



ASPE
ASSISTANT SECRETARY FOR
PLANNING AND EVALUATION

OFFICE OF
HEALTH POLICY

REPORT TO CONGRESS

Prescription Drug Pricing

May 20, 2020

U.S. Department of Health & Human Services

Office of the Assistant Secretary for Planning and Evaluation

Acknowledgements

Many people at ASPE contributed to this project including Kenneth Finegold, Nguyen Nguyen, Sean Klein, Arielle Bosworth, Victoria Aysola, and Michael Tran. ASPE also acknowledges programming support from Acumen, LLC.

Suggested Citation

Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health & Human Services. Prescription Drug Pricing Report. 2020. <https://aspe.hhs.gov/prescription-drugs>

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Section 1. Introduction

The Secretary of Health and Human Services (HHS) has been directed to submit a drug pricing report containing information requested by the House Committee on Appropriations. In response, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) developed this report containing data and analyses related to prescription drug spending between 2006¹ and 2018 as well as on prescription drugs benefiting from public funding for biomedical research since 2013. The sections on prescription drug spending provide comparative gross prescription drug spending and prices as well as the top 10 highest-cost drugs and the top 10 most frequently prescribed drugs for each of the following: (1) The Medicare program under part B of title XVIII of the Social Security Act; (2) The Medicare prescription drug program under part D of title XVIII of the Social Security Act; (3) The Medicaid program under title XIX of the Social Security Act. The section on public funding for biomedical research provides the list of drugs that have been approved for sale by the Food and Drug Administration (FDA) in the past five years that have benefited significantly from government grants or research subsidies in either the pre-clinical or clinical stages of development, as well as spending in Medicare Part D and Medicaid for each of those drugs.

This report does not include: (1) prescription drug spending or prices pertaining to programs of the Department of Veterans Affairs; (2) spending and prices net of rebates for individual drugs within Medicare Part D or Medicaid; or (3) a breakdown of the comparative prices net of rebates for each of the 10 most frequently prescribed drugs or the 10 highest-cost drugs between ambulatory settings and retail settings. Rebate data and prices net of rebates are excluded because this information is generally considered proprietary and is subject to a variety of disclosure restrictions under Federal law. The Department of Health and Human Services does not have access to the requested data on prescription drug spending and prices under programs of the Department of Veterans Affairs.

Prescription Drug Spending in Medicare Part B, Medicare Part D, and Medicaid

Prescription drug spending generally continues to increase in the United States.² The Office of the Actuary within the Centers for Medicare & Medicaid Services (CMS) estimates that in 2020, \$358.7 billion will be spent on retail prescription drugs, rising from \$258.2 billion in 2013.³ The May 2018 “American Patients

¹ The committee request data on drug pricing back to 2008. In several analyses, this report presents data starting with 2006; several policy changes began in 2006 including the implementation of Medicare Part D and the first year that most hospital outpatient departments began using ASP methodology for payments under Medicare Part B.

² IQVIA’s baseline analysis projects 4-7% annual spending growth in invoice prices and 3-6% annual spending growth in net prices through 2023. See IQVIA Institute for Human Data Science, *Medicine Use and Spending in the U.S.: A Review of 2019 and Outlook to 2023*, May 2019 (<https://www.iqvia.com/en/insights/the-iqvia-institute/reports/medicine-use-and-spending-in-the-us-a-review-of-2018-and-outlook-to-2023>).

³ The \$358.7 billion estimate for 2020 includes \$122.4 billion for Medicare (including Part B and Part D) and \$37.0 billion for Medicaid. Both estimates are net of rebates. See Table 11 in <https://www.cms.gov/files/zip/nhe-projections-2019-2028-tables.zip-0>. The projections cited in this report were developed before the impacts of the COVID-19 epidemic could be incorporated.

KEY POINTS

- Drug spending is concentrated in relatively few drugs in the Medicare and Medicaid programs. The top spending drugs differ by program and the level of concentration differs as well. For example, in 2018, the top ten highest-cost drugs by total spending accounted for 46 percent of spending in Medicare Part B, 18 percent of spending in Medicare Part D, and 14 percent of spending in Medicaid.
 - Drug spending has been growing rapidly in the Medicare Part B program, increasing at an average of 8.4 percent per year between 2006 and 2018, and 9.7 percent between 2017 and 2018. During the period 2006-18, as FFS enrollment in Part B between 2006 and 2018 was flat, spending per enrollee increased similarly at 8.3 percent per year on average.
 - While Medicare Part D drug spending has grown since the program began in 2006, the average annual rate of growth in spending in recent years has not increased as fast as drug spending in Medicare Part B. Medicare Part D program spending increased an average of 6.0 percent per year between 2006 and 2018, but dropped by 4.8 percent between 2017 and 2018, due partly to increased manufacturer rebates. During the period 2006-18, although Medicare Part D spending increased 6 percent annually, as Part D enrollees increased about 3.5 percent, spending per enrollee increased on average 2.5 percent per year.
 - Medicaid program spending on drugs increased an average of 4.8 percent per year between 2006 and 2018, but only 1.4 percent between 2017 and 2018 due in part to reduced spending on hepatitis C drugs. Medicaid program spending on prescription drugs increased 0.8 percent on a per enrollee basis between 2006 and 2018. Of particular note, in the list of top ten drugs by volume for Medicaid, hydrocodone-acetaminophen, a pain relief drug, was the most prescribed drug in 2014 and 2015. It is no longer in the top ten, which may be a result of government action to address the opioid epidemic.
 - All or virtually all new drugs approved for sale by the FDA between 2014 and 2018 benefited significantly from government grants or research subsidies in either the pre-clinical or clinical stages of development.
-

First: Trump Administration Blueprint to Lower Drug Prices and Reduce Out of Pocket Costs” described a new, more transparent drug pricing system that would lower high prescription drug prices and bring down out-of-pocket costs. The blueprint includes four strategies for putting American patients first: bringing down out-of-pocket-costs, boosting competition, strengthening negotiation, and creating incentives for lower list prices.⁴

Trends in prescription drug utilization and spending vary across the Medicare Part B, Medicare Part D, and Medicaid programs. Differences in utilization and spending reflect underlying variation in eligibility for each program, including age, disability, income, and medical need. The Medicare Program provides health insurance coverage for individuals aged 65 years and older as well as certain younger individuals with disabilities or End-Stage Renal Disease. Medicaid is a joint Federal-State program that provides coverage

⁴ <https://www.hhs.gov/sites/default/files/AmericanPatientsFirst.pdf>

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for individuals and families with low incomes; some individuals with incomes above these limits may also qualify due to high medical expenses.

In addition to populations served, these programs and different parts of these programs also vary in the coverage offered for prescription drugs. Medicare Part D and Medicare Part B provide coverage for different types of prescription drugs based on site of service: in general, Medicare Part D provides coverage for self-administered prescription drugs and Medicare Part B covers drugs that are administered in physician's offices or hospital outpatient departments. In Medicaid, outpatient prescription drug coverage is an optional benefit, currently offered by all states and the District of Columbia.

Prescription drug expenditures are projected to continue rising during the coming decade, placing increasing fiscal pressures on commercial, federal, and state budgets.^{5,6} As Figure 1-1 shows, spending growth has slowed down over the past three years, with drops of 5 percent in Medicare Part D and 2 percent in Medicaid between 2017 and 2018. Medicare Part B spending, however, has continued to increase. Over the longer period from 2006 to 2018, program spending for prescription drug has grown at a compounded annual rate of 6 percent for Medicare Part D, 8 percent for Medicare Part B, and 5 percent for Medicaid, each far above the 3 percent rate for overall prescription drug expenditures.^{7,8} Increases in prescription drug spending are not expected to be uniform across government programs, however, in part due to differences in eligibility and coverage across programs. Another important factor underlying differential projected increases in prescription drug spending is variation in use of purchasing arrangements, utilization management strategies, and value-based approaches by the different government programs.

⁵ *Observations on trends in prescription drug spending*. ASPE Issue Brief (3/8/2016). <https://aspe.hhs.gov/pdf-report/observations-trends-prescription-drug-spending>

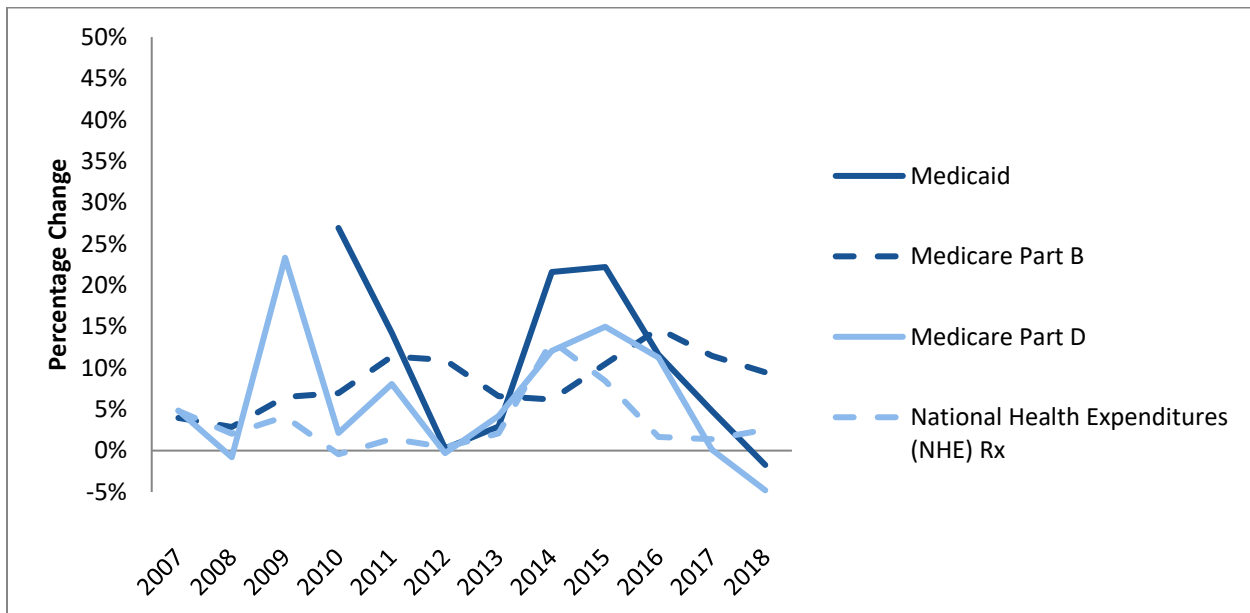
⁶ Sisko AM, Keehan SP, Poisal JA, et al. National Health Expenditure Projections, 2018–27: Economic And Demographic Trends Drive Spending And Enrollment Growth. *Health Affairs*. 3 (2019). Available from: <https://www.healthaffairs.org.ezproxyhhs.nihlibrary.nih.gov/toc/hlthaff/0/0>.

⁷ Medicaid data for years before 2010 are not shown in Figure 1-1 because they do not include spending by Managed Care Organizations and may be subject to data errors. The high rate of increase in Medicaid spending in 2014 and 2015 is associated with Medicaid expansion under the Affordable Care Act and the launch of expensive new drugs such as Sovaldi and Harvoni for hepatitis C.

⁸ On a per person basis, Medicare Part D spending increased on average 2.5 percent annually during the period 2006-18 as Part D enrollment increased about 3.5 percent annually while Medicare Part B drug spending per person in FFS remains at about 8 percent as enrollment in Part B FFS was flat over the period.

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Figure 1-1 Annual Percentage Change in Prescription Drug Spending by Program, 2007-2018



Notes: Medicaid Percentage Change based on gross program spending; Medicare Part B and Part D Percentage change based on total program net spending⁹; NHE Rx Percentage Change based on net spending.

Sources: Medicaid, 2010-2012, Lewin analysis of Medicaid State Drug Utilization public-use data; Medicaid, 2013-2018 Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data; Medicare Part B, Acumen analysis of CMS carrier, durable medical, and outpatient claims data; Medicare Part D, Acumen analysis of CMS Prescription Drug Event (PDE) files; National Health Expenditures, CMS Office of the Actuary, “National Health Expenditures by Type of Service and Source of Funds: Calendar Years 1960 To 2018” (<https://www.cms.gov/files/zip/national-health-expenditures-type-service-and-source-funds-cy-1960-2018.zip>). Medicaid data for years before 2010 are not shown because they do not include spending by Managed Care Organizations and may be subject to data errors.

Prescription Drug Development and Public Funding

Prescription drugs can effectively treat many acute and chronic diseases leading to improvements in quality of life, life expectancy, and overall population health. However, development of new prescription drugs is expensive, uncertain, and slow. The high costs of new drug development require the prospect of financial returns to encourage sponsors to continue investing in innovation. To encourage investment, sponsors of certain drugs approved by the Food and Drug Administration (FDA) are granted exclusive rights to market their drug for a period of time. In addition, new drugs may benefit significantly from government grants or research subsidies in either the pre-clinical or clinical stages of development. For example, the Orphan Drug Act provides incentives, including grants, tax credits, and an additional period of market exclusivity to encourage investment in treatments for rare diseases or conditions. Because new medicines can improve the health of individuals and the population more broadly, the incentives for

⁹ According to the CMS Office of the Actuary, after 2018, the projected Part D costs are lower than those in the 2018 report. The difference is primarily attributable to higher rebates and slower overall drug price increases. (<https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TR2019.pdf>, p. 32).

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innovation described above are important. At the same time, policy makers must balance these incentives with assuring that the new medicines are affordable and reflect their value in terms of improving patient health outcomes.

Congressional Request for this Drug Pricing Report

This is the third report on drug pricing that ASPE has prepared at the request of the Congress. The 2016 and 2019 reports are available on the ASPE website.¹⁰ The current report prepared in 2020 responds to the request shown below:

“The Committee directs the Secretary of Health and Human Services to submit a report to the Committees on Appropriations not later than 120 days after the date of enactment of this Act regarding price changes of prescription drugs since 2008. The report should include comparative prescription drug prices (net of rebates) paid by the following programs for the 10 most frequently prescribed drugs and the 10 highest-cost drugs for each of the following: (1) The Medicare program under part B of title XVIII of the Social Security Act; (2) The Medicare prescription drug program under part D of title XVIII of the Social Security Act; (3) The Medicaid program under title XIX of the Social Security Act; and (4) The Department of Veterans Affairs. The report should also provide a breakdown of the comparative prices (net of rebates) for each of the 10 most frequently prescribed drugs and the 10 highest-cost drugs between ambulatory settings and retail settings. In addition, the report should include total annual costs due to prescription drugs to the Medicare program under part B of title XVIII of the Social Security Act, the Medicare prescription drug program under part D of title XVIII of such Act, and the Medicaid program under title XIX of such Act. Finally, the report should list the drugs that have been registered for sale by the Food and Drug Administration (FDA) in the past five years that have benefited significantly from government grants or research subsidies in either the pre-clinical or clinical stages of development, as well as the price (net of rebates) and total spending in Medicare and Medicaid for each of those drugs.”¹¹

¹⁰ ASPE, Report to Congress: Prescription Drugs: Innovation, Spending, and Patient Access, December 7, 2016, and ASPE, Report to Congress, Prescription Drug Pricing Report, August 6, 2019. These reports and other ASPE research on prescription drugs are available at <https://aspe.hhs.gov/prescription-drugs>.

¹¹ Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Bill, 2020, Report of the Committee on Appropriations, House of Representatives, Report 116-62, May 15, 2019 (<https://www.congress.gov/116/crpt/hrpt62/CRPT-116hrpt62.pdf>), p. 133. The Further Consolidated Appropriations Act, including appropriations for the Department of Health and Human Services, became Public Law 116-94 upon its signature by President Trump on December 20, 2019.

Section 2. Medicare Part B

This section presents information about prescription drugs in Medicare Part B between 2006 and 2018. It presents data pertaining to trends in overall spending for prescription drugs and the top 10 highest-cost drugs and top 10 most frequently prescribed drugs in Medicare Part B. The data presented in this section include only spending in fee-for-service Medicare Part B and exclude Medicare Advantage spending.

Program Overview

Medicare is a federal health insurance program created in 1965 for people ages 65 and older; it was expanded in 1972 to cover people under age 65 with permanent disabilities or end-stage renal disease (ESRD). Medicare Part B, also known as the Supplementary Medical Insurance (SMI) program, helps pay for physician, outpatient, and preventive services as well as some home health services.

Part B is financed through a combination of general revenues, premiums paid by beneficiaries, interest, and other sources. Premiums are automatically set to cover 25 percent of spending in the aggregate, while general revenues subsidize 73 percent and the remaining 2 percent is financed through interest and other sources. Higher-income beneficiaries pay a larger share of spending, ranging from 35 percent to 80 percent of Part B costs.¹²

Certain types of drugs including infusible and injectable drugs and biologics administered in physician offices and hospital outpatient departments, as well as certain other drugs provided by pharmacies and suppliers (for example, inhalation drugs and certain oral anticancer, oral antiemetic, and immunosuppressive drugs), are covered by Part B.¹³ Providers purchase these Part B drugs and Medicare payments are made directly to these providers.

Through the passage of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA)¹⁴, beginning in 2005 payments for Part B drugs generally are tied to health care providers' acquisition costs by paying for a drug's average sales price (ASP) plus a 6 percent add-on (106 percent of ASP) as computed by CMS using quarterly sales price and volume of sales data.¹⁵ The Secretary was provided discretion for drugs administered in hospital outpatient settings, to determine payment based

¹² High-income beneficiaries have paid an income-related premium for Part B since 2007 and for Part D since 2011.

¹³ Steven Sheingold, Elena Marchetti-Bowick, Nguyen Nguyen, and Robin Yabroff, *Medicare Part B Drugs: Pricing and Incentives*, ASPE, March 8, 2016. Available from: <https://aspe.hhs.gov/system/files/pdf/187581/PartBDrug.pdf>

¹⁴ *Medicare Prescription Drug, Improvement, and Modernization Act of 2003*. 2003. retrieved from: <https://www.congress.gov/108/plaws/publ173/PLAW-108publ173.pdf>

¹⁵ Medicare payments on the claims data reflect the 2 percent reduction due to the sequester in effect during the period from April 2013 through September 2027. The sequestration reduces benefit payments by 2 percent from April 1, 2013 through March 31, 2027 and by 4 percent from April 1, 2027 through September 30, 2027. Under the sequester, Medicare payments to providers, but not beneficiary coinsurance payments, are reduced by 2 percent. After applying this payment reduction, the payment rate is effectively ASP+4.3%. (In other words, as the sequester applies to federal payment only (80 percent of total payment while beneficiaries still pay the full 20 percent copay), the effective federal payment under ASP+6% is reduced to $(ASP+6\%)*(1-(2\%*80\%))$, or ASP+4.3%.

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on average acquisition costs or similarly to how payment is made in a physician’s office. The Secretary has used ASP-based pricing for most Part B drugs provided in hospital outpatient departments since 2006.

Medicare Part B Spending and Spending Trends

Overall spending and spending trends

In Calendar Year (CY) 2018, total Medicare expenditures were \$740.6 billion, of which \$337.2 billion were for total Part B benefits.¹⁶ The total fee-for-service Part B benefit was \$201.5 billion after netting out spending for Medicare Advantage and administrative expenses (Table 2-1).

Table 2-1 Medicare Fee-for-Service Part B Program Spending, 2006-2018¹⁷

Year	Total Part B Benefit		Part B Drug Program		Part B Drugs' Share of Part B Benefit
	Spending (\$B)	Annual Growth	Spending (\$B)	Annual Growth	
2006	134.4	-	10.1	-	7.5%
2007	137.5	2.3%	10.5	3.3%	7.6%
2008	132.2	-3.9%	10.8	3.7%	8.2%
2009	149.2	12.9%	11.5	6.5%	7.7%
2010	154.5	3.5%	12.3	6.8%	8.0%
2011	162.7	5.3%	13.7	11.3%	8.4%
2012	170.5	4.8%	15.2	10.7%	8.9%
2013	170.5	0.0%	16.2	6.8%	9.5%
2014	176.5	3.5%	17.2	6.2%	9.8%
2015	180.8	2.5%	19.0	10.2%	10.5%
2016	186.0	2.8%	21.8	14.6%	11.7%
2017	194.1	4.4%	24.3	11.3%	12.5%
2018	201.5	3.8%	26.6	9.7%	13.2%
Average Annual 2006-18		3.4%		8.4%	

Source: Total Part B benefit spending from Trustees Reports 2007-2019 (Table III.C1 for 2007-2011 and Table III. C4 for 2012-2019) netting out spending in Medicare Advantage (MA numbers provided by the Office of the CMS Office of the Actuary). The data presented in this table include only spending in fee-for-service Medicare Part B and exclude Medicare Advantage spending.

¹⁶ Table II.B1, p. 11. Medicare Trustees Report (2019). 2019 Annual Report Of The Boards Of Trustees Of The Federal Hospital Insurance And Federal Supplementary Medical Insurance Trust Funds. Retrieved from: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TR2019.pdf>

¹⁷ Medicare payments in the claims data reflect the 2 percent reduction due to the sequester in effect during the period from April 1, 2013 through September 30, 2030, except for the period from May 1, 2020 to December 31, 2020.

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As shown in Table 2-1, fee-for-service Part B drug program spending grew from \$10.1 billion in 2006 to \$26.6 billion in 2018, representing an average annual growth rate of 8.4 percent.¹⁸ Comparatively, total fee-for-service Part B benefit spending grew at 3.4 percent annually over the same period. Part B drug spending has particularly increased since 2014, with annual average growth of 11.5 percent compared to 3.4 percent for total Part B benefit spending.

Table 2-2 shows that on a per fee-for-service enrollee basis, program spending on Part B drugs grew much faster than spending on total Part B benefits. Per fee-for-service enrollee program spending for Part B drugs grew 8.3 percent annually from 2006 to 2018, while per fee-for-service enrollee program spending for total Part B benefits grew 3.3 percent (data not shown). Fee-for-service enrollment for Part B was flat at about 33 million over the same period.

Table 2-2 Medicare Fee-for-Service Part B Program Spending per Enrollee for Drug Benefits, 2006-2018

Year	Fee-for-Service Enrollees (M)	Total Part B Benefit		Part B Drug Program	
		Spending per Enrollee (\$)	Annual Growth	Payment per Enrollee (\$)	Annual Growth
2006	33.1	4,111	-	306	-
2007	32.4	4,293	4.4%	322	5.3%
2008	32.0	4,296	0.1%	339	5.2%
2009	31.8	4,721	9.9%	363	7.0%
2010	32.2	4,779	1.2%	383	5.6%
2011	32.5	4,936	3.3%	422	10.1%
2012	32.9	5,089	3.1%	462	9.5%
2013	33.1	5,084	-0.1%	490	6.1%
2014	33.2	5,301	4.3%	520	6.0%
2015	33.3	5,434	2.5%	571	9.9%
2016	33.7	5,557	2.3%	647	13.1%
2017	33.6	5,783	4.1%	723	11.8%
2018	33.2	6,102	5.5%	800	10.7%

Source: Total Part B benefit spending from Trustees Reports 2007-2019 (Table III.C1 for 2007-2011 and Table III.C4 for 2012-2019); Enrollment from Trustees Report 2019 Table V. B3. The data presented in this section include only spending in fee-for-service Medicare Part B and exclude Medicare Advantage spending.

¹⁸ Program spending excludes beneficiary liability and third party payments. Total FFS Part B spending (Medicare program, beneficiary liability and third party payments) grew from \$12.7 B. in 2006 to \$33.5 B. in 2018.

Spending concentration for top ten drugs

A relatively small number of Part B drugs account for a substantial share of the spending.¹⁹ Table 2-3²⁰ presents the top 10 drugs in terms of Medicare Part B drug program payment over the last ten years. For brevity, we present only 2008, 2011, 2014, and 2018 here, with tables for all years included in Appendix Table A-1. Concentrated spending for a relatively small number of drugs has been consistent for the past decade with the top 10 highest-cost drugs accounting for 45 to 50 percent of total Part B spending on drugs.

In 2018, the top 10 highest-cost drugs accounted for \$12.2 billion in Part B payments (not including beneficiary cost-sharing), or 46 percent of \$26.6 billion in total Part B spending for all drugs. At nearly \$2.1 billion in total Part B payments, aflibercept (Eylea) accounted for more spending than any other drug in 2018. Total Part B payments including beneficiary cost-sharing for aflibercept was \$943 per unit in 2018, or \$10,703 per Medicare user (data not shown). We defined unit based on the Healthcare Common Procedure Coding System (HCPCS) billing unit, which, in many cases, is the lowest dispensable amount or the lowest denomination (e.g., one pill or a standardized volume for liquids) and may not be the common dose.²¹ Pembrolizumab (Keytruda), which has historically been in the top ten list over the last decade, accounts for the second most Medicare Part B payments with approximately \$1.5 billion.

Table 2-4 presents the top 10 highest-cost prescribed drugs in Medicare Part B ranked by spending per unit for 2011, 2014, and 2018, with all years 2011-2018 presented in Appendix Table A-2.

As displayed in Table 2-5, the top 10 most frequently prescribed drugs in Medicare Part B are relatively inexpensive and typically account for less than 10 percent of total Part B drug spending. In 2018, spending on the top 10 most frequently prescribed drugs was \$2.2 billion, or 8 percent of \$26.6 billion in total Part B spending for all drugs. Aflibercept, the eighth most prescribed drug, accounted for \$2.1 billion in Part B spending. The remaining nine drugs each accounted for at most \$18.2 million in spending and had average per unit spending of \$13 or less. Spending and pricing data for all years are included in Appendix Table A-3.

¹⁹ Spending numbers presented are program spending, net of beneficiary cost sharing, and include the reduction of the sequester. The sequestration reduces benefit payments by 2 percent from April 1, 2013 through March 31, 2030, except for the period from May 1, 2020 to December 31, 2020.

²⁰ The drug spending presented in Table 2-3 includes claims by critical access hospitals, Maryland hospitals and third party claims. Acumen analyzed the carrier, durable medical, and outpatient claims data 2006-2018 for ASPE.

²¹ Per the above example, a unit of aflibercept is 1mg, although the common dose for aflibercept is 2mg. On the claims data the unit is the MTUS_CNT.

Section 2: Medicare Part B

Table 2-3 Top 10 Highest-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Rank	Description	2008		Description	2011	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Rituximab cancer treatment (Rituxan)	516.94	918.7	Ranibizumab injection (Lucentis)	405.35	1,141.9
2	Bevacizumab injection (Avastin)	57.41	761.3	Rituximab injection (Rituxan)	611.65	1,098.3
3	Infliximab injection (Remicade)	55.85	647.8	Bevacizumab injection (Avastin)	60.45	817.4
4	Injection, pegfilgrastim 6mg (Neulasta)	2,208.74	634.3	Injection, pegfilgrastim 6mg (Neulasta)	2,643.26	808.4
5	Ranibizumab injection (Lucentis)	397.07	588.1	Infliximab injection (Remicade)	61.49	761.6
6	Darbepoetin alfa, non-esrd (Aranesp)	2.91	534.5	Oxaliplatin (Eloxatin)	9.42	398.0
7	Oxaliplatin (Eloxatin)	9.42	365.9	Pemetrexed injection (Alimta)	53.07	374.0
8	Epoetin alfa, non-esrd (Epogen/Procrit)	9.26	362.3	Darbepoetin alfa, non-esrd (Aranesp)	3.15	341.9
9	Docetaxel (Taxotere)	327.90	316.8	Trastuzumab injection (Herceptin)	70.60	327.2
10	Gemcitabine HCl ((Gemzar)	132.42	263.7	Docetaxel injection (Taxotere)	18.70	315.8
Medicare Part B Spending, Top 10			5,393.4			
Medicare Part B Spending, All Drugs			10,843.8			

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Table 2-3 Top 10 Highest-Cost Prescribed Drugs, Medicare Part B, Ranked by Total Spending (cont.)

Rank	Description	2014		Description	2018	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Rituximab injection (Rituxan)	693.46	1,244.6	Aflibercept injection (Eylea)	942.72	2,051.4
2	Ranibizumab injection (Lucentis)	390.62	1,063.4	Inj pembrolizumab (Keytruda)	43.72	1,536.3
3	Aflibercept injection (Eylea)	964.46	1,036.1	Injection, nivolumab (Opdivo)	24.75	1,429.0
4	Injection, pegfilgrastim 6mg (Neulasta)	3,308.51	974.4	Rituximab injection (Rituxan)	819.28	1,414.5
5	Infliximab injection (Remicade)	71.72	965.6	Denosumab injection (Prolia)	17.06	1,163.6
6	Bevacizumab injection (Avastin)	65.17	880.3	Injection, pegfilgrastim 6mg (Neulasta)	4,181.28	1,138.9
7	Denosumab injection (Prolia)	14.30	629.8	Ranibizumab injection (Lucentis)	368.24	967.9
8	Trastuzumab injection (Herceptin)	80.78	464.0	Infliximab not biosimilar (Remicade) 10mg	78.32	954.3
9	Pemetrexed injection (Alimta)	59.50	463.6	Bevacizumab injection (Avastin)	71.04	836.6
10	Bortezomib injection (Velcade)	45.54	387.3	Trastuzumab injection (Herceptin)	93.23	684.0
Medicare Part B Spending, Top 10			8,109.1	12,176.5		
Medicare Part B Spending, All Drugs			17,240.2	26,602.5		

Source: Analysis of carrier, durable medical, and outpatient claims data 2006-2018. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. HCPCS codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Unit includes beneficiary cost-sharing; Total Spending does not include beneficiary cost-sharing. Both measures include the sequester.

Section 2: Medicare Part B

Table 2-4 Top 10 Highest-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Rank	Description	2008		Description	2011	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Fluocinolone acetone implt (Retisert)	19,195.39	2.4	Y90 ibritumomab, rx (Zevalin)	33,573.26	7.5
2	Ganciclovir long act implant	6,602.06	0.4	Sipuleucel-T (Provenge)*	32,848.53	97.9
3	Porfimer sodium (Photofrin)	2,494.71	0.8	I131 tositumomab, rx (Bexxar)	27,732.46	1.1
4	Gemtuzumab ozogamicin (Mylotarg)	2,438.37	2.6	Fluocinolone acetone implt (Retisert)	16,162.45	1.4
5	Injection, pegfilgrastim 6mg (Neulasta)	2,208.74	634.3	Sm 153 lexidronam (Quadramet)	7,608.51	3.8
6	Pegaspargase /singl dose vial (Oncaspar)	2,094.39	0.2	Porfimer sodium injection (Photofrin)	5,254.63	0.8
7	Tenecteplase injection (TNKase)	1,968.37	4.6	Leuprolide acetate implant (Lupron)	4,378.09	0.3
8	Pentostatin injection (Nipent)	1,771.27	4.9	Ganciclovir long act implant	3,449.66	0.4
9	Inj melphalan hydrochl 50 MG (Evomela)	1,502.60	2.9	Vantas implant	2,960.96	13.8
10	Leuprolide acetate implant (Lupron)	1,434.62	4.8	Pegaspargase injection (Oncaspar)	2,683.49	0.2
Medicare Part B Spending, Top 10			657.9			
Medicare Part B Spending, All Drugs			10,843.8	127.0		
				13,733.3		

Section 2: Medicare Part B

Table 2-4 Top 10 Highest-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit (cont.)

Rank	Description	2014		Description	2018	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Y90 ibrutumomab, rx (Zevalin)	42,297.49	7.2	Tisagenlecleucel car-pos t (Kymriah)	480,463.46	5.8
2	Sipuleucel-t auto cd54+ (Provenge)	33,841.80	146.6	Y90 ibrutumomab, rx (Zevalin)	41,746.76	1.5
3	Porfimer sodium injection (Photofrin)	19,291.79	2.7	Sipuleucel-t auto cd54+ (Provenge)	39,392.47	157.1
4	Fluocinolone acetone implt (Retisert)	19,140.58	1.7	Porfimer sodium injection (Photofrin)	18,263.00	2.1
5	Sm 153 lexidronam (Quadramet)	8,000.12	1.2	Fluocinolone acetone implt Retisert)	17,815.65	0.2
6	Pegaspargase injection (Oncaspar)	5,952.34	1.0	Sm 153 lexidronam (Quadramet)	11,994.26	0.7
7	Centruroides immune f(ab) (Anascorp)	3,583.29	0.1	Pegaspargase injection (Oncaspar)	11,869.87	1.2
8	Injection, pegfilgrastim 6mg (Neulasta)	3,308.51	974.4	Choline c-11	5,209.25	9.5
9	Reteplase injection (Retavase)	2,978.94	0.0	Injection, pegfilgrastim 6mg (Neulasta)	4,187.28	1,138.9
10	Vantas implant	2,926.38	4.7	Centruroides immune f(ab) (Anascorp)	3,925.12	0.3
Medicare Part B Spending, Top 10			1,139.7			
Medicare Part B Spending, All Drugs			17,240.2	1,317.2		
				26,602.5		

* The current HCPCS code for Sipuleucel-T, Q2043, replaced the earlier C9273 code as of July 1, 2011. The 2011 listing for this drug shows spending per unit for Q2043, which accounts for the larger number of services in CY 2011, and total spending under both codes.

Source: Analysis of carrier, durable medical, and outpatient claims data 2008-2018. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. HCPCS codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Unit includes beneficiary cost-sharing; Total Spending does not include beneficiary cost-sharing. Both measures include the sequester.

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Table 2-5 Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Rank	Description	2008		Description	2011	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Vitamin b12 injection (Cobal-1000, Cobolin-M)	0.29	0.6	Vitamin b12 injection (Cobal-1000, Cobolin-M)	0.35	0.7
2	Dexamethasone sodium phos (Hexadrol)	0.09	1.5	Triamcinolone acet inj NOS (Kenalog)	1.62	13.0
3	Ondansetron hcl injection (Zofran)	0.43	5.4	Dexamethasone sodium phos (Hexadrol)	0.09	1.4
4	Triamcinolone acetamide inj (Kenalog)	1.44	10.0	Albuterol non-comp unit	0.06	21.2
5	Albuterol ipratrop non-comp (Duoneb)	0.66	121.6	Albuterol ipratrop non-comp (Duoneb)	0.24	34.5
6	Normal saline solution infus	0.28	0.6	Methylprednisolone 40 MG inj (Medrol)	2.76	5.1
7	Methylprednisolone 40 MG inj (Medrol)	4.41	7.7	Methylprednisolone 80 MG inj (Depo Medrol)	6.91	9.0
8	Epoetin alfa, non-esrd (Epogen/Procrit)	9.26	362.3	Normal saline solution infus	0.28	0.4
9	Albuterol non-comp unit	0.04	12.5	LOCM 300-399mg/ml iodine,1ml	0.17	12.0
10	Methylprednisolone 80 MG inj (Depo Medrol)	8.56	10.8	Epoetin alfa, non-esrd (Epogen/Procrit)	9.96	278.1
Medicare Part B Spending, Top 10			533.0	375.4		
Medicare Part B Spending, All Drugs			10,843.8	13,733.3		

Section 2: Medicare Part B

Table 2-5 Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services (cont.)

Rank	Description	2014		Description	2018	
		Spending per Unit (\$)	Program Spending (\$M)		Spending per Unit (\$)	Program Spending (\$M)
1	Triamcinolone acet inj nos (Kenalog)	1.75	14.8	Triamcinolone acet inj nos (Kenalog)	1.79	18.2
2	Dexamethasone sodium phos (Hexadrol)	0.13	2.0	Dexamethasone sodium phos (Hexadrol)	0.12	1.7
3	Vitamin b12 injection (Cobal-1000)	2.02	3.4	Vitamin b12 injection (Cobal-1000)	1.93	3.2
4	Methylprednisolone 40 mg inj (Medrol)	2.95	6.0	Methylprednisolone 40 mg inj (Medrol)	6.60	13.7
5	Albuterol non-comp unit	0.05	13.4	Albuterol non-comp unit	0.05	9.0
6	Albuterol ipratrop non-comp (Duoneb)	0.18	20.0	Albuterol ipratrop non-comp (Duoneb)	0.13	12.8
7	Methylprednisolone 80 mg inj (Depo Medrol)	5.63	7.4	Methylprednisolone 80 mg inj (Depo Medrol)	12.79	15.3
8	Locm 300-399mg/ml iodine,1ml	0.18	12.4	Aflibercept injection (Eylea)	942.72	2,051.4
9	Betamethasone acet&sod phosp (Celestone Soluspan)	5.59	11.1	Locm 300-399mg/ml iodine,1ml	0.12	8.8
10	Ceftriaxone sodium injection (Rocephin)	0.69	2.0	Betamethasone acet&sod phosp (Celestone Soluspan)	7.03	15.6
Medicare Part B Spending, Top 10			92.5	2,149.7		
Medicare Part B Spending, All Drugs			17,240.2	26,602.5		

Source: Analysis of carrier, durable medical, and outpatient claims data 2006-2018. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. HCPCS codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Unit includes beneficiary cost-sharing; Total Spending does not include beneficiary cost-sharing. Both measures include the sequester.

Data and Methods

The Medicare claims data used in the analyses of spending and trends in spending include Part B²² covered drugs administered in physicians' offices and furnished by suppliers (carrier and durable medical equipment (DME) claims files) and covered drugs in hospital outpatient departments (outpatient claims files) from 2006 to 2018. Many of the analyses start with calendar year 2006 because it is the first year that most hospital outpatient departments were paid using the ASP methodology.

²² Part B drugs that are separately paid, i.e., neither bundled nor paid under a bundled system.

Section 2: Medicare Part B

Medicare Part B drugs are identified by the HCPCS codes in the claims data. Analyses are restricted to Part B drugs paid under the methodology described in section 1847A of the Social Security Act.²³ As a result, the analyses exclude vaccines; blood products with P* codes (but include blood clotting with J & Q codes); claims in the DME file with an AWP flag²⁴; and enteral and parenteral drugs that have B* codes.

Claims with HCPCS codes that represent ESRD²⁵ drugs as well as claims with HCPCS codes that do not represent drugs were dropped from the analyses. Codes and prices for carrier and DME were obtained from the CMS ASP files, while those for hospital outpatient departments come from the CMS Addendum B files. Claim lines with denied payments or Medicare as secondary payer were dropped from the analyses. Medicare payments include Medicare program payments and beneficiary cost sharing, and include the effects of the budget sequestration beginning in 2013, which reduced Medicare spending rates by a fixed 2 percent per year.²⁶

The top 10 highest cost drugs and top 10 most frequently prescribed drugs present average spending per billing unit. We define unit based on the combination of HCPCS unit per beneficiary per date, which, in many cases, is the lower of the lowest dispensable amount or the lowest denomination (e.g., one pill or a standardized volume for liquids) and may not be the common dose.²⁷

²³ Typically, this means ASP, but may also include WAC- or AMP-based payments. WAC-based payment occurs in limited situations, such as when a drug is new. AMP-based payment occurs infrequently when ASP exceeds AMP by a threshold percentage and other safeguards are met. The pricing files do not always indicate which source is used for a payment amount.

²⁴ Claims in the durable medical equipment (DME) file with an AWP flag include infusion drugs which previously appeared in the ASP Drug Pricing Files. This indicator was not maintained in the ASP Drug Pricing files and its use has been discontinued (because of the change in DME infusion payment resulting from the Cures Act).

²⁵ ESRD drugs were mostly bundled into the ESRD facility composite rates by 2014.

²⁶ The budget sequestration in 2013 refers to the automatic spending cuts to United States federal government spending in particular categories of outlays that were initially set to begin on January 1, 2013, as an austerity fiscal policy as a result of Budget Control Act of 2011 (BCA), and were postponed by two months by the American Taxpayer Relief Act of 2012 until March 1 when this law went into effect, with the first reductions to Medicare payment as of April 1, 2013. The cuts are split evenly (by dollar amounts, not by percentages) between the defense and non-defense categories. Some major programs such as Social Security, Medicaid, federal pensions and veteran's benefits are exempt. By a special provision in the BCA, Medicare spending rates were reduced by a fixed 2 percent per year. That is providers and health insurance plans will be paid 98 cents on the dollar under Medicare for the entire period April 1, 2013 to September 30, 2030, with the exception of the period from May 1, 2020 to December 31, 2020. As the sequester applies to federal payment only (80 percent of total payment while beneficiaries still pay the full 20 percent copay), the effective federal payment under ASP+6% is $(ASP+6\%)*(1-(2\%*80\%))$, or ASP+4.3%.

²⁷ An example where the billing unit is lower than the dispensable amount is bevacizumab. This drug is available in 100mg and 400mg vials, so the lowest dispensable amount (without pharmacy/outsourcer repackaging) is 100mg. The lowest denomination is 10mg, hence the HCPCS billing unit is 10mg. Payment in Oct 2017 was about \$75 per 10mg, and Medicare's share was about \$60; these figures correspond to the unit being equal to the HCPCS code descriptor amount.

Section 3. Medicare Part D

This section presents information about prescription drugs in Medicare Part D between 2006 and 2018. Specifically, in response to the information requested by the House Committee on Appropriations, this section presents data pertaining to trends in overall spending for prescription drugs and the top 10 highest-cost drugs and top 10 most frequently prescribed drugs in Medicare Part D.²⁸

For many of the analyses contained in this chapter, measures of drug spending are constructed from Part D Prescription Drug Event (PDE) records to include payments to the pharmacy by the Part D plan sponsor and the beneficiary's out-of-pocket liability. These measures are referred to as gross drug costs (GDC). In some cases we estimate Medicare program spending for Part D, which differs from gross drug costs to the extent that rebates and other price concessions affect plan premiums but are not reflected in prices paid at the pharmacy.²⁹

Program Overview

The Medicare Modernization Act of 2003 (MMA) authorized Medicare Part D as a voluntary drug benefit for Medicare beneficiaries, and the Part D program was implemented in January 2006. Private plans compete for enrollees by providing and managing the drug benefit.³⁰ Each enrollee in either Part A or Part B is also entitled to enroll in a Part D prescription drug plan. In addition, some Medicare Advantage plans also cover the Part D benefit. These plans are known as MA-PDs. Similar to Part B, enrollment in Part D is voluntary and the enrollee pays a monthly premium.³¹ In 2018, total enrollment in Medicare was 59.9 million, of which enrollment in Part D was 45.8 million (equivalent to 76 percent).³² Enrollees in Part D pay a monthly premium, in addition to cost sharing and typically costs up to a deductible for their drugs. Low-income beneficiaries (LIS) pay lower or no premiums, cost sharing, or deductibles. Under Part D, private plan sponsors submit annual premium bids for providing the benefit. Medicare subsidizes 74.5

²⁸ Rebate data at the drug level are considered proprietary data and therefore not available for this report.

²⁹ Total Government payment is estimated as the sum of Premium Subsidies (PG), Reinsurance (RI), Low-Income Premium Subsidies (LIPS), and Low-Income Cost Sharing (LICS), with the government paying 74.5% of premiums and beneficiaries paying 25.5%.

³⁰ The Medicare Part D drug benefit is administered through private prescription drug plans, which each separately design and manage benefits and pay claims. Private prescription drug plans use purchasing arrangements and utilization management, including negotiation of prices with manufacturers and pharmacies, formularies, step therapy, quantity limitations, and prior authorization. All formularies must include all (with specified exceptions) drugs in the immunosuppressant, antidepressant, antipsychotic, anticonvulsant, antiretroviral, and antineoplastic classes to ensure patient access to these protected classes of drugs. The current exceptions include that the formulary does not have to include all therapeutic equivalents (i.e., generics) and can use safety edits to limit quantities (see 42 CFR 423.120(b)(2)(vi)).

³¹ High-income beneficiaries have paid an income-related premium for Part B since 2007 and for Part D since 2011.

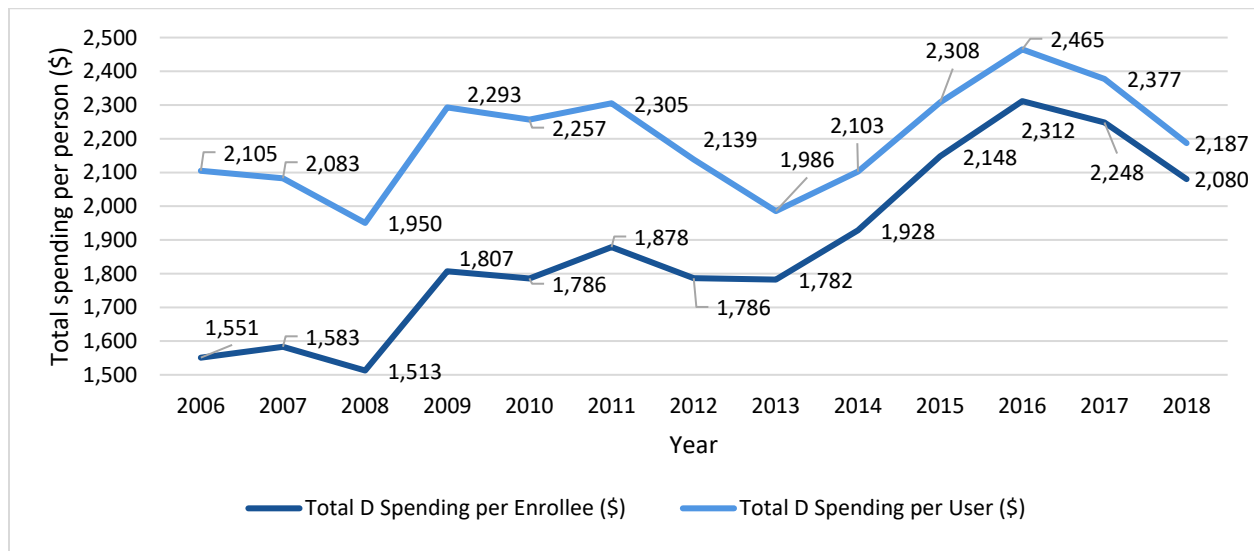
³² Medicare Trustees Report 2019 Table II.B.1. Medicare Trustees Report (2019). 2019 Annual Report Of The Boards Of Trustees Of The Federal Hospital Insurance And Federal Supplementary Medical Insurance Trust Funds. Retrieved from: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TR2019.pdf>

percent of the national average premium and provides additional assistance for premiums and out-of-pocket costs to LIS beneficiaries. In CY 2018, total Medicare expenditures were \$740.6 billion, of which \$95.2 billion (or 13 percent) was for the Part D benefit.³³

Medicare Part D Program Spending and Program Spending Trends

Medicare Part D program spending per enrollee³⁴ rose about 2.5 percent annually between CY 2006 to CY 2018.³⁵ In recent years, program spending per enrollee grew from \$1,782 per enrollee in 2013 to \$2,312 per enrollee in 2016, before decreasing to \$2,080 in 2018 (Figure 3-1). As the number of enrollees increased about 3.4 percent annually, total spending increased 6.0 percent annually from 2006 to 2018 (Table 3-1).

Figure 3-1 Medicare Part D Total Program Spending per Enrollee and Per User, 2006-2018



Source: Spending and Enrollment from Trustees Report 2019, Tables III. D3 and V.B3; Users from Acumen analysis of claims data for ASPE.

³³ Medicare Trustees Report 2019, Table II.B1. Medicare expenditures reflect program payment for the benefits net of rebates plus administrative expenses.

³⁴ Federal spending (Medicare Part D net program spending) is based on a percent of premiums which in turn reflect the rebates plans expect to receive. Federal spending is estimated as the sum of Premium Subsidies, Reinsurance, Low-Income Premium Subsidies, Low-Income Cost Sharing, and risk corridor payments. CMS pays plans a monthly prospective payment for each enrollee (the direct subsidy). This payment is first adjusted by the enrollee’s case mix and other subsidy factors, namely low-income status and longterm institutionalized status. A second adjustment to the plan’s approved bid is the subtraction of the enrollee’s premium. (See the following section on how premiums are calculated.) CMS also provides plans with interim prospective payment adjustments for individual reinsurance and low-income subsidies. The agency reconciles actual levels of enrollment, risk factors, levels of incurred allowable drug costs (after rebates and other discounts), reinsurance amounts, and low-income subsidies after the end of each year.

³⁵ Annual compound growth rate of total program spending per enrollee and enrollment growth computed from United States Centers for Medicare & Medicaid Services. Medicare Trustees Reports, 2019. Part D total spending from Table III.D3 and Part D enrollment from Table V.B3.

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In 2018, total program spending was estimated to be \$95.2 billion, while net benefit spending was \$94.7 billion (Table 3-1). The difference reflects federal administrative costs. Given that the total drug cost obtained from the 2018 claims data was over \$167.6 billion (Table 3-2); this implies that Medicare spending (\$95.2 billion) was about 57 percent of the gross drug cost in 2018. This difference reflects primarily rebates and beneficiary cost sharing, and to a lesser extent administrative cost and profits of plan sponsors, low-income subsidies, net risk corridor payment, coverage gap discount, and the timing of reconciliation payments, among other factors.

Table 3-1 Medicare Part D Total Program Spending and Benefit Spending, 2006-2018

Year	Total Part D Enrollees		Part D Total Program Spending		Part D Benefits Spending	
	(M)	(M)	(M)	(M)	(M)	(M)
	Enrollment (M)	Annual Growth	Spending (\$B)	Annual Growth	Spending (\$B)	Annual Growth
2006	30.6		47.4		47.1	
2007	31.4	2.7%	49.7	4.9%	48.8	3.6%
2008	32.6	3.8%	49.3	-0.8%	49.0	0.4%
2009	33.6	3.2%	60.8	23.3%	60.5	23.5%
2010	34.8	3.4%	62.1	2.1%	61.7	2.0%
2011	35.7	2.7%	67.1	8.1%	66.7	8.1%
2012	37.4	4.8%	66.9	-0.3%	66.5	-0.3%
2013	39.1	4.4%	69.7	4.2%	69.3	4.2%
2014	40.5	3.6%	78.1	12.1%	77.7	12.1%
2015	41.8	3.2%	89.8	15.0%	89.5	15.2%
2016	43.2	3.4%	99.9	11.2%	99.5	11.2%
2017	44.5	2.9%	100.0	0.1%	100.1	0.6%
2018	45.8	2.9%	95.2	-4.8%	94.7	-5.4%
Average Annual 2006-18		3.4%		6.0%		6.0%

Source: Spending and Enrollment from Trustees Report 2019, Tables III. D3 and V. B3

The decline in total Part D program spending from \$100.0 billion in 2017 to \$95.2 billion in 2018 took the form of the 3.5 percentage point increase in rebates, which grew from 21.9 percent to 25.0 percent.³⁶ Because rebates are not passed onto consumers at the point of sale, they mainly affect premiums and plan bids, and hence program spending.

Medicare Part D Gross Drug Costs and Costs Trends

In CY 2018, total gross drug costs (GDC) for the Medicare Part D drugs are estimated to be \$167.6 billion (Table 3-2).³⁷ This reflects a 8.7 percent increase from the previous year's \$154.2 billion in GDC. In recent years, the growth in GDC has slowed from its peak in 2013 through 2015, when GDC exhibited double digit growth each year. The higher rates of growth in 2013 to 2015 in total GDC were primarily the result

³⁶ Medicare Trustees 2020, Table IV.B8, p. 142.

³⁷ Estimate based on Medicare Part D events (PDE) 2007-18 files by Acumen for ASPE

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of increases in both utilization (number of users, claims, and days) and unit cost (per user, per script, and per day) driven in large part because of spending for drugs used to treat hepatitis C and even faster growth in prices for existing brand-name drugs.³⁸

Table 3-2 Medicare Part D Prescription Gross Drug Costs (GDC): 2007-2018

Year	Total Gross Drug Cost		Users (M)	Users		Drug Cost Per User	
	Gross Drug Cost (\$B)	Annual Growth		Annual Growth	Cost per User (\$)	Annual Growth	
2007	\$61.9	-	23.9	-	\$2,594	-	
2008	\$68.2	10.2%	25.3	5.9%	\$2,699	4.1%	
2009	\$73.5	7.8%	26.5	4.9%	\$2,773	2.7%	
2010	\$77.4	5.3%	27.5	3.8%	\$2,813	1.5%	
2011	\$84.6	9.3%	29.1	5.8%	\$2,908	3.4%	
2012	\$89.5	5.8%	31.3	7.5%	\$2,862	-1.6%	
2013	\$103.3	15.4%	35.1	12.2%	\$2,944	2.9%	
2014	\$121.0	17.1%	37.1	5.8%	\$3,258	10.7%	
2015	\$136.8	13.1%	38.9	4.7%	\$3,517	8.0%	
2016	\$145.4	6.3%	40.5	4.2%	\$3,589	2.0%	
2017	\$154.2	6.0%	42.1	3.8%	\$3,666	2.2%	
2018	\$167.6	8.7%	43.5	3.5%	\$3,851	5.0%	
Average Annual							
2007-18		9.5%		5.6%		3.7%	
2007-12		7.7%		5.6%		2.0%	
2012-18		11.0%		5.7%		5.1%	

Source: Analysis of Medicare Part D Events data 2007-2018 by Acumen for HHS/ASPE.

Over the entire 2007-18 period, total gross drug cost increased by 9.5 percent annually, while Medicare benefit spending (net of rebates and cost-sharing) grew at 6.2 percent over the same period (data not shown). The divergence likely reflects the growth in manufacturer rebates over time.³⁹ Moreover, the period from 2007 to 2018 encompasses two sub-periods: the period from 2007 to 2012 saw increasing entry of generic drugs into the market, while the subsequent period from 2013 to 2018 experienced the arrivals of expensive drugs such as the hepatitis C and specialty drugs. As shown in Table 3-2, although the annual average growth of GDC over the whole 2007-18 period was 9.5 percent, the annual rate during 2007-12 was 7.7 percent, increasing to 11.0 percent during 2012 to 2018.

Top 10 Drugs by Total Spending and by Number of Claims

Over the last 10 years, the top 10 highest-cost drugs in Part D account for approximately 20 percent of total Part D GDC. Table 3-3 presents the top 10 drugs in term of Medicare Part D GDC over the last ten

³⁸ IQVIA Institute for Human Data Science. Medicine use and spending in the U.S.: a review of 2017 and outlook to 2022. Parsippany (NJ): IQVIA Institute for Human Data Science; 2018 Apr.

³⁹ Medicare Trustees Report 2019, Table IV.B8.

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years. For brevity, we present only 2008, 2011, 2014, and 2018 here, with tables for all years included in Appendix Table A-4.

In 2018, the top 10 highest-cost drugs accounted for \$29.4 billion in Part D GDC, or 17.5 percent of \$167.6 billion in total Part D GDC. At \$5 billion in Medicare Part D GDC, Eliquis, used to treat and prevent blood clots and to prevent stroke, accounted for more spending than any other drug in 2018. Medicare Part D GDCs for Eliquis was \$7 per unit⁴⁰ in 2018. Table A-4 shows that the GDC per user for Eliquis was \$3,031 in 2018; GDC per user for the second highest-cost drug, Revlimid (used in chemotherapy), was \$103,031. Medicare beneficiaries using these high cost drugs face high patient liabilities despite the catastrophic coverage provisions of Part D. More detailed spending and pricing data for the top highest-cost drugs for all years are included in Appendix Table A-4.

Table 3-4 presents the top 10 highest-cost prescribed drugs in Medicare Part D ranked by spending per unit for 2008, 2011, 2014, and 2018 with all years 2008-2018 presented in Appendix Table A-5. Gattex, used to treat short bowel syndrome, topped the list for 2018 at \$38,596.

As shown in Table 3-5, the top 10 most frequently prescribed drugs in Medicare Part D (as calculated by number of claims), are relatively inexpensive and typically account for less than 10 percent of total Part D GDC. In 2018, spending on the top 10 most frequently prescribed drugs was \$4.3 billion, or 2.6 percent of \$167.6 billion in total Part D GDC. Spending and pricing data for all years are included in Appendix Table A-6.

⁴⁰ A unit here refers to a quantity dispensed in the PDE data. A unit refers to the lowest dispensable amount (e.g. one pill or a standardized volume for liquids).

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Table 3-3 Top 10 Highest-Cost Drugs, Medicare Part D, Ranked by Total Spending

		<u>2008</u>		<u>2011</u>		
<u>Rank</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>
1	Lipitor	2.96	2,397.8	Plavix	6.18	3,656.7
2	Plavix	3.83	2,305.1	Lipitor	4.58	2,672.9
3	Nexium	4.73	1,487.0	Seroquel	7.36	2,045.3
4	Seroquel	4.84	1,462.2	Nexium	5.89	1,970.1
5	Aricept	5.18	1,326.1	Advair Diskus	3.81	1,664.9
6	Zyprexa	12.69	1,229.0	Zyprexa	19.87	1,625.3
7	Advair Diskus	2.95	1,213.3	Abilify	19.22	1,469.6
8	Actos	4.90	1,063.0	Crestor	4.44	1,416.3
9	Prevacid	4.58	947.2	Actos	7.11	1,294.1
10	Abilify	14.43	837.1	Spiriva	7.48	1,288.4
Medicare Part D GDC, Top 10			14,267.8			19,103.6
Medicare Part D GDC, All Drugs			68,223.6			84,639.2

		<u>2014</u>		<u>2018</u>		
<u>Rank</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>
1	Sovaldi	1,016.87	3,102.2	Eliquis	7.00	4,992.2
2	Nexium	7.82	2,658.3	Revlimid	697.35	4,065.1
3	Crestor	6.07	2,541.2	Xarelto	13.97	3,358.8
4	Abilify	28.98	2,524.9	Januvia	14.24	3,228.9
5	Advair Diskus	4.95	2,273.8	Lyrica	7.55	2,950.2
6	Spiriva	9.43	2,156.2	Advair Diskus	6.71	2,394.0
7	Lantus	21.74	2,014.7	Humira Pen	2,457.82	2,388.8
8	Januvia	9.67	1,773.8	Lantus	26.54	2,370.5
				Solostar		
9	Lantus	21.52	1,724.2	Imbruvica	303.62	1,867.2
10	Revlimid	450.97	1,670.5	Symbicort	31.63	1,751.2
Medicare Part D GDC, Top 10			22,439.8			29,366.8
Medicare Part D GDC, All Drugs			121,001.4			167,628.6

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

Section 3: Medicare Part D

Table 3-4 Top 10 Highest-Cost Drugs, Medicare Part D, Ranked by Spending per Unit

<u>2008</u>				<u>2011</u>		
Rank	Drug Name	GDC Per Unit (\$)	GDC (\$M)	Drug Name	GDC Per Unit (\$)	GDC (\$M)
1	Somatuline Depot	7,747.93	0.3	Lucentis	38,985.58	1.1
2	Arcalyst	5,198.06	1.1	Ilaris	16,278.40	0.8
3	Viadur	4,905.50	0.1	Stelara	10,736.42	31.7
4	Vantas	4,738.90	0.5	Somatuline Depot	8,474.58	3.5
5	H.P. Acthar	4,547.26	6.9	Neulasta	5,952.62	28.3
6	Neulasta	3,399.84	19.5	Mozobil	5,703.27	1.1
7	Fabrazyme	3,220.60	1.4	Sylatron 4-Pack	5,585.66	0.1
8	Herceptin	2,728.76	2.3	Jevtana	5,528.20	1.2
9	Sandostatin Lar	2,468.81	14.2	H.P. Acthar	5,303.69	49.5
10	Panhematin	2,403.41	0.3	Arcalyst	5,178.90	2.5
Medicare Part D GDC, Top 10			46.7			119.8
Medicare Part D GDC, All Drugs			68,223.6			84,639.2

<u>2014</u>				<u>2018</u>		
Rank	Drug Name	GDC Per Unit (\$)	GDC (\$M)	Drug Name	GDC Per Unit (\$)	GDC (\$M)
1	Eylea	38,360.36	2.9	Gattex	38,586.16	240.9
2	Lucentis	36,665.31	2.7	Eylea	38,477.57	16.6
3	Gattex	28,077.72	46.7	Lucentis	32,482.75	3.1
4	Ilaris	16,381.65	4.1	Spinraza	26,339.53	8.0
5	Stelara	14,608.29	156.9	Krystexxa	20,919.48	23.9
6	Somatuline Depot	12,083.85	10.2	Stelara	20,571.11	582.6
7	Krystexxa	7,744.50	0.8	Besponsa	19,307.95	1.8
8	Neulasta	7,384.42	57.8	Lemtrada	18,722.10	4.7
9	H.P. Acthar	6,497.68	391.1	Somatuline Depot	17,743.60	29.9
10	Jevtana	6,017.94	1.7	Ilaris	16,465.32	11.3
Medicare Part D GDC, Top 10			674.7			922.8
Medicare Part D GDC, All Drugs			121,001.4			167,628.6

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

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Table 3-5 Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

		<u>2008</u>		<u>2011</u>		
<u>Rank</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>
1	Lisinopril	0.25	345.0	Simvastatin	0.31	594.3
2	Simvastatin	0.57	694.1	Lisinopril	0.19	322.3
3	Furosemide	0.11	131.8	Hydrocodone-Acetaminophen	0.18	430.1
4	Hydrocodone-Acetaminophen	0.18	312.5	Amlodipine Besylate	0.30	383.1
5	Levothyroxine Sodium	0.24	207.8	Omeprazole	0.51	674.7
6	Amlodipine Besylate	0.45	401.5	Levothyroxine Sodium	0.22	256.5
7	Lipitor	2.96	2,397.8	Furosemide	0.11	133.5
8	Omeprazole	0.85	695.6	Metformin HCl	0.12	214.4
9	Hydrochlorothiazide	0.12	94.1	Metoprolol Tartrate	0.09	126.1
10	Atenolol	0.11	111.7	Hydrochlorothiazide	0.12	95.2
Medicare Part D GDC, Top 10			5,391.9	3,230.2		
Medicare Part D GDC, All Drugs			68,223.6	84,639.2		

		<u>2014</u>		<u>2018</u>		
<u>Rank</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>	<u>Drug Name</u>	<u>GDC Per Unit (\$)</u>	<u>GDC (\$M)</u>
1	Lisinopril	0.13	281.4	Atorvastatin Calcium	0.27	881.1
2	Levothyroxine Sodium	0.34	631.5	Amlodipine Besylate	0.11	287.1
3	Amlodipine Besylate	0.16	303.6	Levothyroxine Sodium	0.35	828.1
4	Simvastatin	0.19	346.5	Lisinopril	0.10	264.8
5	Hydrocodone-Acetaminophen	0.27	676.2	Gabapentin	0.15	579.7
6	Omeprazole	0.29	527.6	Omeprazole	0.21	388.9
7	Atorvastatin Calcium	0.44	747.2	Furosemide	0.10	145.1
8	Furosemide	0.10	135.6	Losartan Potassium	0.14	244.5
9	Metformin HCl	0.08	203.8	Metformin HCl	0.06	189.8
10	Gabapentin	0.19	491.2	Hydrocodone-Acetaminophen	0.29	529.4
Medicare Part D GDC, Top 10			4,344.5	4,338.5		
Medicare Part D GDC, All Drugs			121,001.4	167,628.6		

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

Data and Methods

Medicare Part D PDE data were used from 2007 to 2018 to calculate annual total gross drug costs, price, and utilization. Although the Medicare Part D program started in 2006, data in the initial year are not considered reliable for analyses. As a result, 2007 was the first year used for evaluating trends.

The analysis is based on all drugs reported in the PDE data, excluding non-covered claims and compound drugs. Additional information was obtained from the Health Plan Management System (HPMS), Medispan, and First Data Bank.⁴¹

The unit of analysis for the study is the National Drug Code (NDC), a unique product identifier. The NDC is a unique 10-digit, 3-segment numeric identifier assigned to each medication identifying the labeler or vendor, product (specific strength, dosage form, and formulation for a particular firm), and trade package (package forms and sizes).

The top 10 highest cost drugs and top 10 most frequently prescribed drugs present average spending per dosage unit. Units refer to both the number of claims or the quantity dispensed in the PDE data. Quantity dispensed describes how many dosage units of the medication were dispensed in the current drug event (normally, it is the number of units, grams, milliliters, other; for compounded items, the total of all ingredients is supplied as Quantity Dispensed). 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.

⁴¹ The Health Plan Management System (HPMS) provides such information as plan type, cost share tier level, and utilization management (quantity limit, prior authorization, step therapy). The First Data Bank (FDB) and Medispan provide such information as generic and brand name, dosage form, strength, and route of administration. In addition, Medispan provides information on drug class and protected class.

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This section presents information about prescription drugs in Medicaid between 2006 and 2018. It presents data pertaining to trends in overall spending for prescription drugs and the top 10 highest-cost drugs and top 10 most frequently prescribed drugs in Medicaid.

Program Overview

Medicaid, created alongside Medicare in 1965, provides comprehensive health coverage, including prescription drug benefits, to low-income and disabled individuals and families. Unlike Medicare, Medicaid is administered by states in accord with federal statutes and regulations. Financial responsibility for Medicaid is apportioned between the federal government and the states according to the applicable Federal Medical Assistance Percentage (FMAP). Although prescription drug coverage is legally an optional rather than a mandatory Medicaid benefit, all states and the District of Columbia have elected to provide this coverage.

About 64 million people were enrolled in Medicaid as of December 2019.⁴² Most enrollees receive services under some form of managed care.⁴³ States can carve prescription drugs out of managed care but fewer do so since the Affordable Care Act (ACA) extended Medicaid prescription drug rebates to cover Managed Care Organizations (MCOs) as well as Fee for Service (FFS) utilization, allowing states to receive full rebates under either type of utilization.

About half of the gross cost of Medicaid prescription drugs comes back to the federal government and the states through rebates. Since the Omnibus Budget Reconciliation Act of 1990, manufacturers have been required to provide rebates on prescription drugs as a condition of state Medicaid coverage for their products. For single source/innovator multiple source (brand name) drugs, rebate amounts are based on the greater of a percentage of the Average Manufacturer Price (AMP) or the difference between AMP and the “best price” available to other purchasers.⁴⁴ Additional rebates that apply when the cost of a branded drug increases faster than inflation now account for about half of total rebate amounts on these drugs.⁴⁵

⁴² Centers for Medicare & Medicaid Services [CMS]. [December 2019 Medicaid & CHIP Enrollment Data Highlights](https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html). <https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html>.

⁴³ Centers for Medicare & Medicaid Services [CMS]. *Medicaid Managed Care Enrollment and Program Characteristics, 2017* Winter 2019. Available at <https://www.medicaid.gov/medicaid/managed-care/downloads/enrollment/2017-medicaid-managed-care-enrollment-report.pdf>.

⁴⁴ “Best price” is defined at section 1927(c)(1)(C) of the Social Security Act, and 42 CFR 447.505. Exclusions from the prices used in this calculation include the prices charged to Medicare Part D Plans and to the Veterans Health Administration.

⁴⁵ U.S. Department of Health and Human Services, Office of Inspector General. *Medicaid rebates for brand-name drugs exceeded Part D rebates by a substantial margin*. Publication number OEI-03-00650. April 2015. Available at <http://oig.hhs.gov/oei/reports/oei-03-13-00650.pdf>.

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The Bipartisan Budget Act of 2015 (Public Law 114-74) amended the Social Security Act to provide for the payment of additional inflation-based rebates for non-innovator multiple source drugs (generic drugs).

The ACA made several important changes to Medicaid prescription drug rebates. The minimum rebate percentage for single source/innovator multiple source (brand name) drugs was raised from 15.1 percent to 23.1 percent of AMP for most drugs, with a lower rate of 17.1 percent for blood clotting factors and drugs approved by the FDA exclusively for pediatric indications. The minimum rebate percentage for non-innovator (generic) drugs was increased from 11.0 to 13.0 percent of AMP. A line extension of a single source drug or an innovator multiple source drug that is an oral dosage was made subject to an additional penalty that discourages manufacturers from making trivial changes to avoid inflation rebates.⁴⁶ The ACA also provided for a maximum rebate amount (or cap) with respect to each dosage form and strength of a brand drug for a rebate period (basic plus additional inflation-based) at 100 percent of AMP; this maximum rebate amount or cap applies to rebates for generic drugs (basic plus additional inflation-based) as well.

Medicaid Spending and Spending Trends

Overall spending and spending trends

Medicaid gross spending on prescription drugs in CY 2018 totaled \$66.4 billion (Table 4-1). However, nearly half of that spending came back to the federal government and the states as rebates. Table 4-1 shows estimates of Medicaid prescription drug gross and net spending. In 2014, the combination of new, expensive drugs for hepatitis C and other conditions, price increases in existing drugs, a relatively low number of patent expirations, and increased enrollment due to Medicaid expansion under the ACA increased gross prescription drug spending by 21.6 percent to \$47.3 billion.⁴⁷ From CYs 2006 to 2018, Medicaid gross spending on prescription drugs grew from \$13.0 billion to \$66.4 billion with a compounded average annual growth rate of 14.8 percent.

The Medicaid Drug Rebate Program discussed above, however, substantially reduced spending in all years, and pushed net spending below half of gross spending in 2016 and 2017. The additional rebate based on inflation, in particular, meant net Medicaid prices decreased as list prices for many drugs increased rapidly during this period. Due to the expansion of rebates based on inflation, the compounded average annual growth for net spending, 4.8 percent, was much lower than the gross growth rate over this period. The CMS Office of the Actuary identifies lower spending on hepatitis C drugs as a factor in the particularly

⁴⁶ Line extension is defined in statute at section 1927(c)(2)(C) of the Social Security Act to mean, with respect to a drug, a new formulation of the drug, such as an extended release formulation, but does not include an abuse-deterrent formulation of the drug (as determined by the Secretary), regardless of whether such abuse-deterrent formulation is an extended release formulation.

⁴⁷ See the analysis of the jump in net spending between 2013 and 2014 in ASPE, Report to Congress: Prescription Drugs: Innovation, Spending, and Patient Access, December 7, 2016 (<https://delaware.house.gov/sites/delauro.house.gov/files/Prescription-Drugs-Innovation-Spending-and-Patient-Access-12-07-16.pdf>), p. 73.

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small 1.4 percent rate of increase in net spending between 2017 and 2018.⁴⁸ On a per capita basis, which adjusts for the growth in Medicaid enrollment over this period, net spending grew only 0.8 percent per year between 2006 and 2018.

Table 4-1 Medicaid Prescription Drug Gross and Net Spending, 2006-2018

Year	Total Gross Medicaid Spending (\$B)	Annual Growth	Total Net Medicaid Spending (\$B)	Annual Growth
2006	13.0	-	19.1	-
2007	16.7	28.5%	18.3	-4.1%
2008	24.7	47.5%	19.2	4.9%
2009	26.0	5.6%	20.3	5.8%
2010	33.0	26.8%	20.4	0.4%
2011	37.7	14.2%	21.0	2.6%
2012	37.8	0.2%	21.4	2.3%
2013	38.9	3.0%	22.1	2.9%
2014	47.3	21.6%	27.3	23.9%
2015	57.8	22.2%	30.5	11.6%
2016	64.5	11.5%	32.0	5.0%
2017	67.6	4.9%	32.9	2.7%
2018	66.4	-1.7%	33.4	1.4%
Average Annual 2006-18		14.6%		4.8%

Sources: Gross Spending: 2006-2012 Lewin analysis of Medicaid State Drug Utilization public-use data, 2013-2018 Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data. Medicaid data for years before 2010 does not include spending by Managed Care Organizations and may be subject to data errors. Net Spending: National Health Expenditure Accounts, Historical Data (<https://www.cms.gov/files/zip/nhe-tables.zip>), Table 16.

Spending concentration for top ten drugs

Table 4-2 presents the top 10 drugs in term of Medicaid drug program spending over the last ten years. For brevity, we present only 2008, 2011, 2014, and 2018 here, with tables for all years from 2008 to 2018 included in Appendix Table A-7. In 2008, the top 10 highest-cost drugs accounted for \$5.5 billion in Medicaid spending, or 22 percent of \$24.7 billion in Medicaid spending for all drugs. Comparatively, in 2018, the top 10 highest-cost drugs accounted for \$9.2 billion in Medicaid spending, or 14 percent of \$66.4 billion in Medicaid spending for all drugs. At \$1.4 billion in Medicaid spending, Humira Pen, used to treat rheumatoid arthritis and other chronic conditions, accounted for more spending than any other drug

⁴⁸ Sean P. Keehan, Gigi A. Cuckler, John A. Poisal, Andrea M. Sisko, Sheila D. Smith, Andrew J. Madison, Kathryn E. Rennie, Jacqueline A. Fiore, and James C. Hardesty, National Health Expenditure Projections, 2019–28: Expected Rebound In Prices Drives Rising Spending Growth, *Health Affairs* 39, no. 4 (2020), p. 712. Mavyret, approved and launched for hepatitis C in 2017, reached third in total Medicaid prescription drug spending in 2018 at an average price per unit of \$239.60. The competing hepatitis C medications, Harvoni and Eplusa, at respective 2018 unit prices of \$1,086.43 and \$876.81, fell from second and fifth in 2017 to thirty-eighth and sixteenth in 2018.

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in 2018. Medicaid gross spending for the Humira Pen was \$2,222.53 per unit in 2018. A unit refers to the lowest dispensable amount (e.g. one pill or a standardized volume for liquids). Prior to the release of a lower-cost generic in mid-2015, the psychotropic drug Abilify was one of the highest-cost drugs in Medicaid, with \$2.4 billion in spending in 2014.

Table 4-3 shows the top 10 drugs by gross unit cost in 2014 and 2018.⁴⁹ The competing macular degeneration drugs Eylea and Lucentis topped the list in 2014, but Compath, used to treat both leukemia and multiple sclerosis, was highest in 2018, with an average price of \$31,788.87. Spending and pricing data for 2013-2018 are included in Appendix Table A-8. Because Medicaid volume for the highest unit cost drugs is typically low, the top 10 accounted for less than 1 percent of total Medicaid gross spending in all the years shown.

As shown in Table 4-4, the top 10 most frequently prescribed drugs in Medicaid (as calculated by number of claims) are relatively inexpensive and typically account for less than 5 percent of total Medicaid drug spending. In 2018, spending on the top 10 most frequently prescribed drugs was \$1.4 billion, or 2% of \$66.4 billion in total Medicaid spending for all drugs. The antibiotic Amoxicillin was the most prescribed drug in 2015, 2016, 2017, and 2018. Hydrocodone-Acetaminophen, number one in 2014 and 2015, dropped thereafter and is no longer in the top ten. This change likely reflects government responses to the opioid crisis, including the adoption of quantity limits and prior authorization requirements by state Medicaid agencies, the Drug Enforcement Administration's rescheduling of hydrocodone combination products, and the adoption of opioid prescribing guidelines developed by the Centers for Disease Control and Prevention.⁵⁰ Spending and pricing data for 2008-2018 are included in Appendix Table A-9.

⁴⁹ Data on the top 10 drugs by gross unit cost for 2006-2012 are not reliable and are not shown in this Report.

⁵⁰ Shefali Luthra, "Hoping to attack opioid epidemic at its source, state Medicaid programs are limiting prescriptions, STAT News, November 23, 2016 (<https://www.statnews.com/2016/11/23/mcicaid-opioid-limits/>); Raji MA, Kuo Y-F, Adhikari D, Baillargeon J, Goodwin JS. Decline in opioid prescribing after federal rescheduling of hydrocodone products. *Pharmacoepidemiol Drug Saf.* 2018;27:513-519. <https://doi.org/10.1002/pds.4376>; Amy S.B. Bohnert, Gery P. Guy Jr., and Jan L. Losby, Opioid Prescribing in the United States Before and After the Centers for Disease Control and Prevention's 2016 Opioid Guideline, *Annals of Internal Medicine* Vol. 169, No. 6, September 18, 2018.

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Table 4-2 Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Total Spending

		<u>2008</u>		<u>2011</u>		
<u>Rank</u>	<u>Generic Drug Name</u>	<u>Spending per Unit</u>	<u>Total Spending</u>	<u>Generic Drug Name</u>	<u>Spending per Unit</u>	<u>Total Spending</u>
1	Quetiapine Fumarate	\$5.59	\$962,610,903	Aripiprazole	\$16.92	\$1,667,289,509
2	Aripiprazole	\$12.98	\$864,665,984	Quetiapine Fumarate	\$8.47	\$1,618,779,336
3	Olanzapine	\$14.00	\$655,125,344	Olanzapine	\$20.49	\$983,556,014
4	Risperidone	\$5.54	\$624,080,668	Montelukast Sodium	\$4.65	\$892,903,221
5	Montelukast Sodium	\$3.46	\$452,731,574	Methylphenidate HCL	\$4.09	\$709,352,216
6	Palivizumab	\$1,603.26	\$440,111,778	Fluticasone/Salmeterol	\$4.14	\$640,832,463
7	Lansoprazole	\$4.80	\$396,513,136	Esomeprazole Mag Trihydrate	\$5.82	\$573,215,157
8	Fluticasone/Salmeterol	\$3.38	\$372,878,837	Emtricitabine/Tenofovir	\$35.81	\$455,304,078
9	Esomeprazole Mag Trihydrate	\$5.00	\$351,395,745	Albuterol Sulfate	\$3.10	\$453,110,973
10	Topiramate	\$3.79	\$335,536,619	Efavirenz/Emtricitabine/Tenofovir	\$55.06	\$443,793,760
Medicaid Spending, Top 10			\$5,455,650,587			\$8,438,136,726
Medicaid Spending, All Drugs			\$24,655,613,645			\$37,679,593,904

		<u>2014</u>		<u>2018</u>		
<u>Rank</u>	<u>Generic Drug Name</u>	<u>Spending per Unit</u>	<u>Total Spending</u>	<u>Generic Drug Name</u>	<u>Spending per Unit</u>	<u>Total Spending</u>
1	Abilify	\$27.88	\$2,346,179,601	Humira Pen	\$2,222.53	\$1,386,718,665
2	Sovaldi	\$1,013.21	\$1,370,816,701	Latuda	\$40.59	\$1,244,564,745
3	Atorvastatin Calcium	\$8.58	\$1,137,100,298	Mavyret	\$239.60	\$1,021,288,242
4	Truvada	\$43.54	\$638,258,728	Vyvanse	\$9.46	\$1,015,172,563
5	Vyvanse	\$6.74	\$582,714,805	Genvoya	\$86.63	\$911,876,985
6	Lantus	\$21.49	\$570,672,682	Invega Sustenna	\$1,577.04	\$869,025,167
7	Atripla	\$68.57	\$566,065,841	Suboxone	\$7.85	\$788,866,456
8	Methylphenidate ER	\$4.98	\$547,943,220	Lyrica	\$7.07	\$767,025,790
9	Advair Diskus	\$4.97	\$519,066,484	Triumeq	\$83.32	\$602,684,956
10	Lantus Solostar	\$22.51	\$442,768,093	Flovent HFA	\$18.71	\$584,499,258
Medicaid Spending, Top 10			\$9,007,086,936			\$9,191,722,827
Medicaid Spending, All Drugs			\$47,308,056,863			\$66,427,744,266

Source: 2006-2012 Lewin analysis of Medicaid State Drug Utilization public-use data, 2013-2018 Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data.

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Table 4-3 Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Unit Cost

Rank	Generic Drug Name	2014		Generic Drug Name	2018	
		Spending per Unit	Total Spending		Spending per Unit	Total Spending
1	Eylea	\$31,551.35	\$23,343,424	Campath	\$31,788.87	\$267,026
2	Lucentis	\$25,981.67	\$41,433,582	Supprelin La	\$30,480.93	\$22,574,174
3	Supprelin La	\$17,762.59	\$12,646,967	Eylea	\$29,531.34	\$168,289,609
4	Ilaris	\$16,091.56	\$16,749,878	Brineura	\$26,503.70	\$795,111
5	Stelara	\$15,037.77	\$51,719,138	Lucentis	\$21,484.19	\$53,075,737
6	Jetrea	\$14,755.80	\$212,484	Xofigo	\$18,746.35	\$2,154,405
7	Somatuline Depot	\$11,530.85	\$2,172,294	Retisert	\$17,441.25	\$197,470
8	Marqibo	\$7,202.00	\$151,242	Stelara	\$17,274.02	\$334,701,308
9	Jevtana	\$6,978.23	\$3,339,192	Spinraza	\$17,241.35	\$223,505,259
10	Panhematin	\$6,467.93	\$3,465,737	Krystexxa	\$15,948.96	\$9,102,868
Medicaid Spending, Top 10			\$155,233,938			\$814,662,969
Medicaid Spending, All Drugs			\$47,308,056,863			\$66,427,744,266

Source: Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data.

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Table 4-4 Top 10 Most Frequently Prescribed Drugs, Medicaid, Ranked by Number of Claims

Rank	Generic Drug Name	2008		Generic Drug Name	2011	
		Spending per Unit	Total Spending		Spending per Unit	Total Spending
1	Hydrocodone bit/Acetaminophen	\$0.23	\$112,492,086	Hydrocodone bit/Acetaminophen	\$0.20	\$185,851,039
2	Amoxicillin	\$0.09	\$64,329,996	Amoxicillin	\$0.09	\$127,704,574
3	Ibuprofen	\$0.09	\$49,200,240	Ibuprofen	\$0.09	\$82,215,957
4	Azithromycin	\$2.40	\$145,355,482	Albuterol Sulfate	\$3.10	\$453,110,973
5	Alprazolam	\$0.13	\$39,489,546	Azithromycin	\$1.47	\$182,600,085
6	Clonazepam	\$0.20	\$51,623,548	Alprazolam	\$0.12	\$59,014,244
7	Lorazepam	\$0.27	\$57,573,711	Loratadine	\$0.16	\$54,014,819
8	Montelukast sodium	\$3.46	\$452,731,574	Clonazepam	\$0.13	\$53,746,692
9	Aspirin	\$0.09	\$14,808,907	Lisinopril	\$0.19	\$43,334,762
10	Loratadine	\$0.24	\$44,987,853	Montelukast sodium	\$4.65	\$892,903,221
Medicaid Spending, Top 10			\$1,032,592,942	Medicaid Spending, Top 10		
Medicaid Spending, All Drugs			\$24,655,613,645	Medicaid Spending, All Drugs		

Rank	Generic Drug Name	2014		Generic Drug Name	2018	
		Spending per Unit	Total Spending		Spending per Unit	Total Spending
1	Hydrocodone-Acetaminophen	\$0.30	\$219,659,896	Amoxicillin	\$0.13	\$97,170,954
2	Amoxicillin	\$0.13	\$91,646,982	Gabapentin	\$0.14	\$182,622,489
3	Ibuprofen	\$0.12	\$70,387,995	Ibuprofen	\$0.11	\$83,378,906
4	Omeprazole	\$0.30	\$98,303,694	Atorvastatin Calcium	\$0.26	\$114,085,012
5	Lisinopril	\$0.14	\$42,780,167	Lisinopril	\$0.13	\$55,164,969
6	Gabapentin	\$0.21	\$149,205,210	Omeprazole	\$0.19	\$73,039,418
7	Azithromycin	\$1.68	\$110,672,172	Ventolin HFA	\$2.81	\$522,020,935
8	Metformin HCl	\$0.10	\$43,208,354	Fluticasone Propionate	\$0.67	\$104,298,341
9	Levothyroxine Sodium	\$0.38	\$83,162,384	Levothyroxine Sodium	\$0.40	\$124,542,600
10	Fluticasone Propionate	\$1.04	\$109,336,321	Amlodipine Besylate	\$0.15	\$50,590,301
Medicaid Spending, Top 10			\$1,019,709,357	Medicaid Spending, Top 10		
Medicaid Spending, All Drugs			\$47,308,056,863	Medicaid Spending, All Drugs		

Source: 2006-2012 Lewin analysis of Medicaid State Drug Utilization public-use data, 2013-2018 Centers for Medicare & Medicaid Services analysis of Medicaid State Drug Utilization public-use data.

Data and Methods

Gross spending amounts for 2006-2012 in Table 4-1 are based on Lewin analysis of the public-use Medicaid State Drug Utilization Data.⁵¹ Gross spending amounts for 2013-2018 in Table 4-1 are based on CMS analysis of national Medicaid drug utilization data, which excludes claims for over-the-counter drugs covered by Medicaid. Net spending amounts are CMS estimates from the National Health Expenditure Accounts, as released in 2019.⁵² Both gross and net totals combine federal and state reimbursement and include any applicable dispensing fees. Annual prescription drug spending as shown is not adjusted for inflation.

Data for 2006-2012 in Tables 4-2 and 4-4 and Appendix Tables A-7 and A-9 are based on Lewin analysis of the public-use Medicaid State Drug Utilization Data. Data for 2013 in Tables 4-2, 4-3, and 4-4 and Appendix Tables A-7, A-8, and A-9 are based on CMS analysis of national Medicaid drug utilization data, which excludes claims for over-the-counter drugs covered by Medicaid and NDCs with fewer than 50 claims in 2016 or 2017. Data for 2014 to 2018 in Tables 4-2, 4-3, and 4-4 and Appendix Tables A-7, A-8, and A-9 are from the CMS Medicaid Drug Spending Dashboard, which excludes claims for over-the-counter drugs covered by Medicaid and NDCs with fewer than 11 claims in 2018.⁵³ Spending per unit and total spending in these tables combine federal and state reimbursement, include any applicable dispensing fees, and are not adjusted for Medicaid rebates or inflation. Data on the top 10 drugs by gross unit cost for 2006-2012 are not reliable and are not shown in this Report.

The top 10 highest cost drugs, top 10 most frequently prescribed drugs, and top 10 drugs by unit cost present average spending per dosage unit. Units refer to the drug unit in the lowest dispensable amount. 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 manufacture 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. We use number of claims to identify the “most frequently prescribed drugs” as more directly related to the Congressional request than number of units. Number of scripts (including prescriptions that were never filled) is not available from the Medicaid drug data discussed above.

⁵¹ <https://www.medicaid.gov/medicaid/prescription-drugs/state-drug-utilization-data/index.html>.

⁵² <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical>, Table 16.

⁵³ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Information-on-Prescription-Drugs/Medicaid>. Additional information on the Medicaid Drug Spending Dashboard methodology is available at <https://www.cms.gov/files/zip/medicaid-drug-spending-dataset-2018.zip>.

Section 5. Drugs Benefiting from Government Grants or Research Subsidies

Congress requested that HHS identify prescription drug products recently approved by the Food and Drug Administration (FDA) whose development “benefited significantly from government grants or research subsidies in either the pre-clinical or clinical stages of development.” There is some empirical evidence which suggests that in virtually all cases, new drug products approved for sale in recent years involved research and development activity that was based at least in part on advances in basic medical science that were made possible by public funding. Additional research finds the public sector’s role in late-stage drug development is substantive and growing.

The mission of the National Institutes of Health (NIH) is to improve human health by conducting and supporting research in the causes, diagnosis, prevention, and cure of diseases. Basic science research funded by NIH identifies mechanisms of disease and describes biological processes, highlighting potential drug targets that offer the promise of valuable new strategies for therapy. Knowledge gleaned from such research is often described as a “public good” available to all parties for use. Private markets are known to underproduce public goods such as basic scientific knowledge because private investments in their development yield economic benefits that cannot be held solely for private use, so such investments are not profitable; that dilemma provides the rationale for public funding of basic science.

In a typical case of new commercial drug development, private investments in research on the safety and efficacy of specific drug compounds are based directly or indirectly on insights into basic science knowledge made possible by public funding. Private firms have strong incentives to conduct applied research into the development of new drug therapies because patent protection confers time-limited exclusive sales rights, allowing drugmakers to earn potentially-high rates of return on investments in new product development. Those high rates of return are necessary to induce investments in pharmaceutical R&D given the high capital costs of such investments and the fact that such investments are made in the face of scientific uncertainty as to a compound’s clinical value. Of the many compounds that are studied by innovative drugmakers, the overwhelming majority fail to reach FDA approval and marketing by the sponsor. Even when a drug is approved and marketed, the drugmaker sees no revenue for years after the initial investment decision, so there are high opportunity costs for investment capital during the research stage.

A recent analysis addresses the question of how public funding has contributed to the development of new prescription drug products in recent years.⁵⁴ The authors examine every one of the 210 new molecular entities (NMEs)—essentially, new drugs that contain active ingredients not previously

⁵⁴ Ekaterina Galkina Cleary, Jennifer M. Beierlein, Navleen Surjit Khanuja, Laura M. McNamee, and Fred D. Ledley, “Contribution of NIH funding to new drug approvals 2010–2016,” *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 115 (10):2329–2334, March 6, 2018 (www.pnas.org/cgi/doi/10.1073/pnas.1715368115).

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approved—which were approved for marketing by the FDA from 2010 to 2016. In an extensive analysis of published medical literature related to those drugs as well as a thorough review of government data on NIH-funded research projects, the authors find that “NIH funding contributed to every one of the NMEs approved from 2010–2016 and was focused primarily on the drug targets rather than on the NMEs themselves” and that the contribution of public funding “primarily involved funding for research related to molecular targets for new drugs and likely represents basic research.” These findings are consistent with the idea that publicly-funded basic science enables subsequent private research efforts which focus on applications of basic science with viable commercial prospects.

In some cases, the development of a newly-approved drug might benefit from public research funding in ways that go beyond basic science. Current research suggests the public sector contributed to late-stage (intellectual contributions to patentable or nearly patentable discoveries) drug development in 25% of the NMEs approved for marketing by the FDA from 2008 to 2017.⁵⁵ This represents expansion of the role of the public sector in late-stage drug development over the last four decades. The study also found that publicly funded NMEs were more likely to win first in class designations or expedited approval from the FDA, which suggests they were more innovative and/or targeted at high priority areas than NMEs without late-stage federal support. This research makes clear that the federal government contributes throughout the drug development life cycle from basic science to late-stage development for some drugs. It appears safe to conclude that all or nearly all new drugs have at least some history of public funding in their development.

The Committee requested a list of all drugs approved for sale in the past five years that involved public funding. Below (Table 5-1) is a list of all drugs approved during the five-year period for which data are currently available, 2014 through 2018. This list does not correspond exactly to the set of drugs examined in the study mentioned above, but because that study examined all new NMEs from 2010 to 2016, there will be considerable overlap in the two sets of drugs. Because all NMEs examined in that study had at least some history of public funding, it appears highly likely that a similar conclusion would be drawn in a full analysis of more-recent drug approvals. Table 5-1 also presents 2018 total and per unit spending in Medicare Part D and Medicaid where available for each prescription drug. Because Medicare Part B drug claims are aggregated to the HCPCS level, which may include multiple drugs, we are unable to include Medicare Part B spending for individual drugs.

⁵⁵ Rahul K. Nayak, Jerry Avorn, and Aaron S. Kesselheim, “Public sector financial support for late stage discovery of new drugs in the United States: cohort study,” *BMJ* 367, October 23, 2019 (www.bmj.com/content/367/bmj.l5766).

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Table 5-1 Prescription Drugs Approved for Sale by the Food and Drug Administration from 2014 to 2018, and 2018 Spending by Program Where Applicable

Brand Name	Medicare Part D		Medicaid		Year of FDA Approval
	Total Spending in 2018	Spending per Unit in 2018	Total Spending in 2018	Spending per Unit in 2018	
Addyi			\$41,549	\$25.18	2015
Adlyxin	\$63,298	\$99.67	\$392,411	\$91.45	2016
Aemcolo					2018
Aimovig†	\$18,649,849	\$580.55	\$6,627,123	\$555.47	2018
Ajovy	\$1,033,232	\$389.02	\$592,821	\$377.47	2018
Akynzeo††	\$683,619	\$540.84	\$545,852	\$488.15	2018
Alecensa	\$64,635,717	\$61.63	\$21,802,495	\$57.28	2015
Aliqopa	\$227,530	\$4,740.20	\$194,775	\$888.84	2017
Alunbrig	\$12,363,134	\$412.22	\$3,078,369	\$350.60	2017
Annovera					2018
Anthim					2016
Aristada†	\$112,794,326	\$768.85	\$105,685,626	\$700.85	2015
Asparlas					2018
Austedo	\$136,444,846	\$74.40	\$26,710,878	\$70.86	2017
Avycaz	\$5,336,535	\$20.89	\$2,472,173	\$300.05	2015
Axumin					2016
Bavencio	\$498,626	\$161.89	\$541,597	\$117.36	2017
Baxdela*	\$1,854,812	\$71.01	\$348,801	\$70.08	2017
Beleodaq	\$454,016	\$1,860.72	\$567,514	\$63.85	2014
Belsomra	\$79,276,233	\$11.37	\$13,784,298	\$10.74	2014
Benznidazole			\$4,117	\$3.02	2017
Besponsa	\$1,814,947	\$19,307.95	\$1,418,496	\$13,998.36	2017
Bevyxxa	\$17,577	\$15.32			2017
Biktarvy	\$298,283,826	\$99.31	\$255,322,319	\$90.13	2018
Blincyto	\$342,468	\$3,913.97	\$11,738,710	\$4,295.81	2014
Bridion			\$1,661,946	\$32.56	2015
Brineura			\$795,111	\$26,503.70	2017
Briviact*	\$47,036,508	\$17.74	\$40,185,295	\$15.70	2016
Calquence	\$33,476,152	\$238.13	\$1,611,934	\$211.54	2017
Cerdelga	\$17,945,890	\$445.71	\$5,660,228	\$394.83	2014
Cholbam			\$14,149,417	\$491.12	2015
Cinqair	\$831,764	\$90.30	\$1,952,467	\$66.23	2016
Copiktra	\$560,852	\$213.09			2018
Corlanor	\$17,086,854	\$7.20	\$6,258,873	\$6.79	2015
Cosentyx*†	\$369,998,623	\$2,374.98	\$185,417,237	\$2,143.57	2015
Cotellic	\$5,508,835	\$114.19	\$1,420,441	\$108.22	2015
Cresemba*	\$29,129,856	\$88.35	\$10,805,883	\$102.03	2015
Crysvita			\$8,893,740	\$7,292.72	2018
Cyramza	\$1,373,285	\$115.16	\$19,662,621	\$107.91	2014
Daklinza	\$6,816,373	\$770.39	\$1,201,293	\$742.88	2015
Dalvance	\$2,677,242	\$180.90	\$4,232,011	\$1,273.77	2014
Darzalex	\$11,263,942	\$103.81	\$32,231,423	\$89.70	2015
Daurismo					2018

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Brand Name	Medicare Part D		Medicaid		Year of FDA Approval
	Total Spending in 2018	Spending per Unit in 2018	Total Spending in 2018	Spending per Unit in 2018	
Defitelio					2016
Diacomit					2018
Doptelet	\$3,160,143	\$937.73	\$1,059,872	\$917.64	2018
Dupixent	\$101,803,038	\$736.25	\$59,745,272	\$651.61	2017
Elzonris					2018
Emflaza	\$3,523,041	\$218.12	\$38,554,778	\$177.70	2017
Emgality	\$789,937	\$583.41	\$301,623	\$534	2018
Empliciti	\$3,295,275	\$2,173.74	\$3,570,577	\$1,662.17	2015
Entresto	\$476,575,743	\$7.75	\$58,455,328	\$7.21	2015
Entyvio	\$23,881,087	\$1,521.28	\$75,794,058	\$3,195.80	2014
Epclusa	\$896,454,303	\$877.14	\$492,571,226	\$838.81	2016
Epidiolex	\$540,463	\$12.58	\$868,378	\$12.28	2018
Erleada	\$87,331,270	\$93.22	\$1,436,714	\$85.54	2018
Esbriet	\$571,407,728	\$51.10	\$16,605,881	\$48.14	2014
Eucrisa	\$13,021,342	\$10.38	\$52,936,360	\$9.75	2016
Exondys 51	\$11,489,143	\$773.91	\$102,230,228	\$796.41	2016
Farxiga	\$356,573,700	\$15.41	\$51,919,110	\$14.67	2014
Farydak	\$7,893,633	\$1,391.29	\$687,490	\$1,180.81	2015
Fasenra	\$14,770,062	\$4,829.97	\$10,888,968	\$3,706.85	2017
Firdapse					2018
Galafold	\$1,324,671	\$1,785.27			2018
Gamifant					2018
Genvoxa	\$871,858,538	\$99.45	\$911,876,985	\$86.63	2015
Giapreza					2017
Harvoni	\$1,726,263,039	\$1,131.37	\$312,969,804	\$1,064.83	2014
Hemlibra			\$53,442,022	\$10,350.40	2017
Hetlioz	\$90,316,946	\$498.07	\$14,469,959	\$484.27	2014
Ibrance	\$1,507,730,890	\$552.83	\$277,989,209	\$511.30	2015
Idhifa	\$42,806,444	\$843.52	\$3,119,701	\$746.59	2017
Ilumya	\$493,778	\$13,345.36	\$228,800	\$13,458.79	2018
Imfinzi	\$4,764,486	\$361.44	\$14,461,559	\$82.92	2017
Impavido	\$640,215	\$601.71			2014
Ingrezza	\$308,166,322	\$207.17	\$77,034,537	\$194.95	2017
Jardiance	\$668,459,356	\$15.42	\$201,621,840	\$14.24	2014
Jublia	\$35,473,372	\$145.15	\$3,431,269	\$123.53	2014
Kanuma			\$9,291,378	\$1,301.31	2015
Kengreal					2015
Kerydin	\$9,670,613	\$149.12	\$744,868	\$121.87	2014
Kevzara	\$18,531,349	\$1,389.37	\$4,717,483	\$1,129.95	2017
Keytruda	\$26,485,846	\$1,184.20	\$216,287,017	\$1,064.62	2014
Kisqali*†	\$73,575,412	\$202.37	\$21,573,104	\$191.59	2017
Krintafel					2018
Kybella					2015
Lartruvo	\$1,072,688	\$49.51	\$9,831,971	\$50.90	2016
Lenvima	\$138,354,129	\$317.59	\$17,777,596	\$2,158.14	2015
Libtayo	\$102,976	\$1,225.90			2018

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Brand Name	Medicare Part D		Medicaid		Year of FDA Approval
	Total Spending in 2018	Spending per Unit in 2018	Total Spending in 2018	Spending per Unit in 2018	
Lokelma					2018
Lonsurf	\$74,896,393	\$194.04	\$19,864,398	\$185.89	2015
Lorbrena	\$723,896	\$459.64	\$245,878	\$446.98	2018
Lucemyra	\$793,089	\$21.05	\$717,636	\$20.63	2018
Lumason					2014
Lumoxiti					2018
Lutathera					2018
Lynparza	\$119,106,528	\$111.69	\$26,861,000	\$104.54	2014
Macrilen					2017
Mavyret	\$461,337,391	\$160.16	\$1,021,288,242	\$239.60	2017
Mektovi	\$6,594,533	\$61.83	\$795,373	\$59.05	2018
Mepsevii			\$2,358,201	\$375.81	2017
Motegrity					2018
Movantik	\$86,783,013	\$11.65	\$18,369,040	\$10.18	2014
Moxidectin					2018
Mulpleta					2018
Myalept	\$11,357,421	\$4,483.78	\$21,441,823	\$4,243.38	2014
Natpara	\$53,128,928	\$4,837.37	\$21,349,353	\$4,665.04	2015
Nerlynx	\$25,587,361	\$64.99	\$25,407,382	\$62.15	2017
Netspot					2016
Neuraceq					2014
Ninlaro	\$268,301,807	\$3,372.53	\$12,281,799	\$2,968.19	2015
Northera	\$176,669,499	\$56.03	\$8,992,982	\$47.19	2014
Nucala	\$32,478,179	\$2,939.20	\$29,894,460	\$2,199.46	2015
Nuplazid	\$209,067,812	\$53.83	\$3,497,620	\$48.60	2016
Nuzyra					2018
Ocaliva	\$52,445,398	\$216.66	\$9,197,508	\$201.65	2016
Ocrevus	\$50,553,375	\$1,488.18	\$107,547,817	\$1,240.84	2017
Odomzo	\$11,624,006	\$361.38	\$1,502,389	\$342.31	2015
Ofev	\$618,635,442	\$157.00	\$17,648,458	\$142.74	2014
Olumiant	\$2,023,223	\$69.60	\$383,536	\$68.73	2018
Omegaven					2018
Onpattro					2018
Opdivo	\$33,146,376	\$268.03	\$243,496,449	\$242.64	2014
Orbactiv	\$516,924	\$93.99	\$1,808,183	\$555.30	2014
Orilissa	\$138,612	\$26.21	\$1,063,295	\$24.80	2018
Orkambi	\$48,653,400	\$193.07	\$282,545,276	\$188.59	2015
Otezla	\$318,273,429	\$54.81	\$93,736,396	\$48.08	2014
Oxervate					2018
Ozempic	\$56,817,559	\$404.74	\$12,163,131	\$395.30	2017
Palynziq	\$972,905	\$666.70	\$388,302	\$806.80	2018
Parsabiv			\$13,849,558	\$129.41	2017
Pifeltro	\$381,363	\$46.52	\$161,389	\$45.89	2018
Plegridy*†	\$75,309,862	\$6,870.18	\$14,687,047	\$3,274.05	2014
Portrazza	\$166,392	\$87.57	\$363,701	\$53.02	2015
Poteligeo					2018

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Brand Name	Medicare Part D		Medicaid		Year of FDA Approval
	Total Spending in 2018	Spending per Unit in 2018	Total Spending in 2018	Spending per Unit in 2018	
Praluent*†	\$211,868,506	\$570.37			2015
Praxbind					2015
Prevymis*	\$7,187,846	\$196.17	\$3,165,572	\$167.76	2017
Radicava	\$64,233,760	\$5.60	\$4,260,662	\$6.15	2017
Rapivab					2014
Repatha*†	\$278,776,544	\$549.01	\$19,262,139	\$481.38	2015
Revcovi					2018
Rexulti	\$238,907,717	\$37.03	\$183,248,095	\$34.46	2015
Rhopressa	\$15,644,629	\$94.70	\$685,727	\$88.61	2017
Rubraca	\$30,130,554	\$123.91	\$6,784,488	\$116.69	2016
Rydapt	\$24,792,988	\$144.02	\$10,059,036	\$132.04	2017
Savaysa	\$9,832,465	\$11.22	\$911,250	\$10.68	2015
Seysara					2018
Siliq	\$3,135,421	\$1,192.40	\$1,586,087	\$1,073.68	2017
Sivextro*	\$7,932,743	\$349.20	\$2,506,710	\$331.61	2014
Solosec	\$57,731	\$273.61	\$431,499	\$210.90	2017
Spinraza	\$8,033,556	\$26,339.53	\$223,505,259	\$17,241.35	2016
Steglatro	\$740,483	\$8.89	\$9,463,375	\$7.61	2017
Strensiq	\$69,696,199	\$5,918.63	\$46,392,498	\$3,870.51	2015
Striverdi Respimat	\$2,569,511	\$49.53	\$876,855	\$45.87	2014
Sylvant			\$812,300	\$1,455.68	2014
Symdeko	\$102,650,904	\$407.68	\$127,086,739	\$382.62	2018
Symproic	\$4,486,240	\$10.65	\$906,335	\$10.12	2017
Tagrisso	\$387,940,690	\$503.26	\$53,225,790	\$434.88	2015
Takhzyro	\$12,343,788	\$11,262.58	\$5,107,588	\$11,299.97	2018
Taltz*†	\$130,521,984	\$5,233.16	\$52,461,645	\$4,802.62	2016
Talzenna	\$162,688	\$492.99			2018
Tanzeum	\$11,664,688	\$127.54	\$15,255,241	\$111.52	2014
Tavalisse	\$5,337,627	\$158.92	\$1,494,375	\$153.89	2018
Tecentriq	\$3,601,620	\$431.85	\$20,318,958	\$382.72	2016
Tegsedi					2018
Tibsovo	\$6,673,701	\$443.76	\$571,828	\$414.37	2018
Tpoxx					2018
Tremfya	\$77,058,267	\$10,259.39	\$25,466,822	\$9,318.20	2017
Tresiba*†	\$932,414,209	\$63.36	\$119,986,806	\$59.30	2015
Trogarzo	\$4,366,508	\$879.82	\$344,336	\$1,171.50	2018
Trulance	\$20,158,481	\$13.08	\$7,278,209	\$11.87	2017
Trulicity	\$1,360,642,452	\$363.21	\$196,059,927	\$324.99	2014
Tymlos	\$52,079,801	\$1,118.20	\$3,321,673	\$998.39	2017
Ultomiris					2018
Unituxin					2015
Uptravi	\$305,315,458	\$250.39	\$76,932,187	\$241.45	2015
Vabomere	\$306,830	\$4.03	\$173,713	\$158.63	2017
Varubi*	\$1,896,101	\$302.50	\$604,381	\$209.60	2015
Veltassa	\$77,725,105	\$27.10	\$8,298,208	\$25.77	2015
Venclexta*†	\$144,011,208	\$90.65	\$6,636,628	\$82.38	2016

Section 5: Drugs Benefiting from Government Grants or Research Subsidies

Brand Name	Medicare Part D		Medicaid		Year of FDA Approval
	Total Spending in 2018	Spending per Unit in 2018	Total Spending in 2018	Spending per Unit in 2018	
Verzenio	\$106,458,848	\$205.17	\$21,283,286	\$193.57	2017
Viberzi	\$59,371,509	\$19.19	\$14,975,917	\$18.21	2015
Viekira Pak*†	\$503,808	\$333.21	\$11,529,527	\$964.35	2014
Vimizim	\$13,906,366	\$229.91	\$52,757,725	\$223.06	2014
Vitrakvi					2018
Vizimpro					2018
Vosevi	\$144,806,296	\$895.06	\$69,168,165	\$809.91	2017
Vraylar	\$184,939,872	\$40.95	\$166,296,359	\$38.30	2015
Vyzulta	\$8,640,790	\$71.91	\$402,707	\$58.66	2017
Xadago	\$6,304,633	\$24.90	\$94,988	\$21.33	2017
Xepi					2017
Xerava					2018
Xermelo	\$8,985,928	\$68.54	\$957,937	\$63.27	2017
Xiidra	\$140,996,659	\$8.48	\$30,032,496	\$30.80	2016
Xofluzza	\$40,698	\$76.93	\$8,418	\$77.23	2018
Xospata	\$775,798	\$253.53	\$256,476	\$248.52	2018
Xtoro					2014
Xuriden					2015
Yondelis	\$179,131	\$115.43	\$1,313,302	\$2,173.86	2015
Yupelri					2018
Zejula	\$68,458,312	\$192.59	\$10,987,404	\$188.12	2017
Zemdri					2018
Zepatier	\$82,840,870	\$624.30	\$72,491,544	\$617.89	2016
Zerbaxa	\$3,368,450	\$8.19	\$1,174,976	\$92.55	2014
Zinbryta	\$4,258,998	\$7,471.93	\$1,090,458	\$7,127.17	2016
Zinplava	\$285,157	\$98.61	\$112,056	\$83.37	2016
Zontivity	\$4,423,462	\$10.59	\$337,282	\$9.14	2014
Zurampic	\$873,639	\$12.50	\$267,347	\$11.47	2015
Zydelig	\$44,084,085	\$175.27	\$2,458,354	\$166.53	2014
Zykadia	\$8,083,559	\$114.31	\$1,752,566	\$103.62	2014

Source: The list of approved drugs was obtained at <https://www.fda.gov/Drugs/DevelopmentApprovalProcess/HowDrugsareDevelopedandApproved/DrugandBiologicApprovalReports/NDAandBLAApprovalReports/ucm373420.htm>. Spending data are from the CMS Medicare Part D and Medicaid dashboards at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Information-on-Prescription-Drugs>. Blank fields indicate no associated volume or spending in 2018.

Information on drugs with fewer than 11 claims in 2018 is suppressed to protect patient confidentiality.

* Average spending per dosage unit reflects multiple routes of administration of the drug (e.g., intravenous, subcutaneous) which individually may have different unit pricing.

† Drugs with more than one product listed separately in the dashboard data for Medicare Part D and/or Medicaid. In such cases, Total Spending represents the sum of those products. Spending per Dosage Unit represents the reported figure for the product with the largest number of service units in 2018.

†† Akynzeo received FDA approval in 2014. A prodrug version was approved under the same brand name by the FDA in 2018. Because the active ingredients and indications are nearly identical and the CMS Medicare Part D and Medicaid State Drug Utilization data do not differentiate between the 2014 and 2018 versions, data are aggregated under the most recently approved version.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2008	1	J9310	Rituximab cancer treatment	1,151.1	63	18,194	299	3,848.12	2,227	516.94	918.7
	2	J9035	Bevacizumab injection	944.7	149	6,349	581	1,626.77	16,457	57.41	761.3
	3	J1745	Infliximab injection	814.8	59	13,700	339	2,401.25	14,589	55.85	647.8
	4	J2505	Injection, pegfilgrastim 6mg	798.8	101	7,895	361	2,214.14	362	2,208.74	634.3
	5	J2778	Ranibizumab injection	735.8	87	8,423	364	2,023.04	1,853	397.07	588.1
	6	J0881	Darbepoetin alfa, non-esrd	676.7	203	3,331	1,142	592.73	232,618	2.91	534.5
	7	J9263	Oxaliplatin	457.5	26	17,330	149	3,069.31	48,582	9.42	365.9
	8	J0885	Epoetin alfa, non-esrd	462.3	185	2,493	1,522	303.86	49,918	9.26	362.3
	9	J9170	Docetaxel	396.7	46	8,624	240	1,649.52	1,210	327.90	316.8
	10	J9201	Gemcitabine HCl	330.8	46	7,242	313	1,056.47	2,498	132.42	263.7
Medicare Part B Spending, Top 10				6,769.4							5,393.4
Medicare Part B Spending, All Drugs				13,614.3							10,843.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2009	1	J9310	Rituximab injection	1,195.5	64	18,660	293	4,075.20	2,203	542.65	954.5
	2	J9035	Bevacizumab injection	1,086.7	167	6,491	679	1,601.47	19,024	57.12	875.5
	3	J2778	Ranibizumab injection	899.0	99	9,112	435	2,068.39	2,236	402.03	718.6
	4	J1745	Infliximab injection	854.4	59	14,538	338	2,525.06	14,943	57.17	678.7
	5	J2505	Injection, pegfilgrastim 6mg	793.1	99	7,990	355	2,232.98	1,356	584.72	628.5
	6	J0881	Darbepoetin alfa, non-esrd	583.6	164	3,568	966	603.94	193,897	3.01	460.5
	7	J9263	Oxaliplatin	467.5	27	17,158	152	3,081.10	49,594	9.43	373.7
	8	J0885	Epoetin alfa, non-esrd	463.9	170	2,727	1,453	319.35	48,219	9.62	364.0
	9	J9170	Docetaxel injection	409.8	46	9,006	234	1,751.30	1,200	341.42	327.3
	10	J9305	Pemetrexed injection	363.9	20	18,100	81	4,501.54	7,505	48.49	292.6
			Medicare Part B Spending, Top 10	7,117.4							5,674.0
			Medicare Part B Spending, All Drugs	14,488.5							11,547.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2010	1	J9310	Rituximab injection	1,253.1	65	19,312	290	4,325.74	2,171	577.17	1,000.9
	2	J2778	Ranibizumab injection	1,171.8	115	10,157	557	2,103.88	2,900	404.11	936.4
	3	J9035	Bevacizumab injection	1,105.6	162	6,821	699	1,581.74	19,142	57.75	890.7
	4	J1745	Infliximab injection	899.8	59	15,264	339	2,654.44	15,232	59.07	713.9
	5	J2505	Injection, pegfilgrastim 6mg	876.2	100	8,802	357	2,452.56	358	2,444.30	694.3
	6	J0881	Darbepoetin alfa, non-esrd	500.4	138	3,637	833	601.09	169,876	2.95	393.5
	7	J9305	Pemetrexed injection	429.8	22	19,894	92	4,667.74	8,439	50.93	346.0
	8	J0885	Epoetin alfa, non-esrd	421.9	150	2,804	1,297	325.33	43,247	9.76	330.6
	9	J9171	Docetaxel injection	392.4	44	8,990	221	1,776.83	21,902	17.92	312.8
	10	J9355	Trastuzumab injection	365.4	14	25,707	177	2,066.54	5,510	66.33	291.5
			Medicare Part B Spending, Top 10	7,416.4							5,910.6
			Medicare Part B Spending, All Drugs	15,478.6							12,336.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2011	1	J2778	Ranibizumab injection	1,428.9	133	10,753	670	2,131.30	3,525	405.35	1,141.9
	2	J9310	Rituximab injection	1,373.0	68	20,286	298	4,601.63	2,245	611.65	1,098.3
	3	J9035	Bevacizumab injection	1,012.5	174	5,809	756	1,339.73	16,750	60.45	817.4
	4	J2505	Injection, pegfilgrastim 6mg	1,020.5	106	9,661	386	2,645.27	386	2,643.26	808.4
	5	J1745	Infliximab injection	960.5	60	16,045	344	2,791.30	15,620	61.49	761.6
	6	J9263	Oxaliplatin	498.3	30	16,529	164	3,040.10	52,882	9.42	398.0
	7	J9305	Pemetrexed injection	464.4	22	20,867	97	4,807.40	8,751	53.07	374.0
	8	J0881	Darbepoetin alfa, non-esrd	435.4	112	3,888	687	633.74	138,222	3.15	341.9
	9	J9355	Trastuzumab injection	410.7	15	27,130	182	2,257.82	5,817	70.60	327.2
	10	J9171	Docetaxel injection	395.9	45	8,797	210	1,883.21	21,168	18.70	315.8
			Medicare Part B Spending, Top 10	8,000.1							6,384.5
			Medicare Part B Spending, All Drugs	17,191.6							13,733.3

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2012	1	J9310	Rituximab injection	1,466.2	70	20,972	302	4,858.21	2,364	620.27	1,175.0
	2	J2778	Ranibizumab injection	1,268.0	136	9,338	605	2,097.19	3,166	400.53	1,013.4
	3	J2505	Injection, pegfilgrastim 6mg	1,118.7	107	10,428	395	2,829.12	396	2,822.92	886.0
	4	J9035	Bevacizumab injection	1,027.5	183	5,628	789	1,302.61	16,713	61.48	831.2
	5	J1745	Infliximab injection	1,040.5	61	17,089	352	2,955.06	16,201	64.22	824.7
	6	J9263	Oxaliplatin	532.7	31	16,937	172	3,092.09	55,077	9.67	425.6
	7	J9305	Pemetrexed injection	521.9	23	22,656	103	5,048.21	9,386	55.60	421.1
	8	J0897	Denosumab injection	503.8	164	3,073	386	1,304.46	34,654	14.54	400.4
	9	J9355	Trastuzumab injection	478.6	17	28,951	192	2,488.81	6,441	74.30	381.5
	10	J9041	Bortezomib injection	436.4	20	21,590	311	1,401.06	10,145	43.01	347.5
			Medicare Part B Spending, Top 10	8,394.3							6,706.5
			Medicare Part B Spending, All Drugs	19,001.0							15,201.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2013	1	J9310	Rituximab injection	1,554.8	72	21,696	304	5,122.40	2,321	669.87	1,245.7
	2	J2778	Ranibizumab injection	1,354.1	144	9,412	678	1,996.39	3,443	393.25	1,078.9
	3	J2505	Injection, pegfilgrastim 6mg	1,159.5	105	11,074	386	3,001.61	387	2,998.81	915.1
	4	J1745	Infliximab injection	1,139.7	62	18,473	359	3,175.49	16,779	67.92	900.8
	5	J0178	Aflibercept injection	1,079.3	109	9,924	520	2,075.76	1,117	966.45	859.7
	6	J9035	Bevacizumab injection	1,060.2	188	5,641	795	1,334.16	16,689	63.52	855.6
	7	J0897	Denosumab injection	655.9	237	2,765	537	1,220.36	46,311	14.16	517.8
	8	J9305	Pemetrexed injection	564.6	23	24,050	107	5,290.91	9,664	58.42	455.2
	9	J9355	Trastuzumab injection	518.5	18	29,376	190	2,723.78	6,670	77.74	413.2
	10	J9041	Bortezomib injection	465.3	21	22,393	321	1,450.56	10,448	44.53	368.8
			Medicare Part B Spending, Top 10	9,551.8							7,610.7
			Medicare Part B Spending, All Drugs	20,331.5							16,231.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare
											Payment Net of Cost- Sharing (\$M)
2014	1	J9310	Rituximab injection	1,552.5	70	22,031	292	5,323.90	2,239	693.46	1,244.6
	2	J2778	Ranibizumab injection	1,336.0	142	9,412	676	1,977.01	3,420	390.62	1,063.4
	3	J0178	Aflibercept injection	1,302.0	133	9,791	627	2,075.35	1,350	964.46	1,036.1
	4	J2505	Injection, pegfilgrastim 6mg	1,235.7	102	12,086	373	3,309.64	373	3,308.51	974.4
	5	J1745	Infliximab injection	1,223.5	62	19,894	360	3,397.98	17,060	71.72	965.6
	6	J9035	Bevacizumab injection	1,091.4	217	5,030	907	1,202.69	16,747	65.17	880.3
	7	J0897	Denosumab injection	799.3	306	2,615	670	1,192.09	55,891	14.30	629.8
	8	J9355	Trastuzumab injection	581.0	19	30,590	198	2,934.94	7,192	80.78	464.0
	9	J9305	Pemetrexed injection	575.4	24	24,476	107	5,363.31	9,670	59.50	463.6
	10	J9041	Bortezomib injection	489.3	21	23,459	328	1,491.70	10,745	45.54	387.3
Medicare Part B Spending, Top 10				10,186.0							8,108.9
Medicare Part B Spending, All Drugs				21,597.8							17,240.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare
											Payment Net of Cost- Sharing (\$M)
2015	1	J0178	Aflibercept injection	1,823.5	181	10,091	870	2,095.42	1,890	964.59	1,451.2
	2	J9310	Rituximab injection	1,615.8	70	22,959	286	5,658.14	2,213	730.07	1,297.7
	3	J2505	Injection, pegfilgrastim 6mg	1,326.4	100	13,245	369	3,590.57	369	3,589.93	1,047.4
	4	J1745	Infliximab injection	1,302.7	61	21,500	354	3,675.49	17,064	76.34	1,026.8
	5	J9035	Bevacizumab injection	1,155.0	209	5,523	906	1,275.19	16,985	68.00	931.9
	6	J2778	Ranibizumab injection	1,153.9	120	9,625	575	2,007.38	2,980	387.17	918.5
	7	J0897	Denosumab injection	956.8	371	2,579	791	1,209.41	64,348	14.87	753.1
	8	J9355	Trastuzumab injection	669.5	20	32,714	207	3,226.66	7,857	85.21	536.1
	9	J9305	Pemetrexed injection	566.2	22	25,194	104	5,447.12	9,362	60.48	456.1
	10	J9041	Bortezomib injection	526.2	22	24,351	345	1,523.87	11,347	46.37	416.2
Medicare Part B Spending, Top 10				11,096.0							8,834.9
Medicare Part B Spending, All Drugs				23,813.3							19,007.1

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2016	1	J0178	Aflibercept injection	2,224.1	211	10,532	1,052	2,113.43	2,303	965.64	1,769.4
	2	J9310	Rituximab injection	1,723.1	72	24,006	286	6,030.50	2,235	770.88	1,388.1
	3	J2505	Injection, pegfilgrastim 6mg	1,433.3	99	14,475	367	3,902.72	367	3,902.14	1,137.9
	4	J1745	Infliximab injection	1,402.9	60	23,262	354	3,967.60	17,241	81.37	1,105.9
	5	J9299	Injection, nivolumab	1,260.3	28	44,412	217	5,802.74	49,748	25.33	1,010.3
	6	J9035	Bevacizumab injection	1,141.9	208	5,488	904	1,262.76	16,205	70.47	923.2
	7	J0897	Denosumab injection	1,133.4	436	2,601	904	1,253.26	71,943	15.75	890.4
	8	J2778	Ranibizumab injection	1,046.8	107	9,826	526	1,989.43	2,765	378.62	833.1
	9	J9355	Trastuzumab injection	730.6	21	34,431	211	3,461.30	8,137	89.79	585.7
	10	J0129	Abatacept injection	601.0	23	25,695	198	3,031.89	14,727	40.81	474.5
			Medicare Part B Spending, Top 10	12,697.6							10,118.6
			Medicare Part B Spending, All Drugs	27,266.7							21,789.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare
											Payment Net of Cost- Sharing (\$M)
2017	1	J0178	Aflibercept injection	2,473.4	230	10,758	1,166	2,121.69	2,573	961.30	1,967.3
	2	J9310	Rituximab injection	1,815.3	72	25,059	282	6,446.76	2,216	819.14	1,467.6
	3	J9299	Injection, nivolumab	1,516.5	30	50,897	252	6,006.69	58,432	25.95	1,207.8
	4	J2505	Injection, pegfilgrastim 6mg	1,461.7	94	15,520	349	4,183.73	349	4,183.13	1,164.3
	5	J1745	Infliximab not biosimilar 10mg	1,413.9	59	24,149	336	4,207.82	16,633	85.00	1,113.0
	6	J0897	Denosumab injection	1,296.6	491	2,642	995	1,303.63	77,429	16.75	1,016.7
	7	J9035	Bevacizumab injection	1,100.2	220	4,992	935	1,176.83	15,017	73.26	887.5
	8	J9271	Inj pembrolizumab	1,062.2	22	47,585	119	8,948.61	23,017	46.15	885.9
	9	J2778	Ranibizumab injection	1,039.1	105	9,869	525	1,980.08	2,790	372.40	826.9
	10	J9355	Trastuzumab injection	814.1	21	38,441	208	3,914.34	8,581	94.87	654.3
			Medicare Part B Spending, Top 10	13,993.0							11,191.3
			Medicare Part B Spending, All Drugs	30,294.0							24,260.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-1 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Program Spending

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2018	1	J0178	Aflibercept injection	2,579.6	241	10,691	1,231	2,095.60	2,736	942.72	2,051.4
	2	J9271	Inj pembrolizumab	1,869.9	36	51,446	218	8,570.74	42,767	43.72	1,536.3
	3	J9299	Injection, nivolumab	1,768.3	34	52,758	266	6,637.75	71,431	24.75	1,429.0
	4	J9310	Rituximab injection	1,761.8	73	24,189	272	6,484.76	2,150	819.28	1,414.5
	5	J0897	Denosumab injection	1,485.9	557	2,669	1,126	1,319.70	87,080	17.06	1,163.6
	6	J2505	Injection, pegfilgrastim 6mg	1,430.2	91	15,668	342	4,188.12	342	4,187.28	1,138.9
	7	J2778	Ranibizumab injection	1,216.3	123	9,855	619	1,964.20	3,303	368.24	967.9
	8	J1745	Infliximab not biosimil 10mg	1,220.9	54	22,573	310	3,941.04	15,587	78.32	954.3
	9	J9035	Bevacizumab injection	1,043.9	224	4,653	983	1,062.06	14,694	71.04	836.6
	10	J9355	Trastuzumab injection	851.8	21	40,360	208	4,103.71	9,137	93.23	684.0
			Medicare Part B Spending, Top 10	15,228.6							12,176.6
			Medicare Part B Spending, All Drugs	33,200.9							26,602.5

Source: Analysis of carrier, durable medical, and outpatient claims data 2006-2018 by Acumen for ASPE. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. The Healthcare Common Procedure Coding System (HCPCS) codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Beneficiary, Spending per Service, and Spending per Unit include beneficiary cost-sharing and include the sequester.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 Top 10 Highest-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2008	1	J7311	Fluocinolone acetonide implt	2.6	*	22,701	*	19,195.39	*	19,195.39	2.4
	2	J7310	Ganciclovir long act implant	0.4	*	8,488	*	6,818.52	*	6,602.06	0.4
	3	J9600	Porfimer sodium	1.0	*	6,435	*	5,908.53	*	2,494.71	0.8
	4	J9300	Gemtuzumab ozogamicin	3.1	*	9,472	1	6,086.39	1	2,438.37	2.6
	5	J2505	Injection, pegfilgrastim 6mg	798.8	101	7,895	361	2,214.14	362	2,208.74	634.3
	6	J9266	Pegaspargase/singl dose vial	0.2	*	6,762	*	3,242.01	*	2,094.39	0.2
	7	J3100	Tenecteplase injection	6.2	3	2,264	3	2,176.73	3	1,968.37	4.6
	8	J9268	Pentostatin injection	6.1	1	6,583	3	1,834.83	3	1,771.27	4.9
	9	J9245	Inj melphalan hydrochl 50 MG	3.4	*	9,350	1	3,715.94	2	1,502.60	2.9
	10	J9219	Leuprolide acetate implant	6.1	4	1,510	4	1,508.23	4	1,434.62	4.8
Medicare Part B Spending, Top 10				828.0							657.9
Medicare Part B Spending, All Drugs				13,614.3							10,843.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2009	1	J7311	Fluocinolone acetonide implt	2.0	*	22,480	*	19,482.57	*	19,118.41	1.9
	2	J7310	Ganciclovir long act implant	0.3	*	17,103	*	13,156.42	*	7,126.40	0.3
	3	J9266	Pegaspargase injection	0.4	*	11,291	*	5,268.95	*	2,652.16	0.3
	4	J9600	Porfimer sodium injection	0.8	*	7,259	*	6,507.87	*	2,630.36	0.6
	5	J9300	Gemtuzumab ozogamicin inj	3.4	*	9,700	1	5,813.42	1	2,517.55	2.8
	6	C9247	Inj, iobenguane, I-123, dx	0.6	*	2,417	*	2,357.10	*	1,936.47	0.5
	7	J9219	Leuprolide acetate implant	0.7	*	2,213	*	2,193.40	*	1,895.33	0.6
	8	J9245	Inj melphalan hydrochl 50 MG	3.1	*	10,132	1	3,851.84	2	1,563.09	2.6
	9	J9268	Pentostatin injection	3.0	1	5,461	2	1,544.72	2	1,444.61	2.4
	10	J9160	Denileukin diftiox inj	12.9	*	104,347	2	5,707.53	9	1,427.51	10.6
			Medicare Part B Spending, Top 10	27.2							22.6
			Medicare Part B Spending, All Drugs	14,488.5							11,547.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2010	1	C9273	Sipuleucel-T	6.4	*	73,188	*	32,860.00	*	32,860.00	6.2
	2	A9543	Y90 ibritumomab, rx	8.0	*	31,173	*	30,580.35	*	30,464.52	7.8
	3	A9545	I131 tositumomab, rx	2.5	*	26,578	*	24,513.37	*	23,819.59	2.4
	4	J7311	Fluocinolone acetonide implt	2.2	*	21,452	*	19,345.54	*	19,006.15	2.0
	5	A9604	Sm 153 lexidronam	4.3	1	6,697	1	6,387.85	1	5,887.71	3.6
	6	J7310	Ganciclovir long act implant	0.5	*	16,794	*	13,349.21	*	4,338.49	0.5
	7	J9219	Leuprolide acetate implant	0.7	*	4,094	*	4,093.88	*	4,093.88	0.6
	8	J9600	Porfimer sodium injection	0.6	*	7,242	*	6,821.09	*	2,847.64	0.5
	9	J9266	Pegaspargase injection	0.3	*	7,677	*	4,558.21	*	2,652.05	0.2
	10	J9300	Gemtuzumab ozogamicin inj	1.9	*	8,901	*	5,440.90	1	2,589.17	1.6
Medicare Part B Spending, Top 10				27.5							25.4
Medicare Part B Spending, All Drugs				15,478.6							12,336.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2011	1	A9543	Y90 ibritumomab, rx	7.7	*	34,789	*	33,573.26	*	33,573.36	7.5
	2	C9273	Sipuleucel-T*	111.2	1	80,532.82	3	32,872.33	3	32,848.53	97.9
	3	A9545	I131 tositumomab, rx	90.8	1	80,533	3	32,872.33	3	32,848.53	1.1
	4	J7311	Fluocinolone acetonide implt	1.1	*	32,626	*	29,192.06	*	27,732.46	1.4
	5	A9604	Sm 153 lexidronam	1.4	*	18,004	*	16,348.22	*	16,162.45	3.8
	6	J9600	Porfimer sodium injection	4.4	1	8,042	1	7,688.74	1	7,608.51	0.8
	7	J9219	Leuprolide acetate implant	0.8	*	13,645	*	12,441.12	*	5,254.63	0.3
	8	J7310	Ganciclovir long act implant	0.3	*	4,378	*	4,378.09	*	4,378.09	0.4
	9	J9225	Vantas implant	0.4	*	18,727	*	8,549.16	*	3,449.66	13.8
	10	J9266	Pegaspargase injection	17.3	6	2,972	6	2,966.55	6	2,960.96	0.2
			Medicare Part B Spending, Top 10	144.9							127.0
			Medicare Part B Spending, All Drugs	17,191.6							13,733.3

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2012	1	A9543	Y90 ibritumomab, rx	7.6	*	37,285	*	36,214.42	*	36,041.97	7.4
	2	Q2043	Sipuleucel-T auto CD54+	219.7	2	88,100	7	32,794.31	7	32,769.85	186.5
	3	A9545	I131 tositumomab, rx	1.3	*	28,978	*	28,977.70	*	28,977.70	1.3
	4	J9600	Porfimer sodium injection	2.8	*	44,288	*	42,945.92	*	19,151.56	2.7
	5	J7311	Fluocinolone acetonide implt	2.3	*	22,084	*	19,006.54	*	19,006.54	2.2
	6	A9604	Sm 153 lexidronam	3.7	*	8,105	*	7,747.72	*	7,683.29	3.2
	7	J7310	Ganciclovir long act implant	0.2	*	12,112	*	6,921.36	*	5,237.78	0.2
	8	J9266	Pegaspargase injection	0.6	*	17,900	*	6,819.14	*	4,895.79	0.5
	9	J9219	Leuprolide acetate implant	0.3	*	4,602	*	4,601.73	*	4,371.64	0.2
	10	J9225	Vantas implant	12.4	4	3,070	4	3,064.66	4	3,062.38	9.9
			Medicare Part B Spending, Top 10	250.9							214.0
			Medicare Part B Spending, All Drugs	19,001.0							15,201.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2013	1	A9543	Y90 ibritumomab, rx	8.9	*	41,167	*	39,337.54	*	39,337.54	8.6
	2	Q2043	Sipuleucel-T auto CD54+	181.1	2	86,624	6	32,333.33	6	32,333.33	152.2
	3	A9545	I131 tositumomab, rx	0.7	*	30,075	*	28,822.08	*	28,822.08	0.7
	4	J9600	Porfimer sodium injection	2.6	*	41,974	*	38,841.54	*	19,135.17	2.5
	5	J7311	Fluocinolone acetonide implt	2.4	*	22,365	*	18,870.47	*	18,870.47	2.3
	6	A9604	Sm 153 lexidronam	2.7	*	8,142	*	7,852.67	*	7,829.50	2.3
	7	J9266	Pegaspargase injection	0.7	*	14,354	*	8,128.00	*	5,866.29	0.6
	8	J9219	Leuprolide acetate implant	0.1	*	5,045	*	4,280.68	*	4,280.68	0.1
	9	J7310	Ganciclovir long act implant	0.2	*	11,377	*	7,281.59	*	4,233.48	0.2
	10	C1204	Technetium Tc 99m tilmanocept, diagnostic, up to 0.5 millicuries	0.9	*	3,386	*	3,362.31	*	3,057.64	0.8
			Medicare Part B Spending, Top 10	200.3							170.3
			Medicare Part B Spending, All Drugs	20,331.5							16,231.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2014	1	A9543	Y90 ibritumomab, rx	7.3	*	44,619	*	42,543.40	*	42,297.49	7.2
	2	Q2043	Sipuleucel-t auto cd54+	174.6	2	90,761	5	33,841.80	5	33,841.80	146.6
	3	J9600	Porfimer sodium injection	2.8	*	47,085	*	43,406.52	*	19,291.79	2.7
	4	J7311	Fluocinolone acetonide implt	1.8	*	22,213	*	19,140.58	*	19,140.58	1.7
	5	A9604	Sm 153 lexidronam	1.4	*	8,419	*	8,000.12	*	8,000.12	1.2
	6	J9266	Pegaspargase injection	1.1	*	19,147	*	7,922.77	*	5,952.34	1.0
	7	J0716	Centruroides immune f(ab)	0.1	*	7,614	*	6,412.21	*	3,583.29	0.1
	8	J2505	Injection, pegfilgrastim 6mg	1,235.7	102	12,086	373	3,309.64	373	3,308.51	974.4
	9	J2993	Reteplase injection	0.0	*	2,979	*	2,978.94	*	2,978.94	0.0
	10	J9225	Vantas implant	5.9	2	2,928	2	2,926.38	2	2,926.38	4.7
			Medicare Part B Spending, Top 10	1,430.9							1,139.7
			Medicare Part B Spending, All Drugs	21,597.8							17,240.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2015	1	A9543	Y90 ibritumomab, rx	4.5	*	44,343	*	42,669.30	*	42,270.52	4.3
	2	Q2043	Sipuleucel-t auto cd54+	172.4	2	95,552	5	35,193.09	5	35,193.09	145.1
	3	J9600	Porfimer sodium injection	2.2	*	53,446	*	49,882.84	*	19,690.60	2.2
	4	J7311	Fluocinolone acetonide implt	2.2	*	20,993	*	18,543.62	*	18,543.62	2.1
	5	A9604	Sm 153 lexidronam	1.4	*	10,352	*	9,549.97	*	9,549.97	1.2
	6	J9266	Pegaspargase injection	0.9	*	13,880	*	7,822.99	*	6,103.05	0.7
	7	J0716	Centruroides immune f(ab)	0.2	*	8,821	*	8,820.86	*	3,632.12	0.2
	8	J2505	Injection, pegfilgrastim 6mg	1,326.4	100	13,245	369	3,590.57	369	3,589.93	1,047.4
	9	J9216	Interferon gamma 1-b inj	0.1	*		*	3,727.15	*	3,194.70	0.1
	10	J9225	Vantas implant	4.5	2	2,952	2	2,948.00	2	2,948.00	3.6
			Medicare Part B Spending, Top 10	1,514.8							1,206.9
			Medicare Part B Spending, All Drugs	23,813.3							19,007.1

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2016	1	A9543	Y90 ibritumomab, rx	3.5	*	44,055	*	44,054.79	*	43,504.10	3.4
	2	Q2043	Sipuleucel-t auto cd54+	181.8	2	100,458	5	37,002.26	5	37,002.26	152.6
	3	J9600	Porfimer sodium injection	2.5	*	42,966	*	41,557.10	*	20,279.87	2.5
	4	J7311	Fluocinolone acetonide implt	0.4	*	18,664	*	17,852.52	*	17,852.52	0.3
	5	A9604	Sm 153 lexidronam	1.3	*	12,224	*	11,241.56	*	11,241.56	1.1
	6	J9266	Pegaspargase injection	3.0	*	36,299	*	15,399.59	*	10,197.72	2.8
	7	J2505	Injection, pegfilgrastim 6mg	1,433.3	99	14,475	367	3,902.72	367	3,902.14	1,137.9
	8	J0716	Centruroides immune f(ab)	0.3	*	8,303	*	8,043.77	*	3,677.15	0.2
	9	C9461	Choline C 11, diagnostic	5.3	1	5,166	1	3,647.35	1	3,647.35	5.3
	10	J9050	Carmustine injection	1.6	*	16,516	*	10,362.85	*	3,316.98	1.4
			Medicare Part B Spending, Top 10	1,633.0							1,307.5
			Medicare Part B Spending, All Drugs	27,266.7							21,789.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2017	1	A9543	Y90 ibritumomab, rx	2.4	*	42,330	*	42,330.21	*	42,330.21	2.3
	2	Q2043	Sipuleucel-t auto cd54+	204.1	2	105,299	5	38,737.48	5	38,730.12	171.5
	3	J9600	Porfimer sodium injection	3.0	*	54,702	*	50,066.28	*	20,802.19	2.9
	4	J7311	Fluocinolone acetonide implt	0.5	*	21,711	*	19,823.20	*	19,823.20	0.4
	5	A9604	Sm 153 lexidronam	1.1	*	12,210	*	11,560.73	*	11,560.73	1.0
	6	J9266	Pegaspargase injection	2.3	*	30,828	*	13,579.17	*	9,666.53	2.0
	7	A9515	Choline c-11	9.3	1	7,458	2	5,030.06	2	5,030.06	9.3
	8	J2505	Injection, pegfilgrastim 6mg	1,461.7	94	15,520	349	4,183.73	349	4,183.13	1,164.3
	9	J0716	Centruroides immune f(ab)	0.3	*	9,125	*	7,821.01	*	4,147.50	0.2
	10	J0480	Basiliximab	1.1	*	5,521	*	3,338.62	*	3,319.04	0.9
			Medicare Part B Spending, Top 10	1,685.6							1,354.8
			Medicare Part B Spending, All Drugs	30,294.0							24,260.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-2 continued Top 10 High-Cost Prescribed Drugs, Medicare Part B, Ranked by Spending per Unit

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2018	1	Q2040	Tisagenlecleucel car-pos t	5.8	*	480,463	*	480,463.46	*	480,463.46	5.8
	2	A9543	Y90 ibritumomab, rx	1.6	*	46,658	*	42,875.05	*	41,746.76	1.5
	3	Q2043	Sipuleucel-t auto cd54+	189.6	2	107,215	5	39,392.47	5	39,392.47	157.1
	4	J9600	Porfimer sodium injection	2.1	*	47,484	*	43,607.57	*	18,263.00	2.1
	5	J7311	Fluocinolone acetonide implt	0.3	*	20,361	*	17,815.65	*	17,815.65	0.2
	6	A9604	Sm 153 lexidronam	0.8	*	12,781	*	11,994.26	*	11,994.26	0.7
	7	J9266	Pegaspargase injection	1.3	*	24,412	*	15,044.37	*	11,869.87	1.2
	8	A9515	Choline c-11	9.5	1	7,473	2	5,209.25	2	5,209.25	9.5
	9	J2505	Injection, pegfilgrastim 6mg	1,430.2	91	15,668	342	4,188.12	342	4,187.28	1,138.9
	10	J0716	Centruroides immune f(ab)	0.3	*	7,196	*	7,028.70	*	3,925.12	0.3
			Medicare Part B Spending, Top 10	1,641.4							1,317.2
			Medicare Part B Spending, All Drugs	33,200.9							26,602.5

* Fewer than 500.

Source: Analysis of carrier, durable medical, and outpatient claims data 2006-2018 by Acumen for ASPE. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. The Healthcare Common Procedure Coding System (HCPCS) codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Beneficiary, Spending per Service, and Spending per Unit include beneficiary cost-sharing and include the sequester. As per CMS data policy, drugs with fewer than 11 services are not shown to protect patient confidentiality. Number of beneficiaries and spending per beneficiary are marked as n/a for drugs with fewer than 11 beneficiaries.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2008	1	J3420	Vitamin b12 injection	0.9	638	1	2,824	0.33	3,226	0.29	0.6
	2	J1100	Dexamethasone sodium phos	1.9	824	2	2,466	0.78	21,530	0.09	1.5
	3	J2405	Ondansetron hcl injection	7.8	1,520	5	2,281	3.41	17,940	0.43	5.4
	4	J3301	Triamcinolone acetonide inj	13.3	1,404	9	2,250	5.89	9,213	1.44	10.0
	5	J7620	Albuterol ipratrop non-comp	157.8	435	363	1,790	88.15	240,892	0.66	121.6
	6	J7050	Normal saline solution infus	0.8	389	2	1,630	0.46	2,734	0.28	0.6
	7	J1030	Methylprednisolone 40 MG inj	10.1	1,013	10	1,591	6.36	2,294	4.41	7.7
	8	J0885	Epoetin alfa, non-esrd	462.3	185	2,493	1,522	303.86	49,918	9.26	362.3
	9	J7613	Albuterol non-comp unit	15.7	457	34	1,455	10.82	366,913	0.04	12.5
	10	J1040	Methylprednisolone 80 MG inj	14.2	840	17	1,340	10.63	1,663	8.56	10.8
			Medicare Part B Spending, Top 10	684.9							533.1
			Medicare Part B Spending, All Drugs	13,614.3							10,843.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2009	1	J3420	Vitamin b12 injection	0.8	673	1	3,014	0.26	3,299	0.24	0.6
	2	J2405	Ondansetron hcl injection	8.2	1,841	4	2,792	2.92	20,737	0.39	5.6
	3	J1100	Dexamethasone sodium phos	2.0	849	2	2,484	0.79	21,572	0.09	1.5
	4	J3301	Triamcinolone acet inj NOS	14.7	1,453	10	2,345	6.28	9,619	1.53	11.2
	5	J7613	Albuterol non-comp unit	22.6	510	44	1,909	11.85	479,730	0.05	17.0
	6	J7620	Albuterol ipratrop non-comp	51.7	407	127	1,730	29.89	205,555	0.25	39.0
	7	J1030	Methylprednisolone 40 MG inj	9.4	1,053	9	1,661	5.68	2,395	3.94	7.2
	8	J7050	Normal saline solution infus	0.7	382	2	1,547	0.44	2,532	0.27	0.5
	9	J0885	Epoetin alfa, non-esrd	463.9	170	2,727	1,453	319.35	48,219	9.62	364.0
	10	J1040	Methylprednisolone 80 MG inj	12.8	878	15	1,403	9.11	1,701	7.52	9.7
			Medicare Part B Spending, Top 10	586.7							456.4
			Medicare Part B Spending, All Drugs	14,488.5							11,547.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2010	1	J3420	Vitamin b12 injection	0.8	654	1	2,930	0.28	3,008	0.27	0.6
	2	J1100	Dexamethasone sodium phos	2.0	894	2	2,536	0.77	21,768	0.09	1.5
	3	J3301	Triamcinolone acet inj NOS	15.5	1,501	10	2,426	6.39	10,007	1.55	11.8
	4	J7613	Albuterol non-comp unit	27.0	519	52	1,863	14.51	467,175	0.06	20.5
	5	J7620	Albuterol ipratrop non-comp	44.3	404	110	1,790	24.77	202,350	0.22	33.4
	6	J1030	Methylprednisolone 40 MG inj	9.0	1,079	8	1,702	5.30	2,394	3.77	6.9
	7	J1040	Methylprednisolone 80 MG inj	12.2	907	14	1,449	8.45	1,742	7.03	9.3
	8	J7050	Normal saline solution infus	0.6	341	2	1,368	0.44	2,155	0.28	0.5
	9	J0885	Epoetin alfa, non-esrd	421.9	150	2,804	1,297	325.33	43,247	9.76	330.6
	10	Q9967	LOCM 300-399mg/ml iodine,1ml	16.5	857	19	1,139	14.47	94,413	0.17	13.0
			Medicare Part B Spending, Top 10	549.9							428.1
			Medicare Part B Spending, All Drugs	15,478.6							12,336.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2011	1	J3420	Vitamin b12 injection	1.0	638	2	2,753	0.35	2,759	0.35	0.7
	2	J3301	Triamcinolone acet inj NOS	17.1	1,590	11	2,568	6.65	10,559	1.62	13.0
	3	J1100	Dexamethasone sodium phos	1.8	855	2	2,388	0.77	20,543	0.09	1.4
	4	J7613	Albuterol non-comp unit	28.2	537	53	1,886	14.95	456,741	0.06	21.2
	5	J7620	Albuterol ipratrop non-comp	45.0	403	112	1,774	25.39	191,322	0.24	34.5
	6	J1030	Methylprednisolone 40 MG inj	6.7	1,108	6	1,741	3.84	2,424	2.76	5.1
	7	J1040	Methylprednisolone 80 MG inj	11.9	927	13	1,477	8.05	1,721	6.91	9.0
	8	J7050	Normal saline solution infus	0.5	298	2	1,207	0.45	1,901	0.28	0.4
	9	Q9967	LOCM 300-399mg/ml iodine,1ml	15.3	842	18	1,129	13.57	91,794	0.17	12.0
	10	J0885	Epoetin alfa, non-esrd	354.8	129	2,754	1,086	326.60	35,638	9.96	278.1
			Medicare Part B Spending, Top 10	482.4							375.4
			Medicare Part B Spending, All Drugs	17,191.6							13,733.3

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2012	1	J3420	Vitamin b12 injection	1.0	638	2	2,753	0.35	2,759	0.35	0.7
	2	J3301	Triamcinolone acet inj NOS	17.1	1,590	11	2,568	6.65	10,559	1.62	13.0
	3	J1100	Dexamethasone sodium phos	1.8	855	2	2,388	0.77	20,543	0.09	1.4
	4	J7613	Albuterol non-comp unit	28.2	537	53	1,886	14.95	456,741	0.06	21.2
	5	J1030	Methylprednisolone 40 MG inj	45.0	403	112	1,774	25.39	191,322	0.24	34.5
	6	J7620	Albuterol ipratrop non-comp	6.7	1,108	6	1,741	3.84	2,424	2.76	5.1
	7	J1040	Methylprednisolone 80 MG inj	11.9	927	13	1,477	8.05	1,721	6.91	9.0
	8	J2785	Regadenoson injection	0.5	298	2	1,207	0.45	1,901	0.28	0.4
	9	Q9967	LOCM 300-399mg/ml iodine,1ml	15.3	842	18	1,129	13.57	91,794	0.17	12.0
	10	J0702	Betamethasone acet&sod phosp	354.8	129	2,754	1,086	326.60	35,638	9.96	278.1
			Medicare Part B Spending, Top 10	371.7							290.0
			Medicare Part B Spending, All Drugs	19,001.0							15,201.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2013	1	J3420	Vitamin b12 injection	2.9	635	5	2,611	1.11	2,616	1.11	2.2
	2	J3301	Triamcinolone acet inj NOS	19.3	1,611	12	2,609	7.38	11,041	1.74	14.6
	3	J1100	Dexamethasone sodium phos	2.1	953	2	2,460	0.87	19,725	0.11	1.7
	4	J7613	Albuterol non-comp unit	21.6	581	37	1,871	11.54	429,856	0.05	16.1
	5	J1030	Methylprednisolone 40 MG inj	7.2	1,153	6	1,816	3.96	2,542	2.83	5.5
	6	J7620	Albuterol ipratrop non-comp	32.6	423	77	1,673	19.47	169,941	0.19	24.3
	7	J1040	Methylprednisolone 80 MG inj	9.5	946	10	1,500	6.36	1,745	5.47	7.2
	8	J2785	Regadenoson injection	248.6	1,181	211	1,199	207.44	4,638	53.61	196.2
	9	Q9967	LOCM 300-399mg/ml iodine,1ml	14.0	820	17	1,146	12.25	86,550	0.16	11.1
	10	J0702	Betamethasone acet&sod phosp	14.2	707	20	1,099	12.93	2,559	5.55	10.9
			Medicare Part B Spending, Top 10	372.1							289.6
			Medicare Part B Spending, All Drugs	20,331.5							16,231.8

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2014	1	J3301	Triamcinolone acet inj nos	19.5	1,641	12	2,642	7.39	11,168	1.75	14.8
	2	J1100	Dexamethasone sodium phos	2.6	982	3	2,461	1.05	19,556	0.13	2.0
	3	J3420	Vitamin b12 injection	4.7	581	8	2,327	2.02	2,331	2.02	3.4
	4	J1030	Methylprednisolone 40 mg inj	7.8	1,192	7	1,880	4.16	2,656	2.95	6.0
	5	J7613	Albuterol non-comp unit	18.1	530	34	1,647	10.97	354,647	0.05	13.4
	6	J7620	Albuterol ipratrop non-comp	26.9	409	66	1,508	17.87	151,477	0.18	20.0
	7	J1040	Methylprednisolone 80 mg inj	9.7	946	10	1,491	6.54	1,732	5.63	7.4
	8	Q9967	Locm 300-399mg/ml iodine,1ml	15.8	827	19	1,160	13.63	86,806	0.18	12.4
	9	J0702	Betamethasone acet&sod phosp	14.6	721	20	1,110	13.16	2,611	5.59	11.1
	10	J0696	Ceftriaxone sodium injection	2.6	598	4	1,019	2.60	3,857	0.69	2.0
			Medicare Part B Spending, Top 10	122.5							92.6
			Medicare Part B Spending, All Drugs	21,597.8							17,240.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2015	1	J3301	Triamcinolone acet inj nos	20.8	1,724	12	2,783	7.48	11,915	1.75	15.8
	2	J1100	Dexamethasone sodium phos	2.7	1,032	3	2,483	1.10	19,403	0.14	2.1
	3	J3420	Vitamin b12 injection	6.8	572	12	2,367	2.88	2,369	2.88	5.0
	4	J1030	Methylprednisolone 40 mg inj	9.8	1,233	8	1,943	5.02	2,774	3.52	7.5
	5	J7613	Albuterol non-comp unit	20.6	517	40	1,556	13.25	321,972	0.06	15.4
	6	J1040	Methylprednisolone 80 mg inj	11.5	960	12	1,511	7.59	1,759	6.52	8.7
	7	J7620	Albuterol ipratrop non-comp	23.6	416	57	1,457	16.23	144,047	0.16	17.5
	8	Q9967	Locm 300-399mg/ml iodine,1ml	13.2	837	16	1,165	11.32	87,560	0.15	10.3
	9	J0702	Betamethasone acet&sod phosp	15.9	750	21	1,156	13.72	2,744	5.78	12.1
	10	J0696	Ceftriaxone sodium injection	2.8	634	4	1,072	2.65	4,071	0.70	2.1
			Medicare Part B Spending, Top 10	127.7							96.5
			Medicare Part B Spending, All Drugs	23,813.3							19,007.1

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2016	1	J3301	Triamcinolone acet inj nos	22.5	1,819	12	2,950	7.62	12,824	1.75	16.9
	2	J1100	Dexamethasone sodium phos	2.6	1,091	2	2,536	1.03	19,762	0.13	2.0
	3	J3420	Vitamin b12 injection	9.1	584	16	2,448	3.71	2,454	3.70	6.8
	4	J1030	Methylprednisolone 40 mg inj	13.2	1,254	11	1,969	6.69	2,840	4.64	10.0
	5	J7613	Albuterol non-comp unit	14.3	510	28	1,508	9.51	304,221	0.05	10.5
	6	J1040	Methylprednisolone 80 mg inj	15.6	960	16	1,507	10.34	1,763	8.84	11.7
	7	J7620	Albuterol ipratrop non-comp	22.5	426	53	1,439	15.64	139,231	0.16	16.7
	8	Q9967	Locm 300-399mg/ml iodine,1ml	11.1	864	13	1,209	9.17	90,733	0.12	8.7
	9	J0702	Betamethasone acet&sod phosp	17.0	777	22	1,204	14.15	2,922	5.83	12.9
	10	J0696	Ceftriaxone sodium injection	2.5	642	4	1,091	2.32	4,165	0.61	1.8
			Medicare Part B Spending, Top 10	130.4							98.2
			Medicare Part B Spending, All Drugs	27,266.7							21,789.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost- Sharing (\$M)
2017	1	J3301	Triamcinolone acet inj nos	24.1	1,873	13	3,033	7.93	13,373	1.80	18.0
	2	J1100	Dexamethasone sodium phos	2.3	1,145	2	2,538	0.89	19,677	0.11	1.7
	3	J3420	Vitamin b12 injection	6.8	571	12	2,399	2.84	2,400	2.84	4.8
	4	J1030	Methylprednisolone 40 mg inj	16.2	1,258	13	1,966	8.24	2,840	5.71	12.2
	5	J7613	Albuterol non-comp unit	13.6	528	26	1,481	9.20	288,582	0.05	9.9
	6	J1040	Methylprednisolone 80 mg inj	18.8	939	20	1,474	12.75	1,728	10.87	14.0
	7	J7620	Albuterol ipratrop non-comp	19.9	459	43	1,451	13.73	136,709	0.15	14.5
	8	Q9967	Locm 300-399mg/ml iodine,1ml	11.2	872	13	1,209	9.22	91,796	0.12	8.7
	9	J0702	Betamethasone acet&sod phosp	20.1	781	26	1,209	16.61	2,982	6.73	15.2
	10	J0178	Aflibercept injection	2,473.4	230	10,758	1,166	2,121.69	2,573	961.30	1,967.3
			Medicare Part B Spending, Top 10	2,606.4							2,066.3
			Medicare Part B Spending, All Drugs	30,294.0							24,260.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-3 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part B, Ranked by Total Number of Services

Year	Rank	HCPCS	Description	Total Payment (\$M)	Beneficiaries (1000s)	Spending per Beneficiary (\$)	Services (1000s)	Spending per Service (\$)	Units (1000s)	Spending per Unit (\$)	Medicare Payment Net of Cost-Sharing (\$M)
2018	1	J3301	Triamcinolone acet inj nos	24.4	1,904	13	3,080	7.91	13,600	1.79	18.2
	2	J1100	Dexamethasone sodium phos	2.3	1,162	2	2,500	0.91	19,493	0.12	1.7
	3	J3420	Vitamin b12 injection	4.4	546	8	2,291	1.93	2,293	1.93	3.2
	4	J1030	Methylprednisolone 40 mg inj	18.1	1,214	15	1,890	9.60	2,749	6.60	13.7
	5	J7613	Albuterol non-comp unit	12.4	521	24	1,439	8.64	273,376	0.05	9.0
	6	J7620	Albuterol ipratrop non-comp	17.4	465	37	1,433	12.10	132,891	0.13	12.8
	7	J1040	Methylprednisolone 80 mg inj	20.6	883	23	1,373	14.99	1,609	12.79	15.3
	8	J0178	Aflibercept injection	2,579.6	241	10,691	1,231	2,095.60	2,736	942.72	2,051.4
	9	Q9967	Locm 300-399mg/ml iodine,1ml	11.3	888	13	1,217	9.25	93,639	0.12	8.8
	10	J0702	Betamethasone acet&sod phosp	20.7	769	27	1,180	17.53	2,942	7.03	15.6
			Medicare Part B Spending, Top 10	2,711.2							2,149.7
			Medicare Part B Spending, All Drugs	33,200.9							26,602.5

Source: Analysis of carrier, durable medical, and outpatient claims data 2006-2018 by Acumen for ASPE. Data include Part B covered drugs administered in physicians' offices and furnished by suppliers, covered drugs in hospital outpatient departments; and reflect only Part B drugs paid under the average sales price plus 6 percent (ASP) methodology. The Healthcare Common Procedure Coding System (HCPCS) codes and prices for carrier and DM were obtained from the CMS ASP file, those for OP come from the CMS Addendum B file. Lines with denied payments or Medicare as secondary payer were dropped. Spending per Beneficiary, Spending per Service, and Spending per Unit include beneficiary cost-sharing and include the sequester.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2008	1	Lipitor	2,397.8	18,446.2	812,966.5	3,124.8	129.99	2.95	767.34	1,349.4
	2	Plavix	2,305.1	14,268.3	601,948.6	2,156.1	161.56	3.83	1,069.10	1,319.8
	3	Nexium	1,487.0	7,910.2	314,143.7	1,480.1	187.99	4.73	1,004.66	978.7
	4	Seroquel	1,462.2	6,038.8	306,095.0	767.1	242.13	4.78	1,906.03	1,152.5
	5	Aricept	1,326.1	7,102.7	256,076.3	1,041.5	186.71	5.18	1,273.33	803.6
	6	Zyprexa	1,229.0	2,814.5	97,134.6	339.6	436.69	12.65	3,618.96	1,004.4
	7	Advair Diskus	1,213.3	5,507.7	413,199.2	1,278.7	220.29	2.94	948.88	774.5
	8	Actos	1,063.0	5,174.6	220,536.5	846.1	205.42	4.82	1,256.35	663.1
	9	Prevacid	947.2	5,176.2	206,602.2	949.1	182.99	4.58	998.02	780.5
	10	Abilify	837.1	1,841.7	59,250.7	279.4	454.51	14.13	2,995.69	696.7
Medicare Part D Spending, Top 10			14,267.8							9,523.1
Medicare Part D Spending, All Drugs			68,223.6							44,840.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units			GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)					
2009	1	Plavix	2,721.3	15,091.7	577,272.2	2,308.9	180.32	4.71	1,178.60	1,527.9	
	2	Lipitor	2,288.4	16,124.6	653,606.5	2,797.1	141.92	3.50	818.12	1,236.4	
	3	Nexium	1,676.8	8,185.9	316,028.8	1,538.1	204.85	5.31	1,090.19	1,097.5	
	4	Seroquel	1,647.0	6,114.6	335,895.3	778.7	269.35	4.90	2,114.95	1,276.2	
	5	Aricept	1,585.3	7,537.4	247,633.8	1,107.9	210.32	6.40	1,430.90	939.8	
	6	Advair Diskus	1,394.2	5,919.7	427,927.5	1,360.5	235.52	3.26	1,024.75	871.3	
	7	Zyprexa	1,341.4	2,730.6	117,748.0	328.8	491.23	11.39	4,079.42	1,085.1	
	8	Actos	1,188.3	5,105.6	213,588.7	839.0	232.74	5.56	1,416.26	729.3	
	9	Abilify	1,079.2	2,210.0	73,310.5	337.8	488.35	14.72	3,194.42	879.2	
	10	Flomax	958.9	6,533.8	288,158.8	1,226.3	146.76	3.33	781.99	500.8	
		Medicare Part D Spending, Top 10	15,880.7							10,143.6	
		Medicare Part D Spending, All Drugs	73,520.0							47,329.5	

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2010	1	Plavix	3,105.2	15,235.3	573,566.4	2,371.2	203.81	5.41	1,309.54	1,772.6
	2	Lipitor	2,280.9	14,347.6	586,401.3	2,457.2	158.98	3.89	928.28	1,244.9
	3	Nexium	1,858.7	8,488.2	332,456.5	1,556.0	218.97	5.59	1,194.58	1,270.4
	4	Seroquel	1,817.0	5,990.0	282,975.9	771.7	303.34	6.42	2,354.64	1,415.0
	5	Aricept	1,796.6	7,206.5	238,494.8	1,096.9	249.31	7.53	1,637.92	1,083.0
	6	Advair Diskus	1,517.5	6,113.5	423,206.3	1,402.4	248.21	3.59	1,082.04	959.6
	7	Zyprexa	1,487.0	2,688.4	91,173.5	325.3	553.13	16.31	4,571.81	1,215.3
	8	Actos	1,270.4	5,019.2	199,166.3	853.4	253.11	6.38	1,488.63	788.7
	9	Abilify	1,226.4	2,296.7	71,850.3	338.6	533.99	17.07	3,621.85	1,003.9
	10	Crestor	1,095.8	7,020.9	273,762.9	1,304.0	156.08	4.00	840.31	617.8
		Medicare Part D Spending, Top 10	17,455.6							11,371.3
		Medicare Part D Spending, All Drugs	77,418.4							50,526.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2011	1	Plavix	3,656.7	15,209.9	591,894.7	2,395.4	240.42	6.18	1,526.57	2,047.8
	2	Lipitor	2,672.9	13,774.0	584,820.9	2,607.5	194.05	4.57	1,025.08	1,441.6
	3	Seroquel	2,045.3	5,937.4	280,754.1	762.7	344.48	7.28	2,681.73	1,568.9
	4	Nexium	1,970.1	8,223.8	334,287.8	1,516.2	239.56	5.89	1,299.34	1,334.8
	5	Advair Diskus	1,664.9	6,168.1	436,745.3	1,402.4	269.91	3.81	1,187.16	1,028.4
	6	Zyprexa	1,625.3	2,408.1	81,766.3	312.6	674.94	19.88	5,199.61	1,317.4
	7	Abilify	1,469.6	2,447.9	77,464.4	360.7	600.36	18.97	4,074.93	1,186.1
	8	Crestor	1,416.3	7,826.7	318,709.3	1,496.0	180.96	4.44	946.70	782.5
	9	Actos	1,294.1	4,484.5	184,544.5	778.7	288.57	7.01	1,661.93	779.7
	10	Spiriva	1,288.4	4,815.4	172,359.5	981.3	267.57	7.48	1,312.91	765.5
		Medicare Part D Spending, Top 10	19,103.6							12,252.7
		Medicare Part D Spending, All Drugs	84,639.2							54,815.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2012	1	Nexium	2,124.2	7,911.8	337,691.6	1,434.2	268.49	6.29	1,481.16	1,388.6
	2	Advair Diskus	1,886.3	6,288.9	452,552.6	1,424.3	299.94	4.17	1,324.39	1,131.6
	3	Crestor	1,789.8	8,624.5	361,021.6	1,598.1	207.53	4.96	1,119.94	971.7
	4	Abilify	1,758.0	2,572.0	82,133.7	376.6	683.54	21.40	4,668.48	1,388.1
	5	Plavix	1,690.7	6,468.8	258,051.4	2,032.7	261.35	6.55	831.73	968.4
	6	Spiriva	1,603.2	5,275.9	193,071.2	1,065.5	303.87	8.30	1,504.59	928.3
	7	Cymbalta	1,453.8	5,776.3	243,795.2	912.8	251.69	5.96	1,592.77	924.4
	8	Atorvastatin Calcium	1,347.8	16,152.8	734,283.3	3,655.9	83.44	1.84	368.67	752.7
	9	Namenda	1,327.4	5,425.4	345,809.0	757.6	244.66	3.84	1,752.13	750.9
	10	Januvia	1,113.0	3,766.1	149,648.7	666.6	295.53	7.44	1,669.77	645.3
		Medicare Part D Spending, Top 10	16,094.2							9,850.1
		Medicare Part D Spending, All Drugs	89,524.6							57,004.1

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2013	1	Nexium	2,526.3	8,192.4	360,017.7	1,484.0	308.38	7.02	1,702.39	1,516.8
	2	Advair Diskus	2,263.1	6,605.7	492,979.4	1,527.2	342.60	4.59	1,481.83	1,246.7
	3	Crestor	2,216.2	9,066.6	401,735.0	1,732.7	244.44	5.52	1,279.02	1,098.9
	4	Abilify	2,107.1	2,886.9	86,132.7	396.8	729.89	24.46	5,310.84	1,593.9
	5	Cymbalta	1,961.2	6,887.7	279,891.9	1,032.8	284.74	7.01	1,898.98	1,147.2
	6	Spiriva	1,958.6	5,735.3	218,670.5	1,181.6	341.51	8.96	1,657.60	1,043.7
	7	Namenda	1,564.8	6,878.5	347,985.0	798.7	227.49	4.50	1,959.14	812.4
	8	Januvia	1,460.6	4,358.9	174,161.4	761.8	335.08	8.39	1,917.32	781.4
	9	Lantus Solostar	1,372.0	3,864.0	80,270.4	862.9	355.09	17.09	1,590.06	719.3
	10	Revlimid	1,349.9	153.8	3,227.5	24.6	8,778.38	418.26	54,794.71	853.5
		Medicare Part D Spending, Top 10	18,779.9							10,813.8
		Medicare Part D Spending, All Drugs	103,334.3							62,585.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2014	1	Sovaldi	3,102.2	109.4	3,050.8	33.0	28,360.47	1,016.87	93,970.21	2,311.5
	2	Nexium	2,658.3	7,533.5	340,109.6	1,405.3	352.86	7.82	1,891.56	1,568.1
	3	Crestor	2,541.2	9,065.4	418,795.5	1,751.6	280.32	6.07	1,450.83	1,205.3
	4	Abilify	2,524.9	2,961.4	88,079.9	404.8	852.60	28.67	6,237.58	1,878.4
	5	Advair Diskus	2,273.8	6,087.5	459,844.7	1,419.7	373.51	4.94	1,601.58	1,185.5
	6	Spiriva	2,156.2	5,847.1	228,758.3	1,211.1	368.77	9.43	1,780.38	1,105.4
	7	Lantus Solostar	2,014.7	4,437.2	92,674.1	972.5	454.04	21.74	2,071.61	1,011.6
	8	Januvia	1,773.8	4,493.2	183,418.8	789.4	394.77	9.67	2,247.03	903.0
	9	Lantus	1,724.2	4,281.2	80,133.3	786.6	402.73	21.52	2,192.01	935.3
	10	Revlimid	1,670.5	178.3	3,705.1	27.1	9,371.24	450.86	61,557.30	972.2
		Medicare Part D Spending, Top 10	22,439.8							13,076.5
		Medicare Part D Spending, All Drugs	121,001.4							71,948.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2015	1	Harvoni	7,031.6	225.9	6,238.8	75.7	31,130.80	1,127.08	92,845.71	4,771.3
	2	Crestor	2,883.2	8,712.2	416,827.2	1,733.0	330.93	6.92	1,663.66	1,270.2
	3	Lantus Solostar	2,483.3	4,861.7	100,569.1	1,041.4	510.80	24.69	2,384.66	1,175.4
	4	Advair Diskus	2,270.2	5,649.5	430,440.5	1,321.5	401.83	5.27	1,717.85	1,084.5
	5	Spiriva	2,191.7	5,447.2	212,261.8	1,142.2	402.35	10.33	1,918.78	1,042.5
	6	Januvia	2,131.9	4,623.6	193,043.8	828.8	461.10	11.04	2,572.33	1,011.4
	7	Revlimid	2,077.7	204.9	4,240.8	30.5	10,140.47	489.92	68,220.65	1,121.5
	8	Nexium	2,012.9	5,470.9	251,472.7	1,127.9	367.93	8.00	1,784.61	1,184.3
	9	Lantus	1,876.3	3,993.9	75,074.9	734.0	469.80	24.99	2,556.48	961.4
	10	Lyrica	1,765.7	4,731.6	346,639.6	825.5	373.17	5.09	2,138.85	963.7
		Medicare Part D Spending, Top 10	26,724.4							14,586.2
		Medicare Part D Spending, All Drugs	136,841.9							77,659.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2016	1	Harvoni	4,399.7	141.7	3,933.3	52.8	31,047.66	1,118.58	83,326.10	2,958.0
	2	Revlimid	2,661.6	239.1	4,896.2	35.4	11,132.08	543.60	75,243.90	1,398.1
	3	Lantus solostar	2,526.4	5,029.2	102,691.2	1,075.4	502.35	24.60	2,349.23	1,161.4
	4	Januvia	2,440.4	4,743.2	203,654.2	864.6	514.50	11.98	2,822.56	1,119.7
	5	Crestor	2,323.1	6,013.5	285,722.2	1,560.3	386.32	8.13	1,488.87	1,066.5
	6	Advair Diskus	2,320.1	5,195.1	401,111.3	1,196.2	446.60	5.78	1,939.58	1,070.4
	7	Lyrica	2,097.1	4,939.8	364,403.5	852.3	424.54	5.75	2,460.47	1,123.5
	8	Xarelto	1,955.0	4,403.9	167,518.1	808.0	443.93	11.67	2,419.69	729.6
	9	Eliquis	1,926.3	4,456.3	328,547.8	827.1	432.27	5.86	2,329.07	690.1
	10	Spiriva	1,819.1	4,153.7	164,588.2	903.6	437.95	11.05	2,013.07	817.8
		Medicare Part D Spending, Top 10	24,468.9							12,135.1
		Medicare Part D Spending, All Drugs	145,439.6							80,365.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2017	1	Revlimid	3,312.8	259.7	5,283.7	37.5	12,756.50	626.98	88,442.03	1,654.1
	2	Eliquis	3,078.9	6,352.2	480,038.5	1,143.1	484.70	6.41	2,693.42	1,032.9
	3	Januvia	2,786.1	4,833.9	216,563.6	893.6	576.36	12.86	3,117.75	1,220.9
	4	Lantus solostar	2,632.4	5,236.0	106,072.4	1,112.4	502.74	24.82	2,366.34	1,152.0
	5	Xarelto	2,611.8	5,246.1	204,631.9	952.9	497.86	12.76	2,740.80	949.6
	6	Harvoni	2,555.8	81.9	2,282.8	32.4	31,207.60	1,119.62	78,891.25	1,611.1
	7	Lyrica	2,516.9	5,071.9	377,949.8	876.1	496.24	6.66	2,872.90	1,275.5
	8	Advair Diskus	2,374.8	4,881.7	381,843.2	1,135.9	486.48	6.22	2,090.73	1,040.5
	9	Humira Pen	2,015.7	370.8	901.5	51.8	5,436.12	2,235.96	38,889.78	1,124.3
	10	Spiriva	1,662.0	3,358.3	136,812.8	717.9	494.90	12.15	2,315.25	702.7
		Medicare Part D Spending, Top 10	25,547.2							11,763.7
		Medicare Part D Spending, All Drugs	154,229.6							81,332.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-4 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Program Spending

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2018	1	Eliquis	4,992.2	9,092.0	713,807.3	1,646.8	549.07	6.99	3,031.46	1,610.4
	2	Revlimid	4,065.1	285.9	5,829.3	39.5	14,217.06	697.35	103,030.51	1,975.2
	3	Xarelto	3,358.8	5,896.6	240,480.2	1,050.6	569.62	13.97	3,196.91	1,137.6
	4	Januvia	3,228.9	4,819.5	226,814.5	919.6	669.97	14.24	3,511.30	1,352.6
	5	Lyrica	2,950.2	5,222.2	391,129.0	905.0	564.93	7.54	3,260.06	1,431.5
	6	Advair Diskus	2,394.0	4,398.7	356,768.1	1,031.0	544.25	6.71	2,321.93	997.9
	7	Humira Pen	2,388.8	394.6	971.9	53.7	6,053.45	2,457.82	44,500.54	1,290.9
	8	Lantus Solostar	2,370.5	4,475.8	89,306.4	1,050.7	529.62	26.54	2,256.12	953.5
	9	Imbruvica	1,867.2	165.2	7,909.0	21.9	11,300.24	236.09	85,128.43	868.6
	10	Symbicort	1,751.2	4,265.2	55,342.5	1,039.6	410.58	31.64	1,684.58	796.4
		Medicare Part D Spending, Top 10	29,366.8							12,414.7
		Medicare Part D Spending, All Drugs	167,628.6							85,207.5

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 Top 10 Highest-Cost Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units		GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)				
2008	1	Somatuline Depot	0.3	0.1	0.0	0.0	2,819.04	7,648.06	12,633.46	0.3
	2	Arcalyst	1.1	0.1	0.2	n/a	20,592.32	5,198.06	n/a	0.7
	3	Viadur	0.1	0.0	0.0	0.0	4,905.50	4,905.50	5,255.89	0.0
	4	Vantas	0.5	0.1	0.1	0.1	4,738.90	4,738.90	4,993.68	0.3
	5	H.P. Acthar	6.9	0.2	1.5	0.1	35,585.26	4,547.26	95,056.51	5.5
	6	Neulasta	19.5	5.5	5.7	1.8	3,536.66	3,399.84	10,722.80	12.3
	7	Fabrazyme	1.4	0.2	0.4	0.0	8,173.90	3,443.73	129,296.30	1.3
	8	Herceptin	2.3	0.6	0.9	0.1	4,214.84	2,728.76	22,371.08	1.8
	9	Sandostatin LAR	14.2	4.8	5.8	0.7	2,945.87	2,453.37	19,063.35	10.0
	10	Panhematin	0.3	0.0	0.1	n/a	9,189.49	2,403.41	n/a	0.3
		Medicare Part D Spending, Top 10	46.7							32.5
		Medicare Part D Spending, All Drugs	68,223.6							44,840.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2009	1	Stelara	1.5	0.2	0.2	0.1	8,361.83	9,541.40	11,889.48	1.1
	2	Somatuline Depot	1.1	0.4	0.1	0.1	3,011.21	7,875.82	21,138.69	0.8
	3	Mozobil	0.7	0.0	0.1	0.0	14,950.95	5,564.27	18,587.67	0.5
	4	Arcalyst	2.2	0.1	0.4	0.0	22,317.79	5,235.69	184,121.78	1.6
	5	Neulasta	22.5	6.1	4.5	2.0	3,693.07	5,009.98	11,121.24	14.1
	6	H.P. Acthar	9.1	0.3	1.9	0.2	31,995.97	4,863.39	59,213.32	7.5
	7	Vantas	0.3	0.1	0.1	0.1	4,725.97	4,725.97	4,901.01	0.2
	8	Fabrazyme	2.0	0.3	0.7	0.0	6,482.43	3,021.31	170,703.94	1.9
	9	Simponi	0.3	2,833	1,717	955	1,865.5	3,078.0	5,534.0	3.8
	10	Herceptin	2.0	683	1,047	118	4,166.6	2,718.0	24,116.8	2.2
		Medicare Part D Spending, Top 10	44.7							31.4
		Medicare Part D Spending, All Drugs	73,520.0							47,329.5

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2010	1	Lucentis	0.3	0.1	0.0	0.0	2,503.94	22,702.37	7,739.44	0.2
	2	Ilaris	0.4	0.0	0.0	n/a	16,322.31	16,322.31	n/a	0.3
	3	Stelara	17.0	2.3	1.7	0.8	7,370.30	9,739.63	20,294.78	12.9
	4	Somatuline Depot	2.1	0.6	0.3	0.1	3,556.19	7,898.25	23,486.46	1.5
	5	Mozobil	0.6	0.0	0.1	0.0	17,696.26	5,647.74	19,305.02	0.5
	6	Jevtana	0.3	0.0	0.1	0.0	8,162.78	5,441.85	22,311.59	0.2
	7	Neulasta	23.5	6.2	4.5	2.0	3,812.86	5,200.94	11,536.11	15.1
	8	Arcalyst	2.7	0.1	0.5	0.0	20,785.97	5,196.49	209,458.67	2.1
	9	H.P. Acthar	19.3	0.6	4.0	0.3	30,162.85	4,838.15	58,320.92	16.0
	10	Vantas	0.2	0.0	0.0	0.0	4,229.59	4,229.59	4,229.59	0.1
		Medicare Part D Spending, Top 10	66.1							48.7
		Medicare Part D Spending, All Drugs	77,418.4							50,526.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2011	1	Lucentis	1.1	0.5	0.0	0.2	2,279.74	38,985.58	6,438.53	0.5
	2	Ilaris	0.8	0.0	0.0	0.0	16,278.40	16,278.40	61,357.03	0.6
	3	Stelara	31.7	3.9	2.9	1.4	8,064.04	10,756.61	23,308.63	23.6
	4	Somatuline Depot	3.5	1.0	0.4	0.1	3,713.58	8,342.85	27,866.44	2.4
	5	Neulasta	28.3	7.1	4.8	2.2	3,998.67	5,952.62	12,706.41	18.8
	6	Mozobil	1.1	0.1	0.2	0.1	19,048.93	5,703.27	22,410.51	0.9
	7	Sylatron 4-Pack	0.1	0.0	0.0	n/a	6,494.88	5,567.04	n/a	0.1
	8	Jevtana	1.2	0.1	0.2	0.0	8,706.92	5,528.20	35,852.03	1.0
	9	H.P. Acthar	49.5	1.5	9.3	0.9	33,621.29	5,303.69	57,979.97	39.7
	10	Arcalyst	2.5	0.1	0.5	0.0	21,429.95	5,178.90	191,221.07	1.8
		Medicare Part D Spending, Top 10	119.8							89.5
		Medicare Part D Spending, All Drugs	84,639.2							54,815.2

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2012	1	Eylea	0.9	0.4	0.0	0.1	2,297.08	38,331.14	6,453.71	0.4
	2	Lucentis	1.8	0.8	0.0	0.2	2,384.96	36,617.53	7,338.33	0.9
	3	Ilaris	1.7	0.1	0.1	0.0	18,148.49	16,282.76	79,193.43	1.3
	4	Stelara	50.3	5.7	4.2	1.9	8,775.18	11,838.64	26,482.64	36.7
	5	Somatuline Depot	5.3	1.4	0.6	0.2	3,774.88	8,953.32	30,307.51	3.6
	6	Neulasta	33.0	7.6	5.2	2.4	4,337.23	6,308.60	13,541.62	20.9
	7	H.P. Acthar	141.5	3.4	23.7	1.6	41,763.10	5,977.25	89,356.67	108.3
	8	Mozobil	1.5	0.1	0.3	0.1	19,094.40	5,786.18	23,034.51	1.0
	9	Jevtana	1.6	0.2	0.3	0.0	9,396.62	5,680.17	38,242.07	1.4
	10	Sylatron 4-Pack	0.4	0.1	0.1	0.0	5,437.02	5,437.02	16,528.55	0.3
Medicare Part D Spending, Top 10			238.1							174.7
Medicare Part D Spending, All Drugs			89,524.6							57,004.1

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2013	1	Eylea	1.6	0.7	0.0	0.2	2,309.66	36,383.59	7,637.12	0.7
	2	Lucentis	2.3	1.0	0.1	0.3	2,361.54	34,887.59	8,185.55	1.0
	3	Gattex	15.2	0.6	0.8	0.1	26,801.27	20,118.72	102,496.75	10.8
	4	Ilaris	2.0	0.1	0.1	0.0	17,108.96	16,413.48	80,754.31	1.4
	5	Stelara	89.5	9.0	6.7	3.0	9,940.45	13,330.93	29,471.14	61.8
	6	Somatuline Depot	7.5	1.7	0.8	0.2	4,394.33	9,834.27	32,074.85	5.0
	7	Neulasta	46.7	9.5	6.9	3.0	4,902.99	6,810.18	15,321.63	28.2
	8	H.P. Acthar	262.6	6.8	42.6	2.4	38,889.46	6,158.54	108,013.82	196.2
	9	Mozobil	1.7	0.1	0.3	0.1	16,639.76	5,930.15	20,122.50	1.1
	10	Jevtana	1.8	0.2	0.3	0.0	9,507.63	5,770.35	48,288.74	1.5
Medicare Part D Spending, Top 10			431.0							307.6
Medicare Part D Spending, All Drugs			103,334.3							62,585.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2014	1	Eylea	2.9	1.2	0.1	0.4	2,454.93	38,360.36	8,065.24	1.3
	2	Lucentis	2.7	1.2	0.1	0.4	2,306.97	36,442.45	7,452.28	1.1
	3	Gattex	46.7	1.5	1.7	0.2	30,400.76	28,077.72	187,410.33	32.4
	4	Ilaris	4.1	0.2	0.3	0.0	19,689.48	16,381.65	91,009.16	2.7
	5	Stelara	156.9	14.1	10.8	4.5	11,166.08	14,510.12	34,578.67	98.2
	6	Somatuline Depot	10.2	2.0	0.9	0.3	5,108.44	11,421.89	38,847.44	6.5
	7	Krystexxa	0.8	0.1	0.1	0.0	14,612.26	7,744.50	40,760.50	0.6
	8	Neulasta	57.8	10.9	7.8	3.5	5,312.60	7,384.42	16,424.20	30.4
	9	H.P. Acthar	391.1	9.6	60.2	2.9	40,696.05	6,497.68	133,340.95	276.6
	10	Jevtana	1.7	0.2	0.3	0.0	9,026.91	6,017.94	35,915.57	1.3
Medicare Part D Spending, Top 10			674.7							451.2
Medicare Part D Spending, All Drugs			121,001.4							71,948.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2015	1	Eylea	6.4	2.7	0.2	0.8	2,419.86	35,457.43	8,530.47	2.8
	2	Lucentis	3.1	1.3	0.1	0.4	2,329.83	35,086.39	8,394.99	1.3
	3	Gattex	74.2	2.1	3.1	0.3	35,253.47	24,311.15	228,225.56	49.0
	4	Lemtrada	4.3	0.0	0.3	0.0	90,605.92	16,856.91	106,075.22	3.0
	5	Ilaris	4.3	0.2	0.3	0.0	20,073.20	16,395.66	99,899.17	2.4
	6	Stelara	205.3	17.0	12.7	5.6	12,109.85	16,219.81	36,381.06	118.0
	7	Somatuline Depot	13.7	2.3	1.1	0.4	5,881.26	12,493.25	38,310.32	7.8
	8	Signifor LAR	1.7	0.1	0.1	0.0	11,511.42	11,200.30	53,472.38	1.0
	9	Neulasta	66.2	11.6	8.3	3.8	5,688.47	8,024.69	17,313.71	31.8
	10	H.P. Acthar	504.0	11.2	73.8	3.1	44,963.81	6,827.41	162,370.93	334.2
		Medicare Part D Spending, Top 10	883.3							551.3
		Medicare Part D Spending, All Drugs	136,841.9							77,659.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2016	1	Eylea	9.5	3.9	0.3	1.0	2,433.75	37,668.61	9,522.84	4.0
	2	Lucentis	2.8	1.2	0.1	0.3	2,355.95	31,859.70	8,379.86	1.1
	3	Gattex	103.4	2.8	3.4	0.4	36,538.49	30,719.39	231,328.70	65.4
	4	Stelara	265.1	20.2	20.1	6.7	13,118.25	13,181.51	39,799.76	147.3
	5	Lemtrada	6.9	0.1	0.4	0.1	83,264.34	17,140.23	86,386.75	4.6
	6	Ilaris	5.0	0.2	0.3	0.0	20,710.32	16,446.43	104,846.00	2.7
	7	Krystexxa	5.0	0.2	0.3	0.1	28,548.43	16,273.54	99,919.52	3.0
	8	Somatuline Depot	18.8	3.0	1.4	0.4	6,313.87	13,662.80	43,609.75	10.3
	9	Signifor LAR	2.9	0.3	0.3	0.0	11,687.71	11,505.09	79,602.77	1.9
	10	Neulasta	70.1	11.2	8.0	3.5	6,252.09	8,782.59	20,096.27	33.1
		Medicare Part D Spending, Top 10	489.6							273.4
		Medicare Part D Spending, All Drugs	145,439.6							80,365.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2017	1	Eylea	13.0	5.3	0.3	1.3	2,468.10	38,341.55	9,633.85	5.3
	2	Lucentis	3.2	1.3	0.1	0.3	2,379.18	37,542.48	9,202.22	1.3
	3	Gattex	164.8	4.2	4.7	0.7	39,470.04	35,331.78	228,871.44	98.8
	4	Krystexxa	13.6	0.4	0.7	0.1	33,153.88	19,152.45	159,528.66	8.0
	5	Stelara	406.0	27.4	45.4	8.8	14,841.17	8,949.45	46,216.27	218.4
	6	Lemtrada	7.7	0.1	0.4	0.1	82,319.50	18,062.64	91,035.69	4.4
	7	Ilaris	8.1	0.4	0.5	0.1	21,572.47	16,621.41	126,738.28	4.6
	8	Somatuline Depot	25.7	3.5	1.7	0.5	7,302.22	15,515.58	52,424.32	13.5
	9	Signifor LAR	2.7	0.2	0.2	0.0	11,850.16	11,541.03	102,093.70	1.7
	10	Neulasta	77.0	11.1	7.9	3.4	6,968.21	9,767.20	22,970.98	36.8
		Medicare Part D Spending, Top 10	721.8							392.9
		Medicare Part D Spending, All Drugs	154,229.6							81,332.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-5 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Spending per Unit

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2018	1	Gattex	240.9	5.7	6.2	0.9	42,553.16	38,586.16	274,053.96	136.0
	2	Eylea	16.6	6.6	0.4	1.7	2,498.08	38,477.57	9,601.56	6.3
	3	Lucentis	3.1	1.4	0.1	0.5	2,269.15	31,511.54	6,694.50	1.2
	4	Spinraza	8.0	0.0	0.3	0.0	163,950.11	26,339.53	502,097.23	4.0
	5	Krystexxa	23.9	0.6	1.1	0.1	38,811.58	20,919.48	164,614.65	14.2
	6	Stelara	582.6	34.0	52.1	9.8	17,119.63	11,178.88	59,383.88	309.8
	7	Besponsa	1.8	0.0	0.1	n/a	82,497.61	19,307.95	n/a	0.9
	8	Lemtrada	4.7	0.1	0.3	0.1	72,929.79	18,722.10	79,007.27	2.7
	9	Somatuline Depot	29.9	3.9	1.8	0.5	7,725.37	16,628.73	56,657.58	15.2
	10	Ilaris	11.3	0.5	0.7	0.1	22,668.74	16,465.35	139,650.60	6.6
		Medicare Part D Spending, Top 10	922.8							496.9
		Medicare Part D Spending, All Drugs	167,628.6							85,207.5

Note: Rankings exclude drugs with fewer than 11 claims or fewer than 11 units.

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2008	1	Lisinopril	345.0	28,462.5	1,384,924.0	4,672.3	12.12	0.25	73.85	212.9
	2	Simvastatin	694.1	27,433.9	1,210,910.7	4,849.0	25.30	0.57	143.14	446.0
	3	Furosemide	131.8	23,854.8	1,198,221.6	4,094.5	5.52	0.11	32.18	74.2
	4	Hydrocodone-Acetaminophen	312.5	23,826.7	1,706,052.0	5,434.9	13.12	0.18	57.50	226.7
	5	Levothyroxine Sodium	207.8	21,857.8	878,139.4	3,105.1	9.51	0.24	66.91	118.7
	6	Amlodipine Besylate	401.5	19,669.9	887,503.7	3,193.8	20.41	0.45	125.71	252.6
	7	Lipitor	2,397.8	18,446.2	812,966.5	3,124.8	129.99	2.95	767.34	1,349.4
	8	Omeprazole	695.6	16,717.3	807,699.4	3,280.3	41.61	0.86	212.06	501.9
	9	Hydrochlorothiazide	94.1	16,464.8	771,308.9	3,029.2	5.71	0.12	31.06	50.7
	10	Atenolol	111.7	16,257.6	983,693.8	2,575.0	6.87	0.11	43.38	60.0
		Medicare Part D Spending, Top 10	5,391.9							3,293.1
		Medicare Part D Spending, All Drugs	68,223.6							44,840.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 High-Cost Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units			GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)					
2009	1	Simvastatin	739.1	34,591.8	1,507,177.8	6,049.8	21.37	0.49	122.16	456.3	
	2	Lisinopril	342.6	30,379.4	1,439,338.6	5,160.8	11.28	0.24	66.39	206.4	
	3	Hydrocodone- Acetaminophen	352.1	26,105.7	1,957,212.7	5,919.0	13.49	0.18	59.49	253.3	
	4	Furosemide	134.2	23,854.2	1,155,844.7	4,211.4	5.63	0.12	31.87	74.7	
	5	Levothyroxine Sodium	221.2	23,635.2	936,334.0	3,418.5	9.36	0.24	64.72	123.6	
	6	Amlodipine Besylate	387.1	23,000.0	973,035.4	3,788.0	16.83	0.40	102.20	230.4	
	7	Omeprazole	825.1	21,535.3	1,042,306.3	4,212.0	38.31	0.79	195.89	581.4	
	8	Metoprolol Tartrate	129.4	18,572.0	1,265,381.7	3,162.7	6.97	0.10	40.91	77.5	
	9	Metformin HCl	247.9	16,815.3	1,466,211.6	2,790.5	14.74	0.17	88.85	163.2	
	10	Hydrochlorothiazide	94.6	16,518.9	721,527.2	3,138.4	5.73	0.13	30.16	49.6	
		Medicare Part D Spending, Top 10	3,473.4							2,216.5	
		Medicare Part D Spending, All Drugs	73,520.0							47,329.5	

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units			GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)					
2010	1	Simvastatin	675.4	39,103.9	1,719,786.3	6,848.7	17.27	0.39	98.62	395.8	
	2	Lisinopril	319.7	31,820.3	1,529,230.0	5,533.6	10.05	0.21	57.77	184.5	
	3	Hydrocodone- Acetaminophen	380.3	28,107.0	2,077,239.4	6,402.7	13.53	0.18	59.39	270.6	
	4	Amlodipine Besylate	369.0	25,763.0	1,105,779.4	4,302.8	14.32	0.33	85.76	206.2	
	5	Levothyroxine Sodium	238.5	25,517.1	1,039,522.1	3,736.0	9.35	0.23	63.85	129.5	
	6	Omeprazole	774.7	25,015.8	1,203,076.1	4,819.2	30.97	0.64	160.76	535.1	
	7	Furosemide	134.5	23,836.6	1,170,099.9	4,297.7	5.64	0.11	31.29	73.5	
	8	Metoprolol Tartrate	119.1	18,307.8	1,286,033.6	3,105.3	6.50	0.09	38.34	69.5	
	9	Metformin HCl	220.0	17,887.0	1,581,764.1	3,056.4	12.30	0.14	71.99	141.5	
	10	Hydrochlorothiazide	93.0	16,505.6	744,455.4	3,209.3	5.64	0.12	28.99	45.7	
		Medicare Part D Spending, Top 10	3,324.2							2,051.9	
		Medicare Part D Spending, All Drugs	77,418.4							50,526.2	

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units			GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)					
2011	1	Simvastatin	594.3	40,947.8	1,893,225.1	7,410.7	14.51	0.31	80.20	321.4	
	2	Lisinopril	322.3	32,756.4	1,656,393.0	5,883.8	9.84	0.19	54.78	178.3	
	3	Hydrocodone- Acetaminophen	430.1	31,363.7	2,353,900.5	7,091.0	13.71	0.18	60.66	305.5	
	4	Amlodipine Besylate	383.1	27,946.4	1,263,380.4	4,798.2	13.71	0.30	79.83	210.2	
	5	Omeprazole	674.7	27,327.0	1,350,133.3	5,328.3	24.69	0.50	126.62	439.7	
	6	Levothyroxine Sodium	256.5	27,308.8	1,174,724.3	4,132.6	9.39	0.22	62.07	133.0	
	7	Furosemide	133.5	23,915.7	1,217,118.1	4,439.2	5.58	0.11	30.07	71.8	
	8	Metformin HCl	214.4	18,853.6	1,740,552.4	3,323.6	11.37	0.12	64.52	133.8	
	9	Metoprolol Tartrate	126.1	18,486.8	1,373,459.4	3,245.1	6.82	0.09	38.85	71.8	
	10	Hydrochlorothiazide	95.2	16,893.8	800,829.1	3,401.8	5.64	0.12	28.00	44.1	
		Medicare Part D Spending, Top 10	3,230.2							1,909.6	
		Medicare Part D Spending, All Drugs	84,639.2							54,815.2	

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units			GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
					Dispensed (1000s)	Beneficiaries (1000s)					
2012	1	Simvastatin	491.9	37,795.7	1,834,651.7	7,036.5	13.02	0.27	69.91	264.7	
	2	Lisinopril	292.7	34,012.4	1,829,754.1	6,276.8	8.61	0.16	46.63	159.8	
	3	Hydrocodone- Acetaminophen	462.0	32,935.7	2,514,651.9	7,463.0	14.03	0.18	61.91	322.5	
	4	Amlodipine Besylate	311.4	30,511.0	1,458,302.5	5,393.2	10.20	0.21	57.73	161.2	
	5	Levothyroxine Sodium	287.0	30,273.5	1,446,101.5	4,917.6	9.48	0.20	58.36	140.7	
	6	Omeprazole	591.5	29,740.8	1,535,244.4	5,776.7	19.89	0.39	102.40	362.5	
	7	Furosemide	128.7	24,196.9	1,287,834.2	4,603.5	5.32	0.10	27.95	69.3	
	8	Metformin HCl	209.9	19,993.8	1,919,371.7	3,625.6	10.50	0.11	57.90	128.3	
	9	Metoprolol Tartrate	133.8	19,548.2	1,546,730.0	3,547.9	6.84	0.09	37.71	76.2	
	10	Hydrochlorothiazide	98.0	17,097.6	848,605.5	3,513.7	5.73	0.12	27.90	44.6	
		Medicare Part D Spending, Top 10	3,007.0							1,729.8	
		Medicare Part D Spending, All Drugs	89,524.6							57,004.1	

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2013	1	Lisinopril	307.0	36,880.0	2,038,993.3	7,006.5	8.32	0.15	43.82	165.1
	2	Simvastatin	433.7	36,746.6	1,895,722.8	7,030.2	11.80	0.23	61.69	215.3
	3	Levothyroxine Sodium	396.1	35,175.5	1,703,818.5	5,738.4	11.26	0.23	69.02	197.6
	4	Hydrocodone-Acetaminophen	567.7	34,757.8	2,665,245.3	8,086.4	16.33	0.21	70.21	397.8
	5	Amlodipine Besylate	343.3	34,597.6	1,718,554.6	6,244.4	9.92	0.20	54.98	174.6
	6	Omeprazole	641.7	32,217.6	1,723,529.7	6,378.1	19.92	0.37	100.61	390.3
	7	Atorvastatin Calcium	910.8	26,672.6	1,321,516.3	5,345.6	34.15	0.69	170.38	467.0
	8	Furosemide	144.9	26,440.9	1,368,750.2	5,002.9	5.48	0.11	28.96	81.8
	9	Metformin HCl	226.6	22,041.1	2,221,651.2	4,134.2	10.28	0.10	54.81	134.0
	10	Metoprolol Tartrate	162.0	21,032.7	1,734,532.0	3,899.9	7.70	0.09	41.54	91.6
Medicare Part D Spending, Top 10			4,133.8							2,315.1
Medicare Part D Spending, All Drugs			103,334.3							62,585.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2014	1	Lisinopril	281.4	38,255.9	2,193,230.6	7,454.7	7.36	0.13	37.75	147.9
	2	Levothyroxine Sodium	631.5	37,693.9	1,887,046.8	6,245.4	16.75	0.33	101.11	310.6
	3	Amlodipine Besylate	303.6	36,323.5	1,880,188.1	6,749.9	8.36	0.16	44.97	150.7
	4	Simvastatin	346.5	34,075.7	1,855,648.8	6,768.0	10.17	0.19	51.20	167.2
	5	Hydrocodone-Acetaminophen	676.2	33,444.0	2,573,595.3	8,005.7	20.22	0.26	84.47	477.9
	6	Omeprazole	527.6	32,981.3	1,811,634.8	6,703.8	16.00	0.29	78.69	312.9
	7	Atorvastatin Calcium	747.2	32,583.8	1,690,100.2	6,739.2	22.93	0.44	110.87	361.9
	8	Furosemide	135.6	27,117.7	1,409,321.2	5,176.2	5.00	0.10	26.20	76.3
	9	Metformin HCl	203.8	23,461.8	2,444,099.8	4,509.8	8.69	0.08	45.19	117.7
	10	Gabapentin	491.2	22,109.5	2,495,659.5	4,292.3	22.22	0.20	114.43	339.4
		Medicare Part D Spending, Top 10	4,344.5							2,462.6
		Medicare Part D Spending, All Drugs	121,001.4							71,948.6

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2015	1	Levothyroxine Sodium	777.8	39,439.6	2,036,719.8	6,640.8	19.72	0.38	117.12	362.9
	2	Lisinopril	253.0	39,119.7	2,318,174.2	7,767.0	6.47	0.11	32.57	127.5
	3	Atorvastatin Calcium	712.0	38,601.1	2,078,721.8	8,070.3	18.44	0.34	88.22	346.0
	4	Amlodipine Besylate	264.1	38,207.9	2,041,318.6	7,262.7	6.91	0.13	36.36	125.5
	5	Omeprazole	446.6	33,470.5	1,883,411.7	6,941.1	13.34	0.24	64.34	259.9
	6	Simvastatin	261.2	31,741.2	1,807,426.0	6,479.8	8.23	0.14	40.32	122.7
	7	Hydrocodone-Acetaminophen	727.1	29,544.1	2,359,203.0	7,482.2	24.61	0.31	97.18	504.6
	8	Furosemide	137.9	27,544.9	1,446,438.2	5,314.9	5.01	0.10	25.95	67.1
	9	Gabapentin	490.1	24,808.1	2,857,603.1	4,813.8	19.76	0.17	101.81	336.5
	10	Metformin HCl	178.3	24,608.8	2,641,097.0	4,835.1	7.25	0.07	36.87	99.5
		Medicare Part D Spending, Top 10	4,248.0							2,352.3
		Medicare Part D Spending, All Drugs	136,841.9							77,659.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2016	1	Atorvastatin Calcium	757.0	44,481.1	2,491,418.6	9,407.7	17.02	0.30	80.47	343.7
	2	Levothyroxine Sodium	806.7	41,037.3	2,190,683.3	7,027.0	19.66	0.37	114.80	330.9
	3	Amlodipine Besylate	269.1	39,856.0	2,229,469.5	7,791.2	6.75	0.12	34.53	127.9
	4	Lisinopril	259.6	39,461.8	2,424,552.5	8,008.3	6.58	0.11	32.42	125.4
	5	Omeprazole	411.9	32,882.4	1,911,212.4	6,999.2	12.53	0.22	58.85	232.6
	6	Simvastatin	247.5	29,680.7	1,767,731.3	6,199.8	8.34	0.14	39.92	107.5
	7	Hydrocodone-Acetaminophen	727.4	28,504.6	2,264,853.4	7,222.6	25.52	0.32	100.72	507.6
	8	Furosemide	135.6	27,858.5	1,489,998.1	5,416.3	4.87	0.09	25.04	59.5
	9	Gabapentin	488.1	27,547.9	3,254,818.6	5,346.8	17.72	0.15	91.28	321.7
	10	Metformin HCl	184.2	25,462.7	2,847,474.7	5,119.8	7.23	0.06	35.97	98.9
		Medicare Part D Spending, Top 10	4,287.2							2,255.7
		Medicare Part D Spending, All Drugs	145,439.6							80,365.0

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2017	1	Atorvastatin Calcium	808.9	48,580.5	2,883,654.6	10,662.4	16.65	0.28	75.86	358.1
	2	Levothyroxine Sodium	836.1	41,396.3	2,296,350.5	7,343.7	20.20	0.36	113.85	303.8
	3	Amlodipine Besylate	267.1	40,572.5	2,389,099.9	8,300.7	6.58	0.11	32.18	125.9
	4	Lisinopril	256.2	38,680.3	2,496,970.1	8,168.2	6.62	0.10	31.37	118.2
	5	Omeprazole	394.3	31,251.6	1,890,974.6	6,865.0	12.62	0.21	57.44	221.0
	6	Gabapentin	494.5	29,424.6	3,574,001.9	5,806.5	16.81	0.14	85.17	325.9
	7	Furosemide	139.7	27,504.9	1,508,572.7	5,494.6	5.08	0.09	25.42	58.6
	8	Simvastatin	219.2	27,023.8	1,699,708.5	5,882.8	8.11	0.13	37.26	91.9
	9	Hydrocodone-Acetaminophen	498.4	26,893.1	2,104,453.6	6,846.1	18.53	0.24	72.80	336.1
	10	Metformin HCl	188.2	25,415.9	3,006,011.9	5,337.2	7.41	0.06	35.27	98.5
		Medicare Part D Spending, Top 10	4,102.6							2,038.1
		Medicare Part D Spending, All Drugs	154,229.6							81,332.7

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-6 continued Top 10 Most Frequently Prescribed Drugs, Medicare Part D, Ranked by Number of Claims

Year	Rank	Brand Name	Gross Drug Cost (\$M)	Claims (1000s)	Units Dispensed (1000s)	Beneficiaries (1000s)	GDC per Claim (\$)	GDC per Unit (\$)	GDC per User (\$)	Total Estimated Government (net of Cost-Sharing, in \$M)
2018	1	Atorvastatin Calcium	881.1	51,749.8	3,278,599.5	11,862.7	17.03	0.27	74.27	391.1
	2	Amlodipine Besylate	287.1	41,592.2	2,597,238.2	8,932.6	6.90	0.11	32.15	134.3
	3	Levothyroxine Sodium	828.1	41,536.5	2,402,980.3	7,596.0	19.94	0.34	109.02	269.8
	4	Lisinopril	264.8	37,750.6	2,585,182.3	8,340.1	7.01	0.10	31.74	119.8
	5	Gabapentin	579.7	30,730.5	3,772,070.1	6,163.4	18.86	0.15	94.05	389.9
	6	Omeprazole	388.9	29,402.2	1,862,537.1	6,769.4	13.23	0.21	57.46	218.3
	7	Furosemide	145.1	26,861.0	1,536,821.2	5,572.5	5.40	0.09	26.04	64.6
	8	Losartan Potassium	244.5	25,465.5	1,725,165.9	5,902.6	9.60	0.14	41.41	111.8
	9	Metformin HCl	189.8	24,653.6	3,118,256.8	5,467.4	7.70	0.06	34.71	99.0
	10	Hydrocodone-Acetaminophen	529.4	24,599.5	1,876,058.4	6,221.0	21.52	0.28	85.10	367.9
		Medicare Part D Spending, Top 10	4,338.5							2,166.7
		Medicare Part D Spending, All Drugs	167,628.6							85,207.5

Source: Analysis of Medicare claims data (carrier, outpatient) and Part D prescription drug event records by Acumen for ASPE.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-7 Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Total Spending

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2008	1	Quetiapine Fumarate	\$5.59	\$962,610,903
	2	Aripiprazole	\$12.98	\$864,665,984
	3	Olanzapine	\$14.00	\$655,125,344
	4	Risperidone	\$5.54	\$624,080,668
	5	Montelukast Sodium	\$3.46	\$452,731,574
	6	Palivizumab	\$1,603.26	\$440,111,778
	7	Lansoprazole	\$4.80	\$396,513,136
	8	Fluticasone/Salmeterol	\$3.38	\$372,878,837
	9	Esomeprazole Mag Trihydrate	\$5.00	\$351,395,745
	10	Topiramate	\$3.79	\$335,536,619
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$24,655,613,645
2009	1	Aripiprazole	\$14.05	\$1,086,225,218
	2	Quetiapine Fumarate	\$6.33	\$1,081,880,930
	3	Olanzapine	\$12.51	\$689,987,147
	4	Montelukast Sodium	\$3.73	\$509,973,605
	5	Esomeprazole Mag Trihydrate	\$5.31	\$435,692,163
	6	Lansoprazole	\$5.22	\$426,174,979
	7	Fluticasone/Salmeterol	\$3.58	\$413,942,343
	8	Palivizumab	\$1,689.25	\$398,919,752
	9	Methylphenidate Hcl	\$3.14	\$357,362,638
	10	Amphet Asp/Amphet/D-Amphet	\$5.50	\$286,553,078
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$26,029,704,453
2010	1	Aripiprazole	\$15.29	\$1,424,014,486
	2	Quetiapine Fumarate	\$7.36	\$1,411,178,430
	3	Olanzapine	\$17.07	\$848,755,243
	4	Montelukast Sodium	\$4.07	\$731,230,131
	5	Esomeprazole Mag Trihydrate	\$5.52	\$577,427,457
	6	Fluticasone/Salmeterol	\$3.81	\$572,958,809
	7	Methylphenidate Hcl	\$3.72	\$559,315,101
	8	Ziprasidone Hcl	\$7.65	\$376,368,788
	9	Palivizumab	\$1,771.61	\$370,882,218
	10	Emtricitabine/Tenofovir	\$33.23	\$368,035,678
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$32,999,520,529

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-7 continued Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Total Spending

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2011	1	Aripiprazole	\$16.92	\$1,667,289,509
	2	Quetiapine Fumarate	\$8.47	\$1,618,779,336
	3	Olanzapine	\$20.49	\$983,556,014
	4	Montelukast Sodium	\$4.65	\$892,903,221
	5	Methylphenidate Hcl	\$4.09	\$709,352,216
	6	Fluticasone/Salmeterol	\$4.14	\$640,832,463
	7	Esomeprazole Mag Trihydrate	\$5.82	\$573,215,157
	8	Emtricitabine/Tenofovir	\$35.81	\$455,304,078
	9	Albuterol Sulfate	\$3.10	\$453,110,973
	10	Efavirenz/Emtricitab/Tenofovir	\$55.06	\$443,793,760
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$37,679,593,904
2012	1	Aripiprazole	\$19.15	\$1,827,786,498
	2	Quetiapine Fumarate	\$10.86	\$985,626,781
	3	Montelukast Sodium	\$6.23	\$713,394,035
	4	Methylphenidate Hcl	\$4.63	\$703,317,971
	5	Fluticasone/Salmeterol	\$4.59	\$670,347,610
	6	Emtricitabine/Tenofovir	\$39.39	\$549,689,170
	7	Albuterol Sulfate	\$3.54	\$538,800,846
	8	Insulin Glargine,Hum.Rec.Anlog	\$13.13	\$524,024,969
	9	Efavirenz/Emtricitab/Tenofovir	\$59.21	\$497,667,487
	10	Lisdexamfetamine Dimesylate	\$5.23	\$459,895,293
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$37,771,206,170
2013	1	Abilify	\$23.72	\$2,011,387,678
	2	Advair Diskus	\$4.63	\$580,242,453
	3	Methylphenidate Er	\$5.09	\$578,534,690
	4	Vyvanse	\$6.01	\$559,256,432
	5	Truvada	\$41.69	\$522,333,513
	6	Cymbalta	\$6.97	\$498,940,945
	7	Atripla	\$63.69	\$494,445,974
	8	Seroquel Xr	\$14.44	\$414,436,248
	9	Synagis	\$2,346.53	\$387,004,169
	10	Adderall Xr	\$7.28	\$377,512,240
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$38,896,894,112

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-7 continued Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Total Spending

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2014	1	Abilify*	\$27.88	\$2,346,179,601
	2	Sovaldi	\$1,013.21	\$1,370,816,701
	3	Atorvastatin Calcium	\$8.58	\$1,137,100,298
	4	Truvada	\$43.54	\$638,258,728
	5	Vyvanse	\$6.74	\$582,714,805
	6	Lantus	\$21.49	\$570,672,682
	7	Atripla	\$68.57	\$566,065,841
	8	Methylphenidate ER	\$4.98	\$547,943,220
	9	Advair Diskus	\$4.97	\$519,066,484
	10	Lantus Solostar	\$22.51	\$442,768,093
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$47,308,056,863
2015	1	Harvoni	\$1,138.94	\$2,168,970,359
	2	Abilify*	\$32.00	\$2,035,844,536
	3	Lantus	\$25.40	\$769,469,517
	4	Vyvanse	\$7.43	\$723,823,649
	5	Truvada	\$46.36	\$716,826,487
	6	Methylphenidate ER	\$5.94	\$695,108,331
	7	Lantus Solostar	\$25.21	\$644,982,796
	8	Humira Pen	\$1,566.94	\$603,450,403
	9	Atripla	\$74.19	\$602,802,414
	10	Aripiprazole	\$21.27	\$601,296,137
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$57,820,639,442
2016	1	Harvoni	\$1,127.93	\$2,219,115,075
	2	Abilify*	\$31.84	\$1,071,359,522
	3	Humira Pen	\$1,922.67	\$986,629,482
	4	Vyvanse	\$8.25	\$889,167,642
	5	Latuda	\$32.70	\$868,210,466
	6	Lantus	\$25.08	\$787,424,300
	7	Lantus Solostar	\$24.98	\$762,526,226
	8	Truvada	\$49.79	\$762,180,023
	9	Methylphenidate ER	\$6.28	\$728,864,177
	10	Aripiprazole	\$11.12	\$676,114,263
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$64,455,170,411

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-7 continued Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Total Spending

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2017	1	Humira Pen	\$2,160.88	\$1,296,774,050
	2	Harvoni	\$1,086.43	\$1,217,366,921
	3	Latuda	\$37.30	\$1,101,252,524
	4	Vyvanse	\$8.88	\$973,599,150
	5	Epclusa	\$876.81	\$931,238,927
	6	Genvoya	\$90.55	\$815,376,747
	7	Invega Sustenna	\$1,522.21	\$748,862,538
	8	Methylphenidate ER	\$6.74	\$738,759,444
	9	Lyrica	\$6.54	\$727,773,266
	10	Suboxone	\$7.88	\$711,997,013
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$67,585,558,174
2018	1	Humira Pen	\$2,222.53	\$1,386,718,665
	2	Latuda	\$40.59	\$1,244,564,745
	3	Mavyret	\$239.60	\$1,021,288,242
	4	Vyvanse	\$9.46	\$1,015,172,563
	5	Genvoya	\$86.63	\$911,876,985
	6	Invega Sustenna	\$1,577.04	\$869,025,167
	7	Suboxone	\$7.85	\$788,866,456
	8	Lyrica	\$7.07	\$767,025,790
	9	Triumeq	\$83.32	\$602,684,956
	10	Flovent HFA	\$18.71	\$584,499,258
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$66,427,744,266

*Average spending per dosage unit reflects multiple routes of administration of the drug (e.g., intravenous, subcutaneous) which individually may have different unit pricing.

Source: 2006-2012 Lewin analysis of Medicaid State Drug Utilization public-use data, 2013-2018 Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-8 Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Spending per Unit

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2013	1	Eylea	\$28,726.14	\$11,329,044
	2	Lucentis	\$27,154.34	\$35,875,600
	3	Ilaris	\$16,441.73	\$6,641,802
	4	Supprelin La	\$15,778.66	\$11,234,408
	5	Retisert	\$13,283.28	\$212,532
	6	Stelara	\$11,528.58	\$29,800,559
	7	Somatuline Depot	\$9,951.89	\$1,655,617
	8	Jevtana	\$7,152.10	\$2,891,192
	9	H.P. Acthar	\$5,841.24	\$83,938,624
	10	Mozobil	\$5,459.21	\$2,049,180
		Medicaid Spending, Top 10		\$185,628,558
		Medicaid Spending, All Drugs		\$38,896,894,112
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2014	1	Eylea	\$31,551.35	\$23,343,424
	2	Lucentis	\$25,981.67	\$41,433,582
	3	Supprelin La	\$17,762.59	\$12,646,967
	4	Ilaris	\$16,091.56	\$16,749,878
	5	Stelara*	\$15,037.77	\$51,719,138
	6	Jetrea	\$14,755.80	\$212,484
	7	Somatuline Depot	\$11,530.85	\$2,172,294
	8	Marqibo	\$7,202.00	\$151,242
	9	Jevtana	\$6,978.23	\$3,339,192
	10	Panhematin	\$6,467.93	\$3,465,737
		Medicaid Spending, Top 10		\$155,233,938
		Medicaid Spending, All Drugs		\$47,308,056,863
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2015	1	Eylea	\$28,963.26	\$59,505,315
	2	Lucentis	\$25,695.61	\$41,833,622
	3	Supprelin La	\$21,008.09	\$14,748,730
	4	Lemtrada	\$18,809.72	\$1,079,678
	5	Calcium Disodium Versenate	\$16,182.57	\$28,158
	6	Stelara*	\$15,419.79	\$86,169,160
	7	Jetrea	\$14,237.22	\$209,344
	8	Xofigo	\$14,211.63	\$448,434
	9	Somatuline Depot	\$12,468.23	\$4,337,608
	10	Ilaris	\$10,876.21	\$31,004,109
		Medicaid Spending, Top 10		\$239,364,157
		Medicaid Spending, All Drugs		\$57,820,639,442

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-8 continued Top 10 High-Cost Prescribed Drugs, Medicaid, Ranked by Spending per Unit

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2016	1	Eylea	\$29,948.78	\$123,603,852
	2	Supprelin La	\$25,814.53	\$19,438,343
	3	Lucentis	\$21,080.72	\$40,130,873
	4	Xofigo	\$19,776.19	\$1,097,539
	5	Stelara*	\$16,553.34	\$143,951,167
	6	Lemtrada	\$12,885.56	\$10,374,381
	7	Jetrea	\$11,941.05	\$161,443
	8	Somatuline Depot	\$11,731.02	\$8,529,336
	9	Signifor Lar	\$11,560.15	\$1,260,056
	10	Marqibo	\$9,196.10	\$320,944
		Medicaid Spending, Top 10		\$348,867,934
		Medicaid Spending, All Drugs		\$64,455,170,411
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2017	1	Eylea	\$32,121.62	\$160,981,290
	2	Supprelin La	\$28,261.40	\$21,676,491
	3	Lucentis	\$19,695.11	\$40,561,698
	4	Spinraza	\$19,042.25	\$124,364,964
	5	Lemtrada	\$17,862.46	\$17,515,040
	6	Xofigo	\$17,838.78	\$2,296,440
	7	Retisert	\$17,355.51	\$225,622
	8	Krystexxa	\$16,588.18	\$1,476,348
	9	Stelara*	\$16,533.93	\$228,530,191
	10	Ilaris	\$16,152.85	\$52,845,407
		Medicaid Spending, Top 10		\$650,473,490
		Medicaid Spending, All Drugs		\$67,585,558,174
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2018	1	Campath	\$31,788.87	\$267,026
	2	Supprelin La	\$30,480.93	\$22,574,174
	3	Eylea	\$29,531.34	\$168,289,609
	4	Brineura	\$26,503.70	\$795,111
	5	Lucentis	\$21,484.19	\$53,075,737
	6	Xofigo	\$18,746.35	\$2,154,405
	7	Retisert	\$17,441.25	\$197,470
	8	Stelara*	\$17,274.02	\$334,701,308
	9	Spinraza	\$17,241.35	\$223,505,259
	10	Krystexxa	\$15,948.96	\$9,102,868
		Medicaid Spending, Top 10		\$814,662,969
		Medicaid Spending, All Drugs		\$66,427,744,266

*Average spending per dosage unit reflects multiple routes of administration of the drug (e.g., intravenous, subcutaneous) which individually may have different unit pricing.

Source: Centers for Medicaid and Medicaid Services analysis of national Medicaid drug utilization data.

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-9 Top 10 Most Frequently Prescribed Drugs, Medicaid, Ranked by Number of Claims

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2008	1	Hydrocodone Bit/Acetaminophen	\$0.23	\$112,492,086
	2	Amoxicillin	\$0.09	\$64,329,996
	3	Ibuprofen	\$0.09	\$49,200,240
	4	Azithromycin	\$2.40	\$145,355,482
	5	Alprazolam	\$0.13	\$39,489,546
	6	Clonazepam	\$0.20	\$51,623,548
	7	Lorazepam	\$0.27	\$57,573,711
	8	Montelukast Sodium	\$3.46	\$452,731,574
	9	Aspirin	\$0.09	\$14,808,907
	10	Loratadine	\$0.24	\$44,987,853
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$24,655,613,645
2009	1	Hydrocodone Bit/Acetaminophen	\$0.24	\$128,705,221
	2	Amoxicillin	\$0.10	\$74,540,834
	3	Ibuprofen	\$0.09	\$54,549,556
	4	Azithromycin	\$1.76	\$138,836,617
	5	Albuterol Sulfate	\$3.05	\$221,791,801
	6	Alprazolam	\$0.12	\$40,524,359
	7	Clonazepam	\$0.13	\$38,998,901
	8	Lorazepam	\$0.16	\$36,034,159
	9	Montelukast Sodium	\$3.73	\$509,973,605
	10	Loratadine	\$0.22	\$47,178,424
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$26,029,704,453
2010	1	Hydrocodone Bit/Acetaminophen	\$0.22	\$170,503,632
	2	Amoxicillin	\$0.09	\$108,328,686
	3	Ibuprofen	\$0.09	\$75,096,982
	4	Albuterol Sulfate	\$2.87	\$356,562,839
	5	Azithromycin	\$1.53	\$169,561,708
	6	Loratadine	\$0.17	\$60,859,947
	7	Alprazolam	\$0.13	\$53,806,189
	8	Clonazepam	\$0.13	\$48,683,997
	9	Montelukast Sodium	\$4.07	\$731,230,131
	10	Lisinopril	\$0.19	\$36,786,525
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$32,999,520,529

**Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in
Medicare Part B, Medicare Part D, and Medicaid**

Table A-9 continued Top 10 Most Frequently Prescribed Drugs, Medicaid, Ranked by Number of Claims

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2011	1	Hydrocodone Bit/Acetaminophen	\$0.20	\$185,851,039
	2	Amoxicillin	\$0.09	\$127,704,574
	3	Ibuprofen	\$0.09	\$82,215,957
	4	Albuterol Sulfate	\$3.10	\$453,110,973
	5	Azithromycin	\$1.47	\$182,600,085
	6	Alprazolam	\$0.12	\$59,014,244
	7	Loratadine	\$0.16	\$54,014,819
	8	Clonazepam	\$0.13	\$53,746,692
	9	Lisinopril	\$0.19	\$43,334,762
	10	Montelukast Sodium	\$4.65	\$892,903,221
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$37,679,593,904
2012	1	Hydrocodone Bit/Acetaminophen	\$0.21	\$185,509,603
	2	Amoxicillin	\$0.08	\$109,425,719
	3	Albuterol Sulfate	\$3.54	\$538,800,846
	4	Ibuprofen	\$0.08	\$71,155,236
	5	Azithromycin	\$1.29	\$160,450,118
	6	Omeprazole	\$0.42	\$116,061,714
	7	Alprazolam	\$0.11	\$55,748,894
	8	Loratadine	\$0.16	\$48,268,866
	9	Lisinopril	\$0.16	\$40,290,457
	10	Clonazepam	\$0.12	\$51,067,101
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$37,771,206,170
2013	1	Hydrocodone-Acetaminophen	\$0.26	\$195,051,575
	2	Amoxicillin	\$0.12	\$98,135,545
	3	Ibuprofen	\$0.11	\$62,215,054
	4	Omeprazole	\$0.38	\$114,616,969
	5	Azithromycin	\$1.66	\$129,482,064
	6	Lisinopril	\$0.15	\$38,977,743
	7	Loratadine	\$0.18	\$40,981,632
	8	Cetirizine Hcl	\$0.16	\$53,416,090
	9	Albuterol Sulfate	\$0.15	\$109,339,045
	10	Gabapentin	\$0.27	\$150,887,536
			Medicaid Spending, Top 10	
		Medicaid Spending, All Drugs		\$38,896,894,112

**Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in
Medicare Part B, Medicare Part D, and Medicaid**

Table A-9 continued Top 10 Most Frequently Prescribed Drugs, Medicaid, Ranked by Number of Claims

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2014	1	Hydrocodone-Acetaminophen	\$0.30	\$219,659,896
	2	Amoxicillin	\$0.13	\$91,646,982
	3	Ibuprofen	\$0.12	\$70,387,995
	4	Omeprazole	\$0.30	\$98,303,694
	5	Lisinopril	\$0.14	\$42,780,167
	6	Gabapentin	\$0.21	\$149,205,210
	7	Azithromycin*	\$1.68	\$110,672,172
	8	Metformin HCl	\$0.10	\$43,208,354
	9	Levothyroxine Sodium*	\$0.38	\$83,162,384
	10	Fluticasone Propionate*	\$1.04	\$109,336,321
		Medicaid Spending, Top 10		\$1,018,363,174
		Medicaid Spending, All Drugs		\$47,308,056,863
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2015	1	Hydrocodone-Acetaminophen	\$0.38	\$276,818,616
	2	Amoxicillin	\$0.12	\$108,565,708
	3	Ibuprofen	\$0.13	\$87,088,592
	4	Lisinopril	\$0.12	\$47,332,269
	5	Omeprazole	\$0.25	\$93,897,592
	6	Gabapentin	\$0.21	\$200,563,295
	7	Azithromycin*	\$1.55	\$122,883,334
	8	Metformin HCl	\$0.08	\$45,565,299
	9	Levothyroxine Sodium*	\$0.44	\$118,249,890
	10	Fluticasone Propionate*	\$0.79	\$104,247,810
		Medicaid Spending, Top 10		\$1,205,212,405
		Medicaid Spending, All Drugs		\$57,820,639,442
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2016	1	Amoxicillin	\$0.12	\$107,167,584
	2	Hydrocodone-Acetaminophen	\$0.35	\$237,541,101
	3	Ibuprofen	\$0.12	\$88,413,480
	4	Lisinopril	\$0.11	\$47,765,662
	5	Gabapentin	\$0.17	\$199,399,163
	6	Omeprazole	\$0.20	\$80,766,832
	7	Atorvastatin Calcium	\$0.35	\$112,403,412
	8	Metformin HCl	\$0.07	\$47,742,536
	9	Levothyroxine Sodium*	\$0.44	\$130,651,279
	10	Ventolin HFA	\$2.91	\$500,574,838
		Medicaid Spending, Top 10		\$1,552,425,888
		Medicaid Spending, All Drugs		\$64,455,170,411

Appendix: Top 10 Drugs by Total Cost, Spending Per Unit, and Prescription Frequency in Medicare Part B, Medicare Part D, and Medicaid

Table A-9 continued Top 10 Most Frequently Prescribed Drugs, Medicaid, Ranked by Number of Claims

Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2017	1	Amoxicillin	\$0.12	\$106,460,986
	2	Gabapentin	\$0.16	\$207,348,756
	3	Ibuprofen	\$0.11	\$86,397,134
	4	Lisinopril	\$0.12	\$52,775,860
	5	Hydrocodone-Acetaminophen	\$0.32	\$182,209,566
	6	Atorvastatin Calcium	\$0.31	\$121,688,101
	7	Omeprazole	\$0.21	\$81,990,323
	8	Ventolin HFA	\$2.92	\$565,975,929
	9	Metformin HCl	\$0.08	\$53,576,325
	10	Levothyroxine Sodium*	\$0.42	\$132,160,514
		Medicaid Spending, Top 10		\$1,590,583,494
		Medicaid Spending, All Drugs		\$67,585,558,174
Year	Rank	Generic Drug Name	Spending per Unit	Total Spending
2018	1	Amoxicillin	\$0.13	\$97,170,954
	2	Gabapentin	\$0.14	\$182,622,489
	3	Ibuprofen	\$0.11	\$83,378,906
	4	Atorvastatin Calcium	\$0.26	\$114,085,012
	5	Lisinopril	\$0.13	\$55,164,969
	6	Omeprazole	\$0.19	\$73,039,418
	7	Ventolin HFA	\$2.81	\$522,020,935
	8	Fluticasone Propionate*	\$0.67	\$104,298,341
	9	Levothyroxine Sodium*	\$0.40	\$124,542,600
	10	Amlodipine Besylate	\$0.15	\$50,590,301
		Medicaid Spending, Top 10		\$1,406,913,925
		Medicaid Spending, All Drugs		\$66,427,744,266

*Average spending per dosage unit reflects multiple routes of administration of the drug (e.g., intravenous, subcutaneous) which individually may have different unit pricing.

Source: 2006-2012 Lewin analysis of Medicaid State Drug Utilization public-use data, 2013-2018 Centers for Medicare & Medicaid Services analysis of national Medicaid drug utilization data.