

MAGELLAN RX MANAGEMENT

MEDICAL PHARMACY

TREND REPORT™

2018 NINTH EDITION



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Introduction

Magellan Rx Management is pleased to present the ninth edition of our Medical Pharmacy Trend Report, the only detailed source analyzing medical benefit drug claims for trends and data benchmarking as well as current medical benefit drug management approaches.

The last 12 months saw significant changes to many provider-administered therapeutic categories covered on the medical benefit. Novel oncology therapies and immunotherapy treatments continued to drive the highest spend. Other categories such as hemophilia, enzyme replacement drugs, autoimmune agents for gastrointestinal (GI) disorders, and new entrants in the asthma category contributed to the \$4 per-member-per-month (PMPM) increase in medical benefit spend. And the trend is not slowing.

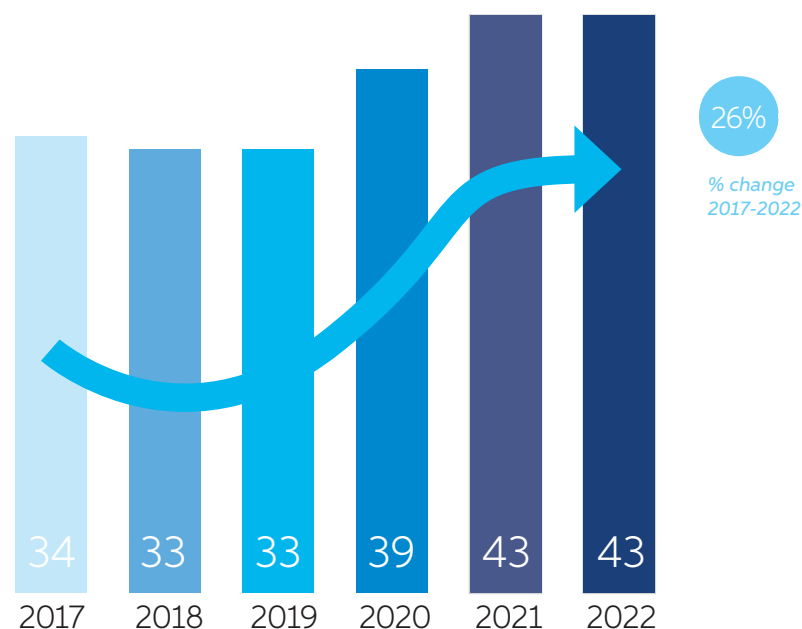
By 2022, the number of billion-dollar drugs will rise by 26% from 34 drugs in 2017 to 43 drugs in 2022. In the autoimmune category specifically, PMPM drug costs are expected to increase 90% from \$1.40 to \$2.66 over the same time period. Within oncology, chimeric antigen receptor therapy (CAR-T) alone is expected to increase 530% from \$0.10 in 2018 to \$0.63 in 2022.

The big story again this year was the increase in oncology immunotherapy products, specifically Opdivo and Keytruda. While Opdivo made a strong debut in 2016, ranking #8 in commercial medical benefit spend and #3 in Medicare medical benefit spend, it continued to climb in 2017 moving up five spots to #3 in commercial. Keytruda started at #39 in commercial and #21 in Medicare, but made up ground under both lines of business (LOB) in 2017 moving up to #14 in commercial and #9 in Medicare.

Another area to watch is biosimilars. For each iteration of this report, Rituxan, Herceptin, Avastin, Neulasta, and Remicade have been the highest spend commercial medical benefit drugs. Looking forward, in 2019, biosimilars may begin to have a significant impact on the medical benefit. Remicade has had a biosimilar on the market since 2016, Neulasta now has two biosimilars available and Rituxan, Herceptin, and Avastin all have FDA approved biosimilars due to potentially launch in 2019. The 2018 Magellan Rx Medical Pharmacy Trend Report goes in depth with biosimilar reimbursement trends to assist you in jumping ahead of this movement.

Again this year, we are bringing readers new and exciting information to enhance the report and increase the insights our audience can glean for their medical benefit strategy.

Billion-Dollar Drugs



Enhancements to the 2018 report include:

- A new line of business; Medicaid analysis across all claims data metrics
- Additional forecasting for the most significant medical benefit categories

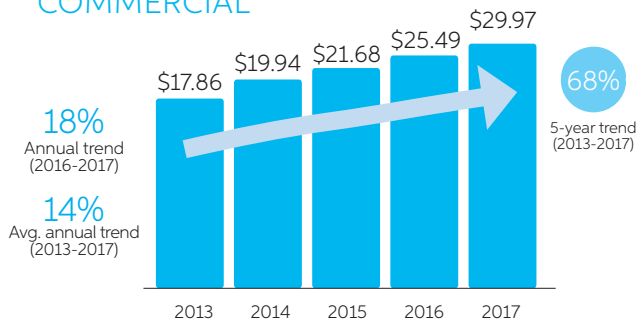
We know you will find this report useful and unique. The topics provide valuable insight on medical pharmacy, as well as key legislative outcomes and management trends affecting the medical pharmacy benefit. This report is another way Magellan Rx Management gives you the tools to make smarter decisions every day for managing the medical pharmacy benefit.

You can download the report at magellanrx.com

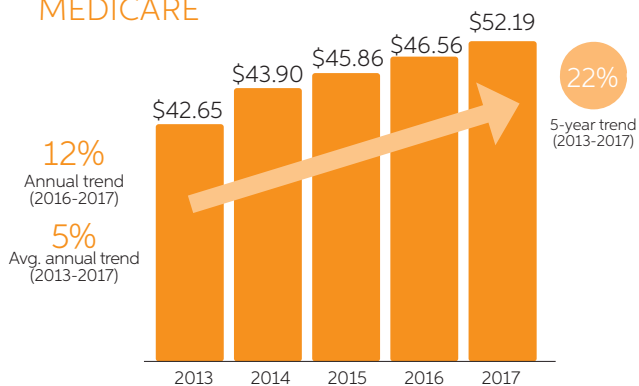
Executive Summary

TREND IN PMPM SPEND 2013-2017

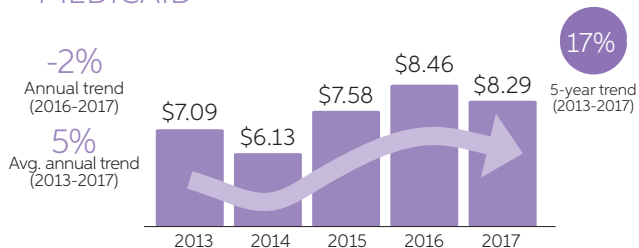
COMMERCIAL



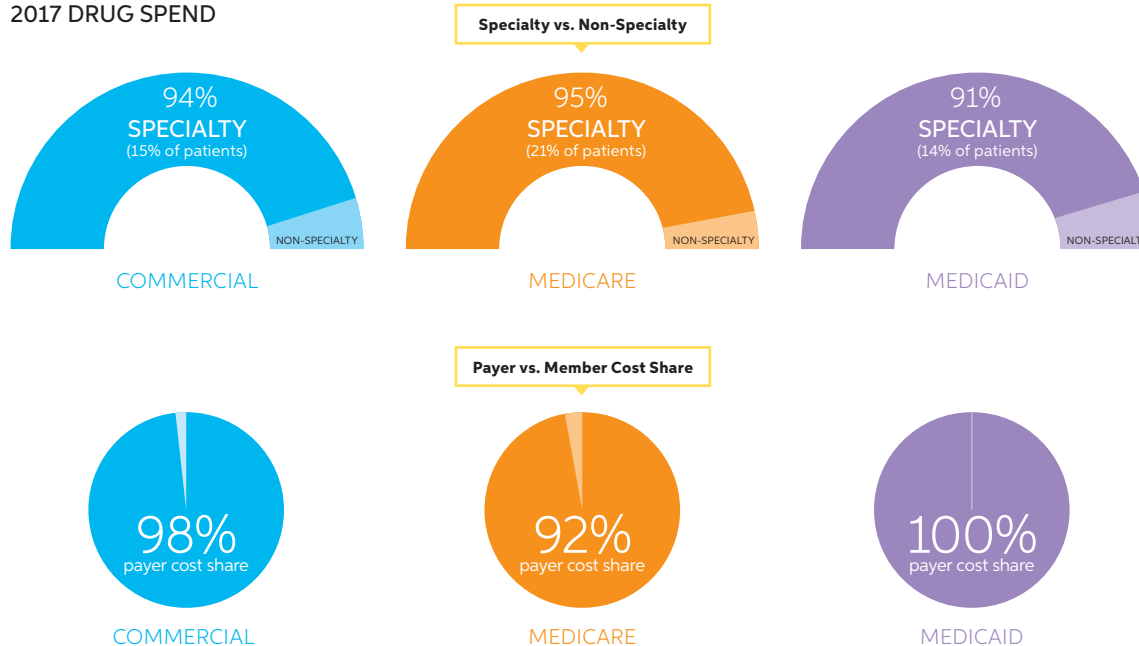
MEDICARE



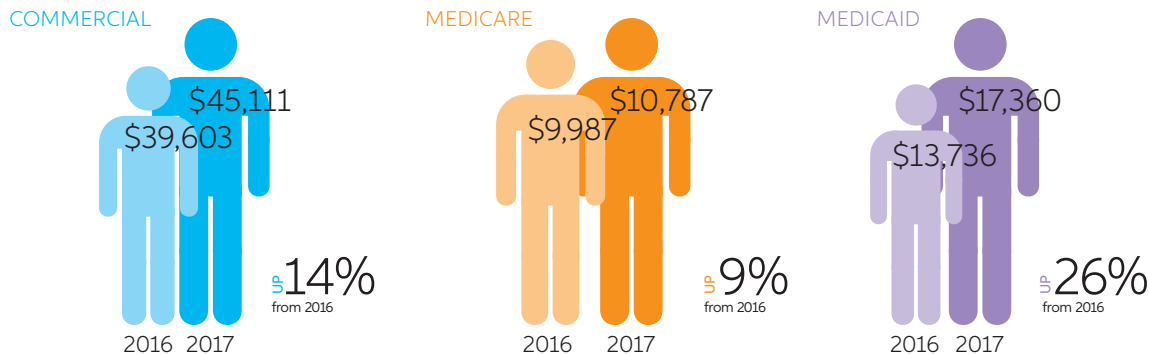
MEDICAID



2017 DRUG SPEND



2017 AVERAGE ANNUAL COST PER PATIENT (TOP 10 DRUGS)



2017 DRUG TRENDS

COMMERCIAL

Ⓢ **203%**

KEYTRUDA:
Rank: From #39 to #14
PMPM: \$0.16 to \$0.48

Ⓢ **73%**

ENTYVIO:
Rank: From #13 to #9
PMPM: \$0.40 to \$0.69

MEDICARE

Ⓢ **244%**

KEYTRUDA:
Rank: From #21 to #9
PMPM: \$0.49 to \$1.70

Ⓢ **35%**

PERJETA:
Rank: From #22 to #17
PMPM: \$0.45 to \$0.62

MEDICAID

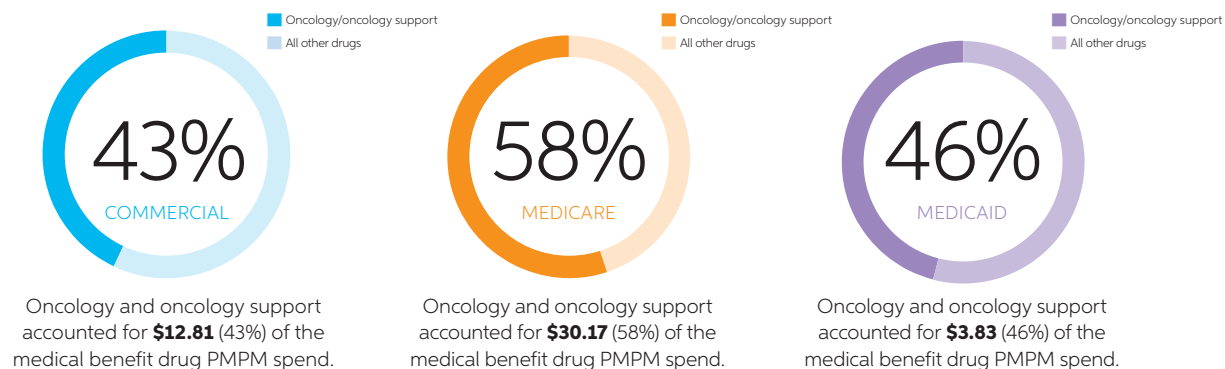
Ⓢ **338%**

KEYTRUDA:
Rank: From #43 to #10
PMPM: \$0.04 to \$0.19

Ⓢ **81%**

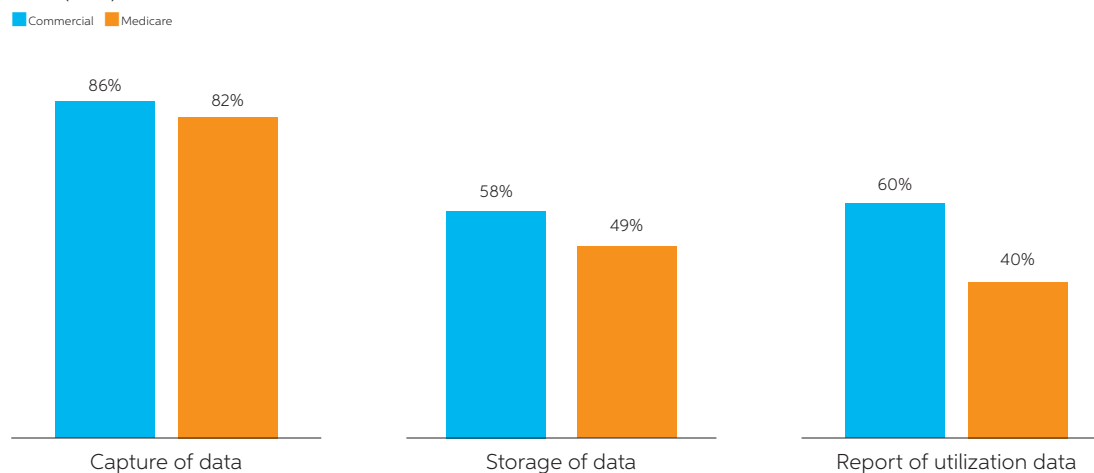
MAKENA:
Rank: From #13 to #4
PMPM: \$0.16 to \$0.28

CATEGORY TREND: ONCOLOGY AND ONCOLOGY SUPPORT



PAYER NDC DATA COLLECTION*

The majority of plans, 82% of commercial plans and 79% of Medicare Advantage, collected or will collect National Drug Code (NDC) data in the next 12-18 months.

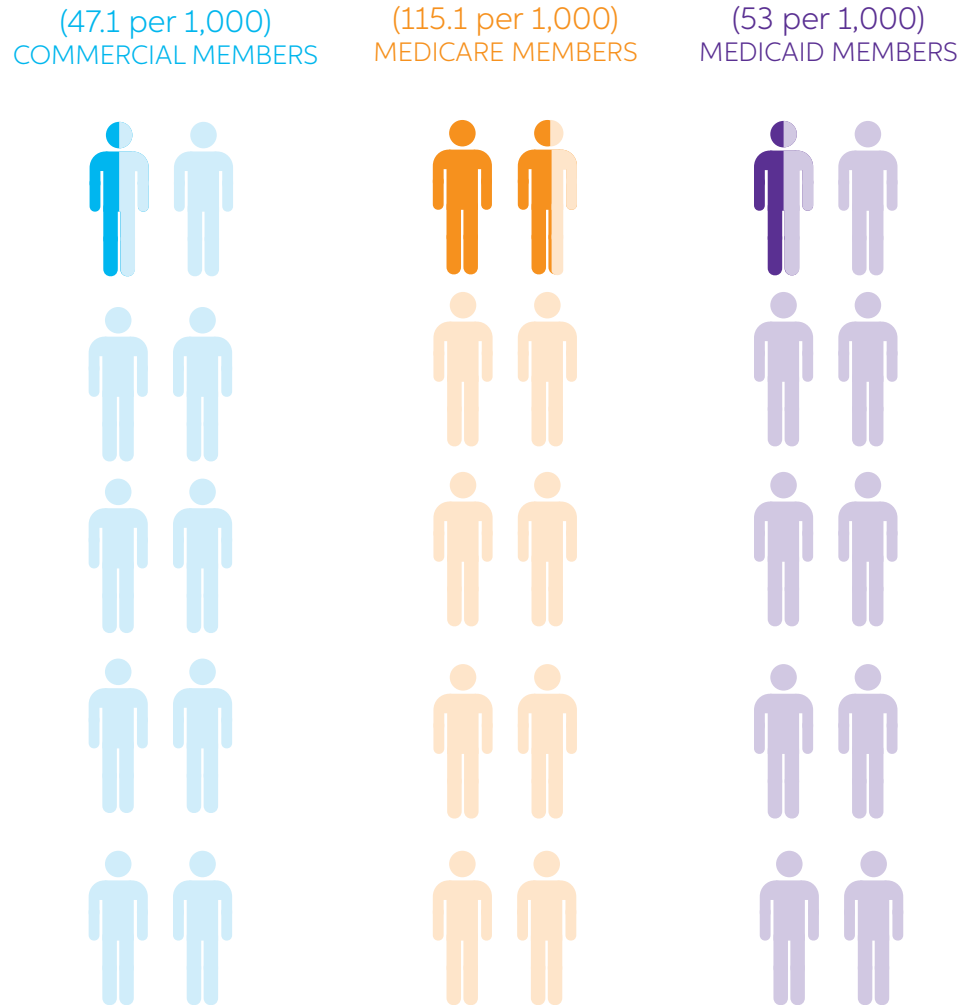


*Medicaid data was included in claims data set only, not payer survey.

Medical Benefit Pharmacy Overview

FIGURE 1

2017 Medical Pharmacy Claim Volume



Medical pharmacy continues to be driven by low-volume, high-cost specialty medications. In 2017, 15% of patients drove 94% of the \$29.97 PMPM commercial medical pharmacy spend. In Medicare, 21% of patients drove 95% of the \$52.19 PMPM medical pharmacy spend. The story is similar in Medicaid where 14% of patients drove 91% of the \$8.29 PMPM medical pharmacy spend (see **Executive Summary on pages 2-3**).

Similarly, when it comes to claim volume, the number of patients with a medical pharmacy claim is a small percentage of total pharmacy claims. In 2017, approximately 5% (47.1 per 1,000) of commercial health plan members, 12% (115.1 per 1,000) of Medicare Advantage members, and 5% (53 per 1,000) of Medicaid members had a medical pharmacy claim (see **figure 1**).

In 2017, overall commercial medical pharmacy spend was \$29.97 PMPM, an 18% increase from \$25.49 in 2016. Medicare PMPM saw its largest increase in more than five years to \$52.19, up 12% from \$46.56 in 2016. The majority, about 50%, of the medical benefit spend was in the hospital outpatient setting for commercial, accounting for \$14.83 PMPM; and in the physician office, about 60% for Medicare, accounting for \$30.62 PMPM (see **figure 2**). New this year, analysis for the Medicaid line of business shows \$8.29 PMPM for medical pharmacy, a decrease of 2% from \$8.46 in 2016.

The commercial hospital outpatient setting not only housed the majority of medical benefit spend, but also more than doubled (100% to 109% higher) the costs of the physician office when indexed to national benchmarks such as average sales price (ASP), average wholesale price (AWP), and wholesale acquisition cost (WAC). In comparison, the dynamic was not as acute in Medicare, where the majority of spend was in the physician office but drug costs were 5% to 7% higher in the hospital outpatient setting. The majority of spend for Medicaid lands in the hospital outpatient site of service (SOS), but the reimbursement figures land somewhere in the middle where hospital outpatient costs were 34% to 68% higher than in the physician office (see **appendix figure A2**).

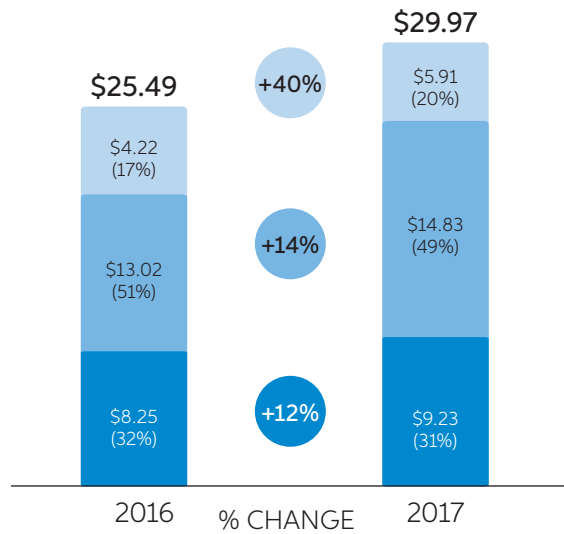
FIGURE 2

Medical Pharmacy Allowed Amount PMPM 2016-2017

COMMERCIAL

■ Physician ■ Hospital OP ■ Home

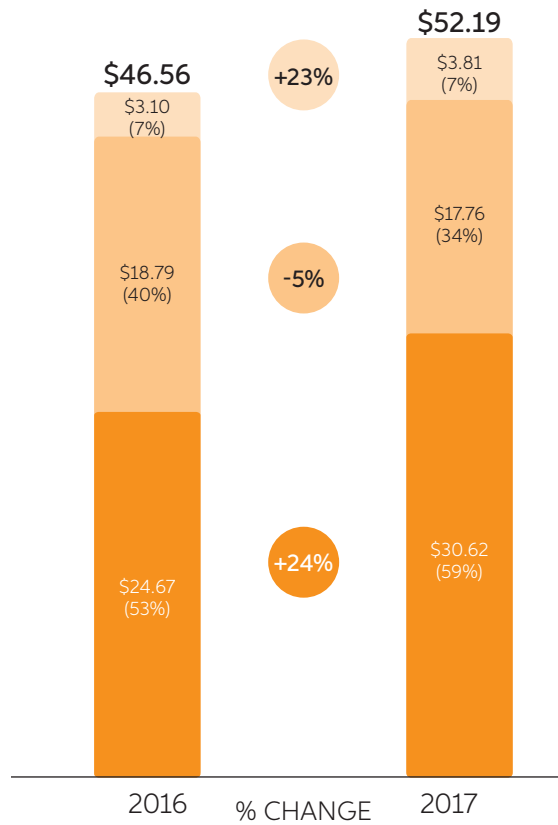
Annual Trend: 18%



MEDICARE

■ Physician ■ Hospital OP ■ Home

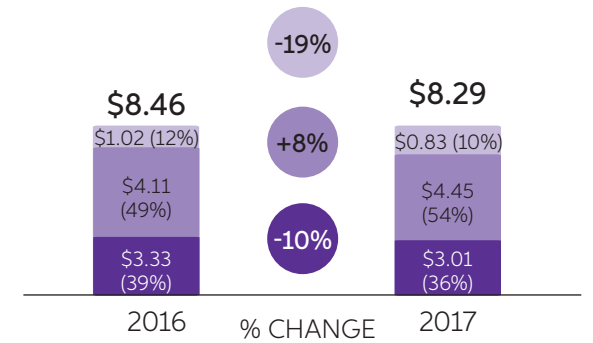
Annual Trend: 12%



MEDICAID

■ Physician ■ Hospital OP ■ Home

Annual Trend: -2%



Medical Benefit Trend Drivers

In 2017, commercial and Medicare medical benefit PMPM trend was driven by increases in unit volume with commercial units per patient seeing a 26% increase. In Medicare, prevalence, or overall increase in the number of units, had the largest effect on the increase in trend. The trend was counterbalanced by allowed per unit costs, analyzed through ASP index changes and inflation, which decreased when normalized for new drugs from 2016 to 2017 for all lines of business (see figure 3).

FIGURE 3

2017 Trend Contributors by LOB

	COMMERCIAL	MEDICARE
Unit Volume	18.7% Prevalence -6.9% Unit per Patient 25.6%	24.3% Prevalence 16.1% Unit per Patient 8.1%
Allowed per Unit	-1.1% Inflation -8.2% ASP Index 7.1%	-12.2% Inflation -10.0% ASP Index -2.2%
Overall PMPM Trend	17.6%	12.1%

Medical Benefit Category Trends

In 2017, the commercial oncology and oncology support categories accounted for 43% of PMPM or \$12.81 PMPM. Oncology alone accounted for 34% of PMPM or \$10.12 PMPM and oncology support accounted for 9% of PMPM or \$2.69 PMPM (see figure 4). The biologic drugs for autoimmune disorders (BDAIDs) category in total accounted for 18% of PMPM or \$5.29, while the highest spend BDAID category, Crohn's disease/ulcerative colitis (UC), accounted for \$3.01 PMPM or 10% on its own. The fifth highest category, antihemophilic factor, saw the largest increase in PMPM of 62%, from \$1.03 to \$1.66, possibly due to new extended half-life products with higher costs now on the market (see figure 4).

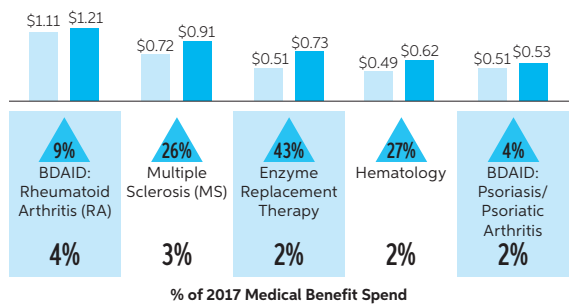
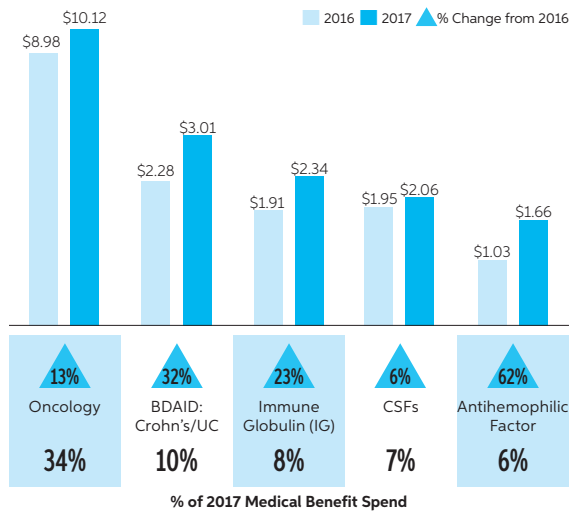
For Medicare, oncology and oncology support contributed more than half of spend at 58% of PMPM or \$30.17 PMPM (see figure 4). Colony-stimulating factors (CSFs) experienced a 1% decrease in PMPM, led by reduced utilization of Neulasta. Starting in 2016, CSFs experienced a decline in use, possibly related to new immunotherapy agents contributing to a decline in the use of myelosuppressive chemotherapy regimens. The second highest spend category, ophthalmic injections, saw a significant trend in PMPM of 20% potentially due to continued effects of the Protocol T study (see category section on page 19 for details). Similar to commercial, the sixth highest spend category, antihemophilic factor, saw its PMPM trend almost triple at 185%, moving from \$0.45 to \$1.28.

The story was similar in Medicaid where oncology and oncology support contributed 46% of spend or \$3.83 PMPM (see figure 4). The BDAID category contributed 11% of PMPM or \$0.93 PMPM and was led by Crohn's/UC accounting for 7% of PMPM or \$0.54 PMPM on its own. Unlike the commercial and Medicare lines of business, contraceptives and progestins made a larger impact in Medicaid, ranking #5 and #6, respectively.

FIGURE 4

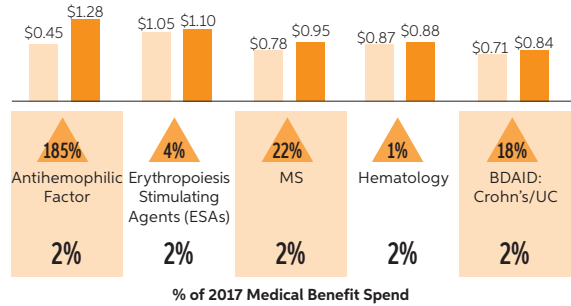
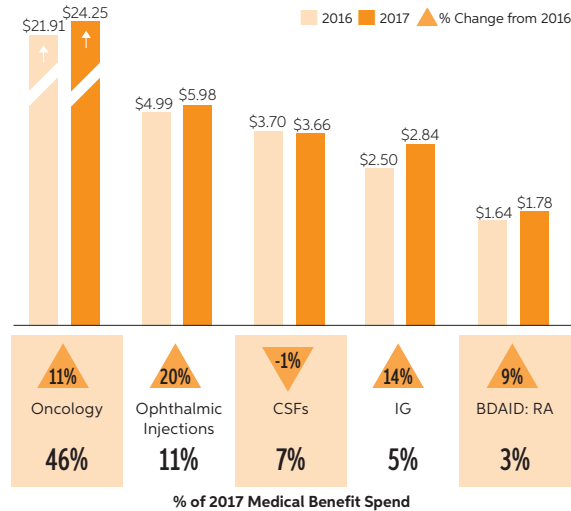
Top 10 Disease States or Drug Categories by PMPM Spend 2016-2017

COMMERCIAL



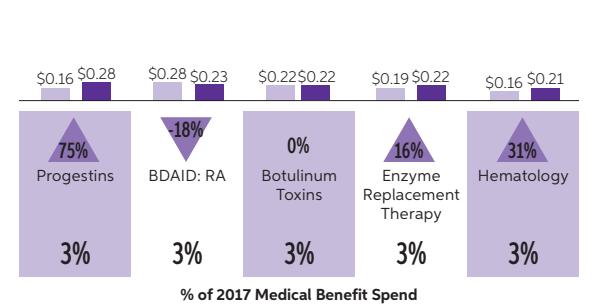
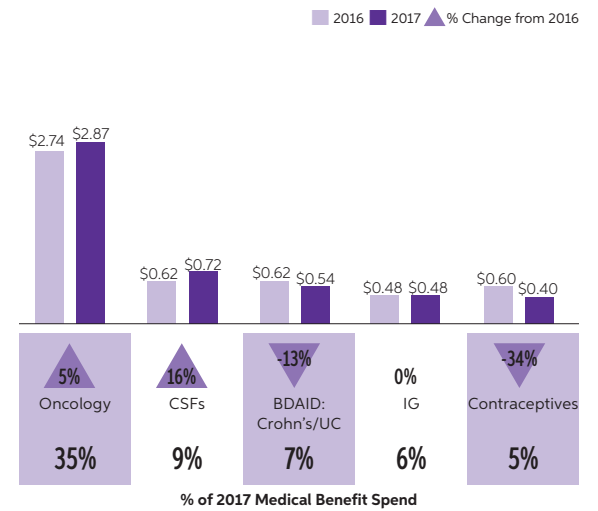
\$19.49 TOP 10 PMPM 2016
\$23.19 TOP 10 PMPM 2017
77% % OF 2017 MEDICAL BENEFIT SPEND

MEDICARE



\$38.61 TOP 10 PMPM 2016
\$43.56 TOP 10 PMPM 2017
83% % OF 2017 MEDICAL BENEFIT SPEND

MEDICAID

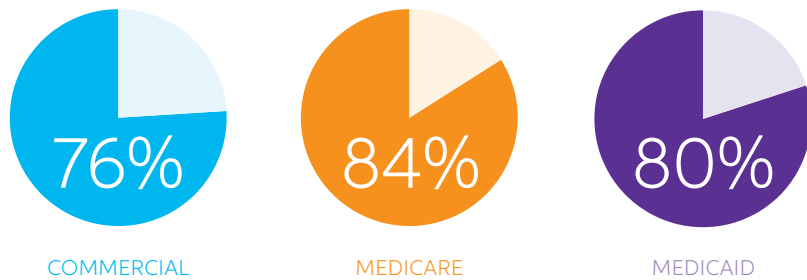


\$6.07 TOP 10 PMPM 2016
\$6.18 TOP 10 PMPM 2017
75% % OF 2017 MEDICAL BENEFIT SPEND

Medical Benefit Drug Trends

This year, the number of Healthcare Common Procedure Coding System (HCPCS) codes in this analysis, increased to 1,065 in 2017 from 925 in 2015-2016, illustrating the rapid growth in the number of classified medical benefit drugs. As with Keytruda and Opdivo in 2016, introduction of these drugs often made an immediate impact to the benefit. And these drugs often debut within the top 25-50 drug spend rankings. As has historically been the case, these top drugs drove the majority of spend with the top 50 driving 76% of spend in commercial, 84% of spend in Medicare, and 80% of spend in Medicaid (see appendix figure A12 for details).

% of PMPM Cost Driven by Top 50 Drugs



Top Drug Trends

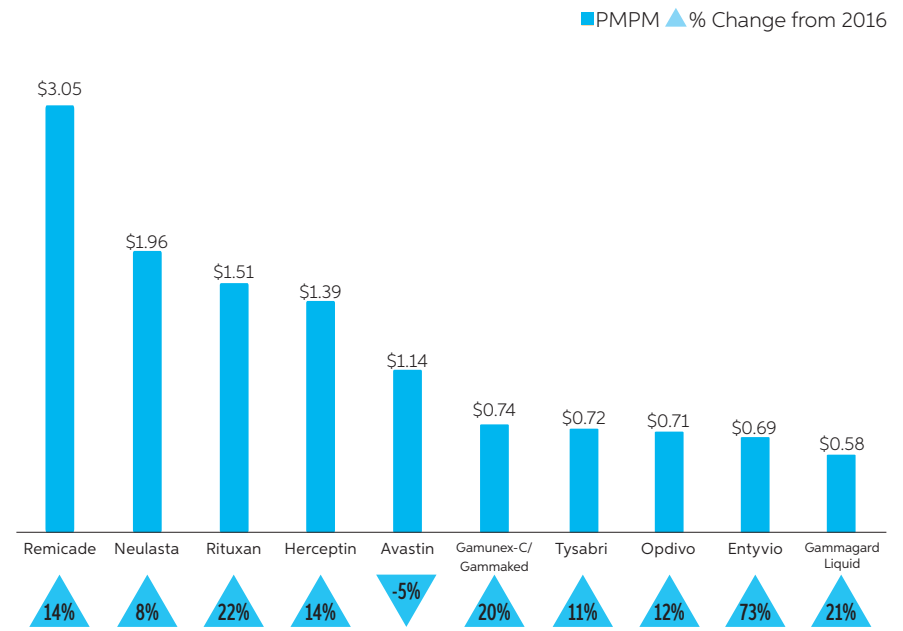
For the ninth straight year, the top five commercial drugs are Remicade, Neulasta, Rituxan, Herceptin, and Avastin. After its debut in the top 10 last year, Opdivo remained the eighth highest spend drug in commercial and the third highest spend drug in Medicare. In Medicaid, Opdivo jumped one spot from sixth in 2016 to fifth in 2017 (see figure 5).

In 2017, Keytruda increased in rank across all LOBs after experiencing slow growth in 2016. In commercial, Keytruda jumped from #39 to #14 with a 203% increase in PMPM from \$0.16 to \$0.48. Similarly, in Medicare, it went from #21 to #9 with a 244% increase in PMPM from \$0.49 to \$1.70. Medicaid saw the largest jump in PMPM for Keytruda with a 338% increase in PMPM from \$0.04 to \$0.19 moving up from #43 to #10. Much of this growth can be attributed to Keytruda's five approvals spanning from March to September 2017 (see category profile on page 16 for details).

FIGURE 5

2017 Top 10 Medical Benefit Drugs by Spend

COMMERCIAL



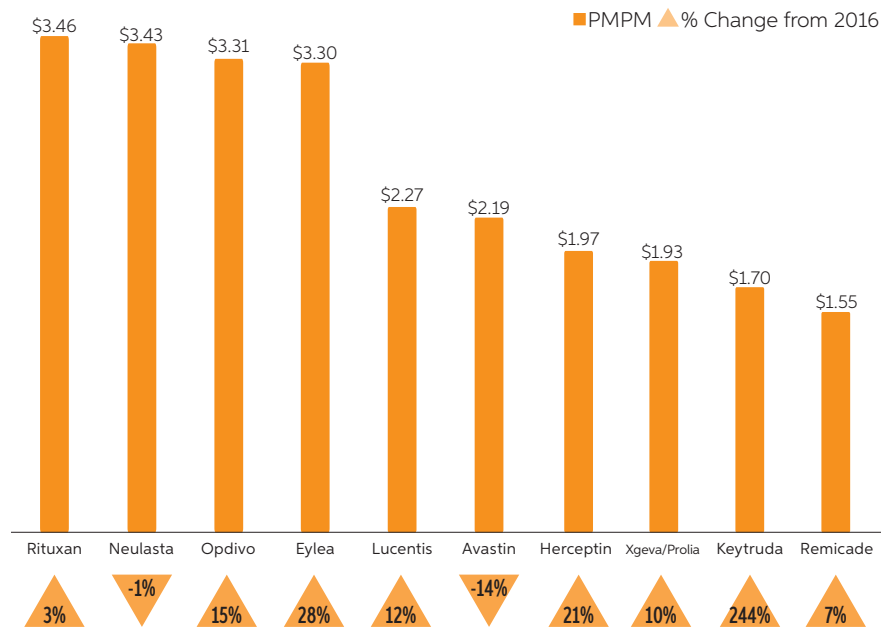
	PMPM	Cost per Patient	Members per 1,000	ASP Index	AWP Index
Top 10 Totals & Averages*	\$12.51 ▲14%	\$45,111 ▲14%	1.2 ▲0.5%	1.67	1.11
All Medical Pharmacy Totals & Averages*	\$29.97 ▲18%	\$2,412 ▲23%	51.1 ▼5%	1.76	1.13

*%=percent change in PMPM 2016-2017.

FIGURE 5 (CONT.)

2017 Top 10 Medical Benefit Drugs by Spend

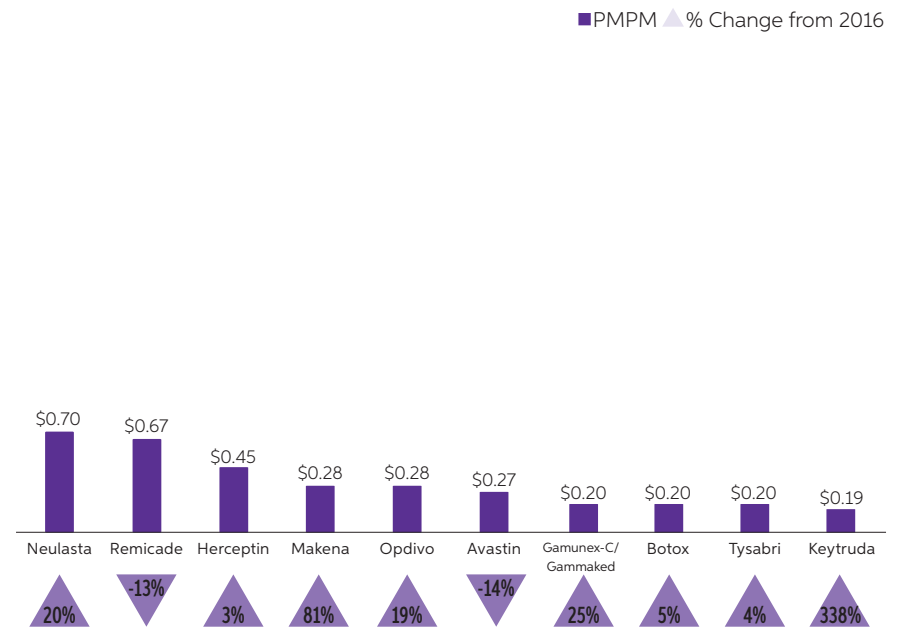
MEDICARE



	PMPM	Cost per Patient	Members per 1,000	ASP Index	AWP Index
Top 10 Totals & Averages*	\$25.10 ▲13%	\$10,787 ▲9%	10.4 ▲7%	1.07	0.78
All Medical Pharmacy Totals & Averages	\$52.19 ▲12%	\$1,915 ▼6%	118.6 ▲23%	1.12	0.73

*%=percent change in PMPM 2016-2017.

MEDICAID



	PMPM	Cost per Patient	Members per 1,000	ASP Index	AWP Index
Top 10 Totals & Averages*	\$3.43 ▲12%	\$17,360 ▲26%	0.8 ▼12%	1.58	0.93
All Medical Pharmacy Totals & Averages	\$8.29 ▼2%	\$854 ▼4%	38.4 ▲2%	1.52	0.91

Unclassified Codes

Unclassified medical benefit drugs had another significant year with the introduction of Exondys, Ocrevus, and Spinraza. As a combined category, unclassified codes ranked #9 in commercial and #12 in Medicare. In commercial, Spinraza for Spinal Muscular Atrophy (SMA) contributed the highest spend to J3490. In Medicare, new oncology treatments under unclassified code J9999 had the highest combined PMPM. Medicaid had its greatest spend from Spinraza under J3490 (see figure 6).

Collection of unclassified code data is still mainly a manual process. Across all lines of business, 69% of payers collected unclassified code data through manual entry, where the claims processor reviews the submitted NDC and attaches a rate code. Only 13% have a claims system that automatically recognizes the submitted NDC and applies an automatic rate (see figure 7).

FIGURE 6

2017 Unclassified Code Spend and Sample Drugs by Allowed Amount PMPM

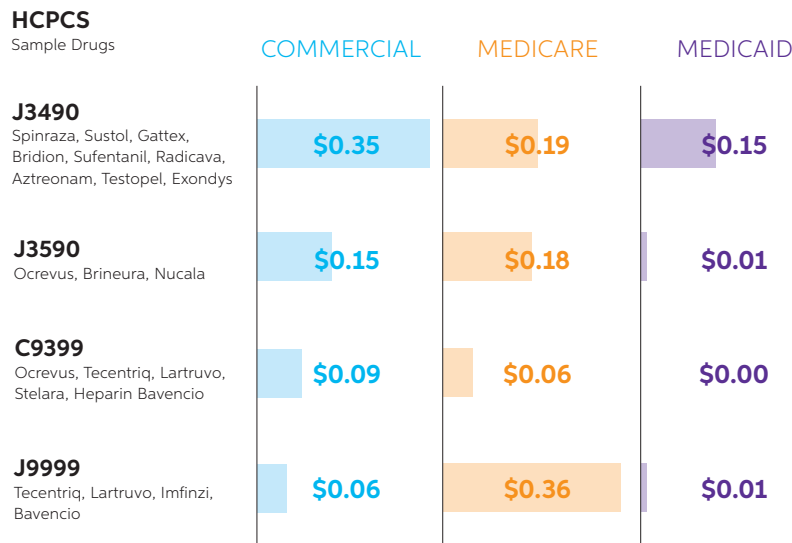


FIGURE 7

Payment of Unclassified Codes (n=45)

69%
MANUAL ENTRY

13%
AUTOMATIC PROCESS

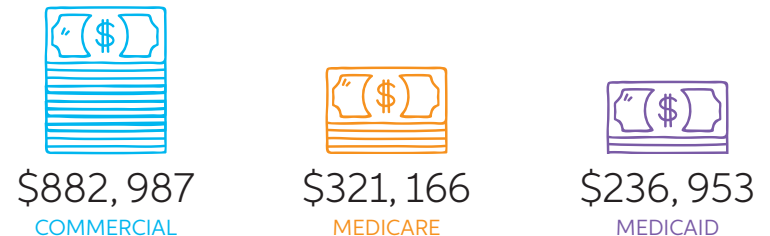
18%
DON'T KNOW

Highest Cost Drugs

The highest cost drugs are often outside of the overall top 10 drugs, mainly due to lower volume. For those payers who managed these drugs, the average commercial cost per patient per year (PPPY) was \$882,987. Several of the payers experienced \$1 million-plus price tags for Kanuma, Vimizim, and Naglazyme in 2017. In Medicare, the top 10 costliest drugs averaged \$321,166 PPPY due to Xyntha and Koate costs. In Medicaid, the top 10 costliest drugs averaged \$236,953 PPPY led by claims for Alprolix and Elaprase. These drugs affected very small numbers of patients with a total of 0.009 patients per 1,000 in commercial, 0.08 patients per 1,000 in Medicare, and 0.02 patients per 1,000 in Medicaid. Even so, over a 10-year period, the highest cost commercial drug, Kanuma, could cost more than \$18.9 million for one patient (see figure 8 and appendix figures A9-A11).

FIGURE 8

10 Highest Cost Medical Benefit Drugs Average Cost PPPY



Administration Code Reimbursement

For both commercial and Medicare, the administration code associated with the highest spend continued to be CPT code 96413, IV chemotherapy infusion for up to one hour (see figure 9). In commercial, hospital administration spend was three times that of physician office for 96413. In Medicare, hospital administration spend for 96413 was 22% higher than the physician office. In Medicaid, the highest spend administration code was 90460, immunization administration through 18 years of age via any route of administration. This trend is not surprising given Medicaid's affiliation with the Children's Health Insurance Program (CHIP).

FIGURE 9

2017 Top Five Administration Codes by Total PMPM for Hospital Outpatient and Physician Office

COMMERCIAL

CPT Code & Description	Physician	Hospital OP	Total PMPM
96413 Chemotherapy administration, IV infusion technique; up to 1 hour, single or initial substance/drug	\$0.25	\$0.76	\$1.01
95165 Supervision of preparation and provision of antigens for allergen immunotherapy; single or multiple antigens (specify number of doses)	\$0.42	\$0.01	\$0.43
96375 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential IV push of a new substance/drug	\$0.03	\$0.36	\$0.39
96365 IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); initial, up to 1 hour	\$0.08	\$0.31	\$0.39
96372 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); subcutaneous (SQ) or intramuscular	\$0.26	\$0.11	\$0.37

MEDICARE

CPT Code & Description	Physician	Hospital OP	Total PMPM
96413 Chemotherapy administration, IV infusion technique; up to 1 hour, single or initial substance/drug	\$0.55	\$0.67	\$1.22
96372 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); SQ or intramuscular	\$0.63	\$0.26	\$0.89
96374 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); IV push, single or initial substance/drug	\$0.03	\$0.85	\$0.88
96365 IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); initial, up to 1 hour	\$0.17	\$0.52	\$0.69
67028 Intravitreal injection of a pharmacologic agent (separate procedure)	\$0.67	\$0.01	\$0.69

MEDICAID

CPT Code & Description	Physician	Hospital OP	Total PMPM
90460 Immunization administration through 18 years of age via any route of administration, with counseling by physician or other qualified healthcare professional; first vaccine/toxoid component	\$0.38	\$0.00	\$0.39
96372 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); SQ or intramuscular	\$0.14	\$0.06	\$0.20
96374 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); IV push, single or initial substance/drug	\$0.00	\$0.15	\$0.15
96413 Chemotherapy administration, IV infusion technique; up to 1 hour, single or initial substance/drug	\$0.03	\$0.09	\$0.13
96375 Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential IV push of a new substance/drug	\$0.00	\$0.08	\$0.08

Medical Benefit Categories

Market share by category can now be found in the appendix.

Antihemophilic Factors

Antihemophilic factor drugs saw the highest and most significant jump in both commercial and Medicare PMPM from 2016 to 2017. Commercial PMPM went up 62% from \$1.03 in 2016 to \$1.66 in 2017; and in Medicare it went up a staggering 185% from \$0.45 in 2016 to \$1.28 in 2017 potentially due to the introduction of new extended half-life products with higher costs. Cost per claim in the category was one of the highest across the medical benefit. Even so, volume remained one of the lowest. Across sites of service, antihemophilic drugs were often three to four times higher in the hospital outpatient setting. The highest cost drug, Factor VIII (recombinant), costs 3.7 times more in the hospital outpatient setting and saw a 13% increase in commercial PMPM from \$0.50 in 2016 to \$0.57 in 2017.

2017 CATEGORY PMPM

\$1.66	\$1.28	\$0.12
COMMERCIAL	MEDICARE	MEDICAID
#5	#6	#16
RANKED		

2016-2017 CATEGORY TREND

Antihemophilic factor had the highest category trend across the top 25 medical benefit categories.

62%	185%
COMMERCIAL	MEDICARE

2017 MEMBERS PER 1,000

Antihemophilic factor is a low volume drug.

0.01	0.02	0.02
COMMERCIAL	MEDICARE	MEDICAID

2017 AVERAGE COST PER CLAIM

Although low volume, it has one of the highest costs per claim.

\$19,281
COMMERCIAL

\$16,866
MEDICARE

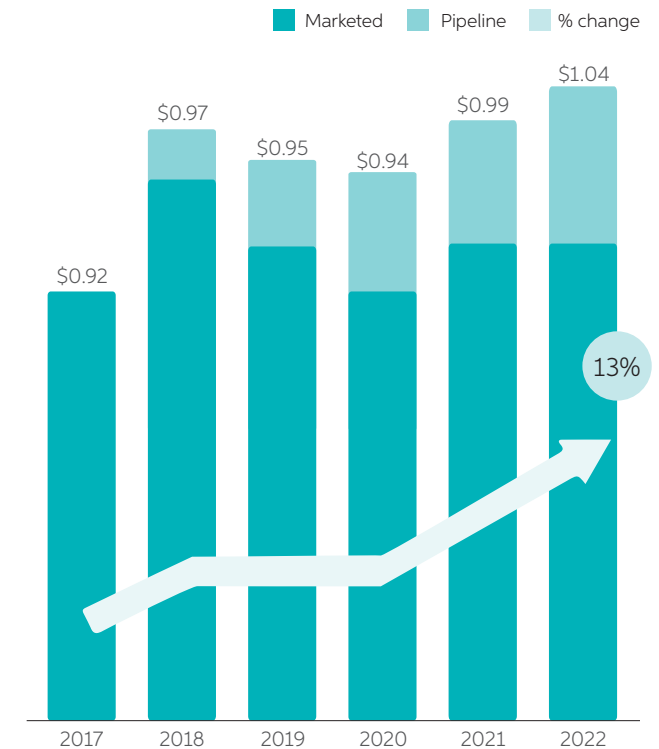
\$15,753
MEDICAID

COST PER UNIT [FACTOR VIII (RECOMBINANT)]

3.7x higher in the hospital OP setting vs. all other sites of services.

\$12,037	\$44,956	\$15,952
Physician	Hospital OP	Home

FORECAST



ADDITIONAL NOTES:

- Antihemophilic drug Factor VII (recombinant) ranked #11 in commercial.
- Utilization for commercial and Medicare is mainly in the home.

Asthma/COPD

Asthma/COPD PMPM ranked #12 for the medical benefit, but saw the second highest commercial trend among all categories. Although asthma/COPD saw lower spend than many other medical pharmacy categories, the volume of members using treatments for asthma or COPD are multiple times that of most other medical pharmacy categories. In 2017, newcomers Nucala and Cinqair impacted the category, especially in commercial spend, as prescribing patterns moved toward these products. Asthma/COPD was mostly administered in the physician office and was one of the few categories with consistent administration across all LOBs.

2017 CATEGORY PMPM

\$0.51 COMMERCIAL
\$0.71 MEDICARE
\$0.13 MEDICAID

2017 MEMBERS PER 1,000

Eighth highest utilization in commercial and Medicaid and seventh highest in Medicare.

2.5 COMMERCIAL
6.5 MEDICARE
2.4 MEDICAID

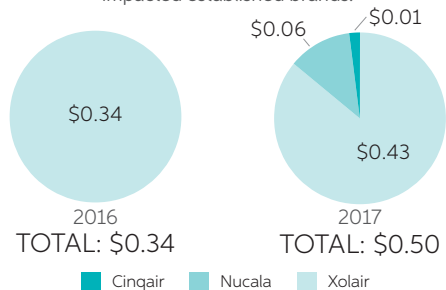
2016-2017 CATEGORY TREND

Third highest commercial trend amongst top categories.

43% COMMERCIAL
12% MEDICARE
11% MEDICAID

COMMERCIAL TOP DRUGS

In commercial, newcomers Nucala and Cinqair impacted established brands.



HIGHEST SOS UTILIZATION BY MEMBERS

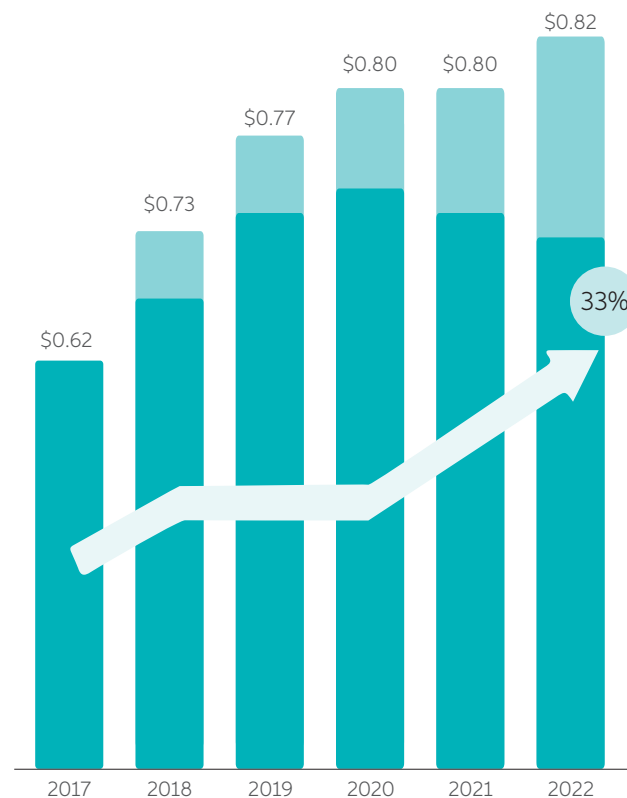
PHYSICIAN
86%
 COMMERCIAL

PHYSICIAN
72%
 MEDICARE

PHYSICIAN
90%
 MEDICAID

FORECAST

Marketed Pipeline % change



ADDITIONAL NOTES:

- Commercial spend increased from \$0.34 PMPM to \$0.50 PMPM to accommodate new market entrants.

Biologic Drugs for Autoimmune Disorders (BDAIDs)

BDAIDs saw double digit increases in commercial and Medicare PMPM (21% and 13%, respectively), due to higher use in the treatment of Crohn's/UC and Rheumatoid Arthritis. Remicade continues to rank first or second in both commercial and Medicare.

In commercial, changes to Stelara dosing and the unmet need fulfilled by both Stelara and Entyvio led to a 23% increase in PMPM from \$0.33 in 2016 to \$0.41 in 2017 and a 16% increase in cost per patient. Entyvio saw a 73% increase in spend. For commercial, additional analysis found that 49% of Stelara claims were for the 45 unit dose and 46% of claims were for 90 units. This varied across sites of service where 70% of hospital claims were for the 90 unit dose. This also tracks with commercial Stelara spend where 65% of total PMPM spend for Stelara is for the 90 unit dose. BDAIDs have the highest potential for category growth as it is forecasted to increase in spend by 90% by 2022.

2017 CATEGORY PMPM

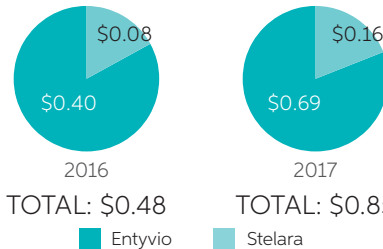
PMPM is the second highest across all commercial and Medicaid medical benefit spend and fourth highest in Medicare.

\$5.29 COMMERCIAL
\$3.17 MEDICARE
\$0.93 MEDICAID

2016-2017 CATEGORY TREND

21% COMMERCIAL
13% MEDICARE
-13% MEDICAID

COMMERCIAL CROHN'S DISEASE/UC TOP DRUGS PMPM



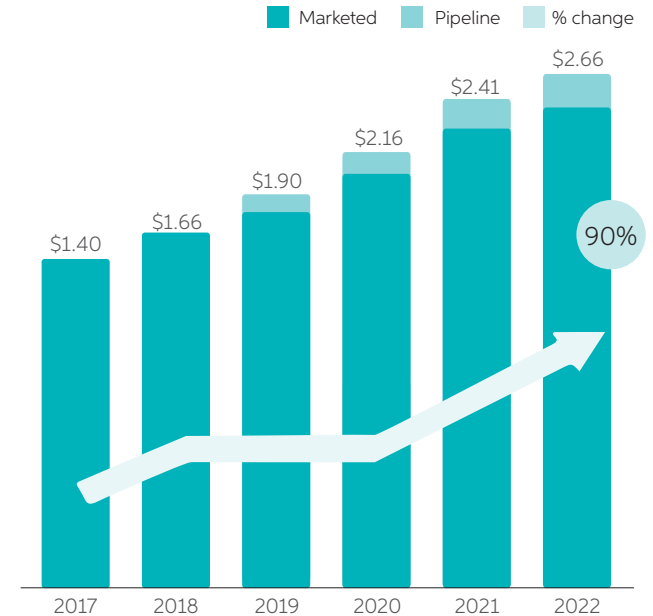
2017 AVERAGE COST PER CLAIM

Commercial BDAID drug costs are 1.9 to 2.6 times higher in the hospital OP setting than in the physician office.

Rank	Brand	Physician	Hospital OP	Home
1	Remicade	\$4,645	\$11,081	\$6,692
9	Entyvio	\$5,891	\$11,127	\$6,345
17	Stelara*	\$12,092	\$31,385	\$15,564
23	Orencia	\$3,878	\$7,308	\$3,239

* Stelara - J3357

FORECAST



ADDITIONAL NOTES:

- Crohn's/UC attributes to the highest spend in commercial of \$3.01 (54%) and in Medicaid of \$0.54 (58%). RA contributed to the highest spend in Medicare at \$1.78 (59%). RA drug Remicade is in the top 10 across all three LOBs; #1 commercial, #10 Medicare, #2 Medicaid.
- In commercial, and Medicare under Crohn's/UC treatment, Remicade decreased in market share but increased in PMPM spend for 2016-2017 (see appendix figure A19).

Immune Globulin (IG)

PMPM spend for IG drugs was the third highest in commercial and fourth highest in both Medicare and Medicaid. Despite this high spend, intravenous immune globulin (IVIg) and subcutaneous immune globulin (SCIg) remained a low-volume category. Drug costs per claim across sites of service were comparable, although commercial costs may be 50% higher in the hospital outpatient setting. Administration of IG products varied as commercial was most often administered in the home while Medicare and Medicaid were most often administered in the hospital outpatient setting. Medicare administration in the hospital is likely due to Part B vs. Part D coverage.

2017 CATEGORY PMPM

\$2.34 **\$2.84** **\$0.48**
 COMMERCIAL MEDICARE MEDICAID

2017 MEMBERS PER 1,000

0.13 **0.32** **0.06**
 COMMERCIAL MEDICARE MEDICAID

COMMERCIAL COST PER CLAIM (GAMUNEX-C/GAMMAKED)

PHYSICIAN **\$4,604**
 HOSPITAL OP **\$6,863**
 HOME **\$4,072**

COMMERCIAL COST PER CLAIM (PRIVIGEN)

PHYSICIAN **\$2,940**
 HOSPITAL OP **\$4,656**
 HOME **\$4,506**

HIGHEST SOS UTILIZATION BY MEMBERS

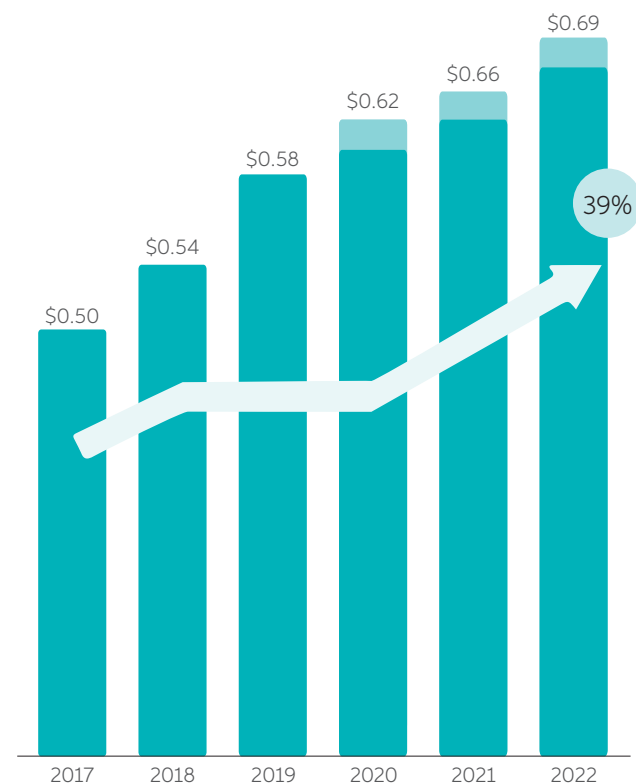
HOME
49%
 COMMERCIAL

HOSPITAL OP
41%
 MEDICARE

HOSPITAL OP
59%
 MEDICAID

FORECAST

■ Marketed ■ Pipeline ■ % change



ADDITIONAL NOTES:

- 2017 category spend for IVIG was similar for commercial and Medicare (\$2.34 and \$2.84, respectively).

Oncology

In 2017, as anticipated, oncology had the highest PMPM across all LOBs, even in Medicaid, where there were only 0.58 members per 1,000 using an oncology agent, compared to Medicare where members per 1,000 were 7.97. The category was also assisted by oncology checkpoint inhibitors, which continued their foothold in the class. Although staples Rituxan, Herceptin, and Avastin stayed in the top five commercial drugs for the ninth year, Keytruda PMPM increased 203% and moved from #39 in 2016 to #14 in 2017. In Medicare, Keytruda saw an even larger increase in PMPM of 244% from \$0.49 to \$1.70, improving its rank from #21 to #9. These significant increases can be linked to Keytruda's five additional indication approvals in 2017.

These included adult and pediatric patients with relapsed/refractory classical Hodgkin's Lymphoma, first line of treatment for non-small cell lung cancer (NSCLC) in combination with chemotherapy (pemetrexed/carboplatin), regardless of level of PD-1 expression; locally advanced or metastatic urothelial carcinoma (first line for patients ineligible for cisplatin); any solid tumor with MSI-H/dMMR biomarker; and recurrent or metastatic gastric or gastroesophageal junction (GEJ) cancers.

2017 CATEGORY PMPM

Oncology had the highest PMPM across all LOBs including Medicaid, where only 0.58 members per 1,000 used an oncology agent.

\$10.12 COMMERCIAL
\$24.25 MEDICARE
\$2.87 MEDICAID

COST PER CLAIM (AVASTIN)

Avastin use for oncology was at least three times higher in the hospital OP setting than in the physician office across all LOBs.

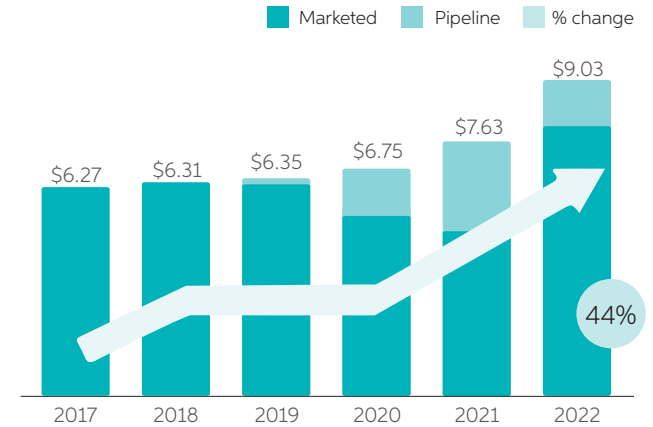
PHYSICIAN HOSPITAL OP
\$2,034 **\$7,794**
 COMMERCIAL

UPCOMING BIOSIMILARS CURRENT RANKING

The top three oncology drugs will be biosimilars in 2019 potentially reshaping the medical benefit.

	COMMERCIAL	MEDICARE	MEDICAID
RITUXAN	#3	#1	#15
HERCEPTIN	#4	#7	#3
AVASTIN	#5	#6	#6

FORECAST

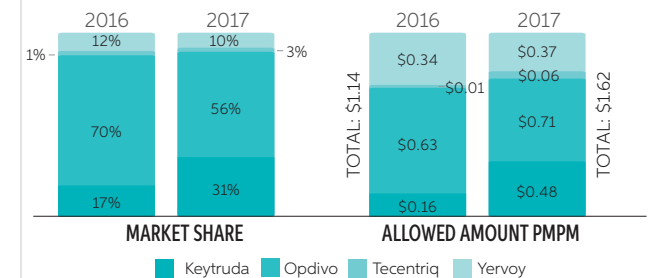


ADDITIONAL NOTES:

- There were three additional checkpoint inhibitors in 2017-2018, Libtayo, Bavencio, and Imfinzi. Market share was too low to include in this year's report.

COMMERCIAL MARKET SHARE/PMPM

Keytruda category spend increased 203%, 244%, 338% in commercial, Medicare, and Medicaid, respectively.



Oncology Biosimilar Availability

In 2019, three of the top spend oncology agents (Rituxan, Herceptin, Avastin) are expected to have biosimilar competition available on the market. Mylan's biosimilar trastuzumab (Ogivri) was approved in December 2017 and will likely be available sometime in mid-2019. Amgen's biosimilar bevacizumab (Mvasi) was approved in September 2017 and should be available in mid-2019. Celltrion's biosimilar rituximab (Truxima) was approved on November 28, 2018 and could potentially be available in the third quarter of 2019. Other manufacturers also have pending biosimilar approval applications for these three oncology biosimilars and it is likely we may see multiple biosimilar competitors for these products become available in 2019.

Oncology Management

In 2018, at least 67% of payers were using some form of guidelines or other strategy to manage oncology drugs. Specifically, 67% of payers were willing to restrict specific regimens based on patient performance as it relates to National Comprehensive Cancer Network (NCCN) guidelines. The same number of payers were willing to incentivize lower cost regimens when they carried the same level of compendia recommendation. (see figure 10).

FIGURE 10

Oncology Management Strategies Willing to Implement

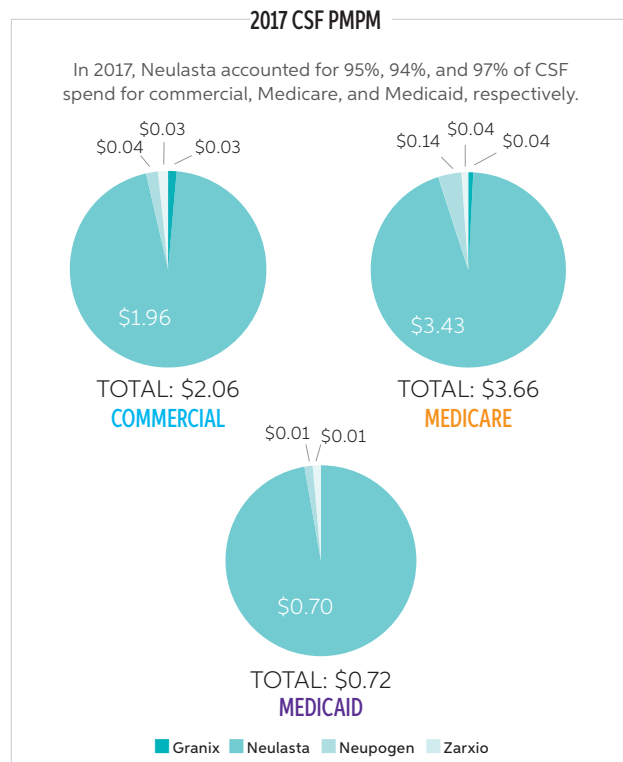
% of payers
(n=45)

67%	Restricting specified regimens based on the patient's performance status when aligned with NCCN recommendations.
67%	Incentivizing lower cost regimens when they carry the same level of compendia recommendation
47%	Limiting agents that are recently approved by the FDA under an accelerated approval pathway to patients who meet the study eligibility criteria used for FDA approval
31%	Not covering NCCN 2A recommendations if evidence is lacking
2%	Other (preferring a lower cost agent but only if NCCN 1 vs. 2A or lower)
7%	None of the above

Oncology Support

Oncology support refers to supportive drugs used in the oncology setting including, CSFs, antiemetics, chemoprotectant GI agents such as sandostatin, and erythropoiesis-stimulating agents (ESA).

As a category, oncology support ranked #3 in commercial and Medicare and #2 in Medicaid. The category is led by CSFs, which attributed \$2.06 (74%) of total oncology support spend in commercial, \$3.66 (60%) in Medicare, and \$0.72 (71%) in Medicaid. Member utilization follows closely with oncology, where the majority of use in Medicare is in the physician office, and in the hospital outpatient setting for the other two LOBs.



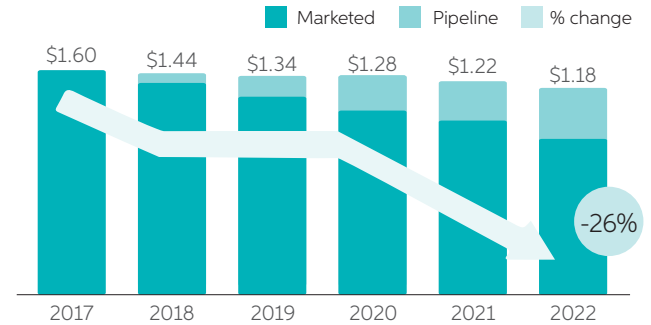
HIGHEST SOS UTILIZATION BY MEMBERS



COMMERCIAL COST PER CLAIM (NEULASTA)



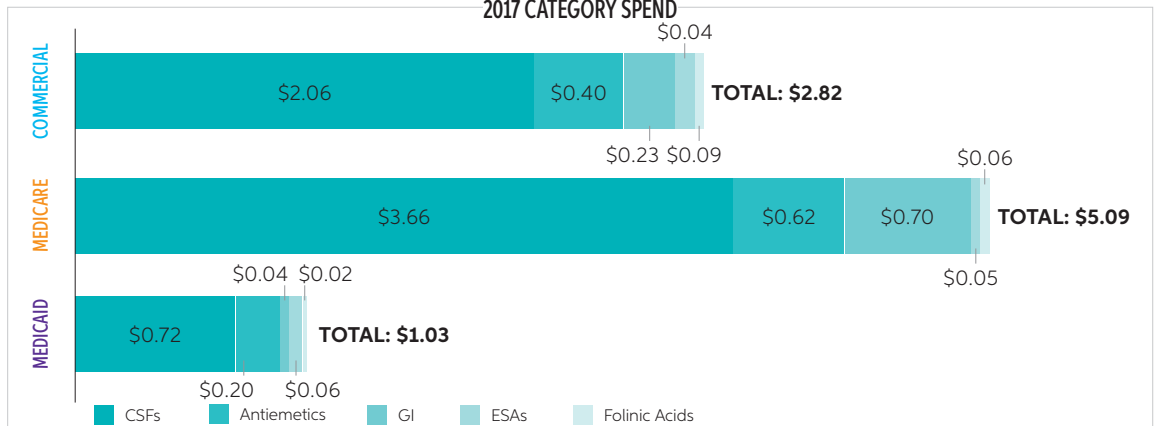
FORECAST



ADDITIONAL NOTES:

- Oncology support is the only category that will experience decreases in forecasted PMPM over the next five years. Decreases in PMPM spend were attributed to the potential increased use of biosimilars in this category.

2017 CATEGORY SPEND



Ophthalmic Injections

Ophthalmic injections predominantly impacts senior populations, and in Medicare it was more impactful than either BDAIDs or oncology support, accounting for 11% of total medical benefit spend. For Medicare, ophthalmic injections not only had the second highest PMPM spend at \$5.98, but was the fifth largest category by utilization (10 members/1,000) behind corticosteroids and infectious disease drugs which had utilization rates of 70 members/1,000 and 18 members/1,000, respectively.

Increases in the use of ophthalmic agents may be due to positive results from the Protocol T study from the Diabetic Retinopathy Clinical Research Network (DRCRnet). DRCRnet published two-year data on aflibercept (Eylea), bevacizumab (Avastin), and ranibizumab (Lucentis) for diabetic macular edema, where all three anti-VEGF groups showed visual acuity (VA) improvement from baseline to two years with a decreased number of injections in the second year.¹ The clinical efficacy of bevacizumab at year two for patients with a baseline VA better than 20/50 (20/32 to 20/40) had statistically similar results to ranibizumab and aflibercept.

2017 CATEGORY PMPM

\$0.47	\$5.98	\$0.06
COMMERCIAL	MEDICARE	MEDICAID

2017 MEMBERS PER 1,000

0.41	10.1	0.18
COMMERCIAL	MEDICARE	MEDICAID

COST PER CLAIM

COMMERCIAL	\$1,274
MEDICARE	\$477
MEDICAID	\$858

HIGHEST SOS UTILIZATION BY MEMBERS

Ophthalmic is one of the few categories where use in one site of service, the physician office, is universal.

PHYSICIAN	PHYSICIAN	PHYSICIAN
96%	99%	97%
COMMERCIAL	MEDICARE	MEDICAID

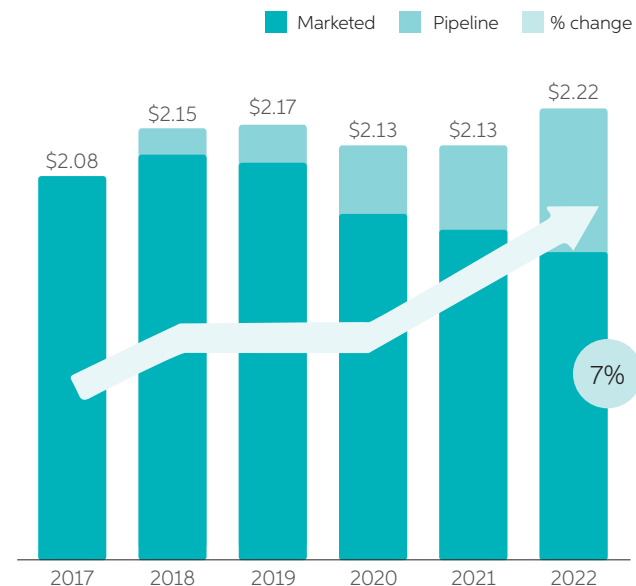
EYLEA PMPM

The growth of **Eylea** across commercial and Medicare may be traced to more robust results from the Protocol T study.

\$0.30	\$3.30
2017	2017
▲	▲
\$0.26	\$2.58
2016	2016
COMMERCIAL	MEDICARE

1. www.drcr.net/. Personal Login, accessed November 2018

FORECAST



ADDITIONAL NOTES:

- Avastin market share is much higher in Medicare and Medicaid than commercial (65% and 77% vs. 49%, respectively) (see appendix figures A49-A51).
- Ophthalmic injections may be an area for future utilization management strategies following The Centers for Medicare and Medicaid Services' (CMS) August 7, 2018 proposal allowing allow of Medicare Advantage plans to use step therapy edits for Medicare Part B drugs beginning January 1, 2019 (see details in Legislative Update on page 28).

Medical Pharmacy Management

Please note that Medicaid data was included in the claims data set only, not in the payer survey.

Product Preferencing/Rebating

In 2018, 71% of commercial payers (91% of medical benefit lives) managed medical benefit products with some sort of product preferencing in place (see figure 11). More than half of commercial payers preferred BDAIDs (56%) and Viscosupplementation (51%).

Of those payers with product preferencing, 50% always or usually used rebating as part of their preferencing strategy (see figure 12). Payers preferred a rebate level of around 23% or wanted to see annual savings of more than \$300,000 in commercial and \$280,000 in Medicare to see it as valuable (see figure 13).

Under Medicare, product preferencing is not common practice; 53% of payers with Medicare lives had no form of product preferencing for the medical benefit. However, the August 2018 memo from CMS opened the door for step therapy in Medicare and will likely lead to increased use of this management tool in the future (see details in Legislative Update on page 28).

FIGURE 11

2018 Commercial Product Preferencing

(n=45; 105 million lives)

■ Yes ■ No

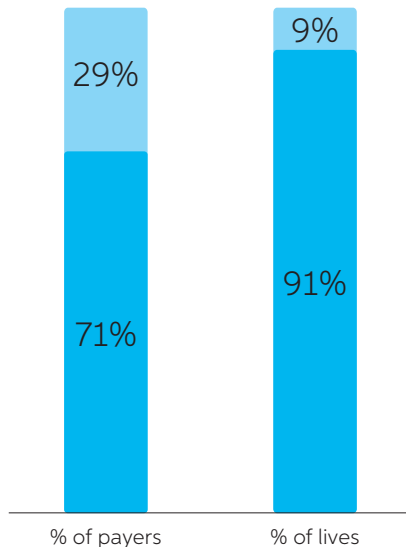


FIGURE 12

2018 Rebate as Preferencing Strategy

(n=32)

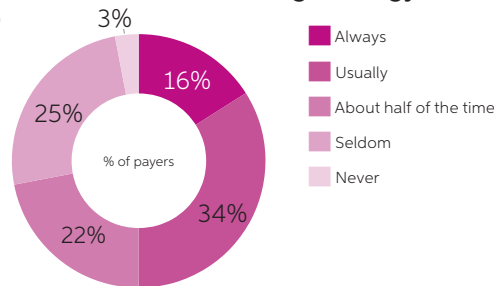


FIGURE 13

2018 Annual Savings/Valuable Discount Needed to Preference a Medical Benefit Drug*

(n=42)

Commercial



~\$340,000

23%

Medicare



~\$280,000

VALUABLE DISCOUNT

*Self-reported

Utilization Management Tools

Payers continued to lean on prior authorizations (PA) in both commercial and Medicare Advantage. One-fifth of payers, 20% in commercial and 22% in Medicare, used post-service claim edits as a secondary utilization management strategy (see figure 14). Payers denied PA at a rate of 24% in commercial and 20% in Medicare (see figure 15). Post-service claim edits had a denial rate of 15% across both LOBs (see figure 16).

FIGURE 14

2018 Utilization Management Tools

(% of payers)

■ Commercial (n=45) ■ Medicare (n=33)

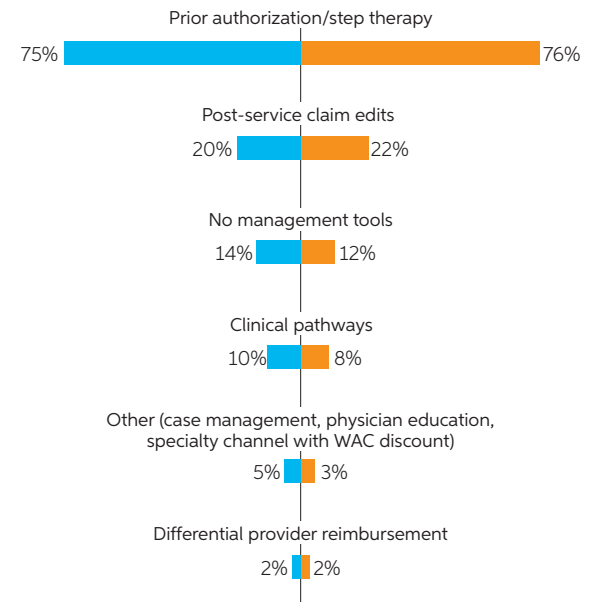


FIGURE 15

2018 Prior Authorization Denial, Appeal and Overturn Rates (Weighted)

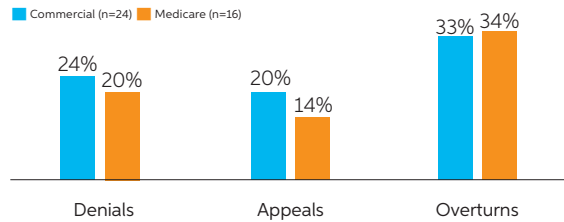
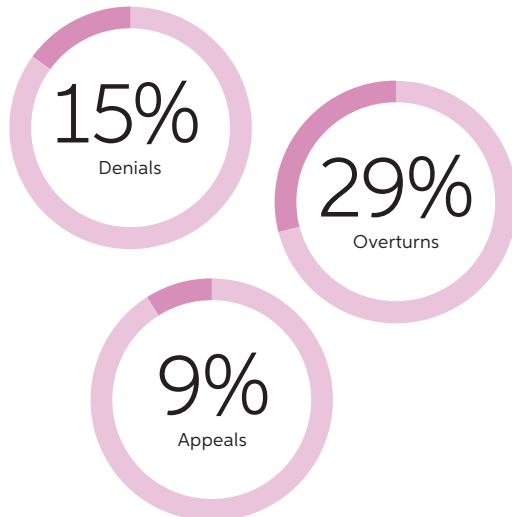


FIGURE 16

2018 Commercial and Medicare Denial, Appeal and Overturn Post-Service Claim Edit Rates (Weighted)

Weighted rates (n=15; 12 million covered lives)



Utilization Management: Category-Specific

In hemophilia, specifically, there are several other utilization management options. While most payers (86%) continue to rely on PA to manage the category, 44% of payers managed support services or case management and 42% had a site of service or preferred network strategy (see figure 17).

Novel CAR-T cell therapies, Yescarta and Kymriah are currently used to treat adults with diffuse large B-cell lymphoma (DLBCL) or children with acute lymphoblastic leukemia (ALL) who have already been through two unsuccessful standard treatments. Currently, 84% of payers introduced a PA for CAR-T therapy in the outpatient setting. Of those who introduced a PA, 47% of those payers used the same approval process/ department to manage the inpatient treatment and 17% were unaware of which department manages inpatient treatment. For those 36% who used a different department to manage the inpatient administration of CAR-T therapy, 54% went through their medical utilization management (UM) team, 38% used medical case management, and 8% went through clinical operations (see figure 18).

FIGURE 17

2018 Hemophilia Management

(n=36; % of payers)

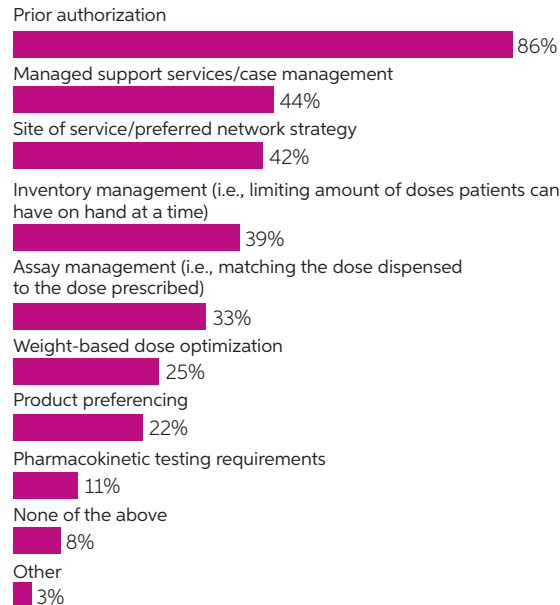
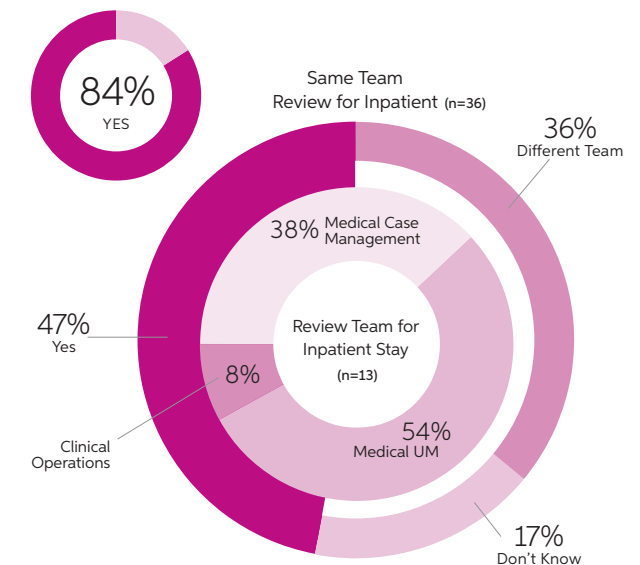


FIGURE 18

2018 CAR-T Therapy Management

PA for CAR-T (n=43)



Utilization Management: Programs

Payers managed medical benefit drugs through UM tools as well as guidelines and programs. Close to half, 42% of payers, followed Institute for Clinical and Economic Review (ICER) guidelines for coverage decisions. 64% of payers encouraged the use of the lower cost option by removing criteria or not requiring utilization management on that option (see figure 19). In addition, payers implemented drug management strategies in the form of dose optimization, vial rounding, and weight-based dosing. For dose optimization, 51% of commercial and 55% of Medicare payers had a program (see figure 20). In commercial, 65% of payers implemented dose optimization for BDAIDs and oncology, while in Medicare 60% implemented for oncology. Additionally, 65% of commercial and 42% of Medicare payers experienced savings at a rate between 7% to 7.5%.

For commercial, 32% of payers had a vial rounding procedure with 50% of payers using +/- 10% limits of the prescribed dose. More Medicare payers (39%), used a vial rounding procedure, with 50% using +/- 10% limits of the prescribed dose (see figure 21). The majority of commercial payers (71%) implemented vial rounding for BDAIDs, oncology, and oncology support. Medicare implemented vial rounding for the same categories, although at a lower rate of 57%.

31% of commercial and 33% of Medicare payers used weight-based dosing for products that have shifted to flat dosing, mainly Keytruda and Opdivo, as a management tool. Less than one-quarter of commercial and Medicare payers were aware of and experienced savings from weight-based dosing protocol, 21% and 17%, respectively, with a savings rate for both LOBs of 15% (see figure 22).

SOS programs continued to be used by more than half of commercial payers (60%) with 88% of them utilizing clinical policy criteria to implement their SOS programs. Most commercial plans used SOS programs for BDAIDs, oncology, and oncology immunotherapy categories. In Medicare, 36% of payers used SOS programs, and 58% of payers used clinical policy criteria to apply the program. More than half of commercial payers (67%) experienced a staggering 61% savings from their SOS programs (see figure 23).

FIGURE 19

2018 Medical Pharmacy Programs

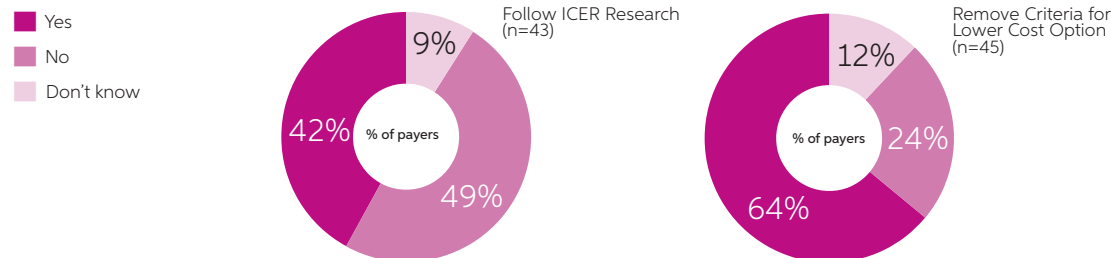
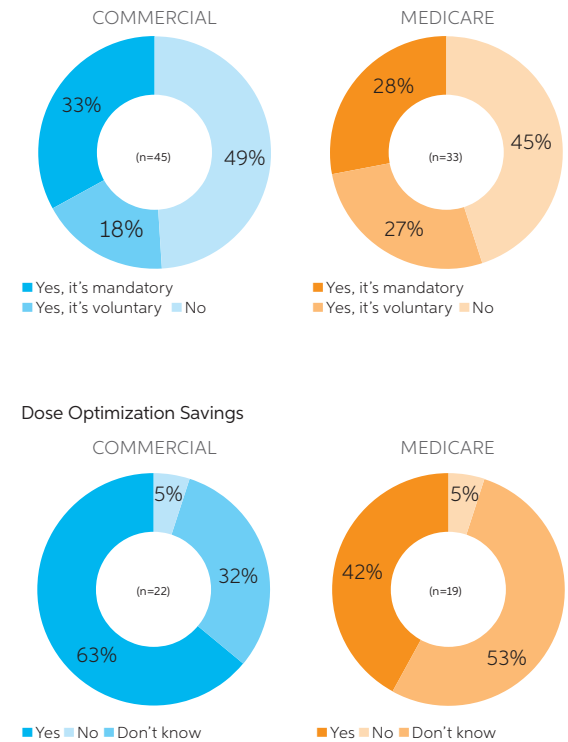


FIGURE 20

2018 UM Dose Optimization Program



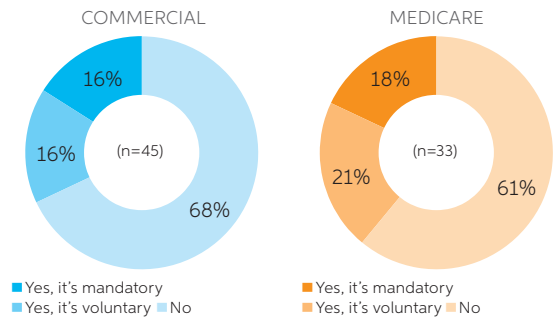
Average Savings from Dose Optimization Program



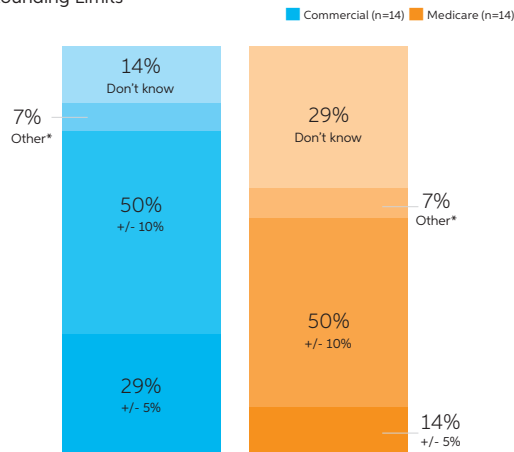
FIGURE 21

2018 Vial Rounding Procedure

(% of payers)



Vial Rounding Limits



*Nearest vial, varies

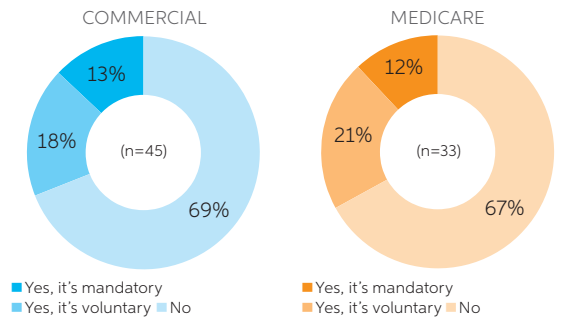
Average Savings from Vial Rounding Procedure

4% COMMERCIAL 4% MEDICARE

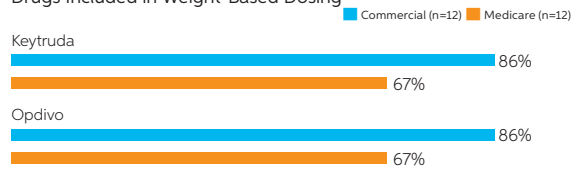
FIGURE 22

2018 Weight-Based Dosing

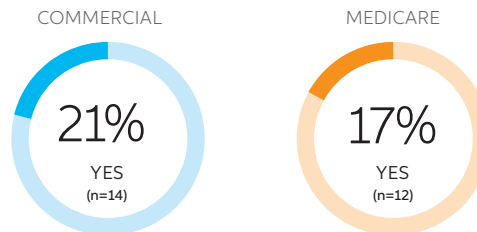
(% of payers)



Drugs Included in Weight-Based Dosing



Savings from Weight-Based Dosing



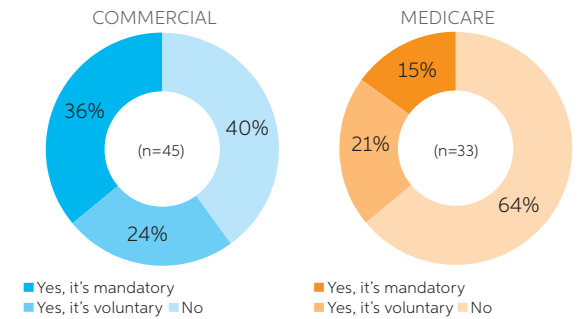
Average Savings from Weight-Based Dosing Program

15% COMMERCIAL 15% MEDICARE

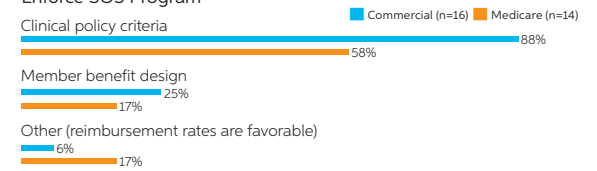
FIGURE 23

2018 Site of Service (SOS) Program

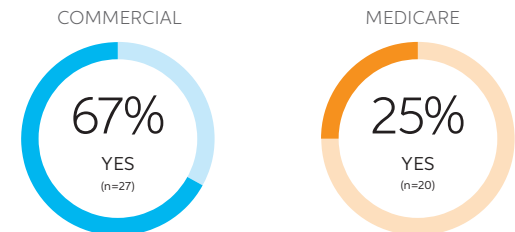
(% of payers)



Enforce SOS Program



Savings from SOS Program



Average Savings from SOS Program

61% COMMERCIAL 5% MEDICARE

New (Unclassified) Specialty Drugs: Coverage and Management

Due to the absence of real-time claims adjudication and a traditional formulary process on the medical benefit, payers are unable to implement edits to manage utilization of new specialty drugs to market as they can on the pharmacy benefit. In absence of these tools, 93% of payers used unclassified code PA requirements with 55% implementing immediately after FDA approval and 74% within the first three months of release. More than one-quarter of payers (29%) wait for the NDC to be available, with 100% implementing PA within three months of release. Still, 17% of payers performed a review of the new therapy prior to the decision of coverage of the unclassified code. (see figure 24).

Almost half of payers (44%) implemented a post-service claim edit (PSCE) for unclassified drugs, with 35% implementing after FDA approval and 40% implementing after NDC availability, both within three months of release (see figure 25).

FIGURE 24

PA for Newly Released Medical Benefit Drugs

(n=45; % of payers)

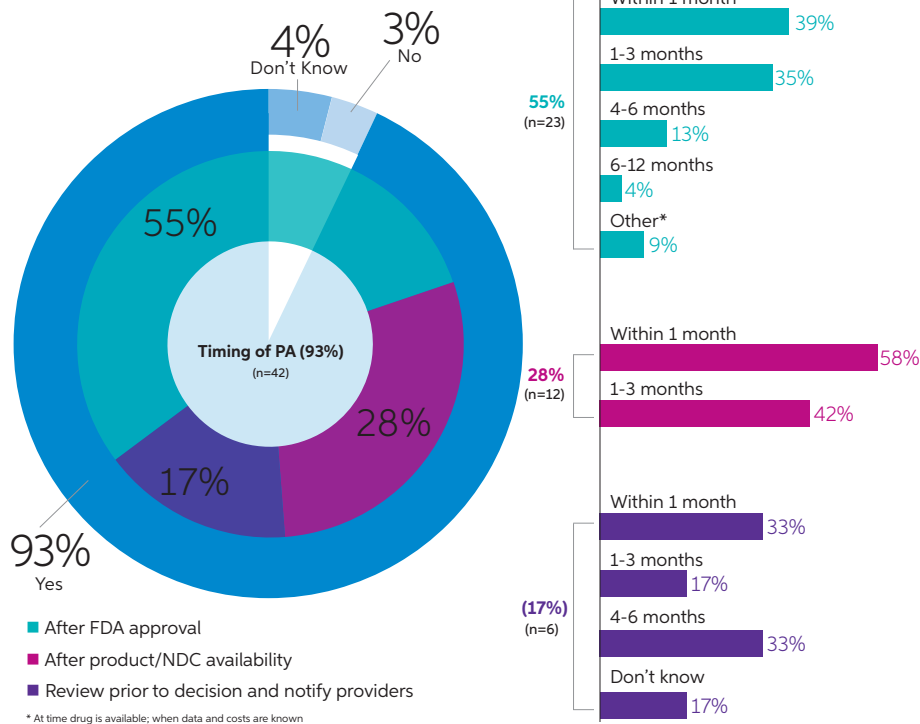
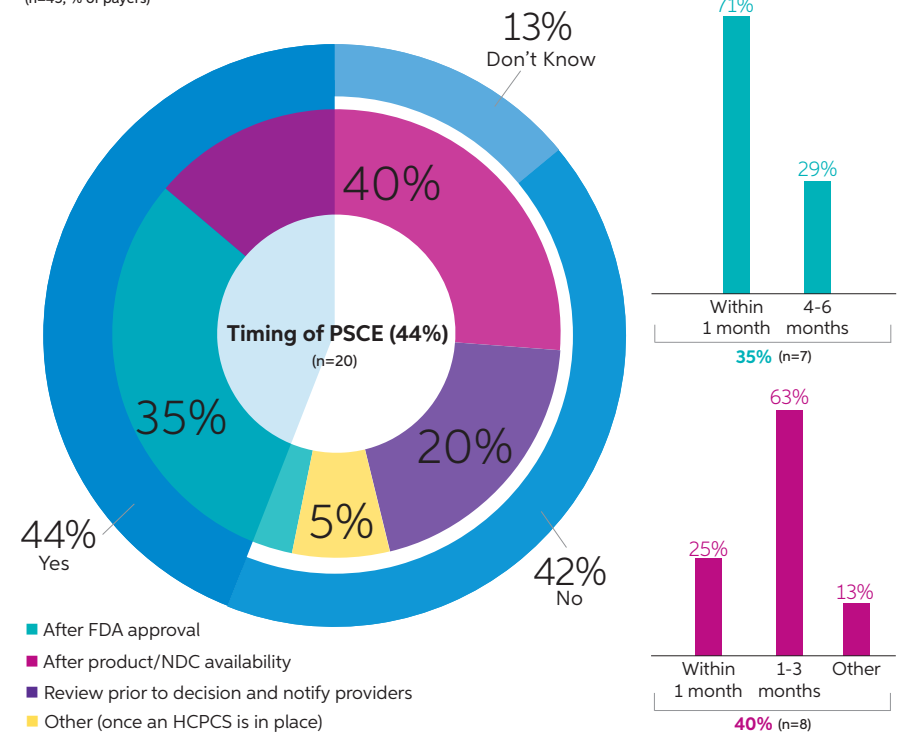


FIGURE 25

2018 PSCE for Newly Released Medical Specialty Drugs

(n=45; % of payers)



Medical Benefit Cost Share

With the high cost of medical benefit drugs, patients reach their out-of-pocket maximums fairly quickly, resulting in health insurance carriers bearing the majority of the cost. Commercial payers covered 98% of costs, Medicare payers covered 92% of costs, and Medicaid payers covered 100% of costs (see **Executive Summary on page 2**).

In 2018, when there was a cost share for members, 51% of commercial payers and 70% of Medicare payers required coinsurance. (see **figure 26**).

Overall, payers did not vary cost share by drug, site of service, or indication. For the 11% of payers who varied by drug, 60% saw positive outcomes. For either drug (20%), site of service (33%), or indication (9%), one-third or less have the capability to vary cost share by those metrics (see **figures 27-29**).

FIGURE 26

2018 Medical Benefit Member Cost Share Type

(% of payers)

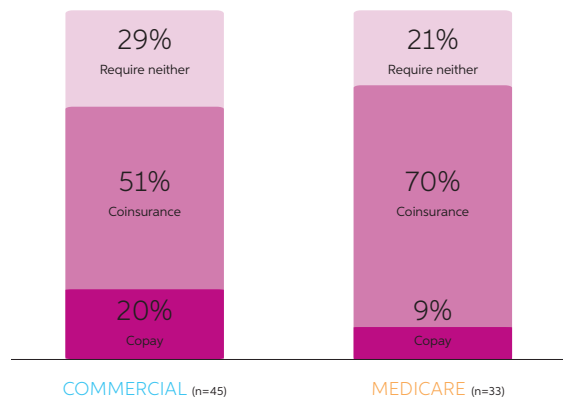


FIGURE 27

2018 Landscape of Varying Cost Share by Drug

(% of payers)

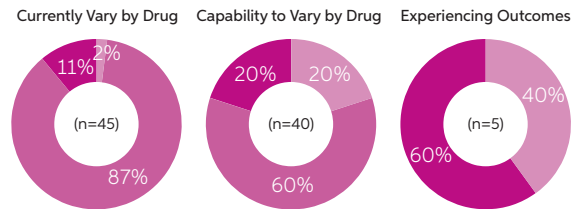


FIGURE 28

2018 Landscape of Varying Cost Share by SOS

(% of payers)

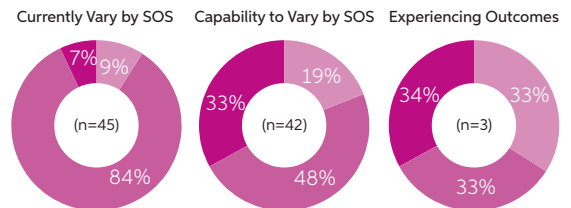
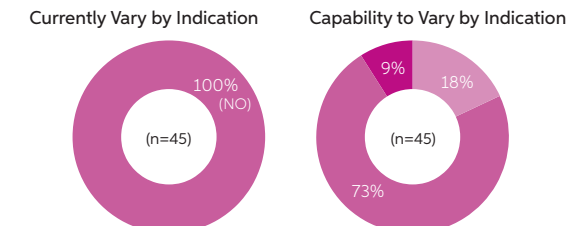


FIGURE 29

2018 Landscape of Varying Cost Share by Indication

(% of payers)



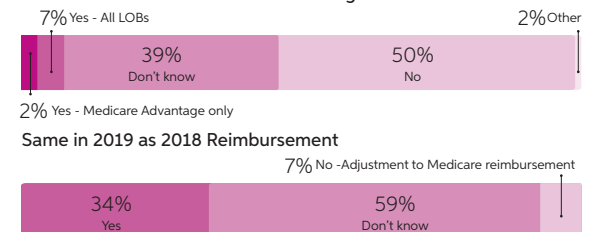
340B Updates to Reimbursement

Finalized November 13, 2017, as part of the 2018 Medicare hospital outpatient payment final rule, CMS reduced Part B reimbursement for most separately payable drugs and biologics acquired by hospitals under the 340B program. Beginning January 1, 2018, CMS reduced the payment for Medicare fee-for-service (FFS) beneficiaries by 28.5%—from the former rate of the drug's ASP plus 6% (i.e., 106% ASP) to ASP minus 22.5% (i.e., 77.5% ASP). Though the payment change has since been implemented, it nonetheless sparked significant reaction by hospital associations and other industry organizations, which filed suit challenging the authority of the CMS to make the change. On July 17, 2018, the U.S. Court of Appeals for the District of Columbia upheld the payment change on procedural grounds. The plaintiffs, including the American Hospital Association, refiled the lawsuit on September 5, 2018, and in December 2018 the ruling was vacated. Even so, 50% of payers surveyed attested to changing their reimbursement approach and 34% plan to continue their updated approach in 2019. The 9% of payers who will change in 2019 will adjust to Medicare reimbursement (see **figure 30**).

FIGURE 30

2018 Payer Reimbursement Updates

(% of payers)



Biosimilar Reimbursement

In 2018, 34% of commercial and 43% of Medicare lives were under plans where biosimilars were reimbursed using a Medicare model (WAC + 6% then ASP + 6% of reference product) (see figure 31). For commercial, this is a shift from 2017 when most commercial plans were under an ASP + model. 64% of payers indicated that the pricing of biosimilars had the most impact on their reimbursement decisions, while one-third (33%) felt that provider willingness to switch to the biosimilar over the reference product was the next most impactful when considering a strategy. Close to half of payers (49%), preferred biosimilars over the reference product and on average needed the cost savings for that biosimilar to be 28% in order to warrant preferencing the biosimilar product.

In a large swing from previous years, more than half of payers (51%) required members to step through a biosimilar before utilizing its reference product. For those payers who did not have a step in place, 36% were planning to implement a step edit and 41% were not planning to implement one at all (see figure 32). The majority of payers (73%) indicated a significant cost differential of between 25% and 50% would be needed to implement a step; 51% would implement a step if there was a U.S. Food and Drug Administration (FDA) designation of interchangeability (see figure 33).

On July 18, 2018, Food and Drug Commissioner Scott Gottlieb released the “Biosimilar Action Plan: Balancing Innovation and Competition,” an 11-point plan intended to encourage innovation and competition among biologics and the development of biosimilars. The FDA notes it is considering revisiting biosimilar labeling, finalizing interchangeability guidance, and enhancing provider education around biosimilars. The plan also suggests allowing samples from foreign countries to support a biosimilar application, improving the Purple Book, and establishing a new Office of Therapeutic Biologics and Biosimilars.

FIGURE 31

2018 Biosimilar Reimbursement Strategy

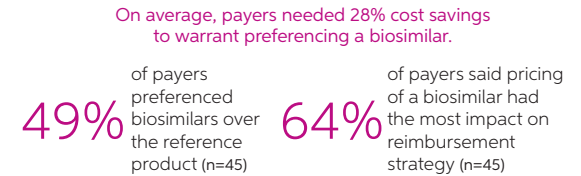
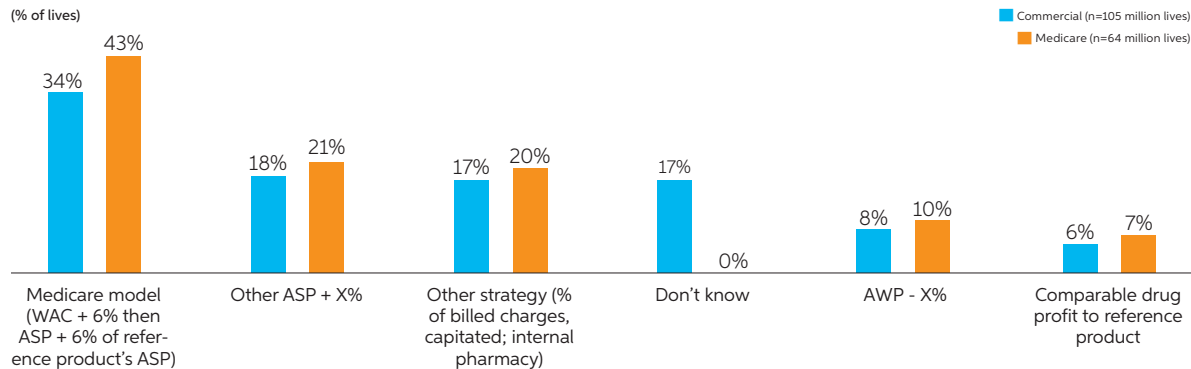


FIGURE 32

2018 Biosimilar Step Therapy Protocol

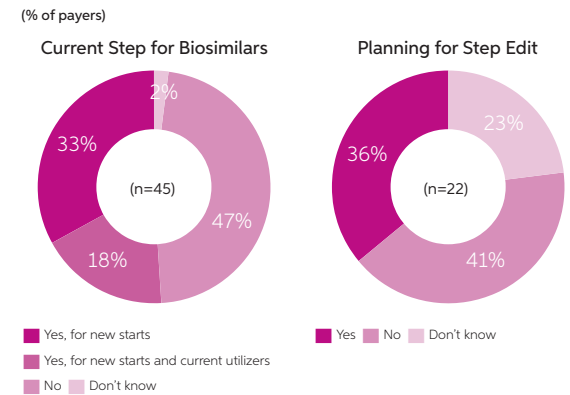
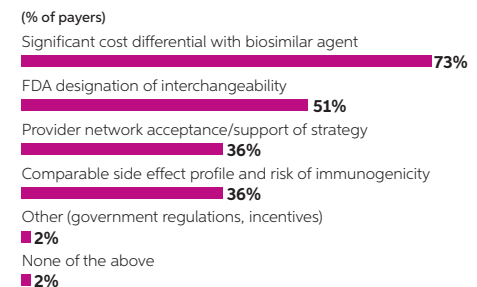


FIGURE 33

2018 Biosimilar Step Therapy Protocol Considerations



Health Information Data

Medical benefit claims systems were not originally designed to manage drugs. Therefore, legacy systems do not have a designated field to capture NDC information. In 2018, 62% of commercial payers and 58% of Medicare payers collected NDC data (see figure 36). Of those commercial payers who were collecting NDC data, 86% collected data across all three main sites of service: hospital outpatient, physician office, and the home infusion setting. In Medicare, collection was more prevalent in the hospital outpatient setting, but 84% of plans were also collecting NDCs in the physician office setting. More than half, 57% to 61% of commercial payers were reporting utilization data. In Medicare, few were reporting in the home infusion setting, but 47% to 53% were reporting in the physician office and hospital outpatient setting (see figure 34). For payers not collecting data, 47% of commercial and 50% of Medicare plans do not have plans to implement a data collection program in the next 12-18 months (see figure 35).

The majority of the payer's providers (71%) are required to report NDC data. Close to one-third (27%) of providers also collected outcomes data. One-third of payers (34%) made changes based on these outcomes in the form of annual adjustments and reimbursement change when seeing metrics-based improvements (see figures 37 and 38).

FIGURE 34

Current NDC Data Collection

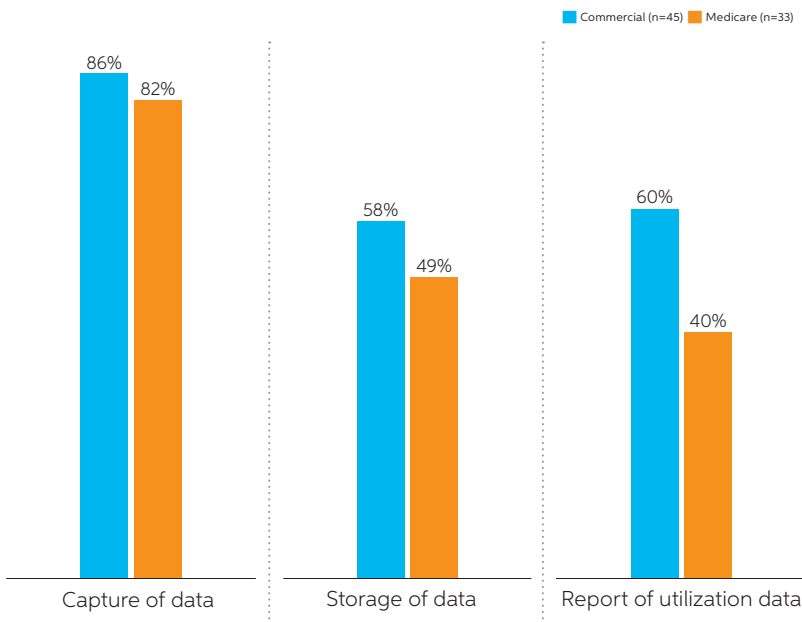


FIGURE 35

Future NDC Data Collection

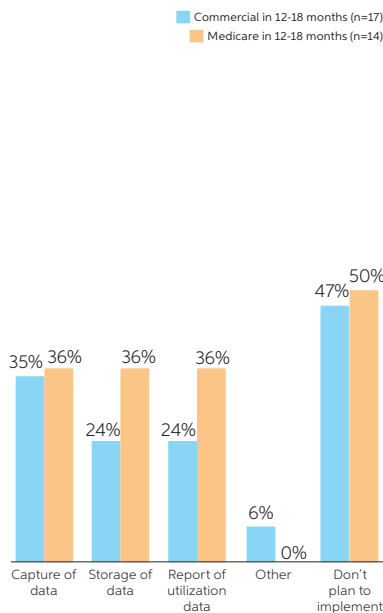
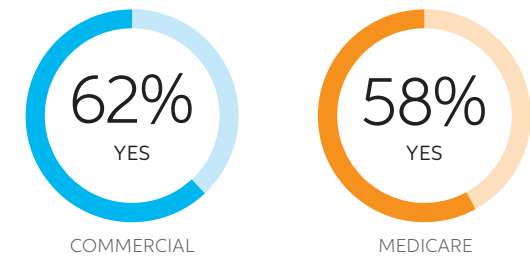


FIGURE 36

Payer NDC Data Collection



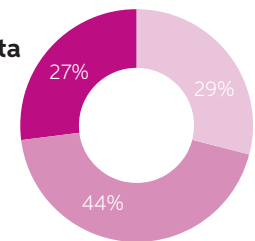
71% of providers are required to report NDC data

FIGURE 37

Providers Collecting and Reporting Outcomes Data

(n=45)

Yes* No Don't know



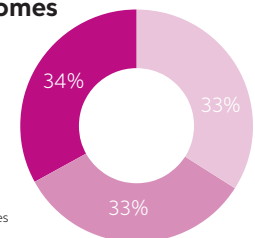
*All oncology, accountable case organizations (ACOs), etc.

FIGURE 38

Changes Based on Outcomes of Data Collection

(n=45)

Yes* No Don't know



*Annual adjustments/reimbursement on quality metric improvements outreach programs, changes to criteria

Legislative and Regulatory Update

Trump Administration's Blueprint to Lower Drug Prices

On May 11, 2018, the U.S. Department of Health and Human Services (HHS) released "American Patients First: The Trump Administration Blueprint to Lower Drug Prices and Reduce Out-of-Pocket Costs."¹ Lowering prescription drug prices remains a high-priority issue for the Trump administration. Of note to medical pharmacy reimbursement policy, the Blueprint includes proposals relating to the 340B Drug Discount Program, and Medicare Part B-payable drugs and biologics. The administration has advanced select policies discussed in the Blueprint, including releasing a request for information and advance notice of proposed rulemaking on leveraging CMS Innovation Center authority for an International Pricing Index (IPI) model for Part B drugs and biologics.² The proposed IPI model would reimburse model vendors, instead of physicians and hospitals, for certain Part B drugs based on a Target Price derived from foreign pricing data. Physicians and hospitals would be paid a set payment amount per encounter or per month for an administered drug. CMS is expected to issue a proposed rule on the IPI model this spring.

"CMS released guidance and subsequent FAQs in August 7, 2018, allowing Medicare ...MA plans to use utilization management tools, such as step therapy, edits for Medicare Part B drugs ... The guidance also rescinds the agency's guidance prohibiting the use of mandatory step therapy."

Allowance of Step Therapy for Part B Drugs and Biologics Under Medicare Advantage

Reflecting concepts from the administration's Blueprint, CMS released guidance and subsequent FAQs in August 2018 allowing Medicare Advantage (MA) plans to use utilization management tools, such as step therapy, for Part B drugs as part of drug management coordination beginning Jan. 1, 2019. The guidance also rescinds the agency's 2012 guidance which prohibited the use of mandatory step therapy. Of note, CMS stated Part B step therapy limits need not be reported to CMS, and MA plans are permitted to make midyear changes to step therapy if consistent with the plan's annual notice of change and evidence of coverage. The use of step therapy by MA plans for Part B drugs is expected to promote higher quality care and lower program and beneficiary costs. The change does not extend to Medicare fee-for-service; however, the agency appears interested in exploring avenues for leveraging current authorities to promote utilization management and other pharmacy benefit management tools in Part B, as well as for protected class drugs in Part D. In a November 2018 proposed rule, CMS includes a series of proposals to align utilization management tools for protected class and non-protected class drugs under Part D for patients on existing therapy, as well as new starts, as otherwise is in practice today for non-protected classes.³

Payment Reform

Again reflecting the reimbursement policy themes of the administration's Blueprint, on Nov. 23, 2018, CMS finalized the 2019 Medicare physician fee schedule (PFS), which — among its usual and customary annual updates — reduced the add-on payment for WAC based payments for new Medicare Part B drugs from 6% to 3% effective Jan. 1, 2019.⁴ The proposal would not affect payments that are required by law to be calculated at the volume-weighted ASP plus 6%. Beyond reducing Medicare program costs, the reduction is intended to decrease the amount beneficiaries pay for in-office drugs, encourage appropriate utilization, and to create greater parity overall between WAC and ASP for new drugs, biologics and biosimilars. MedPAC recommended the reduction in its 2017 Report to the Congress.⁵

For updates on biosimilars, please see page 26 in Medical Pharmacy Management section.

1. U.S. Department of Health and Human Services, "American Patients First: The Trump Administration Blueprint to Lower Drug Prices and Reduce Out-of-Pocket Costs" (May 11, 2018), <http://www.hhs.gov/sites/default/files/AmericanPatientsFirst.pdf>.
2. Centers for Medicare & Medicaid Services, Health and Human Services department, "Medicare Program: Proposed Changes to Hospital Outpatient Prospective Payment and Ambulatory Surgical Center Payment Systems and Quality Reporting Programs; Requests for Information on Promoting Interoperability and Electronic Health Care Information, Price Transparency, and Leveraging Authority for the Competitive Acquisition Program for Part B Drugs and Biologics for a Potential CMS Innovation Center Model" 83 FR 37046 (July 31, 2018); *ibid.*, "Advance Notice of Proposed Rulemaking with Comment: Medicare Program; International Pricing Index Model for Medicare Part B Drugs" 83 FR 54546 (Oct. 30, 2018).
3. *Ibid.*, "Proposed Rule: Modernizing Part D and Medicare Advantage to Lower Drug Prices and Reduce Out-of-Pocket Expenses" 83 FR 62152 (Nov. 30, 2018).
4. *Ibid.*, "Final Rules with Interim Final Rule: Medicare Program; Revisions to Payment Policies Under the Physician Fee Schedule and Other Revisions to Part B for CY 2019; Medicare Shared Savings Program Requirements; Quality Payment Program; Medicaid Promoting Interoperability Program; Quality Payment Program-Extreme and Uncontrollable Circumstance Policy for the 2019 MIPS Payment Year; Provisions From the Medicare Shared Savings Program-Accountable Care Organizations-Pathways to Success; and Expanding the Use of Telehealth Services for the Treatment of Opioid Use Disorder Under the Substance Use-Disorder Prevention That Promotes Opioid Recovery and Treatment (SUPPORT) for Patients and Communities Act" 83 FR 59452 (Nov. 23, 2018).
5. MedPAC, "Report to the Congress: Medicare and the Health Care Delivery System" (June 2017), http://www.medpac.gov/docs/default-source/reports/jun17_reporttocongress_sec.pdf.

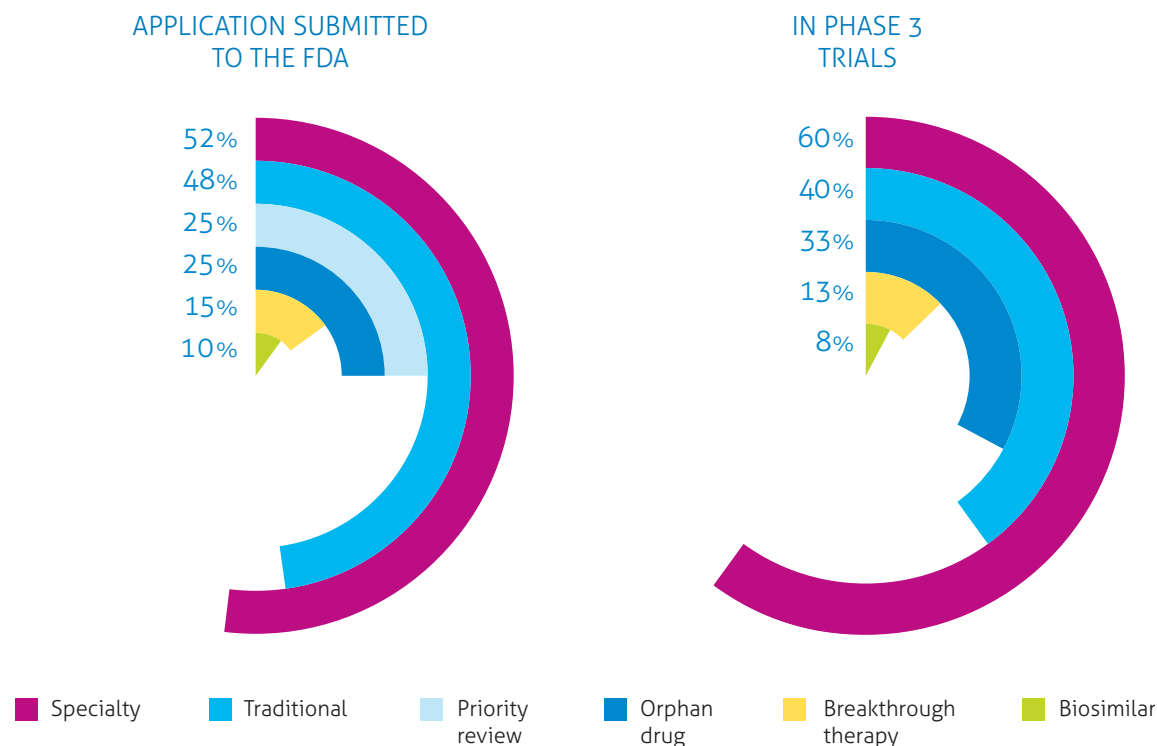
Drug Pipeline

In 2017, the FDA approved 46 new molecular entities (NMEs), which is twice the number approved in 2016 and the highest number of approvals in 21 years. Most notably, the first-ever gene therapies were approved — Kymriah and Yescarta, both novel CAR-T cell therapies for oncology, and Luxturna, the first gene therapy approved for RPE65-mediated inherited retinal disease. Of the 46 drugs approved in 2017, 16 (35%) were therapeutic treatments for oncology. Additionally, 40% of the novel drugs were designated as orphan drugs, and 15 of the 46 approvals were considered to be first in class approvals. Additionally, 2018 proved to be a record year with the highest number of new drug approvals by the FDA since the Prescription Drug User Fee Act with 59 total approvals.

The pipeline drug outlook below is an aerial outline of drugs with anticipated FDA approval through 2019. It is not intended to be a comprehensive inventory of all drugs in the pipeline; emphasis is placed on drugs in high-impact categories. Investigational drugs with a complete response letter and those that have been withdrawn from development are also noted (see figure 39). For more detailed drug pipeline information, see the MRx Pipeline report referenced below.

FIGURE 39

Pipeline Drug Outlook Through 2019⁶



⁶MRx Pipeline October 2018. http://www1.magellanrx.com/media/792906/mrx-pipeline_october-2018_web_mrx1119_1118.pdf. Accessed December 2018.

2018 Report Methodology and Demographics

This report includes a combination of primary and secondary research methodologies to deliver a comprehensive view of payer perceptions and health plan actions related to provider-administered infused or injected drugs paid under the medical benefit, also referred to as medical benefit drugs. These medical benefit drugs are commonly used to treat cancer, autoimmune disorders, and immunodeficiencies.

The results of this study were a combination of findings from a survey of medical, pharmacy, and network directors at commercial health plans, across the U.S., as well as medical benefit drug and administration paid claims data across key lines of business (i.e., commercial, Medicare Advantage, and Medicaid) and outpatient sites of service (i.e., physician offices, homes via home infusion, specialty pharmacies, and hospital outpatient facilities).

Payer Survey

The 2018 Magellan Rx Management Medical Pharmacy Trend Report™ payer survey included insights from U.S. health plans representing more than 105 million medical pharmacy lives. Data collection took place over two months in summer 2018 through a custom market research survey consisting of topics ranging from utilization and management trends to benefit design and provider network landscape. Validated results were analyzed based on percentage of payers or lives. Methodology for survey data analyses included stratification of payer sample by covered lives, small versus large plans, geographic dispersion, and respondent type (i.e., medical, pharmacy, or network directors).

Survey Respondent Sample

The payer survey included insights from a total of 45 U.S. payer respondents. Of the 45 respondents, 33 indicated they were responsible for managing Medicare Advantage lives in addition to their commercial population. Throughout the survey, these respondents were asked questions about their Medicare line of business in addition to their commercial lines of business (see figure 40). Respondents represented an array of plan sizes. The respondent sample was split between plans with less than 1 million covered lives representing half (53%) of the respondent sample, and larger plans representing the remaining 47%. Health plan respondents were mainly pharmacy directors (78%) and medical directors (7%). The remaining respondents were provider network directors and consultants (15%).

Survey participants represented all major lines of business beyond commercial and Medicare Advantage, including managed Medicaid and Health Insurance Exchange. Overall, the largest line of business was commercial, representing 60% of lives, while 11% of lives were attributed to Medicare Advantage (see figure 41).

Survey respondents from national plans constituted 9% of payers but represented 30% of total lives. Regional plans accounted for the other 70% of covered lives. The following map illustrates the geographic distribution of regional plan lives, showing 60% of participants on the West Coast, 30% located in the East, and 7% of lives located in the central region. National plans represented across all 50 states and D.C. were not included in this analysis (see figure 42).

The methodology for the ninth edition of the Magellan Rx Management Medical Pharmacy Trend Report was developed with original guidance from our payer advisory board as well as reader feedback on our previous trend reports.

FIGURE 40

2018 Respondent Sample

Commercial	Count ⁽ⁿ⁼⁾	% of Payers	Lives ⁽ⁿ⁼⁾	% of Lives
Less than 500,000	18	40%	2,593,681	2%
500,000 to 999,999	6	13%	3,790,000	4%
1,000,000 to 4,999,999	16	36%	34,151,414	32%
5,000,000 or more	5	11%	64,784,121	62%
Total	45	100%	105,319,216	100%

Medicare Advantage	Count ⁽ⁿ⁼⁾	% of Payers	Lives ⁽ⁿ⁼⁾	% of Lives
Less than 500,000	10	30%	1,788,347	3%
500,000 to 999,999	6	18%	3,790,000	6%
1,000,000 to 4,999,999	14	42%	30,731,618	45%
5,000,000 or more	3	9%	31,775,000	47%
Total	33	100%	68,084,965	100%

Therapeutic Classes Represented

Therapeutic classes represented in the survey were inclusive of current medical benefit drugs. To ensure accuracy of responses, respondents were provided with examples of drugs for each of the categories presented (see figure 43).

Health Plan Claims Data

Medical benefit drug utilization and trend data were collected through secondary analyses of commercial and Medicare Advantage health plan medical paid claims data for the most recent calendar years. Claims data were analyzed for medical pharmacy utilization across 1,065 HCPCS and several outpatient sites of service, including the physician office, home, and hospital outpatient facility. Claims billed from participating and nonparticipating providers were included. Vaccines and radiopharmaceuticals were excluded from the analyses. Administration codes were analyzed separately in only one analysis (see figure 9 in Medical Benefit Trend Drivers section); their utilization was not included in any other analysis. Most analyses compared calendar years 2016 and 2017. In some cases, the past five years were analyzed to show a longer period of year-over-year spend and trend. Shifts in claims data information have occurred due to adjustments.

FIGURE 41

2017 Lives by Line of Business

(n=45; 105 million covered lives)

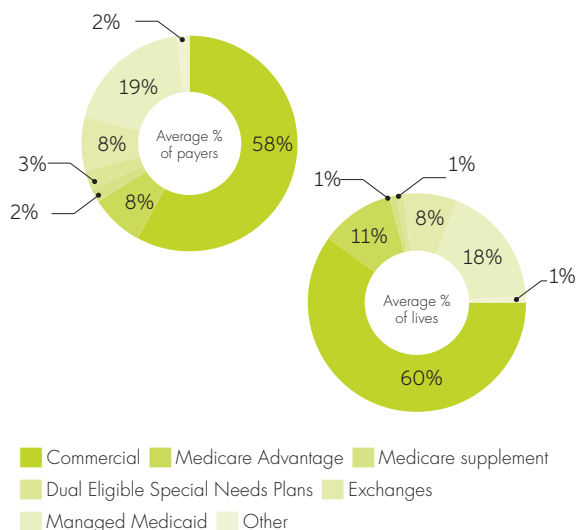


FIGURE 42

Regional Plans – Geographic Dispersion of Lives*

(n=41; 74 million lives)

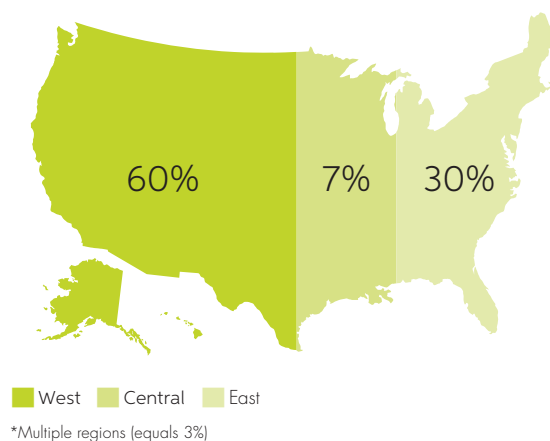


FIGURE 43

Medical Benefit Drug Examples for Therapeutic Classes in Payer Survey

DRUG CATEGORY	EXAMPLE DRUGS
Antihemophilic Factors	Advate, Xyntha, Recombinate
Asthma	Nucala, Xolair, Cinqair, Fasenra
Biologic Drugs for Autoimmune Disorders	Remicade, Orenzia, Cimzia, Actemra, Simponi Aria, Stelara, Entyvio
Botulinum Toxins	Botox, Dysport, Myobloc, Xeomin
Immune Globulin	IV: Gamunex, Gammagard; SQ: Hizentra, HyQvia
Multiple Sclerosis	Tysabri, Lemtrada, Ocrevus
Oncology	Avastin, Cyramza, Vectibix, Erbitux
Oncology Immunotherapy	Opdivo, Keytruda, Tecentriq, Imfinzi, Bavencio
Oncology Support	CSFs, ESAs, antiemetics, folinic acids
Ophthalmic Injections	Lucentis, Eylea, Macugen, bevacizumab
Viscosupplementation	Orthovisc, Synvisc, Supartz, Hyalgan, Euflexxa, Gel-One, Monovisc

Appendix

PMPM TRENDS

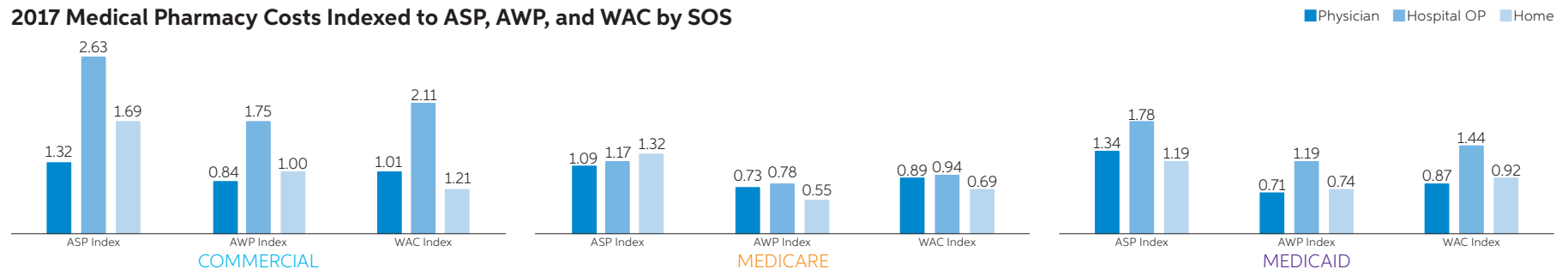
FIGURE A1

Medical Pharmacy Allowed Amount PMPM and Year-Over-Year Trend by LOB by Site of Service 2013-2017

	2013	2014	2013-2014 % Change	2015	2014-2015 % Change	2016	2015-2016 % Change	2017	2016-2017 % Change
COMMERCIAL									
Home	\$2.83	\$3.06	8%	\$3.66	20%	\$4.22	15%	\$5.91	40%
Hospital OP	\$9.39	\$10.41	11%	\$10.70	3%	\$13.02	22%	\$14.83	14%
Physician office	\$5.63	\$6.47	15%	\$7.31	13%	\$8.25	13%	\$9.23	12%
Total	\$17.86	\$19.94	12%	\$21.68	9%	\$25.49	18%	\$29.97	18%
MEDICARE									
Home	\$3.06	\$4.04	32%	\$3.12	-23%	\$3.10	-1%	\$3.81	23%
Hospital OP	\$18.02	\$19.39	8%	\$18.49	-5%	\$18.79	2%	\$17.76	-5%
Physician office	\$21.57	\$20.48	-5%	\$24.24	18%	\$24.67	2%	\$30.62	24%
Total	\$42.65	\$43.90	3%	\$45.86	4%	\$46.56	2%	\$52.19	12%
MEDICAID									
Home	\$0.75	\$1.10	46%	\$1.03	-6%	\$1.02	0%	\$0.83	-19%
Hospital OP	\$3.29	\$2.62	-20%	\$3.93	50%	\$4.11	4%	\$4.45	8%
Physician office	\$3.04	\$2.41	-21%	\$2.62	9%	\$3.33	27%	\$3.01	-10%
Total	\$7.09	\$6.13	-14%	\$7.58	24%	\$8.46	12%	\$8.29	-2%

FIGURE A2

2017 Medical Pharmacy Costs Indexed to ASP, AWP, and WAC by SOS



THERAPEUTIC CLASS TRENDS

FIGURE A3

2017 Commercial Allowed Amount PMPM, Cost per Claim, and Patient Utilization by Disease State or Drug Category*

Rank	Therapy	2016 PMPM	2017 PMPM	2016-2017 % Change	% of Total PMPM	Cost per Claim	Members per 1,000	% of Members	ASP Trend	AWP Trend
1	Oncology	\$8.98	\$10.12	13%	35%	\$2,321	1.67	1.9%	2%	2%
2	BDAIDs: Crohn's Disease/ Ulcerative Colitis	\$2.28	\$3.01	32%	10%	\$7,610	0.27	0.3%	2%	1%
3	Immune Globulin	\$1.91	\$2.34	23%	8%	\$4,055	0.13	0.1%	7%	2%
4	Colony-Stimulating Factors	\$1.95	\$2.06	6%	7%	\$4,499	0.38	0.4%	27%	22%
5	Antihemophilic Factor	\$1.03	\$1.66	62%	6%	\$19,281	0.01	0.0%	-24%	-31%
6	BDAIDs: Rheumatoid Arthritis	\$1.11	\$1.21	9%	4%	\$4,963	0.17	0.2%	-1%	-3%
7	Multiple Sclerosis	\$0.72	\$0.91	26%	3%	\$10,084	0.05	0.1%	3%	2%
8	Enzyme Replacement Therapy	\$0.51	\$0.73	44%	2%	\$22,132	0.01	0.0%	19%	1%
9	Unclassified	\$0.25	\$0.66	164%	2%	\$597	1.63	1.9%	-	-
10	Hematology	\$0.49	\$0.62	28%	2%	\$11,064	0.01	0.0%	17%	18%
11	BDAIDs: Psoriasis/ Psoriatic Arthritis	\$0.51	\$0.53	4%	2%	\$7,788	0.06	0.1%	3%	-2%
12	Asthma/COPD	\$0.36	\$0.51	42%	2%	\$433	2.53	2.9%	19%	4%
13	Infectious Disease	\$0.42	\$0.50	19%	2%	\$102	8.37	9.6%	8%	0%
14	Ophthalmic Injections	\$0.42	\$0.47	12%	2%	\$1,274	0.41	0.5%	1%	0%
15	Other	\$0.35	\$0.42	20%	2%	\$106	7.28	8.3%	-5%	-3%
16	Antiemetics	\$0.48	\$0.40	-16%	1%	\$131	5.72	6.5%	-3%	-3%
17	Contraceptives	\$0.33	\$0.38	15%	1%	\$609	2.43	2.8%	16%	0%
18	Botulinum Toxins	\$0.33	\$0.38	15%	1%	\$1,045	0.58	0.7%	0%	1%
19	Pain Management	\$0.25	\$0.27	8%	1%	\$44	10.55	12.1%	-13%	-12%
20	Iron, IV	\$0.20	\$0.27	35%	1%	\$488	0.67	0.8%	5%	1%
21	Gastrointestinal: Chemoprotectant/ Hormonal	\$0.25	\$0.23	-8%	1%	\$7,220	0.02	0.0%	4%	2%
22	Viscosupplementation	\$0.25	\$0.23	-8%	1%	\$332	1.08	1.2%	1%	-7%
23	BDAIDs: Systemic Lupus Erythematosus	\$0.18	\$0.21	16%	1%	\$3,843	0.02	0.0%	-4%	-5%
24	Hereditary Angioedema	\$0.26	\$0.21	-19%	1%	\$23,248	0.00	0.0%	7%	10%
25	BDAIDs: Other	\$0.15	\$0.20	33%	1%	\$6,462	0.03	0.0%	11%	6%
26	Pulmonary Arterial Hypertension	\$0.13	\$0.13	0%	0%	\$12,839	0.00	0.0%	3%	6%
27	Corticosteroids	\$0.13	\$0.12	-8%	0%	\$10	28.97	33.1%	-15%	-11%
28	Alpha-1 Proteinase Inhibitor (For Emphysema)	\$0.11	\$0.11	0%	0%	\$4,929	0.00	0.0%	145%	155%
29	BDAIDs: Ankylosing Spondylitis	\$0.09	\$0.10	11%	0%	\$5,583	0.01	0.0%	5%	1%
30	Bone Resorption Inhibitors (Osteoporosis)	\$0.08	\$0.10	25%	0%	\$1,056	0.31	0.4%	0%	-2%
31	Erythropoiesis-Stimulating Agents	\$0.10	\$0.10	0%	0%	\$939	0.08	0.1%	3%	1%
32	Fluids	\$0.15	\$0.09	-40%	0%	\$30	4.10	4.7%	-35%	-28%
33	Sedatives/Anesthesia	\$0.10	\$0.09	-10%	0%	\$35	5.34	6.1%	-5%	-16%
34	End-Stage Renal Disease: Erythropoiesis-Stimulating Agents	\$0.08	\$0.09	13%	0%	\$433	0.01	0.0%	6%	10%
35	Progestins	\$0.06	\$0.08	33%	0%	\$894	0.04	0.0%	584%	-9%
36	Cardiovascular Agent	\$0.10	\$0.08	-20%	0%	\$73	1.65	1.9%	-14%	-6%
37	Thyroid Agents	\$0.07	\$0.07	0%	0%	\$894	0.04	0.0%	31%	34%
38	Anticoagulants	\$0.08	\$0.06	-25%	0%	\$58	1.14	1.3%	174%	64%
39	Gout	\$0.02	\$0.04	100%	0%	\$16,857	0.00	0.0%	-42%	-36%
40	BDAIDs: Rare Autoinflammatory Conditions	\$0.04	\$0.03	-25%	0%	\$25,789	0.00	0.0%	14%	3%
41	Diabetes	\$0.03	\$0.03	0%	0%	\$274	0.25	0.3%	14%	15%
42	Testosterone	\$0.03	\$0.03	0%	0%	\$25	0.61	0.7%	3%	-5%
43	CNS: Skeletal Muscle Relaxants	\$0.02	\$0.02	0%	0%	\$364	0.16	0.2%	-17%	-18%
44	CNS Agents: Rare Diseases	-	\$0.02	0%	0%	\$45,701	0.00	0.0%	-	-
45	Transplant	\$0.01	\$0.02	100%	0%	\$1,246	0.01	0.0%	12%	60%
46	Corticotropin, ACTH	\$0.07	\$0.02	-71%	0%	\$1,018	0.04	0.0%	6%	-4%
47	Antipsychotics	\$0.01	\$0.01	0%	0%	\$155	0.26	0.3%	22%	19%
48	Rho(D) Immune Globulin	\$0.01	\$0.01	0%	0%	\$146	0.32	0.4%	1%	-3%

*Disease states or drug categories included had ≥\$0.01 PMPM spend.

FIGURE A4

2017 Medicare Allowed Amount PMPM, Cost per Claim, and Patient Utilization by Disease State or Drug Category*

Rank	Therapy	2016 PMPM	2017 PMPM	2016-2017 % Change	% of Total PMPM	Cost per Claim	Members per 1,000	% of Members	ASP Trend	AWP Trend
1	Oncology	\$21.91	\$24.25	11%	46%	\$1,517	7.97	4.4%	-2%	-4%
2	Ophthalmic Injections	\$4.99	\$5.98	20%	11%	\$858	10.10	3.8%	-2%	-2%
3	Colony-Stimulating Factors	\$3.70	\$3.66	-1%	7%	\$2,522	1.89	0.7%	-2%	-6%
4	Immune Globulin	\$2.50	\$2.84	13%	5%	\$2,564	0.32	0.2%	-1%	-7%
5	BDAIDs: Rheumatoid Arthritis	\$1.64	\$1.78	9%	3%	\$3,707	0.36	0.2%	-1%	-1%
6	Antihemophilic Factor	\$0.45	\$1.28	185%	2%	\$16,867	0.02	0.0%	-5%	-17%
7	Erythropoiesis-Stimulating Agents	\$1.05	\$1.10	5%	2%	\$649	1.54	0.6%	-7%	-9%
8	Multiple Sclerosis	\$0.78	\$0.95	21%	2%	\$7,181	0.08	0.0%	4%	2%
9	Hematology	\$0.87	\$0.88	1%	2%	\$2,786	0.06	0.0%	3%	1%
10	BDAIDs: Crohn's Disease/Ulcerative Colitis	\$0.71	\$0.84	19%	2%	\$4,579	0.15	0.1%	2%	0%
11	Viscosupplementation	\$0.78	\$0.79	1%	2%	\$256	5.22	2.9%	-2%	-7%
12	Unclassified	\$0.64	\$0.78	21%	2%	\$733	1.70	0.9%	-	-100%
13	Other	\$0.53	\$0.77	45%	2%	\$58	21.88	12.2%	-14%	-14%
14	Asthma/COPD	\$0.63	\$0.71	12%	1%	\$179	6.54	3.6%	17%	0%
15	Gastrointestinal: Chemoprotectant/Hormonal	\$0.67	\$0.70	4%	1%	\$4,448	0.08	0.0%	-4%	-6%
16	Antiemetics	\$0.66	\$0.62	-6%	1%	\$138	3.78	2.1%	-4%	-1%
17	Bone Resorption Inhibitors (Osteoporosis)	\$0.55	\$0.60	9%	1%	\$792	2.70	1.5%	-2%	-3%
18	Infectious Disease	\$0.59	\$0.57	-4%	1%	\$50	18.00	10.0%	1%	-22%
19	Iron, IV	\$0.32	\$0.52	63%	1%	\$392	2.01	1.1%	-2%	-7%
20	Botulinum Toxins	\$0.43	\$0.48	12%	1%	\$807	1.19	0.7%	-1%	-1%
21	Cardiovascular Agent	\$0.29	\$0.36	24%	1%	\$120	3.75	2.1%	-37%	-29%
22	Corticosteroids	\$0.22	\$0.32	45%	1%	\$10	70.50	39.2%	-7%	0%
23	BDAIDs: Psoriasis/Psoriatic Arthritis	\$0.21	\$0.24	14%	0%	\$4,910	0.05	0.0%	-9%	-13%
24	Alpha-1 Proteinase Inhibitor (For Emphysema)	\$0.25	\$0.23	-8%	0%	\$3,302	0.01	0.0%	35%	42%
25	Pulmonary Arterial Hypertension	\$0.33	\$0.15	-55%	0%	\$11,284	0.02	0.0%	0%	2%
26	BDAIDs: Ankylosing Spondylitis	\$0.08	\$0.13	63%	0%	\$4,688	0.03	0.0%	0%	-3%
27	Pain Management	\$0.09	\$0.10	7%	0%	\$18	12.25	6.8%	-30%	-36%
28	BDAID: Systemic Lupus Erythematosus	\$0.08	\$0.09	12%	0%	\$2,350	0.02	0.0%	3%	2%
29	BDAIDs: Other	\$0.09	\$0.08	-11%	0%	\$3,446	0.03	0.0%	2%	-1%
30	End-Stage Renal Disease: Erythropoiesis-Stimulating Agents	\$0.04	\$0.05	25%	0%	\$104	0.06	0.0%	-4%	5%
31	Fluids	\$0.07	\$0.05	-29%	0%	\$9	4.81	2.7%	-43%	4%
32	Gout	\$0.00	\$0.04	774%	0%	\$15,336	0.00	0.0%	-1%	16%
33	Enzyme Replacement Therapy	\$0.16	\$0.04	-77%	0%	\$17,309	0.00	0.0%	-6%	-5%
34	CNS: Skeletal Muscle Relaxants	\$0.03	\$0.03	0%	0%	\$288	0.24	0.1%	-3%	-5%
35	Antipsychotics	\$0.01	\$0.03	200%	0%	\$457	0.09	0.0%	-6%	-4%
36	Diabetes	\$0.02	\$0.03	50%	0%	\$207	0.32	0.2%	9%	10%
37	Testosterone	\$0.02	\$0.02	0%	0%	\$10	1.24	0.7%	-3%	-7%
38	Anticoagulants	\$0.03	\$0.02	-33%	0%	\$15	1.28	0.7%	9%	-13%
39	Anticonvulsants	\$0.00	\$0.02	833%	0%	\$1,942	0.02	0.0%	1663%	-98%
40	Sedatives/Anesthesia	\$0.03	\$0.02	-33%	0%	\$10	3.46	1.9%	-46%	-40%
41	Thyroid Agents	\$0.03	\$0.02	-33%	0%	\$1,487	0.04	0.0%	91%	93%
42	Transplant	\$0.02	\$0.01	-50%	0%	\$1,238	0.01	0.0%	14%	172%

*Disease states or drug categories included had ≥\$0.01 PMPM spend.

FIGURE A5

2017 Medicaid Allowed Amount PMPM, Cost per Claim, and Patient Utilization by Disease State or Drug Category*

Rank	Therapy	2016 PMPM	2017 PMPM	2016-2017 % Change	% of Total PMPM	Cost per Claim	Members per 1,000	% of Members	ASP Trend	AWP Trend
1	Oncology	\$2.74	\$2.87	5%	34%	\$1,625	0.58	0.9%	-3%	12%
2	Colony-Stimulating Factors	\$0.62	\$0.72	16%	9%	\$4,274	0.15	0.2%	27%	10%
3	BDAIDs: Crohn's Disease/Ulcerative Colitis	\$0.62	\$0.54	-13%	6%	\$6,182	0.07	0.1%	-8%	-16%
4	Immune Globulin	\$0.48	\$0.48	0%	6%	\$3,224	0.06	0.1%	36%	31%
5	Contraceptives	\$0.60	\$0.40	-34%	5%	\$343	4.76	5.0%	-51%	34%
6	Progestins	\$0.16	\$0.28	75%	3%	\$564	0.17	0.3%	22%	-44%
7	BDAIDs: Rheumatoid Arthritis	\$0.28	\$0.23	-18%	3%	\$3,769	0.04	0.1%	-24%	-26%
8	Botulinum Toxins	\$0.22	\$0.22	0%	3%	\$1,310	0.27	0.4%	20%	17%
9	Enzyme Replacement Therapy	\$0.19	\$0.22	11%	3%	\$13,645	0.01	0.0%	-21%	-24%
10	Hematology	\$0.16	\$0.21	31%	3%	\$2,212	0.01	0.0%	47%	46%
11	Multiple Sclerosis	\$0.22	\$0.21	-5%	3%	\$7,914	0.01	0.0%	3%	9%
12	Infectious Disease	\$0.22	\$0.20	-9%	2%	\$51	7.96	12.7%	-25%	-37%
13	Antiemetics	\$0.17	\$0.20	18%	2%	\$59	6.98	11.2%	18%	30%
14	Unclassified	\$0.05	\$0.17	240%	2%	\$1,452	0.21	0.3%	-	-
15	Asthma/COPD	\$0.12	\$0.13	8%	2%	\$161	2.40	3.8%	5%	4%
16	Antihemophilic Factor	\$0.36	\$0.12	-67%	1%	\$15,753	0.02	0.0%	-56%	-58%
17	Corticosteroids	\$0.08	\$0.11	38%	1%	\$13	16.11	25.8%	-20%	-4%
18	Iron, IV	\$0.07	\$0.10	43%	1%	\$571	0.27	0.4%	-21%	-13%
19	Other	\$0.09	\$0.10	11%	1%	\$40	4.38	7.0%	-37%	-26%

Rank	Therapy	2016 PMPM	2017 PMPM	2016-2017 % Change	% of Total PMPM	Cost per Claim	Members per 1,000	% of Members	ASP Trend	AWP Trend
20	Hereditary Angioedema	\$0.09	\$0.07	-22%	1%	\$24,030	0.00	0.0%	-22%	-5%
21	BDAIDs: Psoriasis/Psoriatic Arthritis	\$0.09	\$0.07	-22%	1%	\$6,592	0.01	0.0%	25%	10%
22	BDAIDs: Other	\$0.04	\$0.06	50%	1%	\$6,628	0.01	0.0%	37%	20%
23	CNS: Skeletal Muscle Relaxants	\$0.06	\$0.06	9%	1%	\$323	0.75	0.8%	81%	71%
24	Cardiovascular Agent	\$0.04	\$0.06	50%	1%	\$72	1.31	2.1%	22%	29%
25	Pain Management	\$0.09	\$0.06	-33%	1%	\$12	9.82	15.7%	-76%	-75%
26	Ophthalmic Injections	\$0.11	\$0.06	-45%	1%	\$477	0.18	0.2%	-29%	-29%
27	Erythropoiesis-Stimulating Agents	\$0.04	\$0.06	50%	1%	\$909	0.06	0.1%	11%	1%
28	Viscosupplementation	\$0.05	\$0.04	-20%	1%	\$236	0.33	0.3%	38%	7%
29	Gastrointestinal: Chemoprotectant/Hormonal	\$0.04	\$0.04	0%	1%	\$2,547	0.01	0.0%	11%	4%
30	Alpha-1 Proteinase Inhibitor (For Emphysema)	\$0.01	\$0.03	200%	0%	\$4,101	0.00	0.0%	-	-
31	Anticoagulants	\$0.04	\$0.03	-25%	0%	\$40	1.02	1.6%	167%	95%
32	BDAIDs: Systemic Lupus Erythematosus	\$0.03	\$0.02	-33%	0%	\$3,917	0.00	0.0%	-68%	-68%
33	Fluids	\$0.05	\$0.02	-60%	0%	\$23	1.44	2.3%	-29%	-41%
34	Gout	\$0.01	\$0.02	100%	0%	\$9,923	0.00	0.0%	-	-
35	Rho(D) Immune Globulin	\$0.01	\$0.02	100%	0%	\$110	0.88	0.9%	23%	49%
36	Corticotropin, ACTH	\$0.03	\$0.02	-33%	0%	\$2,112	0.03	0.0%	-36%	26%
37	Sedatives/Anesthesia	\$0.04	\$0.02	-50%	0%	\$10	3.61	5.8%	-64%	-44%
38	Bone Resorption Inhibitors (Osteoporosis)	\$0.01	\$0.01	0%	0%	\$773	0.05	0.1%	-31%	-33%
39	BDAIDs: Ankylosing Spondylitis	\$0.02	\$0.01	-50%	0%	\$2,299	0.00	0.0%	-63%	-67%

*Disease states or drug categories included had ≥\$0.01 PMPM spend.

MEDICAL BENEFIT TOP DRUG TRENDS

FIGURE A6

Commercial Top 25 Drugs by Spend, Cost per Patient, Cost per Claim, and Cost per Unit 2015-2016*

Rank	Change	HCPCS	Brand	PMPM			COST PER CLAIM			CLAIMS PER PATIENT			COST PER UNIT			UNITS PER CLAIM			MEMBERS PER 1,000		
				2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change
1	▶	J1745	Remicade	\$2.67	\$3.05	14%	\$6,636	\$6,859	3%	5.7	6.2	7%	\$131	\$143	9%	50.5	48.0	-5%	0.30	0.30	2%
2	▶	J2505	Neulasta	\$1.82	\$1.96	8%	\$6,099	\$6,851	12%	4.0	4.2	5%	\$4,932	\$6,696	36%	1.2	1.0	-17%	0.33	0.31	-8%
3	▲	J9310	Rituxan	\$1.24	\$1.51	22%	\$8,756	\$9,954	14%	4.1	4.3	3%	\$1,092	\$1,309	20%	8.0	7.6	-5%	0.15	0.15	4%
4	▼	J9355	Herceptin	\$1.22	\$1.39	14%	\$5,371	\$5,365	0%	10.0	11.4	14%	\$130	\$141	8%	41.3	38.0	-8%	0.10	0.10	3%
5	▶	J9035	Avastin	\$1.20	\$1.14	-5%	\$4,710	\$4,298	-9%	5.3	6.6	25%	\$111	\$113	1%	42.3	38.2	-10%	0.21	0.18	-14%
6	▲	J1561	Gamunex-C/Gammaked	\$0.62	\$0.74	20%	\$5,071	\$4,912	-3%	12.2	13.4	10%	\$71	\$73	3%	71.1	67.1	-6%	0.03	0.04	8%
7	▼	J2323	Tysabri	\$0.65	\$0.72	11%	\$7,983	\$8,509	7%	8.3	8.5	3%	\$27	\$29	7%	294.4	292.0	-1%	0.04	0.04	2%
8	▶	J9299	Opdivo	\$0.63	\$0.71	12%	\$7,372	\$6,319	-14%	8.1	10.1	25%	\$38	\$36	-5%	192.7	173.3	-10%	0.05	0.06	39%
9	▲	J3380	Entyvio	\$0.40	\$0.69	73%	\$7,694	\$7,943	3%	4.7	5.1	7%	\$26	\$27	3%	294.4	296.3	1%	0.04	0.07	54%
10	▶	J1569	Gammagard Liquid	\$0.48	\$0.58	21%	\$4,452	\$4,551	2%	11.0	10.5	-5%	\$63	\$65	4%	71.1	70.1	-2%	0.03	0.04	23%
11	▼	J7192	Factor VIII (Recombinant)	\$0.50	\$0.57	13%	\$19,026	\$15,752	-17%	10.7	14.6	37%	\$3	\$2	-16%	6,557.8	6,493.8	-1%	0.01	0.01	-9%
12	▼	J9306	Perjeta	\$0.45	\$0.54	22%	\$7,500	\$7,613	2%	6.4	7.0	10%	\$16	\$17	2%	455.9	454.7	0%	0.04	0.06	42%
13	▲	J1300	Soliris	\$0.38	\$0.49	28%	\$28,587	\$33,940	19%	16.6	14.4	-13%	\$282	\$334	18%	101.5	101.7	0%	0.00	0.00	19%
14	▲	J9271	Keytruda	\$0.16	\$0.48	203%	\$12,371	\$12,988	5%	4.8	5.7	20%	\$71	\$73	3%	175.1	179.0	2%	0.01	0.03	153%
15	▼	J0897	Xgeva/Prolia	\$0.39	\$0.46	19%	\$2,028	\$2,188	8%	2.5	2.5	-1%	\$22	\$24	9%	91.4	90.3	-1%	0.34	0.39	13%
16	▲	J2357	Xolair	\$0.34	\$0.43	26%	\$2,386	\$2,449	3%	7.5	8.2	9%	\$35	\$39	11%	68.8	63.4	-8%	0.08	0.08	1%
17	▼	J3357	Stelara	\$0.33	\$0.41	23%	\$15,088	\$17,694	17%	2.8	2.8	-1%	\$219	\$245	12%	69.1	72.1	4%	0.03	0.03	-2%
18	▲	J9228	Yervoy	\$0.34	\$0.37	8%	\$53,796	\$47,836	-11%	3.5	4.0	15%	\$202	\$208	3%	266.8	230.3	-14%	0.01	0.01	6%
19	▼	J0585	Botox	\$0.32	\$0.36	14%	\$1,113	\$1,048	-6%	2.4	2.8	16%	\$7	\$7	3%	169.4	155.1	-8%	0.53	0.55	5%
20	▲	J3490	Unclassified	\$0.11	\$0.36	218%	\$133	\$332	150%	2.4	2.7	10%	\$22	\$35	60%	6.0	9.4	56%	1.37	1.45	6%
21	▲	J0178	Eylea	\$0.26	\$0.30	19%	\$2,204	\$2,223	1%	4.9	5.3	7%	\$1,043	\$1,041	0%	2.1	2.1	1%	0.12	0.14	16%
22	▼	J9305	Alimta	\$0.34	\$0.29	-14%	\$7,546	\$6,967	-8%	5.0	5.8	16%	\$90	\$94	5%	84.2	73.9	-12%	0.04	0.04	4%
23	▼	J0129	Orencia	\$0.27	\$0.29	6%	\$4,077	\$4,368	7%	7.9	7.4	-6%	\$52	\$56	7%	78.1	78.4	0%	0.04	0.04	10%
24	▲	J1459	Privigen	\$0.21	\$0.27	29%	\$4,791	\$4,404	-8%	10.2	11.1	9%	\$73	\$70	-4%	65.7	63.1	-4%	0.01	0.02	21%
25	▼	J9264	Abraxane	\$0.26	\$0.23	-8%	\$3,267	\$2,892	-12%	9.1	10.5	15%	\$16	\$17	7%	204.0	168.1	-18%	0.04	0.04	18%
Top 25				\$15.59	\$18.36	32%	\$9,122	\$9,130	7%	6.8	7.4	10%	\$351	\$436	8%	378.5	370.7	-3%	0.16	0.17	17%
Total				\$25.49	\$29.97	18%	\$477	\$569	19%	4.1	4.2	3%	\$13	\$13	-1%	35.4	42.6	20%	53.86	51.12	-5%

*Please note that due to rounding, some column totals do not add up accurately.

FIGURE A7

Medicare Top 25 Drugs by Spend, Cost per Patient, Cost per Claim, and Cost per Unit 2015-2016*

Rank	Change	HCPCS	Brand	PMPM			COST PER CLAIM			CLAIMS PER PATIENT			COST PER UNIT			UNITS PER CLAIM			MEMBERS PER 1,000		
				2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change
1	▲	J9310	Rituxan	\$3.36	\$3.46	3%	\$5,440	\$5,496	1%	4.3	4.8	11%	\$801	\$844	5%	6.8	6.5	-4%	0.86	0.82	-5%
2	▼	J2505	Neulasta	\$3.45	\$3.43	-1%	\$4,081	\$4,241	4%	3.4	3.5	4%	\$4,078	\$4,241	4%	1.0	1.0	0%	1.05	1.41	34%
3	▶	J9299	Opdivo	\$2.88	\$3.31	15%	\$4,988	\$4,465	-10%	8.8	11.5	30%	\$27	\$26	-3%	185.9	170.8	-8%	0.39	0.40	2%
4	▲	J0178	Eylea	\$2.58	\$3.30	28%	\$2,168	\$2,096	-3%	4.7	5.1	8%	\$988	\$976	-1%	2.2	2.1	-2%	1.72	2.39	39%
5	▲	J2778	Lucentis	\$2.02	\$2.27	12%	\$1,962	\$1,815	-8%	5.1	5.9	17%	\$390	\$379	-3%	5.0	4.8	-5%	1.38	1.62	17%
6	▼	J9035	Avastin	\$2.57	\$2.19	-14%	\$796	\$645	-19%	4.2	4.6	10%	\$74	\$73	-1%	10.8	8.8	-18%	4.63	4.56	-2%
7	▲	J9355	Herceptin	\$1.63	\$1.97	21%	\$3,762	\$3,375	-10%	9.0	13.1	45%	\$94	\$96	3%	40.1	35.1	-13%	0.29	0.27	-7%
8	▼	J0897	Xgeva/Prolia	\$1.75	\$1.93	10%	\$1,353	\$1,401	4%	2.1	2.1	1%	\$16	\$17	3%	83.4	83.5	0%	2.69	2.93	9%
9	▲	J9271	Keytruda	\$0.49	\$1.70	244%	\$8,169	\$8,424	3%	4.9	5.1	3%	\$47	\$47	0%	172.3	178.5	4%	0.07	0.25	259%
10	▼	J1745	Remicade	\$1.45	\$1.55	7%	\$3,976	\$4,071	2%	5.2	5.3	2%	\$84	\$86	3%	47.5	47.3	0%	0.29	0.30	1%
11	▲	J1569	Gammagard Liquid	\$0.91	\$1.19	30%	\$3,288	\$3,229	-2%	10.0	9.1	-9%	\$44	\$43	-2%	74.9	75.3	0%	0.10	0.16	54%
12	▼	J9041	Velcade	\$1.14	\$1.05	-8%	\$1,422	\$1,016	-29%	15.7	24.6	56%	\$50	\$48	-4%	28.5	21.2	-26%	0.30	0.26	-14%
13	▼	J9305	Alimta	\$1.21	\$0.91	-25%	\$4,818	\$3,807	-21%	5.2	6.0	15%	\$64	\$67	4%	74.9	57.2	-24%	0.29	0.25	-13%
14	▲	J9034	Bendeka	-	\$0.75	-	-	\$3,885	-	-	7.4	-	-	\$25	-	-	153.5	-	-	0.16	-
15	▼	J2323	Tysabri	\$0.70	\$0.71	2%	\$5,279	\$5,641	7%	8.3	7.1	-13%	\$18	\$19	7%	299.2	300.0	0%	0.07	0.07	2%
16	▼	J2353	Sandostatin	\$0.66	\$0.69	5%	\$4,873	\$5,008	3%	7.1	7.8	9%	\$169	\$179	6%	28.9	28.0	-3%	0.08	0.11	40%
17	▲	J9306	Perjeta	\$0.45	\$0.62	38%	\$4,979	\$4,795	-4%	5.6	8.0	42%	\$11	\$11	2%	465.3	437.3	-6%	0.10	0.10	3%
18	▲	J0129	Orencia	\$0.45	\$0.61	35%	\$2,995	\$3,572	19%	7.8	7.5	-4%	\$41	\$47	16%	73.6	75.4	2%	0.08	0.10	17%
19	▼	J9264	Abraxane	\$0.60	\$0.60	0%	\$1,958	\$1,432	-27%	7.7	12.1	57%	\$10	\$10	0%	190.9	139.6	-27%	0.24	0.23	-4%
20	▼	J9217	Eligard/Lupron Depot	\$0.68	\$0.60	-12%	\$983	\$861	-12%	2.0	2.0	2%	\$243	\$213	-12%	4.0	4.0	0%	2.27	2.46	9%
21	▼	J1561	Gamunex-C/Gammaked	\$0.54	\$0.57	5%	\$3,694	\$2,443	-34%	8.4	14.8	75%	\$43	\$41	-4%	85.7	59.0	-31%	0.07	0.06	-15%
22	▼	J0881	Aranesp	\$0.60	\$0.55	-7%	\$1,009	\$983	-3%	5.4	5.5	0%	\$5	\$4	-12%	222.7	246.3	11%	0.69	0.70	2%
23	▶	J0885	Procrit	\$0.46	\$0.55	20%	\$453	\$480	6%	8.2	9.0	10%	\$13	\$13	0%	33.9	36.0	6%	0.78	0.84	9%
24	▲	J9395	Faslodex	\$0.46	\$0.53	15%	\$1,771	\$1,731	-2%	7.6	7.6	0%	\$98	\$98	0%	18.1	17.7	-2%	0.21	0.26	26%
25	▼	J1300	Solisris	\$0.60	\$0.49	-18%	\$21,869	\$22,113	1%	17.7	17.6	0%	\$220	\$228	4%	99.2	96.8	-2%	0.01	0.01	-3%
Top 25				\$31.64	\$35.51	17%	\$4,004	\$3,881	-6%	7.0	8.3	15%	\$318	\$313	1%	94.0	91.4	-6%	0.78	0.83	19%
Total				\$46.56	\$52.19	12%	\$475	\$423	-11%	4.3	4.5	5%	\$13	\$11	-11%	37.6	37.7	0%	96.24	118.55	23%

*Please note that due to rounding, some column totals do not add up accurately.

FIGURE A8

Medicaid Top 25 Drugs by Spend, Cost per Patient, Cost per Claim, and Cost per Unit 2015-2016*

Rank	Change	HCPCS	Brand	PMPM			COST PER CLAIM			CLAIMS PER PATIENT			COST PER UNIT			UNITS PER CLAIM			MEMBERS PER 1,000		
				2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change	2016	2017	% Change
1	▲	J2505	Neulasta	\$0.58	\$0.70	20%	\$5,018	\$6,008	20%	3.4	3.6	6%	\$5,018	\$5,971	19%	1.0	1.0	1%	0.14	0.1	-6%
2	▼	J1745	Remicade	\$0.77	\$0.67	-13%	\$4,891	\$5,813	19%	4.9	5.5	13%	\$106	\$127	19%	46.0	45.8	0%	0.13	0.1	-36%
3	▶	J9355	Herceptin	\$0.44	\$0.45	3%	\$4,783	\$4,599	-4%	7.9	10.4	32%	\$110	\$120	10%	43.7	38.3	-12%	0.07	0.1	-19%
4	▲	J1725	Makena	\$0.16	\$0.28	81%	\$714	\$590	-17%	9.3	12.4	33%	\$3	\$2	-9%	269.9	246.0	-9%	0.09	0.2	67%
5	▲	J9299	Opdivo	\$0.23	\$0.28	19%	\$5,329	\$5,368	1%	7.3	9.2	26%	\$29	\$32	10%	183.4	168.7	-8%	0.04	0.0	-6%
6	▼	J9035	Avastin	\$0.32	\$0.27	-14%	\$2,157	\$2,534	17%	4.2	5.2	25%	\$79	\$95	20%	27.1	26.6	-2%	0.21	0.1	-42%
7	▲	J1561	Gamunex-C/Gammaked	\$0.16	\$0.20	25%	\$4,304	\$3,383	-21%	8.3	9.6	16%	\$56	\$63	11%	76.6	54.0	-29%	0.02	0.0	35%
8	▲	J0585	Botox	\$0.19	\$0.20	5%	\$1,118	\$1,302	16%	2.2	2.5	13%	\$6	\$7	12%	180.7	187.7	4%	0.31	0.2	-19%
9	▼	J2323	Tysabri	\$0.19	\$0.20	4%	\$6,178	\$7,596	23%	6.7	7.5	12%	\$21	\$25	20%	292.0	300.0	3%	0.02	0.0	-25%
10	▲	J9271	Keytruda	\$0.04	\$0.19	338%	\$10,210	\$10,441	2%	3.3	5.0	52%	\$56	\$56	-1%	181.1	187.1	3%	0.008	0.022	183%
11	▶	J9306	Perjeta	\$0.16	\$0.17	8%	\$5,890	\$6,327	7%	5.6	6.5	15%	\$13	\$15	14%	455.6	431.0	-5%	0.03	0.03	-13%
12	▲	J1300	Soliris	\$0.12	\$0.17	42%	\$23,760	\$25,078	6%	12.5	10.6	-15%	\$238	\$243	2%	99.6	103.3	4%	0.00	0.00	58%
13	▼	J7307	Implanon	\$0.18	\$0.17	-2%	\$784	\$963	23%	1.0	1.0	-2%	\$784	\$963	23%	1.0	1.0	0%	1.31	1.07	-18%
14	▲	J3490	Unclassified	\$0.02	\$0.15	588%	\$83	\$1,708	1,946%	1.9	2.9	53%	\$17	\$415	2,318%	4.9	4.1	-15%	0.56	0.12	-79%
15	▼	J9310	Rituxan	\$0.26	\$0.15	-41%	\$5,942	\$4,936	-17%	3.6	3.6	-1%	\$820	\$733	-11%	7.2	6.7	-7%	0.05	0.03	-29%
16	▶	J2357	Xolair	\$0.12	\$0.12	7%	\$1,993	\$1,942	-3%	8.2	10.7	31%	\$36	\$36	-1%	54.9	54.1	-2%	0.03	0.04	28%
17	▼	J7298	Mirena	\$0.20	\$0.12	-40%	\$778	\$912	17%	1.1	1.0	-7%	\$777	\$912	17%	1.0	1.0	0%	1.41	0.78	-45%
18	▲	J0897	Xgeva	\$0.01	-	-	\$1,986	-	-	2.8	-	-	\$19	-	-	103.6	-	-	0.01	-	-
			Xgeva/Prolia	\$0.08	\$0.12	37%	\$1,801	\$2,130	18%	2.6	2.8	7%	\$19	\$20	11%	97.3	104.0	7%	0.07	0.08	8%
19	▼	J1569	Gammagard Liquid	\$0.14	\$0.12	-17%	\$3,410	\$2,608	-24%	7.2	8.0	11%	\$48	\$52	9%	71.5	50.0	-30%	0.02	0.02	-3%
20	▼	J9305	Alimta	\$0.12	\$0.11	-2%	\$5,245	\$4,622	-12%	4.2	6.6	57%	\$69	\$80	15%	75.6	58.1	-23%	0.03	0.02	-29%
21	▲	J1459	Privigen	\$0.05	\$0.11	104%	\$3,906	\$8,055	106%	6.4	8.3	30%	\$55	\$119	115%	70.4	67.6	-4%	0.01	0.01	12%
22	▲	J1743	Elaprase	\$0.04	\$0.09	122%	\$18,072	\$20,100	11%	15.0	17.3	15%	\$620	\$617	0%	29.1	32.6	12%	0.00	0.00	73%
23	▲	J2469	Aloxi	\$0.08	\$0.08	6%	\$328	\$417	27%	4.8	4.7	-1%	\$33	\$42	27%	10.0	10.0	0%	0.30	0.25	-17%
24	▲	J1439	Injectafer	\$0.05	\$0.08	68%	\$972	\$1,074	11%	2.1	2.1	3%	\$1	\$1	11%	745.3	741.8	0%	0.14	0.14	-3%
25	▼	J9264	Abraxane	\$0.10	\$0.08	-20%	\$2,628	\$2,259	-14%	7.8	10.7	38%	\$14	\$14	1%	194.1	165.9	-15%	0.03	0.02	-32%
			Top 25	\$4.20	\$4.58	55%	\$4,691	\$5,198	89%	5.6	6.8	19%	\$161	\$200	110%	132.9	128.6	-5%	0.20	0.14	2%
			Total	\$8.46	\$8.29	-2%	\$252	\$249	-1%	3.5	3.4	-3%	\$9	\$9	0%	27.4	27.0	-1%	37.70	38.37	2%

*Please note that due to rounding, some column totals do not add up accurately.

HIGHEST COST DRUGS

FIGURE A9

2017 10 Highest Cost per Patient per Year Commercial Medical Benefit Drugs by Annual Cost per Patient

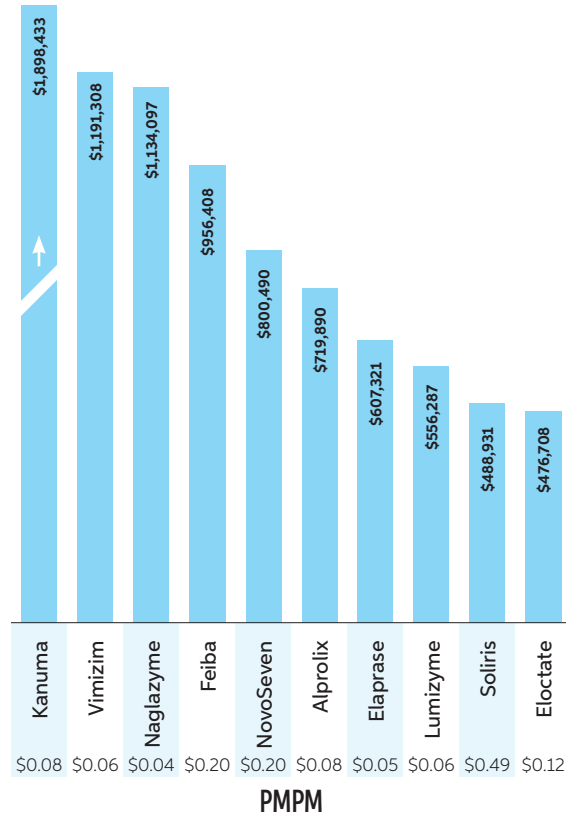


FIGURE A10

2017 10 Highest Cost per Patient per Year Medicare Medical Benefit Drugs by Annual Cost per Patient

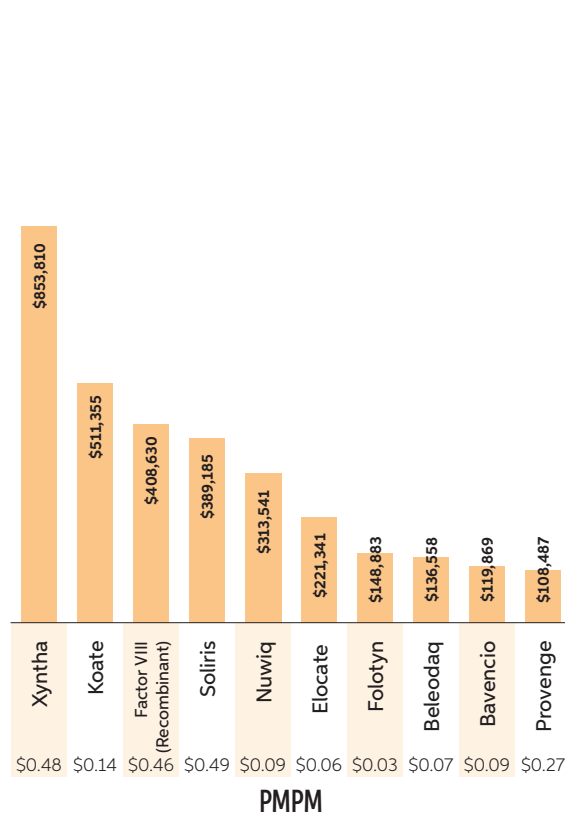


FIGURE A11

2017 10 Highest Cost per Patient per Year Medicaid Medical Benefit Drugs by Annual Cost per Patient

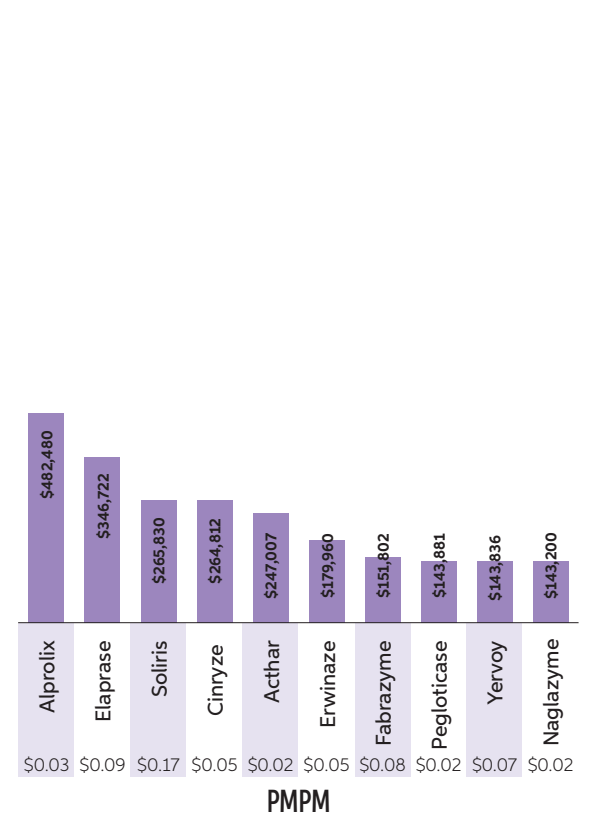


FIGURE A12

2017 Medical Pharmacy Percentage Spend by LOB

	COMMERCIAL PMPM	CUMULATIVE TOTAL	MEDICARE 2017 PMPM	CUMULATIVE TOTAL	MEDICAID 2017 PMPM	CUMULATIVE TOTAL
TOP 10	\$12.51	42%	\$25.10	48%	\$3.43	41%
TOP 25	\$18.36	61%	\$35.51	68%	\$5.28	64%
TOP 50	\$22.76	76%	\$43.77	84%	\$6.62	80%
TOP 100	\$26.80	89%	\$49.56	95%	\$7.68	93%
ALL OTHER	\$29.97	100%	\$52.19	100%	\$8.29	100%

MEDICAL BENEFIT MARKET SHARE AND MEMBER UTILIZATION BY CATEGORY

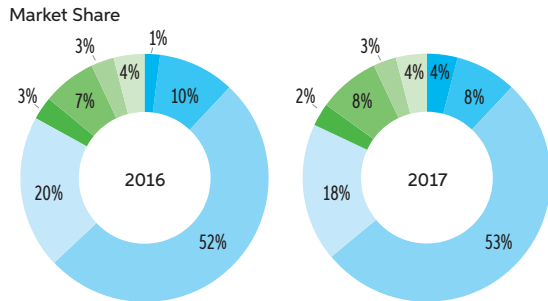
Please note that these analyses were meant to be a global assessment and were not at a diagnosis level. They did not take into consideration disease stage or line of therapy.

Antihemophilic

FIGURE A13

2017 Commercial Antihemophilic Factor Top Market Share, Cost per Patient, and PMPM*

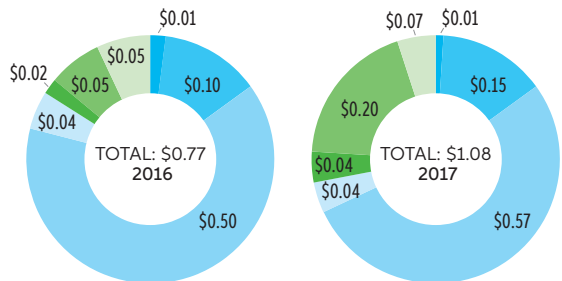
Alphanate, BeneFix, Factor VIII (Recombinant), Humate-P, Koate, NovoSeven, Wilate, Xyntha



Annual Cost per Patient

Brand	2016	2017
Alphanate	\$122,648	\$60,423
BeneFix	\$214,166	\$440,444
Factor VIII (Recombinant)	\$203,242	\$230,767
Humate-P	\$39,543	\$41,883
Koate	\$142,063	\$350,128
NovoSeven	\$167,923	\$800,490
Wilate	\$31,021	\$70,468
Xyntha	\$218,697	\$312,321

Allowed Amount PMPM

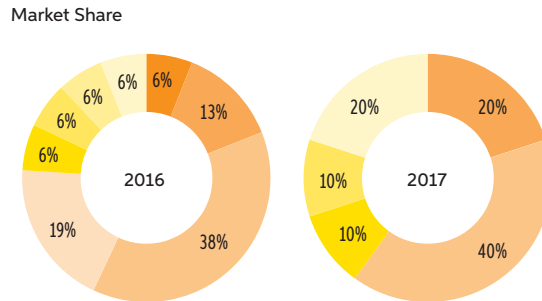


*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A14

2017 Medicare Antihemophilic Factor Top Market Share, Cost per Patient, and PMPM*

Alphanate, BeneFix, Factor VIII (Recombinant), Humate-P, Koate, NovoSeven, Wilate, Xyntha



Annual Cost per Patient

Brand	2016	2017
Alphanate	\$2,383	-
BeneFix	\$48,340	\$89,062
Factor VIII (Recombinant)	\$207,013	\$408,630
Humate-P	\$5,358	-
Koate	\$476,590	\$511,355
NovoSeven	\$167,990	\$2,308
Wilate	\$2,920	-
Xyntha	\$1,438,903	\$853,810

Allowed Amount PMPM

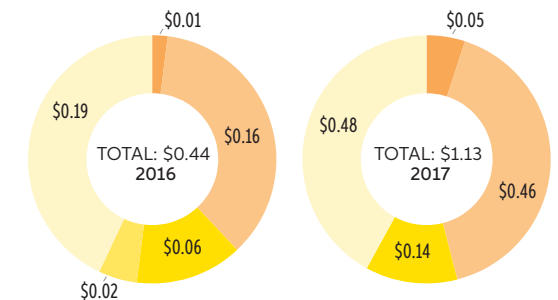
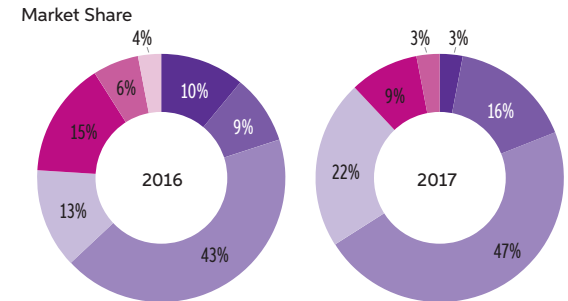


FIGURE A15

2017 Medicaid Antihemophilic Factor Top Market Share, Cost per Patient, and PMPM*

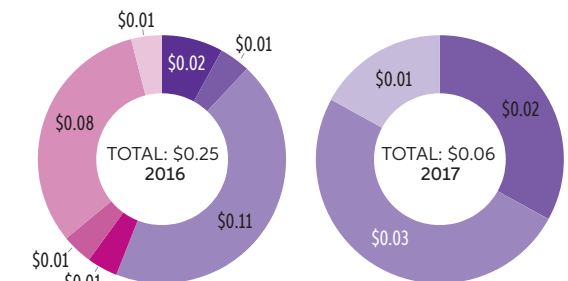
Alphanate, BeneFix, Factor VIII (Recombinant), Humate-P, Koate, NovoSeven, Wilate, Xyntha



Annual Cost per Patient

Brand	2016	2017
Alphanate	\$69,893	-
BeneFix	\$28,880	\$75,079
Factor VIII (Recombinant)	\$90,242	\$35,785
Humate-P	\$25,903	\$11,581
Koate	\$13,063	\$9,214
NovoSeven	\$440,100	\$2,300
Wilate	-	-
Xyntha	\$65,735	-

Allowed Amount PMPM



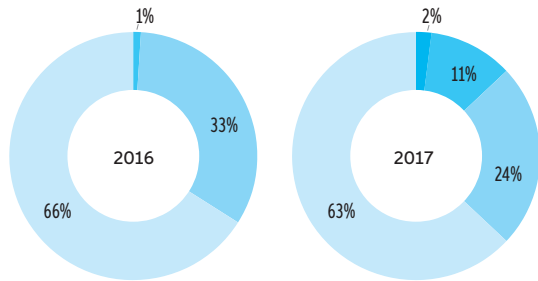
Asthma/COPD

FIGURE A16

2017 Commercial Asthma/COPD Top Market Share, Cost per Patient, and PMPM*

Cinqair Nucala Pulmicort Xolair

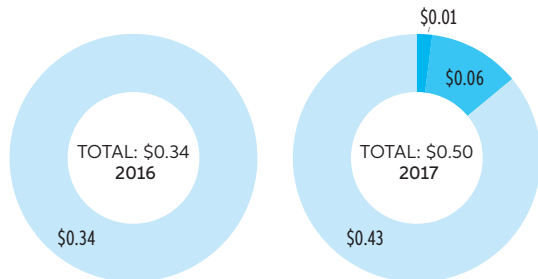
Market Share



Annual Cost per Patient

Brand	2016	2017
Cinqair	\$28,263	\$22,991
Nucala	\$2,625	\$17,089
Pulmicort	\$94	\$22
Xolair	\$17,924	\$20,106

Allowed Amount PMPM



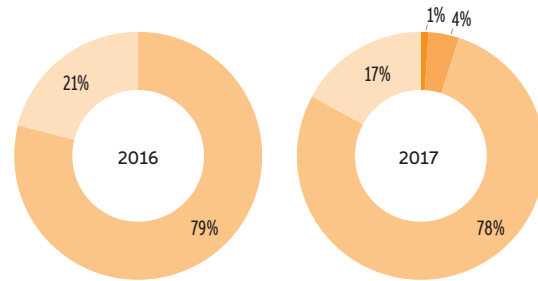
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A17

2017 Medicare Asthma/COPD Top Market Share, Cost per Patient, and PMPM*

Cinqair Nucala Pulmicort Xolair

Market Share



Annual Cost per Patient

Brand	2016	2017
Cinqair	-	\$10,557
Nucala	\$6,957	\$14,168
Pulmicort	\$1,357	\$966
Xolair	\$16,207	\$16,849

Allowed Amount PMPM

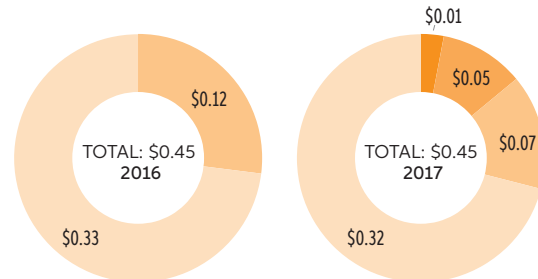
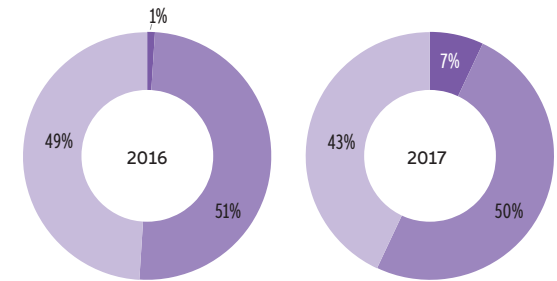


FIGURE A18

2017 Medicaid Asthma/COPD Top Market Share, Cost per Patient, and PMPM*

Cinqair Nucala Pulmicort Xolair

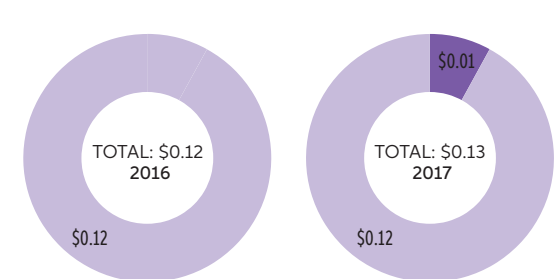
Market Share



Annual Cost per Patient

Brand	2016	2017
Cinqair	-	\$9,190
Nucala	\$5,834	\$8,732
Pulmicort	\$103	\$4
Xolair	\$16,263	\$20,812

Allowed Amount PMPM

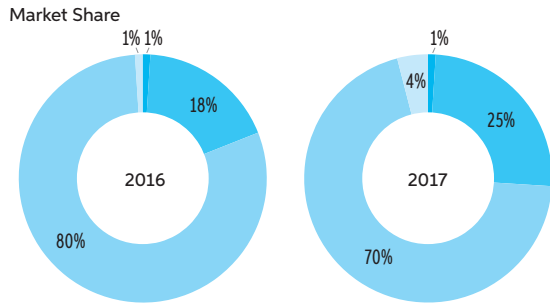


Biologic Drugs for Autoimmune Disorders

FIGURE A19

2017 Commercial BDAIDs: Crohn's Disease Top Market Share, Cost per Patient, and PMPM*

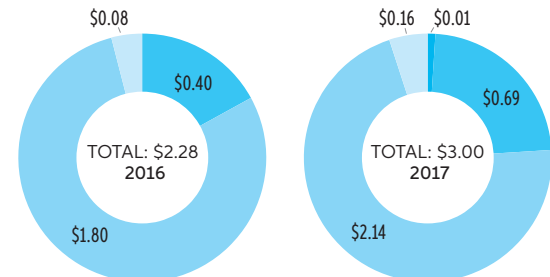
Cimzia Entyvio Remicade Stelara



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$13,603	\$22,919
Entyvio	\$36,245	\$40,204
Remicade	\$38,640	\$43,629
Stelara	\$129,238	\$107,484

Allowed Amount PMPM

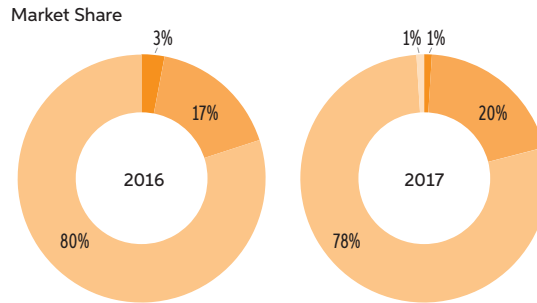


*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A20

2017 Medicare BDAIDs: Crohn's Disease Top Market Share, Cost per Patient, and PMPM*

Cimzia Entyvio Remicade Stelara



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$18,268	\$2,904
Entyvio	\$19,831	\$25,934
Remicade	\$21,378	\$20,904
Stelara	\$38,899	\$5,023

Allowed Amount PMPM

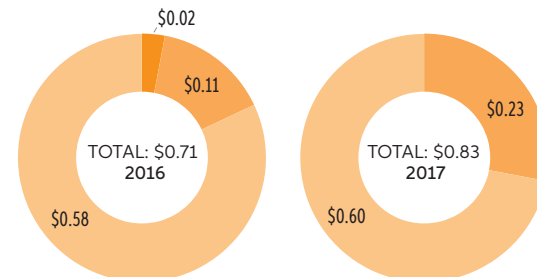
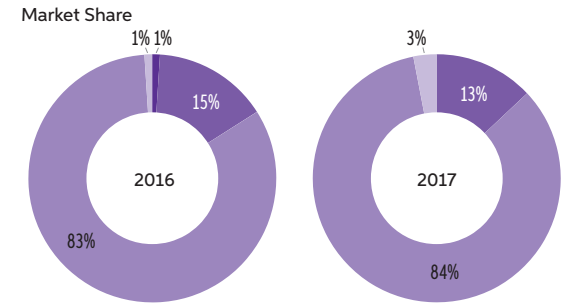


FIGURE A21

2017 Medicaid BDAIDs: Crohn's Disease Top Market Share, Cost per Patient, and PMPM*

Cimzia Entyvio Remicade Stelara



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$17,172	-
Entyvio	\$19,464	\$30,529
Remicade	\$24,139	\$31,752
Stelara	\$39,743	\$73,436

Allowed Amount PMPM

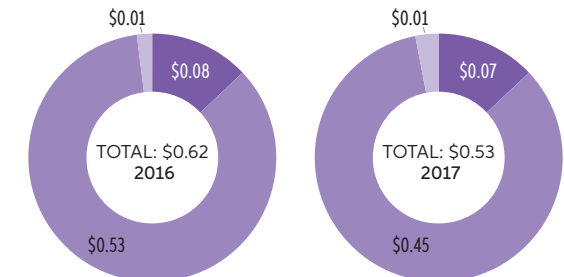
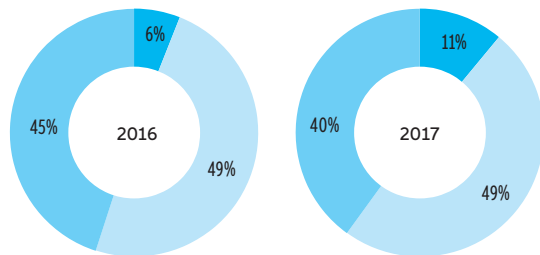


FIGURE A22

2017 Commercial BDAIDs: Psoriasis Top Market Share, Cost per Patient, and PMPM*

Cimzia Remicade Stelara

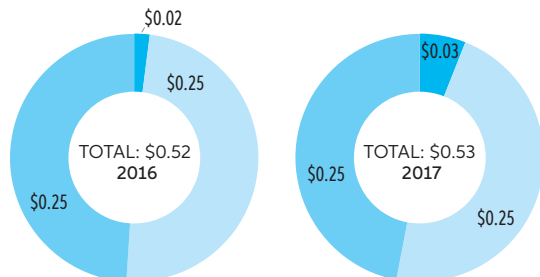
Market Share



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$20,447	\$23,991
Remicade	\$36,466	\$38,882
Stelara	\$34,309	\$36,659

Allowed Amount PMPM



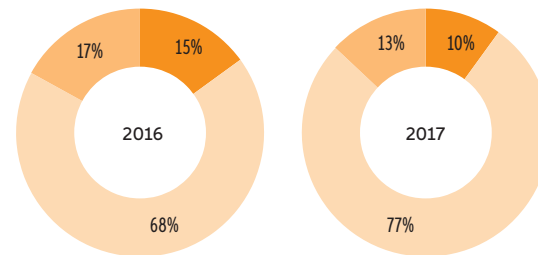
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A23

2017 Medicare BDAIDs: Psoriasis Top Market Share, Cost per Patient, and PMPM*

Cimzia Remicade Stelara

Market Share



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$12,020	\$15,285
Remicade	\$21,841	\$26,711
Stelara	\$38,899	\$33,243

Allowed Amount PMPM

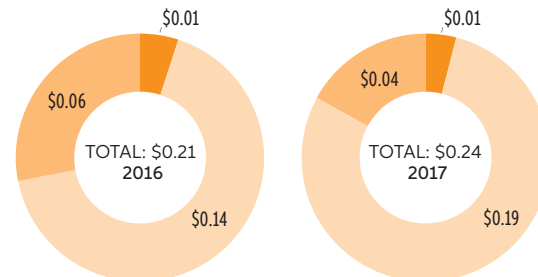
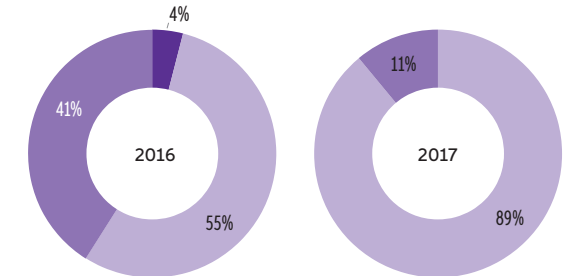


FIGURE A24

2017 Medicaid BDAIDs: Psoriasis Top Market Share, Cost per Patient, and PMPM*

Cimzia Remicade Stelara

Market Share



Annual Cost per Patient

Brand	2016	2017
Cimzia	\$5,642	-
Remicade	\$29,162	\$38,865
Stelara	\$26,752	\$34,064

Allowed Amount PMPM

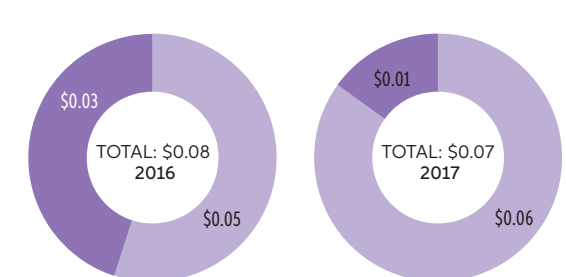
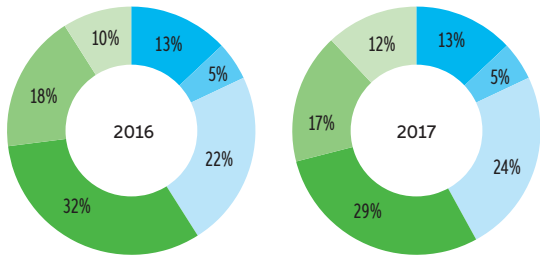


FIGURE A25

2017 Commercial BDAIDs: Rheumatoid Arthritis Top Market Share, Cost per Patient, and PMPM*

Actemra Cimzia Orencia Remicade Rituxan
Simponi Aria

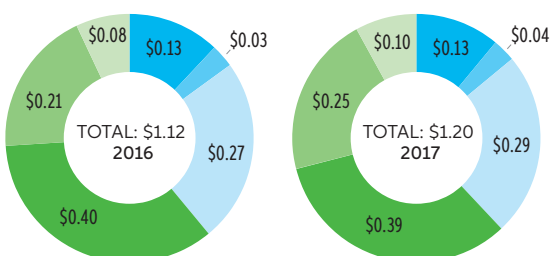
Market Share



Annual Cost per Patient

Brand	2016	2017
Actemra	\$25,626	\$26,265
Cimzia	\$16,488	\$21,586
Orencia	\$32,128	\$32,392
Remicade	\$32,531	\$34,377
Rituxan	\$29,819	\$36,050
Simponi Aria	\$22,671	\$23,833

Allowed Amount PMPM



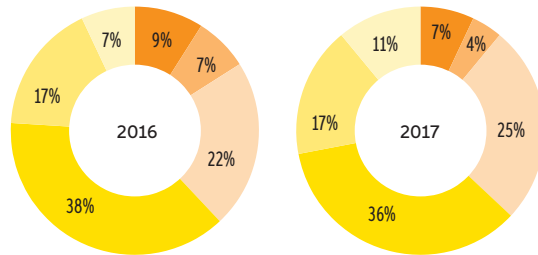
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A26

2017 Medicare BDAIDs: Rheumatoid Arthritis Top Market Share, Cost per Patient, and PMPM*

Actemra Cimzia Orencia Remicade Rituxan
Simponi Aria

Market Share



Annual Cost per Patient

Brand	2016	2017
Actemra	\$13,575	\$14,608
Cimzia	\$12,177	\$12,257
Orencia	\$23,392	\$26,653
Remicade	\$17,920	\$18,971
Rituxan	\$20,731	\$21,280
Simponi Aria	\$18,932	\$17,256

Allowed Amount PMPM

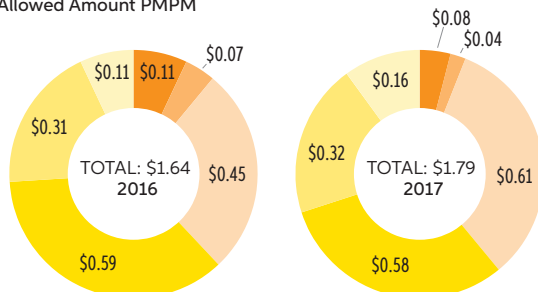
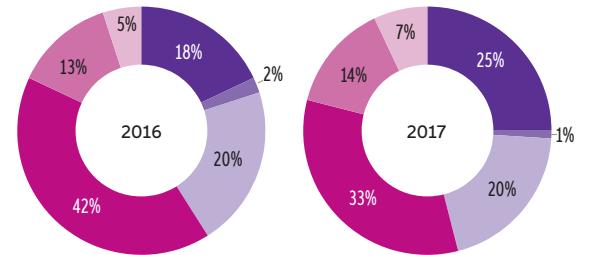


FIGURE A27

2017 Medicaid BDAIDs: Rheumatoid Arthritis Top Market Share, Cost per Patient, and PMPM*

Actemra Cimzia Orencia Remicade Rituxan
Simponi Aria

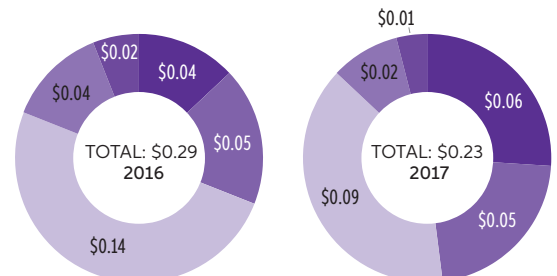
Market Share



Annual Cost per Patient

Brand	2016	2017
Actemra	\$15,519	\$23,696
Cimzia	\$10,414	\$5,105
Orencia	\$16,642	\$25,773
Remicade	\$23,361	\$27,975
Rituxan	\$21,542	\$16,024
Simponi Aria	\$21,589	\$13,589

Allowed Amount PMPM



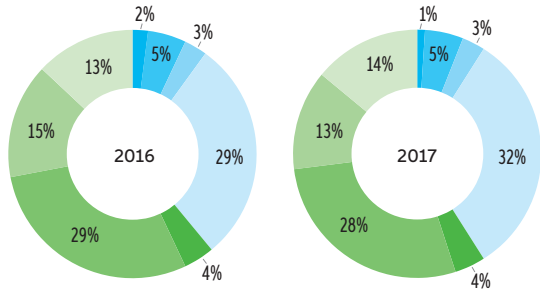
Immune Globulin

FIGURE A28

2017 Commercial IV Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Bivigam
 ■ Carimune
 ■ Flebogamma
 ■ Gammagard Liquid
 ■ Gammagard Liquid
 ■ Gammaplex
 ■ Gamunex-C/Gammaked
 ■ Octagam
 ■ Priven

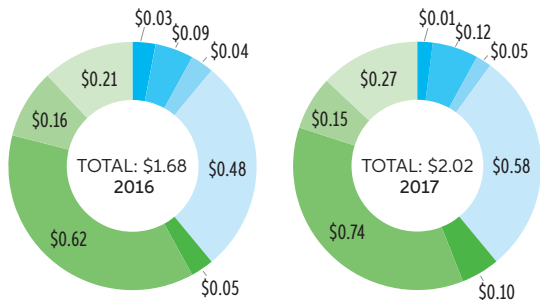
Market Share



Annual Cost per Patient

Brand	2016	2017
Bivigam	\$52,986	\$21,779
Carimune	\$55,051	\$66,134
Flebogamma	\$44,578	\$54,605
Gammagard Liquid	\$49,152	\$47,968
Gammaplex	\$41,989	\$49,699
Gamunex-C/Gammaked	\$61,657	\$65,719
Octagam	\$36,811	\$35,006
Priven	\$48,668	\$48,933

Allowed Amount PMPM



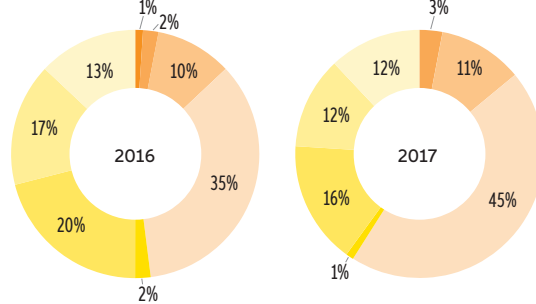
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A29

2017 Medicare IV Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Bivigam
 ■ Carimune
 ■ Flebogamma
 ■ Gammagard Liquid
 ■ Gammagard Liquid
 ■ Gammaplex
 ■ Gamunex-C/Gammaked
 ■ Octagam
 ■ Priven

Market Share



Annual Cost per Patient

Brand	2016	2017
Bivigam	\$30,320	\$3,399
Carimune	\$11,906	\$20,542
Flebogamma	\$22,647	\$12,444
Gammagard Liquid	\$32,951	\$29,535
Gammaplex	\$8,068	\$13,904
Gamunex-C/Gammaked	\$31,187	\$36,124
Octagam	\$22,001	\$16,212
Priven	\$24,961	\$35,432

Allowed Amount PMPM

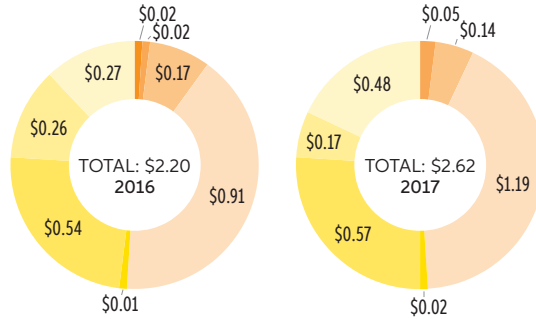
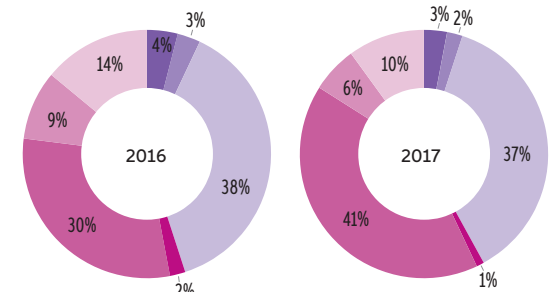


FIGURE A30

2017 Medicaid IV Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Bivigam
 ■ Carimune
 ■ Flebogamma
 ■ Gammagard Liquid
 ■ Gammagard Liquid
 ■ Gammaplex
 ■ Gamunex-C/Gammaked
 ■ Octagam
 ■ Priven

Market Share



Annual Cost per Patient

Brand	2016	2017
Bivigam	-	-
Carimune	\$22,440	\$14,509
Flebogamma	\$20,768	\$16,863
Gammagard Liquid	\$24,562	\$20,863
Gammaplex	\$19,449	\$37,061
Gamunex-C/Gammaked	\$35,506	\$32,422
Octagam	\$34,477	\$24,868
Priven	\$24,904	\$66,793

Allowed Amount PMPM

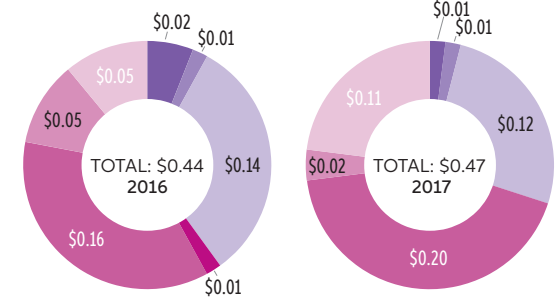
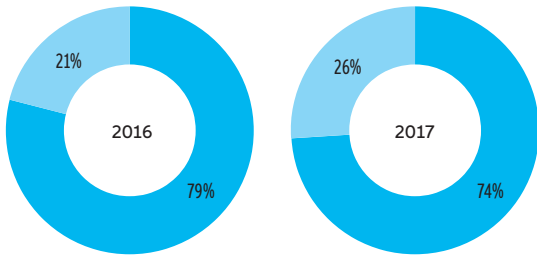


FIGURE A31

2017 Commercial SQ Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Hizentra ■ HyQvia

Market Share

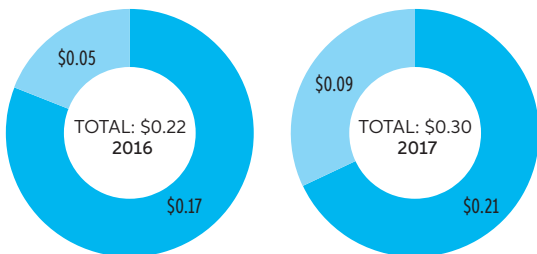


Annual Cost per Patient

Brand	2016	2017
Hizentra	\$52,276	\$56,078
HyQvia	\$58,696	\$70,601

HyQvia \$58,696 \$70,601

Allowed Amount PMPM



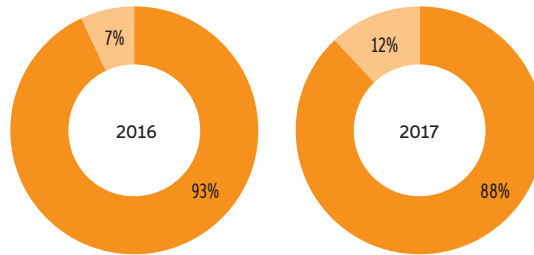
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A32

2017 Medicare SQ Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Hizentra ■ HyQvia

Market Share



Annual Cost per Patient

Brand	2016	2017
Hizentra	\$56,185	\$45,993
HyQvia	\$38,853	\$49,467

HyQvia \$38,853 \$49,467

Allowed Amount PMPM

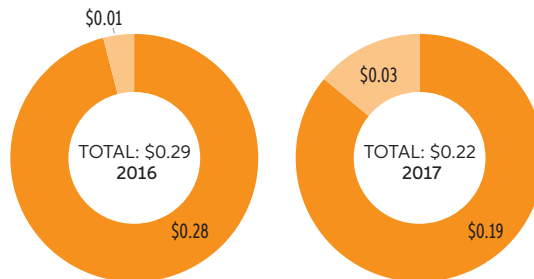
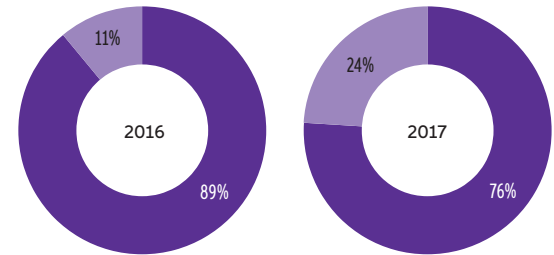


FIGURE A33

2017 Medicaid SQ Immune Globulin Top Market Share, Cost per Patient, and PMPM*

■ Hizentra ■ HyQvia

Market Share

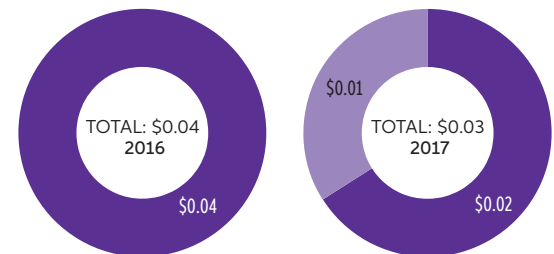


Annual Cost per Patient

Brand	2016	2017
Hizentra	\$29,318	\$18,658
HyQvia	\$15,805	\$21,455

HyQvia \$15,805 \$21,455

Allowed Amount PMPM



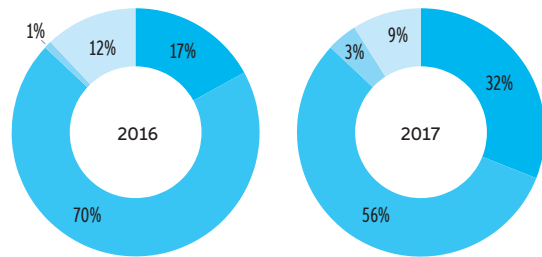
Oncology

FIGURE A34

2017 Checkpoint Inhibitors Top Commercial Market Share, Cost per Patient, and PMPM*

■ Keytruda ■ Opdivo ■ Tecentriq ■ Yervoy

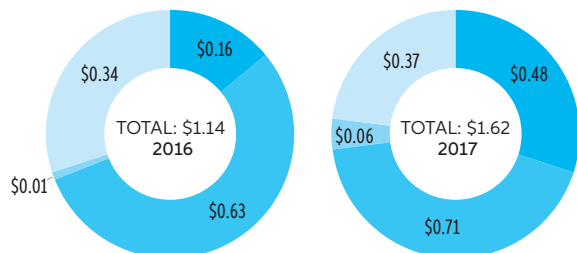
Market Share



Annual Cost per Patient

Brand	2016	2017
Keytruda	\$58,877	\$74,456
Opdivo	\$59,490	\$63,607
Tecentriq	\$36,807	\$85,541
Yervoy	\$186,350	\$189,997

Allowed Amount PMPM



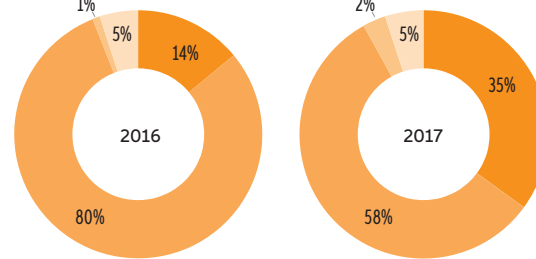
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A35

2017 Checkpoint Inhibitors Top Medicare Market Share, Cost per Patient, and PMPM*

■ Keytruda ■ Opdivo ■ Tecentriq ■ Yervoy

Market Share



Annual Cost per Patient

Brand	2016	2017
Keytruda	\$40,368	\$42,705
Opdivo	\$43,910	\$51,154
Tecentriq	\$22,516	\$28,926
Yervoy	\$122,949	\$87,447

Allowed Amount PMPM

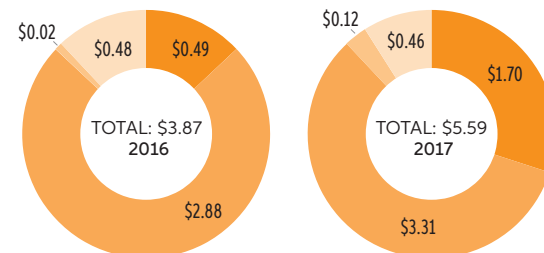
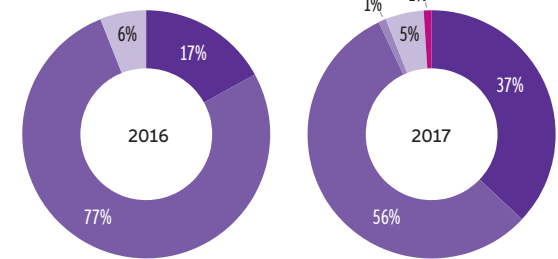


FIGURE A36

2017 Checkpoint Inhibitors Top Medicaid Market Share, Cost per Patient, and PMPM*

■ Keytruda ■ Opdivo ■ Tecentriq ■ Yervoy ■ Imfinzi

Market Share



Annual Cost per Patient

Brand	2016	2017
Keytruda	\$33,547	\$52,021
Opdivo	\$39,042	\$49,440
Tecentriq	-	\$33,445
Yervoy	\$131,115	\$143,836
Imfinzi	-	\$58,625

Allowed Amount PMPM

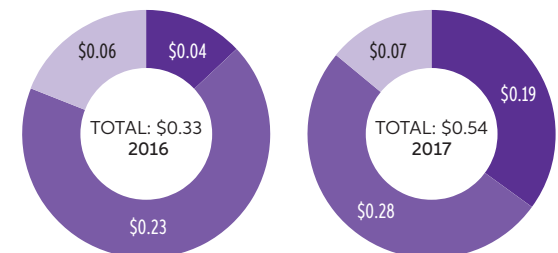
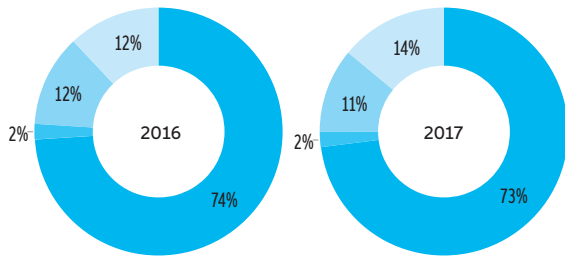


FIGURE A37

2017 Commercial Colorectal Top Market Share, Cost per Patient, and PMPM*

Avastin Cyramza Erbitux Vectibix

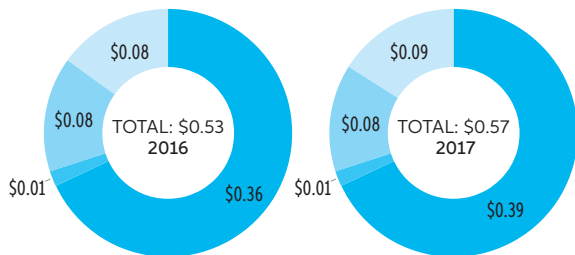
Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$39,573	\$44,041
Cyramza	\$32,091	\$34,440
Erbitux	\$53,811	\$57,339
Vectibix	\$54,805	\$54,826

Allowed Amount PMPM



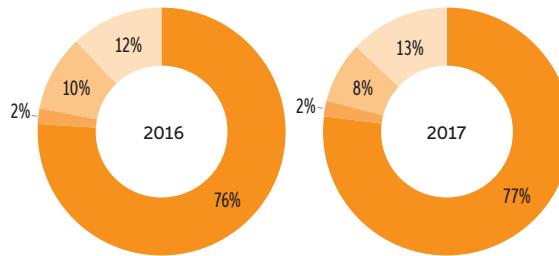
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A38

2017 Medicare Colorectal Top Market Share, Cost per Patient, and PMPM*

Avastin Cyramza Erbitux Vectibix

Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$25,858	\$26,206
Cyramza	\$24,877	\$40,205
Erbitux	\$34,600	\$45,221
Vectibix	\$35,754	\$45,578

Allowed Amount PMPM

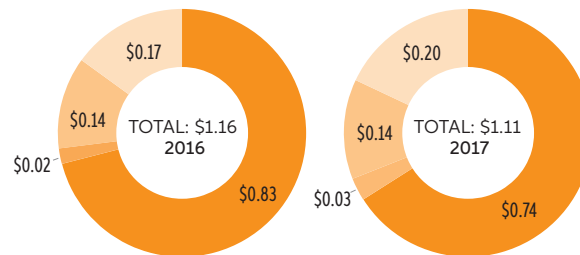
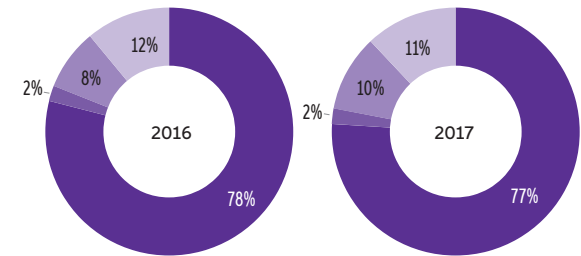


FIGURE A39

2017 Medicaid Colorectal Top Market Share, Cost per Patient, and PMPM*

Avastin Cyramza Erbitux Vectibix

Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$26,303	\$29,656
Cyramza	\$22,733	\$55,200
Erbitux	\$32,436	\$30,123
Vectibix	\$22,872	\$34,501

Allowed Amount PMPM

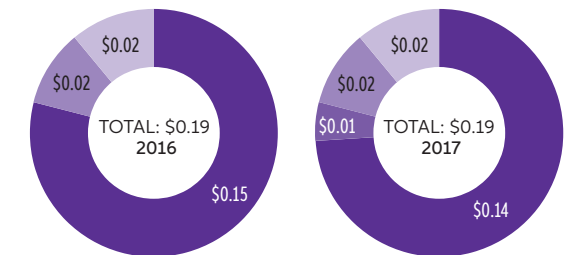
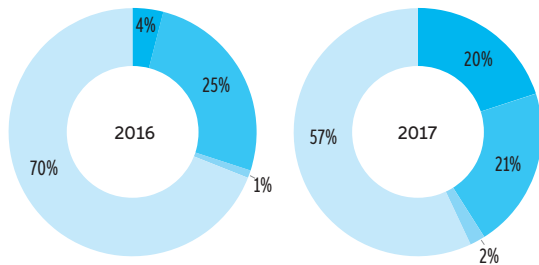


FIGURE A40

2017 Commercial Multiple Myeloma Top Market Share, Cost per Patient, and PMPM*

■ Darzalex ■ Kyprolis ■ Rituxan ■ Velcade

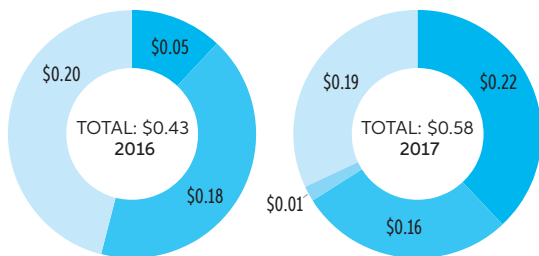
Market Share



Annual Cost per Patient

Brand	2016	2017
Darzalex	\$114,633	\$104,743
Kyprolis	\$68,568	\$74,410
Rituxan	\$32,543	\$31,243
Velcade	\$30,166	\$32,376

Allowed Amount PMPM



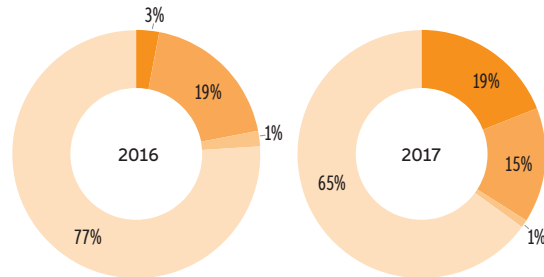
*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A41

2017 Medicare Multiple Myeloma Top Market Share, Cost per Patient, and PMPM*

■ Darzalex ■ Kyprolis ■ Rituxan ■ Velcade

Market Share



Annual Cost per Patient

Brand	2016	2017
Darzalex	\$32,545	\$47,561
Kyprolis	\$41,718	\$47,118
Rituxan	\$24,320	\$7,092
Velcade	\$22,607	\$25,584

Allowed Amount PMPM

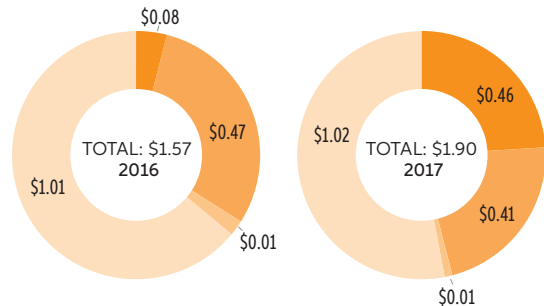
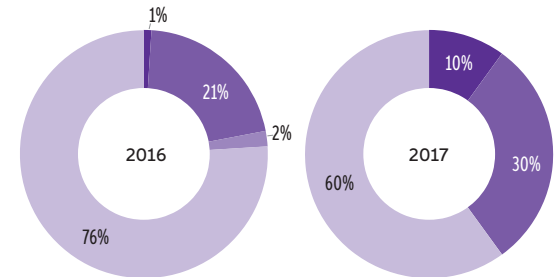


FIGURE A42

2017 Medicaid Multiple Myeloma Top Market Share, Cost per Patient, and PMPM*

■ Darzalex ■ Kyprolis ■ Rituxan ■ Velcade

Market Share



Annual Cost per Patient

Brand	2016	2017
Darzalex	\$22,058	\$79,179
Kyprolis	\$48,887	\$67,825
Rituxan	\$8,334	-
Velcade	\$17,799	\$15,977

Allowed Amount PMPM

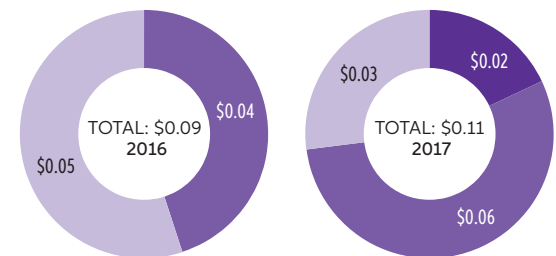
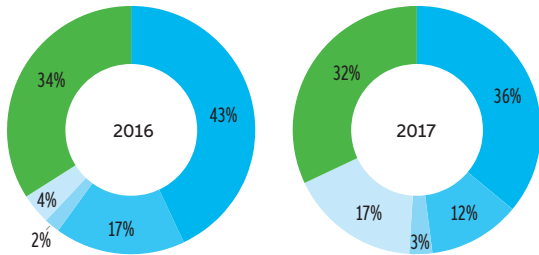


FIGURE A43

2017 Commercial NSCLC Top Market Share, Cost per Patient, and PMPM*

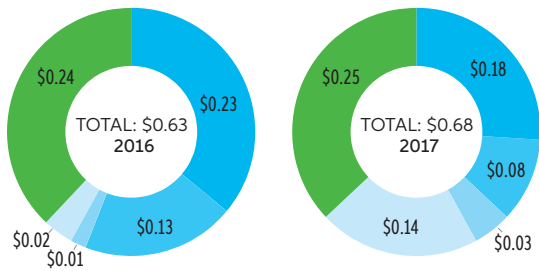
Alimta Avastin Cyramza Keytruda Opdivo
Market Share



Annual Cost per Patient

Brand	2016	2017
Alimta	\$37,091	\$37,620
Avastin	\$53,262	\$54,514
Cyramza	\$36,778	\$85,680
Keytruda	\$34,959	\$61,195
Opdivo	\$50,287	\$60,305

Allowed Amount PMPM

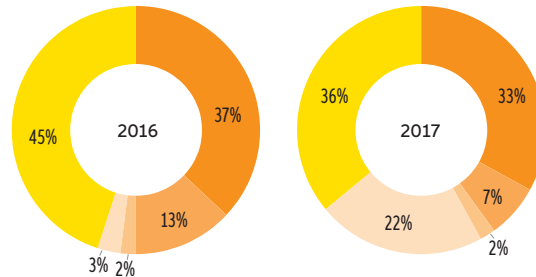


*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A44

2017 Medicare NSCLC Top Market Share, Cost per Patient, and PMPM*

Alimta Avastin Cyramza Keytruda Opdivo
Market Share



Annual Cost per Patient

Brand	2016	2017
Alimta	\$23,891	\$21,980
Avastin	\$35,491	\$34,405
Cyramza	\$28,846	\$16,869
Keytruda	\$27,768	\$32,270
Opdivo	\$40,174	\$52,096

Allowed Amount PMPM

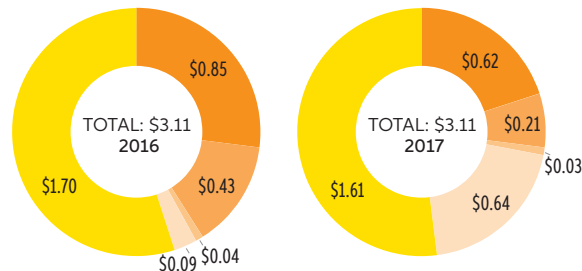
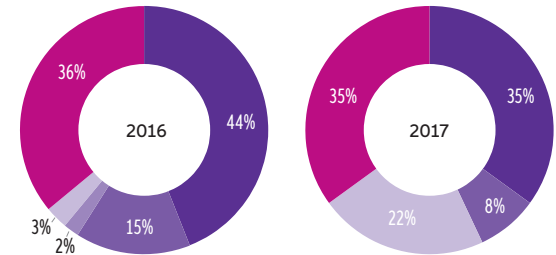


FIGURE A45

2017 Medicaid NSCLC Top Market Share, Cost per Patient, and PMPM*

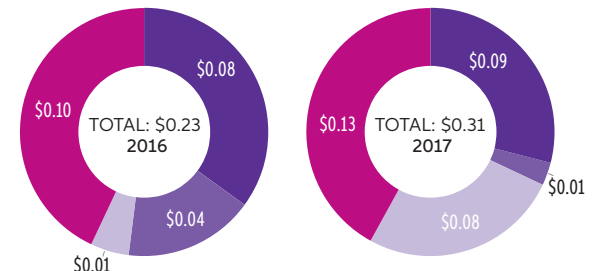
Alimta Avastin Cyramza Keytruda Opdivo
Market Share



Annual Cost per Patient

Brand	2016	2017
Alimta	\$22,622	\$31,207
Avastin	\$30,531	\$20,430
Cyramza	\$21,568	-
Keytruda	\$23,170	\$45,291
Opdivo	\$31,779	\$45,061

Allowed Amount PMPM

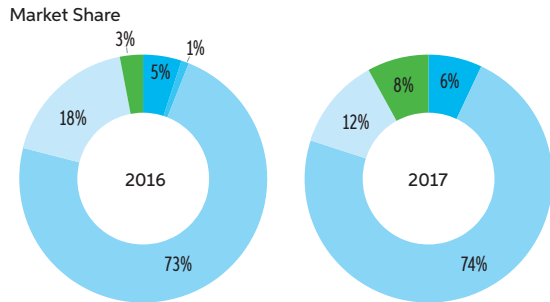


Oncology Support

FIGURE A46

2017 Commercial Colony-Stimulating Factors Top Market Share, Cost per Patient, and PMPM †*

■ Granix ■ Leukine ■ Neulasta ■ Neupogen ■ Zarxio



Annual Cost per Patient

Brand	2016	2017
Granix	\$5,566	\$4,087
Leukine	\$4,463	\$3,980
Neulasta	\$24,332	\$28,781
Neupogen	\$4,335	\$4,145
Zarxio	\$3,865	\$4,192

Allowed Amount PMPM

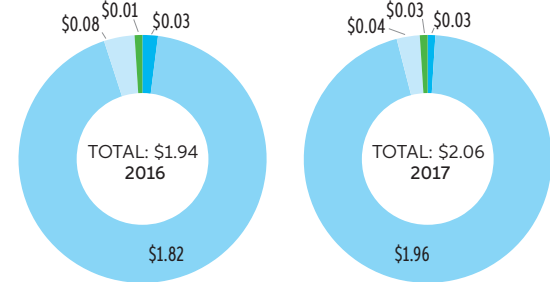
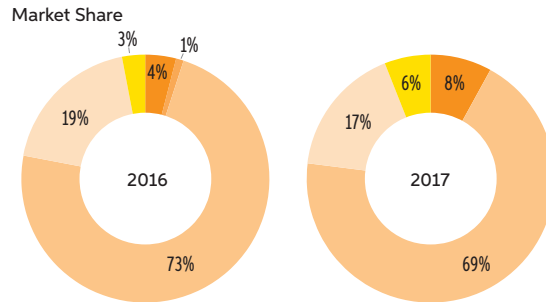


FIGURE A47

2017 Medicare Colony-Stimulating Factors Top Market Share, Cost per Patient, and PMPM †*

■ Granix ■ Leukine ■ Neulasta ■ Neupogen ■ Zarxio



Annual Cost per Patient

Brand	2016	2017
Granix	\$1,936	\$1,466
Leukine	\$3,958	\$1,931
Neulasta	\$13,872	\$15,054
Neupogen	\$2,721	\$2,802
Zarxio	\$3,874	\$2,533

Allowed Amount PMPM

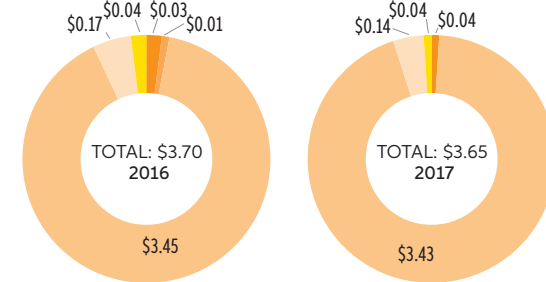
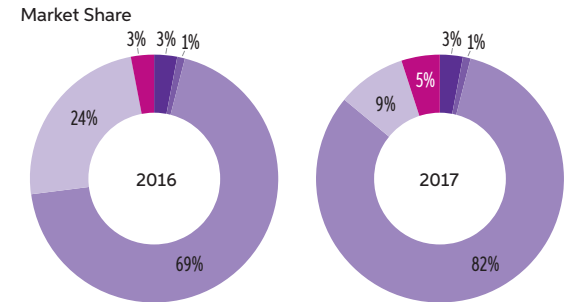


FIGURE A48

2017 Medicaid Colony-Stimulating Factors Top Market Share, Cost per Patient, and PMPM †*

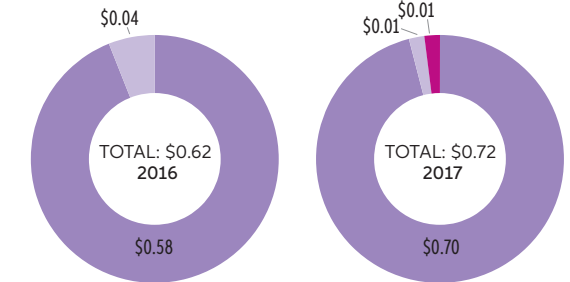
■ Granix ■ Leukine ■ Neulasta ■ Neupogen ■ Zarxio



Annual Cost per Patient

Brand	2016	2017
Granix	\$2,410	\$1,897
Leukine	\$12,304	\$2,492
Neulasta	\$16,893	\$21,483
Neupogen	\$2,999	\$3,847
Zarxio	\$1,197	\$3,282

Allowed Amount PMPM



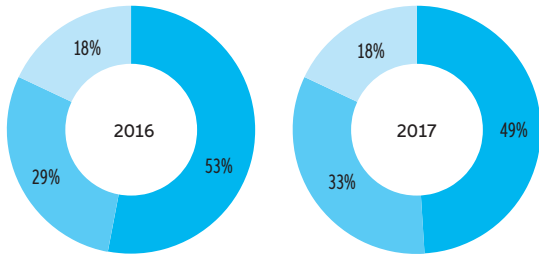
†Oncology Support: CSF will not match figure 4 (top 10 disease states) as it is limited to oncology ICD-10 diagnoses.
*Please note that due to rounding, some PMPM totals do not add up accurately.

Ophthalmic Injections

FIGURE A49

2017 Commercial Ophthalmic Injections (Anti-VEGF) Top Market Share, Cost per Patient, and PMPM*

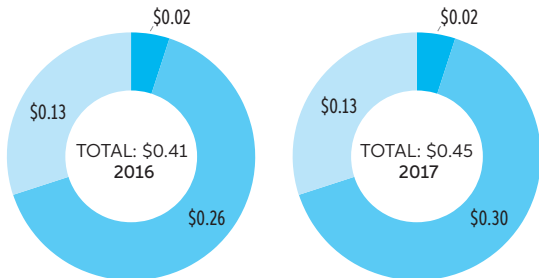
Avastin Eylea Lucentis
Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$1,895	\$2,403
Eylea	\$10,872	\$11,736
Lucentis	\$8,598	\$9,503

Allowed Amount PMPM

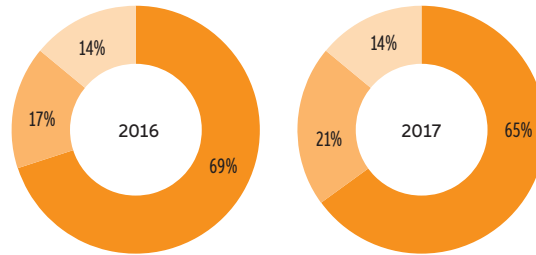


*Please note that due to rounding, some PMPM totals do not add up accurately.

FIGURE A50

2017 Medicare Ophthalmic Injections (Anti-VEGF) Top Market Share, Cost per Patient, and PMPM*

Avastin Eylea Lucentis
Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$1,630	\$2,083
Eylea	\$10,221	\$10,622
Lucentis	\$10,007	\$10,793

Allowed Amount PMPM

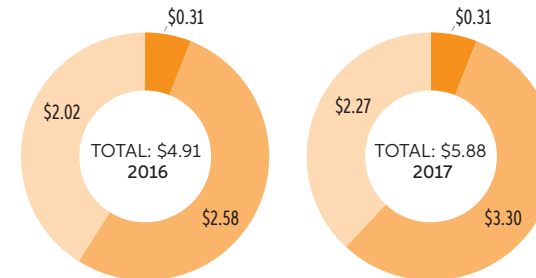
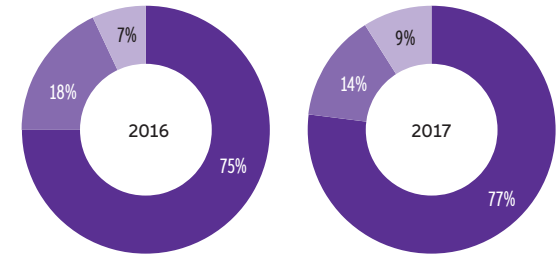


FIGURE A51

2017 Medicaid Ophthalmic Injections (Anti-VEGF) Top Market Share, Cost per Patient, and PMPM*

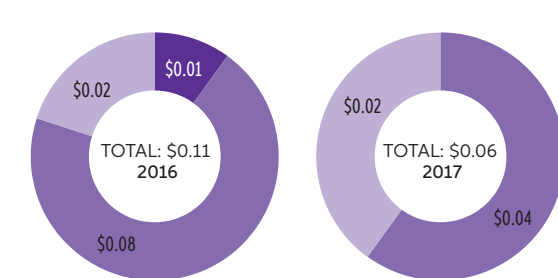
Avastin Eylea Lucentis
Market Share



Annual Cost per Patient

Brand	2016	2017
Avastin	\$1,380	\$385
Eylea	\$8,511	\$8,296
Lucentis	\$5,193	\$5,819

Allowed Amount PMPM



SITE OF SERVICE TRENDS

FIGURE A52

Commercial Top 25 Drug Trends by Cost per Claim, Cost per Unit, and Member Utilization

Rank	HCPCS	Brand	COST PER CLAIM			COST PER UNIT			MARKET SHARE		
			Physician	Hospital OP	Home	Physician	Hospital OP	Home	Physician	Hospital OP	Home
1	J1745	Remicade	\$4,645	\$11,081	\$6,692	\$94	\$248	\$127	53%	37%	10%
2	J2505	Neulasta	\$4,998	\$9,381	-	\$4,729	\$9,379	-	50%	50%	-
3	J9310	Rituxan	\$7,808	\$12,683	\$11,364	\$949	\$1,832	\$972	42%	56%	2%
4	J9355	Herceptin	\$4,006	\$7,037	-	\$108	\$197	-	48%	52%	-
5	J9035	Avastin	\$2,034	\$7,794	-	\$81	\$159	-	77%	23%	-
6	J1561	Gamunex-C/Gammaked	\$4,604	\$6,863	\$4,072	\$57	\$107	\$64	17%	47%	36%
7	J2323	Tysabri	\$6,013	\$10,944	\$6,574	\$20	\$38	\$23	42%	52%	6%
8	J9299	Opdivo	\$6,208	\$8,162	-	\$29	\$51	-	43%	57%	-
9	J3380	Entyvio	\$5,891	\$11,127	\$6,345	\$20	\$38	\$21	38%	43%	19%
10	J1569	Gammagard Liquid	\$4,522	\$4,626	\$4,507	\$56	\$77	\$65	35%	30%	35%
11	J7192	Factor VIII (Recombinant)	\$12,037	\$44,956	\$15,952	\$2	\$9	\$3	13%	10%	77%
12	J9306	Perjeta	\$5,755	\$10,018	-	\$13	\$22	-	44%	56%	-
13	J1300	Soliris	\$24,767	\$44,101	\$25,339	\$232	\$463	\$237	26%	57%	17%
14	J9271	Keytruda	\$9,747	\$16,496	\$10,286	\$54	\$97	\$58	39%	60%	1%
15	J0897	Xgeva/Prolia	\$1,630	\$3,729	\$1,179	\$19	\$37	\$19	66%	28%	5%
16	J2357	Xolair	\$1,866	\$3,854	\$2,873	\$35	\$89	\$34	50%	8%	43%
17	J3357	Stelara	\$12,092	\$31,385	\$15,564	\$186	\$339	\$231	53%	17%	30%
18	J9228	Yervoy	\$38,194	\$57,524	-	\$151	\$260	-	38%	62%	-
19	J0585	Botox	\$993	\$1,967	\$1,159	\$7	\$13	\$6	72%	9%	19%
20	J3490	Unclassified	\$292	\$183	\$3,856	\$77	\$20	\$264	37%	61%	2%
21	J0178	Eylea	\$2,228	\$4,139	-	\$1,043	\$1,758	-	98%	2%	-
22	J9305	Alimta	\$5,379	\$8,569	-	\$72	\$128	-	42%	58%	-
23	J0129	Orencia	\$3,878	\$7,308	\$3,239	\$48	\$104	\$44	69%	24%	7%
24	J1459	Privigen	\$2,940	\$4,656	\$4,506	\$48	\$87	\$58	16%	53%	30%
25	J9264	Abraxane	\$2,022	\$3,806	-	\$12	\$24	-	45%	55%	-

FIGURE A53

Medicare Top 25 Drug Trends by Cost per Claim, Cost per Unit, and Member Utilization

Rank	HCPCS	Brand	COST PER CLAIM			COST PER UNIT			MARKET SHARE		
			Physician	Hospital OP	Home	Physician	Hospital OP	Home	Physician	Hospital OP	Home
1	J9310	Rituxan	\$5,828	\$4,784	-	\$838	\$885	-	57%	43%	-
2	J2505	Neulasta	\$4,206	\$4,369	-	\$4,206	\$4,369	-	58%	42%	-
3	J9299	Opdivo	\$5,282	\$3,975	-	\$26	\$27	-	54%	46%	-
4	J0178	Eylea	\$2,126	\$2,497	-	\$983	\$981	-	99%	1%	-
5	J2778	Lucentis	\$1,813	\$2,064	-	\$381	\$413	-	100%	0%	-
6	J9035	Avastin	\$655	\$3,281	-	\$74	\$79	-	94%	6%	-
7	J9355	Herceptin	\$2,955	\$3,615	-	\$95	\$100	-	53%	47%	-
8	J0897	Xgeva/Prolia	\$1,415	\$1,556	-	\$17	\$17	-	71%	29%	-
9	J9271	Keytruda	\$7,996	\$8,277	-	\$48	\$48	-	55%	45%	-
10	J1745	Remicade	\$4,020	\$4,553	\$3,913	\$85	\$88	\$108	52%	44%	4%
11	J1569	Gammagard Liquid	\$2,363	\$2,131	\$4,955	\$40	\$41	\$49	51%	33%	16%
12	J9041	Velcade	\$876	\$1,020	-	\$48	\$51	-	53%	47%	-
13	J9305	Alimta	\$3,335	\$4,065	-	\$64	\$74	-	62%	38%	-
14	J9034	Bendeka	\$4,026	\$4,036	-	\$24	\$30	-	60%	40%	-
15	J2323	Tysabri	\$5,644	\$5,698	\$5,634	\$19	\$19	\$19	38%	60%	2%
16	J2353	Sandostatin	\$5,067	\$4,953	-	\$183	\$180	-	56%	44%	-
17	J9306	Perjeta	\$4,407	\$5,256	-	\$11	\$11	-	48%	52%	-
18	J0129	Orencia	\$3,766	\$3,571	\$4,604	\$47	\$49	\$46	62%	36%	2%
19	J9264	Abraxane	\$1,353	\$1,513	-	\$10	\$11	-	66%	34%	-
20	J9217	Eligard/ Lupron Depot	\$946	\$851	-	\$211	\$254	-	85%	15%	-
21	J1561	Gamunex-C/Gammaked	\$2,463	\$3,086	\$1,693	\$41	\$46	\$41	14%	49%	38%
22	J0881	Aranesp	\$1,045	\$804	-	\$4	\$4	-	78%	22%	-
23	J0885	Procrit	\$408	\$502	-	\$14	\$14	-	62%	38%	-
24	J9395	Faslodex	\$1,962	\$2,008	-	\$98	\$104	-	60%	40%	-
25	J1300	Soliris	\$20,070	\$21,998	-	\$223	\$244	-	50%	50%	-

FIGURE A54

Medicaid Top 25 Drug Trends by Cost per Claim, Cost per Unit, and Member Utilization

Rank	HCPCS	Brand	COST PER CLAIM			COST PER UNIT			MEMBER UTILIZATION		
			Physician	Hospital OP	Home	Physician	Hospital OP	Home	Physician	Hospital OP	Home
1	J2505	Neulasta	\$4,533	\$7,505	-	\$4,473	\$7,505	-	48%	52%	-
2	J1745	Remicade	\$3,805	\$7,547	\$5,185	\$89	\$159	\$95	39%	55%	6%
3	J9355	Herceptin	\$3,554	\$5,728	-	\$104	\$135	-	46%	54%	-
4	J1725	Makena	\$595	\$35	\$652	\$2	\$4	\$2	96%	2%	1%
5	J9299	Opdivo	\$5,389	\$5,576	-	\$28	\$37	-	44%	56%	-
6	J9035	Avastin	\$1,256	\$4,376	-	\$81	\$104	-	72%	28%	-
7	J1561	Gamunex-C/Gammaked	\$2,463	\$4,840	\$1,628	\$40	\$82	\$41	12%	71%	17%
8	J0585	Botox	\$1,194	\$2,712	-	\$6	\$15	-	87%	13%	-
9	J2323	Tysabri	\$7,522	\$8,111	\$6,390	\$25	\$27	\$21	26%	62%	12%
10	J9271	Keytruda	\$9,843	\$12,195	-	\$52	\$66	-	42%	58%	-
11	J9306	Implanon	\$858	\$3,549	-	\$858	\$3,549	-	96%	4%	-
12	J1300	Perjeta	\$5,468	\$6,973	-	\$12	\$17	-	47%	53%	-
13	J7307	Soliris	\$23,011	\$33,443	-	\$253	\$315	-	33%	67%	-
14	J3490	Unclassified	\$360	\$5,340	\$1,743	\$121	\$1,236	\$202	65%	32%	2%
15	J9310	Rituxan	\$6,375	\$4,417	\$8,976	\$882	\$685	\$898	27%	72%	1%
16	J2357	Xolair	\$2,030	\$1,461	-	\$37	\$26	-	88%	12%	-
17	J7298	Mirena	\$904	\$1,202	-	\$904	\$1,202	-	97%	3%	-
18	J0897	Xgeva/Prolia	\$1,885	\$2,572	-	\$18	\$24	-	50%	50%	-
19	J1569	Gammagard Liquid	\$3,705	\$4,264	\$1,523	\$42	\$75	\$43	22%	48%	30%
20	J9305	Alimta	\$3,995	\$5,096	-	\$69	\$86	-	33%	67%	-
21	J1459	Privigen	\$819	\$8,438	-	\$42	\$120	-	21%	79%	-
22	J1473	Elaprase	\$87,698	\$9,099	\$65,803	\$522	\$899	\$522	25%	50%	25%
23	J2469	Aloxi	\$245	\$533	-	\$24	\$53	-	39%	61%	-
24	J1439	Injectafer	\$873	\$1,320	\$969	\$1	\$2	\$1	52%	47%	1%
25	J9264	Abraxane	\$1,907	\$2,864	\$2,864	\$12	\$17	-	47%	53%	-

ADMINISTRATION CODE TRENDS

FIGURE A55

2017 Commercial, Medicare and Medicaid Top Hospital Administration Code Trends by Allowed Amount PMPM and Unit Cost

CPT Code	Description	COMMERCIAL		MEDICARE		MEDICAID	
		2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost
96413	Chemotherapy administration, IV infusion technique; up to 1 hour, single or initial substance/drug	\$0.76	\$708.05	\$0.67	\$290.75	\$0.09	\$228.26
96375	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential IV push of a new substance/drug	\$0.36	\$175.57	\$0.27	\$36.80	\$0.08	\$24.48
96365	IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); initial, up to 1 hour	\$0.31	\$447.11	\$0.52	\$170.26	\$0.07	\$80.43
96374	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); IV push, single or initial substance/drug	\$0.28	\$305.55	\$0.85	\$160.29	\$0.15	\$56.71
96361	IV infusion, hydration; each additional hour	\$0.18	\$134.53	\$0.19	\$33.51	\$0.06	\$17.69
96415	Chemotherapy administration, IV infusion technique; each additional hour	\$0.12	\$242.17	\$0.06	\$57.52	\$0.01	\$44.09
96372	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); SQ or intramuscular	\$0.11	\$139.55	\$0.26	\$47.77	\$0.06	\$22.35
96367	IV infusion, for therapy, prophylaxis or diagnosis (specify substance or drug); additional sequential infusion of a new drug/substance, up to 1 hour	\$0.10	\$224.96	\$0.12	\$52.70	\$0.02	\$44.51
96360	IV infusion, hydration; initial, 31 minutes to 1 hour	\$0.10	\$399.29	\$0.16	\$169.41	\$0.02	\$63.60
96417	Chemotherapy administration, IV infusion technique; each additional sequential infusion (different substance/drug), up to 1 hour	\$0.09	\$334.29	\$0.04	\$57.52	\$0.01	\$84.21
96366	IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); each additional hour	\$0.01	\$32.94	\$0.08	\$34.88	\$0.02	\$24.93
96411	Chemotherapy administration; IV, push technique, each additional substance/drug	\$0.06	\$319.82	\$0.02	\$62.14	\$0.00	\$74.09
96416	Chemotherapy administration, IV infusion technique; initiation of prolonged chemotherapy infusion (more than 8 hours), requiring use of a portable or implantable pump	\$0.05	\$618.51	\$0.03	\$275.30	\$0.00	\$194.07
96409	Chemotherapy administration; IV, push technique, single or initial substance/drug	\$0.04	\$461.42	\$0.03	\$176.69	\$0.02	\$180.02
20610	Under General Introduction or Removal Procedures on the Musculoskeletal System	\$0.04	\$503.46	\$0.07	\$151.58	\$0.00	\$33.49
96376	IV push, single or initial substance/drug; each additional sequential IV push of the same substance/drug provided in a facility	\$0.03	\$115.96	\$0.01	\$42.48	\$0.01	\$13.43
96401	Chemotherapy administration, SQ or intramuscular; non-hormonal anti-neoplastic	\$0.03	\$294.35	\$0.02	\$59.17	\$0.00	\$49.33
90471	Immunization administration (includes percutaneous, intradermal, SQ, or intramuscular injections); 1 vaccine (single or combination vaccine/toxoid)	\$0.03	\$92.26	\$0.04	\$48.96	\$0.00	\$7.27
96402	Chemotherapy administration, SQ or intramuscular; hormonal antineoplastic	\$0.02	\$259.71	\$0.01	\$57.66	-	-
96368	IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); concurrent infusion	\$0.02	\$189.81	\$0.00	\$35.80	-	-
96450	Chemotherapy administration, into CNS (e.g., intrathecal), requiring and including spinal puncture	\$0.01	\$979.99	-	-	-	-
96523	Irrigation of implanted venous access device for drug delivery systems	\$0.01	\$154.82	\$0.01	\$56.94	-	-
95165	Supervision of preparation and provision of antigens for allergen immunotherapy; single or multiple antigens (specify number of doses)	\$0.01	\$36.10	\$0.00	\$34.94	-	-
67028	Intravitreal injection of a pharmacologic agent (separate procedure)	\$0.01	\$763.56	\$0.01	\$217.50	\$0.00	\$885.89
95117	Immunotherapy injections	\$0.01	\$92.12	\$0.00	\$30.68	-	-

FIGURE A56

2017 Commercial, Medicare and Medicaid Top Physician Office Administration Code Trends by Allowed Amount PMPM and Unit Cost

CPT Code	Description	COMMERCIAL		MEDICARE		MEDICAID	
		2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost
95165	Supervision of preparation and provision of antigens for allergen immunotherapy; single or multiple antigens (specify number of doses)	\$0.42	\$14.02	\$0.09	\$11.92	-	-
90460	Immunization administration through 18 years of age via any route of administration, with counseling by physician or other qualified healthcare professional; first vaccine/toxoid component	\$0.35	\$22.59	-	-	\$0.38	\$13.29
20610	Under General Introduction or Removal Procedures on the Musculoskeletal System	\$0.32	\$109.05	\$0.55	\$56.75	\$0.04	\$77.45
90471	Immunization administration (includes percutaneous, intradermal, SQ, or intramuscular injections); 1 vaccine (single or combination vaccine/toxoid)	\$0.26	\$23.92	\$0.17	\$21.58	\$0.04	\$8.05
96372	Therapeutic, prophylactic or diagnostic injection (specify substance or drug); SQ or intramuscular	\$0.26	\$28.07	\$0.63	\$23.03	\$0.14	\$18.21
96413	Chemotherapy administration, IV infusion technique; up to 1 hour, single or initial substance/drug	\$0.25	\$209.73	\$0.55	\$138.04	\$0.03	\$122.06
90461	Im administration each addl component	\$0.12	\$11.36	-	-	\$0.03	\$11.04
67028	Intravitreal injection of a pharmacologic agent (separate procedure)	\$0.09	\$192.00	\$0.67	\$102.25	\$0.02	\$277.13
96365	IV infusion, for therapy, prophylaxis or diagnosis (specify substance or drug); initial, up to 1 hour	\$0.08	\$93.99	\$0.17	\$68.96	\$0.01	\$52.37
95117	Immunotherapy injections	\$0.06	\$13.56	\$0.02	\$9.25	-	-
96366	IV infusion, for therapy, prophylaxis or diagnosis (specify substance or drug); each additional hour	\$0.07	\$151.71	\$0.08	\$34.88	\$0.02	\$24.93
96367	IV infusion, for therapy, prophylaxis or diagnosis (specify substance or drug); additional sequential infusion of a new drug/substance, up to 1 hour	\$0.05	\$40.38	\$0.12	\$30.51	\$0.01	\$25.84
96401	Chemotherapy administration, SQ or intramuscular; non-hormonal anti-neoplastic	\$0.04	\$87.76	\$0.12	\$70.53	\$0.00	\$42.16
90472	Immunization administration; each additional component	\$0.03	\$15.33	\$0.01	\$11.24	\$0.03	\$8.70
96415	Chemotherapy administration, IV infusion technique; each additional hour	\$0.03	\$45.87	\$0.06	\$28.77	\$0.00	\$27.59
96417	Chemotherapy administration, IV infusion technique; each additional sequential infusion (different substance/drug), up to 1 hour	\$0.03	\$103.31	\$0.06	\$63.10	\$0.00	\$59.94
96375	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); each additional sequential IV push of a new substance/drug	\$0.03	\$35.42	\$0.07	\$21.71	\$0.00	\$17.20
96416	Chemotherapy administration, IV infusion technique; initiation of prolonged chemotherapy infusion (more than 8 hours), requiring use of a portable or implantable pump	\$0.03	\$224.43	\$0.03	\$146.30	\$0.00	\$123.28
96411	Chemotherapy administration; IV, push technique, each additional substance/drug	\$0.02	\$90.10	\$0.03	\$61.58	\$0.00	\$50.95
96374	Therapeutic, prophylactic, or diagnostic injection (specify substance or drug); IV push, single or initial substance/drug	\$0.01	\$78.59	\$0.03	\$53.53	\$0.00	\$43.41
96366	IV infusion, for therapy, prophylaxis or diagnosis (specify substance or drug); each additional hour	\$0.01	\$32.94	\$0.03	\$24.84	\$0.00	\$23.31
96360	IV infusion, hydration; initial, 31 minutes to 1 hour	\$0.01	\$81.87	\$0.03	\$57.01	\$0.00	\$60.76
96409	Chemotherapy administration; IV, push technique, single or initial substance/drug	\$0.01	\$165.57	\$0.03	\$110.14	\$0.00	\$92.41
95115	Immunotherapy one injection	\$0.01	\$12.38	-	-	-	-
96361	IV infusion, hydration; each additional hour	\$0.01	\$22.31	\$0.01	\$15.19	\$0.00	\$12.55
96402	Chemotherapy administration, SQ or intramuscular; hormonal antineoplastic	\$0.01	\$52.65	\$0.03	\$34.23	-	-
96368	IV infusion, for therapy, prophylaxis, or diagnosis (specify substance or drug); concurrent infusion	\$0.00	\$28.16	\$0.01	\$20.29	-	-
96523	Irrigation of implanted venous access device for drug delivery systems	\$0.00	\$39.76	\$0.01	\$24.74	-	-
96521	Refilling and maintenance of portable pump	\$0.00	\$143.77	\$0.01	\$126.49	-	-

FIGURE A57

2017 Commercial, Medicare and Medicaid Top Home Infusion Administration Code Trends by Allowed Amount PMPM and Unit Cost

CPT Code	Description	COMMERCIAL		MEDICARE		MEDICAID	
		2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost	2017 PMPM	2017 Unit Cost
99601	Home infusion/specialty drug administration, per visit (up to 2 hours)	\$0.11	\$117.62	\$0.09	\$143.60	\$0.01	\$108.33
99602	Home infusion/specialty drug administration, per visit (up to 2 hours); each additional hour	\$0.04	\$54.43	\$0.02	\$64.95	-	-
90471	Immunization administration (includes percutaneous, intradermal, SQ, or intramuscular injections); 1 vaccine (single or combination vaccine/toxoid)	\$0.02	\$11.15	\$0.00	\$12.49	\$0.00	\$8.54

Glossary

ACO	accountable care organization	HI	home infusion	RFI	request for information
ALL	acute lymphoblastic leukemia	Hospital OP	hospital outpatient	SCIG.....	subcutaneous immune globulin
ASP	average sales price	ICD	International Classification of Diseases	SOS.....	site of service
AWP.....	average wholesale price	ICER.....	Institute for Clinical and Economic Review	SQ	subcutaneous
BDAIDs.....	biologic drugs for autoimmune disorders	IDN.....	integrated delivery network	UC	ulcerative colitis
CAP.....	competitive acquisition program	IG	immune globulin	UM.....	utilization management
CAR-T.....	chimeric antigen receptor therapy	IV.....	intravenous	VEGF	vascular endothelial growth factor
CD	Crohn's disease	IVIG.....	intravenous immune globulin	VA	visual acuity
CHIP	Children's Health Insurance Program	LOB.....	line of business	WAC.....	wholesale acquisition cost
CMS.....	Centers for Medicare & Medicaid Services	MA	Medicare Advantage		
CNS.....	central nervous system	MedPAC.....	Medicare Payment Advisory Commission		
COPD.....	chronic obstructive pulmonary disease	MS.....	multiple sclerosis		
CPT	Current Procedural Terminology	NCCN.....	National Comprehensive Cancer Network		
CSF.....	colony-stimulating factor	NDC.....	National Drug Code		
DLBCL.....	diffuse large B-cell lymphoma	NME	new molecular entity		
DRCRnet...	Diabetic Retinopathy Clinical Research Network	NSCLC.....	non-small cell lung cancer		
ESA	erythropoiesis-stimulating agent	PA	prior authorization		
FDA.....	U.S. Food and Drug Administration	Part D.....	Medicare Prescription Drug Program		
FFS.....	fee for service	PD-1	programmed cell death 1		
GEJ	gastric or gastroesophageal junction	PFS.....	physician fee services		
GI.....	gastrointestinal	PMPM.....	per member per month		
HAE	hereditary angioedema	PPPY.....	per patient per year		
HCPCS.....	Healthcare Common Procedure Coding System	PSCE.....	post-service claim edit		
HHS	U.S. Department of Health and Human Services	RA.....	rheumatoid arthritis		



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