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Five-Year Trends in Payments for Neurologist-Prescribed Drugs in Medicare Part D

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Abstract

Objective

To determine whether there was an increase in payments for neurologist-prescribed drugs, we performed a retrospective analysis of prescription claims in the Medicare Part D Prescriber Public Use Files from 2013 to 2017.

Methods

We included claims prescribed by providers with the taxonomy "neurology" and included drugs present in all 5 years. Drugs were designated in 2013 as generic (GEN), brand name only (BNO), and brand name prescribed even though a generic equivalent is available (BNGE). To observe payment trends, the percentage change in the per claim payment was compared between drug classes.

Results

We included 520 drugs, of which 322 were GEN, 61 were BNO, and 137 were BNGE, representing 90,716,536 claims and generating payments of $26,654,750,720. While the number of claims from 2013 to 2017 increased only 7.6%, the total payment increased 50.4%. Adjusted for inflation, claim payments for GEN drug increased 0.6%, compared to significant increases in BNO and BNGE drugs of 42.4% and 45.0% ($p_{trend} < 0.001$). The percentage of overall GEN claims increased from 81.9% to 88.0%, BNO increased from 4.9% to 6.2%, and BNGE decreased from 13.3% to 5.8%. Neuroimmunology/multiple sclerosis drugs represented >50% of the total payments despite being only 4.3% of claims.

Conclusions

Payments for neurologist-prescribed brand name, but not generic, drugs in Medicare Part D increased consistently and well above inflation from 2013 to 2017. Unless the overall trend stabilizes or is reversed or high cost-to-claim drugs are addressed, this trend will place an increasing burden on the neurologic Medicare budget.

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Glossary

BNGE = brand name with generic equivalent; **BNO** = brand name only; **GEN** = generic.

The high cost of prescription drugs for neurologic disease remains a major concern, and the Centers for Medicare & Medicaid Services has borne the public component of these costs. An analysis of Medicare Part D data from 2013 showed that neurologist-prescribed drugs were the costliest component of all neurologic care provided to the Medicare population.[1] Disease-modifying therapies to treat multiple sclerosis have had the largest rise in cost with an annual increase 5 times greater than inflation.[2,3] Patients with neurologic disease have also had significant increases in out-of-pocket cost.[4,5] Because the burden of neurologic disease will continue to rise in Medicare beneficiaries as the population ages, our aim was to better understand trends in payments for neurology drugs among Medicare Part D beneficiaries.

Methods

Data Source

We performed a retrospective analysis of Medicare Part D Prescriber Public Use Files from 2013 to 2017, which contains drug claims for providers with a National Provider Identifier.[6] The Public Use File does not require institutional review board approval, excludes drugs with ≤10 claims and Part B drugs such as infusions, and has no beneficiary or patient-level data.

Outcomes

We included prescription claims with the provider taxonomy "neurology." The Public Use File reports the number of claims per drug in a calendar year, including original prescriptions, refills, and payments for all claims per drug. The payments represent the aggregate cost paid by the Part D plan, Medicare beneficiary, government subsidies, and other third-party payers. The primary outcomes are yearly payments for drugs, number of claims, the payment-to-claim ratio, where a ratio of 1.0 is equivalent to an individual claim costing $100, and a standardized variable referred to as claim payment, which is total payments in a calendar year divided by the number of claims. To observe payment trends, we used 2013 as a reference and calculated the percent change in yearly claim payments. Using the Part D data on generic and brand names, drugs were designated in 2013 as generic (GEN), brand name only (BNO), or brand name with generic equivalent (BNGE) by 2 pharmacists (S.D., P.W.). Subsequent to 2013, drugs were not allowed to change categories, and new drugs were not included. Two physicians (A.D., N.S.) divided drugs into neurologic subspecialty categories by examining the Food and Drug Administration indications. For both the drug and subspecialty adjudications, discrepancies were resolved by consensus.

Analysis

We included only drugs that were consistently present in the data from 2013 to 2017. This allowed a focus on payment trajectory and explorations of prescribing patterns over 5 years of data using a consistent set of drugs. We excluded outlier drugs with payment change that was >4 interquartile ranges below or above the first and third quartiles.

We report descriptive statistics for yearly payments, yearly claims, and claim payment stratified by GEN vs BNO vs BNGE and neurology subspecialty. The yearly claim payment changes were plotted over 5 years and stratified by drug classes. The trend of percent change is displayed via locally weighted smoothing and tested for significant differences with *t* tests. We adjusted for inflation using US Bureau of Labor Statistics data. As a sensitivity analysis, the same analysis was performed with neuroimmunology drugs removed. After drugs were stratified by neurologic subspecialty, 2 subspecialties were assigned to 27 medications, which increased total claims from 91 to 104 million for this analysis only. All analyses were performed in Stata (version 15.1, StataCorp, College Station, TX).

Standard Protocol Approvals, Registrations, and Patient Consents

The dataset used in this study does not contain any identifying patient information and was exempt from institutional review board review.

Data Availability

Medicare Part D Prescriber Public Use Files are publicly available at cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Part-D-Prescriber.

Results

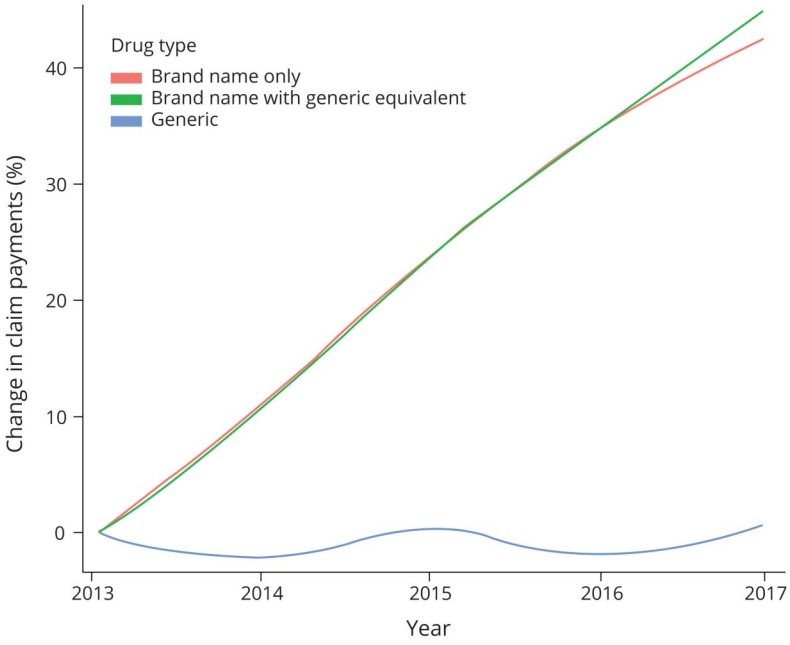
The yearly average of neurology prescribers in this sample was 12,511. Excluding drugs that were not present in all years from 2013 to 2017 resulted in a loss of 3.1% of data, and excluding outlier drugs by the ±4 interquartile range cost rule resulted in a loss of 1.5% of data. We included 520 drugs, of which 322 were GEN, 61 were BNO, and 137 were BNGE. The total number of resulting claims were 90,716,536, generating payments of $26,654,750,720 (table). Yearly total payments increased from $4.05 billion in total dollars in 2013 to $6.09 billion in 2017, a 50.4% increase. Total claims increased from 17.1 million in 2013 to 18.4 million in 2017, a 7.6% increase. The average claim payment increased from $237 in 2013 to $331 in 2017.

Table Payments and Number of Claims for Neurology Provider–Prescribed Drugs in Medicare Part D in 2013 and 2017 and Totals for 2013 to 2017, Showing Subspecialty and Percentage of Claims That Were Generic, Brand Name Only, and Brand Name With Generic Equivalent

Drug Subspecialty	Year	Payments (per $100 million), n	Claims (per million), n	Payment: Claim Ratio	Claim Payment, $	Claims Generic, %	Claims Brand, %	Claims Brand With Generic, %
All drugs (520 drugs)	2013	40.5	17.1	2.37	236.84	81.9	4.9	13.3
	2017	60.9	18.4	3.31	330.98	88.0	6.2	5.8
	2013–17	266.6	90.70	2.94	294.36	84.5	5.6	9.9
All drugs excluding neuroimmunology (474 drugs)	2013	18.9	16.5	1.15	114.93	83.4	3.5	13.0
	2017	19.8	17.6	1.13	112.86	90.8	4.4	4.8
	2013–17	102.3	86.8	1.18	117.85	87.0	4.0	9.0
Epilepsy (40 drugs)	2013	4.24	3.28	1.29	129.22	82.1	5.9	12.0
	2017	7.16	3.75	1.91	190.93	84.6	7.8	7.6
	2013–17	28.12	17.74	1.59	157.42	83.4	6.9	9.7
Movement (28 drugs)	2013	4.26	2.38	1.79	178.99	89.3	2.0	8.7
	2017	3.35	2.48	1.35	135.08	96.1	2.1	1.8
	2013–17	21.91	12.53	1.75	174.86	91.4	1.9	6.7
Vascular (85 drugs)	2013	0.41	0.675	0.61	60.74	86.9	1.5	11.6
	2017	0.21	0.608	0.35	34.54	95.6	3.3	1.3
	2013–17	1.55	3.28	0.47	47.26	91.4	2.3	6.3
Cognitive (16 drugs)	2013	4.04	2.38	1.70	169.74	57.5	N/A	42.5
	2017	2.79	2.14	1.30	130.37	82.3	N/A	17.7
	2013–17	19.23	11.87	1.62	162.00	67.4	N/A	32.6
Neuroimmunology (46 drugs)	2013	21.59	0.647	33.37	3,336.94	28.3	36.8	34.9
	2017	41.08	0.838	49.02	4,902.15	27.7	43.3	29.0
	2013–17	164.34	3.93	41.85	4,181.68	27.1	41.7	31.3
Neuromuscular (13 drugs)	2013	0.26	0.72	0.36	36.11	98.6	1.3	0.1
	2017	0.61	0.855	0.71	71.35	96.0	3.9	0.1
	2013–17	2.25	3.93	0.57	57.25	97.2	2.7	0.1
Headache (89 drugs)	2013	1.95	2.34	0.83	83.33	92.6	0.8	6.6
	2017	1.85	2.42	0.76	76.45	95.6	0.9	3.5
	2013–17	10.12	12.07	0.84	83.84	94.4	0.6	5.0
Miscellaneous (203 drugs)	2013	3.79	4.75	0.80	79.79	86.8	6.9	6.3
	2017	3.84	5.3	0.72	72.45	92.6	6.7	0.7
	2013–17	19.04	25.39	0.75	74.99	90.8	6.9	2.3

After adjustment for inflation, claim payments for GEN drug increased 0.6% from 2013 to 2017, which differs from the significant increase for BNO and BNGE drugs of 42.4% and 45.0%, respectively ($p_{trend} < 0.001$) (figure 1). From 2013 to 2017, the percentage of claims that were GEN increased from 81.9% to 88.0%, BNO increased from 4.9% to 6.2%, and BNGE decreased from 13.3% to 5.8% (figure 2A). After stratification by neurologic subspecialty, neuroimmunology

Figure 1 Inflation Adjusted Claim Payment Trajectory for Neurology Provider–Prescribed Generic, Brand Name Only, and Brand Name With Generic Equivalent Drugs From Medicare Part D 2013 to 2017



drugs emerged as a dramatic outlier, with relatively few claims and exceptional cost (figure 2B). These drugs, mostly for multiple sclerosis, represented >50% of all payments (>$16 billion) despite being only 4.3% of claims. They also had a 46.9% increase in claim payment from 2013 to 2017 ($3,337 to $4,902). However, reanalysis after the removal of neuroimmunology drugs still showed significant claim payment increases from 2013 to 2017 for BNO and BNGE drugs of 50.4% and 45.6%, respectively (p_{trend} < 0.001).

Compared to neuroimmunology, an opposite trend was observed in vascular and cognitive, with a 5-year decrease in claim payment of 43% ($61 to $35) and 24% ($170 to $130), respectively (table). From highest to lowest, the average payment-to-claim ratio from 2013 to 2017 for the subspecialties was 41.85 for neuroimmunology, 1.75 for movement disorder, 1.59 for epilepsy, 1.62 for cognitive, 0.84 for headache, 0.57 for neuromuscular, and 0.47 for vascular.

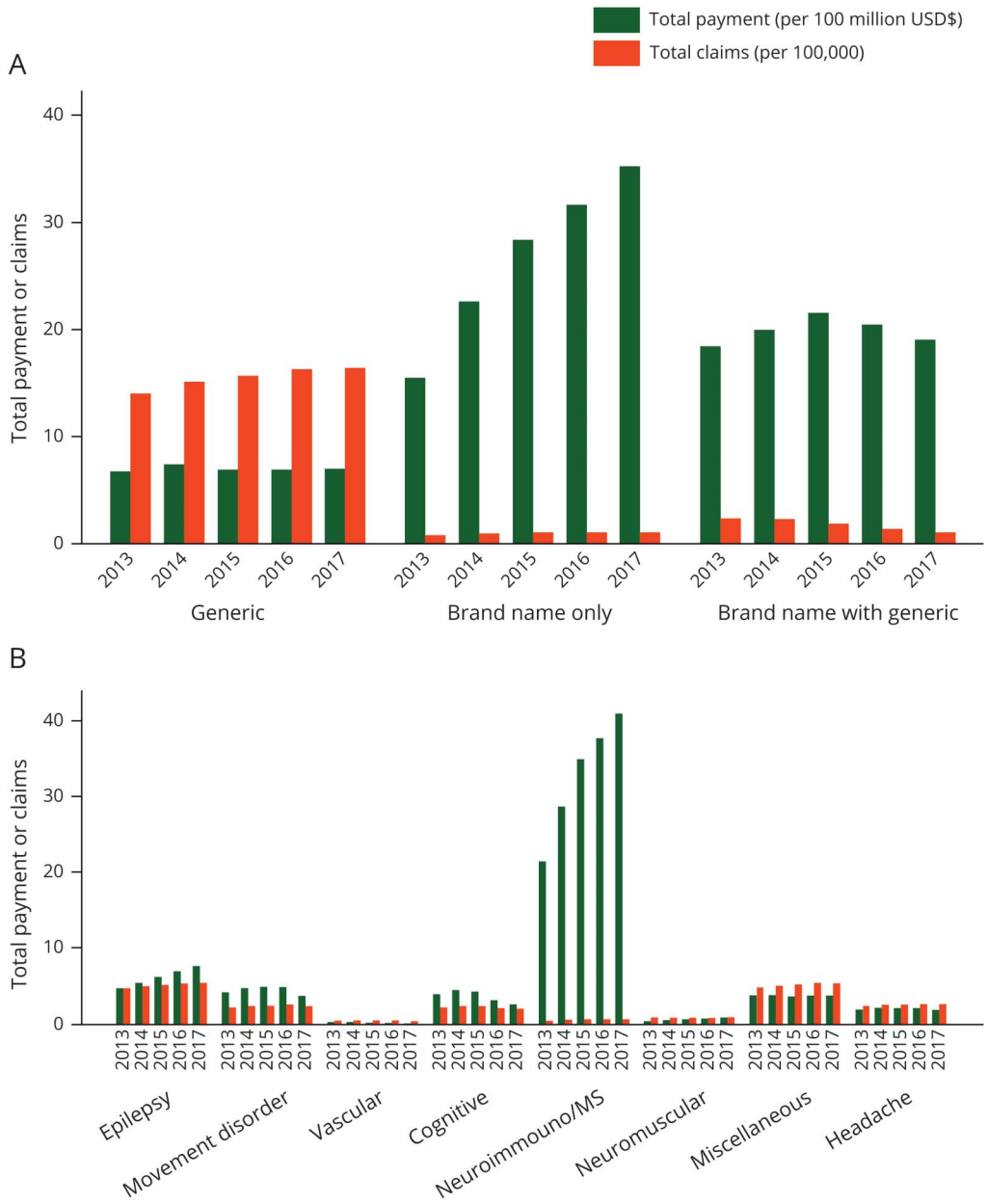
Discussion

Payments for neurologist-prescribed drugs in Medicare Part D from 2013 to 2017, which represents a large proportion of publicly funded neurologic expenditure, increased 50.4% with only a 7.6% increase in claims. Adjusting for inflation did not meaningfully change the payment increase. Our analysis included only medications that were available all years from 2013 to 2017, meaning that the payment increase is for the same product over time. BNO and BNGE drugs account for the observed payment increase, while GEN drug payments decreased.

There were major differences between different neurologic subspecialties. Despite a similar number of claims, vascular neurology drugs were 80 times cheaper per claim than neuroimmunology drugs. Subspecialties that observed a decrease in claim payment such as vascular and cognitive neurology had an increase in the proportion of claims for GEN drugs over the 5-year period and a decrease in BNGE drugs, suggesting that physicians or patients were choosing generic equivalents more often. However, the implication of the overall findings of our analysis is that, while prescribing patterns can continue improving, the most effective solution would also control the price of drugs. Neuroimmunology/multiple sclerosis drugs may be particularly appealing for price control because many of these therapeutics are biologic drugs that are available only as BNGEs.

Payment for identical neurologic brand name drugs in Medicare Part D increased consistently and well above inflation from 2013 to 2017. Unless this trend stabilizes or is reversed, these payments will place a higher burden on the Medicare budget, which accounted for 15% of total federal spending in 2018 and is projected to continue growing.[7] Neuroimmunology drugs are a source of high and rising cost that represents an opportunity for Centers for Medicare & Medicaid Services to negotiate lower drug prices for certain classes of medication, which has proved effective for the Veterans Health Administration.[8] Neurologist awareness of

Figure 2 Cost and Claims of Neurologist-Prescribed Medicare Part D Drugs



(A) Payments and number of claims for neurology provider–prescribed drugs in Medicare Part D from 2013 to 2017 and (B) subspecialty breakdown with 29 drugs in 2 subspecialties. Both figures exclude outliers from ±4 interquartile range rule. MS = multiple sclerosis; USD = US dollars.

payment increases for BNO and BNGE drugs is also critical to encourage the prescription of generic drugs whenever possible.

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Disclosure

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scientific advisory board for NeuroOne Medical Technologies Corp and performs medical legal consultations. Dr. Nair consults for Celgene, Novartis, Genentech, and EMD Serono. Go to Neurology.org/N for full disclosures.

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Appendix Authors

Name	Location	Contribution
Adam de Havenon, MD	University of Utah, Salt Lake City	Design and conceptualized study; interpreted and analyzed the data; drafted the manuscript for intellectual content
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Sarah Dehoney, PharmD	University of Utah, Salt Lake City	Major role in acquisition of data
Presley Whetman, BS	University of Utah, Salt Lake City	Major role in acquisition of data
Nazanin Sheibani, MD	University of Utah, Salt Lake City	Major role in acquisition of data
Brian Callaghan, MD, MS	University of Michigan, Ann Arbor	Design and conceptualized study; interpreted the data; drafted the manuscript for intellectual content
John Ney, MD, MPH	Boston University, MA	Design and conceptualized study; interpreted the data; drafted the manuscript for intellectual content
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Kavita Nair, PhD	University of Colorado, Denver	Design and conceptualized study; interpreted and analyzed the data; drafted the manuscript for intellectual content

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