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Medicare Spending on Anti–Vascular Endothelial Growth Factor Medications

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Purpose: To analyze Medicare Part B spending on anti–vascular endothelial growth factor (VEGF) medications.

Design: Observational cohort study using Medicare Part B claims data released by the Centers for Medicare and Medicaid Services.

Participants: Medicare Part B beneficiaries and their providers.

Methods: Data from 2011 through 2015 were used to analyze intravitreal injection claims for ranibizumab (Lucentis; Genentech, South San Francisco, CA) and aflibercept (Eylea; Regeneron, Tarrytown, NY).

Main Outcomes Measures: Number of intravitreal injections performed annually, Medicare Part B expenditures on anti-VEGF medications, and beneficiary cost share.

Results: The number of Medicare Part B claims for ranibizumab decreased from 671 869 in 2011 to 573 796 in 2015. During this 5-year period, associated Medicare drug costs averaged $1.3 billion annually. The number of Medicare Part B claims for aflibercept increased from 518 836 in 2013 to 866 749 in 2015. Annual Medicare drug expenditure for aflibercept was $1.4 billion on average. On average, Medicare spent $9719 and $9934 annually on each beneficiary receiving ranibizumab and aflibercept injections, respectively.

Conclusions: The number of anti-VEGF injections performed annually, and their associated costs, continue to rise. Ranibizumab and aflibercept costs account for 12% of the Medicare Part B budget annually. Bevacizumab represents a substantially more cost-effective alternative, but its use can present many obstacles, including efficacy concerns, dependence on compounding pharmacies, and off-label usage. *Ophthalmology Retina 2017;■ :1–7 © 2017 by the American Academy of Ophthalmology*

Since their inception in 2006, anti–vascular endothelial growth factor (VEGF) agents have become an integral part of daily ophthalmic practice. The 3 principal medications, bevacizumab (Avastin; Genentech, South San Francisco, CA), ranibizumab (Lucentis; Genentech), and aflibercept (Eylea; Regeneron, Tarrytown, NY) have brought about a paradigm shift in the treatment of age-related macular degeneration, diabetic eye disease, retinal vein occlusion, and several other ocular conditions. Their advent has prevented innumerable cases of blindness and permanent visual impairment across the world.

The costs of these medications have garnered significant attention over the last few years.[1–12] Ophthalmologists, despite representing a minority of Medicare providers, account for a disproportionate amount of Medicare dollars. Ophthalmology is a specialty that gravitates toward an elderly patient population, and thus Medicare beneficiaries. Nearly 3000 ophthalmologists fell in the top 2% of Medicare Part B funding in 2012.[13] Most of these Medicare reimbursement dollars are pass-through costs associated with expensive drugs.[12] Aflibercept costs approximately $1850 per vial for the standard 2.0-mg dose. Ranibizumab cost varies from $1170 per vial for a 0.3-mg dose (indicated for diabetic macular edema) to $1950 per vial for the 0.5-mg dose (indicated for age-related macular degeneration and retinal vein occlusion). Off-label bevacizumab repackaged in a standard 1.25-mg dose costs approximately $60 per dose.[14]

Not surprisingly, this glaring discrepancy in drug costs has led to significant scrutinizing of ophthalmology practice patterns. Questions abound as to whether these more expensive medications provide any incremental benefit and, even so, whether that benefit justifies the increased cost. Rising healthcare costs are putting a strain on the economy. The objective of the present analysis was to understand better the Medicare Part B spending trends with regard to anti-VEGF medications for ophthalmic use.

Methods

Data Source

The Centers for Medicare and Medicaid Services drug spending data were accessed to gather the data for analysis in this observational cohort study. Vanderbilt University Medical Center Institutional Review Board study exemption was obtained. Specifically, annual Medicare Part B spending data from 2011 through 2015 (the only years for which data have been made available publicly) were analyzed. These data files provide information on the spending and use of Medicare Part B drugs (e.g., drugs administered in doctors' offices and outpatient settings). Drug-spending metrics are based on total spending, representing the sum of Medicare payment, deductible, and coinsurance.

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Table 1. Medicare Part B Claims 2011 through 2015

	2011	2012	2013	2014	2015
Ranibizumab (Lucentis; J2778)					
Total no. of claims	671 869	605 711	678 511	674 502	573 796
Total Part B spending	$1 427 995 770	$1 268 139 093	$1 352 411 993	$1 331 353 226	$1 150 132 915
Average cost per drug claim	$2125	$2094	$1993	$1973	$2004
Beneficiary count*	132 433	135 259	143 516	141 615	119 657
Average no. of injections per beneficiary	5.1	4.5	4.7	4.8	4.8
Average spending per beneficiary	$10 782.78	$9375.64	$9423.42	$9401.22	$9611.92
Average beneficiary cost share	$2163.64	$1880.37	$1913.61	$1916.75	$1958.96
Aflibercept (Eylea; J0178)					
Total no. of claims			518 836	625 294	866 749
Total Part B spending			$1 079 555 056	$1 295 323 934	$1 813 496 828
Average cost per drug claim			$2081	$2072	$2092
Beneficiary count*			108 470	132 523	180 020
Average no. of injections per beneficiary			4.8	4.7	4.8
Average spending per beneficiary			$9952.57	$9774.33	$10 073.86
Average beneficiary cost share			$2011.27	$1992.14	$2052.57

*Number of Medicare Part B fee-for-service beneficiaries using the drug.

Data were refined to include all claims submitted nationally for ranibizumab and aflibercept during the study period. These procedures were isolated using Healthcare Common Procedure Coding System codes J2778 for ranibizumab injection and J0178 for aflibercept injection. Data files included Medicare Part B spending as well as beneficiary cost share. Data also were stratified across states. The total number of injections given in each state was tabulated. This was then compared with the number of Medicare beneficiaries in each state.

Bevacizumab injection claims were not included in the analysis because it is not possible to separate ophthalmologic and non-ophthalmologic use. The dataset provided by Centers for Medicare and Medicaid Services excluded claims if Medicare was not the primary payer or if drugs were billed using Not Otherwise Classified codes. Thus, bevacizumab injections claims also were incomplete because J3490 and J3590 were not available to analyze.

Statistical Analysis

Medicare Part B drug expenditure data were downloaded and organized into Microsoft Excel 2017 (Microsoft Corporation, Redmond, WA). Data analysis was performed using SAS 9.3 software (SAS Institute, Inc, Cary, NC), and figure construction was performed using GraphPad Prism 7 (GraphPad Corporation, La Jolla, CA) and Numbers 4.3.1 (Apple, Inc, Cupertino, CA).

Results

Ranibizumab

The number of Medicare Part B claims for ranibizumab injections decreased from 671 869 in 2011 to 573 796 in 2015 (Table 1). During this period, the number of Medicare Part B beneficiaries using the medication nationally decreased from 132 433 to 119 657. Beneficiaries received 4.8 ranibizumab injections annually, on average.

Annual Medicare Part B spending on ranibizumab injections was $1.43 billion in 2011. This number decreased to $1.15 billion in 2015 (Fig 1). This averages to $9719 annually spent on each Medicare beneficiary receiving ranibizumab intravitreal injections during the study period. Cumulative over 5 years, this averages to $48 595 per beneficiary spent by the Medicare Part B program. The cumulative beneficiary cost share (average amount that beneficiaries receiving the drug paid out of pocket not accounting for any secondary insurance coverage) over this period was $9833, or approximately $1967 annually.

Aflibercept

The number of Medicare Part B claims for aflibercept injections increased from 518 836 in 2013 (first year of Medicare Part B data availability for aflibercept) to 866 749 in 2015 (Table 1). During this period, the number of Medicare Part B beneficiaries using the medication nationally also increased from 108 470 to 180 020. Similar to ranibizumab, beneficiaries received an average of 4.8 aflibercept injections annually.

Annual Medicare Part B spending on aflibercept injections was $1.08 billion in 2013. This number increased steadily to $1.81 billion in 2015. Medicare Part B spending on aflibercept annually was $9934 per beneficiary. Beneficiaries receiving aflibercept injections paid an average of $2019 out of pocket annually from 2013 to 2015 (not accounting for any secondary insurance coverage).

Data were tabulated to analyze the nationwide distribution of ranibizumab and aflibercept injections for 2015, the most recent year for which data were available. Data were graphed by both total number of injections administered for each medication and the number of injections administered per 1000 Medicare beneficiaries residing in the state (Fig 2A and B). For ranibizumab, the highest volumes of injections per 1000 Medicare beneficiaries were performed in Tennessee, Kansas, Pennsylvania, Maryland, and Utah. For aflibercept, the highest volumes of injections per 1000 Medicare beneficiaries were performed in Nebraska, Connecticut, Utah, North Dakota, and Iowa (Table 2).

Discussion

As part of the Centers for Medicare and Medicaid Services initiative to increase transparency with respect to the cost of prescription and outpatient drugs, there has been an increase in publicly available information. In 2014, $21.5 billion encompassed the total Medicare Part B program spending. This number rose to $24.6 billion in 2015.[15] Spending on 15