MILLIMAN WHITE PAPER

Drug and administration costs in the commercial market for generalized Myasthenia Gravis pharmaceutical therapies

Commissioned by UCB

Jake Klaisner, FSA, MAAA
Kristin Niakan, MPH

Milliman

UCB, Inc. (UCB) engaged Milliman to estimate the average annual cost, including the drug cost and administration costs, for generalized Myasthenia Gravis (gMG) indicated drug treatments in the commercial health insurance market. Two UCB drugs indicated for gMG were approved in 2023. The commercial health insurance market includes both self-insured and fully insured employer groups, as well as the individual and small business Affordable Care Act (ACA) markets. Myasthenia Gravis (MG) is an autoimmune disorder that impacts the neuromuscular system and results in muscle weakness and fatigue.[1] While there is no diagnosis code specific to gMG, there are six drugs on the market that are indicated for gMG, a subset of MG that affects multiple muscle groups. It is estimated that the prevalence of MG in the United States ranges from 14 to 20 per 100,000 population, which translated to between 36,000 and 60,000 cases nationwide.[2] Although estimates vary widely, likely due to the small number of patients included in each study resulting from the overall low prevalence of MG, approximately 30% to 55% of patients with MG evolve into gMG.[3,4]

Eculizumab was approved by the U.S. Food and Drug Administration (FDA) in October 2017 to treat adults with gMG who are anti-acetylcholine receptor (AChR) antibody-positive.[5] Approximately 77% of patients with gMG are AChR antibody-positive.[6] Eculizumab is administered via an intravenous infusion that is typically administered every two weeks, following the initial loading doses for the gMG indication.[7] Efgartigimod alfa-fcab (efgartigimod) received FDA approval in December 2021 for the same indication and is administered as an intravenous infusion approximately once every four weeks, with recurring four week treatment cycles depending on clinical evaluation.[8,9] Ravulizumab-cwvz (ravulizumab) received FDA approval in April 2022 for the treatment of adults with gMG who are AChR antibody-positive. Following the initial dose, ravulizumab is typically administered via infusion once every eight weeks.[10] Eculizumab and ravulizumab have multiple indications, including paroxysmal nocturnal hemoglobinuria and patients with atypical hemolytic uremic syndrome.

A summary of drugs to treat gMG is provided in Figure 1. Drugs to treat gMG that were approved in 2023 were not included in the analysis due to the lack of claims data availability at the time of this report but are listed in Figure 1 for completeness. The two most recently approved drugs indicated for gMG are manufactured by UCB.

FIGURE 1: DRUGS APPROVED TO TREAT GENERALIZED MYASTHENIA GRAVIS BY MECHANISM OF ACTION

DRUG GENERIC NAME	MECHANISM OF ACTION	FDA APPROVAL DATE FOR gMG INDICATION	MANUFACTURER
eculizumab	C5 inhibitor	October 23, 2017	Alexion Pharmaceuticals*
efgartigimod alfa-fcab	Neonatal Fc receptor blocker	December 17, 2021	Argenx
ravulizumab-cwvz	C5 inhibitor	April 28, 2022	Alexion Pharmaceuticals*
efgartigimod alfa and hyaluronidase[11]	Neonatal Fc receptor blocker	June 20, 2023	Argenx
rozanolixizumab-noli[12]	Neonatal Fc receptor blocker	June 26, 2023	UCB
zilucoplan[13]	C5 inhibitor	October 17, 2023	UCB

**Alexion is a subsidiary of AstraZeneca*

Results

Milliman conducted a claims-based analysis to estimate the average annual and per claim drug cost and administration cost for commercially insured members diagnosed with MG who had at least one claim for a drug used to treat gMG, outlined in Figure 2. The drug and administrative costs include allowed amounts inclusive of patient cost sharing, third-party payments, and any site of care markup inherent in the claims data. Results for patients who did not meet the diagnosis criteria for MG but had at least one claim of the considered drugs are included in Appendix A-1. As highlighted in Figure 2, a majority of the claims for eculizumab and ravulizumab were for patients who did not meet the MG diagnosis criteria; however, there was an increase in the percentage of eculizumab claims for patients who met

the MG diagnosis criteria between 2018 and 2022. Fifty-two percent of the claims for efgartigimod were for patients who met the MG diagnosis criteria.

FIGURE 2: AVERAGE CLAIM COST AND ADMINISTRATION COST – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

					PER CLAIM		ANNUAL COSTS BASED ON PATIENT CLAIM COUNTS	
YEAR	PERCENT OF DRUG'S CLAIMS ATTRIBUTED TO PATIENTS WITH MG DIAGNOSIS *	UNIQUE PATIENT COUNT	CLAIM VOLUME FOR PATIENTS WITH MG DIAGNOSIS*	CLAIMS PER PATIENT	DRUG COST	ADMINISTRATION COST	DRUG COST	ADMINISTRATION COST
C5 INHIBITORS								
ECULIZUMAB								
2018	7%	71	771	11	$37,700	$258	$409,000	$2,270
2019	17%	153	2,110	14	$34,000	$247	$469,000	$2,610
2020	32%	170	2,861	17	$33,600	$240	$566,000	$3,320
2021	39%	189	3,275	17	$31,800	$227	$551,000	$3,290
2022	36%	146	2,425	17	$31,300	$200	$520,000	$2,750
RAVULIZUMAB								
2022†	5%	36	98	3	$84,900	$220	$231,000	$550
NEONATAL FC RECEPTOR BLOCKERS								
EFGARTIGIMOD								
2022†	52%	90	535	6	$20,500	$204	$121,000	$1,070

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
† Drug available for partial year. Efgartgimod's HCPCS code was first observed in our data in June 2022 due to use of unclassified code prior to June 2022.

The costs in Figure 2 are based on the actual patient claim counts in the data. They do not reflect the annual costs associated with a patient fully adherent to each product's prescribed dosing regimen for patients with gMG, nor for patients who have gone through the initial dosing escalation period. Ravulizumab and efgartigimod summaries are both based on partial 2022 data due to ravulizumab's April 2022 launch and the first instance of efgartigimod's Healthcare Common Procedure Coding System (HCPCS) code appearing in June 2022. Figure 3 estimates the annual drug and administration cost associated with a patient who is fully adherent and has progressed through the dose escalation phase of their treatment, if applicable. To calculate the annual costs in Figure 3 we multiplied the average non-loading dose claim cost by the number of annual administrations for a fully adherent patient for each drug. Values in Figure 3 reflect the observed distribution among various sites of care for non-loading dose claims.

FIGURE 3: AVERAGE ANNUAL DRUG AND ADMINISTRATION COST – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

ANNUAL COSTS BASED ON FULL ADHERENCE TO MAINTENANCE DOSING SCHEDULE**

YEAR	DRUG COST	ADMINISTRATION COST
C5 INHIBITORS		
ECULIZUMAB		
2018	$821,000	$3,590
2019	$818,000	$4,030
2020	$825,000	$4,170
2021	$769,000	$3,790
2022	$767,000	$3,530
RAVULIZUMAB		
2022	$585,000	$1,150
NEONATAL FC RECEPTOR BLOCKERS		
EFGARTIGIMOD †		
2022	$327,000 - $409,000	$3,270 - $4,090

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
** Eculizumab's recommended dosage regimen for gMG is 1,200 mg every two weeks after the initial dose.[14] Efgartgimod's recommended weight-based dosage regimen for gMG is 10mg/kg once every four weeks. Ravulizumab' recommended weight-based dosage regimen for gMG ranges from 3,000 to 3,600 mg every eight weeks.[15]
† Dosing schedule ranges based on 16-20 administrations per year. There are four administrations in a cycle, with four weeks between the end of one cycle and the initiation of another cycle.[16]

While the wholesale acquisition cost (WAC) for eculizumab has not changed since August 2017, we observed a decrease in average claim cost for eculizumab each year from 2018 through 2022 for patients diagnosed with MG. This is primarily driven by a shift in site of care from the hospital setting to office and home settings, as outlined in Figure 4. In 2018, 46% of eculizumab claims were billed in an outpatient hospital setting, compared to 20% of claims in 2022. From 2018 through 2022, eculizumab claims billed in an outpatient hospital setting had the highest claim cost compared to all other sites of care. While eculizumab claim volume billed in a home site of care was relatively flat from 2018 to 2020, we observed an increase in 2021 and 2022. Home-based claims increased from 15% of claims in 2020 to 40% of claims in 2021 and 51% of claims in 2022. This increase in home-based claims for eculizumab is likely driven, at least in part, by the COVID-19 pandemic, as other infused drugs also experienced an increase in home-based infusions following the pandemic.[17]

FIGURE 4: DISTRIBUTION OF CLAIMS BY SITE OF CARE – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

YEAR	OUTPATIENT HOSPITAL	OFFICE	HOME
C5 INHIBITORS			
ECULIZUMAB			
2018	46%	38%	15%
2019	35%	46%	18%
2020	30%	52%	15%
2021	25%	32%	40%
2022	20%	26%	51%
RAVULIZUMAB			
2022†	24%	34%	43%
NEONATAL FC RECEPTOR BLOCKERS			
EFGARTIGIMOD			
2022†	25%	35%	39%

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
Note: Outpatient hospital, office, and home administration account for 97% to 100% of summarized utilization, depending on the year.

† Drug available for partial year. Efgartgimod's HCPCS code was first observed in our data in June 2022 due to use of unclassified code prior to June 2022.

COSTS BY SITE OF CARE

We summarized drug and administration costs by site of care for each product. Figure 5 summarizes the 2022 drug and administrative costs by site of care for drugs to treat gMG. The summaries from 2018 to 2021 for eculizumab can be found in Appendix A-2.

FIGURE 5: 2022 DRUG AND ADMINISTRATIVE COSTS BY SITE OF CARE – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

SITE OF CARE	DISTRIBUTION OF CLAIM VOLUME**	AVERAGE DRUG CLAIM COST	DRUG CLAIM COST (% of WAC)	AVERAGE ADMINISTRATION CLAIM COST	ADMINISTRATION COST (% OF DRUG WAC)
C5 INHIBITORS					
ECULIZUMAB					
Outpatient Hospital	14%	$45,200	149%	$463	1.5%
Office	30%	$27,400	106%	$133	0.5%
Home	55%	$29,100	109%	$149	0.3%
Weighted Average		**$31,300**	**117%**	**$200**	**0.6%**
RAVULIZUMAB†					
Outpatient Hospital	13%	$151,300	223%	$527	0.8%
Office	36%	$80,200	110%	$153	0.2%
Home	51%	$70,900	110%	$172	0.2%
Weighted Average		**$84,900**	**125%**	**$220**	**0.3%**
NEONATAL FC RECEPTOR BLOCKERS					
EFGARTIGIMOD†					
Outpatient Hospital	10%	$55,100	268%	$583	2.8%
Office	45%	$16,100	100%	$154	0.9%
Home	46%	$17,600	111%	$156	0.6%
Weighted Average		**$20,500**	**125%**	**$204**	**1.0%**

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
** Claim distribution percentage excludes other sites of care and therefore does not add up to 100% in all cases.
† Drug available for partial year. Efgartgimod's HCPCS code was first observed in our data in June 2022 due to use of unclassified code prior to June 2022.

The drug cost of eculizumab claims billed in a home setting of care were 40% and 36% less costly than claims billed in an outpatient hospital setting in 2021 and 2022, respectively. Between 2019 and 2022, claims for eculizumab billed in an office setting of care were the least expensive compared to all other settings of care.

The 2022 average claim cost for ravulizumab varied widely depending on the site of care—ranging from $70,900 in a home setting to $151,300 in an outpatient hospital setting. Twenty-four percent of ravulizumab claims were billed in an outpatient hospital setting in 2022, compared to 43% in a home site of care.

The 2022 average claim cost for efgartigimod also varied widely, depending on the site of care. While the office and home settings had fairly similar drug claim costs of $16,100 and $17,600, respectively, the outpatient hospital average drug claim cost was $55,100.

The average per claim administration cost for all three drugs included in the analysis was similar in 2022. While eculizumab administrative claim costs varied year-over-year for each setting of care, administrative costs were highest in the outpatient hospital setting of care from 2018 to 2022. Administration claim costs were fairly similar for home-based and office-based sites of care across all years. It is important to note that there may be patient mix contributing to the cost differences between sites of care. For example, some commercial payers limit outpatient hospital infusions of drugs such as those included in this analysis to complex patients and/or patients who have a history of adverse reactions who may require the additional capabilities found in an outpatient hospital setting. It is possible that patients who received infusion in an outpatient hospital site of care are more likely to have other drugs administered along with therapies indicated for gMG and the drug administration costs could include costs of other infused therapies. Figure 6 summarizes the average drug and administrative cost for a fully adherent patient who has progressed through the dose escalation phase of their treatment by site of care for 2022.

FIGURE 6: AVERAGE ANNUAL DRUG AND ADMINISTRATION COST – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS* – CY 2022

ANNUAL COSTS BASED ON FULL ADHERENCE TO MAINTENANCE DOSING SCHEDULE**		
SITE OF CARE	**DRUG COST**	**ADMINISTRATION COST**
	C5 INHIBITORS	
	ECULIZUMAB	
Outpatient Hospital	$944,000	$9,750
Office	$710,000	$3,410
Home	$739,000	$2,390
Weighted Average	**$767,000**	**$3,530**
	RAVULIZUMAB	
Outpatient Hospital	$1,188,000	$2,920
Office	$555,000	$970
Home	$482,000	$900
Weighted Average	**$585,000**	**$1,150**
	NEONATAL FC RECEPTOR BLOCKER	
	EFGARTIGIMOD†	
Outpatient Hospital	$881,000 - $1,102,000	$9,330 – $11,660
Office	$258,000 - $323,000	$2,460 - $3,070
Home	$282,000 - $352,000	$2,490 - $3,110
Weighted Average	**$327,000 - $409,000**	**$3,270 - $4,090**

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
** Eculizumab's recommended dosage regimen for gMG is 1,200 mg every two weeks after the initial dose.[1] Efgartgimod's recommended weight-based dosage regimen for gMG is 10 mg/kg once every four weeks.[2] Ravulizumab's recommended weight-based dosage regimen for gMG ranges from 3,000 to 3,600 mg every eight weeks.[3]
† Dosing schedule ranges based on 16-20 administrations per year. There are four administrations in a cycle, with four weeks between the end of one cycle and the initiation of another cycle.

DRUG ADMINISTRATION COSTS

We summarized drug administration costs using Current Procedural Terminology (CPT) codes in the billing guide for the gMG indication for each product.[4,5,6] The billing guides provide information on codes to identify the drug, as well as the drug administration, and typically include the indication and important safety information for each drug. We also identified additional CPT codes related to home infusion and additional sequential infusions that were frequently used in the claims data for administration of all three products, but which are not in the billing guides. Figure 7 summarizes the average cost per claim and per year for drug administration codes on the billing guide, as well as codes that indicate drug administrations that were not listed on the billing guide by product.

[1] See https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/125166s422lbl.pdf.
[2] See https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/761195s000lbl.pdf.
[3] See https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/761108s023lbl.pdf.
[4] Soliris. Coding and Billing Guide for the Use of Soliris (eculizumab). Retrieved November 16, 2023, from https://solirisgmgpro.com/getting-started/-/media/5623B9B571AE47C683C47AC26EDA4C45.pdf.
[5] Alexion. Coding and Billing Guide for the Use of Ultomiris. Retrieved November 16, 2023, from https://alexionaccessnavigator.com/-/media/alexionaccessnavigator/ultomiris/files/ultomiris-gmg-coding-and-billing-guide.pdf.
[6] Vyvgart. Billing and Coding Guide. Retrieved November 16, 2023, from https://vyvgarthcp.com/content/dam/vyvgart/hcp/pdfs/vyvgart-billing-and-coding-guide.pdf.

FIGURE 7: AVERAGE ADMINISTRATION COSTS FOR COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

		PER CLAIM			ANNUAL COSTS BASED ON PATIENT CLAIM COUNTS		
YEAR	% BILLING GUIDE CLAIMS**	BILLING GUIDE	NON-BILLING GUIDE	WEIGHTED AVERAGE***	BILLING GUIDE	NON-BILLING GUIDE	WEIGHTED AVERAGE**
C5 INHIBITORS							
ECULIZUMAB							
2018	65%	$324	$132	$258	$2,430	$980	$2,270
2019	62%	$309	$140	$247	$3,130	$1,310	$2,610
2020	58%	$313	$135	$240	$4,190	$1,590	$3,320
2021	55%	$291	$140	$227	$4,310	$1,770	$3,290
2022	52%	$250	$140	$200	$3,700	$1,610	$2,750
RAVULIZUMAB							
2022†	47%	$281	$166	$220	$650	$460	$550
NEONATAL FC RECEPTOR BLOCKERS							
EFGARTIGIMOD							
2022†	71%	$226	$147	$204	$1,210	$670	$1,070

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
** Some drug claims have both billing guide and non-billing guide administration claims.
*** The average per claim and year administrative costs across billing guide and non-billing guide codes is consistent with the values in Figure 1 above.
† Drug available for partial year. Efgartgimod's HCPCS code was first observed in our data in June 2022 due to use of unclassified code prior to June 2022.

Eculizumab administration cost was variable each year, ranging from $250 to $324 across the five-year time horizon for codes on the billing guide. Across all years, the administration codes that were captured on the billing guide had higher costs than those not on the billing guide, with average billing guide claims being more than two times greater in most years. Additionally, we observed an increase each year in the percentage of eculizumab claims with a non-billing guide administration code, aligning with the increase in home setting of care described above. Ravulizumab and efgartgimod's billing guide administrative costs relative to non-billing guide administrative costs were similar to eculizumab in 2022.

While eculizumab administrative claim costs varied year-over-year for each site of care, administrative costs were highest for the outpatient hospital setting in all years. Administration claim costs were fairly similar for home-based and office-based sites of care across all years. Administrative claim costs are summarized by percentile in Figure 8 below.

FIGURE 8: 2022 PER CLAIM ADMINISTRATIVE COSTS – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS*

	C5 INHIBITORS				NEONATAL FC RECEPTOR BLOCKERS	
	ECULIZUMAB		RAVULIZUMAB		EFGARTIGIMOD†	
PERCENTILE	BILLING GUIDE	NON-BILLING GUIDE	BILLING GUIDE	NON-BILLING GUIDE	BILLING GUIDE	NON-BILLING GUIDE
20th	$77	$93	$86	$85	$80	$105
40th	$156	$115	$141	$119	$122	$126
60th	$213	$140	$163	$170	$177	$155
80th	$358	$184	$472	$185	$372	$181
Standard Deviation	$264	$64	$330	$142	$233	$63

* Defined as patients with two MG diagnoses within 24 months and at least three months between diagnosis codes and at least one claim for eculizumab, efgartgimod, or ravulizumab.
† Drug available for partial year. Efgartgimod's HCPCS code was first observed in our data in June 2022 due to use of unclassified code prior to June 2022.

Methodology and Assumptions

We relied on Milliman's Consolidated Health Cost Guidelines™ (CHSD+) research database, which contains nationwide de-identified healthcare claims data for over 60 million unique individuals. The CHSD+ is a closed dataset comprised of payer claim and membership data. We reviewed claims from 2018 through 2022 and limited our review to individuals with commercial health insurance coverage. We summarized utilization for all patients 18 years or older with a claim for eculizumab, efgartgimod, or ravulizumab, stratified by MG diagnosis status. We classified individuals as diagnosed with MG if they met the following criteria:

- Two or more MG diagnosis codes within 24 months between 2018 and 2022
- Patients who had at least three months between two of the MG diagnoses within a 24-month time period

We used the following ICD-10 diagnoses codes for MG: G70.01 and G70.00. There are no diagnosis codes specific to gMG, but eculizumab, efgartgimod, and ravulizumab are indicated specifically for gMG. When interpreting the results in Appendix A-1 for patients who did not meet the MG diagnosis criteria outlined above, it is important to consider that eculizumab and ravulizumab are approved for indications other than gMG.

We excluded 0.76% of patients (18) from the analysis due to outlier claims in the data with erroneously high-cost claims.

We identified eculizumab, efgartgimod alfa-fcab, and ravulizumab-cwvz claims using National Drug Codes (NDCs) and Healthcare Common Procedure Coding System (HCPCS) codes that align with each billing guide, outlined in Figure 9. For instances where there were multiple doses billed on the same date of service for each patient, we treated them as one claim.

FIGURE 9: IDENTIFICATION OF ECULIZUMAB, EFGARTGIMOD ALFA-FCAB, AND RAVULIZUMAB-CWVZ CLAIMS

DRUG NAME	NDC	HCPCS
Eculizumab	25682-0001-01	J1300
Efgartgimod alfa-fcab	73475-3041-05	J9332
Ravulizumab-cwvz	25682-0025-01 25682-0028-01	J1303

Each billing guide also includes ICD-10-Procedure Coding System (ICD-10-PCS) and CPT codes for billing drug administration services for MG indication. In addition to the drug administration codes on the billing guide, we identified additional CPT codes related to home infusion that were frequently populated in the claims data for administration services but were not captured on the billing guide. We only included the drug administration codes in summaries if they were billed on the same date of service as a drug claim. There were instances where the administration code had a different site of care than the drug claim; however, for summaries by site of care we aligned the administration code to the drug's site of care. Figure 10 summarizes the administration codes included in the analysis.

FIGURE 10: IDENTIFICATION OF DRUG ADMINISTRATION SERVICES FOR GMG INDICATION

ICD-10-PCS	CPT – BILLING GUIDE	CPT – NON-BILLING GUIDE
3E033GR	96365	99601
3E043GR	96366	99602
3E0330M	96413	96367
3E0430M	96415	96417
3E033GC		
3E043GC		

We limited the analysis to claims billed through the medical benefit for consistency in average annual cost reporting, which excluded about 1% of utilizing patients.

Approximately 18% of eculizumab claims, 14% of efgartgimod alfa-fcab claims, and 19% of ravulizumab-cwvz claims did not have one of the administration codes listed in Figure 10 on the same date of service. There were four revenue codes that were typically associated with the drugs included in the analysis:

- 0250: Pharmacy – General Classification
- 0258: Pharmacy – IV Solutions
- 0260: IV Therapy – General Classification
- 0636: Pharmacy – Extension of 025X – Drugs Requiring Detailed Coding

While these codes and the presence of ICD-10-PCS codes likely indicate the administration costs associated with the drugs included in this analysis, due to limitations in inpatient claim reporting (often bundled), we did not attempt to separate out the cost associated with each revenue code from other HCPCS codes billed on the same date of service. As such, we have a subset of claims that are used to calculate the average drug claim cost, but not the average administration cost for each drug.

Caveats and Limitations

This report has been prepared for UCB. This report is designed to assist UCB in better understanding the costs, including drug costs and administration costs, to treat generalized Myasthenia Gravis patients with eculizumab, efgartgimod alfa-fcab, and ravulizumab-cwvz in the commercial market. UCB may share this report with external parties with Milliman's prior consent. It is not intended, and should not be used, for any other purpose. We do not intend this information to benefit any third party, even if we permit the distribution of our work product to such third party. Any third-party recipient of this report desiring professional guidance should not rely upon Milliman's work product but should engage qualified professionals for advice appropriate to its specific needs. Any releases of this report to a third party should be in its entirety.

This analysis is subject to the limitations inherent in analysis of paid claims data (e.g., the potential for mis- or under-coding of diagnosis). In preparing this report, we relied on internal claims datasets. We accepted this information without audit but reviewed the information for general reasonableness. Our results and conclusions may not be appropriate if this information is not accurate.

APPENDIX A-1: AVERAGE CLAIM COST AND ADMINISTRATION COST – ALL OTHER COMMERCIALLY INSURED PATIENTS

		PER CLAIM		ANNUAL COSTS BASED ON PATIENT CLAIM COUNTS	
YEAR	PERCENTAGE OF CLAIMS FOR PATIENTS WITHOUT MG DIAGNOSIS*	DRUG COST	ADMINISTRATION COST	DRUG COST	ADMINISTRATION COST
			C5 INHIBITORS		
			ECULIZUMAB		
2018	93%	$32,300	$410	$499,000	$5,750
2019	83%	$32,800	$380	$438,000	$4,570
2020	68%	$31,900	$410	$397,000	$4,640
2021	61%	$32,400	$440	$395,000	$4,850
2022	64%	$32,200	$490	$397,000	$5,450
			RAVULIZUMAB		
2022	95%	$89,300	$400	$413,000	$1,720
			NEONATAL FC RECEPTOR BLOCKER		
			EFGARTIGIMOD		
2022	48%	$22,600	$280	$123,000	$1,360

* Defined as patients without two MG diagnoses within 24 months and at least three months between diagnosis codes but with at least one claim for eculizumab, efgartgimod, or ravulizumab.

APPENDIX A-2: DRUG AND ADMINISTRATIVE COSTS BY SITE OF CARE – COMMERCIALLY INSURED PATIENTS WITH MYASTHENIA GRAVIS DIAGNOSIS

SITE OF CARE	DISTRIBUTION OF CLAIM VOLUME	AVERAGE DRUG CLAIM COST	DRUG CLAIM COST (% OF WAC)	AVERAGE ADMINISTRATION CLAIM COST
ECULIZUMAB – 2018				
Outpatient Hospital	46%	$57,800	176%	$421
Office	38%	$27,100	104%	$136
Home	15%	$36,300	127%	$150
All Other	0%	$22,100	242%	$333
Weighted Average		$37,700	133%	$258
ECULIZUMAB – 2019				
SITE OF CARE	**DISTRIBUTION OF CLAIM VOLUME**	**AVERAGE DRUG CLAIM COST**	**DRUG CLAIM COST (% OF WAC)**	**AVERAGE ADMINISTRATION CLAIM COST**
Outpatient Hospital	35%	$48,300	182%	$424
Office	46%	$27,700	105%	$156
Home	18%	$34,300	119%	$153
All Other	1%	$34,900	328%	$326
Weighted Average		$34,000	128%	$247
ECULIZUMAB – 2020				
SITE OF CARE	**DISTRIBUTION OF CLAIM VOLUME**	**AVERAGE DRUG CLAIM COST**	**DRUG CLAIM COST (% OF WAC)**	**AVERAGE ADMINISTRATION CLAIM COST**
Outpatient Hospital	30%	$51,600	180%	$469
Office	51%	$27,600	104%	$148
Home	14%	$33,700	113%	$147
All Other	4%	$41,100	205%	$285
Weighted Average		$33,600	124%	$240
ECULIZUMAB – 2021				
SITE OF CARE	**DISTRIBUTION OF CLAIM VOLUME**	**AVERAGE DRUG CLAIM COST**	**DRUG CLAIM COST (% OF WAC)**	**AVERAGE ADMINISTRATION CLAIM COST**
Outpatient Hospital	25%	$47,800	171%	$496
Office	32%	$27,100	105%	$147
Home	40%	$28,900	107%	$146
All Other	3%	$46,300	178%	$258
Weighted Average		$31,800	119%	$227

* Defined as patients without two MG diagnoses within 24 months and at least three months between diagnosis codes but with at least one claim for eculizumab, efgartgimod, or ravulizumab.

CONTACT

Jake Klaisner
jake.klaisner@milliman.com

Kristin Niakan
kristin.niakan@milliman.com

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