

Healthcare Costs in Commercially Insured Pediatric Patients with Generalized Myasthenia Gravis in the United States

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Background

Myasthenia gravis (MG) is a rare, chronic autoantibody disease. The predominant manifestation is muscle weakness and fatigability, affecting ocular muscles (ocular MG) or extending to other muscle groups (generalized MG [gMG])¹

In the United States, the estimated prevalence of MG among children is 25.3 (95% confidence interval [CI], 19.9–32.2) per million population among commercially insured patients and 37.6 (95% CI, 31.9–44.4) per million population among Medicaid recipients²

Healthcare resource utilization data in pediatric/young adult patients with gMG remain limited

Objective

To assess the incremental healthcare costs associated with gMG in commercially insured and Medicaid-recipient children and young adults

Methods

- This was a longitudinal, retrospective cohort study using data from the Merative™ MarketScan® Commercial Claims and Encounters Database and the Multi-State Medicaid Database
- Eligibility criteria for the gMG cohort were as follows:
 - ≥1 qualified MG event between January, 1, 2010, and June 30, 2025 (≥1 claim with an MG diagnosis code [International Classification of Diseases, Ninth Revision, Clinical Modification codes 358.00/358.01 or Tenth Revision, Clinical Modification codes G70.00/G70.01] in the primary billing position for an inpatient visit or ≥2 claims on separate days with an MG diagnosis code in any billing position for an outpatient/emergency department/other visit except for inpatient within a 60-day period)
 - Age 2–25 years on index date (date of qualified MG event)
 - ≥6 months' continuous health plan enrollment before index date
- Exclusion criteria were presence of congenital and developmental myasthenia or ocular MG
- The non-MG cohort (control) was selected randomly
- Patients were followed until the earliest of disenrollment, death, or end of data
- Healthcare resource utilization encounters were defined; associated costs per patient per month were calculated, adjusted for inflation, and reported in the first half of 2025 US dollars
- Inverse probability of treatment weighting was calculated in the gMG and non-MG cohorts using all baseline variables

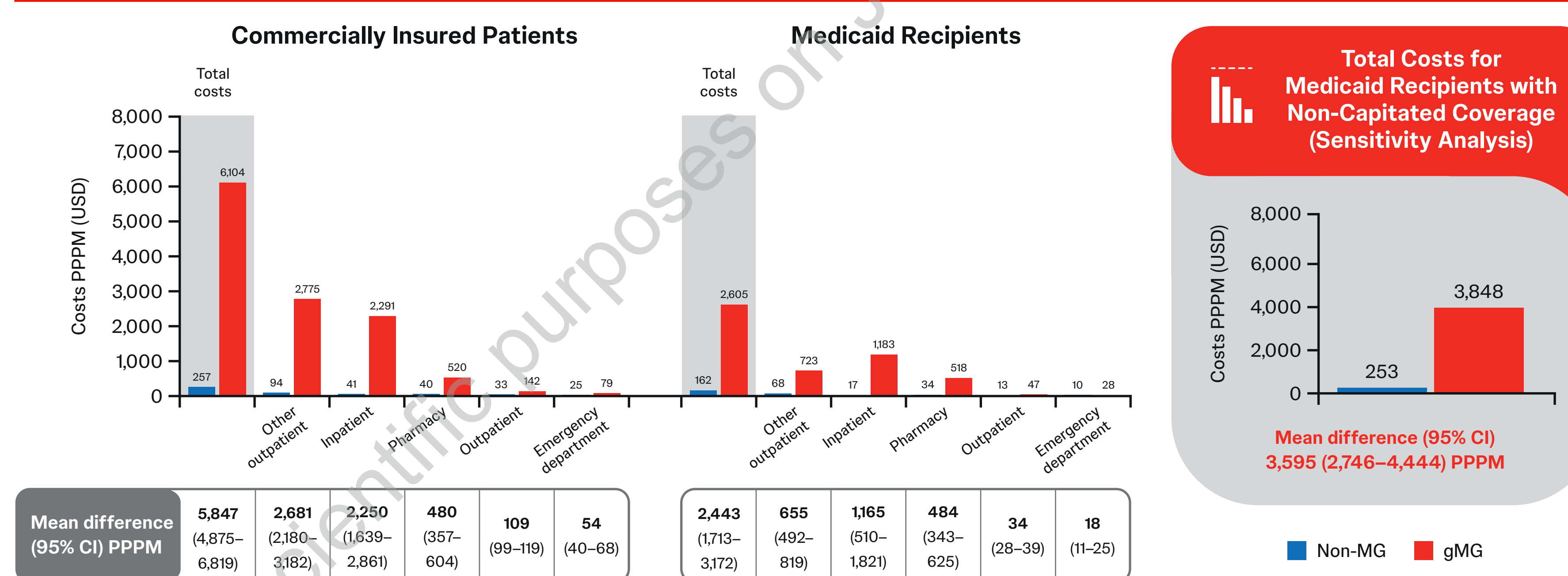
Results

Baseline characteristics were well balanced between the gMG and non-MG cohorts after weighting adjustment

Characteristic	Commercially Insured Patients				Medicaid Recipients			
	Before Weighting		After Weighting ^a		Before Weighting		After Weighting ^a	
	gMG (n=1,361)	Non-MG (n=14,632)	gMG (n=1,389)	Non-MG (n=14,628)	gMG (n=681)	Non-MG (n=6,908)	gMG (n=673)	Non-MG (n=6,923)
Sex, female, n (%)	977 (71.8)	7,133 (48.7)	668 (48.1)	7,415 (50.7)	472 (69.3)	3,505 (50.7)	348 (51.8)	3,628 (52.4)
Age, mean (SD), years	18.0 (6.1)	14.0 (6.8)	14.3 (7.0)	14.3 (6.8)	15.0 (7.1)	11.2 (6.1)	11.7 (6.8)	11.5 (6.3)
Length of follow-up, median, months	20.9	23.4	–	–	34.6	29.6	–	–
Insurance plan, n (%)								
Non-capitated	1,195 (87.8)	12,602 (86.1)	1,192 (85.9)	12,615 (86.2)	296 (43.5)	2,410 (34.9)	252 (37.4)	2,485 (35.9)
Capitated	166 (12.2)	2,030 (13.9)	196 (14.1)	2,013 (13.8)	385 (56.5)	4,498 (65.1)	421 (62.6)	4,438 (64.1)
Comorbidities ^b , n (%)								
Pharyngitis	132 (9.7)	1,461 (10.0)	155 (11.2)	1,453 (9.9)	78 (11.5)	692 (10.0)	72 (10.7)	710 (10.3)
Otitis media	44 (3.2)	722 (4.9)	84 (6.1)	702 (4.8)	25 (3.7)	439 (6.4)	41 (6.1)	423 (6.1)
Asthma	97 (7.1)	558 (3.8)	58 (4.2)	595 (4.1)	76 (11.2)	446 (6.5)	51 (7.5)	480 (6.9)
Allergic inflammation of the nasal airways	95 (7.0)	665 (4.5)	71 (5.1)	697 (4.8)	47 (6.9)	487 (7.0)	56 (8.3)	486 (7.0)
Autoimmune condition	147 (10.8)	251 (1.7)	35 (2.6)	358 (2.4)	58 (8.5)	94 (1.4)	14 (2.1)	147 (2.1)
Anxiety	144 (10.6)	449 (3.1)	50 (3.6)	538 (3.7)	58 (8.5)	180 (2.6)	26 (3.8)	222 (3.2)
Depression	94 (6.9)	335 (2.3)	32 (2.3)	385 (2.6)	57 (8.4)	212 (3.1)	25 (3.7)	241 (3.5)
Obesity	48 (3.5)	196 (1.3)	21 (1.5)	225 (1.5)	41 (6.0)	265 (3.8)	29 (4.3)	288 (4.2)
Fluid and electrolyte disorders	30 (2.2)	70 (0.5)	11 (0.8)	89 (0.6)	47 (6.9)	66 (1.0)	9 (1.4)	117 (1.7)

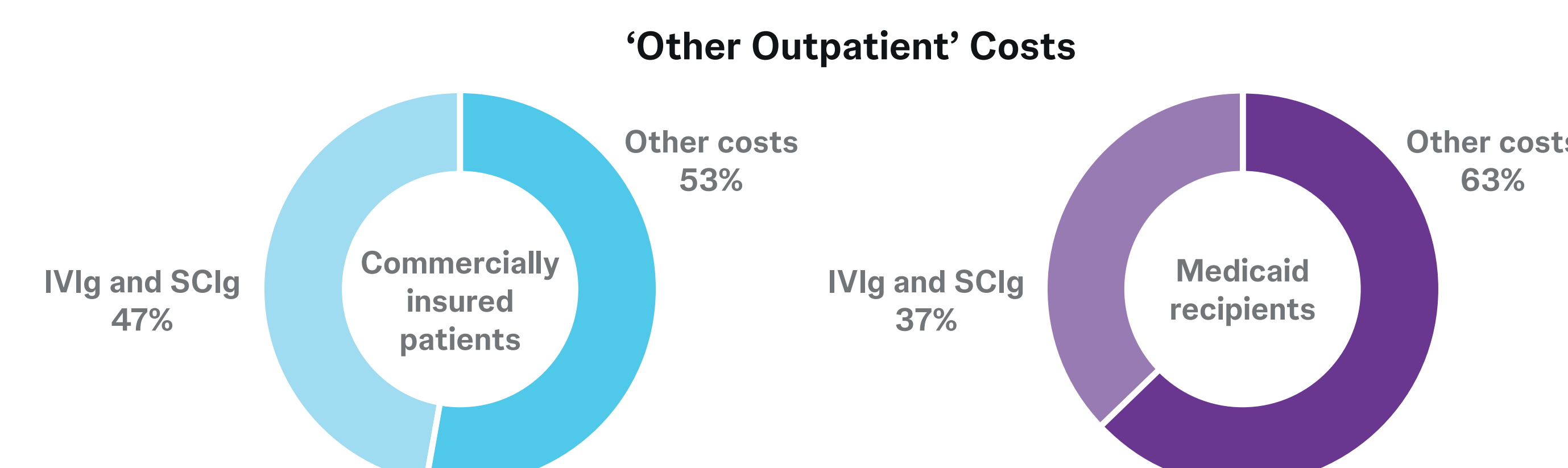
^aPercentages were calculated by the weighted population and may not always add up to 100. ^bPresent in >5% of any group. gMG=generalized myasthenia gravis, MG=myasthenia gravis, SD=standard deviation.

Healthcare costs were higher in the cohort of patients with gMG compared with the non-MG cohort (weighted populations)



To limit the influence of extremely large cost values, maximum total costs and subcategory costs were capped at the 99th percentile for both gMG and non-MG cohorts. CI=confidence interval, gMG=generalized myasthenia gravis, MG=myasthenia gravis, PPPM=per patient per month, USD=US dollars.

In the cohort of patients with gMG (weighted population), the combined costs of intravenous and subcutaneous immunoglobulin treatment accounted for 47% and 37% of 'other outpatient' costs for the commercially insured patients and Medicaid recipients, respectively



gMG=generalized myasthenia gravis, IVIg=intravenous immunoglobulin, SCIG=subcutaneous immunoglobulin.

In the cohort of patients with gMG (weighted population), mean healthcare costs per patient per month during follow-up were higher for those with acute events (MG exacerbation or myasthenic crisis) compared with those without acute events

Costs PPPM (USD)	Commercially Insured Patients			Medicaid Recipients		
	No Exacerbation	Exacerbation	Mean (95% CI) Difference	No Exacerbation	Exacerbation	Mean (95% CI) Difference
Total	3,715	13,401	9,686 (6,698–12,674)	1,535	4,934	3,399 (1,211–5,587)
Other outpatient	2,120	4,777	2,657 (1,274–4,039)	711	749	38 (–320 to 395)
Inpatient	666	7,256	6,590 (4,328–8,851)	243	3,229	2,986 (925–5,047)
Pharmacy	477	652	175 (–100 to 449)	423	723	300 (–7 to 606)
Outpatient	133	170	37 (17–57)	43	55	11 (–1 to 24)
Emergency department	66	120	54 (15–92)	27	31	4 (–8 to 16)
	No Myasthenic Crisis	Myasthenic Crisis	Mean (95% CI) Difference	No Myasthenic Crisis	Myasthenic Crisis	Mean (95% CI) Difference
Total	4,734	15,565	10,831 (6,154–15,508)	2,045	5,538	3,493 (1,473–5,512)
Other outpatient	2,373	5,554	3,181 (1,375–4,987)	675	976	301 (–230 to 831)
Inpatient	1,358	8,734	7,376 (3,512–11,240)	715	3,631	2,915 (1,233–4,598)
Pharmacy	490	729	239 (–158 to 636)	488	672	184 (–162 to 530)
Outpatient	138	166	28 (4–52)	45	58	13 (–3 to 29)
Emergency department	76	103	27 (–8 to 62)	27	36	9 (–5 to 23)

CI=confidence interval, gMG=generalized myasthenia gravis, MG=myasthenia gravis, PPPM=per patient per month, USD, US dollars.

Key Takeaways

- For pediatric and young adult patients with gMG in the United States, healthcare costs were higher than in those without MG
- Among patients with gMG, healthcare costs were approximately three times higher for those with versus without acute events
- This study highlights the need for improved management of gMG symptoms for pediatric and young adult patients to reduce the frequency of costly acute events