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Economic impact of oral corticosteroid-related comorbidities in patients with anti-acetylcholine receptor antibody-positive generalised myasthenia gravis in the United States

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INTRODUCTION

- Myasthenia gravis is a rare, chronic, autoimmune neuromuscular disease characterised by muscle weakness, fluctuating symptoms, and variable disease course.[1]
- Although oral corticosteroids (OCS) are commonly used to treat myasthenia gravis, long-term use, especially at high doses, is associated with substantial systemic adverse effects, including diabetes, osteoporosis, hypertension, weight gain, cataracts, and neuropsychiatric symptoms, that contribute to diminished quality of life and increased economic burden.[2-4]
  - Due to the adverse effects associated with OCS use, international expert consensus recommends aiming for the lowest therapeutic OCS dose (≤ 5 mg/d) for the shortest feasible duration.[2]
- Given the widespread use of OCS for the treatment of myasthenia gravis, real-world data characterising the economic impact of OCS-related comorbidities and clinical burden are needed.[4]

OBJECTIVE

- To estimate the annual direct cost to the US healthcare system of OCS-related comorbidities in patients with anti-acetylcholine receptor antibody-positive (AChR-Ab+) generalised myasthenia gravis (gMG) receiving OCS > 1825 mg/yr and determine potential reductions in medical costs associated with OCS use.

CONCLUSIONS

- In this analysis of patients with AChR-Ab+ gMG, treatment with OCS doses > 1825 mg/yr was associated with a notable excess cumulative incidence of comorbidities and high annual OCS-related comorbidity costs.
  - The largest differences were observed for gastrointestinal disorders, followed by type 2 diabetes mellitus and cardiovascular disease.
- The excess annual cost associated with OCS-related comorbidities may potentially be avoided or reduced with steroid-sparing strategies, mitigating the overall burden for patients with AChR-Ab+ gMG.

METHODS

- A prevalence-based cost calculator was developed to estimate the annual excess cost attributable to OCS-related comorbidities among adult patients with AChR-Ab+ gMG in the United States who used OCS > 1825 mg/yr (prednisone equivalent of a patient receiving an average daily dose of 5 mg/d for 1 year) to manage their disease.
- The excess annual costs were estimated using a 3-step calculation applied separately to each OCS-related comorbidity (**Figure 1**).
  - **Estimating population at risk:** The number of adults with AChR-Ab+ gMG receiving OCS was estimated based on the published epidemiology literature[5-10] and an analysis of the Komodo Health® database.
  - **Estimating excess cumulative incidence of OCS-related comorbidities:** Retrospective claims analyses of the Komodo Health® database were conducted to derive the cumulative incidence rate of each comorbidity among patients with OCS doses > 1825 mg/yr and those not using OCS.[11] Excess cumulative incidence rate was calculated as the difference between the 2 groups.
  - **Cost application:** Published literature-derived annual per-patient excess healthcare costs (converted and inflated to 2025 US dollars) were applied to estimate total annual excess costs by comorbidity. Costs were then summed across conditions to estimate the total annual burden.

Figure 1. Modelling approach for assessing annual OCS-related comorbidity costs

Population at risk of experiencing increased OCS-related comorbidities **×** Excess cumulative incidence of comorbidities attributed to OCS use > 1825 mg/yr **×** Annual per-patient healthcare costs associated with each comorbidity **=** Annual **excess cost of OCS-related comorbidity** among adult patients with AChR-Ab+ gMG in the United States who are using OCS

Selected[a] OCS-related comorbidities

- Cataracts or glaucoma
- Cardiovascular disease
- Gastrointestinal disorders
- Hypertension
- Mood disorders
- Obesity
- Osteoporosis or fracture
- Type 2 diabetes

[a]Comorbidities that had a significantly greater cumulative incidence rate in the higher dose steroid group (> 1825 mg/yr) compared with the no OCS group.
AChR-Ab+, anti-acetylcholine receptor antibody-positive; gMG, generalised myasthenia gravis; OCS, oral corticosteroids.

RESULTS AND INTERPRETATION

Population at risk of increased OCS-related comorbidities

- Based on the model, a total of 49,142 adult patients with AChR-Ab+ gMG in the United States were estimated to be receiving OCS in 2025.

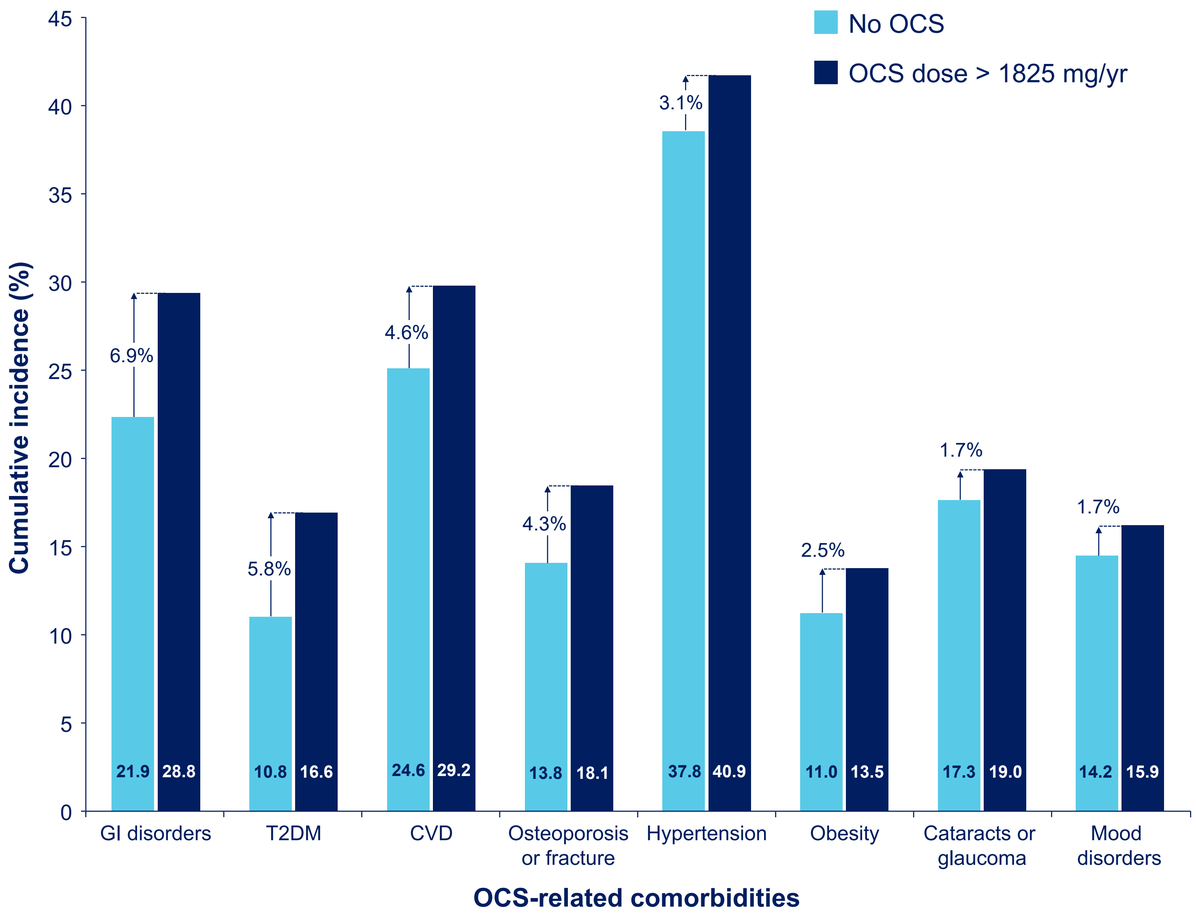
Incidence of OCS-related comorbidities

- Excess cumulative incidence of comorbidities associated with high-dose OCS use is shown in **Figure 2**.
  - The greatest differences were observed in the cumulative incidences of gastrointestinal disorders, type 2 diabetes mellitus, and cardiovascular disease.

Cost estimates for OCS-related comorbidities

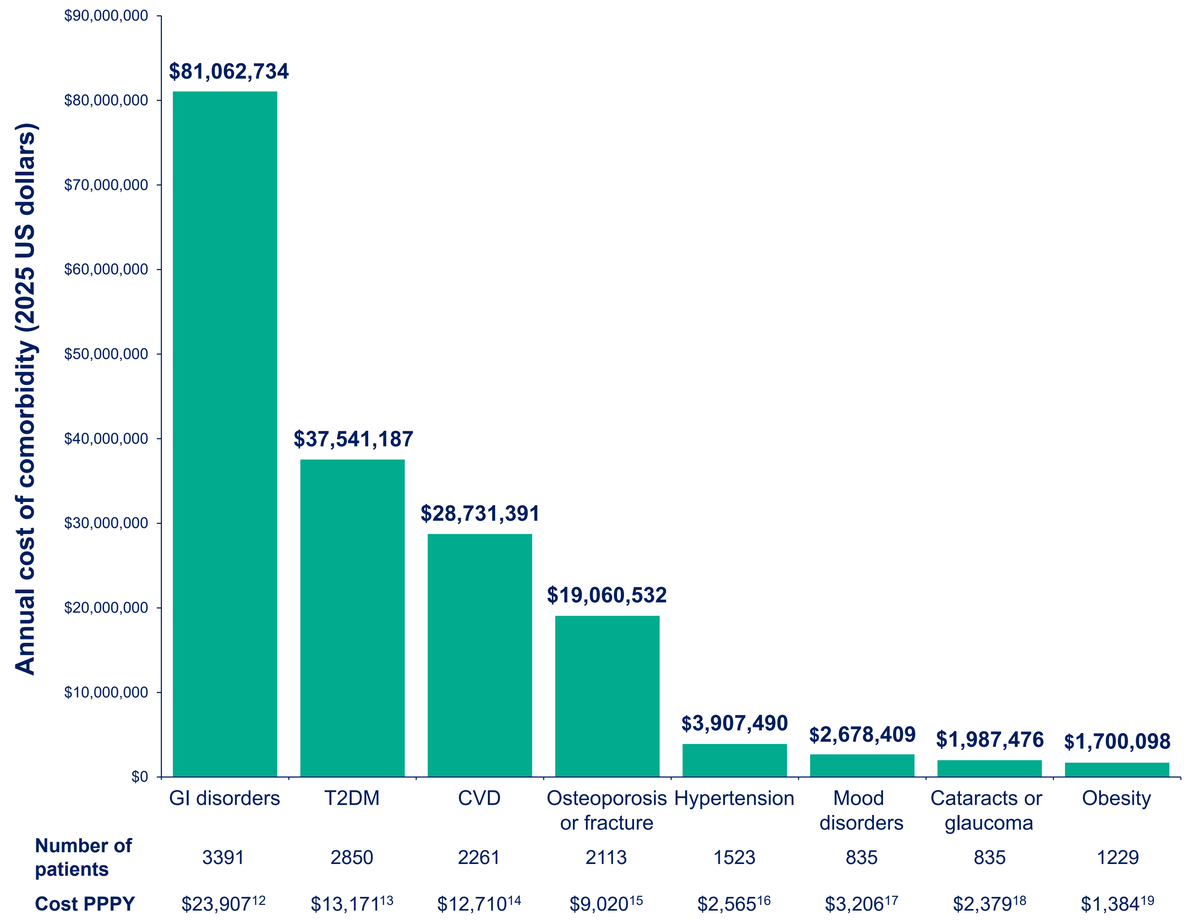
- OCS doses > 1825 mg/yr were associated with an excess annual total cost of $176,669,317 in patients with AChR-Ab+ gMG.
- The highest annual cost for OCS-related comorbidities was associated with gastrointestinal disorders, followed by type 2 diabetes mellitus and cardiovascular disease (**Figure 3**).

Figure 2. Cumulative incidence rate of OCS-associated comorbidities in patients receiving no OCS vs those receiving OCS > 1825 mg/yr



Differences in the cumulative incidences are derived from unrounded estimates.
CVD, cardiovascular disease; GI, gastrointestinal; OCS, oral corticosteroids; T2DM, type 2 diabetes mellitus.

Figure 3. Estimated excess annual cost of OCS-related comorbidities among patients with AChR-Ab+ gMG in the United States



	GI disorders	T2DM	CVD	Osteoporosis or fracture	Hypertension	Mood disorders	Cataracts or glaucoma	Obesity
Number of patients	3391	2850	2261	2113	1523	835	835	1229
Cost PPPY	$23,907[12]	$13,171[13]	$12,710[14]	$9,020[15]	$2,565[16]	$3,206[17]	$2,379[18]	$1,384[19]

2025 US dollars. Values presented are rounded to whole numbers.
AChR-Ab+, anti-acetylcholine receptor antibody-positive; CVD, cardiovascular disease; gMG, generalised myasthenia gravis; GI, gastrointestinal; OCS, oral corticosteroids; PPPY, per patient per year; T2DM, type 2 diabetes mellitus.

References

1. Gilhus NE, et al. *Nat Rev Dis Primers*. 2019;5(1):30.
2. Wiendl H, et al. *Ther Adv Neurol Disord*. 2025;18:17562864251398375.
3. Yan J, et al. *Cell Immunol*. 2025; 411-412:104956.
4. Silvestri NJ, et al. *Medicine (Baltimore)*. 2026;105(12):e47979.
5. Rodrigues E, et al. *Muscle Nerve*. 2024;69(2):166-171.
6. Hendricks TM, et al. *Am J Ophthalmol*. 2019;205:99-105.
7. Oh SJ, et al. *Muscle Nerve*. 2009;39(3):328-332.
8. Anil R, et al. *J Neurol Sci*. 2020;414:116830.
9. Tomschik M, et al. *Neurology*. 2020;95(10):e1426-e1436.
10. Motomura M. *Rinsho Shinkeigaku*. 2011;51(11):872-876.
10. Scheiner CA, et al. Presented at: 2026 MGFA Scientific Session at the AANEM Annual Meeting; 29 September-02 October 2026; Orlando, FL. Poster 44.
12. Mathews SC, et al. *Clin Gastroenterol Hepatol*. 2022;20(7):1480-1487.e7.
13. Parker ED, et al. *Diabetes Care*. 2024;47(1):26-43.
14. Zhang D, et al. *Med Care*. 2017;55(1):4-11.
15. Masurkar PP, et al. *J Am Pharm Assoc (2003)*. 2025;65(2):102315.
16. Kirkland EB, et al. *J Am Heart Assoc*. 2018;7(11):e008731.
17. Figueroa JF, et al. *JAMA Netw Open*. 2020;3(3):e201210.
18. Rasendran C, et al. *J Glaucoma*. 2022;31(1):1-7.
19. MacEwan JP, et al. *Obes Sci Pract*. 2023;10(1):e726.

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Poster

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