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Projecting the fiscal impact of improved health and economic outcomes for people with generalized myasthenia gravis (gMG) in the United States

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BACKGROUND | METHODS

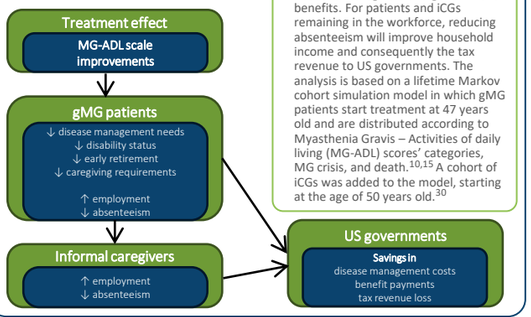
Background and Objective

- Generalized myasthenia gravis (gMG) is a chronic autoimmune disease leading to work impairment and the need for informal caregivers' (iCGs) help.[1-8] In the United States, many symptomatic gMG patients experience persistent symptoms and complications. Prior to the biologic era, off-label use of immunoglobulins (chronic IG) was frequent.[9] Among the biologic treatment landscape, efgartigimod alfa has shown sustained health outcomes improvement.[10,11]
- The current work aims to estimate the fiscal impact of adults living with acetylcholine receptor antibody-positive (AChR-Ab+) gMG, whose symptoms persist despite stable doses of standard of care (SoC), comparing (a) SoC; (b) chronic IG + SoC; and (c) efgartigimod + SoC.

Methods

- **Fiscal consequences** to the US government: tax revenue, healthcare costs and disability and retirement benefits' payments. Outcomes were discounted annually at 3%,[12] applying inflation and wage growth.[13,14]
- **Healthcare costs**: drug acquisition and administration, disease management, adverse events, and end-of life costs. Resource use was based on a previously published model, and unit costs came from online databases and literature.[9,15-19]
- **Effect on productivity**: The employment status, absenteeism rate, and the likelihood of being retired or disabled was stratified by MG-ADL scores, according to the MyRealWorld (MRW) MG study.[4,5,20,21]
- **Labor and fiscal inputs**: Age and sex-specific data on labor participation, absenteeism, wages, taxation, and benefits' payments were based on official statistics and public sources.[14,22-29]

FIGURE 1 Fiscal Model Framework



An effective treatment can reduce disease management costs and improve ability to work, reducing the needs for caregivers and government benefits. For patients and iCGs remaining in the workforce, reducing absenteeism will improve household income and consequently the tax revenue to US governments. The analysis is based on a lifetime Markov cohort simulation model in which gMG patients start treatment at 47 years old and are distributed according to Myasthenia Gravis – Activities of daily living (MG-ADL) scores' categories, MG crisis, and death.[10,15] A cohort of iCGs was added to the model, starting at the age of 50 years old.[30]

RESULTS

Health Outcomes

- Treatment effectiveness was translated into years spent over the patient's remaining lifetime in each health state (**Figure 2**). Those successfully treated are expected to live longer, spending more time with controlled gMG, and having productivity outcomes similar to the general population. Longer productive lives of these gMG patients and caregivers are expected with them depending less on disability and early retirement pensions.

Economic Outcomes

- Results are presented as lifetime fiscal consequences to the compared cohorts (**Table 1**), as well as the incremental savings associated with efgartigimod's administration (**Figure 3**).

FIGURE 2 Time spent (in years) in each health state since treatment initiation.

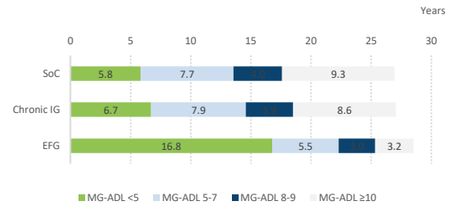
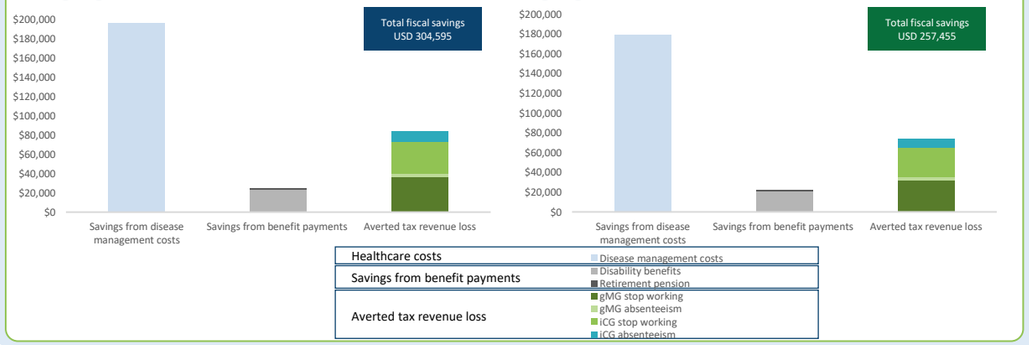


TABLE 1 Fiscal burden of gMG over lifetime since treatment initiation (USD).

Therapeutic option	SoC	Chronic IG + SoC	EFG + SoC
Disability benefit payments	45,326	43,066	22,396
Retirement pension payments	-28,473	-28,755	-30,400
Drug-related expenditure	127,122	343,831	602,247
Disease management expenditure	504,792	488,382	309,068
Tax revenue loss from exiting the workforce (gMG + iCGs)	144,011	136,554	75,023
Tax revenue loss from absenteeism (gMG + iCGs)	34,509	31,778	19,485
Total fiscal burden to United States' governments	**827,288**	**1,014,856**	**997,818**

Notes: Positive values represent a cost (burden) and negative values represent savings to United States governments.

FIGURE 3 Projected lifetime fiscal savings from efgartigimod initiation (USD):



i) Fiscal Burden

- There is a significant lifetime fiscal burden of gMG from both people living with the condition and their caregivers (**Table 1**) – with total fiscal burden for those maintaining SoC estimated at USD 827,288 over a patient's remaining lifetime. Disaggregated results show those on SoC and on chronic IG + SoC generate a substantial burden in (a) disability payments, (b) disease management expenditure, and (c) tax revenue loss from workforce withdrawal and increased absenteeism of patients and their caregivers.

ii) Lifetime fiscal savings from efgartigimod

- When incremental lifetime fiscal consequences since treatment initiation are analyzed (**Figure 3**), the benefits from public investment on efgartigimod consist of savings from disease management costs, benefits payments and averted tax revenue loss. When compared to SoC alone, 72% of public incremental spending on efgartigimod (USD 475,125) is estimated to be recovered through reduced disease management costs and productivity losses (USD 304,595). When compared to chronic IG, efgartigimod is estimated to be a fiscally dominant option with lifetime fiscal benefits (USD 275,455) outweighing the incremental costs (USD 258,416).

iii) Scenario Analyses

- Scenario analyses were performed for three key subgroups: (1) early-onset patients, starting treatment at age 37 instead of 47; (2) patients with high baseline disease severity, defined as MG-ADL ≥ 10; and (3) dual-income households, where both the person with gMG and their caregiver were employed at treatment start. **Table 2** presents the deviations from the base-case in incremental lifetime drug-related costs and fiscal savings for these subgroups. Across all three, efgartigimod is projected to generate higher lifetime fiscal savings while requiring a lower investment cost.

TABLE 2 Scenario analyses on efgartigimod's lifetime fiscal impact

Scenario	% change from base case results: Early-Onset Patients	High Baseline Disease Severity	Dual-Income Household
Efgartigimod + SoC *vs* SoC			
Drug-related costs	-0.5%	-0.1%	0.0%
Total fiscal savings	+31.4%	+4.0%	+20.2%
Efgartigimod + SoC vs chronic IG + SoC			
Drug-related costs	-16.4%	-19.8%	0.0%
Total fiscal savings	+31.1%	+62.7%	+19.8%

KEY TAKEAWAYS

The fiscal burden per symptomatic gMG individual, treated with SoC, and their caregiver was estimated at USD 827,288 over patient's lifetime for US' governments.

Targeted biologic treatments are predicted to provide savings in disease management costs, benefits payments, and averted tax revenue loss to US' governments.

Earlier treatment, greater impairment, and employment status are associated with higher projected government savings from targeted biologic therapies.

Fiscal analysis complements conventional cost-effectiveness by quantifying government budget impacts beyond healthcare costs, while incorporating patient health gains to assess broader societal impact.

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ABBREVIATIONS

AChR-Ab+, acetylcholine receptor antibody-positive; **AChEIs**, acetylcholinesterase inhibitors; **EFG,** efgartigimod; **gMG**, generalized myasthenia gravis; **IG**, immunoglobulins; **iCGs**, informal caregivers; **MG-ADL**, Myasthenia Gravis - Activities of Daily Living; **MRW**, MyRealWorld; **RR**, relative risk; **SoC**, standard of care; **USD**, United States dollars; *vs.*, versus.

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SCAN ME