Real-world treatment pathways among adult patients with myasthenia gravis

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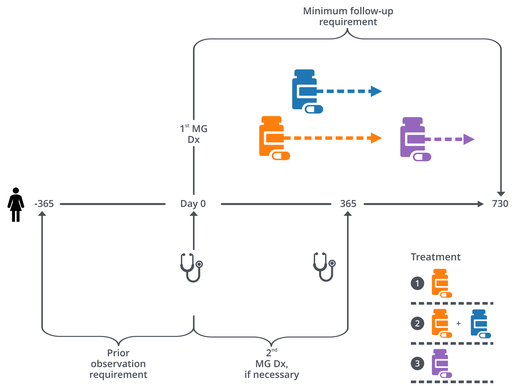
OBJECTIVE

- To describe patterns of treatment observed in the first two years after diagnosis in a real-world population of adult patients with myasthenia gravis (MG).

METHODS

- Patients with ≥ 1 inpatient or ≥ 2 outpatient diagnoses of MG in Optum's De-Identified Clinformatics® Data Mart database were identified.
- Patients were required to be ≥ 18 years and have continuous observation for ≥ 365 days before and 730 days after the initial MG diagnosis.
- Patients were followed for the use of MG treatments, including acetylcholinesterase inhibitors (AChEIs), oral corticosteroids (OCs), steroid-sparing immunosuppressants (NSISTs: azathioprine, cyclosporine, cyclophosphamide, methotrexate, mycophenolate mofetil, and tacrolimus), monoclonal antibodies (mAbs: rituximab and eculizumab), and rapid-acting immunosuppressants (RAIs: intravenous or subcutaneous immunoglobulins and plasmapheresis or plasma exchange).
- These examined patterns at the class level were according to the first exposure within that class. The within class switching or returning to a single class after switching away, was not captured.
- Subgroup analyses were conducted among patients diagnosed by a neurologist in the first 365 days after initial diagnosis.
- Sensitivity analyses were was conducted in Optum's Pan-Therapeutic Electronic Health Records (Panther EHR) databases.
- Thymectomy, a common first-line treatment for some patients, was not included in this analysis, which is focused on pharmacological interventions.

FIGURE 1. Example patient experience



Dx, diagnosis; MG, myasthenia gravis

RESULTS

- 15,335 adult patients with MG were identified.
- Of these, 7,768 patients (average age 66 years, 51% female) had the minimum required 730-day follow-up (Table 1).
- Of these, 5,535 patients (72%) received any treatment during the 730 days following diagnosis.
- Among treated patients, 54% went onto a second type of therapy, 32% to a third, and 17% to a fourth or more.
- AChEIs were the most commonly used first-line therapy (45%), followed by OCs (33%), and their combination (8%).
- Use of NSISTs was not common until the third received therapy. Depending on the order of receipt, RAIs and mAbs were used in up to 20% and 3% of patients, respectively.

TABLE 1. Demographic and diagnostic characteristics of study population, by data source

	Clinformatics (N = 7,768)	Panther EHR (N = 12,622)
Age (years), %		
18-29	2.0	4.0
30-39	4.5	6.1
40-49	7.7	9.5
50-59	13.0	16.0
60-69	20.8	23.4
70-79	34.9	28.1
80-89	17.1	13.0
Sex, %		
Female	50.9	53.3
Male	49.1	46.7
Race, %		
Asian	3.0	1.1
Black or African American	9.0	8.3
White	73.5	86.0
MG diagnosis by specialty, within 365 days of first diagnosis, %		
Both neurology and ophthalmology diagnoses	9.0	4.1
Neurology diagnosis only	45.1	41.4
Ophthalmology diagnosis only	5.8	3.0

Notes
- *Race information is not complete for all patients and thus percentages may not sum to 100%*
- *Provider specialty information may not sum to 100% as some patients are diagnosed by providers other than neurologists or ophthalmologists or by providers with no recorded specialty*

EHR, electronic health record; MG, myasthenia gravis

Optum Clinformatics Extended Data Mart

FIGURE 2. Pathways observed in the first 730 days after diagnosis, up to 4th therapy class received.

Therapy class	Proportion of Cohort Exposed in 1st 730 Days (N = 7,768)	Color
No treatment observed	28.1%	
Oral corticosteroids	52.72%	
Acetylcholinesterase inhibitors	46.59%	
Steroid-sparing immunosuppressants	19.40%	
Rapid-acting immunotherapies	10.93%	
Monoclonal antibodies	1.06%	

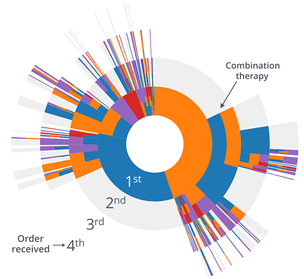
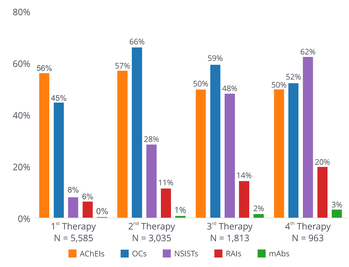


FIGURE 3. Proportion of patients by therapy type and order of receipt



Note: combination therapies are counted towards each of their constituent parts

AChEIs, acetylcholinesterase inhibitors; OCs, oral corticosteroids; NSISTs, steroid-sparing immunosuppressants; mAbs, monoclonal antibodies; RAIs, rapid-acting immunosuppressants

Optum Panther EHR Database

FIGURE 4. Pathways observed in the first 730 days after diagnosis, up to 4th therapy class received.

Therapy class	Proportion of Cohort Exposed in 1st 730 Days (N = 12,622)	Color
No treatment observed	18.71%	
Oral corticosteroids	57.46%	
Acetylcholinesterase inhibitors	59.73%	
Steroid-sparing immunosuppressants	31.06%	
Rapid-acting immunotherapies	14.74%	
Monoclonal antibodies	1.37%	

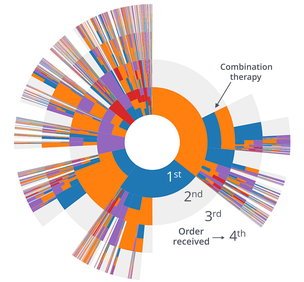
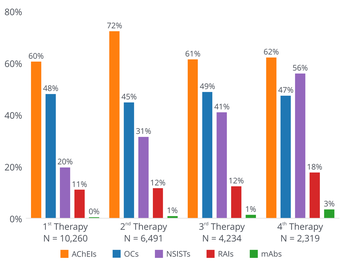


FIGURE 5. Proportion of patients by therapy type and order of receipt



Note: combination therapies are counted towards each of their constituent parts

AChEIs, acetylcholinesterase inhibitors; OCs, oral corticosteroids; NSISTs, steroid-sparing immunosuppressants; mAbs, monoclonal antibodies; RAIs, rapid-acting immunosuppressant

- Patients diagnosed by a neurologist within 365 days of initial diagnosis had a higher overall treatment prevalence (79% vs. 72% in Optum Clinformatics; 81% vs. 89% in Optum Panther EHR).
- Sensitivity analyses in Panther EHR database revealed similar patterns, with higher overall treatment prevalence (81% total, 89% among those diagnosed by a neurologist).
- Similar results were observed when removing the 730-day follow-up requirement.

CONCLUSIONS

A minority of real-world patients with MG remain untreated in the first 730 days after diagnosis.

Differences in this proportion across data sources suggest the possibility of primary nonadherence: patients receiving but not filling prescriptions.

A substantial proportion of patients trialing multiple therapies within a short period of time after diagnosis suggests that there is still an unmet treatment need in MG.

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DISCLOSURES

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AUTOANTIBODY : MG