High Seizure Burden and Limited Treatment Persistence in Epilepsy: Findings from the EMPOWER Observational Study and a US Real-World Claims Analysis

Brittany Gazdag, Karl Hansen, Alex La Croix, Megan Sniecinski, Steven Petrou, Marcio Souza
Praxis Precision Medicines, Boston, MA, USA

BACKGROUND

- Epilepsy is a complex neurological disease characterized by unprovoked, spontaneous seizures with a global prevalence of ~50 million people. In the US, an estimated 3.5 million have an epilepsy diagnosis, almost a third of whom live with uncontrolled seizures.
- Associated with this is decreased quality-of-life and increased risk of overall mortality from sudden unexpected death in epilepsy (SUDEP) and seizure-related accidents. Treatment side effects and frequent medication changes further compound patient burden.
- EMPOWER is a research project led by Praxis Precision Medicines, which aims to characterize seizure burden and antiseizure medication (ASM) use patterns over time in epilepsy patients; empowering them to actively participate in their epilepsy journey and help identify potential participants for Praxis clinical trials.
- A complementary US claims analysis of adults with focal onset seizures (FOS) examines population-level treatment use, persistence and seizure control.

➢ ***Here, we characterize epilepsy burden and unmet needs associated with ASM use through patient-reported data from the EMPOWER study and real-world claims data from adults with FOS.***

METHODS

EMPOWER Study Design

- EMPOWER aims to recruit US participants aged ≥18 years with a confirmed epilepsy diagnosis.
- Participants who elect to enroll are followed for a prospective observational period of up to 24 months.
- EMPOWER includes a survey capturing demographics, disease course, seizure-tracking and ASM use via electronic diary and surveys.
- Participants opting to share medical records will have linked records capturing seizure-related disease course, and prospectively tracking intercurrent events (e.g. hospitalizations, infections).
- Periodically, summarized deidentified reports will be shared with participants to facilitate learning from others' experiences.
- Data are presented from 776 respondents who have been surveyed.

FOS Claims Analysis

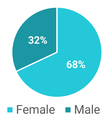
- A retrospective claims analysis evaluated prescribing patterns and seizure control among ~440,000 adults with FOS who had >1 ICD-10 diagnosis code for FOS, identified through billing and pharmacy claims between 2016 and 2023.

EMPOWER: KEY DEMOGRAPHICS

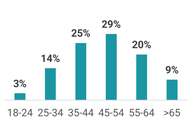
68% of Respondents Are Female, and Most Are Between the Ages of 35 and 54

EMPOWER RESPONDENT DEMOGRAPHICS (N = 776)

GENDER DISTRIBUTION



AGE DISTRIBUTION



Less Than 10% of Respondents Reported Being Managed by an Epileptologist

25%	45%	6%
Of participants managed by Primary Care Provider	*Of participants managed by a neurologist*	*Of participants managed by an epileptologist*

Most Respondents Indicated They Are Unaware of Their Epilepsy Type

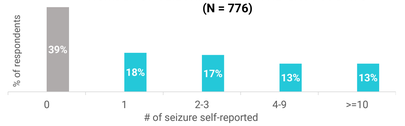
34%	17%	15%	34%
Were not told or did not know their epilepsy diagnosis	*Reported a diagnosis of focal, partial, or localized epilepsy*	*Reported a diagnosis of generalized epilepsy*	*Reported another epilepsy type*

EMPOWER: SEIZURE EXPERIENCE & ANTISEIZURE MEDICATION USE

Over 60% of Respondents Experienced Seizures in the Last Month

61%	14.67	3
Reported seizure in the last month	*Mean 30-day seizure count*	*Median 30-day seizure count*

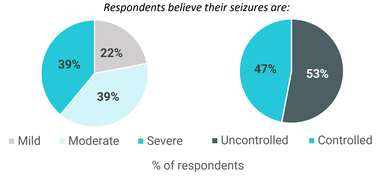
NUMBER OF SEIZURES WITHIN THE LAST 30 DAYS (N = 776)



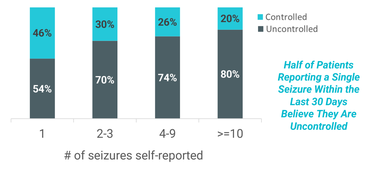
More Than 3/4 Reported Moderate to Severe Seizures, with Over Half Indicating They Were Uncontrolled

SEIZURE DESCRIPTION (N = 776)

Respondents believe their seizures are:



SEIZURE FREQUENCY LAST 1 MONTH (N = 473)

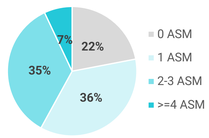


Half of Patients Reporting a Single Seizure Within the Last 30 Days Believe They Are Uncontrolled

EMPOWER: SEIZURE DESCRIPTIONS AND IMPACT ON QUALITY-OF-LIFE

Despite Currently Available ASMs, Respondents Continue to Experience Seizures That Are Predominantly Moderate to Severe, Even While on Multiple Medications, with Greater Impact on Quality-of-Life Among Those Reporting Higher ASM Counts

SELF REPORTED ASM COUNT (N = 776)



	≥4 ASMs (n = 54)	2-3 ASMs (n = 271)	1 ASM (n = 282)	0 ASM (n = 169)
% of respondents experiencing seizures	85%	65%	59%	49%
Seizure Description	**Among Respondents Experiencing Seizures (30-day)**			
Mild	15%	17%	20%	36%
Moderate	44%	39%	41%	32%
Severe	41%	44%	39%	33%

IMPACT ON QUALITY OF LIFE BY ASM COUNT (N = 776)

Quality-of-Life Attribute	Overall (N = 776)	≥4 ASMs (n = 54)	2-3 ASMs (n = 271)	1 ASM (n = 282)	0 ASM (n = 169)
Inability to Work or Study	55%	56%	62%	50%	44%
Mental Effects of ASMs	47%	56%	53%	42%	40%
Physical Effects of ASMs	43%	66%	46%	41%	39%
Social Limitations	43%	67%	47%	37%	40%
Medication Burden	36%	63%	41%	31%	30%

Heat map depiction of the % of respondents who perceive considerable to significant quality of life impact on the metrics listed (4 or 5 on 5-point scale)

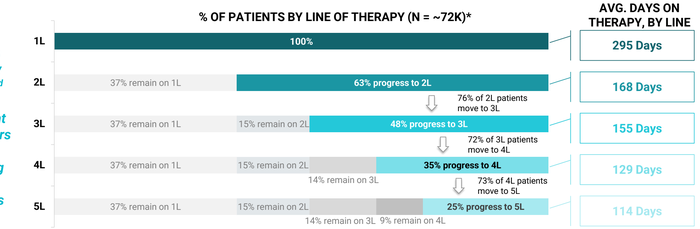
Increasing severity →

FOS CLAIMS ANALYSIS: TREATMENT CYCLING AND PERSISTENCE

- A retrospective claims analysis identified an observable FOS cohort (N ~ 440k) defined by ≥1 FOS diagnosis code, continuous enrollment for ±24 months around first observed diagnosis (with ≥1 claim every 6 months), and evidence of medical or pharmacy (Mx/Rx) activity; treatment analyses reflect a subset of this population.
- Rapid treatment cycling and limited persistence observed.
- 63% of patients advanced beyond 1st line therapy; median time on therapy declined from 295 to 114 days between 1st and 5th line.
- Treatment persistence levelled out ~6 months after initial prescription, varying widely by drug class.

Patients Typically Reach 3rd Line Treatment ~1.25 Years After Receiving FOS Diagnosis Code

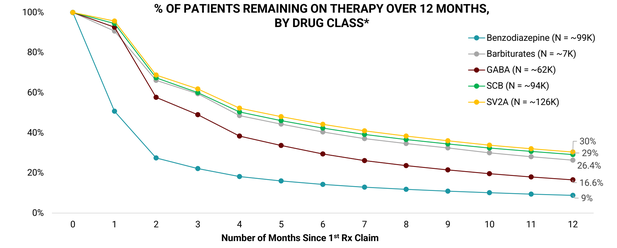
% OF PATIENTS BY LINE OF THERAPY (N = ~72K)*



*Analysis is representative of patients who received their first ASM within +/- 3 days of first observed G40.X ICD-10 code. L=line of therapy

Treatment Persistence After FOS Diagnosis Follows a Similar Trend Across ASMs, but Overall Fill Rate Varies by Drug Class

% OF PATIENTS REMAINING ON THERAPY OVER 12 MONTHS, BY DRUG CLASS*



*Population size reflects observable patients with data available on variable(s) of interest. Note: Persistence is based on 12-month period after patient's first prescription claim for each drug class; Fill Rate defined as patient with >45-day gap in ASM prescription. Rx=prescription; SCB=sodium channel blocker; SV2A=synaptic vesicle glycoprotein 2A

CONCLUSIONS

- **EMPOWER survey data and FOS claims analyses provide complementary perspectives on epilepsy burden and the challenges to optimal seizure control.**
- **Patient-reported data reveal the lived impact of uncontrolled seizures and reduced quality-of-life, while real-world claims highlight rapid treatment cycling and limited persistence in FOS.**
- **Together, these findings reinforce the need for novel therapies to achieve sustained seizure control and improve long-term outcomes.**

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@PraxisMedicines
Praxis Precision Medicines
Praxismedicines.com
clinicaltrials@praxismedicines.com

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