Epilepsy-related healthcare resource use and costs in commercially insured patients before and after initiating brivaracetam: a retrospective claims database analysis

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Background

- Brivaracetam, an antiseizure medication (ASM) that can be started without titration, is approved in the United States as monotherapy or adjunctive therapy for focal (partial-onset) seizures in patients 1 month of age and older.[1]
- Newer ASMs that allow for therapeutic doses at treatment initiation may affect healthcare resource use (HRU) and costs.

Objective

- To understand HRU and costs for commercially insured patients with epilepsy in the United States treated with brivaracetam in the 12 months pre- and post-treatment initiation.

Methods

- Retrospective cohort analysis using IBM MarketScan Commercial Claims and Encounters Database.
- Commercially insured patients ≥18 years of age with baseline epilepsy/seizure diagnosis and continuous medical and pharmacy benefit for 12 months pre- and post-brivaracetam initiation between March 1, 2016 and September 30, 2018 were included.
- Epilepsy-related costs (inpatient, outpatient, and pharmacy), epilepsy-related medical costs (inpatient and outpatient), and inpatient and outpatient HRU were defined as all claims with a diagnosis of epilepsy (*International Classification of Diseases, Ninth Revision, Clinical Modification* [*ICD-9-CM*] codes: 345.X, 780.3X, 333.2; *International Classification of Diseases, Tenth Revision, Clinical Modification* [*ICD-10-CM*] codes: G40X, R56X, G25.3) in any position or procedure code for ASM (C9254, J2560, C9238, J1953, J1165).
  - Total costs (payments made by commercial payers + out-of-pocket costs) were adjusted to 2019 United States dollars (USD).
- Patients with brivaracetam use during baseline period were excluded.
- The follow-up period was 12 months of continuous medical and pharmacy benefit post-index date.
- Baseline characteristics, ASMs used in the 12 months before starting brivaracetam, and epilepsy-related HRU and costs in the 12 months pre- and post-brivaracetam initiation were assessed.

Results

PATIENT DISPOSITION AND BASELINE DEMOGRAPHICS

- A total of 479 commercially insured patients treated with brivaracetam were identified.
- During the baseline period, 67.4% of patients received at least two ASMs.

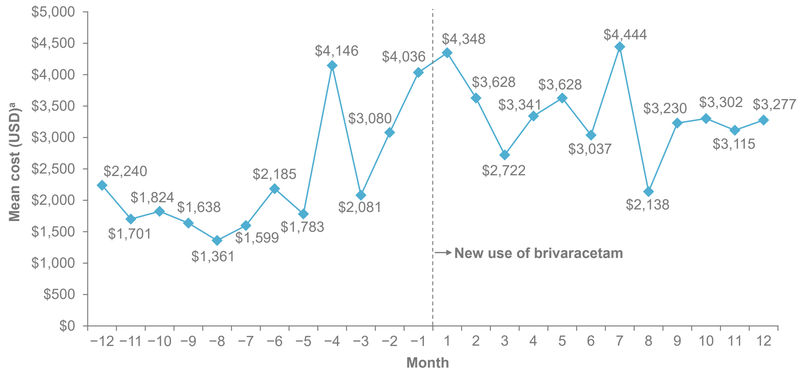
Baseline demographics and epilepsy characteristics

	All patients (N=479)
Age, mean (SD), years	37.5 (13.8)
Female, n (%)	288 (60.1)
ESCI score, mean (SD)	1.2 (1.8)
Seizure type at index, n (%)	
Focal	175 (36.5)
Generalized	45 (9.4)
Unspecified	71 (14.8)
Seizure/convulsion	76 (15.9)
Other	29 (6.1)
Mixed type	83 (17.3)
Most common comorbid conditions (≥15% of patients), n (%)	
Anxiety	152 (31.7)
Hypertension	121 (25.3)
Headache	119 (24.8)
Depression	118 (24.6)
Hyperlipidemia	108 (22.5)
Cardiac arrhythmias	81 (16.9)
Number of ASMs used during the baseline period[a], n (%)	
0	20 (4.2)
1	136 (28.4)
2	159 (33.2)
3	110 (23.0)
≥4	54 (11.3)

[a]ASMs used at any time during 12 months before initiation of brivaracetam treatment.
ASM, antiseizure medication; ESCI, St Germaine-Smith epilepsy-specific comorbidity index.[2]

EPILEPSY-RELATED COSTS AND RESOURCE UTILIZATION

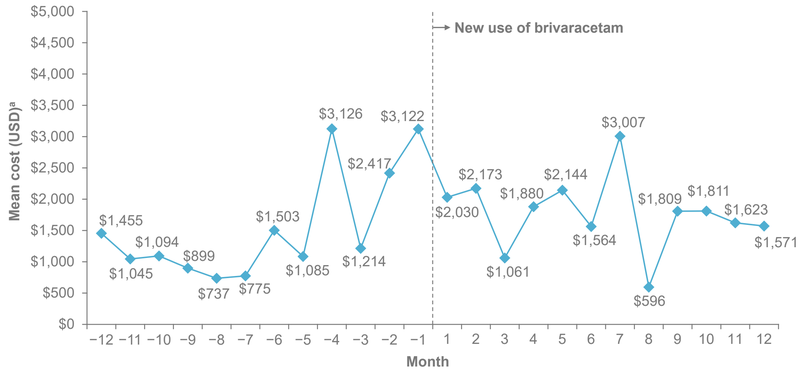
Mean monthly epilepsy-related costs



[a]Healthcare costs were expressed in 2019 constant USD, adjusted using the medical care components of the consumer price index.

- Mean total epilepsy-related costs increased 45% during the 12-month follow-up period vs the 12-month baseline period ($40,212 vs $27,671, respectively), which was mainly driven by pharmacy costs.

Mean monthly epilepsy-related medical costs



[a]Healthcare costs were expressed in 2019 constant USD, adjusted using the medical care components of the consumer price index.

- Within 1 month post-initiation of brivaracetam treatment, mean total epilepsy-related medical costs decreased 35% vs the month pre-initiation of brivaracetam treatment ($2,030 vs $3,122).
- Mean total epilepsy-related medical costs increased 15% during the 12-month follow-up period vs the 12-month baseline period ($21,269 vs $18,472, respectively).
- Mean monthly epilepsy-related medical costs were lower during the 12-month follow-up period vs 6 months before initiation of brivaracetam treatment ($1,772 vs $2,078, respectively).

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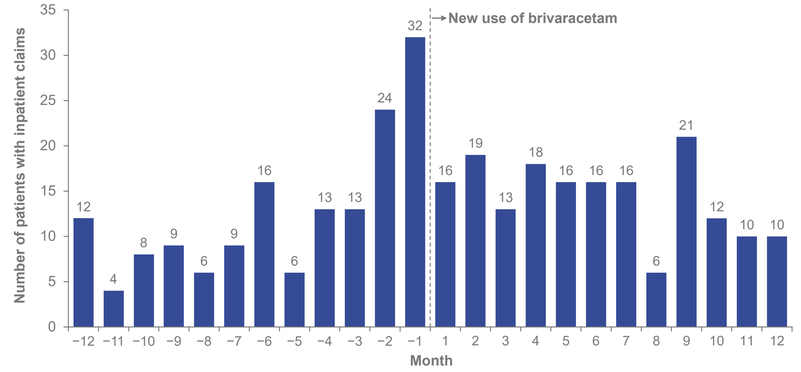
Monthly epilepsy-related inpatient healthcare resource use



- From 6 months to 1 month pre-initiation of brivaracetam treatment, the number of patients with epilepsy-related inpatient or outpatient HRU increased (16 to 32 and 158 to 363, respectively), suggesting uncontrolled epilepsy.
- Within 1 month of initiation of brivaracetam treatment, there was a 50% (32 vs 16) and 37.5% (363 vs 227) reduction in the proportion of patients with evidence of an epilepsy-related inpatient or outpatient event, respectively, compared with the month before initiation of brivaracetam treatment, although utilization varied in later months post-initiation of brivaracetam treatment.

Limitations

- This study was not designed to detect statistically significant differences pre- and post-initiation of brivaracetam treatment.
- Findings from this study relied on the accuracy of diagnosis, medication, and procedure codes contained in the claims data.
- As with all claims-based analyses, study results may not be generalizable to the overall population or patients without health insurance.
- Patients were required to meet enrollment criteria, and results from this study may not be generalizable to patients with shorter coverage.
- Eligible patients remained in the cohort throughout this analysis regardless of any switches or discontinuation.
- This analysis did not consider the duration of epilepsy, or severity of disease, which impact HRU and cost outcomes. Patient epilepsy characteristics may have changed between the 12-month baseline period and the 12-month follow-up period.

Conclusions

- In a commercially insured seizure/epilepsy patient population newly starting on brivaracetam treatment, annual epilepsy-related costs increased but epilepsy-related HRU and medical costs were reduced in the period immediately post-initiation of brivaracetam treatment.
- To our knowledge, this was the first retrospective study of detailed payer-specific costs incurred in the periods pre- and post-initiation of brivaracetam treatment.

References

1. Briviact® (brivaracetam) US Prescribing Information. UCB Inc. 2021. https://www.briviact.com/briviact-PI.pdf Accessed March 21, 2022.
2. St Germaine-Smith C, et al. *Epilepsia* 2011;52(12):2161-2167.

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