Progression to adjunctive therapy among commercially-insured patients with partial-onset epilepsy

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INTRODUCTION
• Epilepsy is a chronic neurologic disorder characterized by recurrent seizures. Approximately 2.2–3 million people in the United States (US) have epilepsy, and about 150,000 new cases are diagnosed each year.1
• There are two main types of epilepsy: primary generalized epilepsy and localized-related epilepsy—localization-related epilepsy accounts for 60–75% of all epilepsy cases; patients have one or more of three types of partial-onset seizures (POS): simple partial, complex partial, or POS with secondary generalization.1
• Approximately two thirds of patients with previously untreated epilepsy achieve adequate seizure control with either the first or second trial of antiepileptic drug (AED) monotherapy.2
• Patients with epilepsy who fail initial AED monotherapy may switch to a different AED or progress to adjunctive therapy (AT).3
• About 35% of patients have refractory epilepsy which does not respond to monotherapy.4,5

OBJECTIVES
• Using a database of commercially insured subjects (i.e., employees), the present study sought to identify subjects with POS (i.e., patients), to determine:
  • the time from diagnosis with POS to initiation of monotherapy and AT
  • the supply of medicine (days) in days for the different AEDs
  • the annual cost of each AED
  • which AEDs were successful as monotherapy for patients with POS.

METHODS
• This retrospective study was performed using the Human Capital Management Systems (HCMS) database of commercially insured subjects.
• The database reflects multiple, geographically diverse, US-based employers in the retail, service, manufacturing, and financial industries, and includes information on more than 2 million employees, plus their spouses and eligible dependents.
• Data were extracted from claims made between January 1, 2004 and June 30, 2014.
• The HCMS database has previously been used to evaluate the costs of specific health conditions to employers.6,7
• The data were de-identified to comply with the Health Insurance Portability and Accountability Act, and the contractual obligations between HCMS and its employee contributors.

Inclusion criteria
• Subjects with POS patients were identified by the occurrence of any primary, secondary or tertiary claims containing International Classification of Diseases, 9th Revision (ICD-9) codes for localization-related (focal) partial epilepsy and epileptic syndromes with:
  • complex partial seizures (ICD-9 = 345.6) or
  • simple partial seizures (ICD-9 = 345.5a).
• Subjects were required to have >365 days of continuous eligibility following initial AED use.

Exclusion criteria
• Employed: diagnosed with any form of epilepsy (ICD-9 = 345.a).
• Subjects: concurrent use of a second AED for >90 days.

Outcomes
• Days from diagnosis with POS to initiation of therapy.
• Based on adjudicated prescription claims in each subject’s 12-month follow-up period:
  • the most commonly used AEDs
  • annual supply of medicine (days) per user for each AED
  • mean annual cost per user (total prescription costs per AED divided by the number of subjects using each AED)
  • mean annual cost for the cohort (total prescription costs per AED divided by the number of subjects in the cohort).
• All costs were adjusted for inflation to September 2014 US dollars using Consumer Price Index (CPI) for each of the items.

RESULTS
• 367 pairs were identified in which the subject had POS and the employee did not have epilepsy.
• 238 subjects (64.9%) were using AED monotherapy.
• These subjects began their first AED as monotherapy an average of 18 days after being diagnosed with POS.
• Baseline characteristics of the 238 pairs (the ‘monotherapy cohort’) are shown in Table 1.
• 139 subjects (55.1%) were excluded due to use of AED AT (concurrent use of more than one AED for >365 days).
• These subjects began taking AT an average of 57 days after being diagnosed with POS.
• Subjects who progressed from monotherapy to AT did so after an average of 41 days.

The AEDs most commonly used as monotherapy during 1 year of follow-up were levetiracetam (31% of subjects), lamotrigine (25%), carbamazepine (18%), phenytoin (13%), and topiramate (11%: Figure 1).

CONCLUSIONS
• In this retrospective study, approximately two thirds of subjects with POS who initiated monotherapy with an AED did not progress to AT within a year.
• Subjects who progressed to AT usually did so within 4–6 weeks.
• Lamotrigine, lamotrigine, carbamazepine, phenytoin, and topiramate were the AEDs most frequently used as monotherapy.
• These AEDs also had the highest days’ supply.
• Among these frequently-used drugs, carbamazepine and phenytoin were the least costly of the top five, on a per-patient basis.

REFERENCES

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