Risk of Hospitalization in Patients With Uncontrolled Epilepsy Treated with a Long Versus Short Half-Life Adjunctive Antiepileptic Medication
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Objective: To examine the impact of adding a LHL versus SHL adjunctive AED on the risk of hospitalizations in patients with uncontrolled epilepsy.

Background: While anti-epileptic drugs (AEDs) remain the primary treatment for epilepsy, many patients continue to have seizures. Uncontrolled seizures may be related to AED half-life, since short half-life (SHL) AEDs require more frequent dosing compared to the simplified regimens of long half-life AEDs (LHL). LHL AEDs may also improve seizure control by extending missed dose forgiveness periods. The value of AED half-life may be assessed as reduced healthcare utilization.

Design/Methods: This was a retrospective, longitudinal cohort study using the Symphony Health Solution Patient Integrated Dataverse. Patients ≥12 years old with uncontrolled epilepsy (≥2 medical claims ≥30 days apart) were identified during a study period of 8/1/2012 to 7/31/2017. Patients were selected if they were subsequently initiated an adjunctive AED (excluding modified release formulations), and the prescription date served as the index. Patients were stratified into two mutually exclusive cohorts based on the index AED half-life (<20 versus >20 hours). Poisson regressions with robust error variances were performed for the relative risk (RR) of all-cause hospitalization.

Results: A total of 6,158 patients were identified (2,705 in the LHL and 2,279 in the SHL cohort). Compared to the SHL cohort, patients in the LHL cohort were significantly younger [mean (SD)= 43.9 (18.5) versus 49.2 (17.2), p<0.001] and were less comorbid [mean (SD) of Charlson Comorbidity Index= 1.2 (1.8) versus 1.8 (2.2), p<0.001]. In the one-year post-index date, adjusting for group differences, the RR of hospitalization for the LHL cohort was significantly lower versus the SHL cohort [0.81 (95% CI: 0.73 - 0.89), p<0.001].

Conclusions: In patients with uncontrolled epilepsy who were initiated on an adjunctive AED, the choice of a LHL versus SHL was associated with a significantly lower risk of hospitalization.