



## Addressing the Costs Associated with Seizure Prophylaxis Beyond a 7 Day Period in Patients with Traumatic Brain Injury

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### Introduction

With health care costs sky-rocketing and a need to care for an ever increasing population of critically ill neurosurgical patients, evaluation of quality outcomes and their expense must be carefully weighed. Limiting the use of seizure prophylaxis can significantly impact the bottom-line of neuroscience centers, patients and payers after hospital discharge. We review our hospital data on seizure prophylaxis to determine the number of patients treated beyond 7 days where no history of seizure was identified.

### Methods

All patients with traumatic brain injury (TBI) ages 18 and older were reviewed from the 2009-2010 academic year. TBI patient diagnoses, as identified by ICD-9 codes, were mined from the hospital's coded administrative data as a part of a quality improvement initiative. Patients' charts were then reviewed individually to assess for any pre-hospital seizure, in-hospital seizure, or past medical history of seizures as well as for seizure medication use (regardless of indication), or for history of alcohol abuse.

### Results

135 patients were identified with TBI. 51 patients had evidence of seizure (witnessed, EEG proven, etc), history of seizure medication use (for seizure disorder, chronic pain, etc), or alcohol abuse. 84 patients were determined to meet criteria for seizure medication use for 7 days. Of those 84 patients, 32 were on Keppra beyond the 7-day window. The total number of excess seizure medication doses was 990. The excess hospital cost was \$3500. However, there were 52 patients discharged on seizure medications. This included patients with less than a 7-day hospital course. The average cost of continued generic seizure medication (levetiracetam) as an outpatient was \$6.84/day. The extended costs of a year's worth of unnecessary seizure medications for these 52 patients totaled \$128,000.

### Conclusions

A substantial costs savings can be realized when using evidence-based seizure prophylaxis appropriately in TBI.



### Learning Objectives

The objective of this study is to save money and prevent polypharmacy in TBI patients by limiting the extent of seizure prophylaxis medication usage.

### References

A randomized, double-blind study of phenytoin for the prevention of post-traumatic seizures. Temkin NR, Dikmen SS, Wilensky AJ, Keihm J, Chabal S, Winn HR. N Engl J Med. 1990 Aug 23;323(8):497-502.