Improvement in time to administration of second line antiseizure medications after implementation of an inpatient status epilepticus alert protocol

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Background:
Status epilepticus (SE) is a neurological emergency where early treatment is essential. In a previous quality improvement project performed at our institution, we found markedly prolonged times to administration (TTA) of second-line antiseizure medications (ASM) for patients in SE 1. Delays in ASM administration have been reported at institutions in the U.S. and in Europe 2, 3.. We evaluated whether implementation of a SE alert protocol could improve TTA of second-line ASM in this patient population.

Methods:
A quasi-experimental cohort study was performed in our institution to evaluate mean TTA of second-line ASM to patients in electroclinical SE. After establishing baseline TTA (Cohort 1) 1, an Intervention was implemented consisting of hospital staff education and creation of an electronic order set for acute management of SE (Cohort 2) 4. Next, a SE alert protocol was developed (Cohort 3). When a patient in clinical SE is identified, staff notify Central Monitoring. Then, Central Monitoring simultaneously pages the general neurology resident, the pharmacist, and the neurointensivist on call, in addition to the rapid response team (RRT) and the house officer. The page reads “Status epilepticus alert”, followed by the patient’s location. In this SE alert protocol, the neurology resident performs a clinical evaluation, enters orders for ASM, determines need for EEG and neuroimaging, and oversees patient management. The pharmacist verifies orders and dispenses ASM to the patient’s bedside. The neurointensivist and RRT evaluate airway and perform endotracheal intubation if necessary. The house officer is notified for bed assignment purposes in the event that escalations in level of care are required. Cohorts were compared using descriptive statistics and t-test for TTA of second-line ASM. Institutional Review Board approval was obtained.

Results:
Cohort 1 (n=25) had an average TTA of a second line ASM of 71 minutes (SD 59) 1. TTA for Cohort 2 (n=7) was 82 minutes (SD 32) 4. There was no significant difference in TTA of second-line ASM once the Intervention was implemented (p=0.6414). Cohort 3 (n=19) had an average TTA of a second-line ASM of 19.05 minutes (SD 11.07). TTA was significantly improved when compared to the initial pre-Intervention TTA (Cohort 1, p=0.0005), and to TTA following our Intervention consisting of house staff education and creation of a SE electronic order set (Cohort 2, p<0.0001). The most common second-line ASM used in these 19 patients were levetiracetam (n=9) and fosphenytoin (n=6). Data collection is ongoing.

Conclusions:
Implementation of this SE alert protocol has led to marked improvement in TTA of second-line ASM, resulting in earlier initiation of therapy after benzodiazepines for patients in SE. To the best of our knowledge, similar SE alert protocols have not been published.

References:
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