

Evaluation of Current Practice of Anti-Epileptic Monitoring

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Introduction

- Anti-epileptics are commonly used in the pediatric intensive care unit (PICU) for various types of seizures
- Anti-epileptics, especially older classes, frequently come with a slew of monitoring requirements (drug levels, renal/hepatic monitoring, adverse events, drug interactions, etc.)
- Creating a consultation service would allow pharmacists to have a set role in anti-epileptic drug management and patient-centered care

Objective

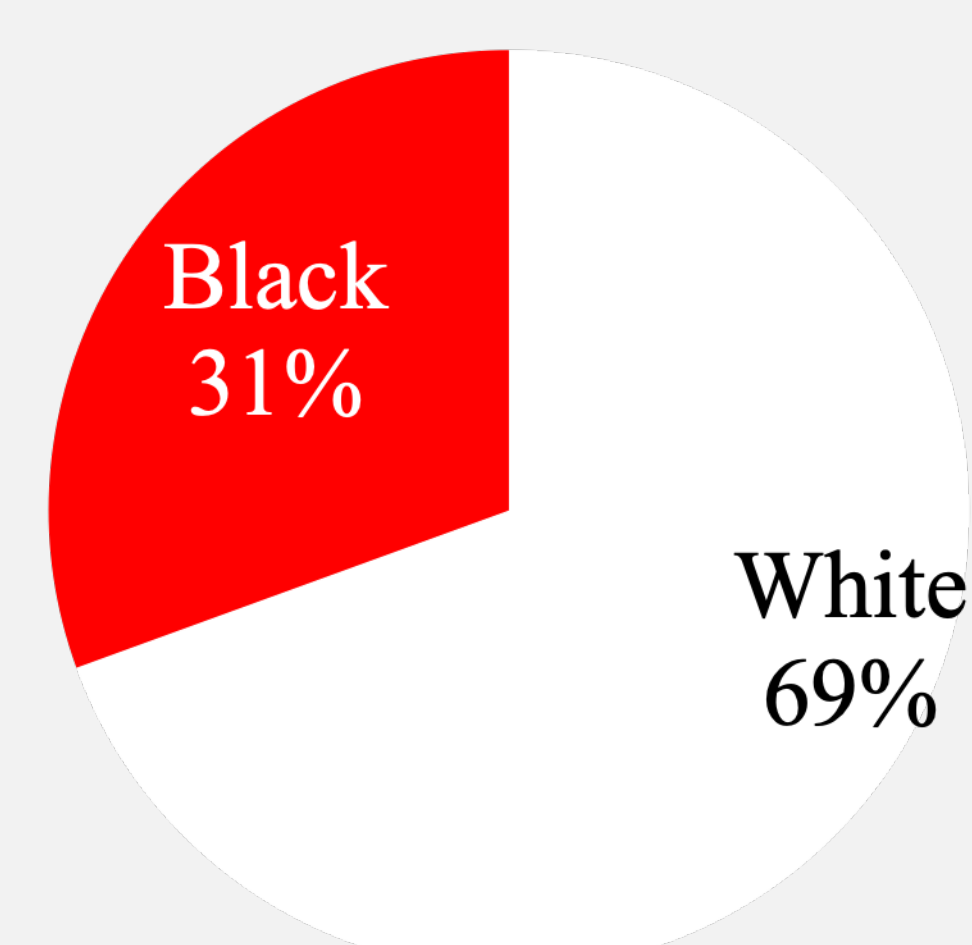
The purpose of this study is to evaluate current practice of anti-epileptic drug monitoring and identify areas for improvement for patient care and safety, specifically involving pharmacists in a multi-disciplinary care team

Methods

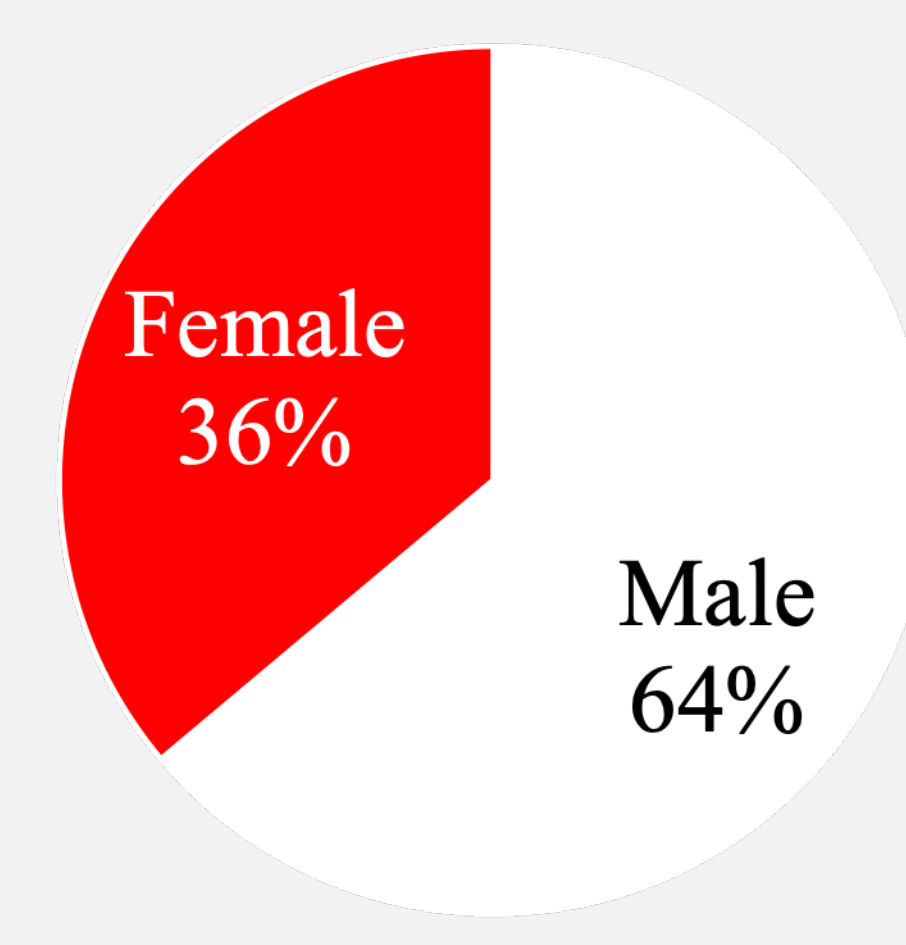
- A single center, retrospective chart review from September 1st, 2019 thru September 1st, 2020
- Inclusion criteria
 - Patients admitted to the PICU with an order for fosphenytoin and/or phenytoin loading dose
- The following elements were collected: patient demographics (age, ethnicity, gender), seizure type, anti-epileptic used, initial dose used, frequency, total daily dose (TDD), timing of initial drug level and subsequent levels (via pharmacokinetic (PK) data and physician input to establish timing of subsequent levels), dose adjustments, and drug-drug interactions
- Statistical analysis
 - Descriptive statistics were used

Results

Demographics - Race

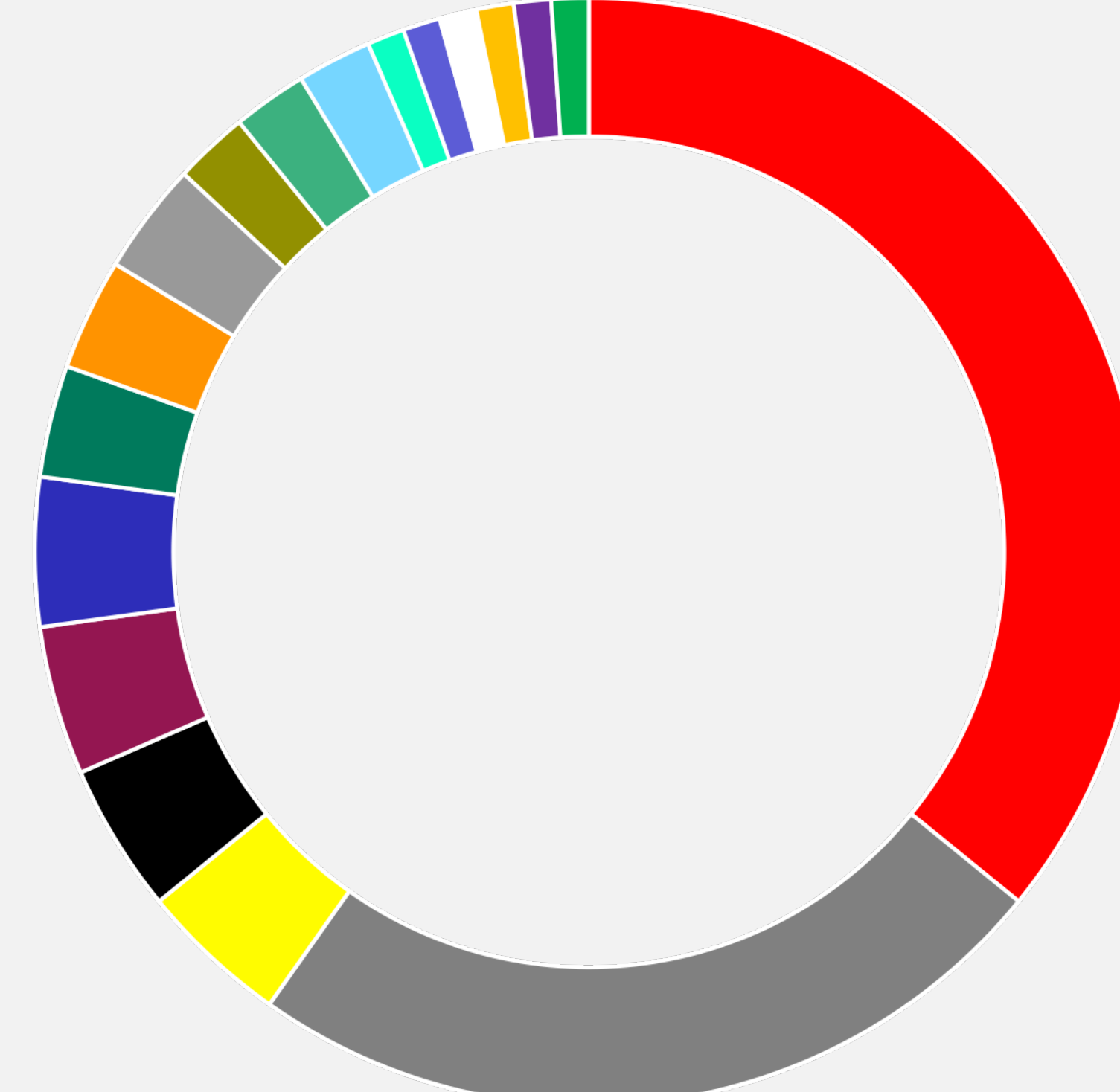


Demographics - Gender



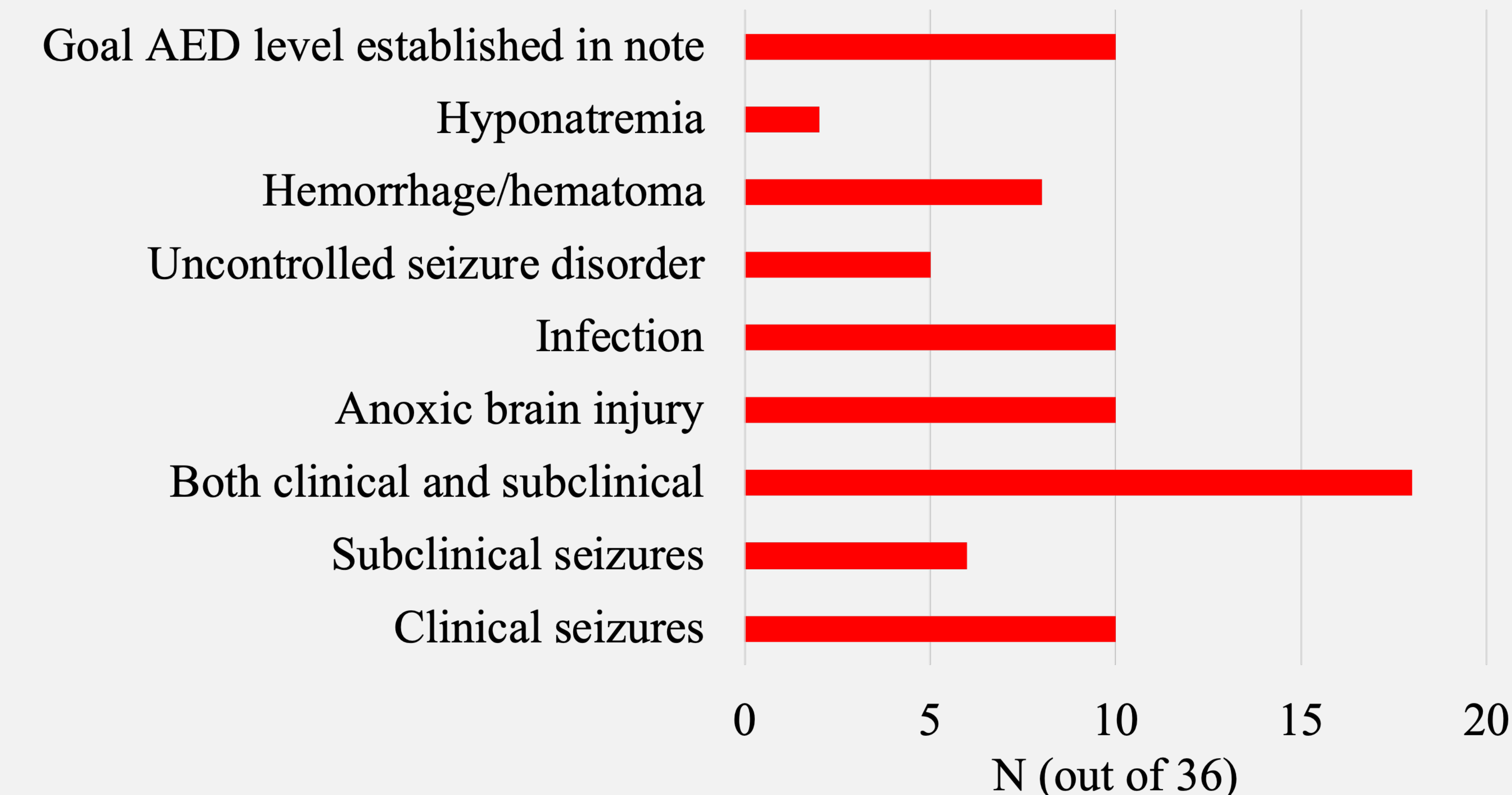
Results Cont.

Concurrent AED's



- Levetiracetam 33 (91.7%)
- Clonazepam 4 (11.1%)
- Epidiolex 3 (8.3%)
- Pentobarbital 2 (5.6%)
- Midazolam 1 (2.8%)
- Oxcarbazepine 1 (2.8%)
- Phenobarbital 22 (61.1%)
- Valproate 4 (11.1%)
- Lacosamide 3 (8.3%)
- Perampanel 2 (5.6%)
- Lamotrigine 1 (2.8%)
- Felbamate 1 (2.8%)
- Clorazepate 4 (11.1%)
- Clobazam 4 (11.1%)
- Topiramate 3 (8.3%)
- Rufinamide 2 (5.6%)
- Vigabatrin 1 (2.8%)
- Zonisamide 1 (2.8%)

Type of Seizure and Etiology



Discussion

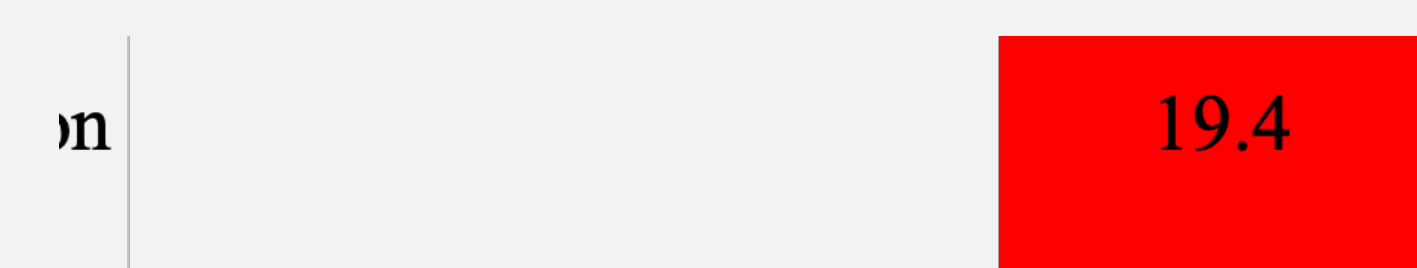
- Most prescribers had ordered and administered fosphenytoin loads and not monitored with drug levels
- All patients with uncontrolled underlying seizure disorder (five patients in total) did not have levels checked and this was explained in neurology notes because they have pre-established knowledge of the seizure behaviors of these patients since they are not naïve to status epilepticus
- Although a past admission history can be helpful, concurrent medications used may differ from admission to admission making the pharmacokinetic behavior of the drugs different, including effects on drug levels

Limitations

- Retrospective chart review
- This small sample size may not accurately reflect trends seen in the general population

Conclusion

- This study showed the potential benefit for pharmacist-led AED monitoring
- The next step would be to work with a physician within the neurology department to provide input such as establishing common goal concentrations, ranking of drug-drug interactions, rationale behind dose adjustments, and any other factors identified by the physician that are important to providing a thorough pharmacist consultation



Fosphenytoin Loading Information

