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### Phenobarbital Therapy for Alcohol Withdrawal

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## Introduction

- For the treatment of alcohol withdrawal syndrome (AWS), phenobarbital works differently than benzodiazepines
- Benzodiazepines activate only gamma-aminobutyric acid (GABA) whereas phenobarbital has the additional mechanism of inhibiting glutamate receptors. In the absence of alcohol, GABA receptor numbers are increased, and glutamate receptors are decreased causing withdrawal symptoms. By giving phenobarbital, we are counteracting both receptors
- This mechanism is associated with less agitation and delirium than what is typically seen with benzodiazepine treatment 1-3

## Background/Significance

- A literature reviewed demonstrated no studies have compared the impact of these two treatment protocols – Dexmedetomidine and Benzodiazepine vs. Phenobarbital and Benzodiazepine – for AWS; therefore, this study seeks to compare the two treatment protocols
- Precedex (Dexmedetomidine HCL), a Central alpha-2 Adrenergic Agonist, is utilized in the ICU as an adjunctive treatment to the standard of care – benzodiazepines – and is based on CIWA score 1-3
- Literature demonstrates Phenobarbital has been used in conjunction with benzodiazepines based on the CIWA scale 1-3

## Problem Statement

- Anticipated that administration of phenobarbital treatment for management of alcohol withdrawal reduces CIWA-Ar scores and improves CAM-ICU Scores when compared to the administration of dexmedetomidine

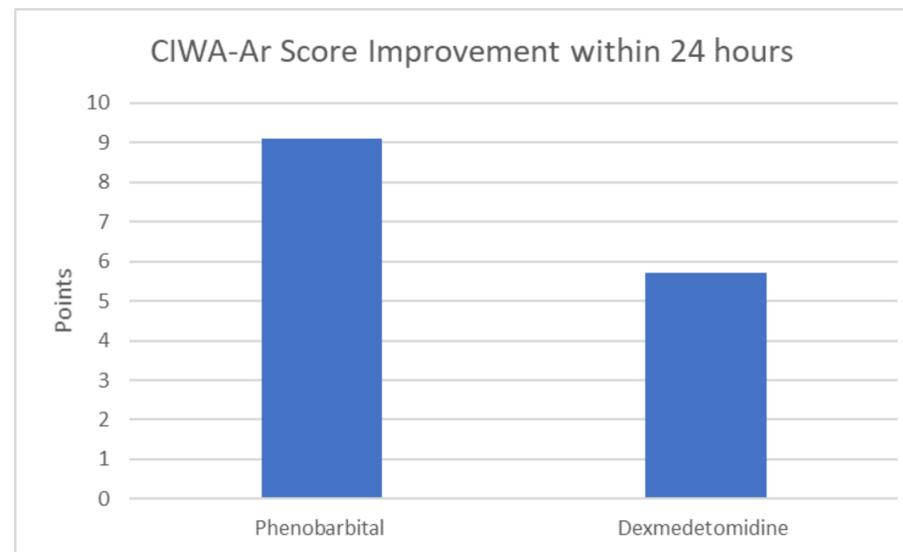


Figure 1. CIWA-Ar Score improvement seen within 24 hours of medication administration.

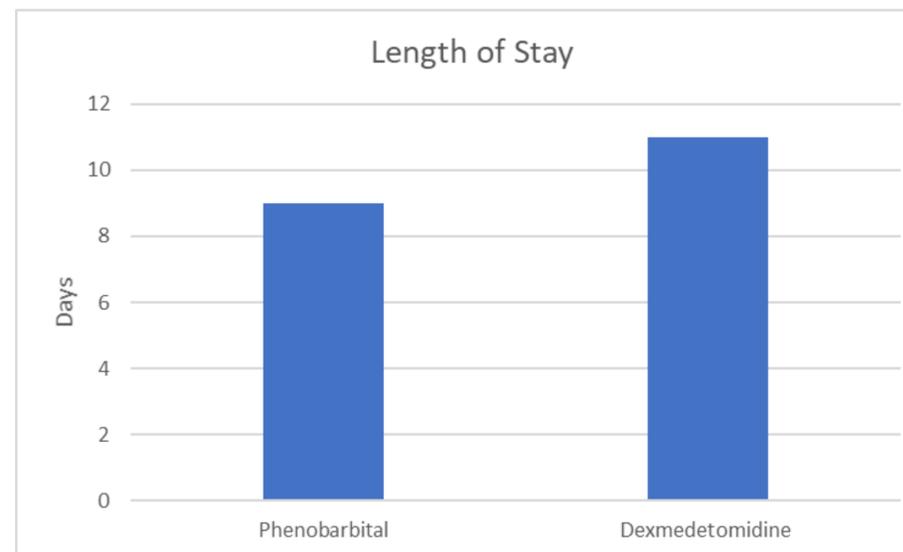


Figure 2. Length of Stay based on medication administration seen in one hospitalization during alcohol withdrawal.

## Methods

- Electronic health records were reviewed from this retrospective study for a goal of 50 (up to 100) cases per group [total of 100 (up to 200)] for Henry Ford Allegiance Health (HFAH) patients 18 years of age or older who were treated for alcohol withdrawal syndrome between September 1st, 2017 and January 1st, 2020
- Primary measures include assessing outcomes for patients given the following alcohol withdrawal protocols:
  - Phenobarbital and Benzodiazepine
  - Dexmedetomidine and Benzodiazepine
- Assessed and compared each treatment protocol (Phenobarbital and Dexmedetomidine) for the following variables: number of patients, average change in CIWA-Ar scores, average change in CAM-ICU scores, and average change in RASS scores
- Average LOS per patient in each treatment group (Phenobarbital and Dexmedetomidine) was assessed and compared
- Looked at changes in outcome variables and differences in length of stay

## Results

- Dexmedetomidine lowered CIWA scores (9.1 points), which is more than phenobarbital does (5.7 points) within 24 hours of medication administration. (p-value of 0.067; See Figure 1).
- Length of Stay for dexmedetomidine cases were in hospital for about 11 days, whereas the phenobarbital cases only had a mean stay of about 9 days (p=0.241; See Figure 2).

## Conclusion

- This study will help identify best practices for the treatment of AWS and may be of benefit to other physicians and their patients
- This study adds to the literature for administration of phenobarbital versus dexmedetomidine for AWS management

## References

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2. Oks M, Cleven KL, Healy L, et al. The Safety and Utility of Phenobarbital Use for the Treatment of Severe Alcohol Withdrawal Syndrome in the Medical Intensive Care Unit. *Journal of intensive care medicine.* 2018;885066618783947.
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