Effects of The Use of Dexmedetomidine on Length of Stay of Patients Going Through Alcohol Withdrawal Requiring ICU Admission

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Disclosure

We have no actual or potential conflicts of interest in relation to this program/presentation.

We have no financial interests or relationships to disclose.

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Introduction

Dexmedetomidine (Precedex) is an α2-adrenergic agonist that has traditionally been used for sedation in severely agitated patients, intubated patients needing sedation, and as part of anesthesia for surgical procedures. It has recently gained traction as part of treatment for patients with severe alcohol withdrawal. Evidence supporting the use of dexmedetomidine in this patient population is limited and has conflicting results

Review of Literature

- Beg et al. published an article in 2016 with (N=79 patients) admitted to the intensive care unit (ICU) for ethanol (ETOH) withdrawal from 2009-2013 and found that dexmedetomidine lead to a statistically insignificant increase in length of overall hospital stay. However, there was a large increase in the usage of other sedating medications measured in lorazepam equivalents in those same patients.

- Yavarovich et al published an article in the *Annals of Intensive Care* in 2017 that studied a cohort of 438 patients that were admitted to the ICU for alcohol withdrawal from January 1, 2012, to May 31, 2017. After adjustment for age, gender, BMI, AWS severity, and pre-ICU length of stay (LOS) the group that received both Dexmedetomidine and Benzodiazepines had a longer ICU LOS (relative mean to the non-dexmedetomidine group 2.14, 95% confidence interval (CI) 1.78–2.57, $p < 0.0001$), corresponding to a difference of 42.9h (95% CI 29.4–61.2).

Objective

To compare the effect of using dexmedetomidine + benzodiazepines vs benzodiazepines alone on the length of ICU stay and overall length of hospital stay in patients with alcohol withdrawal syndrome admitted to the ICU.

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Methods

- Inclusion Criteria:
  - Ages 18-80
  - Admitted from August 2017 to November 2022 to AdventHealth Hinsdale, AdventHealth LaGrange, and AdventHealth Bolingbrook Hospital
  - ICU admission sometime during their hospitalization
  - Diagnosis of alcohol withdrawal
  - Documented CIWA scores
  - Started on Dexmedetomidine and Benzodiazepines within 12 hours of ICU admission OR ICU admission with only Benzodiazepines

- Exclusion Criteria
  - Receiving Dexmedetomidine for reasons other than alcohol withdrawal
  - Developing other significant medical problems that would extend ICU admission and not attributed to ETOH use or withdrawal

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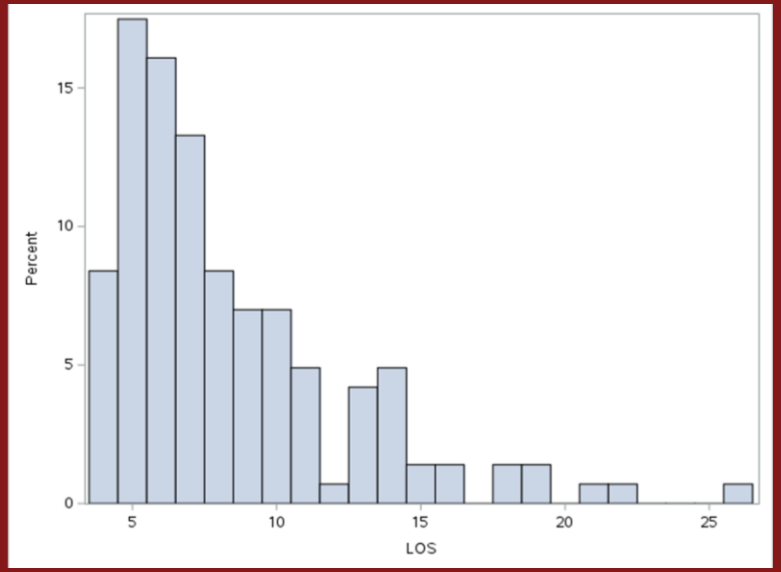
Methods (cont)

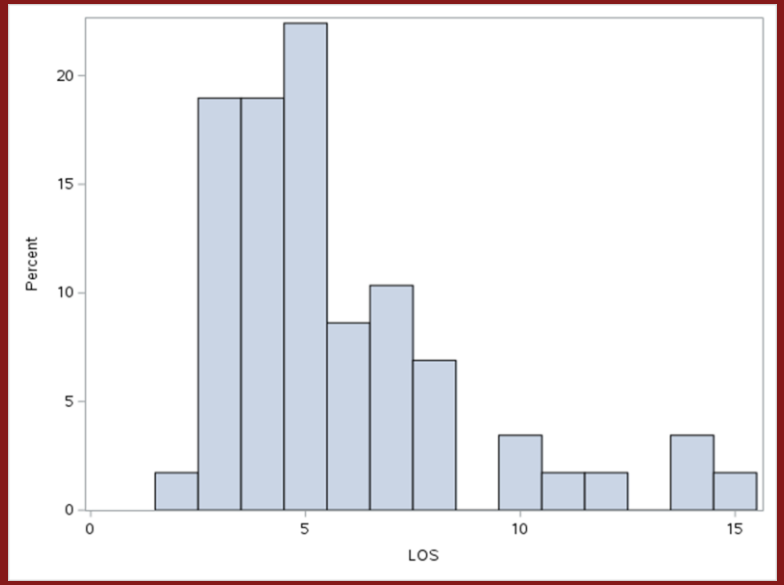
- Chart reviewed each patient admission and recorded following criteria:
  - Patient's age
  - Overall length of stay in hospital
  - Benzodiazepine usage
  - Dexmedetomidine usage
  - Length of ICU admission

- Performed statistical analysis to see if there was a significant difference between overall hospital length of stay and length of stay in the ICU between Dexmedetomidine + Benzodiazepine treatment group and only Benzodiazepine treatment group.

Results



Graph 1: Percentage of alcohol withdrawal patients and their corresponding overall hospital length of stay when treated with Dexmetomidine + benzodiazepines:



Graph 2: Percentage of alcohol withdrawal patients and their corresponding overall hospital length of stay when treated with only benzodiazepines:

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Results (cont)

As seen in the previous slide, distribution of data followed a Poisson/negative binomial distribution rather than a normal distribution. Hence, an unadjusted negative binomial regression model was used.

N = 205	Overall LOS		ICU Length of Stay	
	Incident Rate Ratio (95% CI)	p-value	Incident Rate Ratio (95% CI)	p-value
Dexmetomidine (Precedex) Use	1.45 (1.25, 1.69)*	<0.001*	1.83 (1.48, 2.27)*	<0.001*

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Results (cont)

- Overall Length of Stay in Hospital:
  - Patients who were prescribed Dexmedetomidine had estimated lengths of stay that were 1.45 (95% CI: 1.25 - 1.69) times longer than patients who were not prescribed Dexmedetomidine.

- Overall Length of ICU Stay:
  - Patients who were prescribed Dexmedetomidine had estimated lengths of stay that were 1.83 (95% CI: 1.48 – 2.27) times longer than patients who were not prescribed Dexmedetomidine.

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Conclusion

- In summary, dexmedetomidine use for treatment of alcohol resulted in a statistically significant to increase the length of both overall hospital stay and ICU stay. ICU stays were 83% longer; Hospital stays were 45% longer. This would indicate that dexmedetomidine use for alcohol withdrawal may not result in better healthcare outcomes when compared using benzodiazepines alone.

- We acknowledge limitations due to a relatively small study size and possible confounding population variables given this was a three-site study within relatively close geographic proximity. Future studies with greater study size and different patient populations to further evaluate the effectiveness and appropriateness of using dexmedetomidine in this population are needed.

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Questions?

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