

**Maine Medical Center
Department of Emergency Medicine
Journal Club Summary Template**

Date: 4/12/2022	Presenter Name: Robert Link
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Article Citation:

Nelson, et al. Benzodiazepines vs barbiturates for alcohol withdrawal: Analysis of 3 different treatment protocols. *American Journal of Emergency Medicine*. 37 (2019) 733-736.

Country(ies):

USA

Funding Source(s):

None None Stated

Purpose

Research Question(s):

Are benzodiazepines, barbiturates, or a combination of both better to treat alcohol in the ED None Stated

Hypotheses:

None None Stated

Study Purpose:

Sought to describe the effectiveness of three alcohol withdrawal protocols during three time periods utilizing benzodiazepines and barbiturates for the acute treatment of alcohol withdrawal in the emergency department

Methods

Study Design:

retrospective cohort study

Outcome(s) [or Dependent Variable]:

The primary outcome measure was the rate of ICU admission from the ED. Secondary outcomes included rate of mechanical ventilation, overall rate of hospitalization, length of hospital stay, length of ICU stay, total dose of benzodiazepines in diazepam equivalents, total dose of phenobarbital, and number of protocol violations.

Intervention [or Independent Variable]:

Intravenous diazepam alone (D), intravenous lorazepam & intravenous phenobarbital (L + P), or intravenous phenobarbital alone

Ethics Review: **IRB Review** **IACUC Review** **Other:** **None Stated**

Research Setting:

This single center, retrospective observational cohort study was conducted at Denver Health Medical Center (DHMC), a vertically integrated, public safety-net institution, with 525 inpatient beds, and Level 1 trauma center in Denver, Colorado

Study Subjects:

Adult patients presenting to the emergency department requiring medical treatment for acute alcohol withdrawal syndrome

<p>Inclusion Criteria: 18 years or older and received at least one dose of treatment according to documented SEWS symptom severity score as identified by querying the electronic medical record system</p>
<p>Exclusion Criteria: Excluded if they were 18 years old, pregnant, incarcerated, did not have documented SEWS score, or did not receive treatment as part of our institutional protocol.</p>
<p>Study Interventions: All study participants were placed on the ED Alcohol Withdrawal SEWS Protocol, our symptom-triggered treatment protocol for acute alcohol withdrawal. Dependent on availability of IV benzodiazepines and barbiturates over the time period analyzed, 3 separate protocols were developed to account for product availability. Patients were treated according to the specific protocol that was implemented during those 3 separate time periods.</p>
<p>Study Groups: Intravenous diazepam alone (D), intravenous lorazepam & intravenous phenobarbital (L + P), or intravenous phenobarbital alone</p>
<p>Instruments/Measures Used: Due to the lack of validation in ED patients and time constraints of the available assessment scales, we internally validated a new alcohol withdrawal severity assessment score, the Severity of Ethanol Withdrawal</p>
<p>Data Collection: Data was collected from April 2016 to January 2017 for diazepam only protocol, June 2017 to July 2017 for lorazepam & phenobarbital protocol, and December 2017 to January 2018 for phenobarbital only protocol. These time frames correlated with the use of each individual protocol. Convenience sampling of consecutive patients was used to obtain data for each cohort.</p>
<p>Data Analysis:</p> <p>A priori sample size calculation? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Described <input type="checkbox"/> N/A</p> <p>Statistical analyses used: Continuous and categorical data were characterized with Mann-Whitney U test and chi-square tests, respectively.</p> <p>Adjustment for potential confounders? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Described <input type="checkbox"/> N/A</p> <p>If yes, list:</p>

Results
<p>Study participants:</p> <p>75-bed emergency department saw over 320 patients in the lorazepam & phenobarbital period, and 299 patients in the phenobarbital only period for alcohol withdrawal and treated according to our SEWS protocol. These patients were compared to our previous SEWS protocol utilizing diazepam which treated over 500 patients in that period. A convenience sample of 100 patients was obtained from each group and included for study analysis.</p>
<p>Brief answers to research questions [key findings]:</p> <p>In the current study, we found no difference in the rate of admission to the ICU utilizing a phenobarbital based alcohol withdrawal protocol. This finding varies from Rosenson's analysis, and cannot be explained other than our vastly different approaches and protocols that were utilized. However, similarly to Rosenson, we found no increase in the need for mechanical ventilation in our population and a reduction in total benzodiazepine consumption using a loading dose initially in patients with severe withdrawal. Additional Findings that varied from the evidence thus far include the higher rate of overall admission and longer ED length of stays when utilizing phenobarbital based alcohol withdrawal protocol.</p>

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Additional findings:

Limitations:

Given the retrospective nature of this study, there are several notable limitations. These protocols were developed in light of ongoing drug shortages causing a transition from one benzodiazepine to another, then requiring the use of phenobarbital as our sole agent.

Convenience sampling to identify the first 100 patients during each time frame also may introduce significant sampling bias. The differences, albeit not statistically significant, in the rates of primary diagnosis of alcohol withdrawal in the phenobarbital alone group could have impacted the admission and length of stay rates to a greater extent than the treatment with either a benzodiazepine or barbiturate

Clinical Implications

Applicable? Yes

Feasible? Yes

Clinically relevant?

Certainly

Comments:

Level of evidence generated from this study
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- Ia: evidence obtained from meta-analysis of randomized controlled trials
- Ib: evidence obtained from at least one randomized controlled trial
- IIa: evidence obtained from at least one well-designed, controlled study without randomization**
- IIb: evidence obtained from at least one other type of well-designed quasi-experimental study
- III: evidence obtained from a well-designed, non-experimental study
- IV: expert committee reports; expert opinion; case study; case report

Additional Comments/Discussion/Notes

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EWS Symptom Scale (Severity of Ethanol Withdrawal Scale) Yes

ANXIETY: Do you feel that something bad is about to happen to you right now? 3

NAUSEA and DRY HEAVES or VOMITING? 3

SWEATING (includes moist palms, sweating now)? 2

TREMOR: with arms extended, eyes closed 2

AGITATION: fidgety, restless, pacing 3

ORIENTATION: Name, place, date All three Only two Only one or none 0 1 3

HALLUCINATIONS Visual, tactile, olfactory, gustatory (any) 3

VITAL SIGNS: ANY of the following Pulse >110 Diastolic BP >90 Temp >99.6 °F or 37.6 °C 3 TOTAL SCORE =

1-6 (MILD) 7-12 (MODERATE) 13 or Greater (SEVERE)