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Validation of the Prediction of Alcohol Withdrawal Severity Scale
Alexander Padron, MS4; Matthew Salzman, MD

Introduction
The ability to accurately predict which patients are likely to go into complicated alcohol withdrawal would significantly decrease the amount of in-hospital morbidity and mortality as well as the increased costs associated with increased lengths of hospitalization. Alcohol use disorder is one of the largest substance abuse problems in America, with a twelve month and lifetime prevalence of 13.9% and 29.1%, respectively. In a third of all hospitalized patients there is a strong likelihood that they possess an alcohol use disorder. On average about 20% of patients will develop symptoms of complicated alcohol withdrawal, exhibiting seizures and delirium tremens (DTs) and associated mortality.

The Prediction of Alcohol Withdrawal Severity Scale (PAWSS) is the first screening tool developed for Alcohol Withdrawal Syndromes (AWS). The PAWSS pilot study reported a sensitivity and specificity of 100% with a sample size of 17. This study will reexamine this tool's sensitivity and specificity with a larger sample size.

Alcohol Withdrawal Timeline

Demographic Results

Study Results

Calculating specificity, sensitivity, positive predictive value (PPV), and negative predictive value (NPV).

Sensitivity = TP/"AWS +" = 27/58 = 46%
Specificity = TN/"AWS -" = 243/250 = 97%
PPV = TP/"PAWSS +" = 27/34 = 79%
NPV = TN/"PAWSS -" = 243/274 = 88%

Conclusion
With a PPV of 79% and a NPV of 88%, the PAWSS can be used as an effective tool to predict alcohol withdrawal but it is important to be aware of its limitations and how it can be further improved.

This survey tool could be further refined by narrowing down the most pertinent questions as well as redefining the threshold questions.

Possible reasons for the false positives could be due to the way the PAWSS threshold questions are worded. The question asks if alcohol has been consumed in the past 30 days, which could result in patient being outside of the alcohol withdrawal timeline.

Patients could also have been so ill as to mask their symptoms of AWS, such as in patients admitted to the ICU. While ethnicity made up 64.6% of the total participants. Except for one, all patients that scored "+" on the PAWSS received treatment. Of those patients 74% received benzodiazepines, and 26% received anticonvulsants.

Discussion
The PAWSS was shown to have a sensitivity of 46%, and a specificity of 97%. With a positive predictive value of 79% and a negative predictive value of 86%.

A total of 19% of the patients surveyed underwent symptoms of moderate to severe AWS, as defined by the PAWSS. However this difference was not significant.

During the course of the study 54% of the patients were admitted into the general floor, 27% were admitted to Telemetry/PCU, 8% were admitted to step down/trauma, and 9% were admitted into the ICU.

White ethnicity made up 64.6% of the total participants. Except for one, all patients that scored "+" on the PAWSS received treatment. Of those patients 74% received benzodiazepines, and 26% received anticonvulsants.

References

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Methodology
The PAWSS questionnaire was administered to Adults (18 years and older) treated in the Cooper ED and Trauma Admitting and admitted into Cooper University Hospital. Alcohol withdrawal symptoms were measured and documented using the Glasgow Modified Alcohol Withdrawal Scale (GMAWS) within 48 hours of admission.

Demographic information such as age, gender, ethnicity, and visit information was obtained.

Patients who were predicted by the PAWSS to develop AWS tended to be younger and were more likely to be male. However the difference was not significant.

Patients were considered to have undergone alcohol withdrawal if they had AWS as a primary diagnosis or they scored a 2 or greater on the GMAWS.

Calculating specificity, sensitivity, positive predictive value (PPV), and negative predictive value (NPV).

Sensitivity = TP/"AWS +" = 27/58 = 46%
Specificity = TN/"AWS -" = 243/250 = 97%
PPV = TP/"PAWSS +" = 27/34 = 79%
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