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# PAWSS: Validation of the Prediction of Alcohol Withdrawal Severity Scale (Poster)

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# PAWSS

# Validation of the Prediction of Alcohol Withdrawal Severity Scale

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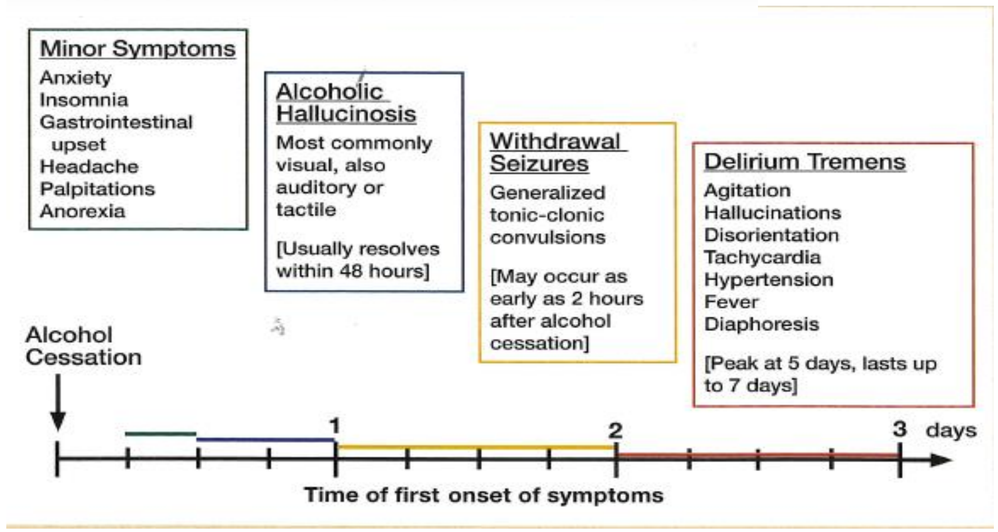
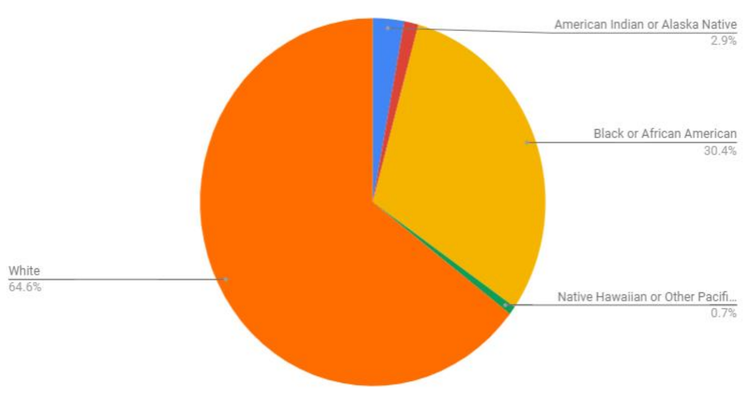
## Introduction

- 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




| Patient Groups (n) | Age, Average (SD) | % Male |
|---|---|---|
| Negative PAWSS screen (572) | 56 (17) | 44.20% |
| PAWSS 0-3 (274) | 53 (16) | 55.50% |
| PAWSS ≥ 4 (34) | 45 (13) | 73.50% |

## 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.
- A positive PAWSS was considered a score of 4 or greater.
- 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.

**Prediction of Alcohol Withdrawal Severity Scale (PAWSS)**

*Maldonado et al., 2014*

**Part A: Threshold Criteria:** (1 point either)

1. Have you consumed any amount of alcohol (i.e., been drinking) within the last 30 days?

   OR did the patient have a "+" BAL upon admission? ____

   *IF the answer to either is YES, proceed with test:*

**Part B: Based on patient interview:** (1 point each)

2. Have you ever experienced previous episodes of alcohol withdrawal? ____
3. Have you ever experienced alcohol withdrawal seizures? ____
4. Have you ever experienced delirium tremens or DT's? ____
5. Have you ever undergone of alcohol rehabilitation treatment? ____

   (i.e., in-patient or out-patient treatment programs or AA attendance)
6. Have you ever experienced blackouts? ____
7. Have you combined alcohol with other "downers" like benzodiazepines or barbiturates during the last 90 days? ____
8. Have you combined alcohol with any other substance of abuse during the last 90 days? ____

**Part C: Based on clinical evidence:** (1 point each)

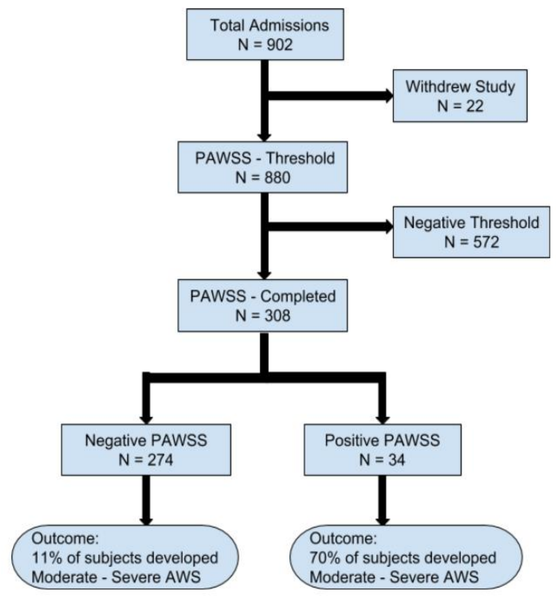
9. Was the patient's blood alcohol level (BAL) on presentation > 200? ____
10. Is there evidence of increased autonomic activity?

    (e.g., HR > 120 bpm, tremor, sweating, agitation, nausea) ____

**Total Score:** ____

*Notes: Maximum score = 10. This instrument is intended as a SCREENING TOOL. The greater the number of positive findings, the higher the risk for the development of alcohol withdrawal syndromes. A score of ≥ 4 suggests HIGH RISK for moderate to severe AWS; prophylaxis and/or treatment may be indicated.*

## Study Results




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

| | AWS "+" (n) | AWS "-" (n) | Total |
|---|---|---|---|
| PAWSS "+" | True positive (TP) 27 | False positives (FP) 7 | All PAWSS "+" 34 |
| PAWSS "-" | False negatives (FN) 31 | True negatives (TN) 243 | ALL PAWSS "-" 274 |
| Total | Patients with AWS (AWS "+") 58 | Patients with no AWS (AWS "-") 250 | Total Patients 308 |

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

## 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 88%.
- A total of 19% of the patients surveyed underwent symptoms of moderate to severe AWS, agreeing with the reported incidence in other studies.
- 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.
- 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.

## 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 can 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.
- The GMAWS itself does not account for all the symptoms of AWS, such as autonomic instability, and possess subjective categories such as anxiousness.
- Along with refining this tool there needs to be a push for better recognition of AWS. Previous literature has shown that even experienced doctors have trouble recognizing AWS consistently. This was exemplified in our study when two patients had AWS and a primary diagnosis yet scored a 0 on the GMAWS. Though this may be due to missing the window of symptoms or the treatment being provided prior to testing.

## References

- Maldonado, Jose. Prospective Validation Study of the Prediction of Alcohol Withdrawal Severity Scale (PAWSS) in Medically Ill Inpatients: A New Scale for the Prediction of Complicated Alcohol Withdrawal Syndrome. Alcal 2015;50(5):509-518
- Sachdeva, A. Alcohol Withdrawal Syndrome: Benzodiazepines and Beyond. Journal of clinical and diagnostic research : JCDR. 2015;9(9), VE01-VE07
- Case Report: Identification and Management of Alcohol Abuse and Withdrawal in Elders. Consultant. 2012;20(4)
- Grant, BF. Epidemiology of DSM-5 Alcohol Use Disorder: Results From the National Epidemiologic Survey on Alcohol and Related Conditions III. JAMA Psychiatry. 2015;72(8):757-66
- McKeon A. The alcohol withdrawal syndrome Journal of Neurology, Neurosurgery & Psychiatry 2008;79:854-862
- McPherson, A. Appraisal of the Glasgow assessment and management of alcohol guideline: a comprehensive alcohol management protocol for use in general hospitals. QJM. 2012l;105(7):649-56

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