

Original Research Reports

Alcohol Withdrawal Treatment in the Medically Hospitalized Patient: A Pilot Study Assessing Predictors for Medical or Psychiatric Complications

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Background: *Optimizing alcohol withdrawal treatment is a clinical priority, yet it is difficult to predict on presentation which patients would require benzodiazepines or in which patients withdrawal would be complicated. Detoxification studies typically exclude patients with medical comorbidities, psychiatric comorbidities, or multiple substance use disorders; therefore, it is difficult to generalize their conclusions to all types of patients.* **Objective:** *This retrospective study with no exclusion criteria identifies the risk factors for complicated withdrawal.* **Methods:** *A retrospective medical record review of 47 veterans admitted to a tertiary veteran's medical hospital for alcohol detoxification. Demographics, blood alcohol level, Charlson Comorbidity Index, drinks per drinking day, pre-psychiatry consult benzodiazepine administration, and length of stay were compared for veterans with complications vs those without.* **Results:** *Overall, 21% patients experienced significant complications during their medically-managed detoxification, including behavioral disruptions and delirium tremens. Of the*

patients, 79% were initially assessed using the Clinical Institute Withdrawal Assessment for Alcohol-Revised scale, and 34% continued to be monitored with the Clinical Institute Withdrawal Assessment for Alcohol-Revised scale during their hospital stay. A Clinical Institute Withdrawal Assessment for Alcohol-Revised scale score ≥ 15 at presentation was significantly associated with increased odds of complications ($p = 0.005$). There was a trend toward significance of association of complications with tachycardia, history of delirium tremens, and benzodiazepines being administered before psychiatric consultation. The groups did not significantly differ with respect to age, admission blood alcohol level, Charlson Comorbidity Index, comorbid recent substance abuse, or length of stay. **Conclusion:** *Clinical Institute Withdrawal Assessment for Alcohol-Revised scale scores ≥ 15 at presentation was significantly associated with increased odds of complicated alcohol withdrawal (odds ratio = 28, 95% CI: 2.5–317.6, $p = 0.005$), which supports findings from previous studies.*

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INTRODUCTION

Alcohol use is a significant public health problem in the United States, with 135.5 million current drinkers (52.1%), 59.7 million reporting binge drinking (23.0%), and 17.0 million reporting heavy drinking (6.5%).¹ Besides the widespread prevalence and serious social effect, unhealthy alcohol use brings patients into the health care sector. Of the emergency department visits, 26.2%–62.5% are alcohol-related.² Alcohol use disorder is also associated with life-threatening

medical illnesses, including cirrhosis, pancreatitis, bone marrow suppression, hypertension, dilated

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cardiomyopathy, delirium tremens (DT), and seizures,^{3–6} resulting in longer and more complicated hospital and intensive care unit stays.^{7,8} In general, 4%–15% of patients with alcohol withdrawal show withdrawal seizures or DT.^{9,10} Moreover, the lifetime risk that DT develops in an individual with alcohol use disorder is between 5% and 10%.^{11–13}

In addition to medical complications of alcohol withdrawal, many patients present psychiatric complications, including agitation and behavioral disturbances. These psychiatric complications place the patient and hospital staff at risk for acute injury and often result in the need for psychiatric emergency response team intervention, physical restraints, or chemical restraints, such as intramuscular or intravenous antipsychotic administration.^{14,15}

As 20%–50% of hospitalized medical patients report alcoholism¹⁶ and 42% of all veteran inpatients required medications for alcohol detoxification,¹⁷ significant attention has been paid to optimizing treatment of alcohol withdrawal and identifying patients with high risk for complications.

In the late 1960s, the comparison of chlordiazepoxide with placebo and other drugs showed the therapeutic efficacy of benzodiazepines for alcohol detoxification.¹⁸ Since then, benzodiazepines have become the first-line agents for alcohol withdrawal treatment because of their efficacy in treating symptoms and preventing DT and seizures.^{19–24} However, standardized guidelines for the administration of benzodiazepines remain a controversy, and significant variability of alcohol withdrawal strategies can be found not only between different institutions but also often among providers working within the same hospital system.

Common strategies of benzodiazepine administration include symptom-triggered therapy, initial loading, and fixed-schedule doses. With symptom-triggered therapy, a scale such as the Clinical Institute Withdrawal Assessment for Alcohol-Revised scale (CIWA-Ar) determines the amount of benzodiazepine given.²⁵ Using the loading method, the clinician gives a long-acting benzodiazepine until significant improvement in withdrawal symptoms is observed and then allows the benzodiazepine to “self-taper” with its long half-life and active metabolites.²⁶ The loading method is frequently used in the emergency department. With fixed-schedule doses, the clinician administers a predetermined amount of

benzodiazepines on a regular schedule.²⁷ Studies both in the United States and in Europe have found symptom-triggered treatment to be superior to routine fixed-schedule detoxification.^{27,28} Meanwhile, a recent study found no evidence of clinical advantage for choosing either benzodiazepine loading vs symptom-triggered treatment of alcohol withdrawal.²⁹ The potential limitations of the aforementioned studies may be the exclusion of medically-complicated patients, psychiatric patients, or patients with multiple substance use disorders, and it has been questioned whether these findings can be generalized to patients undergoing alcohol withdrawal in medical hospitals.^{30,31}

Meanwhile, it has been difficult to identify predictors of complications of alcohol withdrawal.^{32–34} A recent review found that the most commonly identified risk factors included personal history of DT, seizures, presence of acute medical comorbidity especially infection, presence of early withdrawal symptoms, and genetic predisposition.³⁵ In a study of 203 patients admitted to a medical hospital in 1988, Foy et al. found that a CIWA score greater than 15 increased the risk of a complicated withdrawal.³⁶ In 1994, Wetterling et al. found that DT was associated with decreased levels of serum electrolytes, increased levels of liver enzymes, and ataxia and polyneuropathy.³⁷ In a study of 1648 veterans in 1995, Schuckit et al. found that patients with a history of DTs or convulsions reported a greater maximum number of drinks in any 24-hour period and a greater number of total withdrawal episodes.¹³ In a study of 334 patients admitted to a psychiatric and detoxification unit in 2001, Palmstierna concluded that 5 risk factors predicted alcohol withdrawal delirium: current infectious disease, tachycardia, high blood alcohol level (BAL), history of epileptic seizures, and history of delirious episodes.³⁸ In a case-control study of 15 patients with 45 controls in 2002, Fiellin et al. found that prior DTs or seizures, elevated systolic blood pressure, and medical comorbidity increased risk of complications.³⁹ Other studies have examined thrombocytopenia as surrogate markers for chronic severe alcoholism.^{32,40} In a recent pilot study, Maldonado et al. created a scale to help identify the risk of alcohol withdrawal by combining self-reports of recent alcohol use, BAL, history of previous withdrawal and complications, history of alcohol treatment, comorbid substance use, and increased autonomic activity. They studied 68

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