

Substance Use and Outcomes following Intramuscular Antipsychotic Treatment for Acute Pediatric Agitation: A Retrospective Cohort Study

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Submitter Angelo Chaia

Affiliation Mount Sinai Behavioral Health Center

Participant(s) Angelo Chaia (Presenter), Sean Lynch (Co-Author), Chaden Nouredine (Co-Author)

SUBMISSION DETAILS

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Summary Background: Substance use may complicate the management of acute agitation in youth due to concerns regarding behavioral severity, treatment response, and medication-related adverse effects. However, limited data exist examining the impact of substance use on pharmacologic management and outcomes among pediatric patients requiring intramuscular (IM) medications for agitation.

Methods: We conducted a retrospective chart review of pediatric patients who received IM chlorpromazine or haloperidol for acute agitation across a large urban health system between 2019 and 2023. Patients were categorized based on documented substance use identified through urine drug screening or clinical documentation. Groups were compared on demographic characteristics, clinical presentation, medication use, repeat medication administration, restraint or seclusion, and adverse vital-sign events. Kaplan-Meier survival analysis examined time to repeat medication administration, and logistic regression evaluated predictors of adverse vital-sign events.

Results: Among 150 patients, 47 (31.3%) had documented substance use. Patients with substance use were older, more likely to present with police involvement, and more frequently treated in emergency department settings. Despite differences in presentation, there were no significant differences in antipsychotic selection, benzodiazepine coadministration, need for repeat IM medication, time to next medication administration, restraint or seclusion, or adverse vital-sign events. Substance use was not independently associated with adverse vital-sign outcomes in multivariable analysis.

Conclusions: Substance use was associated with differences in presentation but not with differences

in short-term efficacy or safety outcomes following IM antipsychotic treatment. These findings suggest that standard pharmacologic approaches to pediatric agitation may remain effective and safe even when substance use is present or suspected.

****Of note, initial results from this project were submitted as a trainee poster last year. This project represents the completed findings of that study****

The questions following the above will ask you to breakdown your summary.

Background Acute agitation in pediatric psychiatric and emergency settings frequently requires rapid intervention to ensure patient and staff safety. Substance use may complicate assessment and treatment due to concerns regarding intoxication, withdrawal, behavioral severity, and potential medication interactions. Clinicians often modify treatment strategies when substance use is suspected, despite limited evidence regarding whether substance use meaningfully affects pharmacologic response or adverse event risk. Existing literature examining pediatric agitation primarily focuses on medication comparisons rather than patient-level factors influencing outcomes. This study addresses an important gap by examining whether substance use is associated with differences in presentation, treatment practices, efficacy outcomes, and safety outcomes among youth receiving intramuscular antipsychotics for acute agitation. Improved understanding of these relationships may support evidence-based management of pediatric behavioral emergencies.

Educational Learning Objectives

Learning Objective 1 Recognize presentation differences in agitated youth with substance use.

Learning Objective 2 Compare treatment outcomes by substance use status.

Learning Objective 3 Evaluate safety outcomes following IM antipsychotic administration.

Methods A retrospective chart review was conducted of patients younger than 18 years who received intramuscular chlorpromazine or haloperidol for acute agitation across emergency departments and inpatient psychiatric units within a large urban health system between 2019 and 2023. Substance use was defined by positive urine drug screening or documented active/recent substance use. Demographic, clinical, medication, efficacy, and safety variables were extracted using a standardized abstraction protocol. Outcomes included repeat IM medication administration within 24 hours, time to next medication administration, restraint or seclusion, and adverse vital-sign events. Group comparisons used chi-square and independent-samples t-tests. Kaplan-Meier survival analysis evaluated time to repeat medication administration, and multivariable logistic regression examined predictors of adverse vital-sign events.

Results Among 150 patients, 47 (31.3%) had documented substance use. The substance use group was older (14.1 vs 11.3 years, $p < 0.001$), more likely to present with police involvement (40.4% vs 8.7%, $p < 0.001$), and more frequently treated in emergency department settings (68.1% vs 48.5%, $p = 0.026$). Patients with substance use were less likely to have ASD or intellectual

disability (6.4% vs 36.9%, $p < 0.001$). Despite these differences, there were no significant differences in antipsychotic selection, benzodiazepine coadministration, repeat IM medication administration (21.3% vs 14.6%, $p = 0.306$), restraint or seclusion, time to next medication administration, or adverse vital-sign events. Substance use was not independently associated with adverse vital-sign outcomes in adjusted analyses.

Conclusion Youth with substance use presented differently than those without substance use, including greater police involvement and emergency department utilization. However, substance use was not associated with differences in pharmacologic management, treatment response, need for additional interventions, or short-term safety outcomes. These findings suggest that standard approaches to IM antipsychotic treatment of pediatric agitation may remain appropriate when substance use is present or suspected. Further prospective studies are needed to evaluate the effects of specific substances, intoxication states, and polysubstance use on agitation severity and treatment response.

Scientific Significance To our knowledge, this is among the first studies to examine the impact of substance use on outcomes following IM antipsychotic treatment for pediatric agitation. Despite meaningful differences in presentation and diagnostic profiles, youth with substance use experienced similar efficacy and safety outcomes compared with those without substance use. These findings challenge assumptions that substance use necessarily predicts poorer response or increased risk during acute agitation treatment and provide real-world evidence supporting current pharmacologic management strategies. The results may help inform emergency psychiatry and child psychiatry clinicians who frequently manage agitation in situations where substance use history is incomplete or uncertain.

Will your paper cite external research? Yes

Please cite all references here in AMA format. Gerson R, Malas N, Feuer V, Silver GH, Prasad R, Mroczkowski MM. Best Practices for Evaluation and Treatment of Agitated Children and Adolescents (BETA) in the Emergency Department: Consensus Statement of the American Association for Emergency Psychiatry. *West J Emerg Med*. 2019;20(2):409-418.

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