Received: 11 October 2024 | Revised: 5 December 2024 | Accepted: 20 December 2024

DOI: 10.1111/acem.15093

Academic Emergency Medicine

ORIGINAL ARTICLE

Alcohol withdrawal syndrome presentations to emergency departments in the United States from 2015 to 2023

Michael Gottlieb MD[1] | Nicholas Chien MD[1] | Eric Moyer MD[1] | Kyle Bernard MD[2] | Gary D. Peksa PharmD, MBA[1]

[1]Department of Emergency Medicine, Rush University Medical Center, Chicago, Illinois, USA

[2]Department of Emergency Medicine, Medical College of Wisconsin, Milwaukee, Wisconsin, USA

Correspondence
Michael Gottlieb, MD, Department of Emergency Medicine, Rush University Medical Center, 1750 West Harrison Street, Suite 108 Kellogg, Chicago, IL 60612, USA.
Email: michaelgottliebmd@gmail.com

Abstract

Introduction: Alcohol withdrawal syndrome (AWS) is a common condition prompting emergency department (ED) presentation. However, there are limited recent, large-scale, robust data available on the incidence, admission, and medical treatment of AWS in the ED.

Methods: This was a retrospective cohort study of ED presentations for AWS from January 1, 2016, to December 31, 2023, using Epic Cosmos. All ED visits with ICD-10 codes corresponding to AWS were included. Outcomes included percentage of total ED visits, percentage admitted, length of stay (LOS), and medications administered. Binary logistic regression models were used to measure the relationship between time and dependent variables and reported as odds ratios (ORs) with 95% confidence intervals (CIs).

Results: Out of 242,804,798 ED encounters, 670,430 (0.28%) visits were due to AWS with a rise over time (OR 1.074, 95% CI 1.072–1.075). Of these, 386,618 (57.7%) were admitted (46.2% inpatient floor, 11.5% ICU). Median (IQR) hospital LOS was 3 (2–5) days and median (IQR) ICU LOS was 2 (1–4) days. Among all ED patients, benzodiazepine use declined over time (84.9% to 77.1%; OR 0.917, 95% CI 0.914–0.920), while phenobarbital (4.0% to 21.2%; OR 1.255, 95% CI 1.250–1.259) and gabapentin (11.0% to 16.3%; OR 1.054, 95% CI 1.050–1.057) use increased. Oral and intravenous (IV) benzodiazepines were common (63.1% and 66.6%, respectively). Among IV benzodiazepines, lorazepam was most common (59.9%). Among those discharged from the ED, 29.0% were prescribed benzodiazepines (chlordiazepoxide 21.1%, lorazepam 5.5%, diazepam 1.9%). Anticraving medications, such as gabapentin (1.5%), naltrexone (0.4%), and acamprosate (<0.1%) were uncommon, but rising over time.

Conclusions: AWS represents a common reason for ED presentation, with most patients being admitted. We identified a rising incidence with a shift in management to include agents such as phenobarbital and gabapentin. These findings provide important evidence on current trends in AWS to inform health policy and knowledge translation efforts as well as emphasizing the need for ongoing research and evaluation of clinical practices to optimize outcomes for patients with AWS.

Supervising Editor: Christopher R. Carpenter

INTRODUCTION

Alcohol withdrawal syndrome (AWS) is a common, acute, life-threatening emergency department (ED) presentation associated with high patient morbidity and mortality.[1,2] The spectrum of alcohol misuse includes people with alcohol use disorder (AUD) and contributes to over 140,000 deaths annually in the United States.[3,4] Approximately one-half of people with AUD develop AWS after reduction or cessation of alcohol use.[5,6] Researchers have observed a stark increase in alcohol-attributable ED encounters over the past two decades, many of which involve AWS.[3,7–9] However, most studies were limited to smaller regions or data from over 10 years ago. As such, little is known about current epidemiology and management of patients with AWS presenting to EDs in the United States. Because the ED is a common contact point for individuals with AWS, there exists a need to better characterize and monitor the incidence, management, and disposition of ED patients presenting with AWS to inform current practice and guide evidence-based interventions. This is particularly salient as two recent guidelines were released by emergency medicine groups. In 2023, the American Academy of Emergency Medicine (AAEM) published a white paper on management of alcohol intoxication, AWS, and AUD.[2] In 2024, the Society for Academic Emergency Medicine published their fourth iteration of the Guidelines for Reasonable and Appropriate Care in the Emergency Department (GRACE-4), which was focused on AWS, AUD, and cannabinoid hyperemesis syndrome.[10] With these guidelines in place, there remains a critical need to determine how well these align with current practice and shifts in practice patterns over time to inform interventions to enhance alignment with evidence-based care.

This study sought to address these gaps by using a large, national database to assess the epidemiology, evaluation, and medication administration among ED patients with AWS. The primary objective of this study was to report trends in the incidence, proportion of patients admitted, and medication management among ED patients with AWS over an 8-year period. As a secondary objective, we sought to analyze trends in subgroups of specific medications used in the ED and upon discharge.

METHODS

We conducted a retrospective cohort study of AWS presentations and associated treatment, disposition, and length of stay (LOS) over an 8-year period using the Epic System Corporation's Cosmos research platform.[11–15] Cosmos is an application that aggregates electronic health record data voluntarily submitted by health systems for research purposes. Cosmos data are representative of U.S. Census data (https://cosmos.epic.com/). Cosmos offers additional benefits in collecting data more rapidly, thereby reducing time delays to reporting, as well as using data slices to allow more complex analyses among specific conditions. At the time of this study, the Cosmos data set included 274 million unique patients and 38,000 hospitals and clinics. Patients with records at more than one institution were deduplicated and anonymized centrally by Epic. This study adheres to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[16]

We queried Cosmos on November 27, 2024, using ICD-10 codes corresponding to AWS (Appendix S1) from January 1, 2016, to December 31, 2023. This time period was selected based on the launch of ICD-10 coding requirements in October 2015. Inclusion criteria consisted of adults (age ≥ 18 years) with an ED presentation and associated ICD-10 code corresponding to AWS as described above.

We analyzed the cohort for the incidence of AWS presentations and disposition (admission vs. discharge). Among those admitted, we analyzed those admitted to the intensive care unit (ICU) versus general medical floor as well as the LOS for each. Additionally, we examined eight pharmaceutical drug classes/agents (benzodiazepines, phenobarbital, gabapentin, ketamine, propofol, dexmedetomidine, carbamazepine, and valproic acid) among ED patients using Epic's Medication Grouper function, which categorizes medications by their pharmaceutical class and subclass. Among benzodiazepines, we analyzed by route (oral vs. intravenous [IV]) and by specific agent. Among those discharged, we analyzed benzodiazepines (with subgroup analysis by specific benzodiazepine agents), gabapentin, naltrexone, carbamazepine, valproic acid, topiramate, disulfiram, and acamprosate. We used binary logistic regression models to measure the relationship between time and dependent variables (e.g., ED encounters due to AWS, medication use). Data are reported as odds ratios (OR) with 95% confidence intervals (CIs). Analyses were performed with SPSS Version 26.0.0.0 (IBM Corp). The Rush University Institutional Review Board deemed this study exempt. There was no funding for this study.

RESULTS

Out of 242,804,798 ED encounters over the 8-year period, 670,430 (0.28%) visits were due to AWS with a rise over time (OR 1.074, 95% CI 1.072–1.075; Figure 1, Appendix S2). Demographics of the study population are reported in the Table 1.

Of these, 386,618 (57.7%) were admitted to the hospital with 76,918 (11.5%) admitted to the ICU. While hospital admission remained stable (OR 1.001, 95% CI 0.999–1.004), ICU admissions declined over time (OR 0.946, 95% CI 0.943–0.949; Figure 2). Among those admitted, the median (IQR) hospital LOS was 3 (2–5) days and median (IQR) ICU LOS was 2 (1–4) days (Appendix S2).

The majority (81.2%) of patients received benzodiazepines in the ED, whereas 15.3% received gabapentin, 14.5% phenobarbital, 1.5% propofol, 1.3% dexmedetomidine, and 0.4% ketamine (Appendix S3). There was a decrease in benzodiazepines (84.9% to 77.1%; OR 0.917, 95% CI 0.914–0.920), while the administration of phenobarbital (4.0% to 21.2%; OR 1.255, 95% CI 1.250–1.259) and gabapentin (11.0% to 16.3%; OR 1.054, 95% CI 1.050–1.057) rose over time (Figure 3).

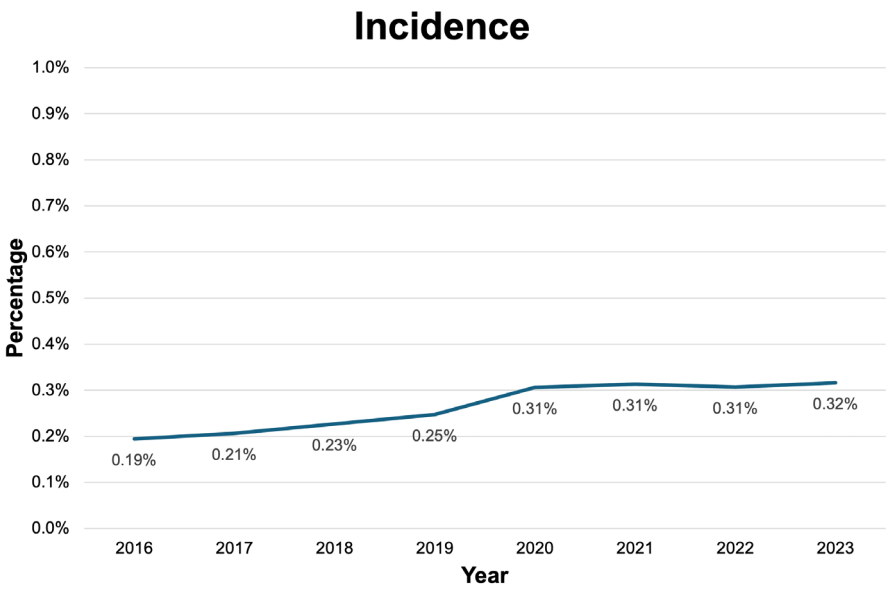

FIGURE 1 Incidence of ED patients presenting with AWS from 2016 to 2023. AWS, alcohol withdrawal syndrome.

Both oral and IV benzodiazepines were common (63.1% and 66.6%, respectively). Over time, there was a slight decline in IV benzodiazepine use (OR 0.942, 95% CI 0.940–0.945) and oral benzodiazepine use (OR 0.967, 95% CI 0.965–0.970; Figure 4). The most common oral benzodiazepine was lorazepam (38.8%), followed by chlordiazepoxide (23.5%) and diazepam (15.9%; Appendix S4). Among IV benzodiazepines, lorazepam was the most common (59.9%) while diazepam was less common (11.8%; Appendix S5).

Among those discharged from the ED, 29.0% were prescribed benzodiazepines, with the majority receiving chlordiazepoxide (21.1%), followed by lorazepam (5.5%) and diazepam (1.9%; Appendix S6). Anticraving medications, such as gabapentin (1.5%), naltrexone (0.4%), and acamprosate (<0.1%) were uncommon, but rising over time (OR 1.114 [95% CI 1.097–1.132], OR 1.494 [95% CI 1.435–1.555], and OR 2.098 [95% CI 1.767–2.491], respectively).

DISCUSSION

In this cross-sectional study of over 242 million ED encounters, we found a rising incidence of patients presenting to the ED with AWS. This is consistent with data from Ontario, Canada, showing a similar rise in AWS over time.[7] This rise may reflect greater recognition of AWS, increasing disease burden of AUD, and lack of direct access to substance use treatment.[8,17–19] Despite the rise in ED presentations, there was no difference in the percentage of hospital admissions and a decline in ICU admissions. Hospital and ICU LOS also did not change over this time period. These data highlight the importance of optimizing treatment and disposition strategies for patients presenting to the ED with AWS and AUD, particularly as boarding remains a major issue.

Over 80% of patients were treated with benzodiazepines with a relatively balanced distribution of oral versus IV benzodiazepines. These percentages remained relatively stable over time, which may reflect common teaching regarding the efficacy of benzodiazepines for AWS as well as the ease of titration and rapid symptom control with IV routes. Among these, lorazepam was the most common oral and IV benzodiazepine, with a two- to four-fold higher administration percentage compared with longer-acting agents (e.g., diazepam, chlordiazepoxide). Prior literature suggest no difference in safety outcomes between lorazepam and diazepam with ED-based loading doses, while lorazepam was associated with a higher incidence of ICU delirium.[20,21] Longer-acting benzodiazepines such as diazepam also offer a benefit of sustained activity, allowing for a more gradual taper and less rebound withdrawal symptoms.[1] These findings highlight the need for more rigorous studies to help identify the most optimal choice of benzodiazepines for the treatment of AWS in the ED.

Of the nonbenzodiazepine agents utilized for AWS, gabapentin was the most frequently used, followed by phenobarbital in our study. The increased utilization of gabapentin for AWS may be attributed to data demonstrating efficacy in treating mild-to-moderate AWS, relative safety as an adjunct to benzodiazepines or phenobarbital, and the ability to be used as anticraving medication for treatment of AUD.[22,23]

We identified a notable increase in phenobarbital administration, increasing from 4% to 21% over the 8-year period. This is consistent with recommendations by GRACE-4 and AAEM, which suggest phenobarbital as a beneficial option in the treatment of moderate-to-severe AWS.[2,10] In recent years, multiple studies have demonstrated the efficacy of phenobarbital compared to benzodiazepines for managing AWS.[24–26] In addition, phenobarbital has a longer duration of activity, facilitating outpatient management by creating a natural taper.[1] One recent study found that administering phenobarbital prior to discharge significantly reduced the likelihood of return visits after ED discharge.[27] The rapid rise in gabapentin and phenobarbital use over time may reflect these findings.

Other nonbenzodiazepine medications, such as propofol, dexmedetomidine, ketamine, carbamazepine, and valproic acid, were

TABLE 1 Demographics of participants with AWS.

Demographic	*N* (%)
Age (years)	
≥18 to <30	56,367 (8.4%)
≥30 to <40	167,848 (25.0%)
≥40 to <50	168,318 (25.1%)
≥50 to <65	230,041 (34.3%)
≥65 to <75	41,525 (6.2%)
≥75 to <85	5819 (0.9%)
≥85	512 (0.1%)
Sex	
Female	171,183 (25.5%)
Male	499,133 (74.4%)
Not reported	81 (0.1%)
Race[a]	
American Indian or Alaskan Native	17,450 (2.6%)
Asian	8653 (1.3%)
Black or African American	79,203 (11.8%)
Native Hawaiian or other Pacific Islander	3063 (0.5%)
White	555,455 (82.9%)
Other race/not reported	77,642 (11.6%)
Ethnicity	
Hispanic or Latino	61,148 (9.1%)
Not Hispanic or Latino	582,324 (86.9%)
Not reported	26,958 (4.0%)
Insurance[a]	
Private/other	348,858 (52.0%)
Medicaid	231,079 (34.5%)
Medicare	66,532 (9.9%)
Self-pay	63,185 (9.4%)
Not reported	26,144 (3.9%)
U.S. Census region	
Midwest	244,988 (36.5%)
Northeast	135,211 (20.2%)
South	190,271 (28.4%)
West	98,911 (14.8%)
Not reported	1049 (0.2%)

Abbreviation: AWS, alcohol withdrawal syndrome.

[a]Participants could select more than one option.

uncommonly used in the ED. This may reflect the more limited evidence for these interventions in the treatment of AWS, particularly in the ED setting.[1,2,10]

When examining medications prescribed at discharge, nearly one-third were prescribed a benzodiazepine with the majority receiving chlordiazepoxide. Interestingly, we noticed a decrease in prescriptions of diazepam and lorazepam over time, despite these medications being listed among the first-line treatments for AWS in the American Society of Addiction Medicine Clinical Guidance on Alcohol Withdrawal and AAEM position statement.[2,28] This decline may be attributed to the rise in phenobarbital, which can allow a more stable taper postdischarge due to the prolonged half-life.[1,27] In addition, such change may reflect increased prescribing of gabapentin, thereby buffering evolving symptoms of AWS after acute management.

Importantly, while rates of medications prescribed for AUD increased over time, this overall remained very low, with only 2% of discharged patients receiving a prescription for an anticraving medication. Our findings are reflective of national data suggesting that medications for AUD are underused as only 2% of American's received pharmacotherapy for AUD in 2021.[29] This reflects a critical opportunity to improve care, as prescription of anticraving medications are well tolerated and readily available, can help to prevent the return to heavy drinking, decrease the risk of mortality, and are recommended by both AAEM and the GRACE-4 guidelines.[1,2,10] Moreover, among those prescribed an anticraving medication, gabapentin was the most common, representing 1.5% of cases. While gabapentin may be more familiar to many clinicians, it can have higher risk of abuse and complications; therefore, GRACE-4 guidelines have recommended naltrexone (in those without opioid use) or acamprosate as first-line, followed by gabapentin in those with more severe withdrawal symptoms.[2,10]

LIMITATIONS

There are several important limitations to consider. First, the data set obtained via the Epic Cosmos research platform is only extracted from hospitals using Epic as their electronic health records and that have chosen to contribute data. Consequently, while this was a large sample and the overall demographics reflect the United States census, it remains possible these data may not fully represent the entire clinical practice of EDs in the United States. More specifically, while a contributing organization's data are backloaded once they join Cosmos, organizations that went live on Epic's electronic health record earlier are more likely to be larger, academically oriented systems. As electronic health records have become more ubiquitous, the percentage of patients from these sorts of institutions has decreased. However, the further one goes back in the database, the higher that percentage becomes. As such, the trends noted in the paper could be partially related to changes in the Epic customer base and not changes in overall practice. Additionally, we were limited to ICD-10 coding and cases may have been missed due to incorrect coding. This also limited our ability to reliably stratify by AWS severity. We were unable to account for concomitant medical conditions that may have influenced admission decisions or management strategy. For example, some patients may have taken medications such as gabapentin outside of AWS (e.g., neuropathy, multimodal pain control), which could have artificially inflated the percentage reported for AWS. We did not include anticraving and other medications used for AUD. Finally, we were not able to assess the effect of various medications on clinical outcomes based on our study design.

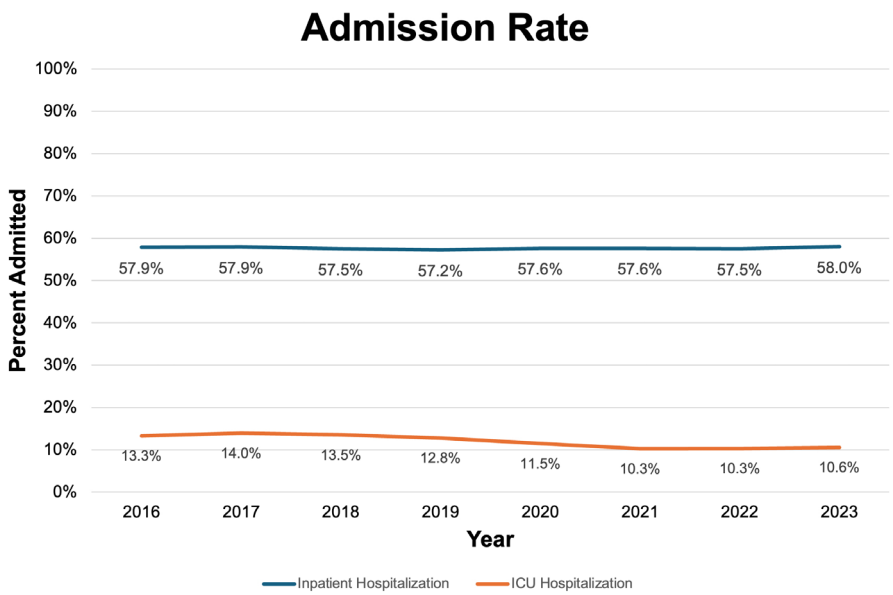

FIGURE 2 Percentage of ED patients with alcohol withdrawal syndrome admitted from 2016 to 2023. ICU, intensive care unit.

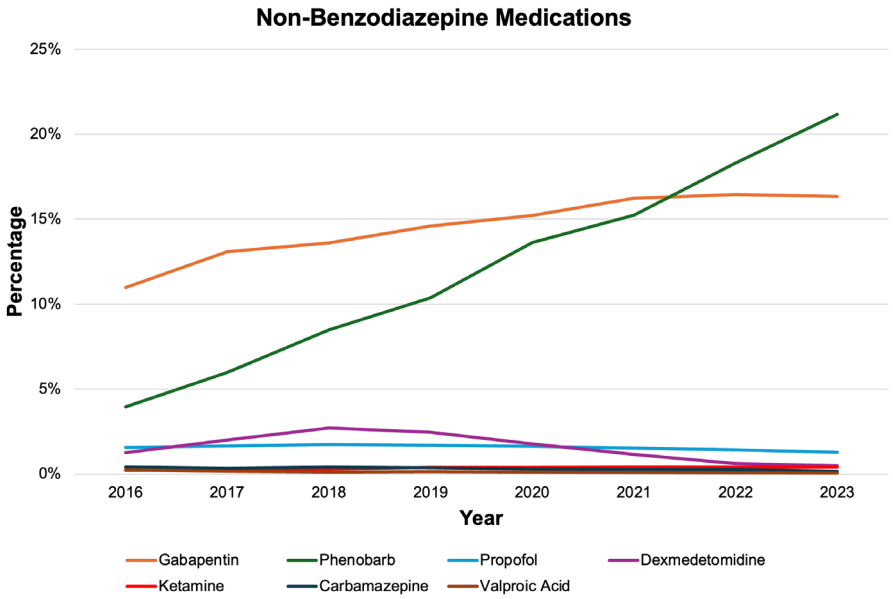

FIGURE 3 Percentage of nonbenzodiazepine agents administered for ED patients with AWS from 2016 to 2023. AWS, alcohol withdrawal syndrome.

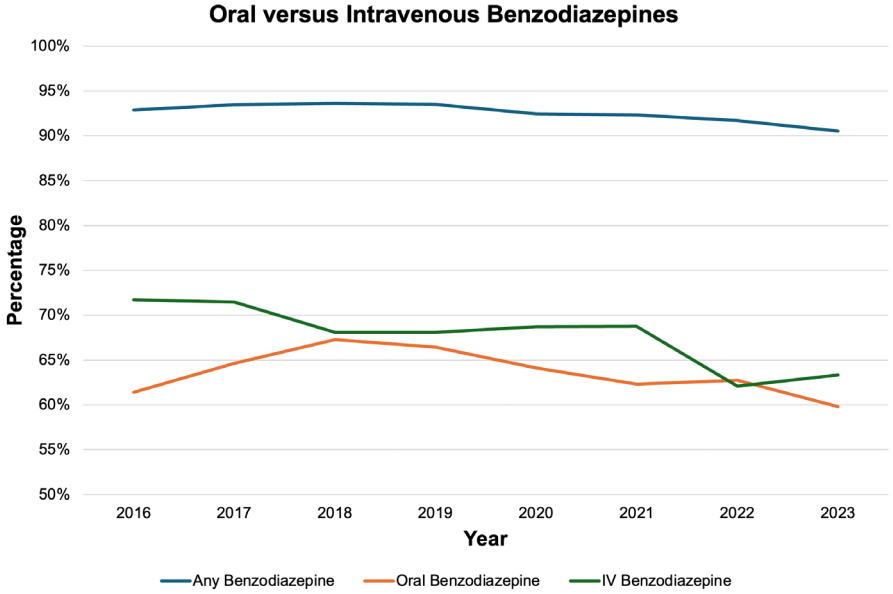

FIGURE 4 Percentage of oral versus IV benzodiazepine agents administered for ED patients with AWS from 2016 to 2023. AWS, alcohol withdrawal syndrome.

CONCLUSIONS

In conclusion, our study provides a summary of presentations and management of patients with alcohol withdrawal syndrome across a large sample of U.S. EDs over an 8-year period. We identified a rising incidence with a shift in management to include agents such as gabapentin and phenobarbital. These findings provide important evidence on current trends in alcohol withdrawal syndrome to inform health policy and knowledge translation efforts as well as emphasizing the need for ongoing research and continuous evaluation of clinical practices to ensure optimal outcomes for patients with alcohol withdrawal syndrome.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Michael Gottlieb https://orcid.org/0000-0003-3276-8375
Nicholas Chien https://orcid.org/0009-0009-8374-9183
Eric Moyer https://orcid.org/0009-0001-9731-8650
Kyle Bernard https://orcid.org/0009-0008-4330-7666

REFERENCES

1. Gottlieb M, Chien N, Long B. Managing alcohol withdrawal syndrome. *Ann Emerg Med*. 2024;84(1):29-39. doi:10.1016/j.annemergmed.2024.02.016
2. Strayer RJ, Friedman BW, Haroz R, et al. Emergency Department Management of Patients with alcohol intoxication, alcohol withdrawal, and alcohol use disorder: a White paper prepared for the American Academy of emergency medicine. *J Emerg Med*. 2023;64(4):517-540. doi:10.1016/j.jemermed.2023.01.010
3. Esser MB, Idaikkadar N, Kite-Powell A, Thomas C, Greenlund KJ. Trends in emergency department visits related to acute alcohol consumption before and during the COVID-19 pandemic in the United States, 2018–2020. *Drug Alcohol Depend Rep*. 2022;3:100049. doi:10.1016/j.dadr.2022.100049
4. Yaseen W, Mong J, Zipursky J. Sobering perspectives on the treatment of alcohol use disorder. *JAMA Netw Open*. 2024;7(3):e243340. doi:10.1001/jamanetworkopen.2024.3340
5. Schuckit MA, Danko GP, Smith TL, Hesselbrock V, Kramer J, Bucholz K. A 5-year prospective evaluation of DSM-IV alcohol dependence with and without a physiological component. *Alcohol Clin Exp Res*. 2003;27(5):818-825. doi:10.1097/01.ALC.0000067980.18461.33
6. Wood E, Albarqouni L, Tkachuk S, et al. Will this hospitalized patient develop severe alcohol withdrawal syndrome?: the rational clinical examination systematic review. *JAMA*. 2018;320(8):825-833. doi:10.1001/jama.2018.10574
7. Myran DT, Hsu AT, Smith G, Tanuseputro P. Rates of emergency department visits attributable to alcohol use in Ontario from 2003 to 2016: a retrospective population-level study. *CMAJ*. 2019;191(29):E804-E810. doi:10.1503/cmaj.181575
8. White AM, Slater ME, Ng G, Hingson R, Breslow R. Trends in alcohol-related emergency department visits in the United States: results from the Nationwide emergency department sample, 2006 to 2014. *Alcohol Clin Exp Res*. 2018;42(2):352-359. doi:10.1111/acer.13559
9. Smith BT, Schoer N, Sherk A, Thielman J, McKnight A, Hobin E. Trends in alcohol-attributable hospitalisations and emergency department visits by age, sex, drinking group and health condition in Ontario, Canada. *Drug Alcohol Rev*. 2023;42(4):926-937. doi:10.1111/dar.13629
10. Borgundvaag B, Bellolio F, Miles I, et al. Guidelines for reasonable and appropriate Care in the Emergency Department (GRACE-4): alcohol use disorder and cannabinoid hyperemesis syndrome management in the emergency department. *Acad Emerg Med*. 2024;31(5):425-455. doi:10.1111/acem.14911
11. Tarabichi Y, Frees A, Honeywell S, et al. The cosmos collaborative: a vendor-facilitated electronic health record data aggregation platform. *ACI Open*. 2021;5(1):e36-e46. doi:10.1055/s-0041-1731004
12. Gottlieb M, Bernard K. Epidemiology of abscess and cellulitis among United States emergency departments from 2016 to 2023. *Acad Emerg Med*. 2024;31(12):1273-1275. doi:10.1111/acem.14986
13. Gottlieb M, Bernard K. Epidemiology of back pain visits and medication usage among United States emergency departments from 2016 to 2023. *Am J Emerg Med*. 2024;82:125-129. doi:10.1016/j.ajem.2024.06.020
14. Gottlieb M, Moyer E, Bernard K. Epidemiology of headache presentations to United States emergency departments from 2016 to 2023. *Am J Emerg Med*. 2024;85:1-6. doi:10.1016/j.ajem.2024.08.013
15. Gottlieb M, Moyer E, Bernard K. Epidemiology of pulmonary embolism diagnosis and management among United States emergency departments over an eight-year period. *Am J Emerg Med*. 2024;85:158-162. doi:10.1016/j.ajem.2024.09.016
16. Vandenbroucke JP, von Elm E, Altman DG, et al. Strengthening the reporting of observational studies in epidemiology (STROBE): explanation and elaboration. *Int J Surg*. 2014;12(12):1500-1524. doi:10.1016/j.ijsu.2014.07.014
17. Mullins PM, Mazer-Amirshahi M, Pines JM. Alcohol-related visits to US emergency departments, 2001-2011. *Alcohol Alcohol*. 2017;52(1):119-125. doi:10.1093/alcalc/agw074
18. Furlong K, Lang E. The management of alcohol use disorder in the emergency department, is it time for version 2.0? *CJEM*. 2023;25(2):108-109. doi:10.1007/s43678-023-00466-6
19. Glann JK, Carman M, Thompson J, et al. Alcohol withdrawal syndrome: improving recognition and treatment in the emergency department. *Adv Emerg Nurs J*. 2019;41(1):65-75. doi:10.1097/TME.0000000000000226
20. Levine AR, Thanikonda V, Mueller J, Naut ER. Front-loaded diazepam versus lorazepam for treatment of alcohol withdrawal agitated delirium. *Am J Emerg Med*. 2021;44:415-418. doi:10.1016/j.ajem.2020.04.095
21. Scheuermeyer FX, Miles I, Lane DJ, et al. Lorazepam versus diazepam in the Management of Emergency Department Patients with Alcohol Withdrawal. *Ann Emerg Med*. 2020;76(6):774-781. doi:10.1016/j.annemergmed.2020.05.029
22. Fluyau D, Kailasam VK, Pierre CG. Beyond benzodiazepines: a meta-analysis and narrative synthesis of the efficacy and safety of alternative options for alcohol withdrawal syndrome management. *Eur J Clin Pharmacol*. 2023;79(9):1147-1157. doi:10.1007/s00228-023-03523-2
23. Mattle AG, McGrath P, Sanu A, et al. Gabapentin to treat acute alcohol withdrawal in hospitalized patients: a systematic review and meta-analysis. *Drug Alcohol Depend*. 2022;241:109671. doi:10.1016/j.drugalcdep.2022.109671
24. Hendey GW, Dery RA, Barnes RL, Snowden B, Mentler P. A prospective, randomized, trial of phenobarbital versus benzodiazepines for acute alcohol withdrawal. *Am J Emerg Med*. 2011;29(4):382-385. doi:10.1016/j.ajem.2009.10.010
25. Rosenson J, Clements C, Simon B, et al. Phenobarbital for acute alcohol withdrawal: a prospective randomized double-blind placebo-controlled study. *J Emerg Med*. 2013;44(3):592-598.e2. doi:10.1016/j.jemermed.2012.07.056

26. Ibarra F. Single dose phenobarbital in addition to symptom-triggered lorazepam in alcohol withdrawal. *Am J Emerg Med*. 2020;38(2):178-181. doi:10.1016/j.ajem.2019.01.053
27. Lebin JA, Mudan A, Murphy CE, Wang RC, Smollin CG. Return encounters in emergency department patients treated with phenobarbital versus benzodiazepines for alcohol withdrawal. *J Med Toxicol*. 2022;18(1):4-10. doi:10.1007/s13181-021-00863-2
28. The ASAM clinical practice guideline on alcohol withdrawal management. *J Addict Med*. 2020;14:1-72. doi:10.1097/ADM.0000000000000668
29. National Institute on Alcohol Abuse and Alcoholism. Alcohol Use in the United States: Age Groups and Demographic Characteristics. Accessed December 3, 2024. https://www.niaaa.nih.gov/alcohols-effects-health/alcohol-topics/alcohol-facts-and-statistics/alcohol-use-united-states-age-groups-and-demographic-characteristics

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Gottlieb M, Chien N, Moyer E, Bernard K, Peksa GD. Alcohol withdrawal syndrome presentations to emergency departments in the United States from 2015 to 2023. *Acad Emerg Med*. 2025;00:1-7. doi:10.1111/acem.15093