Alcohol Withdrawal and Benzodiazepine Use in an Acute Inpatient Rural Hospital

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INTRODUCTION

Alcohol consumption-related problems are the third leading cause of death in the United States.[3]

An estimated 1 in 11 ED visits and 1 in 9 hospitalizations were due to an alcohol use disorder (AUD) or related issue.[4]

Studies have suggested that benzodiazepine use itself may be associated with the development of secondary medical complications while attempting to treat alcohol withdrawal (AW).[2]

Good Samaritan Hospital is a rural hospital in Vincennes, IN and the county seat of Knox County, Indiana, which has a population of 35,956 people in 2021 and catchment area that includes 181,117 people over eight counties.[5] It was discovered that benzodiazepine treatment for patients with AUD or AW was not standardized, prompting a treatment protocol to be implemented on August 19, 2021 in the internal medicine department.

The goal of the protocol is to uniformly guide alcohol withdrawal symptom management and reduce complications from benzodiazepine overuse.

METHODS

A chart review was conducted to complete a pre-post interventional research design. Charts were evaluated for all patients medically admitted to Good Samaritan Hospital for AW or AUD related diagnoses for six months before and six months after protocol initiation.

The population consisted of 88 admissions before protocol implementation and 90 admissions after protocol implementation.

Charts were evaluated for the following variables: length of stay (LOS), number of different benzodiazepines received, number of Ativan equivalents received, whether patient was titrated off the benzodiazepines, if the patient was readmitted for an AUD related issue within 30 days, and complications during hospitalization.

To analyze the data each variable from both groups was evaluated and compared using chi-square and t-tests where appropriate. Descriptive statistics were used to evaluate frequency of specific complications.

PROTOCOL

Nursing Assessments / Alcohol Withdrawal

Core - Alcohol Withdrawl Assessment Merge

[ ]	CIWA every 4 hours while awake. For CIWA scores less than 15; every one hour CIWA scores greater than or equal to 15.	Routine, ONE TIME
[ ]	CIWA-AR SCREENING TOOL (NON-ICU)	Details
[ ]	CIWA GOAL: LESS THAN 9	Routine, ONE TIME
[ ]	If CIWA score is greater than 9, refer to MAR for PRN med for agitation medication.	Routine, ONE TIME
[ ]	IF CIWA SCORE IS 9-15 AND PRN DOSE IS NOT EFFECTIVE, CALL MD	Routine, ONE TIME
[ ]	If CIWA score is greater than 15 for 2 checks, transfer to ICU and call MD	Routine, ONE TIME

Medications

Vitamins/Alcohol Withdrawal

[ ]	thiamine tablet 100 mg	100 mg, Oral, DAILY Starting H+72 Hours For 180 Days
[ ]	folic acid (FOLVITE) tablet 1 mg	1 mg, Oral, DAILY Starting H+72 Hours For 180 Days
[ ]	multivitamin	1 tablet, Oral, DAILY Starting H+72 Hours For 180 Days
[ ]	Banana Bag (Thiamine, Folic Acid, and Multivitamin IV)	Intravenous, at 100 mL/hr, DAILY Starting S For 3 Days

Benzodiazepines/Alcohol Withdrawal

[ ]	chlordiazePOXIDE (LIBRIUM) 25mg q6h for CIWA less than 12, or 50mg q6h for CIWA of 12 or greater	"Or" Linked Panel
[ ]	chlordiazePOXIDE (LIBRIUM) capsule	25 mg, Oral, EVERY 6 HOURS SCHEDULED For 180 Days
[ ]	chlordiazePOXIDE (LIBRIUM) capsule	50 mg, Oral, EVERY 6 HOURS SCHEDULED For 180 Days
[ ]	chlordiazePOXIDE (LIBRIUM) capsule	25 mg, Oral, EVERY 2 HOURS PRN For 180 Days, Withdrawal
[ ]	lorazepam (ATIVAN) 0.5-1 mg IV or PO q1h prn for a continued CIWA greater than 9 after the prn Librium administered	"Or" Linked Panel
[ ]	LORAZEPAM 2 MG/ML IJ SOLN	0.5-1 mg, Intravenous, EVERY 1 HOUR PRN For 180 Days, Anxiety, Agitation
[ ]	LORAZEPAM 0.5 MG PO TABS	0.5 mg, Oral, EVERY 1 HOUR PRN For 180 Days, Anxiety/Agitation
[ ]	LORAZEPAM 1 MG PO TABS	1 mg, Oral, EVERY 1 HOUR PRN For 180 Days, Anxiety/Agitation
[ ]	diazepam (VALIUM) IV 5 mg	5 mg, Intravenous, ONCE PRN For 1 Doses, Seizures

RESULTS

Table 1: Age and Reported Gender

Demographics	N(%) Before	N(%) After
Female	19(21.6)	22(25.9)
Male	69(78.4)	63(74.1)
	Mean(SD) Before	Mean(SD) After
Age	53.6(11.91)	53.28(14.46)

Table 2: Significant Changes

Variable	Mean(SD) Before	Mean(SD) After	Result
Length of stay in days	3.99(4.05)	4.52(3.53)	Significant Increase
Ativan equivilants (mg)	10.61(12.34)	9.51(10.25)	Significant Decrease
	N(%) Before	N(%) After	
Complications	39(44.3)	12(14.1)	Significant Decrease
Hematologic Complications	13(14.77)	1(1.18)	Significant Decrease

CONCLUSION

These changes aim to improve overall care as it no longer relies solely on nursing CIWA scores, which can be unreliable and may vary depending on the evaluator. With the tighter ranges more patients are more likely receiving adequate detox, resulting in a lower need for higher dosages later.

There was a significant decrease in medical complications. This could in part be not only to the decreased use of benzodiazepines but also to the protocol structure and subsequent early interventions.

Of note, the implemented protocol was not a requirement for hospitalist providers to follow. This did limit the data that was collected during the after period. It was calculated that 75% of the cases had utilized the protocol.

There is less variability and outliers noted using the standard protocol as indicated by a decrease in the deviation from the lower mean in the post group. It may be worth pulling charts a year after the implementation of the protocol to see if the data trends in either direction. Further directions may include investigating fidelity to protocol, adjusting recommended starting doses, emphasizing using adjuncts more frequently and investigating how many people sign out AMA early in treatment when protocol is followed.

DISCLOSURES

Nothing to Disclose

REFERENCES

1. Maldonado JR, Sher Y, Ashouri JF, et al. The “Prediction of alcohol withdrawal severity scale” (PAWSS): Systematic Literature Review and Pilot Study of a new scale for the prediction of complicated alcohol withdrawal syndrome. *Alcohol*. 2014;48(4):375-390. doi:10.1016/j.alcohol.2014.01.004
2. Maldonado JR. Novel algorithms for the prophylaxis and management of alcohol withdrawal syndromes–beyond benzodiazepines. *Critical Care Clinics*. 2017;33(3):559-599. doi:10.1016/j.ccc.2017.03.012
3. Mokdad AH. Actual causes of death in the United States, 2000. *JAMA*. 2004;291(10):1238. doi:10.1001/jama.291.10.1238
4. Suen LW, Makam AN, Snyder HR, et al. National prevalence of alcohol and other substance use disorders among emergency department visits and hospitalizations: NHAMCS 2014–2018. *Journal of General Internal Medicine*. 2021;37(10):2420-2428. doi:10.1007/s11606-021-07069-w
5. U.S. Census Bureau quickfacts: Indiana. https://www.census.gov/quickfacts/fact/table/IN/PST045222. Accessed January 16, 2023.

Resources

- Overall Design Recommendations:
  - https://biorender.com/blog/top-5-tips-for-designing-a-scientific-poster
  - https://guides.nyu.edu/posters
  - http://www.personal.psu.edu/drs18/postershow/
- Specific Design Tools:
  - Icons: https://thenounproject.com
  - Free Stock Photos: https://unsplash.com/
  - Color Palette Picker (if you don't want to use ASAM's): https://coolors.co/
  - QR Code Generator: https://www.qr-code-generator.com/
- Printing (ASAM has not independently verified the quality of these printers)
  - https://www.posterpresentations.com/
  - https://scientificposterprinting.com/
  - https://www.uprinting.com/large-format-posters-printing.html
  - https://www.makesigns.com/products/scientific-posters
  - https://www.megaprint.com/research-posters.php