

Evaluating nursing satisfaction and utilization of the Clinical Institute Withdrawal Assessment for Alcohol, revised version (CIWA-Ar)

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How to cite: Bacon O, Robert S, VandenBerg A. Evaluating nursing satisfaction and utilization of the Clinical Institute Withdrawal Assessment for Alcohol, revised version (CIWA-Ar). *Ment Health Clin* [Internet]. 2016;6(3):114-9. DOI: 10.9740/mhc.2016.05.114.

Abstract

Introduction: The Clinical Institute Withdrawal Assessment for Alcohol, revised version (CIWA-Ar), developed and validated for research, is used in our inpatient academic medical center. We sought to assess nursing satisfaction with the scale itself, training for using the scale, and nursing staff use of the CIWA-Ar.

Methods: A retrospective chart review included all patients with an order for CIWA-Ar between August 1, 2014, and September 30, 2014. Data collected included demographics, admitting diagnosis, vital signs, admission blood alcohol level, lorazepam total daily dose, and CIWA-Ar scores. Nursing staff was sent an anonymous, 26-question survey in January 2015. The survey collected demographics, training history, and recommendations for modifications to the CIWA-Ar.

Results: During the 2-month period, 274 patients had orders for CIWA-Ar, with 113 receiving at least one dose of lorazepam. Lorazepam was not given to 21% of patients when they scored >8 on the CIWA-Ar, whereas 71% of patients received a dose of lorazepam when they had a CIWA score <8. The survey was sent to 2011 clinical nurses, with 284 responses received (14% response rate). Only 36% of responding nurses felt adequately trained to administer the CIWA-Ar. Most nurses preferred on-the-job and online training methods.

Discussion: Nursing use of the CIWA-Ar could be optimized at this institution. Fewer than half of respondents reported feeling adequately training to administer the CIWA-Ar. Results will be used to improve training for nursing staff regarding scoring of the CIWA-Ar and administering lorazepam to treat alcohol withdrawal syndrome.

Keywords: alcohol withdrawal, nursing satisfaction, nursing training, CIWA, Clinical Institute Withdrawal Assessment for Alcohol

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Disclosures: The authors have no conflict of interest to disclose.

Introduction

In the United States, about 500 000 episodes of alcohol withdrawal syndrome (AWS) require pharmacologic treat-

ment each year. Management of AWS is very important in the inpatient setting because untreated symptoms can range from insomnia to withdrawal seizures, delirium tremens, and death.^{1,2} Benzodiazepines are first-line treatment for acute AWS in the inpatient setting to manage withdrawal symptoms and prevent the development of seizures and delirium tremens.¹⁻³ Two approaches have emerged as the standard for management at most institutions: symptom-triggered management versus a scheduled taper of benzodiazepines. In several studies, symptom-triggered management of alcohol withdrawal

TABLE 1: Clinical Institute Withdrawal Assessment for Alcohol, revised version

Criteria Assessed
Agitation
Anxiety
Auditory disturbance
Headache
Nausea/vomiting
Orientation
Sweating
Tactile disturbance
Tremors
Visual disturbance

led to fewer total medication doses and a shorter duration of treatment without an increase in adverse outcomes.³⁻⁸

The Clinical Institute Withdrawal Assessment for Alcohol (CIWA) and its derivations are the most extensively studied scales used in the symptom-triggered treatment of alcohol withdrawal. The 10-item CIWA, revised version (CIWA-Ar), was developed from an 18-item scale and has established validity and reliability based on comparisons to ratings by expert physicians and nurses (Table 1).^{9,10} Each item was validated for interrater reliability with “competent nurses” in a 1989 study.¹⁰ Items are scored from 0 to 7 based on patient symptoms, except “orientation and clouding of sensorium,” which is scored from 0 to 4. The total score can range from 0 to 67, with 0 to 8 indicating mild withdrawal, 9 to 15 indicating moderate withdrawal, and >15 indicating severe withdrawal.⁸ In addition to indicating more severe withdrawal, high scores are associated with increased risk of progression to complicated withdrawal.⁹ The score guides the administration of benzodiazepines for withdrawal. Threshold scores of 8 to 10 are typically used as the cutoff for medication administration. The frequency of CIWA-Ar assessments and medication doses (if indicated) is based on the severity of withdrawal symptoms.^{8,9} However, the CIWA-Ar has not been studied in patient populations with significant mental and physical comorbidities.

Psychiatry services at our 94-bed psychiatric inpatient hospital historically used the CIWA-Ar, whereas all other medical services at our 709-bed academic medical center used an internally developed AWS symptom-triggered scale to treat alcohol withdrawal. There was interest in using a single rating scale hospital-wide. On July 1, 2014, the CIWA-Ar was implemented hospital-wide during a new electronic medical record implementation. All nursing staff underwent an institution-specific online training session. The required training session included general information about the CIWA-Ar with an online posttest for

competency before the implementation of CIWA-Ar hospital-wide. The objective of this study was to assess benzodiazepine use with the CIWA-Ar and compare that use between medicine and psychiatric services. We also sought to assess nursing satisfaction and confidence in using the CIWA-Ar scale.

Methods

A retrospective chart review of all adult inpatients initiated on the CIWA-Ar protocol was conducted from August 1, 2014, to September 30, 2014. All patients with a CIWA-Ar ordered in the specified period were included in this study, regardless of CIWA-Ar scoring. Patients younger than 18 years of age were excluded. Data were collected for each admission if the patient was admitted more than once during the 2-month period. Demographic data points collected included sex, age, primary service assigned to the patient, and primary admitting diagnosis. Clinical data points collected included blood alcohol level upon admission, duration of alcohol withdrawal protocol, all CIWA-Ar scores, and total daily dose of lorazepam given. At our institution, the CIWA-Ar is scored by nursing staff only at admission and then a specified number of hours thereafter (usually every 8 hours). Nursing communication on the CIWA-Ar order set includes instructions for taking vital signs with the CIWA-Ar scoring. The provider chooses how often the CIWA-Ar is scored upon ordering the protocol. Choices of every 2, 3, 4, 6, or 8 hours are included in the order set; however, the order defaults to 8 hours per the order set. The order does not automatically adjust frequency of monitoring unless the provider makes the change. If the total CIWA-Ar score is >8, the patient receives a dose of lorazepam from the on-call order set. The dose of lorazepam is dependent on the provider who orders the CIWA-Ar; however, the dose defaults to 2 mg per the order set. The order set includes orders for either oral or intramuscular injection. According to the current order set, a provider is paged if >3 doses of lorazepam are given within 3 hours or >6 doses of lorazepam are given from all sources, including routine and pro re nata, in 24 hours. The provider is also paged if heart rate is <50 or >110 beats per minute, systolic blood pressure (mm Hg) <90 or >180, or diastolic blood pressure (mm Hg) >120.

Nurse managers and clinical pharmacy specialists collaborated to create a 26-question survey (Appendix) to query nurses about their general professional experience, their experience with the CIWA-Ar, and their opinion and satisfaction with the scale itself and the training to use the scale. The anonymous survey was sent electronically to the entire hospital nursing staff on January 8, 2015, using REDCap™ software (Vanderbilt University, Nashville, TN). The nursing staff was given 1 week to respond; the survey was sent a second time on March 16, 2015, for a 1-week

TABLE 2: Baseline patient demographics (n = 274)

Sex, No. (%)	
Female	88 (32)
Male	186 (68)
Age, y, mean (range)	48 (19, 93)
Primary service, No. (%)	
Psychiatry	159 (58)
Medicine	115 (42)
Admitting diagnosis, No. (%)	
Mental illness with suicidal/homicidal ideation	117 (42)
Other medical issue	94 (34)
Altered mental status	36 (13)
Detox/overdose	27 (10)
Blood alcohol level upon admission, mg/dL, mean (range)	72.4 (0-486)
No. of CIWA-Ar scores during admission, median	6
Length of time patients were on CIWA-Ar, days	3

Abbreviation: CIWA-Ar = Clinical Institute Withdrawal Assessment for Alcohol, revised version.

period to psychiatry nursing staff. The psychiatry nursing staff was given another week to respond because of the proportionally large amount of CIWA-Ar protocols administered in their unit in comparison with the rest of the hospital. REDCap™ software was also used to collect and compile the survey results.

Results

During the 2-month study period, 274 admissions with a CIWA-Ar ordered, regardless of whether scoring was completed, were reviewed, and data were collected. Table 2 contains baseline patient demographics. A total of 159 of the 274 included admissions (58%) were on the psychiatry service.

Of the total 274 admissions, 92 admissions (34%) scored >8 on the CIWA-Ar at least once during the hospitalization. Of those 92 admissions that scored >8 at least once, 19 (21%) did not receive a dose of lorazepam during the hospitalization. A total of 12 of the 19 admissions (63%)

that did not receive a dose of lorazepam when indicated were on the psychiatry service, whereas 7 (37%) were on a medicine service (Table 3). Of the 92 admissions that scored >8 once, 73 (79%) received a dose of lorazepam when the score was greater than 8.

Of the total 274 admissions, 113 admissions (41%) received at least one dose of lorazepam from the CIWA-Ar protocol during their hospitalization. Of the 113 admissions that received a dose of lorazepam, 61 of them (54%) were on the psychiatry service, whereas 52 of them (46%) were on a medicine service (Table 3). Of the 113 admissions that received lorazepam, 80 (71%) did not score >8 on the CIWA-Ar during the hospitalization.

The electronic REDCap™ survey was sent to all nursing staff, including 2011 clinical nurses, with 284 total responses received (14% response rate). A total of 75% of the respondents primarily staffed on medicine services, 14% staffed on psychiatry services, 7% staffed in the Children's Hospital, and 4% did not indicate their service line. The response rate for the psychiatry nursing staff was 31% (41 responders out of 132 total nurses). Of the total respondents, 207 (72%) indicated that they take care of AWS patients 0 to 2 times per week on average. Table 4 contains other baseline nurse demographics. A total of 23% of the respondents indicated they had overestimated a CIWA-Ar score in order to give a dose of benzodiazepine to a patient, whereas 57% responded they had not and 20% did not answer. Additionally, 10% responded that they had lowered a CIWA-Ar because the patient was "med seeking," whereas 69% responded they had not and 21% chose not to answer. Only 1% of respondents "always" have a score in mind when using the CIWA-Ar, whereas 40% "sometimes" do, 37% "never" do, and 22% chose not to respond. When asked if they felt adequately trained to administer the CIWA-Ar, 36% answered "yes," 38% answered "no," and 26% chose not to respond. The respondents' preferred methods of training are shown in the Figure. Table 5 contains a summary of respondents' suggested changes to the CIWA-Ar. Only responses that had a frequency >2 are included in the table.

Discussion

Most of the admissions with CIWA-Ar order sets were on the psychiatry service. Most of the admissions were

TABLE 3: Retrospective chart review results

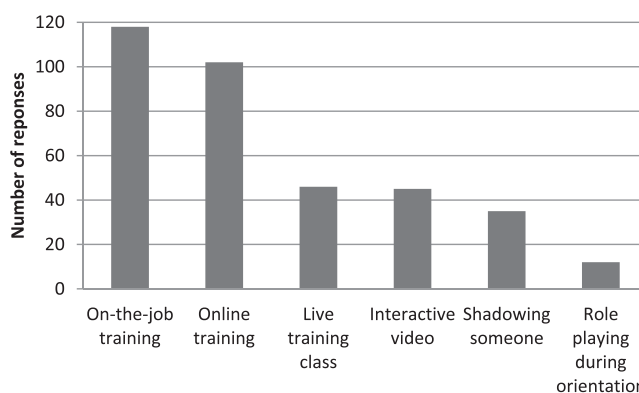
	Total Admissions (n = 274)	Psychiatry Admissions (n = 158)	Medicine Admissions (n = 116)
Scored >8 on the CIWA ≥1 time, No. (%)	92 (34)	49 (31)	43 (37)
Received a dose of benzodiazepine ≥1 time, No. (%)	113 (41)	61 (39)	52 (45)
Scored <8 on the CIWA or did not receive a dose of benzodiazepine, No. (%)	69 (25)	48 (36)	21 (18)

TABLE 4: Baseline nursing demographics (n = 284)

	No. (%)
Registered nurse length of service, y	
Less than 1	17 (6)
1 to 5	105 (37)
6 to 10	52 (18)
11 to 15	20 (7)
16 to 20	18 (6)
Greater than 20	66 (23)
No answer	6 (2)
Average no. of alcohol withdrawal symptoms patients taken care of per week	
0 to 2	204 (72)
3 to 5	16 (6)
6 to 10	10 (4)
Greater than 10	4 (1)
No answer	50 (18)

treated with lorazepam when it was indicated (CIWA-Ar >8). The psychiatry service was less likely than the medicine service to give a dose of lorazepam when it was indicated. Many of the admissions were “overtreated” and received lorazepam when it was not indicated by the CIWA-Ar.

Limitations of data collection prevented some conclusions from being drawn from the retrospective chart review. Nursing notes related to pro re nata administrations from the CIWA-Ar were not collected; therefore, there are no data as to why lorazepam would have been administered or held outside of the protocol parameters. Admissions

**FIGURE:** Registered nurse preferred training methods for Clinical Institute Withdrawal Assessment for Alcohol, revised version.

had other orders for benzodiazepines being used, including pro re nata lorazepam agitation orders. These orders could have led to lower administrations from the CIWA-Ar order set if the other orders were used to administer the lorazepam when a patient scored >8 on the CIWA-Ar. However, each admission with other benzodiazepine orders was not systematically recorded during data collection; therefore, these patients could not be analyzed separately. Additionally, the timing of CIWA-Ar scores and lorazepam doses was not collected, so individual scores and medication doses could not be linked directly.

The survey information identified that 72% of nursing respondents take care of AWS patients 0 to 2 times per week on average. This likely correlates with the result that 38% of respondents do not feel adequately trained to

TABLE 5: Respondent’s suggestions for improving the Clinical Institute Withdrawal Assessment for Alcohol, revised version

	No. (%)	>2 Similar Responses
Nausea/vomiting	6 (13)	All suggested changes regarding giving alternative options
Tremors	7 (16)	Subjective Giving alternative options
Anxiety	7 (16)	Remove it from scale Give an alternative because not always related to alcohol withdrawal
Agitation	7 (16)	Weighted more Give an alternative if agitation not due to withdrawal
Sweating	7 (16)	Subjective Difficult to score
Orientation	7 (16)	Difficult to score
Tactile disturbance	3 (6)	Difficult to score
Auditory disturbance	5 (11)	Subjective
Visual disturbance	2 (4)	If any, give medications
Headache	15 (33)	Use another medication if not related to withdrawal Remove from scoring

administer a CIWA-Ar. The survey identified that most respondents would prefer on-the-job or online training for the CIWA-Ar. Yearly retraining has not been implemented; the data from the survey suggest frequent retraining would be beneficial for nursing staff. Some of the responses for improvement of the scale included having options for other medications when the symptoms a patient is experiencing are on the CIWA-Ar scale but are not related to alcohol withdrawal. For instance, there is not a section to remark whether the patient has baseline hallucinations related to primary mental illness or whether the patient has tremors related to Parkinson disease or other medical issues. The scoring system not being tailored to most of the patient population being scored at this institution is a limitation of the scale.

Because the survey was anonymous, it was not possible to track how many times a nurse responded. This is a limitation of the survey; however, the choice was made to keep the survey anonymous to encourage participation. Additionally, none of the survey questions were mandatory to answer, and 4% of respondents did not indicate their service line, so it is unclear whether those responders were in clinical or nonclinical roles.

This project identified opportunities for improvement in using the CIWA-Ar in the inpatient, nonresearch setting. Information technology services will add scoring anchors to the electronic medical record in order to make the scoring less subjective for nursing staff. Information technology services is also enhancing the electronic medical record to send out nursing reminders to give a dose of on-call lorazepam if the patient scores >8, as well as reminders of when to score the patients throughout the day. A new comment section will allow nurses to provide clarification on individual patients' scores—for example, noting if the patient has baseline tremor or hallucinations. In cooperation with nursing educators and managers, CIWA-Ar nursing training changes are being discussed and will be implemented in the future.

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Appendix

RedCap™ Nursing Survey

1. How long have you worked as a nurse?
<1 year 1-5 years 6-10 years 11-15 years
16-20 years >20 years
2. In which hospital do you work the majority of the time (> 50%)?
IOP ART UniversityHospital (Main)
Children's Hospital
3. On what floor or service do you normally work?
4. How long have you worked on your current service or floor?
<1 year 1-5 years 6-10 years 11-15 years
16-20 years >20 years
5. On what services have you worked in the past (including at other institutions)?
6. On average, in a week, how many patients do you take care of with alcohol withdrawal syndrome?
0 3-5 6-10 >10
7. Do you utilize the CIWA protocol in Epic (internal electronic medical record) for your alcohol withdrawal patients?
Yes No
8. Have you ever increased a CIWA score because you thought benzodiazepine (eg, Ativan) treatment was needed?
Yes No

9. Have you ever lowered a CIWA score because the patient was exaggerating symptoms to obtain a benzodiazepine (eg, Ativan)?
Yes No
10. Do you use symptoms (eg, sweating, tremor, etc) or signs (eg, blood pressure, heart rate, etc) more often to give a dose of medication?
Symptoms Signs
11. Do you already have a score in mind for the patient when you are using the alcohol withdrawal protocol (CIWA-Ar)?
Always Sometimes Never
12. What symptom would prompt you to give a benzodiazepine (eg, Ativan) dose no matter what the CIWA-Ar score was? (Choose all that apply)
- Nausea/Vomiting
 - Tremors
 - Anxiety
 - Agitation
 - Paroxysmal sweats
 - Orientation and clouding of sensorium
 - Tactile disturbances
 - Auditory disturbances
 - Visual disturbances
 - Headache
13. Would you change any of the items on the CIWA-Ar?
Yes No
- a. And if yes, which items would you change on the current protocol? (Choose all that apply)
- Nausea/Vomiting
 - Tremors
 - Anxiety
 - Agitation
 - Paroxysmal sweats
 - Orientation and clouding of sensorium
 - Tactile disturbances
 - Auditory disturbances
 - Visual disturbances
 - Headache
14. What suggestions would you make to change each of the items you checked?
Nausea/Vomiting
15. What suggestions would you make to change each of the items you checked?
Tremors
16. What suggestions would you make to change each of the items you checked?
Anxiety
17. What suggestions would you make to change each of the items you checked?
Agitation
18. What suggestions would you make to change each of the items you checked?
Paroxysmal sweats
19. What suggestions would you make to change each of the items you checked?
Orientation and clouding of sensorium
20. What suggestions would you make to change each of the items you checked?
Tactile disturbances
21. What suggestions would you make to change each of the items you checked?
Auditory disturbances
22. What suggestions would you make to change each of the items you checked?
Visual disturbances
23. What suggestions would you make to change each of the items you checked?
Headache
24. Do you feel adequately trained on the CIWA-Ar protocol?
Yes No
25. Where did you receive your training to assess alcohol withdrawal?
26. How would you be ideally trained to assess alcohol withdrawal? (Choose all that apply)
- Online training
 - Interactive video
 - Shadowing someone
 - Role play during orientation
 - Live training class
 - On-the-job training
 - Other (Please explain)
- Abbreviations: ART = Ashley River Tower; CIWA-Ar = Clinical Institute Withdrawal Assessment for Alcohol, revised version; IOP = Institute of Psychiatry.