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## The Impact of CIWA-Ar Tool on Healthcare Professionals

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The Impact of CIWA-Ar Tool on Healthcare Professionals

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### Abstract

Alcohol is one of the most abused substances worldwide. The regular consumption of alcohol can lead to dependency which depresses the central nervous system.

Consequently, when a heavy drinker is no longer consuming alcohol, the central nervous system is no longer suppressed and may go into a hyperexcitable state known as alcohol withdrawal syndrome (AWS). Symptoms can vary from mild to life threatening. Patients who experience alcohol withdrawal symptoms often have a more complicated hospitalization, an extended length of stay, and increased utilization of intensive care and medical services. The Clinical Institute Withdrawal Assessment of Alcohol Scale-revised (CIWA-Ar) is a tool that can be used to objectively assess patients for the development of AWS. By using the CIWA-Ar to assess patients, nurses can quantify the potential for the development of AWS and therefore initiate treatment for patients who require therapy.

The purpose of this research is to evaluate the impact that CIWA-Ar has on care provided by healthcare professionals.

*Keywords:* alcohol dependency, alcohol withdrawal, alcohol withdrawal syndrome, CIWA-Ar

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## Chapter 1 – Statement of the Problem

### Introduction

Alcohol is one of the most widely consumed intoxicants in our nation. According to the Centers for Disease and Prevention (CDC) nearly 88,000 people (approximately 62,000 men and 26,000 women) die from alcohol related causes annually, making it the third leading preventable cause of death in the United States (CDC, 2014). The National Institute on Alcohol Abuse and Alcoholism (NIAA) defines heavy drinking as drinking five or more drinks on the same occasion on each of five or more days in the past 30 days (2014). Individuals that consume alcohol on a regular basis are at risk for developing alcohol withdrawal syndrome (AWS) when they are hospitalized.

When alcohol intake is reduced or stopped completely, the neurotransmitters that were previously suppressed rebound and alcohol withdrawal syndrome can occur which produces a hyperautonomic state known as AWS (Karriem-Norwood, 2013). Symptoms of AWS can vary from mild such as headaches to severe such as delirium tremens. There are a variety of pharmacological treatments used to prevent those at risk for AWS. There is a need for more research to determine the usefulness of AWS prevention protocols such as the clinical institute withdrawal assessment for alcohol scale (CIWA-Ar) in order to avert complications, prolonged hospitalization, and possible death.

The CIWA-Ar is a tool that clinically calculates the severity of AWS and can be used to monitor response to treatment. Use of the scale can be incorporated into the usual care of patients undergoing alcohol withdrawal. The scale is useful as a research tool in quantitating the efficacy of drugs used in the treatment of alcohol withdrawal. The researcher is employed at the Central Arkansas Veterans Healthcare System (CAVHS)

which uses the CIWA-Ar. At CAVHS, medical doctors (MDs) have an automatic order set that can be used concurrently with the CIWA-Ar. The order set consists of nursing orders, blood laboratory orders, and pharmacological treatments for the patients (Figure 4). This set allows nurses to follow a set of orders without the need to contact doctor whenever interventions are required. The researcher is interested in learning the effect that the CIWA-Ar tool, protocol and order set have on healthcare providers.

### **Background of the Problem**

The use of alcohol depresses the central nervous system by concurrently increasing inhibitory functions and reducing excitatory functions. In order to sustain equilibrium, a heavy drinker needs a continual presence of alcohol in his or her system. Prolonged use of alcohol leads to tolerance and sedation. As this occurs, the person remains alert at alcohol concentrations that would produce lethargy in others (Roberson, 2014). Chronic alcohol consumption also suppresses the activity of glutamate, the neurotransmitter which produces feelings of excitability. To preserve homeostasis, the glutamate system operates by working at a far higher level than it does in moderate drinkers and nondrinkers. When alcohol intake is reduced or stopped completely, the neurotransmitters that were previously suppressed rebound and alcohol withdrawal syndrome can occur, which produces a hyperautonomic state (Karriem-Norwood, 2013).

Signs and symptoms of withdrawal are most likely to reach its highest intensity 48 hours after the last drink; however, there is a diverse variation in the onset, severity, and duration of symptoms. Symptoms of withdrawal usually occur 6 -12 hours after the last drink and can be relieved by ingesting additional alcohol. If left untreated, symptoms can range from mild to life threatening. Patients suffering from alcohol withdrawal

syndrome are more likely to have a prolonged hospital stay due to this condition. In addition, patients are at risk of developing other complications such as, head injuries, cardiac failure, or pneumonia (Hendey, Dery, Barnes, Snowden, & Mentler, 2011).

### **Purpose of Study**

By using the CIWA-Ar to assess patients, nurses can quantify the potential for the development of AWS and therefore initiate pharmacological treatment for patients who necessitate therapy. The scale identifies the minimal clinical features and converts the Diagnostic and Statistical Manual of Mental Disorders (DSM) items into scores for tracking severity over time and thus is essential to clinical research. Individualizing therapy according to the signs and symptoms of each patient should result in administration of less medication and shorter treatment. The CIWA-Ar can be used to provide guidance and to monitor treatment of AWS. The objectives of health informatics are to improve quality of care, lower medical costs, and increase patient satisfaction. If the use of CIWA-Ar protocol is found to be beneficial then it will fulfill the health informatics aims by effectively managing symptoms of AWS and in turn reducing length of hospitalization stays. The purpose of this research is to evaluate the impact of utilizing CIWA-Ar has on care provided by healthcare professionals. By analyzing data from a survey of doctors and nurses, this study aims to determine if the impact of CIWA-Ar is perceived as positive or negative by healthcare professionals that are caring for patients with AWS.

### **Significance of Study**

The clinical institute withdrawal assessment for alcohol scale (CIWA-Ar) protocol is used as a prevention method to stop the progression of AWS in moderate to

high risk patients. The CIWA-Ar protocol has a set of ordered guidelines and medical interventions that the healthcare providers use that is established by a scale that scores the patient based upon the physiological alcohol withdrawal symptoms that he or she displays (Department of Veteran Affairs, 2012).

The CIWA-Ar scale is considered the most sensitive tool available for assessment of the patient experiencing alcohol withdrawal. With the CIWA-Ar protocol, there are ten criteria assessed hourly for moderate to high risk patients to determine if they are displaying signs and symptoms of AWS (Figure 2). Each criterion has a scale of 0 - 7. The measures are as follows: nausea/vomiting, tremors, anxiety, agitation, paroxysmal sweats, orientation, tactile disturbances, auditory disturbances, visual disturbances, and headache. A score of 0-9 indicates absent/minimal withdrawal. A score of 10-19 indicates mild to moderate withdrawal. A score of more than 20 indicates severe withdrawal. Early intervention for CIWA-Ar score of 10 or greater provides a method to inhibit the progression of AWS. Interventions include, but are not limited to: providing the patient with a multivitamin supplement that alcohol users often have a deficiency in and treating symptoms with benzodiazepines as indicated.

There are a variety of treatment approaches used to prevent and treat AWS. Alcohol is one of the most extensively used substances in this country. Unfortunately, there are individuals that develop alcohol dependence which can lead to physiological and psychological impairment if their use of alcohol is abruptly interrupted without tapering off the amount of intake slowly. There is a need to research the effectiveness of the CIWA-Ar protocol in moderate to high risk patients for AWS in order to determine if it is the best intervention to prevent and treat AWS.

**Research Question**

What impact does the Clinical Institute Withdrawal Assessment for Alcohol scale-revised (CIWA-Ar) have on care provided by healthcare professionals?

**Definition of Terms**

Alcohol withdrawal syndrome (AWS) is a set of physiological and psychological symptoms that can manifest when an individual limits or stops alcoholic consumption after long periods of use.

The clinical institute withdrawal assessment for alcohol scale (CIWA-Ar) is an assessment tool with a set of guidelines to manage AWS.

**Limitations**

The research will be acquired through a survey evaluation. This environment will be uncontrolled by the researcher. The survey will have more validity according to the number of responses are received. The patients' complications, pharmacological treatments and length of stay can be affected by other comorbidities which may alter healthcare providers' views of the CIWA-Ar. The literature review shows that there has not been much research done specifically on this topic to compare to. Please refer to Appendix A for the researcher's SWOT analysis that indicates further limitations as well as strengths of this research.

## **Chapter 2 – Review of the Literature**

### **Overview**

This literature review consists of evidence based research journal articles that examine the usefulness of alcohol withdrawal risk protocols and the effectiveness of pharmacological treatment of AWS.

### **Methods**

Electronic databases were used to retrieve relevant journal articles and research. Searches were limited to the English language and articles used were dated no later than 2006. CINAHL with full text, PubMed, Google Scholar, Education Resource Information Center (ERIC), and Ovid were used to conduct the literature searches. Keywords used for the search were: alcohol withdrawal syndrome, alcohol dependency, alcohol misuse, alcohol withdrawal, alcoholism, hospitalization, substance treatment, CIWA-Ar protocol. Figure 1 consists of a flow sheet displaying this process.

### **Data Selection**

The articles were chosen based upon criteria that pertained to: alcohol withdrawal, pharmacological treatments for the prevention and treatment of alcohol withdrawal, the effectiveness of pharmacological treatment of AWS. Articles were not selected if they did not meet the aforementioned measures. Table 1 summarizes the seven studies that were retained after the review of abstracts and full text evaluation.

### **Results**

Awissi, Lebrun, Coursin, Riker and Skrobik (2012) determined in their reflective study of adult ICU patients at risk for AWS should undergo early and aggressive

treatment with pharmacological medications [benzodiazepines, alpha-2 agonists, antipsychotics]. These medications should be titrated to specific withdrawal symptoms in order to prevent complications of AWS.

Fullwood, Mostaghimi, Granger, Washam, Bride, Zhao, and Granger (2013) concluded in their study of 57 adult myocardial infarction patients with high risk of AWS that early screening and prompt therapy may curtail intensive care unit resource use for alcohol withdrawal. In their study, there was not a significant difference in complications or length of stay with the treatment of lorazepam or ethanol.

Murdoch and Marsden (2014) deduced in their study of 50 adult inpatients that by having patients assessed early and on a frequent basis as well as educating staff; management of AWS can be more effective with less pharmacological agents required and less severity of complications.

Muzyk, Fowler, Norwood, and Chilipko (2011) found in their reflective study of adult inpatients diagnosed with AWS that clonidine only affected the mild-to-moderate AWS sympathetic complications, however, it did not prevent the severe symptoms of delirium and seizures. However, they discovered that dexmedetomidine successfully treated all of the alcohol withdrawal symptoms soon after initiation of treatment.

Prince and Turpin (2008) concluded in their reflective study of adult patients diagnosed with AWS that nitrous oxide is contraindicated for use of treatment of AWS and there are limitations on current evidence of the use of carbamazepine and gabapentin for treatment.

Sohraby, Attridge, and Hughes (2014) discovered in their study of 64 mechanically ventilated patients diagnosed with AWS that there was not a significant

difference in length of stay, length of required mechanical ventilation, and length of hospitalization.

Taheri, Dahri, Chan, Shaw, Aulakh, and Tashakkor (2014) deduced in their study of 99 elderly individuals, age 70 years and older, found that by implementing the CIWA-Ar protocol significantly reduced the need amount of required benzodiazepine, cumulative benzodiazepine dose, incidence of severe AWS complications, and use of adjunctive medications in the treatment of AWS.

### **Analysis of Results**

The use of benzodiazepines appears to be the most frequently used pharmacological agent for the use of AWS. There was a significant difference in results found in the comparison studies of pharmacological drugs used. All of the studies consist of different research methods, however, in 4 of the 7 studies reviewed it has been concluded that by performing a risk assessment of AWS prior to symptoms occurring and implementing early treatment assists with reducing the severity of AWS symptoms and further complications.



### **Chapter 3 – Methodology**

#### **Methodology**

A survey questionnaire was developed to collect information to examine the impact that the use of CIWA-Ar has on physicians and nurses at Central Arkansas Veterans Healthcare System (CAVHS). The final data collection tool contained the following variables:

1. Hospital setting
2. Healthcare professional job title
3. Number of AWS patients cared for by the healthcare professional in the past year
4. Amount of pharmaceutical treatments required while using CIWA-Ar
5. Length of stay while using CIWA-Ar
6. Ability to document CIWA-Ar template within one hour of following protocol
7. Efficiency of CIWA-AR with electronic charting
8. Whether or not CIWA-Ar effectively prevents the progression of AWS symptoms
9. Whether or not CIWA-Ar is the most sensitive tool used to treat AWS by healthcare professional
10. Whether or not CIWA-Ar has positively or negatively impacted the healthcare professionals care of patients with AWS

#### **Variables and Rationale**

1. What type of unit do you work on? Survey choices were: (a) Critical care (b) Acute care (c) Long-term care (d) Other.

Rationale: The healthcare setting can factor in how AWS is managed.

2. What is your job title? Survey choices were: (a) Medical Doctor (b) Registered Nurse (c) Licensed Practical Nurse.

Rationale: Physicians and nurses may have differing viewpoints on the effects of CIWA-Ar protocol for AWS patients. Typically, physicians will see more of these patients since they have a larger amount of patients that they see. Whereas, nurses work more closely at the bedside with these patients.

3. On average how many patients have you cared for with alcohol withdrawal in the past year? This survey question had an open ended answer.

Rationale: The healthcare professional that has seen a large number of these patients are more likely to have a more substantiated view of the treatment of patients with AWS.

4. In comparison to other interventions, did patients on CIWA-Ar protocol require more or less pharmaceutical interventions? Survey choices were: (a) More (b) Less (c) No changes (d) Other (specify).

Rationale: Whether or not patients required more or less pharmaceutical interventions will affect the impact on healthcare professionals.

5. In comparison to other interventions, did patients on CIWA-Ar protocol length of stay increase or decrease? Survey choices were: (a) Increase (b) Decrease (c) No changes (d) Other (specify).

Rationale: Whether or not the AWS patient's length of stay increased or decreased will affect the impact on healthcare providers.

6. Are you able to document CIWA-Ar in a timely fashion (within 1 hour of assessment)? Survey choices were: (a) Yes (b) No (Explanation optional).

Rationale: The ability to document CIWA-Ar will affect the impact on healthcare providers.

7. Do you think that CIWA-Ar management is more efficient with electronic charting? Survey choices were: (a) Yes (b) No (Explanation optional).

Rationale: Healthcare providers' perceptions on whether or not they are able to efficiently use CIWA-Ar electronically will affect the impact.

8. Do CIWA-Ar interventions effectively prevent the progression of alcohol withdrawal? Survey choices were: (a) Yes (b) No (Explanation optional).

Rationale: If CIWA-Ar interventions are able to effectively prevent the progression of AWS then it will have an impact on care provided by healthcare professionals.

9. Is the CIWA-Ar the most sensitive tool you have used for assessment of the patient experiencing alcohol withdrawal? Survey choices were: (a) Yes (b) No (Please provide explanation).

Rationale: The sensitivity of the CIWA-Ar tool will affect the impact on healthcare providers.

10. Has the CIWA-Ar protocol positively or negatively impacted your care of alcohol withdrawal patients? Survey choices were: (a) Positive impact (b) Negative impact (c) No impact (Explanation optional).

Rationale: Healthcare providers' perceptions of the impact of CIWA-Ar will determine if they are more likely to endorse and comply with CIWA-Ar.

**Database Selection**

After receiving approval of the survey tool by the director and associate professor of the University of Tennessee Healthcare Science's health informatics and information management graduate program, Drs. Rebecca Reynolds and Sajeesh Kumar, a database was chosen to distribute and evaluate the survey data. Survey monkey was selected after much consideration. It met the criteria for the collection of data that the researcher was pursuing. Survey monkey has many features that aid in the gathering and analysis of survey data. In addition, it is user friendly for the creator of the survey as well as the survey's participants.

**Data Collection Instrument**

A data collection instrument was developed in Survey Monkey by entering the survey questionnaire variables. The survey was distributed by providing the web address link that allowed for quick and easy access to the survey tool. This data collection method allowed for anonymity and consisted of 10 questions; 9 of the questions were multiple choice and only 1 was fill in the blank.

**Population and Sample Design**

Physicians and nurses of the Central Arkansas Veterans Healthcare System (CAVHS) were selected to participate in the survey. CAVHS's healthcare professionals were chosen because the researcher is employed at the facility as a registered nurse and has encountered many patients with AWS in her profession. CIWA-Ar protocol was implemented three years ago at CAVHS and the researcher was concerned with the impact it had on patients and care provided by the healthcare providers. Due to the time

constraints of the research project, it was most feasible to pursue answers from healthcare professionals.

### **Data Collection Procedures**

With permission from the proper CAVHS's authorities, a group email (Figure 5) was sent that detailed the research project and provided a web address link to the survey questionnaire. The first email was sent September 10, 2015 and thereafter emails were sent weekly with a deadline of October 10, 2015. Flyers were also posted throughout the CAVHS facility (Figure 6).

## **Chapter 4 – Results**

### **Response Rate of Population**

By the October 10, 2015 deadline, 87 responses were received. 5 of the respondents were doctors, 81 of the respondents were registered nurses, 0 of the respondents were licensed practical nurses, and 1 respondent did not specify. A specific number of the physicians and nurses employed at the CAVHS in Little Rock, AR could not be acquired.

### **Frequency and Contingency Tables**

Summaries of the counts and percentages of the responses to each of the 10 survey questions are shown in the following tables and graphs. The first three tables provide information on the healthcare professionals' job characteristics and amount of patients with AWS they typically work with yearly. Tables 3 through 10 display information on the respondents' beliefs and perceptions regarding the impact that CIWA-Ar has on care provided by healthcare professionals. Tables 11 through 14 provide comparisons and Pearson's Chi Square calculations of the significance between unit types and the selected variables from the survey questionnaire. Tables 15 through 17 provide comparisons between MDs' and RNs' responses. Graphs 1 through 6 display further comparisons between MDs' and RNs' answers to the survey questions. They are as follows:

Table 1: Hospital Setting

*What type of unit do you work on?*

UNIT TYPE	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
CRITICAL CARE	49	54.44%
ACUTE CARE	40	44.44%
LONG TERM CARE	0	0%
OTHER	1	1.11%

*Note: There are 87 respondents. Some respondents work on multiple units and selected more than one unit.*

Table 2: Healthcare Professional’s Job Title

*What is your job title?*

JOB TITLE	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
MD	5	5.75%
RN	81	93.10%
LPN	0	0.00%
UNKNOWN	1	1.15%

Table 3: Yearly Total of AWS Patients Cared for by Healthcare Professional

*On average how many patients have you cared for with alcohol withdrawal in the past year?*

YEARLY TOTAL OF AWS PATIENTS	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
0	0	0.00%
1-5	19	21.84%
6-10	28	32.18%
11-15	11	12.64%
16-20	9	10.34%
21-25	9	10.34%
26-30	5	5.75%
31-35	0	0.00%
36-40	1	1.15%
40-45	2	2.30%
50-55	3	3.45%

Table 4: Amount of Pharmaceutical Treatments while on CIWA-Ar

*In comparison to other interventions, did patients on CIWA-Ar protocol require more or less pharmaceutical interventions?*

AMOUNT OF PHARMACEUTICAL TREATMENTS	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
MORE	50	57.47%
LESS	25	28.74%
NO CHANGES	11	12.64%
OTHER	1	1.15%



Table 5: Length of Stay while on CIWA-Ar

*In comparison to other interventions, did patients on CIWA-Ar protocol length of stay increase or decrease?*

LENGTH OF STAY	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
INCREASE	32	36.78%
DECREASE	30	34.48%
NO CHANGES	23	26.44%
OTHER	2	2.30%

Table 6: Ability to Document CIWA-Ar Template within 1 Hour

*Are you able to document CIWA-Ar in a timely fashion (within 1 hour of assessment)?*

DOCUMENT WITHIN 1 HOUR	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
YES	66	75.86%
NO	19	21.84%
UNANSWERED	2	2.30%

Table 7: Efficiency of CIWA-Ar with Electronic Charting

*Do you think that CIWA-Ar management is more efficient with electronic charting?*

EFFICIENT WITH ELECTRONIC CHARTING	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
YES	82	94.25%
NO	5	5.75%

Table 8: CIWA-Ar Effect on the Progression of AWS

*Do CIWA-Ar interventions effectively prevent the progression of alcohol withdrawal?*

<b>EFFICIENT WITH ELECTRONIC CHARTING</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENTAGE OF RESPONSES</b>
<b>YES</b>	75	86.21%
<b>NO</b>	12	13.79%

Table 9: Tool Sensitivity of CIWA-Ar

*Is the CIWA-Ar the most sensitive tool you have used for assessment of the patient experiencing alcohol withdrawal?*

<b>MOST SENSITIVE TOOL USED FOR AWS</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENTAGE OF RESPONSES</b>
<b>YES</b>	85	97.70%
<b>NO</b>	2	2.30%

Table 10: Impact of CIWA-Ar on Care Provided by Healthcare Professionals

*Has the CIWA-Ar protocol positively or negatively impacted your care of alcohol withdrawal patients?*

<b>IMPACT OF CIWA-AR ON CARE</b>	<b>NUMBER OF RESPONSES</b>	<b>PERCENTAGE OF RESPONSES</b>
<b>POSITIVE</b>	56	64.37%
<b>NEGATIVE</b>	9	10.34%
<b>NONE</b>	22	25.29%

Table 11a: Cross Tabulation of Unit Type and Pharmaceutical Interventions

In comparison to other interventions, did patients on the CIWA-Ar protocol require more or less pharmaceutical interventions?						
Answer Options	What type of unit do you work on?			Critical Care %	Acute Care %	Other %
	Critical care	Acute care	Other			
More	28	24	1	31.46%	26.97%	1.12%
Less	13	12	0	14.61%	13.48%	0.00%
No changes	7	4	0	7.87%	4.49%	0.00%
Other (please specify)	0	0	0	0.00%	0.00%	0.00%
<i>answered question</i>					<b>86</b>	
<i>skipped question</i>					<b>1</b>	

Table 11b: Pearson’s Chi Square Test of Unit Type and Pharmaceutical Interventions

	Critical Care	Acute Care	Marginal Row Totals
<b>More</b>	28 (27.69) [0]	24 (24.31) [0]	52
<b>Less</b>	13 (13.31) [0.01]	12 (11.69) [0.01]	25
<b>Marginal Column Totals</b>	41	36	77 (Grand Total)

The Chi-square statistic is 0.0231. The P value is 0.87916. This result is not significant at  $p < 0.05$ .

Table 12a: Cross Tabulation of Unit Type and Length of Stay

In comparison to other interventions, did patients on CIWA-Ar protocol length of stay increase or decrease?						
Answer Options	What type of unit do you work on?			Critical Care %	Acute Care %	Other %
	Critical care	Acute care	Other			
Increase	22	12	0	24.72%	13.48%	0.00%
Decrease	15	15	0	16.85%	16.85%	0.00%
No Changes	11	12	1	12.36%	13.48%	1.12%
Other (please specify)	0	1	0	0.00%	1.12%	0.00%
<i>answered question</i>					<b>86</b>	
<i>skipped question</i>					<b>1</b>	

Table 12b: Pearson’s Chi Square Test of Unit Type and Length of Stay

	<b>Critical Care</b>	<b>Acute Care</b>	<b>Marginal Row Totals</b>
<b>Increase</b>	22 (19.66) [0.28]	12 (14.34) [0.38]	34
<b>Decrease</b>	15 (17.34) [0.32]	15 (12.66) [0.43]	30
<b>Marginal Column Totals</b>	37	27	64 (Grand Total)

The Chi-square statistic is 1.4132. The P value is 0.23453. This result is not significant at  $p < 0.05$ .

Table 13a: Cross Tabulation of Unit Type and Documentation

Are you able to document CIWA-Ar in a timely fashion (within 1 hour of assessment)?						
Answer Options	What type of unit do you work on?			Critical Care %	Acute Care %	Other %
	Critical care	Acute care	Other			
Yes	40	29	0	45.45%	32.95%	0.00%
No	8	10	1	9.09%	11.36%	1.14%
<i>answered question</i>					<b>85</b>	
<i>skipped question</i>					<b>2</b>	

Table 13b: Pearson’s Chi Square Test of Unit Type and Documentation

	<b>Critical Care</b>	<b>Acute Care</b>	<b>Marginal Row Totals</b>
<b>Yes</b>	40 (38.07) [0.1]	29 (30.93) [0.12]	69
<b>No</b>	8 (9.93) [0.38]	10 (8.07) [0.46]	18
<b>Marginal Column Totals</b>	48	39	87 (Grand Total)

The Chi-square statistic is 1.0561. The P value is 0.304103. This result is not significant at  $p < 0.05$ .

Table 14a: Cross Tabulation of Unit Type and Perceived Impact

Has the CIWA-Ar protocol positively or negatively impacted your care of alcohol withdrawal patients?						
Answer Options	What type of unit do you work on?			Critical Care %	Acute Care %	Other %
	Critical care	Acute care	Other			
Positive impact	29	28	0	32.22%	31.11%	0.00%
Negative impact	6	3	1	6.67%	3.33%	1.11%
No impact	14	9	0	15.56%	10%	0.00%
<i>answered question</i>						<b>87</b>
<i>skipped question</i>						<b>0</b>

Table 14b: Pearson’s Chi Square Test of Unit Type and Perceived Impact

	Acute Care	Critical Care	Marginal Row Totals
<b>Negative Impact</b>	3 (4.23) [0.36]	6 (4.77) [0.32]	9
<b>Positive Impact</b>	28 (26.77) [0.06]	29 (30.23) [0.05]	57
<b>Marginal Column Totals</b>	31	35	66 (Grand Total)

The Chi-square statistic is 0.778. The P value is 0.37776. This result is not significant at  $p < 0.05$ .

Table 15a: Comparison of MDs and RNs Perceived Impact

Has the CIWA-Ar protocol positively or negatively impacted your care of alcohol withdrawal patients?				
Answer Options	What is your job title?		Response Percent	Response Count
	MD	RN		
Positive impact	2	54	65.1%	56
Negative impact	2	7	10.5%	9
No impact	1	20	24.4%	21
<i>answered question</i>				<b>86</b>
<i>skipped question</i>				<b>0</b>

Table 15b: Pearson’s Chi Square Test of MDs and RNs Perceived Impact

	MDs	RNs	Row Totals
<b>Positive Impact</b>	2 (3.26) [0.48]	54 (52.74) [0.03]	56
<b>Negative Impact</b>	2 (0.52) [4.17]	7 (8.48) [0.26]	9
<b>No Impact</b>	1 (1.22) [0.04]	20 (19.78) [0.00]	21
<b>Column Totals</b>	5	81	<b>86 (Grand Total)</b>

The chi-square statistic is 4.9817. The p-value is .08284. The result is not significant at  $p < .05$ .

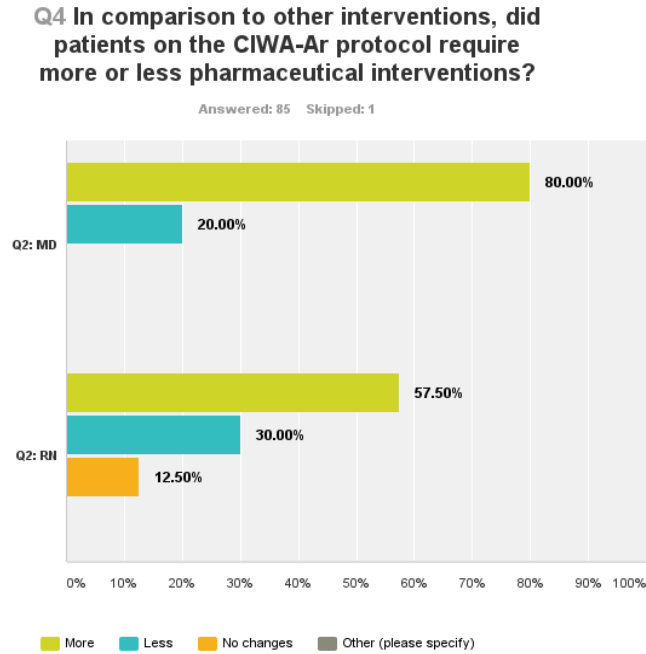
Table 16: Registered Nurses

	CRITICAL CARE	ACUTE CARE	LONG-TERM CARE	OTHER	TOTAL
<b>RNS</b>	54.32%	45.68%	0.00%	0.00%	100.00%
<b>TOTAL RESPONDENTS</b>	44	37	0	0	81

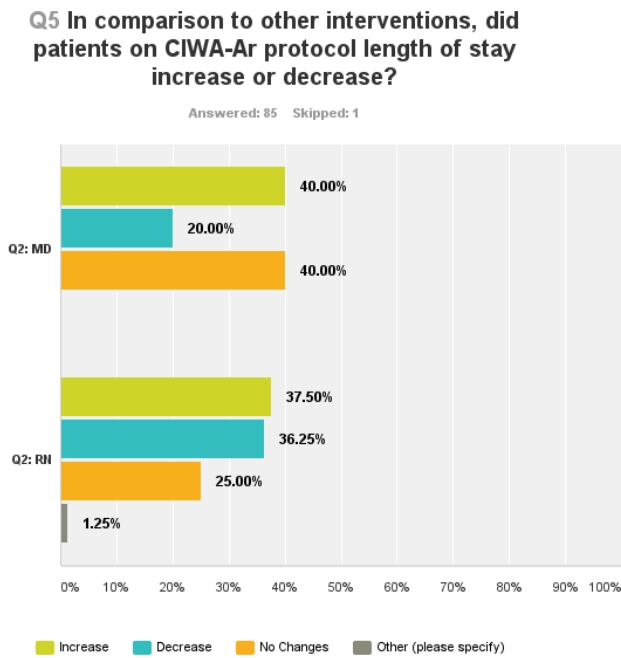
Table 17: Medical Doctors

	CRITICAL CARE	ACUTE CARE	LONG-TERM CARE	OTHER	TOTAL
<b>MDS</b>	80.00%	20.00%	0.00%	0.00%	100.00%
<b>TOTAL RESPONDENTS</b>	4	1	0	0	5

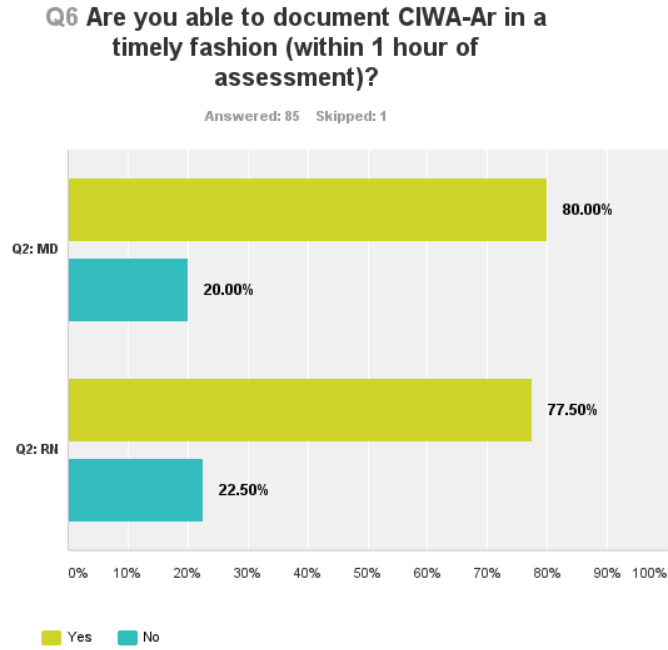
Graph 1: Comparison of MDs and RNs Pharmaceutical Interventions



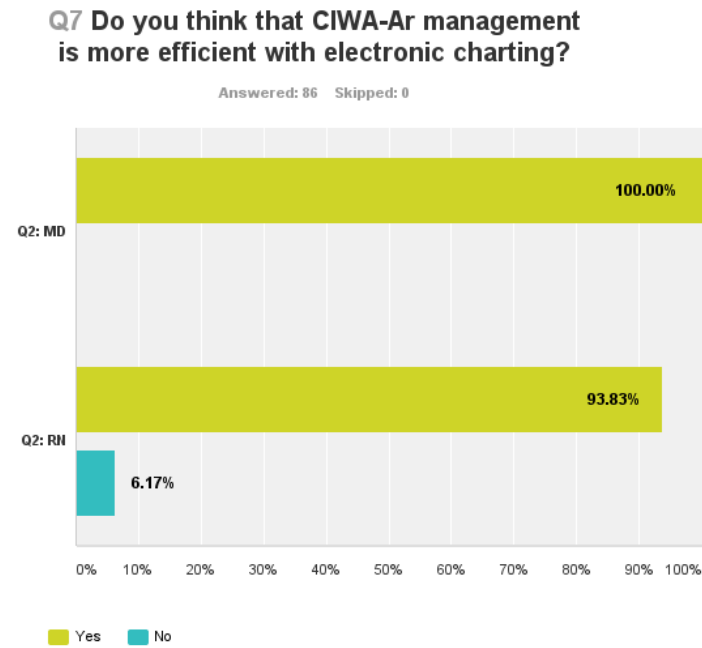
Graph 2: Comparison of MDs and RNs Length of Stay



Graph 3: Comparison of MDs and RNs Documentation

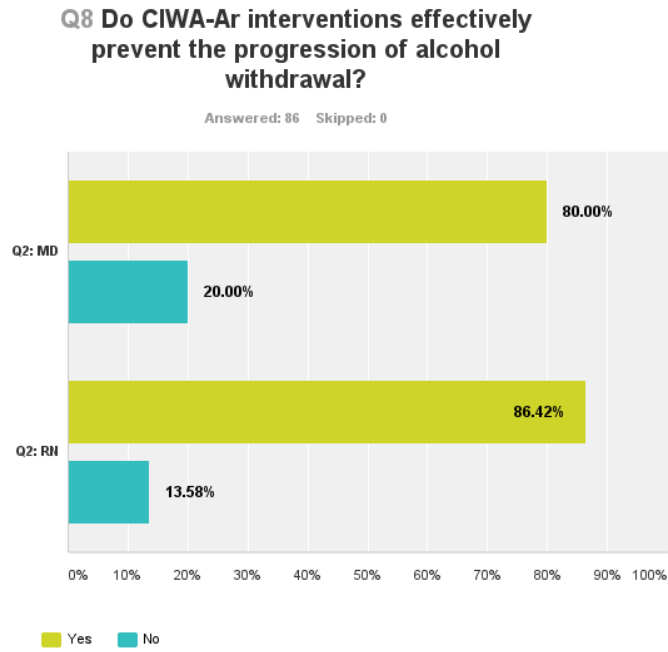


Graph 4: Comparison of MDs and RNs Management with Electronic Charting

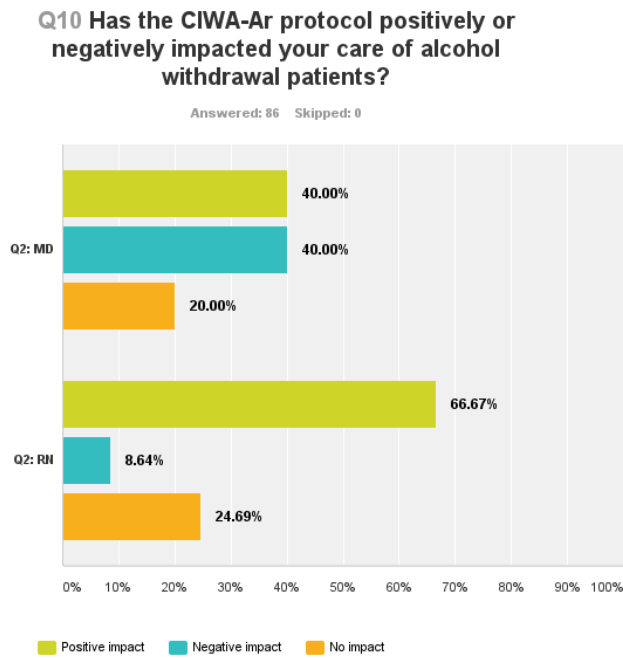




Graph 5: Comparison of MDs and RNs Perception of Effectiveness



Graph 6: Comparison of MDs and RNs Perceived Impact of CIWA-Ar



### **Analysis and Discussion**

In the survey questionnaire, 54% of the respondents worked in a critical care unit, 44% of the respondents worked in an acute care unit, and 1% of the respondents selected “other” (Table 1). In Table 2, 81 of the respondents were registered nurses, 5 of the respondents were medical doctors, none of the respondents were licensed practical nurses, and 1 of the respondents did not answer. In Table 3, respondents entered anywhere from 2 to 50 patients that they have cared for with AWS. The majority was thirty-two percent of the participants provided care for six to ten patients with AWS in the past year. In Table 4, 57.47% of participants selected that they have to give more pharmaceutical treatments while their patients are on CIWA-Ar protocol. Whereas, 28.74% respondents selected less, 12.64% respondents selected no changes, and 1.15% respondents selected other. In Table 5, 36.78% of respondents selected that their patients’ length of stay increased while on CIWA-Ar, 34.48% respondents selected a decrease, 26.44% respondents selected no changes, and 2.30% of respondents did not respond. In Table 6, 75.86% of respondents selected that they are able to document the CIWA-Ar template within one hour, 21.84% selected that they are not able to document, and 2.30% of respondents did not answer. In Table 7, 94.25% of respondents selected that they think CIWA-Ar management is more efficient with electronic charting and 5.75% of respondents selected no. In Table 8, 86.21% of respondents selected that they think that CIWA-Ar interventions effectively prevent the progression of AWS and 13.79% of respondents selected no. In Table 9, 97.70% of respondents selected that CIWA-Ar is the most sensitive tool that they have used for patients experiencing AWS and only 2.30% of respondents selected that it is not the most sensitive tool. In Table 10, 64.37% of

respondents selected that CIWA-Ar has had a positive impact on the care that they provided for patients with AWS, 10.34% selected that CIWA-Ar has had a negative impact on the care that they provided for patients with AWS, and 25.29% selected that CIWA-Ar has had no impact on the care that they provided for patients with AWS.

### **Cross Tabulations and Pearson's Chi Square Tests**

The Pearson's Chi-Square test was chosen to determine if there was a statistical relationship between pairs of selected survey variables at the 0.05 level of significance. This test is often utilized to assess whether unpaired observations on two variables, expressed in a contingency table, are independent of each other. At the 0.05 significance level, none of the aforementioned variables were deemed to be significant of one another. Likely reasons for this are: (1) The sample size was small in comparison to the number of MDs and nurses that work at the facility (2) The time allotted may not have been enough to get a larger amount of participants (3) Each respondent has cared for a wide range of patients with AWS (4) Some of the respondents skipped answering the survey in its entirety (5) In some of the questions, the answers allowed for multiple selections. Some ways to address these issues are by: focusing solely on doctors or nurses in a specific unit type; eradicating some of the answer choices so that there is a smaller chance of variance; allowing for more time and sending more emails for greater participation; utilizing a statistical test for smaller sample sizes.

## **Chapter 5 – Conclusion and Recommendations**

### **Summary of Findings**

The data collected had interesting results. Percentage wise majority of the healthcare professionals selected that patients with AWS required more pharmaceutical interventions and had a longer length of stay. However, majority of the healthcare professionals selected that: they were able to document the CIWA-Ar interventions within one hour; CIWA-Ar was more efficient with electronic charting; CIWA-Ar was the most sensitive tool they utilized for patients with AWS; and that utilizing CIWA-Ar positively impacted the care that they provided for patients with AWS. Statistically shown, these variables were independent of one another and there was not a correlation. Nevertheless, there was a small sample size and a greater sample may have yielded different results.

### **Implications of Study**

As aforementioned, the research question is: What impact does the Clinical Institute Withdrawal Assessment for Alcohol scale-revised (CIWA-Ar) have on care provided by healthcare professionals? The survey questionnaire was able to provide a spectrum of variables that can impact care provided while using the CIWA-Ar protocol. Healthcare professionals can benefit from this by developing strategic plans within their units and departments to increase the positive impact.

### **Recommendations**

Some of the participants in their answers expressed in the optional explanations that they had better results when patients received a scheduled and ordered amount of liquor instead of benzodiazepines to decrease the progression of AWS. Perhaps this could

further be looked into in order to integrate into CIWA-AR treatment and provide a more effective management for patients. The research also brings up the question if healthcare professionals were less inclined to comply with the CIWA-Ar protocol if they felt as if using this tool had a negative impact on the care that they provided for their patients. In addition, since MDs and RNs utilize the CIWA-Ar tool differently then further research should look at these two groups independently.

Alcohol dependence and abuse is not only a problem nationwide, but also worldwide. Individuals that voluntarily or involuntarily wish to stop their alcohol intake must proceed cautiously, because they have a chance of developing AWS. AWS symptoms can be mild or life threatening. A symptom based management tool known as CIWA-Ar has been implemented in a lot of healthcare facilities. It is important to determine if this is the best route of assessment and treatment for a substance that is abused so often. With proper research and analysis, the safest and best approach can be determined.

APPENDIX A: SWOT ANALYSIS

Potential Future Research Topic: I am interested in researching the effectiveness of the clinical institute withdrawal assessment for alcohol scale (CIWA-Ar) protocol used to prevent alcohol withdrawal in patients admitted to the hospital I work at. The CIWA-Ar protocol has a set of ordered guidelines and medical interventions that the healthcare providers use that is established by a scale that scores the patient based upon the physiological alcohol withdrawal symptoms that he/she displays.

.....

<p><b>MY STRENGTHS IN THIS RESEARCH</b></p> <p>I have strong critical thinking, writing, organizational, and computer skills.          I have professional firsthand knowledge and experience of implementation and evaluation of CIWA-Ar protocol.          I already have computer access to patient records (upon approval of facility).          I can utilize a database system and data extracts to condense the information and choose the significant data of my research, such as, gender, amount of alcohol intake, length of alcohol consumption, previous incidents of alcohol withdrawal, etc.          I have access to the overseers of the CIWA-Ar protocol at my facility.</p>	<p><b>MY WEAKNESSES IN THIS RESEARCH</b></p> <p>I have not previously performed a research project of this capacity.          I have my own bias of the CIWA-Ar protocol.          There may not be enough time to collect all of the data that I need if I do not receive approval from the facility and IRB in a timely fashion. In order to mitigate this weakness, I plan to determine if there is a previous census that has kept track of the number of incidences that used the CIWA-Ar protocol.</p>
<p><b>MY OPPORTUNITIES IN THIS RESEARCH</b></p> <p>I will gain research experience and learn the process of performing a research project.          I work at a facility that utilizes the CIWA-Ar protocol.          This research will help determine the benefits and challenges of the CIWA-Ar protocol.          If beneficial, the CIWA-Ar protocol will greatly reduce incidents of alcohol withdrawal which decreases incidents of complications during hospitalization, longer hospital stay, and greater expenses. If it is not, then other interventions should be looked at to reduce alcohol withdrawal.</p>	<p><b>MY THREATS IN THIS RESEARCH</b></p> <p>I will require research approval from my facility. I will keep in mind HIPAA and use de-identification and other redaction processes to protect sensitive information.          I will require research approval from IRB.          Not all of the physician residents use the CIWA-Ar protocol order set and sometimes write their own orders, which decreases uniformity.          I am unsure of the amount of incidences that the CIWA-Ar protocol was necessary, so there may not be enough data available.          Patient’s full disclosure in the amount of alcohol intake can delay implementation of CIWA-Ar protocol, which can affect the effectiveness.</p>
<p>Notes: I am interested in the rates of alcohol withdrawal seen in facilities that supply patients with an ordered amount of alcohol in comparison of those that implement the CIWA-Ar protocol, however, at this time I think that it is more feasible and accessible to look at the effectiveness of CIWA-Ar protocol in the facility I work at. However, I will take it into consideration as my research progresses.</p>	

Figure 1: Literature Review Search

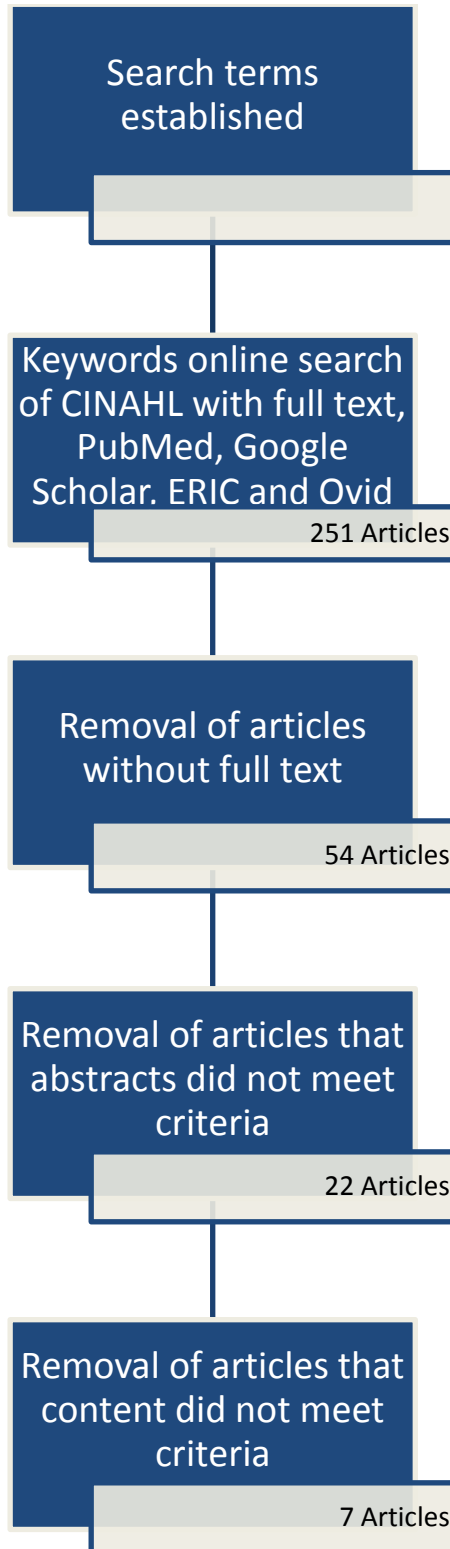


Figure 2: CIWA-Ar Flowsheet Template

Title: CIWA FLOWSHEET

Date/Time: |  ...

Temperature: \*

Pulse: \*

RR: \*

O2Sat: \*

BP: \*

---

Nausea/vomiting: \*

Tremors: \*

Anxiety: \*

Agitation: \*

Paroxysmal Sweats: \*

Orientation: \*

Tactile Disturbances: \*

Auditory Disturbances: \*

Visual Disturbances: \*

Headache: \*

---

TOTAL CIWA-AR SCORE: (\*0 )

(Scale for Scoring: 0-9: absent/minimal withdrawal  
10-19: mild to moderate withdrawal  
more than 20: Severe withdrawal)

\* Indicates a Required Field    Preview    OK    Cancel



Figure 3: Alcohol Admission Assessment

Template: Habits

-----  
**HABITS:**

**ALCOHOL ASSESSMENT (AUDIT-C)**

AUDIT-C: Mandatory on all patient admissions!  
 Read questions as written. Record answers carefully. Begin the AUDIT by saying "Now I am going to ask you some questions about your use of alcoholic beverages during this past year." Explain what is meant by "alcoholic beverages" by using local examples of beer, wine, vodka, etc. Code answers in terms of "standard drinks". Place the correct answer number in the box at the right.

1. How often did you have a drink containing alcohol in the past year?

2. How many drinks containing alcohol did you have on a typical day when you were drinking in the past year?

3. How often did you have six or more drinks on one occasion in the past year?

Total Score: \*0  which is \*  N/A  (0) Never  (1) Less than monthly  (2) Monthly  (3) Weekly  (4) Daily or almost daily  Yes  No

(Women are positive for unhealthy alcohol use w...  
 positive for unhealthy alcohol use w...  
 Does the patient desire treatment/re...  
 (If yes, order consult)

-----  
 A score of 4 or greater indicates high risk for withdrawal syndrome.  
 Follow up with CIWA-Ar scale is REQUIRED. Inform provider of  
 Audit C and CIWA-Ar scores.

**CIWA-Ar Scale**

-----  
 Nausea/vomiting: \*

Tremors: \*

Anxiety: \*

Agitation: \*

Paroxysmal Sweats: \*

Orientation: \*

Tactile Disturbances: \*

Auditory Disturbances: \*

Visual Disturbances: \*

Headache: \*

-----  
 TOTAL CIWA-AR SCORE: (\*0 )  
 (Scale for Scoring: 0-9: absent/minimal withdrawal  
 10-19: mild to moderate withdrawal  
 more than 20: Severe withdrawal)

**DRUG ASSESSMENT:**

-----

All None \* Indicates a Required Field Preview OK Cancel

Figure 4: CIWA-Ar Automated Order Set

Active Orders (includes Pending & Recent Activity) - ALL SERVICES	
Service	Order
Nursing	>> <b>VITAL SIGNS:</b> -Document CIWA-Ar flow sheet q4hrs. -Reassess patient 1hr after each dose of Ativan. -I/O and document <b>CALL PHYSICIAN IF:</b> -CIWA-Ar score >20 despite treatment. -Respiratory rate <10. -SpO2 <92%. -Systolic BP >180 or <70. -Diastolic >100. -Heart rate <50 or >100. -Urine output <250ml/shift. *UNSIGNED*
Lab	BMP+ALBUMIN GRN/YEL PLASMA WC ONCE *UNSIGNED*
	CBC WITH DIFFERENTIAL BLOOD WC ONCE *UNSIGNED*
	VITAMIN B12 GRN/YEL PLASMA WC ONCE *UNSIGNED*
	AMMONIA GRN/YEL-ICE PLASMA WC *UNSIGNED*
	FOLATE GRN/YEL PLASMA WC ONCE *UNSIGNED*
	MAGNESIUM GRN/YEL PLASMA WC ONCE *UNSIGNED*
	PT&INR BLOOD PLASMA WC ONCE *UNSIGNED*
	PO4 GRN/YEL PLASMA WC *UNSIGNED*
	ETHANOL BLOOD SERUM WC ONCE *UNSIGNED*
	AST (SGOT) GRN/YEL PLASMA WC ONCE *UNSIGNED*
	ALT (SGPT) GRN/YEL PLASMA WC ONCE *UNSIGNED*
	GGT GRN/YEL PLASMA WC ONCE *UNSIGNED*
	DRUG ABUSE SURVEY (LR) URINE WC ONCE *UNSIGNED*
Out. Meds	THIAMINE INJECTION INJ.SOLN 100MG IV DAILY FOR 3 DAYS (Administer BEFORE any IV fluids with GLUCOSE). *UNSIGNED*
Nursing	>> CIWA SCORES FOR LORAZEPAM CIWA Scores for Med Administration: **8 or less give no meds. Repeat VS/CIWA q4hrs. **9-15 give 2mg q2hr iv. Repeat VS/CIWA q2hrs until score is less than 9. **Greater than 15 or DBP greater than 110 give 2mg iv q1hr until score less than 15 or DBP less than 110. Repeat VS/CIWA q2hrs **Call MD if pt. requires more than 6mg in 3 hrs. **If CIWA score less than 8 for 3 consecutive 8 hr increments, DC the CIWA protocol. *UNSIGNED*
Out. Meds	LORAZEPAM INJ 2MG/1ML IV Q2H PRN If CIWA Score 9-15. *UNSIGNED*
	LORAZEPAM INJ 2MG/1ML IV Q1H PRN CIWA>15 or diastolic BP >110. *UNSIGNED*

Figure 5: Research Email

Hello VA colleagues,

My name is LaRonda Tinsley and I am currently enrolled in the University of Tennessee Health Science Center Health Informatics and Information Management Master's program. As a course requirement to obtain my degree, I must conduct a research project. I am interested in learning the impact that the Clinical Institute Withdrawal Assessment of Alcohol Scale-revised (CIWA-Ar) has on care provided by healthcare professionals. I have created a survey questionnaire that can be found at:

<https://www.surveymonkey.com/r/V8TZXQ5>. The survey is anonymous and is composed of 10 quick questions. If you have time, please fill it out by October 10, 2015. If you have any questions please feel free to contact me at: [larondatinsley@gmail.com](mailto:larondatinsley@gmail.com) or [laronda.tinsley@va.gov](mailto:laronda.tinsley@va.gov).

Thank you,

LaRonda Tinsley, BSN, RN

SICU

Ext. 74650



**Chart 1: Comparison of Reviewed Studies**

Authors of Study	Population	Pharmacological Treatments Used	Preventative Measures	Results
Awissi, Lebrun, Coursin, Riker, et. al (2012)	ICU adult patients diagnosed with AWS	Benzodiazepines Ethanol infusion Haloperidol	CAGE questionnaire Short Michigan Alcohol Screening test CIWA-Ar Protocol	Critically ill trauma patients developing AWS have a longer duration of mechanical ventilation and ICU stay, more frequent pneumonia, urinary tract infections, sepsis, and septic shock, and higher Mortality.
Fullwood, Mostaghimi, Granger, et. al (2013)	57 adult patients with myocardial infarction	Lorazepam Ethanol infusion	CAGE questionnaire	Safety-associated complication rates did not differ between groups. Days spent in the cardiac intensive care unit and overall hospital stay did not differ between the 2 groups.
Murdoch & Marsden (2014)	50 adult inpatients diagnosed with AWS	Chlordiazepoxide	Pre-intervention audit CIWA-Ar	Patients required significantly less chlordiazepoxide to manage AWS and not one person from the sample group developed severe signs of withdrawal. It is deduced that this is due to the patients being assessed more frequently with a validated individualized assessment tool, in conjunction with staff having an increased knowledge of the withdrawal process.
Muzyk, Fowler, Norwood, et al. (2011)	Adult inpatients diagnosed with AWS	Clonidine Dexmedetomidine Placebo	None	Data from randomized, double-blind studies support the efficacy of oral and transdermal clonidine in reducing symptoms of alcohol withdrawal related to sympathetic overdrive in patients with mild-to-moderate alcohol withdrawal. However, the ability of clonidine monotherapy to prevent alcohol withdrawal seizures or alcohol withdrawal delirium has not been demonstrated. Dexmedetomidine successfully

				controlled psychomimetic and sympathetic symptoms of withdrawal, an effect that was seen almost immediately following initiation of this medication.
Prince & Turpin (2008)	Adult inpatients diagnosed with AWS	Carbamazepine Gabapentin Nitrous oxide	None	Carbamazepine, gabapentin, and nitrous oxide have been investigated for the treatment of alcohol withdrawal syndrome. Because of limitations in evidence accrued so far, the routine use of carbamazepine and gabapentin cannot be recommended, and nitrous oxide should be avoided for this indication.
Sohraby, Attridge, & Hughes (2014)	Total of 64 mechanically ventilated adult patients (18 and older) with ICD- 9 codes of AWS 97% males with mean age of 45	Propofol Benzodiazepines	CIWA-Ar protocol implemented	Patients receiving propofol-containing regimens experienced 8 days of AWS symptoms compared with patients in the benzodiazepine monotherapy group, who experienced 7 days of AWS symptoms. Hospital and ICU lengths of stay were similar between groups. No significant difference was noted between groups in days of required mechanical ventilation.
Taheri, Dahri, Chan, et al. (2014)	Total of 99 individuals 70 and older admitted to the Acute Care for Elders and Acute Medicine Unit wards with diagnostic codes for AWS	Benzodiazepines	CIWA-Ar protocol implemented	A symptom-triggered protocol for dosing of benzodiazepine therapy in the management of AWS in adults aged 70 and older significantly reduced the total duration of benzodiazepine use, cumulative benzodiazepine dose, incidence of severe AWS complications, and use of adjunctive medications in the treatment of AWS.

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