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Assessment of Alcohol Withdrawal Syndrome Incidence and Identification of Other Correlating Risk Factors in Patients Admitted Through the Emergency Department

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DNP Final Project Report

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Risk Factors in Patients Admitted Through the Emergency Department

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Dedication

This work, all previous work, and my DNP project is dedicated to my three beautiful daughters, Layla, Zoe, and Riley, who have inspired me to continue on this journey no matter what. As well as my family, and friends, who have been there by my side, and pushed me through, and held me up as I have progressed through this last three years of strenuous work. Finally to all of my work family who have provided me with support, and help in so many ways to make this dream come true.

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Abstract

PURPOSE: The purpose of this project was to measure adherence rates to the current

alcohol use screening process, and identification of correlations of alcohol use and

outcomes in patients admitted to Norton Hospital, via the emergency department.

METHODS: The study design is a retrospective descriptive evaluation, of adherence to

the current alcohol use screening process, and associations among age, gender, ethnicity,

length of stay, number of ICU days, restraint use days, level of care at admission (ICU,

TCU, LLM/tele, MS), incidence of AWS/DTs, and activation of the CIWA protocol

among the adult inpatient population of Norton Hospital's downtown campus, admitted

via the emergency department (ED), for greater than 24 hours, between April 2016 and

April 2017. The sample consisted of 300 randomly selected patient charts, using the

inclusion criteria.

RESULTS: It was found that overall screening adherence for alcohol use on patients

admitted from the emergency room was nearly 100%. Among the study population

26.3% screened positive, 4.3% had the specific diagnosis of alcohol withdrawal

syndrome, 4.7% were treated with CIWA protocol. Those who screened positive were

more likely to be male, with a mean age of 49.8 years. No statistical differences in

ethnicity, level of care at admission, restraint use, mortality, number of ICU days, and

length of stay were found within the study sample population, between those who

screened positive or negative for alcohol use at admission.

CONCLUSION: Further research needs to be done to better understand associations

between alcohol use screening and ethnicity, level of care at admission, restraint use,

length of stay, number of ICU days and mortality in the overall population at Norton

Hospital's downtown campus. Retrospective review revealed that there was a high level

of adherence to the alcohol use screening process by the health care staff. The screening

process for alcohol use at admission is well documented within those admitted via the

emergency department.

Assessment of Alcohol Withdrawal Syndrome Incidence and Identification of Other Correlating

Risk Factors in Patients Admitted Through the Emergency Department

Introduction

With alcohol and substance abuse problems continuing to rise rapidly throughout our

nation, we are in need of a way to ensure proper identification and treatment of alcohol

withdrawal syndrome in persons who present to the emergency department, and undergo an

abrupt cessation of alcohol consumption due to an acute illness, and hospitalization.   This study

is designed to determine if there was adherence to an established alcohol use screening process

during the time frame, ensuring that those who are at risk for the development of alcohol

withdrawal syndrome are being treated with the Clinical Institute Withdrawal Assessment

(CIWA) protocol, and to determine correlating risk factors and demographics. This study was

designed with alignment of Neuman's Systems Model nursing theory. Treating the patient as a

fluid and dynamic being responding to their own personal environment leading to sickness and

establishing health, using primary, secondary and tertiary care interventions. Focusing on the

patient as a whole, with multidimensional, layers of well-being: physiological, physiochemical,

psychological, sociocultural and spiritual (Petiprin, 2016).

Background

As the problem with alcohol abuse and other substances continues to grow exponentially

throughout our nation, and in particular in the state of Kentucky, we have seen a steady rise of

alcohol withdrawal syndrome (AWS) incidence within the general hospital inpatient population.

Approximately 9% of the adults in the United States meet the criteria for alcohol abuse (Burns,

2015). Within the general inpatient population alcohol withdrawal syndrome (AWS) can present

in nearly 30% of patients; if left untreated AWS has a 15% mortality rate (Ungur, Neuner, John,

Wernecke, & Spies, 2013). With early recognition and treatment, however, that mortality rate

falls dramatically to 2% (Ungur et al., 2013).

At the downtown campus of the 379 bed Norton Hospital in Louisville, KY, there were

16,768 inpatient admissions in 2015 (*US News Health Care Report*, 2016). Based on the 30%

incidence of AWS in the general inpatient population, this could have left 5,030 patients at risk,

or 113 patients on any given day for the development of alcohol related complications that year.

By ensuring that patients are screened for alcohol use at the time of hospital admission, a

primary healthcare intervention, we have the opportunity to identify patients at risk for AWS so

that timely prevention and/or treatment, a secondary healthcare intervention, can occur.

The abrupt cessation of alcohol intake by alcohol dependent patients puts them at risk for

withdrawal, and a variety of complications. These include development of AWS, post-operative

complications and infections, increased length of stay and death (Bard et al., 2006). All of which

can upset the balance of the wellness continuum described by Neuman's Systems Model. This

can also cause problems for the hospital itself. For example the staff can be at risk of burnout,

due to stress from caring for confused and combative patients; also it can be difficult to

determine whether a patient's confusion is due to AWS or another diagnosis, leading to

increased costs and unnecessary testing (Ungar et al., 2013). In addition, the hospital is at risk

for increased post-operative complication rates, increased length of stay, and increased mortality,

all of which lead to increased costs, and decreased patient and provider satisfaction (Ungar et al.,

2013). In 2016 alone, healthcare costs related to alcohol induced complications in the United

States amounted to $21 billion (Trevejo-Nunez, Kolls, & De Wit, 2016).

Currently, the screening tool for alcohol use at Norton Hospital is a yes or no question

asked during the admission assessment within the admission navigator in the electronic medical

record system EPIC. This important screening tool is not linked to prompt the provider to

initiate treatment if the patient screens positive. The current standard of care treatment for AWS

at Norton Hospital is utilized with the Clinical Institute Withdrawal Assessment (CIWA). This

protocol is a thorough nursing assessment done by the bedside nurse, using severity of ten

symptoms of withdrawal, each tied to a number based upon level of severity. These ten numbers

are then added together for an overall composite score. The composite score is then referenced

for the appropriate treatment and frequency of reassessment (Appendix B).   If the alcohol use

screening is left undocumented it leaves potentially hundreds of patients at risk for untreated

AWS, and preventable healthcare dollars wasted.

The evidence shows that treatment preventing AWS at the earliest possible juncture, with

a protocol for symptom triggered management such as the CIWA protocol, produces the best

outcomes (Rubinsky et al., 2013; Melson, Kane, Mooney & McWilliams, 2014). These outcomes

include a decrease in the development of AWS and Delirium Tremens (DTs), as well as

decreases in use of restraints, a need for intensive care unit level of care, length of stay, risk of

infections (sepsis, pneumonia, and surgical site), and complications from organ dysfunction

(Melson, et al., 2014; Ungur, et al., 2013).

By screening all patients for alcohol use at admission via the emergency department,

(where a large portion of the inpatient admissions occur at Norton Hospital's downtown

campus), and ensuring adherence to the documentation of the current method in the admission

navigator under alcohol use screening, we can capture a larger percentage of patients who will

qualify for treatment, and monitor for complications of AWS. In turn reducing alcohol use

related complications and improvement of outcomes such as length of stay, utilization of higher

levels of care, use of restraints, and mortality. As improvement in these things can reduce health care cost and increase patient satisfaction.

Purpose

The purpose of this project was to measure adherence rates to the current alcohol use screening process and identify outcomes (length of hospital stay, number of ICU days, restraint use, level of care at admission, and mortality), of patients admitted to Norton Hospital. The adherence to the current alcohol screening process was reviewed via retrospective chart review. The specific aims of this project were:

1. Measure adherence rate to the current alcohol use screening process, on all adults (those greater than 18 years of age), admitted as inpatients from the emergency department (ED), for greater than 24 hours between April 2016 and April 2017.

2. Identify subject demographics (medical record number, age, ethnicity, and gender), length of stay, number of ICU days, restraint use days, mortality, level of care at admission (ICU, Telemetry Care [TCU], Monitored Medical-Surgical [LLM/tele] or Non-monitored medical surgical [MS]), incidence of AWS/DTs, and activation of the CIWA protocol in all adult patients admitted through the ED, for greater than 24 hours between April 2016 and April 2017.

3. Perform in-group comparisons of subject demographics (age, ethnicity, gender), length of stay, number of ICU days, restraint use days, mortality, level of care at admission (ICU, TCU, LLM/tele, or MS), incidence of AWS/DTs, and activation of the CIWA protocol, among adult patients who screened positive for alcohol use, patients who screened negative for alcohol

use, and those patients who were not screened for alcohol use upon admission from the ED for greater than 24 hours, between April 2016 and April 2017.

Methods

This study was a single-center, retrospective, descriptive evaluation of adherence to the current alcohol use screening process, and the associations between age, gender, ethnicity, length of stay, number of ICU days, mortality, level of care at admission, incidence of AWS/DTs, and the activation of the CIWA protocol, among the adult inpatient population of Norton Hospital downtown campus, admitted via the ED.

Setting

Norton Hospital is one of five main hospitals of the Norton Healthcare System, and is the focus of this study. Norton Hospital's downtown campus is a general medical surgical hospital, with 379 inpatient beds, located in the urban, downtown area of Louisville, KY (*US News Health Report,* 2016). It serves a large population from Jefferson County and many of the outlying, rural areas. This site was selected for use in this study as it provides care to a wide range of patients, and has a highly utilized emergency room, from which the patients were selected.

Sample

The primary population for this study consisted of adult inpatients admitted through the ED for greater than 24 hours between April 2016 and April 2017 at Norton Hospital's downtown campus. From this primary population, 300 patients were randomly selected for the study.

To meet inclusion criteria for this study, subjects had to be adults, aged greater than 18 years and, admitted as inpatients via the ED, for greater than 24 hours to Norton Hospital's downtown campus between April 2016 and April 2017.

Because AWS/DTs occur mostly in the adult population, minors were excluded, from this study.

Data Collection

Prior to the collection of data, approval was obtained from the University of Kentucky Institutional Review Board (IRB) and the Norton Healthcare Office of Research and Administration (NHORA). This study was conducted as a retrospective chart review. The research office of Norton Healthcare randomly selected patient charts for the study from the Norton Hospital electronic patient database and sent to the primary investigator. During data collection, the patient charts were accessed using the patient medical record number, data for the study were collected, and transferred to an electronic spreadsheet, made by this primary investigator, using the patients de-identified unique study ID, and the demographic and outcome variables requested to be collected. The following demographic variables (age, ethnicity, and gender), and outcome variables (length of stay, number of ICU days, restraint use, restraint use days, mortality, incidence of AWS/DTs, level of care at admission, activation of the CIWA protocol, and alcohol use screening documentation) were reviewed.

Data Analysis

Descriptive statistics, including means, standard deviations, ranges, medians, and percentages were used to describe the patient demographic and outcome variables. Only one individual was not screened for alcohol use, therefore group comparisons of study variables were based on those who screened positive versus negative for alcohol use. Continuous variables were compared between those who screened positive, and those that screened negative for alcohol use, using the independent sample t-tests. For categorical variables the chi-squared test of association, or the Fisher's exact test was used. The Mann-Whitney U-test was used to

compare groups on length of hospital stay, and number of ICU days outcomes, since the distributions were skewed. All statistical analysis was done using SPSS version 24 and an alpha level of .05 was used for statistical significance throughout.

Results

Sample Characteristics

For this study, 300 charts were reviewed from randomly selected patients' charts meeting the inclusion criteria. The mean age for the collective sample was 55.9 years old (SD=17.3), and over half (59.7%; see Table 1) were female. The majority of the population was Caucasian (55.3%), followed by African-American (43.3%). The largest portion of admissions went to a TCU level of care (35.3%) and MS (35.3%), followed by ICU (16.7%). The use of restraints among the sample was low (5.3%). The median length of hospital stay in days was 5 days, (1-214 days). Among the 50 patients who were identified as having been in the ICU the median number of days in ICU was 3 days (1-32). Mortality was high (16.0%) among the sample population. Only 1 patient was identified as not being screened for alcohol use (eliminating it as a group for comparison within the study), a majority of the sample was screened negative for alcohol use (73.3%), followed by those who screened positive for alcohol use (26.3%).

Alcohol Use Screening Adherence

For the collective study sample the adherence rate to the alcohol use screening documentation was high, at 99.7%; finding that only one patient was not screened at admission. Approximately one quarter (26.3%) of screened patients yielded a positive result.

Patient Demographics

The patient demographics collected during this study were age, ethnicity, and gender. There were no statistical differences found in ethnicity, or age, between those who screened positive and those who screened negative for alcohol use.

For gender, it was broken into male and female. For the overall study population the majority of patients were female (59.7%). For those who screened positive for alcohol use approximately a third were male (33.9%). There was statistical significance (p=.016) that males were more likely to screen positive for alcohol use, as was concurrent with the literature.

Correlations to outcomes

The following outcome variables were collected in this study: level of care at admission, length of stay, number of ICU days, use of restraints and length of use, if there was a diagnosis of AWS/DTs, if the CIWA protocol for withdrawal treatment was activated, and mortality. For the overall study population 50 patients (16.7%) were admitted to the ICU, 144 patients (48%) were admitted to the TCU, and 106 patients (35.3%) were admitted to the MS units. For those who screened positive for alcohol use 16 (20.3%) went to the ICU, 29 (36.7%) went to the TCU, and 34 (43%) went to MS units. For those who screened negative for alcohol use 34 (15.5%) went to the ICU, 115 (52.3%) went to the TCU, and 71 (32.3%) went to the MS units. There was no statistically significant difference (p=.113) for the level of care at admission between those who screened positive and those who screened negative for alcohol use.

The median length of stay (LOS) for the study population was five days, with a minimum of one day and the maximum of 214 days. For those who screened positive for alcohol use the median LOS was four days, with a minimum of one day, and a maximum of 61 days. For those that screened negative the median LOS was five days, with a minimum of one day, and a

maximum of 214 days. Using the Mann-Whitney U test it was determined that there was no

significant differences in the two groups (p=.975).

The number of ICU days for the study population was a median of three days, with a

minimum of one day, and a maximum of 32 days. For patients who screened positive for alcohol

use the number of ICU days was a median of two days, with a minimum of one day, and a

maximum of 16 days. For those who screened negative for alcohol use the median number of

ICU days was three days, with a minimum of one day, and a maximum of 32 days. No

statistically significant differences were found between the two groups.

Restraints were used in 16 patients, 5.3% out of the overall study population. Of those

who screened positive for alcohol use there were six patients (7.6%) who were placed in

restraints, for a median of two days. Restraints were used in 10 patients (4.5%), who screened

negative for a median of two days. There was no statistically significant difference in the use of

restraints between the two groups (p=.380).

There were 13 patients (4.3%) with an actual diagnosis of AWS or DTs, all of whom

screened positive for alcohol use, and were treated with the CIWA protocol. Only one patient

who screened negative for alcohol use at admission, was found to actually need treatment for

alcohol withdrawal and was treated with the CIWA protocol within the sample, making a total of

14 patients (4.7%) treated for AWS within the study sample population.

Mortality in the overall study population was shown to be 16.0% (48 patients). Those

who screened positive for alcohol use four patients (5.1%) were deceased at the end of the

hospital admission. For those that screened negative for alcohol use 44 patients (20.0%) were

found to be deceased at the end of hospital admission. There was a significant correlation

(p=.002) between screening negative for alcohol use and mortality, opposite of the current literature.

Discussion

This study sought to determine adherence rates for alcohol use screening documentation on patients admitted to Norton Hospital's downtown campus via the emergency department. In addition it sought to measure subject demographics (age, gender and ethnicity), and measure outcomes including hospital length of stay, number of ICU days, use of restraints and length of use, incidence of AWS/DTs, level of care at admission, incidence of activation of the CIWA protocol, and mortality, among the study population. An in-group comparison between those who screened negative for alcohol use, those who screened positive for alcohol use and, those who were not screened, was done to determine any associations of outcomes to a particular group. The results showed that only one person was not screened for alcohol use making that group obsolete for comparison.

Alcohol Use Screening Documentation Adherence

The rate of adherence to the alcohol use screening documentation within the admission history was 99.7%. There is a selectable response of yes, no, or not asked, in which the nursing staff or care treatment team is able to document. This result is very high, showing consistent adherence, with no need for a performance improvement intervention. Further expansion of the study population to all methods of admission, not just those from the ED, may yield different results, and could be examined in another study. Expansion into the primary care setting as well could help provide insight to the consistency across the entire healthcare continuum and Norton Healthcare system.

Alcohol Withdrawal Syndrome Incidence

With adherence to the alcohol use screening at nearly 100%, the hospital was able to

capture 79 patients (26.3%), within the study population who were at risk for developing

AWS/DTs. This aligns closely with the national average of nearly 30% of the inpatient

population (Ungur et al., 2013). In addition 14 patients (16.3%) were determined to need

treatment for withdrawal symptoms using the CIWA protocol.   This shows that with high

adherence to screening for alcohol use the treatment team is able to use that information to

provide the earliest, and best care using the CIWA protocol when indicated, producing the best

possible outcomes for patients (Rubinsky et al., 2013; Melson, et al., 2014).

Patient Demographics

Those patients in the study sample population who screened positive for alcohol use were

statistically younger at 49.8 years (p< .001), compared to those that screened negative (58.2

years) and the overall population (55.9 years). This seems to be appropriate and expected, as

younger people consume more alcohol, and more regularly, (Burns, 2015).

There was also evidence that males are more likely to screen positive for alcohol use than

females (p= .016), which is consistent with the literature reviewed, that males tend to participate

in riskier behaviors (Ungar, et al., 2013).

No relationship was found between ethnicity and results of the alcohol use screening in

this study (p=.479). All patients who screened positive for alcohol use were either Caucasian

(55.7%) or African-American (44.3%) in this study. As alcohol misuse is found in all people

regardless of ethnicity, this finding aligns with other research (Ungar, et al., 2013).

In conclusion those patients who screened positive for alcohol use in this study were

males of approximately 50 years of age, and nearly equally distributed among ethnicities.

Length of Stay/ICU days

In this study it was surprisingly found that those who screened positive for alcohol use had a shorter length of stay, at four days, compared to five days for those who screened negative. Though not statistically significant, it is clinically significant and this difference may be due in part to the population's method of admission (via the ED), and the patients' other medical conditions and primary diagnoses. Another factor that could have influenced the data was that all 13 patients identified for treatment with the CIWA protocol, screened positive for alcohol use and treated appropriately, potentially decreasing sequelae from withdrawal and potentiating a shorter length of stay. Future studies could examine this more closely.

There was found to be no significant difference between a patients' positive or negative screening for alcohol use and the number of days they spent in the ICU. For those who screened positive there was a median of two ICU days, and for those who screened negative there was a median of three ICU days. This slight difference may be due to patients being treated with the CIWA protocol when withdrawal was identified, to reduce escalation of care or time needed in the ICU. This too could be examined more closely in a future study.

Restraint Use Incidence

Although there was a slightly higher incidence of restraint use in those patients who screened positive for alcohol use (7.6%) compared to, those who screened negative (4.5%), there was no statistically significant difference (p= .550) between the two groups. This could be due to a low incidence of restraint use within the overall group, with only 16 patients (5.3%) having been placed in restraints. Reasoning for placement of restraints could be examined in future studies to determine if it was due to sequelae of withdrawal, such as delirium or agitation.

Mortality

Surprisingly, there was a 16% mortality rate among the overall study population, and an equally shocking finding of a significantly lower mortality rate among those who screened positive for alcohol use compared to the overall population and to those who screened negative for alcohol use (p= .002). Those who screened positive for alcohol use had a 5.1% mortality rate, with only four patients found to be deceased at the end of the hospital admission. Those who screened negative for alcohol use had a 20.0% mortality rate, with 44 patients found to be deceased at the end of the hospital admission. There are several factors that may be skewing the data in this unexpected direction. One factor may be the population itself, as most people admitted to the hospital from the ED often have more life-threatening diagnoses or substantial illnesses, than alcohol use or withdrawal. Another factor that may have skewed the data is the high adherence rate to the alcohol use screening and use of treatment with the CIWA protocol, which could have decreased the severity of sequelae from withdrawal and reduced the incidence of life-threatening complications.

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Limitations

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There were several limitations identified in the design of this study. The first one is the study's population being limited to admissions from the ED. Looking at only the ED could have affected the results of this study in multiple ways, such as the adherence to screening for alcohol use. It is possible that this particular department is more stringent in documenting this portion of the admission history, compared to other departments within the hospital. Mortality and length of stay, including number of ICU days could have been affected by only using admissions from the ED. Many people who are seen, treated, and admitted by way of the ED have significant or life-threatening injuries or medical problems, leading to higher rates of death and length of stay,

compared to other patients. Post-elective surgery patients, for example, have an expected length

of stay and discharge plan. Patients admitted from the ED may not have this.

Another limitation of this study was, using only one of the Norton Healthcare hospitals

that serve this community. Different results may be obtained by using more than one site, as the

other facilities serve patients with some of the same demographics. Future research could

compare between the facilities to ensure that adherence to the screening process for alcohol use

and treatment with the CIWA protocol is similar across the Norton Healthcare system.

Recommendations for Future Studies and Next Steps

The results of this study suggest several opportunities for further research into screening

for alcohol use at admission.   It may be helpful to expand the sample population to all methods

of admission, not just via the ED. This would allow a broader look at the population that Norton

Hospital (downtown campus) serves. This could be taken further to include the other Norton

Healthcare facilities, including the primary and immediate care facilities, to ensure system wide

consistency with documentation for alcohol use as well as treatment with the CIWA protocol for

withdrawal, in the hospital setting. Further investigation of the use of the CIWA protocol could

also include the time frame of alcohol use screening at hospital admission, to the time of

activation of the protocol. This could assist with determining how closely these two variables

are correlated.

As well as determining that screening for alcohol use is not just being done within a

hospital admission, and is being monitored and documented within the primary care arena as

well. Many of the patients seen as inpatients access care outside of the hospital itself. The

records of those patients that seek care within the Norton Healthcare system, either in the

hospital, primary care or immediate care setting, are accessible to any provider that sees them

within the Norton Healthcare system. Allowing ease of follow-up and ability for full review of

all care provided. As screening is a primary healthcare intervention it should also be done prior

to a stressor such as a hospital admission.

A more in depth investigation into some of the variables such as mortality, length of stay,

number of ICU days, and restraint use may be helpful in determining a trend, and/or reasoning

why some of the results of this study were not as expected. For example, why there was lower

mortality within the group that screened positive for alcohol use. This could be done by

collecting data regarding admitting diagnoses and past medical history to determine the co-

morbidity burden. As well as socioeconomic characteristics, that may impact mortality.

There may also be value in expanding this study to include screening for substance abuse

to determine if there are correlations between alcohol use and substance abuse, and if we are

treating this population with the best evidence based care as well. This is especially relevant as

the number of opioid related deaths and complications continue to rise in this area of the country.

Gathering this data as well could give us as healthcare providers a better insight to the full

spectrum of the underlying problems our patients face. To ensure that we are not just treating

one problem such as alcohol withdrawal, when there are other problems that need to be

addressed in addition, such as opioid misuse and withdrawal, that often complicate treatment

plans. This data can also help to determine the extent of the problems in this community and

provide information about the demands of the community, so that we can help those in need, and

find out how the Norton Healthcare system can provide these services.

Conclusion

The aim of this study was to measure adherence rates to the current alcohol use screening

process and identify outcomes of patients admitted to Norton Hospital via the emergency

department. In addition, to identify subject demographics (age, ethnicity, and gender), length of stay, number of ICU days, incidence of restraint use and number of days used, mortality, incidence of AWS/DTs, and activation of the CIWA protocol.

In-group comparisons of subject demographics (age, ethnicity, gender), length of stay, number of ICU days, restraint use days, mortality, level of care at admission (ICU, TCU, LLM/tele, or MS), incidence of AWS/DTs, and activation of the CIWA protocol, among adult patients who screened positive for alcohol use, patients who screened negative for alcohol use, and those patients who were not screened for alcohol use upon admission determined that those who will screen positive for alcohol use are males, with a median age of 49.8 years old. It was also identified that the adherence rate for screening for alcohol use was nearly 100%, within the study's sample population. Surprisingly it was identified that those who screened positive for alcohol use had a lower mortality rate, and should be examined more in depth in the future. As well as a more comprehensive dissection of the results regarding length of stay, number of ICU days, and the use of restraints, as none of these results were found to have statistically significant differences among those that screened negative and positive for alcohol use.

This study has laid the ground work for future studies about alcohol use screening, and providing the best evidence-based care to the population served at Norton Hospital's downtown campus.

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Table 1. Descriptive summary of ED patients (N=300)

Variable	Mean (SD); median (range); n (%)
Age	55.9 years (17.3)
Gender	
Male	121 (40.3%)
Female	179 (59.7%)
Race/Ethnicity	
White	166 (55.3%)
African American	130 (43.3%)
Other	4 (1.3%)
Level of care	
ICU	50 (16.7%)
TCU	144 (35.3%)
MS	106 (35.3%)
Restraints	
Yes	16 (5.3%)
No	284 (94.7%)
Length of hospital stay in days	5 (1-214)
Number of ICU days	3 (1-32)
Mortality	
Deceased	48 (16.0%)
Alive	252 (84.0%)
Alcohol screening	
Positive	79 (26.3%)
Negative	220 (73.3%)
Not screened	1 (0.3%)
Diagnosis of AWS	13 (4.3%)
Diagnosis of DTs	1 (0.3%)
CIWA protocol activated	
Yes	14 (4.7%)

Table 2. Associations between Demographic Variables, Patient Outcomes, and Alcohol Use Screening (n=299)

	Screening positive (n=79) Mean (SD) or n (%)	**Screened negative** (n=220) Mean (SD) or n (%)	**p**
Age	49.8 years (14.5)	58.2 years (17.8)	<.001
Gender			
Male	41 (33.9%)	80 (66.1%)	.016
Female	38 (28.3%)	140 (78.7%)	
Race			
White	44 (55.7%)	122 (55.5%)	.479
African-American	35 (44.3%)	94 (42.7%)	
Other	0 (0)	4 (1.8%)	
Level of Care			
ICU	16 (20.3%)	34 (15.5%)	.113
TCU	29(36.7%)	115 (52.3%)	
MS	34 (43.0%	71 (32.3%)	
Restraints			
Yes	6 (7.6%)	10 (4.5%)	.302
No	73 (92.4%)	210 (95.5%)	
Length of Hospital Stay in Days	4 (1-61)	5 (1-214)	.975
Number of ICU days	2 (1-16)	3 (1-32)	.994
Mortality			
Deceased	4 (5.1%)	44 (20.0%)	.002
Alive	75 (94.9%)	176 (80.0%)	

Table 3: Hospital Adherence to Alcohol Use Screening

Variable	Admission level of care ICU (n=50)	Admission level of care TCU (n=144)	Admission level of care MS (n=106)
Hospital screening Adherence			
0-20%=0			
21-40%=1			
41-60%=2			
61-80%=3			
81-100%=4	X	X	X
Actual %	100%	100%	99.1%
	50/50	144/144	105/106
Overall hospital adherence rate (not level of care separated) (n=300)			
% of screening done	99.7% 299/300		

Appendix A   Data Collection Tool for Patient Information

Variable	Patient 1A	Patient 1B	Patient 1C	Patient 1D
Age				
Actual age				
Sex				
Male=0				
Female=1				
Ethnicity				
White=1				
African-American=2				
Other/unknown=3				
Alcohol use				
Yes=0				
No=1				
Not documented=2				
Length of Stay (days)				
Actual number of days				
CIWA protocol activated				
Yes=0				
No=1				
Number ICU days				
Actual # of days (if applicable)				
Restraints				
Yes=0				
No=1				
# of days used				
Diagnosis of AWS				
Yes=0				
No=1				
Diagnosis of DTs				
Yes=0				
No=1				
Mortality				
Deceased=0				
Alive=1				
Level of care at admission				
ICU=0				
TCU=1				
MMS=2				
MS=3				

Appendix B

Alcohol Withdrawal Assessment Scoring Guidelines (CIWA - Ar)

Nausea/Vomiting - Rate on scale 0 - 7

0 - None
1 - Mild nausea with no vomiting 2
3
4 - Intermittent nausea 5
6
7 - Constant nausea and frequent dry heaves and vomiting

Tremors - have patient extend arms & spread fingers. Rate on scale 0 - 7.

0 - No tremor
1 - Not visible, but can be felt fingertip to fingertip 2
3
4 - Moderate, with patient's arms extended 5
6
7 - severe, even w/ arms not extended

Anxiety - Rate on scale 0 -
7 0 - no anxiety, patient at
ease 1 - mildly anxious
2
3
4 - moderately anxious or guarded, so anxiety is
inferred 5

Agitation - Rate on scale 0
- 7 0 - normal activity
1 - somewhat normal
activity 2
3
4 - moderately fidgety and
restless 5

Paroxysmal Sweats - Rate on Scale 0 - 7.
0 - no sweats
1- barely perceptible sweating, palms
moist 2
3
4 - beads of sweat obvious on
forehead 5

Orientation and clouding of sensorium - Ask, "What day is
this? Where are you? Who am I?" Rate scale 0 - 4
0 - Oriented
1 – cannot do serial additions or is uncertain about date
2 - disoriented to date by no more than 2
calendar days 3 - disoriented to date by more

Tactile disturbances - Ask, "Have you experienced any
itching, pins & needles sensation, burning or numbness,
or a feeling of bugs crawling on or under your skin?"

0 - none
1 - very mild itching, pins & needles, burning, or
numbness 2 - mild itching, pins & needles, burning,
or numbness
3 - moderate itching, pins & needles, burning, or
numbness 4 - moderate hallucinations

Auditory Disturbances - Ask, "Are you more aware of
sounds around you? Are they harsh? Do they startle you?
Do you hear anything that disturbs you or that you know
isn't there?"

0 - not present
1 - Very mild harshness or ability to
startle 2 - mild harshness or ability to
startle
3 - moderate harshness or ability to
startle 4 - moderate hallucinations

Visual disturbances - Ask, "Does the light appear to be
too bright? Is its color different than normal? Does it
hurt your eyes? Are you seeing anything that disturbs
you or that you know isn't there?"

0 - not present
1 - very mild
sensitivity 2 - mild
sensitivity
3 - moderate sensitivity
4 - moderate
hallucinations 5

Headache - Ask, "Does your head feel different than
usual? Does it feel like there is a band around your head?"
Do not rate dizziness or lightheadedness.

0 - not present
1 - very mild
2 - mild
3 - moderate
4 - moderately
severe 5 - severe

Procedure:

1. Assess and rate each of the 10 criteria of the CIWA scale. Each criterion is rated on a scale from 0 to 7, except for "Orientation and clouding of sensorium" which is rated on scale 0 to 4. Add up the scores for all ten criteria. This is the total CIWA-Ar score for the patient at that time. Prophylactic medication should be started for any patient with a total CIWA-Ar score of 8 or greater (ie. start on withdrawal medication). If started on scheduled medication, additional PRN medication should be given for a total CIWA-Ar score of 15 or greater.

2. Document vitals and CIWA-Ar assessment on the Withdrawal Assessment Sheet. Document administration of PRN medications on the assessment sheet as well.

3. The CIWA-Ar scale is the most sensitive tool for assessment of the patient experiencing alcohol withdrawal. Nursing assessment is vitally important. Early intervention for CIWA-Ar score of 8 or greater provides the best means to prevent the progression of withdrawal.

ASSESSMENT OF ALCOHOL WITHDRAWAL SYNDROME

Assessment Protocol												
a. Vitals, Assessment Now. **Date**												
b. If initial score ≥ 8 repeat q1h x 8 hrs, then if stable q2h x 8 hrs, then if stable q4h. **Time**												
Pulse												
c. If initial score < 8, assess q4h x 72 hrs. If score < 8 for 72 hrs, d/c assessment. If score ≥ 8 at any time, go to (b) above. **RR**												
O₂ sat												
d. If indicated, (see indications below) administer prn medications as ordered and record on MAR and below. **BP**												

Assess and rate each of the following (CIWA-Ar Scale):	Refer to reverse for detailed instructions in use of the CIWA-Ar scale.											
Nausea/vomiting (0 - 7) 0 - none; 1 - mild nausea ,no vomiting; 4 - intermittent nausea; 7 - constant nausea , frequent dry heaves & vomiting.												
Tremors (0 - 7) 0 - no tremor; 1 - not visible but can be felt; 4 - moderate w/ arms extended; 7 - severe, even w/ arms not extended.												
Anxiety (0 - 7) 0 - none, at ease; 1 - mildly anxious; 4 - moderately anxious or guarded; 7 - equivalent to acute panic state												
Agitation (0 - 7) 0 - normal activity; 1 - somewhat normal activity; 4 - moderately fidgety/restless; 7 - paces or constantly thrashes about												
Paroxysmal Sweats (0 - 7) 0 - no sweats; 1 - barely perceptible sweating, palms moist; 4 - beads of sweat obvious on forehead; 7 - drenching sweat												
Orientation (0 - 4) 0 - oriented; 1 - uncertain about date; 2 - disoriented to date by no more than 2 days; 3 - disoriented to date by > 2 days; 4 - disoriented to place and / or person												
Tactile Disturbances (0 - 7) 0 - none; 1 - very mild itch, P&N, ,numbness; 2-mild itch, P&N, burning, numbness; 3 - moderate itch, P&N, burning ,numbness; 4 - moderate hallucinations; 5 - severe hallucinations; 6 – extremely severe hallucinations; 7 - continuous hallucinations												
Auditory Disturbances (0 - 7) 0 - not present; 1 - very mild harshness/ ability to startle; 2 - mild harshness, ability to startle; 3 - moderate harshness, ability to startle; 4 - moderate hallucinations; 5 severe hallucinations; 6 - extremely severe hallucinations; 7 - continuous.hallucinations												
Visual Disturbances (0 - 7) 0 - not present; 1 - very mild sensitivity; 2 - mild sensitivity; 3 - moderate sensitivity; 4 - moderate hallucinations; 5 - severe hallucinations; 6 - extremely severe hallucinations; 7 - continuous hallucinations												
Headache (0 - 7) 0 - not present; 1 - very mild; 2 - mild; 3 - moderate; 4 - moderately severe; 5 - severe; 6 - very severe; 7 - extremely severe												
Total CIWA-Ar score:												
PRN Med: (circle one) Diazepam Lorazepam — **Dose given (mg):**												
Route:												
Time of PRN medication administration:												

Assessment of response (CIWA-Ar score 30-60 minutes after medication administered)												
RN Initials												

Scale for Scoring:
Total Score =
        0 – 9: absent or minimal withdrawal 10 – 19: mild to moderate withdrawal more than 20: severe withdrawal

Indications for PRN medication:
  a. Total CIWA-AR score 8 or higher if ordered PRN only (Symptom-triggered method).
  b. Total CIWA-Ar score 15 or higher if on Scheduled medication. (Scheduled + prn method) Consider transfer to ICU for any of the following: Total score above 35, q1h assess. x more than 8hrs required, more than 4 mg/hr lorazepam x 3hr **or** 20 mg/hr diazepam x 3hr required, or resp. distress.

Patient Identification (Addressograph)

Signature/ Title	Initials	Signature / Title	Initials

Alcohol Withdrawal Assessment Flowsheet (revised Nov 2003)