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Managing Hospitalized Adults with Alcohol Dependence

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MANAGING HOSPITALIZED ADULTS WITH ALCOHOL DEPENDENCE: AN

EDUCATION PROGRAM FOR NURSES

by

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Abstract

Alcohol withdrawal is a common clinical condition with a variety of presentations, complications and morbidities. According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), an estimated 17 million Americans, or one in every 12 adults, have an alcohol use disorder (AUD). An unanticipated hospital admission can precipitate alcohol withdrawal syndrome that can develop six hours after the cessation of alcohol. Early assessment of potential alcohol dependence, as well as symptoms of withdrawal and utilizing the CIWA tool, is important in identifying and managing this at risk population and reducing the potential incidence of complications. The purpose of this project was to develop and implement an educational program for nurses targeted at management of hospitalized adults with alcohol withdrawal through assessment skills and utilizing the CIWA protocol. The goal was to increase the nurses' knowledge of assessing, monitoring and treating this patient population. A needs assessment was conducted and an online education program was developed based on a review of the literature and clinical experience. The project included a pre and post survey surrounding the education module, followed by a program evaluation. Results indicated higher scores on the post-survey suggesting an increase in nurses' knowledge, awareness and skills related to managing AWS in hospitalized adults utilizing an online education program. The APRN is in the position to improve nursing practice through evidence-based best practice, an important element in improving patient outcomes and safety.

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Managing Hospitalized Adults with Alcohol Dependence: An Education Program for

Nurses

Background/Statement of the Problem

Excessive alcohol use is a prevalent problem in the United States (US) and

responsible for significant health disparities and economic burden.   The American

Psychiatric Association (APA) issued a revision in the 5th edition of the Diagnostic and

Statistical Manual of Mental Disorders (DSM-5) that combined alcohol abuse and

alcohol dependence into a single disorder, alcohol use disorder (AUD). The DSM-T also

outlined criteria for diagnosing mild, moderate or severe AUD (National Institute on

Alcohol Abuse and Alcoholism, 2013). According to the National Institute on Alcohol

Abuse and Alcoholism (NIAAA), an estimated 17 million Americans, or one in every 12

adults, have an alcohol use disorder (AUD). Alcohol use disorder includes both

alcoholism and harmful alcohol intake (NIAAA, 2014). The NIAAA reported that 24.6%

of people engaged in binge drinking in the past month. Binge drinking is characterized as

drinking five or more alcoholic drinks on the same occasion on at least one day in the

past 30 days. Statistics recorded on the NIAAA website revealed that 7.1% of binge

drinkers reported that they engaged in heavy drinking in the past month. Heavy drinking

is defined as five or more drinks on the same occasion on each of five or more days in the

past 30 days (National Institute on Alcohol Abuse and Alcoholism, 2013). The National

Center for Chronic Disease Prevention and Health Promotion (2013) reported new

estimates revealing that binge drinking is a more significant problem than once thought.

This data indicated that more than 38 million Americans binge drink, averaging four to

eight times per month, and that most of these people are not alcohol dependent or alcoholics.

Many theories exist as to what causes alcohol-related disorders. Drinking alcohol is legal, widely available and an accepted social norm of American culture. Genetics, physiologic and psychologic as well as social factors contribute to the development of complications associated with alcohol abuse without consistently affecting every individual equally (APA, 2012). These social and psychological problems, that can include impulsiveness, depression, low self-esteem and/or peer pressure, seem to perpetuate excessive alcohol use (APA). There has been ongoing research on the genetic relationship; for example, one genome-wide link study has suggested that alcohol dependence has a familial association based on analysis and study of the KIAA0040 gene (Hill, Jones, Zezza, & Stiffler, 2013). The National Council on Alcoholism and Drug Dependence Inc. (NCADD, 2012) reported that more than half of all adults have a family history of alcoholism or AUD.

Long-term abuse of alcohol can cause serious health illnesses and complications affecting virtually every organ in the body (NCADD, 2012). Short-term effects of alcohol abuse, usually attributed to binge drinking, include injuries, increased violent tendencies, and risky sexual behaviors; long-term effects of alcohol can include but not limited to high blood pressure, heart disease, stroke, some cancers, liver disease and digestive problems (Centers for Disease Control and Prevention [CDC], 2014). Excessive alcohol intake is the third leading cause of preventable death, responsible for 88,000 deaths in United States each year and cost the U.S. $223.5 billion in 2006

(National Center for Chronic Disease Prevention and Health Promotion, 2013). Higher levels of drinking have more significant alcohol-related medical problems and more significant withdrawal episodes (Schuckit, Tipp, Reich, Hesselbrock, & Bucholz, 1995). People with alcohol dependence have lost reliable control of their alcohol use and are often unable to stop drinking. When alcohol use is stopped suddenly in this population, symptoms of withdrawal from alcohol may ensue (APA, 2012).

The adverse effects and symptoms of alcohol withdrawal have been well documented for centuries, as far back as the stone-age inhabitants (Carlson et al, 2012). Carlson et al. (2012) explained that Dr. Benjamin Rush (1746-1813) distinguished excessive alcohol use as a loss of control but credits Dr. William Osler (1849-1919) as describing the sequela of alcohol withdrawal that included but is not limited to incessant motion, muscular tremor and hallucinations. In 2012, Manasco, Chang, Larriviere, Hamm and Glass described alcohol withdrawal as a clinical condition with initial symptoms of mild anxiety, insomnia, and tremor that can begin within three to six hours after stopping drinking. Prolonged alcohol exposure depresses the central nervous system and with an abrupt cessation of alcohol a variety of withdrawal symptoms can ensue including tremulousness, anxiety, diaphoresis, headache can progress to delirium tremens (Manasco et al. 2012).

Progression of withdrawal varies with a wide range of symptoms secondary to hyperactivity of the autonomic nervous system. Withdrawal can advance to delirium tremens, the most severe form of which was documented in a classic study of 1648 alcohol-dependent men and women (Schuckit et al., 1995). Foy, Kay and Taylor (1997)

conducted an observational study that examined the variability of alcohol withdrawal and its potential complications. Withdrawal was associated with episodes of progression to delirium, respiratory failure, increased length of stay and even death in two patients. For the chronic alcohol abuser with alcohol dependence, an unexpected hospitalization with an obvious abrupt cessation of alcohol can precipitate into episodes of alcohol withdrawal posing significant management problems for nurses (Foy & Taylor, 1997).

Alcohol dependence accounts for approximately 20% of hospital admissions with approximately 39% of admission to the intensive care unit (ICU) (Muzyk et al, 2013). Up to 40% of hospital beds in the United States, excluding maternity and ICU, are used to treat patients with health conditions related to alcohol consumption (National Council on Alcoholism and Drug Dependence Inc., 2012). The Joint Commission has released updated hospital accreditation measures that includes alcohol use screening, the use of brief interventions that are provided or offered, pharmacotherapy and treatment provided and/or offered at discharge (Joint Commission, 2015). Nurses need to be aware of the prevalence of alcohol abuse and the possibility of alcohol withdrawal in their patients.

The CAGE questionnaire, consisting of four questions, is a screening tool that can be used during the history taking to alert the nurse of a potential of alcohol dependence (Ewing, 1984). The Clinical Institute Withdrawal Assessment for Alcohol scale (CIWA-Ar) is a 10-item scale that has shown to be a reliable and validated tool to assess alcohol withdrawal (Sullivan, Sykora, Schneiderman, Naranjo, & Sellers, 1989). When the nurse has been educated on managing alcohol, accurate and early assessment of potential alcohol dependence, as well as withdrawal and utilizing the CIWA-Ar tool, the patient at

risk for alcohol withdrawal can be better identified, and potential incidences of complications may be decreased (McKay, Koranda, & Axen, 2004).

   The purpose of this project was to develop and implement an educational program for nurses targeted at management of hospitalized adults with alcohol withdrawal through assessment skills and utilizing the CIWA protocol.

   Next, a review of the relevant literature will be presented.

Review of the Literature

A comprehensive literature review was completed dating from 2007 to 2014 with some older informational articles and seminal articles incorporated. Search engines included EBSCOhost, CINAHL Plus, Ovid and PubMed. The following key words and combinations of these where used for the search: alcohol withdrawal syndrome, excessive alcohol, CIWA, nurses, alcohol teaching, alcoholism, delirium tremens, hospitalized patients, alcohol treatment, alcohol assessment and nursing education. These key word topics provided a vast number of articles that were evaluated and articles were chosen based on relevance to this project. Informational articles that discussed the basics of alcohol, its abuse and effects were included to give a solid background and understanding of the problem. Inclusion criteria for research involved articles on the CAGE assessment tool, CIWA, benzodiazepines, and alcohol withdrawal. Excluded were other assessment tools, alcohol withdrawal protocols, and medications used to treat alcohol withdrawal.

This literature review will include the subsections: alcohol basics; alcohol withdrawal syndrome and delirium tremens; assessing alcohol dependence; assessing alcohol withdrawal; management of withdrawal and evidence based treatment; and the challenges in nursing practice to implementing the CIWA protocol.

Alcohol Basics

The NIAAA, affiliated with the U.S. Department of Health and Human Services, leads the nation's research efforts on alcohol use and abuse, constantly researching to find answers to why alcohol use has had such a strong effect on some people and not others (NIAAA, 2013). The effects of drinking alcohol are seen almost immediately,

appearing in about 10 minutes after a person takes the first sip and alcohol enters the

blood stream. The more a person drinks, the higher the blood alcohol concentration

(BAC) becomes and the greater impairment is observed, which includes reduced

inhibitions, slurred speech, motor impairment, confusion, memory problems,

concentration problems, coma, breathing problems and death (NIAAA).   Moderate

alcohol use is defined as no more than two drinks per day for men and one drink per day

for women with a drink designated as 12 ounces of beer, 5 ounces of wine or 1.5 ounces

of hard alcohol/spirits (APA, 2012). Drinking either too much alcohol on a single

occasion (binge drinking) or over the course of time can have serious effects on the body

as alcohol interferes with the communication pathways of the brain, and damages the

liver, heart, pancreas, immune system and even increases the risk of developing certain

cancers (NIAAA, 2013). Harmful alcohol intake or abuse is a drinking pattern that

results in recurrent adverse consequences such as failing to fulfill obligations, missing

school or work, or trouble with the law. People with alcoholism have developed alcohol

dependence and have lost the ability to control alcohol use regardless of the kind of

alcohol or even how much (APA, 2012). Binge drinking can lead to the same health risks

and social problems and can lead to faster development of alcoholism. Alcoholism is an

alcohol dependent addiction that includes the symptoms of alcohol craving, loss of

control, dependence and tolerance. It is the dependence element that is responsible for

withdrawal symptoms in alcoholics that may include nausea, sweating, restlessness,

irritability, tremors, hallucinations and even convulsions, when alcohol intake in these

individuals is stopped (APA).

Alcohol Withdrawal Syndrome and Delirium Tremens

Alcohol withdrawal syndrome (AWS) is a clinical syndrome that varies significantly among alcoholics in both its manifestations and severity, and corresponds to the depressive effects alcohol has on the central nervous system (CNS) (Saitz, 1998). Clinical features of AWS usually peak between 10 to 30 hours after cessation of alcohol and include hyperactivity, anxiety, tremor, tachycardia, hypertension, sweating, nausea and retching, seizures and hallucinosis. The earliest sign of autonomic overactivity are tremor that usually peak at six to 24 hours after cessation of alcohol intake (McIntosh & Chick, 2004). Daily alcohol intake affects the brain at the cellular level. Nerve impulses from signal-emitting neurons travel by neurotransmitters between adjacent neurons interact with receptors on the signal-receiving neuron (Saitz, 1998). The amino acid gamma-aminobutyric acid (GABA) is the primary inhibitory neurotransmitter in the brain and glutamate is an excitatory neurotransmitter (Finn & Crabbe, 1997). Regular alcohol intake enhances the inhibitory effects of GABA on signal-receiving neurons that end up suppressing or depressing neuron activity. The body naturally compensates by increasing the number and activity of excitatory neurotransmitters such as glutamate. Glutamate is a component in cellular metabolism with a key role in learning and retaining memory (Myrick & Anton, 1998). When alcohol is removed, the number of glutamate receptors remains elevated that contributes to the hyper-excitability exhibited in alcohol withdrawal syndrome (Saitz, 1998). Neurotransmitters are affected as a consequence of dependence on alcohol resulting in changes in inhibitory and excitatory systems (Finn & Crabbe, 1997). Alcohol has been found to increase dopamine use in the brain, which triggers a

pleasurable effect. Saitz (1998) stated that in alcoholism, GABA receptors become less responsive to the neurotransmitters, and higher levels of alcohol are required to maintain the same level of suppression illustrating the adaption of tolerance. Alcohol interferes with the balance of inhibitory and excitatory neurotransmitters in the CNS. There are many neurotransmitters that are affected by alcohol intake with the aforementioned neurotransmitters most well known. Knowledge of chemical changes that occur in the alcoholic brain can facilitate an understanding of the symptomatology and treatment of AWS.

Alcohol withdrawal symptoms can begin as early as six hours, some sources site four hours, after cessation of alcohol with wide variability between timing and symptomatology among individuals. Common symptoms are nausea, tremor, insomnia, vivid dreams, anxiety, hyper-vigilance of sensory sensitivity, irritability, agitation, headache, vomiting, loss of appetite and sweating (Saitz, 1998). Saitz (1998) stated that the inconsistency is a result of differences in patterns of alcohol use, variables in genetics, the presence of coexisting illnesses, medications, and differences in neurochemical mechanisms.

In a study that included 147 alcoholics, individuals were allowed to drink alcohol until the day before admission to the hospital where blood alcohol concentrations (BAC), blood pressure (BP) and heart rate were recorded and symptoms of AWS were assessed. The aim of the study was to examine the connection between hypertension and severity of alcohol abuse and AWS (Ceccanti et al., 2006). The subjects were assessed using the CIWA-Ar test from day zero (T0) to day 18 (T18). Subjects affected by hypertension

had significant decreases from day T0 at 56.5% to T18 at 21.8% with a sharp decrease

noted at day T3 at 36.5% (p < 0.0005). Ceccanti (2006) found that BP values were high

among older individuals and greater than 50% of patients were affected by mild or

moderate hypertension in only the first days of alcohol withdrawal. Twenty percent of

those who completed detox remaining hypertensive (p < 0.035), which suggested

alcohol-independent hypertension. Tachycardia continues to be a variable that suggests

the severity of AWS but blood pressure is not as reliable (Ceccanti et al., 2006). Blood

pressure monitoring was removed from the CIWA-Ar scale but is still a consideration in

assessing and monitoring AWS, as hypertension can be present in patients with AWS

(McIntosh & Chick, 2004).

Delirium tremens (DT's) is the most serious complication of AWS and is

distinguished by severe agitation and tremor, disorientation, hallucinations mostly visual,

with increased heart rate, BP, and respirations. Saitz (1998) discussed risk factors that

put an individual in alcohol withdrawal more at risk for progressing to DT that includes:

more severe alcohol dependence, higher levels of alcohol intake, longer duration of

alcoholism, abnormal liver function, prior detoxification, past experience of seizures or

DT's, concomitant acute illness, older age, use of other drugs in addition to alcohol, and

more severe withdrawal symptoms when presenting for treatment. Delirium tremens

occur in approximately 5% of individuals experiencing AWS and usually appears two to

four days after the cessation of alcohol (Myrick & Anton, 1998). Elliot, Geyer, Lionetti,

and Doty (2012) concluded that about 5% of patients with DT die as autonomic

hyperactivity may lead to cardiovascular collapse, making DT's a medical emergency.

A previous episode of delirium tremens and/or alcohol withdrawal related seizure activity in a patient's history is the most likely predictor of DT as there remains no clear explanation as to why 5-10% of withdrawals progress to DT (Mainerova et al., 2015). The kindling effect, which is the escalation of alcohol withdrawal symptoms that worsen and intensify with each subsequent episode of alcohol withdrawal, is a consideration that may result in seizures and DT. Treatment is therefore aimed at prompt recognition of potential AWS and early treatment and monitoring to prevent the progression of AWS to DT (Mainerova et al.).

Assessing Alcohol Dependence

There are many instruments that have been developed to screen for signs of hazardous and harmful drinking that includes alcohol dependence, and one frequently used is the CAGE questionnaire (O'Brien, 2008). John A. Ewing developed the CAGE with the actual questions developed from a clinical study completed in 1968 in North Carolina where 130 participants were randomly selected to complete a lengthy interview (Ewing, 1984). Sixteen participants were found to be suffering from alcoholism; responses were analyzed and four pertinent questions formulated the basis for the CAGE questionnaire. (Ewing). Ewing described further testing using the CAGE questions in 1970 on 48 alcoholic patients at a treatment facility in London. His results revealed all of the patients answering yes to at least two of the CAGE questions. Question one elicited 24 yes responses or 50%; questions two and three had yes responses at 43 or 90% and 48 or 100% respectively. This work validated that a score of two to three indicates a high

suspicion for alcoholism and even a score one out of four calls for further inquiry (Ewing, 1984).

The CAGE questionnaire is frequently used today because it is a validated four question mnemonic making it easy for busy clinicians to remember and recall. CAGE stands for:

Cutting down-have you ever felt the need to cut down your drinking;

Annoyance-have you ever felt annoyed by criticism of your drinking;

Guilty-have you ever had guilty feelings about drinking; and

Eye-opener-have you ever taken a morning eye-opener (O'Brien, 2008).

Dhalla and Kopec (2007) completed a systematic review of the CAGE questionnaire that included a review of 19 articles. The purpose was to evaluate the reliability and/or validity studies conducted on the CAGE questionnaire. In this review, Dhalla and Kopec (2007) stated that reliability coefficients greater than 0.7 or 0.8 are regarded as adequate for reliability and reported that the CAGE retest score were 0.80. The authors concluded that the CAGE had high retest reliability and validity as a screening tool for detecting potential alcohol abuse.

Alcohol withdrawal symptoms can begin within six hours of cessation of alcohol. Delaying the initial assessment for alcohol withdrawal beyond 24 hours has been shown to deprive patients of care during times of potential greatest need (Foy & Taylor, 1997). Perry (2014) stated that alcohol withdrawal is a common condition that can be encountered in the hospital and it is important to establish the risk of developing AWS on

admission to ensure monitoring and treatment if needed to prevent the development of AWS and/or the progression to DT.

Assessing alcohol withdrawal syndrome

Once high suspicion for AWS is concluded from either a positive CAGE or a previous history of AWS or known alcoholism, it is important to be able to assess for symptoms and aim treatment to prevent the complication of AWS (Foy, McKay, Bertram, & Sadler, 2006). The most widely used instrument for the assessment of AWS is the modified Clinical Institute Withdrawal Assessment for Alcohol scale (CIWA), which was originally developed from a 32-item scale in 1973 (Stuppaeck et al., 1994). Sullivan et al.'s seminal article on the revised CIWA describes the most recently revised and shortened 10-item scale renamed the CIWA-Ar (1989). The main purpose of the Sullivan et al. study was to improve the CIWA by condensing and eliminating redundant items to maintain clinical usefulness but increase efficiency (p. 1353). Comprehensive research data from 135 known alcoholic subjects were randomly divided into two groups of 100 and 35 subjects. The randomly selected sub-sample of 100 participants was scored on the CIWA-A, which was initially reviewed for validity, and two items were removed prior to the start of the study. This included the 'seizure' item because if the patient presented seizing he couldn't respond to the CIWA-A questions. The item 'quality of contact' was removed because it was found to be more subjective between the inter-raters, which were usually nurses. Using the randomly selected group of 100 subjects, all possible symptoms of the then 15-items CIWA were compared for differing variables; this resulted in reducing the CIWA scale to 10-items (Sullivan et al., 1989).

The CIWA was found to be a reliable scale to assess the severity of alcohol withdrawal and clinically useful in delivering treatment based on the score and monitoring responses to those treatments (Sullivan et al. 1989). The final result was this a 10-items scale: five redundant items were removed, including convulsions, quality of contact, hallucinations (which was covered in another item and not removed from the scale), flushing of the face, and thought disturbances. Data from the remaining 35 patients was used to evaluate the revised scale. Sullivan et al. concluded that the revised scale offered increased efficiency with less items to assess while retaining clinical usefulness, validity and reliability with $p < 0.0001$.

The CIWA-Ar remains the "gold standard" today for assessment of AWS. The National Institute for Health and Clinical Excellence (NICE) has stated that staff in the hospital must be able to recognize the alcohol dependent patient and assess and monitor the effectiveness of treatment by using formal assessment tools that includes CIWA-Ar (Stewart & Swain, 2012).

The Clinical Institute, Addiction Research Foundation, a 61-bed specialty teaching hospital affiliated with the University of Toronto, is the site where multiple studies were conducted that contributed to the formulation of the CIWA-Ar. Stuppaeck et al. (1994) discussed one of the common problems regarding alcohol withdrawal syndrome was the need for a reliable rating tool to assess AWS and monitor the effectiveness of treatment plans. A study in 2006 compared the CIWA-Ar with an alternative revision the CIWA-AD, an eight-item scale that more closely correlates with the DSM criteria (Reoux & Oreskovich, 2006). The study analyzed over 960 CIWA-Ar

scoring episodes from 135 alcohol dependent subjects and converted the scores over to

the CIWA-AD to examine if any clinically important difference would result from using

the scales. The CIWA-Ar and CIWA-AD share six items including tremor, anxiety,

diaphoresis, agitation, nausea, and headache. The CIWA-AD scores for pulse and

sensory disturbances, while the CIWA-Ar does not and individually scores for visual,

auditory and tactile disturbances. The mean total score on the CIWA-AD was 5.7 with a

standard deviation of 4.6, while that of the CIWA-Ar were 5.2 with a standard deviation

of 4.5 ($p < 0.001$). Both scales identified clinically significant withdrawal symptoms

during which a score greater than 9 triggered medication protocols. It was recommended

that medication should be initiated for AWS with scores 8-15 to aid in preventing

symptom progression and complications such as DT's. It was suggested in this study that

patients on the CIWA-AD might be at risk for overmedication. It was proposed that by

the including pulse rate, those with tachycardia might benefit from another treatment

such as fluid replacement instead of medications used for the symptom-triggered

management of AWS.

Steward and Swain (2012) noted that assessment of alcohol dependence starts with

taking a good history but that physicians in acute care hospitals tend to be inexperienced

and find it challenging to assess and manage AWS. The National Institute for Health and

Clinical Excellence (NICE) outlined specific guidelines for physicians to follow when

encountered with hospitalized adults who may have alcohol-use disorders. Stewart and

Swain (2012) explained that alcohol abuse is often assessed in the emergency department

and/or on admission to a unit in the hospital but only consisted of one or two questions

that in many cases were inadequate. This explains why better identification of a potential

alcohol-dependent patient can be achieved through utilization a of an established and

standardized assessment tool recommended in the NICE guidelines, the CIWA-Ar.   The

National Institute for Health and Clinical Excellence recognizes that alcohol abuse is a

major public health issue and that alcohol dependence is common factor in patients

presenting to the hospital. The guidelines include assessment of alcohol dependence,

assessment of alcohol withdrawal and management of withdrawal, which includes

symptom management as well as prophylactic treatment of complication such as

Wernicke and seizures (NICE, 2010).

Management of AWS

The management of AWS in the hospitalized patient includes supportive care,

standardized symptoms assessment and pharmacologic therapy. Once the risk

assessment has been done, for example with one positive answer on the CAGE

questionnaire, the patient can then be assessed for AWS using the gold standard

assessment tool, CIWA-Ar (McKay et al., 2004). Sullivan et al. (1989), reported that

competent nurses were able to carry out a CIWA-Ar evaluation in less than two minutes

with a high inter-rater reliability (r > 0.8).

Foy, Kay, and Taylor (1997) conducted a prospective study that included a total

of 539 subjects admitted to a general hospital for multiple medical and surgical

conditions who had had previously documented episodes of alcohol withdrawal. The

purpose of their study was to examine hospitalized adults who consumed daily alcohol,

monitor for alcohol withdrawal symptoms including timing and severity, and correlate

that data to significant risk factors to be able to predict likely outcomes. Foy et al. (1997)

noted a significant disadvantage to patients when initial assessment was delayed with

symptoms present; treatment was therefore delayed, which contributed to increased

complications, specifically DT's. The authors concluded that best practice is to assess

and monitor patients at risk at admission using standard set criteria, as the median time of

onset of symptoms began at five hours with 90% of reactions occurring by 20 hours (Foy

et al., 1997). The CIWA-Ar was used in this study and highly recommended for both

monitoring and management.

Mainerova et al. (2015) stated that the treatment of AWS continues to be a

comprehensive approach by providing preventative measures, correcting somatic

complications, adjusting environmental conditions along with monitoring and treating the

symptoms associate with withdrawal. Prompt assessment with thorough monitoring and

expeditious treatment of AWS remains the best way of preventing complications such as

DT. The authors stated that without proper management and early detection, AWS can

have high morbidity and mortality rates with prolonged hospitalizations, injuries such as

falls, the occurrence of pneumonia or sepsis for example and incidences of chronic

complications such as Wernicke-Korsakoff syndrome (2015).

Supportive care includes careful head-to-toe assessments, monitoring of vital signs

and electrolyte disturbances frequently associated with AWS. The physical exam can

detect potentially associated conditions such as arrhythmias, inadequate heart function

including but not limited to heart failure, liver disease with the detection of an enlarged

liver or ascites, bleeding disturbances or infectious process to name a few (Myrick &

Anton, 1998). With the wide variability of presentations and symptoms, supportive care

can also include providing the patient with a quiet environment, reduced lighting and

stimuli, positive encouragement and reassurance, limited visitation and/or interpersonal

interaction along with fluids and nutritional support (Myrick & Anton). Adjusting the

environmental conditions to provide a calm atmosphere can aid in calming the patient in

AWS down but at times of high agitation and/or aggression mechanical restraints may

need to be used for only short periods of time and with close monitoring to prevent harm

to the patient and others (Mainerova et al., 2015).

Alcoholics are often deficient in electrolytes and vital minerals presumably due to

poor dietary habits, nausea and vomiting, and alcohol-induced changes in the digestive

tract that impede absorption (Myrick & Anton, 1998). Early supplementation with

vitamin replacement and fluids with electrolytes can aid in preventing and correcting the

somatic complications that may result from AWS (Mainerova et. al, 2015). Thiamine,

which plays a role in the body's energy metabolism, is often found to be deficient in

alcoholics and is a factor in the development of Wernicke-Korsakoff syndrome. A

thiamine deficient encephalopathy is common to alcoholics and is characterized by

severe confusion, abnormal gait and paralysis of certain eye muscles that may progress to

irreversible dementia (McIntosh & Chick, 2004). Chronic alcohol abuse is the most

common cause of Wernicke's encephalopathy noting a 30-80% reduced level of

circulating thiamine (Thomas, Marshall, & Bell, 2012). Malnutrition is another cause of

Wernicke's encephalopathy, the acute phase of thiamine (vitamin B1) deficiency that

with appropriate treatment can be reversed however, if left untreated, can result in a

permanent neurologic disorder often referred to as Wernicke-Korsakoff syndrome. The

advancement to Korsakoff is distinguished by amnesia, disorientation and confabulation,

which could necessitate life-long care (Thomas et al.). Thiamine replacement therapy is

essential with patients being treated with AWS. Thiamine 100-300 mg daily is given

once treatment for AWS begins. The body only stores approximately 30 mg of thiamine,

and the effects of alcohol abuse deplete the body's stores of thiamine, which is required

for the metabolism of glucose (McIntosh & Chick, 2004; Myrick & Anton, 1998).

Patients admitted to the hospital may be in a state of intoxication or active withdrawal

which can obscure any underlying symptoms of Wernicke's encephalopathy, another

reason to initiate thiamine replacement in the treatment of AWS (Thomas et al., 2012).

The replacement of folic acid is important as it has a function in the synthesis of

the cells' genetic material and development of certain blood cells. Deficiencies, common

in alcoholics, can cause changes in the blood cells including a form of anemia that

requires vitamin replacement containing folic acid for a few weeks (Myrick & Anton,

1998). Chronic alcoholism is associated with intestinal malabsorption, decreased

absorption in the liver, and increased urinary secretion of folic acid, all contributing to a

folate deficiency (Halsted, Villanueva, Devlin, & Chandler, 2002).

Benzodiazepines are the medications most widely prescribed in the management

of AWS. Benzodiazepines act upon the GABA system and mimic the effects of alcohol

as it takes several days for the neurotransmitters to readjust to an equilibrium state

following abrupt discontinuation of alcohol. Owing to the similar effects of

benzodiazepines and alcohol, they are called "cross-tolerant" (Saitz, 1998). The

importance of cross-tolerance means that an individual who is tolerant to alcohol is also tolerant to benzodiazepines and therefore if the individual experiences a deficiency in alcohol during AWS, he/she can be given a benzodiazepine in its place to ease the symptoms of withdrawal (Saitz). The guidelines put out by NICE state that benzodiazepines should be used in the pharmacotherapy management to symptom treatment of AWS (Stewart & Swain, 2012). There have been many studies done that have looked at which benzodiazepine is the most effective but no current literature exists that suggests one benzodiazepine is more effective than another (Muzyk et al., 2013). In the review, the authors suggested that using diazepam and giving a loading dose followed by symptom-triggered treatment was effective at significantly reducing the withdrawal symptoms in patients in AWS and DTs.

Diazepam is metabolized by the liver and forms an active metabolite, desmethyldiazepam (DMDZ), which is slowly eliminated by the body (Muzyk, Leung, Nelson, Embury, & Jones, 2013). Lorazepam is a short-acting benzodiazepine with no active metabolites and is often the drug used in AWS as the effects of benzodiazepines, which include sedation, respiratory depression, hypotension, and anterograde amnesia, can have long lasting effects (Muzky, et al., 2013; Riddle et al., 2010). Benzodiazepines bind to GABA receptors and can reduce the symptoms of withdrawal (Finn et al., 1997). Daeppen et al. (2002) conducted a study to examine symptom-triggered medicating versus fixed-scheduled dosing of benzodiazepines for the treatment of alcohol withdrawal. The study included 117 patients with similar inclusion criteria such as: alcohol use preceding admission; blood alcohol concentrations; and assessed severity of

alcohol dependence were randomized into 2 groups. Group A received symptom-triggered benzodiazepine and Group B received fixed-scheduled benzodiazepine administration. The findings suggested that symptom-triggered treatment approach resulted in significantly less benzodiazepine being administered. Benzodiazepines were administered to 22 or 39% of the patients in Group A compared to 100% in Group B. Less benzodiazepines were used (95.4 - 107.7 mg vs. 231.4 - 29.4 mg) for Groups A and B respectively with ($p < 0.001$), and had a reduction in treatment duration (22.7 - 26.68 hours vs. 62.1 - 6.18 hours) ($p = 0.004$) (Daeppen et al., 2002). Benzodiazepines are used in the treatment of AWS, however the specific benzodiazepine used may vary. The NICE guidelines indicate lorazepam, chlordiazepoxide and diazepam as being the most commonly used (Stewart & Swain, 2012).

The CIWA-Ar is also used as a scale to monitor the response of treatment. Sullivan et al. (1989) explained that the scale is a reliable and validated tool where the 10-items are used to formulate a score based on the symptoms presented by the patient. Patients scoring greater than 10 are indicated for pharmacological treatment and competent nurses can assess a patient in less than two minutes and then re-assess hourly to monitor the effectiveness of treatment (Sullivan et al.). The CIWA-Ar is also used as a validated outcome criteria tool in clinical trials related to AWS. Daeppen et al. (2002) utilized the CIWA-Ar in the study noted above and found symptom-triggered pharmacological treatment with benzodiazepine to be safe and associated with less medication given and a decrease in treatment time. The CIWA-Ar has been adopted into alcohol withdrawal protocols, providing a reliable scale for dosing medications,

evaluating the effectiveness of treatment, and assessing the severity of withdrawal

(Riddle, Bush, Tittle, & Dilkhush, 2010).

Delirium tremens is the most serious complication and progression of AWS

(Myrick et al.1998). Myrick et al. (1998) defined DT's as usually occurring two to four

days post alcohol cessation in approximately 5% of patients in alcohol withdrawal,

characterized by severe agitation, increased tremors, change in mental status,

hallucinations and large increases in heart rates, respiratory rates and blood pressure (p.

38). DeBellis, Smith, Choi and Malloy (2005) emphasized the delirium component to

DT, associated with the severe mental confusion and persistent hallucinations. A

mortality rate of 5-15% exists and is caused by complications such as self-harm,

cardiovascular collapse or coronary spasm, for example. Benzodiazepines used to

decrease autonomic hyperactivity and the risk of seizures, may not be effective in treating

the psychiatric symptoms associated with DT's, and therefore an antipsychotic

medication is recommended such as haloperidol in low doses (DeBellis et al.). The

National Institute for Health and Clinical Excellence guidelines recommend oral

lorazepam as a first-line treatment with parenteral lorazepam if unable to take by mouth,

and if symptoms of DT persist, the addition of haloperidol or olanzapine is recommended

(Stewart & Swain, 2012).

Haloperidol (Haldol), is used in many AWS protocols to treat the symptoms of

more severe complications, such a hallucinations. Caution and careful monitoring is

required as an adverse reaction to haloperidol is prolongation of the QT interval and

lowering the threshold to seizures (Riddle et al., 2010). Electrocardiographic monitoring

is therefore required with patients receiving haloperidol given the risk of prolonging the

QT interval > 450 milliseconds (depressing the cardiac electroactivity) and increasing the

risk of torsade's de pointes (DeBellis et al. 2005).

Challenges in nursing practice

Challenges in nursing practice with regard to providing care to patients with

histories of substance abuse/dependence is well documented. A study was conducted by

Grabowska & Narkiewicz (2013), 1,108 nurses participated in completing a questionnaire

to examine how nurses assess for alcohol consumption. The study was conducted in

2007-2009 and included predominately female nurses with an average length of service

as a nurse of 17.0 years (SD = 8.6). Grabowska & Narkiewicz used a custom-made

questionnaire combing elements of a survey and knowledge test. The authors found that

only 149 or 13.5% respondents had knowledge of screening tools such as the CAGE to

assess alcohol use and drinking behaviors. Only 397 or 35.8% of respondents correctly

interpreted what the term standard unit of alcohol meant and only 551 or 49.7% of

respondents could correctly answer a question on alcohol threshold and increasing risk.

The authors concluded that more extensive knowledge is recommended because an

increase in knowledge can contribute to optimizing nursing practices and improve the

effectiveness of patient interventions.

Cund (2013) conducted a study to examine student nurses' s knowledge and

educational preparation for caring for adults with alcohol abuse. The study was

conducted in 2009 with a total of 358 questionnaires distributed to junior level

undergraduates enrolled in the nursing program at a university. A validated tool was

modified and used, the *Shortened Alcohol Attitudes Problem Perception Questionnaire*, along with three scenarios, to determine the student nurses' attitudes towards caring for this population of patient as well as their knowledge on how to care for them. A total of 138 questionnaires were returned completed. The results revealed a range of one to six hours (SD = 1.2) listed as the amount of time dedicated to alcohol education. Interesting results displayed a positive attitude towards caring for patients with alcohol abuse. This was primarily attributed to the fact that the students recognized that as a registered nurse, they have a responsibility or duty to care for patients. More than half of the participants felt that they did not have sufficient education or training to actually work with this population. This study underscores the likely possibility that nurses have limited knowledge and clinical skills in managing the patient with alcohol abuse upon graduation and suggests a change of focus in educational preparedness to teach student nurses how to care for this patient population (Cund, 2013).

A qualitative study was conducted by Broyles, Rodriguez, Kraemer, Sevick, Price and Gordon (2012) that utilized 60 minute audio recorded focus groups comprised of nurses from medical-surgical units. The purpose was to illicit potential barriers and facilitators to implementing nurse delivered alcohol screening and management for hospitalized patients. The focus included alcohol use screening and nurse delivered brief intervention (BI). Broyles et al. defined BI as a " five- to fifteen-minute semi-structured motivational discussion raising awareness of alcohol-related consequences and motivating a patient toward behavior change" (p. 2). This educational piece was individualized to the patient to raise awareness of alcohol-related risks associated with

alcohol abuse and explores the interest and/or willingness to quit drinking. A total of 33

registered nurses participated in an interview that asked about existing clinical practices

and perceptions for addressing unhealthy alcohol use. This was followed by a six-minute

video of a nurse practitioner performing BI, and ended with a discussion exploring how

nurses would perform screening, assessments and BI. The results revealed that the

participants believed that nurses have a lack of knowledge and skills related to alcohol

use and alcohol assessment. They identified a lack of interdisciplinary collaboration in

the management of hospitalized patients with AWS. Many of the nurses in this study

reported an inability to screen and classify alcohol risk, stating that individuals have

different ideas as to what constitutes a drinking problem. The nurses were not familiar

with quantities of alcohol that constitutes a "standard drink" or what accounts for harmful

alcohol use as declared by the National Institute on Alcohol Abuse and Alcoholism

(NIAAA). The nurses described frustration and a lack of collaboration with physicians in

the management of AWS. They also remarked on the dissatisfaction of caring for this

population of patients and successfully caring for them through detoxification only to

have them readmitted in the future with AWS. In reference to facilitating a nurse-

delivered screening and BI, the nurses expressed the need for education of the subject of

alcohol as a whole, with appropriate interventions, and communication techniques for

managing hospitalized patients with AUD (Broyles et al.).

A recent qualitative study investigated nurses' perceptions of caring for patients

with substance abuse/dependence. Neville and Roan (2014) recruited a convenience

sample of 24 nurse participants from five inpatient units at an academic institution and

community medical center that agreed to answer two relative questions. The sample was predominately female, baccalaureate prepared with a median years of experience of 11 to 30 years and only three nurses with less than five years experience. The findings of the study were analyzed and grouped into common patterns. The first question asked what the thoughts of the nurse were about working with patients with substance abuse/dependence. Four common patterns noted included: ethical duty of care; negative perceptions of caring for patients with substance abuse/dependence; need for education; and sympathy in working with these patients. The second question asked how does caring for this patient influence nursing care provided. The responses elicited were largely negative. Statements indicated intolerance and anger at the greater attention and nursing care required of patients with substance abuse/dependence. Additionally, a key element derived from the responses was the nurses' perception of being manipulated or distrusting of this patient population. The study demonstrates the need and potential benefit to developing and implementing an educational program that can offer a more in-depth understanding of not only the psychological aspects of AWS but also the very real and potentially life threatening physical aspects associated with AWS. Neville and Roan (2014) stated that the statements they collected during their study were consistent with the literature that was reviewed in regard to the lack of preparation and knowledge on the part of the nurses dealing with this population of patients. The implications listed in this study included the need for educational opportunities focusing on the complex needs of the medical-surgical patient with history of substance abuse/dependence including but not

limited to assessment, nursing and medical management, as well as interventions to prevent aggression and violence.

Impact to nursing and alcohol management programs

Becker and Semrow (2006) identified the need for a standardized process for nurses in managing patient with AWS, and noted that providing treatment for this patient population is difficult and largely underestimated in the acute hospital setting. The challenges that were addressed included providing consistent staff education on use of an AWS tool and knowledge regarding AWS. The initial confusion among staff regarding scores and scheduled dosing prompted a decision for 1-½ hour meetings every other week to enable time to develop the protocol and educate staff (Becker & Semrow). Becker and Semrow completed a chart review during June and September 2003, six months after staff education, and found 62.2% of the patients were started on the protocol with no adverse outcomes occurring. The authors documented that 50% of nurses felt very comfortable using the protocol with 50% feeling somewhat comfortable and nurses overall noted less patient aggression and a generalized increase in caring for this patient population as a result. The authors concluded that development and implantation of an appropriate treatment program including a reliable tool and staff education can increase the quality of care and patient outcomes (Becker & Semrow).

Self-directed competency training has demonstrated success in increasing the skills and knowledge the management of alcohol withdrawal in a study that included 308 nurses (n=308) (Daly, Kermode, & Reilly, 2009). The goal of this study was to investigate two styles of education and training for nurses regarding assessment and

management of AWS as education programs have documented enhancement of

knowledge and skills. The CIWA-Ar was described as the gold standard for nurses to use

in assessing the severity of AWS and determining the need for medication. Education for

nurses is usually provided in in-services at change of shift; however, often nurses are

tired or too busy and result in sub-optimal training.

A baseline audit over 11 hospitals revealed poor compliance with utilizing AWS

protocols. Participants were divided into two groups of nurses, with one group (n = 238)

receiving in-service education and the second group (n = 70) receiving a self-directed

training program. The education included completing a substance use history,

monitoring of AWS, utilizing the CIWA scale, and knowledge about prescription and

administration of medication. Both the in-service group and self-directed groups

completed a pre- and post-test that consisted of nine standards including five nursing

standards and four medical standards. The nursing standards included substance use

history, monitoring hourly on arrival to the unit, minimum of monitoring every four

hours, monitoring hourly where required and monitoring for three days if and when

required. The medical standards involved the prescribing and administration of diazepam

and thiamine. The results revealed that there was improvement in skills and knowledge

in the self-directed training group, whereas there was little improvement in the in-

services group.   The self-directed competency program revealed a change in the nine

items tested ranging from 5% to 57 % improvement between the pre and post-tests; 5%

improvement in thiamine prescribed, and 57% improvement in the hourly monitoring. In

contrast, the in-service program displayed a minus 12% to 30% change in improvement

range that correlated to minus 12% in the post-test on substance use history and a 30%

improvement on diazepam prescribed.   The best overall improvement was documented

in the hourly monitoring. An improvement of 57% from 17% correct in the pre-test to

74% correct in the post-test in the self-directed group versus only a 1% improvement in

the in-service group were noted. Medications prescribed and administered per protocol

overall revealed no significant difference between self-directed vs. in-service (p = 0.366).

A retrospective follow-up audit of the medical record revealed an increased in

compliance in the nine standards in three out of 11 hospitals that utilized self-directed

competency training.   Authors reported the success of a self-directed program was

related to several factors including a savings of both time and resources for participants

because completion was not dependent on time availability or fatigue levels of off shifts

with the in-service training. The recommendations from this study were that self-paced

competency based models are a viable alternative to in-service training, and should be

encouraged and an adopted practice at other hospitals.

In 2009, a hospital with a multidisciplinary alcohol withdrawal team initiated a

protocol utilizing a bundled approach to manage AWS. The team instituted a nursing

admission assessment to include an AWS risk assessment whereby those patients with a

positive for risk of AWS were then assessed on the CIWA-Ar scale, with physician

notification following for symptom-triggered medication protocols in patients who scored

greater than nine on the scale (Melson, Kane, Mooney, McWilliams, & Horton, 2014).

The goals of the project were to reduce AWS advancing to DT's, reduce restraint use in

patients with DT's, and decrease transfers to ICU. After the implementation of the

protocol, 602 patients (1%) out of 50,534 admissions were discharged with diagnoses of

AWS or DT. Based on the hospital's pre-implementation numbers, this was a decrease

from 16.4% to 12.9% of patients who developed DT's during the first four quarters after

the implementation of the care management guidelines in 2009/2010. In addition, there

were documented decreases in restraint use and transfers to ICU. Melson et al. (2014)

noted that one of the nurse managers never thought it would be possible to manage a

patient going through the DT's on a medical-surgical floor. Implementation of the

protocol empowered the nurses with the tools needed to care for these patients. These

study results support the benefits of early identification of patients at risk for AWS along

with the benefits of ongoing education and standardization of managing this patient

population.

In another study, Broyles et al. (2013) went beyond early assessment and CIWA-

Ar monitoring and included a package of clinical strategies know as alcohol screening,

brief intervention, and referral to treatment (SBIRT). The package was designed for

nurses in inpatient settings and provided guidelines for addressing the spectrum of AUD.

Clinical strategies know as alcohol screening, brief intervention, and referral to treatment

(SBIRT) is supported by the Joint Commission and the author's state that national

initiatives are underway to provide instruction in SBIRT. In the study, SBIRT consisted

of seven sections of two-hour training and included topics such as NIAAA alcohol basics,

risky-drinking criteria, and quick assessment tools for potential alcohol dependence, but

also more in-depth information such as an overview of Alcoholics Anonymous (Broyles,

Kraemer, Kengor, & Gordon, 2013). Although the authors elude to limitations in the

evidence of efficacy and effectiveness with this new SBIRT program, they recommend serious consideration for implementation of such a program. Nurses have the greatest amount of patient contact in the hospital and are the largest group of hospital care providers, putting them at an advantage to practice to the full extent of their education and benefit the patients care (Broyles et al., 2013). Though this is beyond the scope of this particular project, it does defend the assumption that knowledge is empowering and can ultimately improve patient care in this population.

In summary, significant alcohol abuse is a prevalent problem and often precipitates a decline in health in AUD with possible complications of AWS when admitted to the hospital. These complications have been well studied, along with the difficulties nurses face associated with caring for this complicated and labor intense patient. Studies have also shown that additional education for nurses regarding treatment and management of AWS has been shown to beneficial to the care of these patients.

Next, the theoretical frameworks guiding this study are reviewed.

Theoretical frameworks

Theoretical frameworks are used to guide a clinical project in establishing boundaries, providing structure and organization. They assist in showing how the flow of concepts relates to one another (Bonnel & Smith, 2014). Development of the proposed program required two theoretical frameworks, one to guide the project overall and one to guide the development of the proposed program.

Knowles Theory of Adult Learning

Malcolm Knowles' Theory of Adult Learning was the theoretical framework chosen to guide the proposed project as the project consists of developing and implementing an educational program for adults. Knowles (1973) wrote about andragogy, a concept on the art and science of helping adults learn. He believed that as adults mature there is a need to utilize the experience of learning and be self-directed. Knowles based his theory on four main assumptions. The first assumption changes in self-concept, moves from total dependency to self-directedness (Knowles, 1973). Following a formal education, the role of the nurse demonstrates a move to self-directedness. The nurse gains the ability to regulate and adapt to the demands and needs of different patients in order to meet goals. In the second assumption, the role of experience, Knowles stated that the adult learner uses life experience to relate to new learnings. Registered nurses bring the background of higher education and work experience that allows new ideas and skills to have richer meaning. Knowles third assumption is readiness to learn where the adult learner is ready to learn those things they need because of their role. According to Knowles, the readiness to learn implies timing

is important to the need to learn in adults. The nurse taking care of a difficult patient with AWS, a direct experience, should be self-directed to learn about AWS and relevant concepts. Demonstrating increased knowledge leads to improve ease in managing the patient population. A higher level of understanding and critical thinking that complements the background of education and life experience can improve patient outcomes. The final assumption is the orientation to learning that states that adults want to apply tomorrow what they learn today in order to cope with current problems (Knowles, 1973). The needs assessment and review of literature, illustrate the difficulties and multiple problems nurses face when caring for the patient with AWS. The literature has also shown that nurses have participated in educational activities and applied that knowledge with successful results. The education program must contain relevant content for the adult learner.

The use of the four assumptions of Knowles theory can easily be applied to this project. The first assumption of adults being self-directed is related to the intention of the project which is to provide an educational program to professionals who have achieved self-direction and continue to be responsible for making decisions and managing consequences. An education program on alcohol abuse/dependence is a topic that can be utilized in the daily practice of nurses. The second assumption of adults having life experience helps in designing a program with information and/or activities that the adult will be able to perform and test out by comparing what they knew about alcohol and utilizing the modified CIWA protocol prior to the education intervention. The educational program must include activities that reflect the actual work the learners

perform in accordance with third assumption readiness to learn. This permits the nurse to

compare the theoretical aspects of caring for the patient with AWS with their actual

experiences. The intervention will include a review of the basics of alcohol along with a

more in-depth look into assessment and management of AWS following the CIWA

protocol that is currently being used by the nurse. This falls in line with the third

assumption, the orientation to learning, in which the nurse will be able to use the

information learned in the intervention and apply the new knowledge in their current

practice. The goal is to expand on the knowledge base by reviewing the basics of alcohol

use up and through withdrawal symptoms and DT's, so that the nurse can use the new

information to better manage the patient on the CIWA protocol. Achieving success in

Knowles fourth assumption that the adult learner wants to apply tomorrow what they

learn today will be accomplished by including evidenced based best practices in the

educational program. The nurse will be able to apply the concepts acquired in the

intervention to the patients they care for.

The Logic Model for Program Development

The Logic Model for Program Development is a systematic and visual way to

outline the inputs and outcomes when developing a program. Many variations and types

of logic models exist dating back to 1967 (University of Wisconsin-Extension, 2003).

Identifying relationships among the resources available, the activities planned, and the

changes that are hoped to be achieved, are goals of the logic model (W.K. Kellogg

Foundation, 2004). The University of Wisconsin-Extension (2003) depicts the logic

model as a roadmap that shows the logical relationships among resources that are

invested and helpful for planning and program design. In the simplest form it shows the

relationship between the inputs, outputs and outcomes. The inputs are the resources that

go into the program. The outputs are the activities the program undertakes. The

outcomes are the results, the changes and/or benefits that occur.

The situation is the problem or issue that the program is going to address and is

the basis for logic model development (University of Wisconsin-Extension, 2003). The

complete logic model consists of six components and starts with the situation and follows

more thoroughly through inputs, outputs and outcomes, adding assumption and external

factors. Inputs include what is invested; staff, volunteers, time, money, materials,

equipment, and technology. The outputs include the activities or what we do and the

participant. Outcomes are expanded to include short, medium and long-term results.

Assumptions are the beliefs and principles about the program theory and validated with

research and experience. The six, and last component is external factors which can

include culture, economics, politics, demographics, media, and background and

experiences of program participants (Table 1) (University of Wisconsin-Extension,

2003).

Table 1

The Logic Model
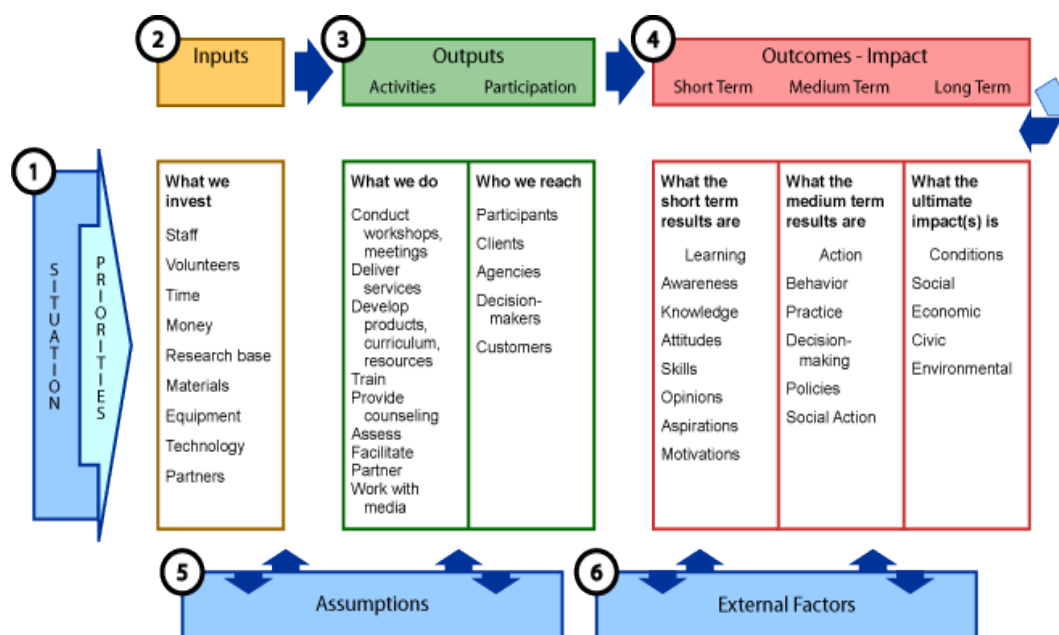
The logic model was used to develop an educational program for nurses to improve

their knowledge base on managing hospitalized adults on the CIWA protocol. The

situation or issue in this project was the lack of a formal education program for nurses

related to using the CIWA protocol to assess and manage hospitalized patients with AWS

successfully.

The inputs in this project included: researching the current literature available;

preparing the project proposal approval from IRB; completion of a needs assessment; and

assistance from nursing education to transition a presentation with a pre- and post-survey

to a NetLearning. The outputs for the project included the activities and participation

related to the program: display of program flyers; distribution of the IRB approved

informational letter; two email reminders to medical-surgical nursing staff to complete

the learning module; and having the NetLearning module completed and available for

participation. Participation included completion of the pre-survey, intervention or

learning module, post-survey and evaluation. A minimum participation of 30% of the

medical-surgical nursing staff was desired.

The focus of this project was on short-term outcomes, namely higher scores on the

post-survey suggesting an increase in knowledge, awareness and skills. A potential

medium-term impact would be a change in behavior among nurses managing patients

with AWS through knowledge gained, as well as improved ease in using the CIWA

protocol. Long-term potential outcomes could include improved patient outcomes such

as reduced inappropriate use of medication, decreased transfers to ICU, and decreased

length of stay. These in turn could potentially result in increased nurse job satisfaction.

Next, the methodology will be presented.

Methods

Purpose

The purpose of this project was to develop and implement an educational program for nurses to gain knowledge on managing hospitalized adults with alcohol withdrawal utilizing the CIWA protocol.

The research question was: Will a self directed education program for medical-surgical nurses, that reviews the basics of alcohol, the effects of alcohol abuse, and the rational for good assessment, monitoring, and treatment by using a CIWA protocol, increase nurses' knowledge?

Situation: Needs Assessment

By definition, "A needs assessment is a systematic approach to studying the state of knowledge, ability, interest, or attitudes (McCawley, 2009, p. 3). It has been an observation by the student researcher that patients are transferred from the medical-surgical floors to the ICU related to "failing the CIWA protocol". This seemed to be associated with one of two things: the patient was over medicated and somnolent or obtunded or under-medicated and in fulminant DTs. These situations raised the question as to why this was happening and what could be done to improve the management of this patient population.

Discussion with the ICU nurse manager regarding the transfer of these patients suggested that there could be a lack of proper assessment and utilization of the CIWA protocol. It was suggested that problems with the CIWA protocol may be related to the fact that the staff on the two medical-surgical floors included many new graduates in the

novice phase of nursing, with potentially little training or experience related to the use of the CIWA protocol. A nurse employed on a medical-surgical floor stated that on some occasions patients were not being awoken in order to score them on the modified CIWA scale.

The ICU nurse manager agreed that an education program for nurses on utilizing the CIWA protocol would be relevant and beneficial. One of the nurse educators was queried as to how new staff to the hospital, including new nursing graduates, were oriented to the CIWA protocol. The educator responded that there was no formal orientation provided by the nursing education department on the CIWA protocol and that it is the responsibility of the preceptor to review the CIWA protocol with new hires.

In March 2014, alcoholism was the topic of a Nursing Grand Rounds presentation secondary to an increasing incidence in the hospital. The presentation included an overview of alcoholism and AUD with a review of actual cases that included a patient case study and treatment throughout the hospital admission. Part of the case study included the discussion of AUD as disease state and a description of the psychiatric comorbidity associated with relapse and remission rates, which is a factor that can make this patient population difficult to care for. Discussions included strategies for intervening with the type of patient including use of motivational interviewing. Though the presentation was informative, questions remained unanswered, such as why some patients seem to be more difficult to treat than others and why patients often seem to continue to have complications although on the CIWA protocol.

In reviewing the literature, it was found that difficulties managing patients in alcohol withdrawal and the challenges caring for this patient population were not new problems. There is well-documented success in the literature related to educational programs geared to helping the nurse better understand and manage the AUD patient in acute alcohol withdrawal on the CIWA protocol. This then was the focus of this program development.

Design

The program development project used a pre-survey, intervention, and post-survey design. The intervention was a self-directed education program developed from a review of the current literature and linked with the CIWA protocol in place at Sturdy Memorial Hospital. The pre and post-survey of this intervention were identical: an eight, four-item multiple choice question survey completed before and after the intervention.

Sample

A convenience sample of 100 nurses on the hospital's two medical-surgical floors were invited to participate in this project. The goal was to have 30% of the nurses voluntarily participate in completing the learning module.

Site

The site was Sturdy Memorial Hospital (SMH) located in Attleboro, Massachusetts. Sturdy Memorial Hospital is a non-profit, 128 beds acute care community hospital. Documentation from June 2014 on the SMH website stated there were 5,951 admissions in one year (U.S. News & World Report, 2014). The two medical-surgical floors can accommodate 40 patients each. Both floors admit the general

medical-surgical patients, with Balfour predominately a telemetry unit and Montplaisier predominately has an oncology and orthopedic population.

Inputs:

Program Content, Goals, and Objectives

This program was developed from a review of the relevant literature and clinical experience. The intervention content and objectives are illustrated in Table 2 on the following page. Information from the review regarding alcohol use and aspects related to the modified CIWA protocol utilized at Sturdy Memorial Hospital was included in the education intervention. This intervention was completed on a NetLearning module. NetLearning is a healthcare learning management system developed by Healthcare Source. It is a program that allows an institution to use educational resources and/or develop their own online courses. Course material can easily be assigned to staff allowing for ease in tracking enrollment, completion, and maintenance of clinical competencies. The modules allow individuals flexibility in completing assignments that can be accessed any time on-line.

Table 2.

Content and Objectives: Managing Hospitalized Adults with Alcohol Dependence: An Education Program for Nurses

Content	Objectives
1. An overview of the basics of alcohol use disorders, term and definitions.	The nurse will review and/or recall alcohol use disorders.
2. The effects of alcohol on the body, both short and long term effects.	The nurse will be knowledgeable about the effects of alcohol from slurred speech to liver dysfunction.
3. Recognizing the signs and symptoms of alcohol withdrawal syndrome. • CAGE assessment tool • CIWA assessment	The nurse will gain knowledge in assessing for excessive alcohol use and potential alcohol withdrawal, as well as actual alcohol withdrawal symptoms.
4. The evidence based treatment recommended to treat AWS. • Prophylactic treatments • Alcohol withdrawal treatment • DT treatment	Nurses will be familiar with the treatment of AWS and DT, as well as understanding the rational for treatment.
5. Significance of the CIWA protocol and how it is used to assess, monitor and medicate hospitalized with adults AWS.	The nurse will be knowledgeable about using the CIWA to assess, when to medicate, and continue to use CIWA to monitor the effectiveness of treatment to better manage the patient with AWS.

Measurement

The eight question survey used for the pre-survey and the post-survey was developed by this author and piloted by co-workers who were registered nurses working in the ICU (Appendix B). The questions were developed from a review of the literature and CIWA protocol, chosen to elicit knowledge of varying aspects of assessing,

monitoring, and medicating potential and/or actual hospitalized adults with AWS taught in the educational intervention. Several of the initial piloted questions were revised secondary to feedback from the ICU nurses. The result was an eight question multiple-choice survey.

Procedures

The written proposal for this program was approved by the Sturdy Memorial Hospital and RIC IRB's. Then, the approved CIWA PowerPoint presentation (Appendix A) was converted to a NetLearning on-line module with the approved pre and post surveys (Appendix B) and evaluation (Appendix C) attached. The author enlisted the assistance of the ICU nurse educator who had the authority and experience with the conversion of projects to NetLearning. The IRB approved flyers containing information on the program (Appendix D) were posted in each of the unit break rooms. Information on the flyer included the researcher's name, a brief explanation about the content of the NetLearning educational program, the time frame it was available, and that participation was completely voluntary. The IRB approved informational letter (Appendix E) was used to recruit participants to the program and served as informed consent for those who chose to participate. The IRB approved letter was placed in each nurse's mailbox and explained that the project was an online educational learning program on NetLearning about assessing and managing patients with AWS using the CIWA protocol for the purpose of improving knowledge in that area. It explained that participation included taking a pre-survey followed by reviewing the educational module, taking a post-survey at the end, and lastly a short five question program evaluation. The nurse managers of

the two medical-surgical floors were also notified about the NetLearning program so that

it could be mentioned in staff meetings, and copies of the information letter were made

available. With the assistance of the ICU nurse educator, the CIWA NetLearning module

was assigned to be available to all nurses on the two medical-surgical units for November

24[th, 2014].

The program took about 20 minutes to complete. Participation was voluntary and

there was no compensation. The direct benefit was the additional knowledge gained from

completing the learning the module. Anonymity and confidentiality were maintained.

Once completed, the nurse educator provided the author with the pre and post-

survey and evaluation results with all identifiers removed. Surveys and evaluations were

identified by sequential numbers placed on the tools by the NetLearning program to aid

in correlating pre and post surveys. All hard copy data collected was stored in a closed

envelope in the ICU nurse manager's office with the computerized results on the SMH

NetLearning site that was accessed by the ICU nurse educator only. The information

collected was presented in a written report without the identity of the participants

revealed.

Data analysis

Quantitative data was collected from prospective surveys. This study included a

pre-survey and post-survey and the goal of the intervention was that a higher score would

be evident on the post-survey following the educational module. A higher score would

signify that the education module was successful in achieving its goal of increasing the

knowledge base of nurses managing hospitalized adults on the CIWA protocol. The

statistical analysis used mean and medium of test scores. The paired samples t-test was used as the project participants were tested twice with pre-survey and post-survey scores.

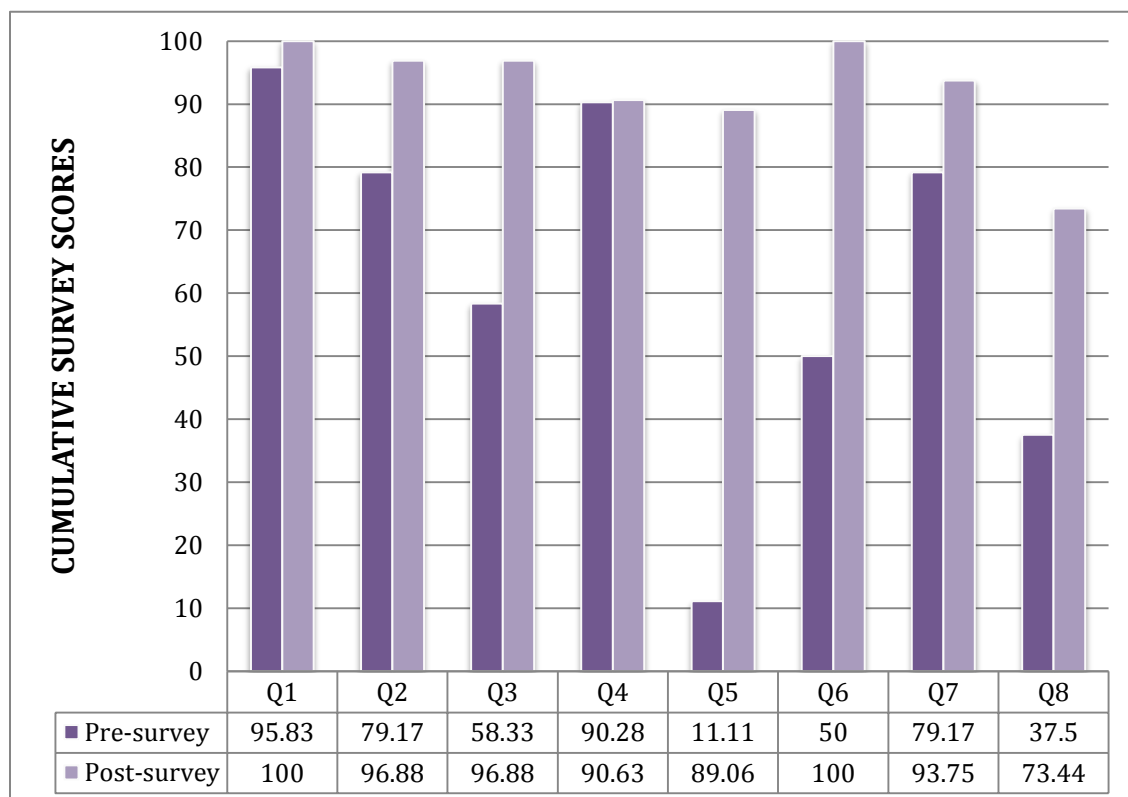Next, the results will be described

Results/Outputs

Sixty-eight nurses out of 100 nurses agreed to participate in the study. All participants completed the pre-survey, intervention, and post-survey using the NetLearning module on CIWA.

Table 1 illustrates the percent correct on the cumulative scores for both the pre and post-surveys (N=68).

Table 1

Nurses' knowledge on managing hospitalized adults with alcohol withdrawal

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Pre-survey	95.83	79.17	58.33	90.28	11.11	50	79.17	37.5
Post-survey	100	96.88	96.88	90.63	89.06	100	93.75	73.44

The pre-survey scores had an average of 62.67% correct answers (SD = 27.11), while the post-survey scores averaged 92.58% correct (SD = 8.15). The median pre-survey score was 68.75 with a significant improvement in the post-survey scores after the

intervention with a median score of 95.32 (p = 0.014). The highest individual score on the pre-survey was 100 with the lowest score equal to 13 (SD = 17.51). The highest individual score on the post-survey was 100 with the lowest score equal to 75 (SD = 6.32).

Question one, identifying the patient that might experience delirium tremens, and question four, identifying symptoms of alcoholism, did not reflect significant increases. There was little change from before and after the intervention as most nurses answered these two questions correctly. Two of the eight questions were answered correctly by 79.17% of the nurses participating in the pre-test. This included question two which is a situational question based on knowledge of lorazepam dosing while following the CIWA protocol, and question seven, that tested the appropriate timing to notify the provider regarding the discontinuation of the CIWA protocol.

Four out of the eight questions had pre-survey scores ranging from 11.11% to 58.33% correct, these questions indicated the greatest improvement following the intervention with post-survey scores ranging from 73.44% to 100%. The following tables illustrate the variability of responses prior to the intervention and the significant improvement post intervention.

Table 2 on the following page illustrates the pre and post-survey individual answers for question three. The correct answer is G for guilty. Table 3. illustrates the pre and post-survey individual answers for question five. The correct answer is within six hours.

Table 2

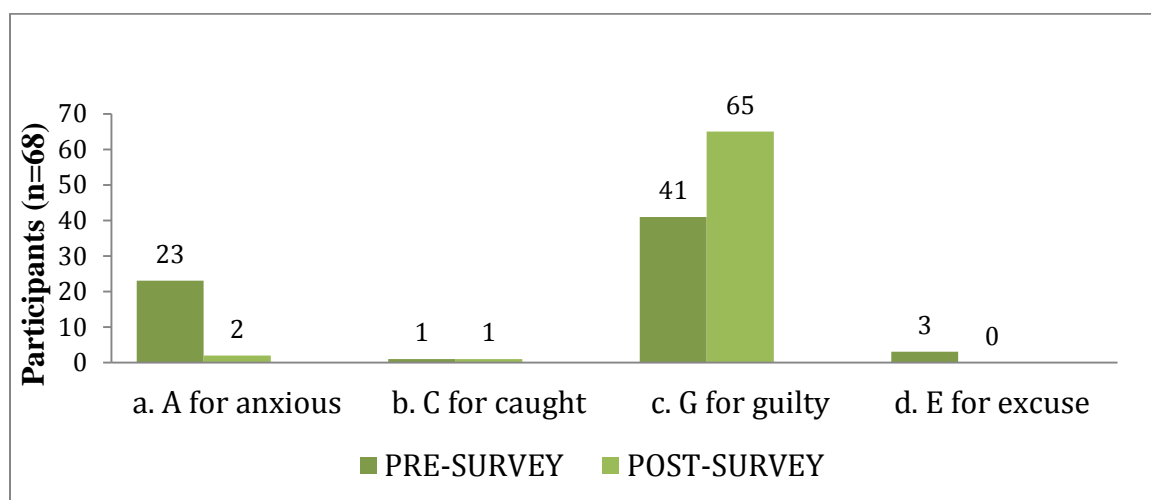*Question 3: The CAGE questionnaire acronym includes ---*

Table 3

Question 5: After patients with alcohol dependence abruptly stop drinking, when might they start to experience alcohol withdrawal symptoms?
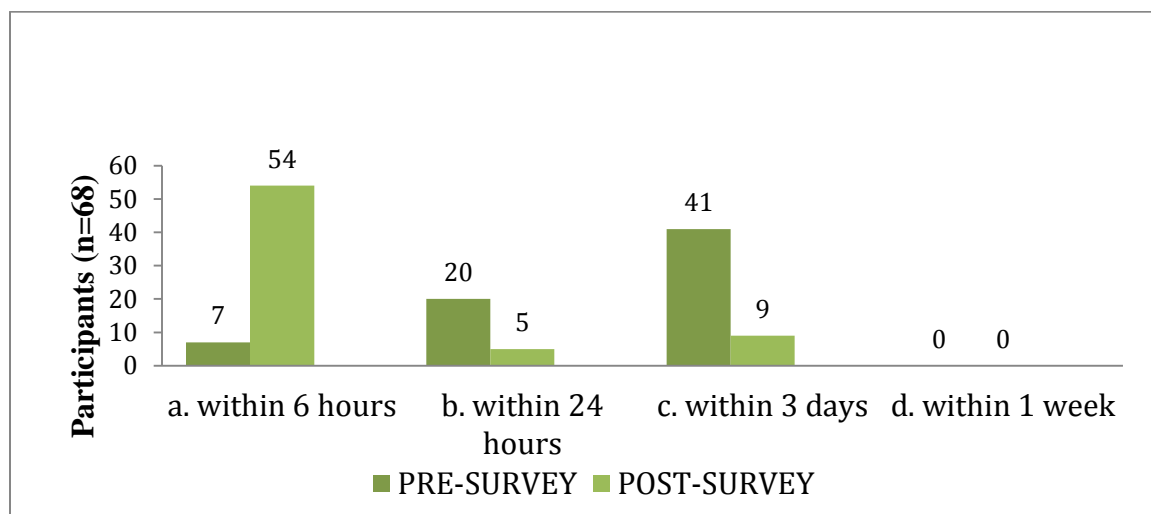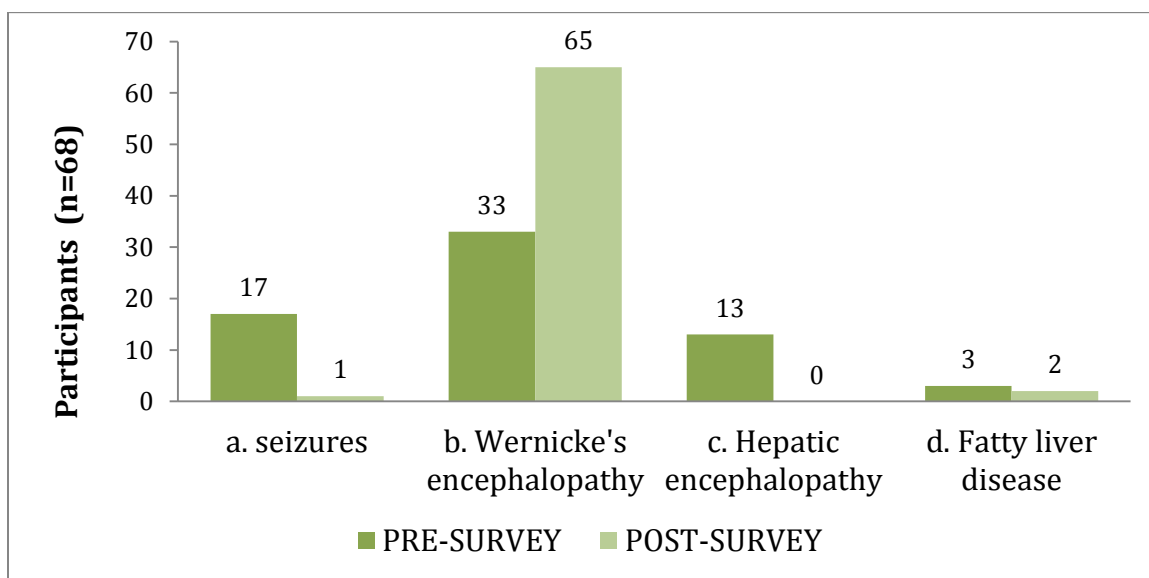
Table 4 illustrates the pre and post-survey individual answers for question six.
The correct answer is Wernicke's encephalopathy.

Table 4.

Question 6: Patients with alcohol withdrawal syndrome are given thiamine 100mg to prevent ---.

Following completion of the post-survey, participants were prompted to complete a four-question evaluation of the online education. Twenty-three out of the 68 nurses completed the evaluation. Table 5 illustrates responses to the evaluation questions.

Table 5.

Evaluation results of post intervention
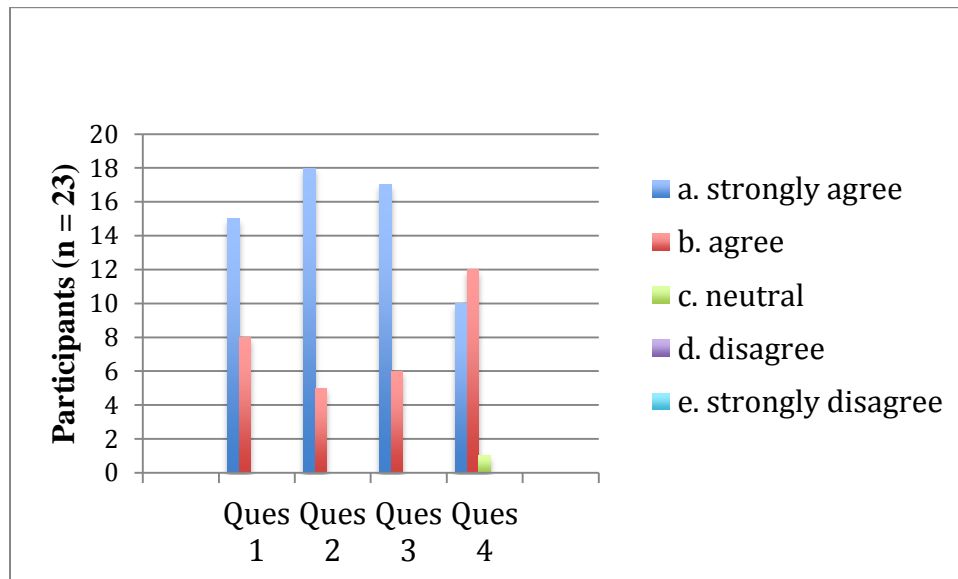
Overall, 65% to 78% of nurses who completed the post intervention evaluation answered strongly agree to questions one through three, with the remaining answering agree. These questions reflected the nurses confidence in explaining the nursing role in managing a patient on a CIWA protocol, recognizing the signs and symptoms of AWS, and that the objectives of the project were met. Question four asked if the nurse felt more confident in utilizing the CIWA protocol after completing the education module, 43% answered strongly agree, 52% answered agree, and 1 answered neutral. Question five was as an open-ended question for comments, however no participants chose to include a comment.

Summary and Conclusions/Outcomes

In the United States, alcohol is the most commonly used addictive substance with an estimated 17.6 million people suffering from alcohol abuse or dependence, and an estimated several million more with risky excessive drinking patterns that could lead to dependence (NCADD, 2012). Alcohol withdrawal is a common clinical condition experienced by an alcohol-dependent adult who has an abrupt cessation of alcohol. This may be a consequence of an unanticipated hospital admission. The probability of a nurse encountering a patient with alcohol withdrawal symptoms is highly likely and should be anticipated.

By definition alcohol-dependence includes the symptoms of: craving with a strong urge to drink; loss of control and inability to stop drinking; physical dependence exhibiting withdrawal symptoms after stopping drinking; and tolerance or the need to drink greater amounts to elicit the same effect (National Institute on Alcohol Abuse and Alcoholism, 2013b.). Symptoms of alcohol withdrawal can begin within six hours after the cessation of alcohol; however there is wide variability in the presentation and progression of AWS. The literature suggests that the predisposition to experiencing AWS is multifactorial and related to genetics, physiologic, psychological, social and economic factors, as well as other co-morbidities the person may have, all contributing to the development of AWS (APA, 2012). The most common pattern of AWS initially is characterized by tremor, anxiety, headache, diaphoresis, nausea and vomiting, including symptoms of an overactive autonomic nervous system as the depressive effects of alcohol are abruptly removed (Foy & Taylor, 1997). The progression of AWS varies with a wide

range of symptoms and can advance to delirium tremens, the most severe complication of AWS (Perry, 2014).

The CAGE questionnaire is frequently used because it is a validated four question mnemonic, easy to remember and recall, and used to assess for alcohol abuse. The Clinical Institute Withdrawal Assessment for Alcohol scale (CIWA-Ar) is a 10-item reliable and validated tool used to assess for alcohol withdrawal and monitor the effectiveness of treatment of AWS (Sullivan, Sykora, Schneiderman, Naranjo, & Sellers, 1989). When nurses are educated to recognize potential alcohol abuse along with assessing and managing AWS by utilizing a CIWA protocol, the patient at risk for withdrawal can be identified sooner and potential incidences of complications may be reduced.

The purpose of this project was to develop and implement an educational program for nurses targeted at management of hospitalized adults with potential or actual alcohol withdrawal through focused assessment skills and implementation of the CIWA protocol. A needs assessment was performed prior to development of this project. An observation was made that some patients in AWS required transfer to the ICU secondary to over sedation or fulminant DT and the question was raised as to why this was occurring. The needs assessment revealed the absence of a formal AWS training program using the CIWA protocol, and this became the focus of this project.

In reviewing the literature, it was found that difficulties managing patients in alcohol withdrawal, and the challenges caring for this patient population is not a new problem. There is well-documented success in educational programs geared to helping

nurses understand and manage the alcohol dependent patient in acute alcohol withdrawal using CIWA protocol (Melson et. al, 2014). The educational program content covered an overview of AUD, the effects of alcohol on the body, how to recognize the signs and symptoms of AWS and potential complications, and the evidence based treatments recommended including the use of the CIWA protocol. The logic model was used to organize the educational program and Knowles Theory of Learning was chosen as the project's framework, as it addresses the adult learner's goals that adults want to apply tomorrow what they learn today in order to cope with current problems. All registered nurses on the two medical-surgical floors at a community hospital were invited to participate in the self-directed educational program on NetLearning.

A total of 68 out of 100 nurses completed the project. The results suggest that an online educational program on AWS and utilizing the CIWA protocol was successful in increasing the nurses' knowledge with significant improvement in the post-survey scores average 92.58% from an average of 62.67% on the pre-survey scores (p = 0.014). Several of the questions demonstrated significant improvement in scores following the intervention and were highlighted in the results. This improvement in the number of correct answers reflects an improvement in the knowledge regarding assessment skills and management of AWS. This may contribute to improved quality and patient care outcomes by recognizing the possibility of AUD, and appropriate timing of potential AWS and understanding the rational behind the treatment.

Several limitations were acknowledged. Of the 68 nurses who completed the program, only 23 completed the evaluation questions and none of those nurses completed

the open-ended comment.   Also, no demographic data was collected on this project and

educational level and years of experience would have enriched the data by further

describing the sample. The study by Cund (2013) examined student nurses' s knowledge

and educational preparation for caring for adults with alcohol abuse. Results of that

study underscored the likelihood that nurses have limited knowledge and clinical skills in

managing the patient with AUD upon graduation and suggested educational preparedness

in caring for this patient population (Cund, 2013).

     In conclusion, the results of the pre and post-survey scores suggest that the

NetLearning education increased the nurses' knowledge on managing hospitalized adults

with AWS and utilizing the CIWA protocol. This NetLearning module on the CIWA

protocol, has been adopted by the hospital nursing education department as an

educational tool for nurses at Sturdy Memorial Hospital.

     Next, recommendations and implications for advanced practice will be discussed,

Recommendations and Implications

The results of this project demonstrate the effectiveness of an online learning module on alcohol dependency related to the management of a hospitalized adult with AWS utilizing a CIWA protocol. Education for nurses in an online format allows the nurse access to that education at time convenient to them that may increase their compliance with the learning exercise, as well as allowing for continued access as a AWS online reference. The NetLearning module created in this project will continue to be used by nursing education for future competencies.

The role of the APRN is multifaceted and recognizable as a level of nursing practice that utilizes expanded skills, experience and knowledge in assessment, diagnosis, treatment and evaluation of patient care. The enhanced scope of practice for the APRN profession includes collaborative practices, providing a supportive environment for nursing staff, participating in ethically justifiable practices using evidence-based resources, with the goals of improving nursing practice while optimizing the nurse-patient relationship to achieve best outcomes. The management of a patient experiencing alcohol withdrawal is challenging because the presentation and severity of symptoms is unpredictable and frequently mimics other illnesses. The nurse at the bedside needs to be educated to recognize symptoms as potentially alcohol withdrawal related and be ready to utilize the CIWA protocol and provide the best level of care to mitigated adverse events. The APRN has the skills and education to research the best evidence and then disseminated that knowledge to improve the practice. Developing strategies to improve

nursing practice through evidence-based best practice is an important element in improving patient outcomes and safety.

Through investigation and review of the literature, clinical strategies know as alcohol screening, brief intervention, and referral to treatment (SBIRT) are being researched and tested. This SBIRT package is designed for nurses in inpatient settings providing enhanced guidelines for addressing the spectrum of AUD, and is supported by the Joint Commission for improving patient outcomes. Nurses have the greatest amount of patient contact in the hospital, and are the largest group of hospital care providers, putting them at an advantage to use their knowledge to practice to the fullest extent of their education and benefit patients care outcomes (Broyles et al., 2013). Changes to hospital policies regarding protocols for AWS require the support of all stakeholders involved. The APRN is in the position to translate current research and assist interdisciplinary teams to develop policy and protocols that greatly impact patient care.

The APRN must continue to investigate and participate in conducting new research to add to the body of knowledge regarding the management of adults with AWS, and therefore being able to further optimize the nurse-patient relationship with ongoing educational opportunities to improve outcomes.

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Appendix A

Outline of the CIWA powerpoint presentation

1   Managing Hospitalized Patients with Alcohol Dependence: An
    Educational Program for Nurses

2   What does alcohol withdrawal look like?

Senario—74 years old male admitted at noon with a hip fracture after a
mechanical fall at home. At 8 p.m. the nurse notices that he is a bit confused
and anxious and assumes the he is experiencing "sundown syndrome". By 11
p.m. the patient is extremely anxious, slightly diaphoretic and nauseated, the
nurse places a call to the provider for an antiemetic and sleeping aid.

3   What the nurse didn't realize is that Mr. Banks is exhibiting
    symptoms of alcohol withdrawal

Managing the potentially severe symptoms of unplanned alcohol withdrawal
can be challenging

4   Objectives

   • Review some basics on alcohol and why it is a problem

   • Define the common terms such as alcohol abuse, dependence,
     withdrawal syndrome, delirium tremens

   • Discuss the effect alcohol has on the body

   • Discuss the signs and symptoms of withdrawal

   • What is the CIWA protocol? And how is it used?

   • How can the nurse manage this patient population.

5   Back to the basics!

Knowing how much alcohol constitutes a "standard" drink it a good starting point.

Each of these pictured drinks = one alcoholic beverage

Moderate alcohol use is defined as *no more than* two drinks per day for men and one drink per day for women

The effects of alcohol are seen almost immediately—about 10 minutes after the first sip, alcohol enters the blood stream.

6   How blood levels affect the body

In the United States, 0.08% is the illegal blood alcohol level for drivers.

Most deaths from alcohol poisoning occur at blood alcohol levels of 0.35 to 0.50

- At 0.02 = mild alteration of feelings, slight intensification of mood
- At 0.05 = feelings of relaxation, giddiness, lowered inhibitions with slight impairment of judgment and motor skills
- At 0.08 = impaired muscle coordination and reaction time, tingling and numbness of face, hands, arms, and legs
- At 0.10 = flushed appearance, ataxia, impaired mental abilities including judgment, attention span and memory,
- At 0.15 = irresponsible behavior, euphoria, delayed reactions
- At 0.20 = slurred speech, staggering, loss of balance, urinary incontinence, amnesia
- At 0.40 = lapses in consciousness, vomiting, respiratory depression
- At 0.45 = life threatening respiratory depression, markedly decreased heart rate, coma
- At 0.50 = death

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) estimates for 2012 :

- 17 million Americans or 1 in every 12 adults

    o have an alcohol use disorder (AUD) which includes both alcoholism and harmful alcohol intake (binge drinking).

- 38 million Americans binge drink averaging 4 to 8 times per month

    – most of these individuals are not alcoholics

- <u>Binge drinking</u> = drinking 5 or more alcoholic drinks on the same occasion on at least 1 day in the past 30 days

- Heavy binge drinking = 5 or more alcoholic drinks on the same occasion on each of 5 or more days within 30 days

- 1 in every 4 to 5 people admitted to the hospital have a drinking problem

8   Definitions

- <u>Alcohol use disorder (AUD)</u> is a medical condition diagnosed when an individual's drinking causes distress or harm – alcohol abuse and dependence

- Recognized on the DSM-5 – the 5th ed. Of the Diagnostic and Statistical Manual of Mental Disorders

- <u>Alcohol abuse</u> = when a person drinks alcohol even though it causes serious problems—loss of work, trouble at home, or problems with the law—but no withdrawal symptoms when they stop drinking

- <u>Alcohol dependence syndrome = alcoholism</u> – an addiction to drinking alcohol, a lifelong disease that often causes health, emotional, behavioral, and social problems, cannot be cured but can be successfully treated if they stop drinking, they have varying withdrawal symptoms.

- <u>Binge drinking</u> is drinking 5 or more drinks on the same occasion on at least one day in the past month

9 Defining Alcoholism

Alcohol abuse is recurrent harmful alcohol use:

Alcoholism or alcohol dependency syndrome is characterized by 4 symptoms:

- o <u>Craving</u> – a strong need, or urge to drink

- o <u>Loss of control</u> – not being able to stop drinking once drinking has begun

- o <u>Dependence</u> – withdrawal symptoms, such as nausea, sweating, shakiness, and negative emotional states such as anxiety, after stopping drinking

- o <u>Tolerance</u> – the need to drink greater amounts of alcohol to feel the same effect

10 What's the problem?

Drinking too much causes 80,000 deaths in the United States each year

In 2006 it cost the U.S. economy $223.5 billion

Excessive alcohol consumption is the nation's third leading cause of preventable deaths

<u>1 in every 4 to 5 people admitted to the hospital have a drinking problem</u>

Alcoholism is a disabling condition associated with high rates of
medical and psychiatric comorbidities as well as early mortality

11   What is alcohol withdrawal syndrome?

☐   SYMPTOMS OF AWS:

(diagnosed when 2 or more of the following symptoms develop in the occurrence of abrupt cessation or reduction of alcohol)

Nausea/vomiting, insomnia, headache, tremor, agitation, anxiety, anorexia, diaphoresis, tachycardia, hypertension (in the first day of AWS)

Alcohol withdrawal syndrome (AWS) is characterized by hyperactivity of the nervous system. Initial symptoms may begin with 3 to 6 hours following the cessation or reduction of heavy and prolonged alcohol use.

- Severity if variable and is dictated by a number of factors:

- Amount of alcohol intake

- Previous history of AWS

- Length of time an individual has been using alcohol

- Age

- Co-morbidities

12 Symptoms of alcohol withdrawal occur in alcoholics because alcohol is a central nervous system (CNS) depressant and abrupt cessation results in over activity of the CNS.

There are many theories as to what causes alcohol related disorders: psychologic; social; physiological; genetic

Genetic-genome-wide studies have shown a gene linked to alcoholism which is why a familial link is suggested. The nature of alcoholism, with its

characteristic denial, memory and anxiety make it challenging for the nurse to obtain an accurate history.

13 Assessing alcohol dependence

There are many instruments that have been developed to screen for signs of alcohol abuse. As part of Sturdy Memorial Hospitals alcohol withdrawal policy, all patient are assessed upon admission using the CAGE scale for potential alcohol dependence. This mean that the nurse asks the patient each one of the questions to elicit a "yes" or "no" response. If a patient answers "yes" to any question, then the nurse initiates monitoring the patient on the CIWA protocol.

14 There have been many studies done that validated that a score of 2 to 3 on the CAGE scale indicates a high suspicion for alcoholism, and even a 1 out of 4 calls for further assessment. The importance of assessing for alcohol dependence very early, on admission, is that AWS can begin within 6 hours (again some references state even earlier at 3-6 hours)

(CAGE illustration)

15 Clinical Institute Withdrawal Assessment for Alcohol (CIWA) scale

The most common assessment tool to assess for alcohol withdrawal syndrome is CIWA-Ar last revised in 1989 to a 10-item scale.

The Clinical Institute, Addiction Research Foundation, is a 61 bed specialty teaching hospital affiliated with the University of Toronto.

Sturdy Memorial Hospital utilizes a modified CIWA scale that includes 8-items: (illustration)

16 Benzodiazepines are the drugs of choice for treatment of AWS and used on the CIWA protocol.

These are the most extensively studied drugs for the treatment of AWS.
These drugs treat the psychomotor agitation.

17 Benzodiazepines

Two of the most common short-acting benzodiazepines are lorazepam
(Ativan) and oxazepam (Serax) which are used at Sturdy Memorial
Hospital. These medications are not metabolized by the liver and
therefore may be beneficial in patients with an impaired liver or in the
elderly. They are also short-acting which helps mitigate the adverse
effects including sedation, respiratory depression, hypotension and
anterograde amnesia. Chlordiazepoxide (Librium) is a medium to long-
acting benzodiazepine.

18 Haloperidol (Haldol)

Haloperidol is an antipsychotic medicine used in the treatment of
schizophrenia, acute psychosis, mania, and delirium that includes
alcohol-induced psychosis secondary to delirium tremens.

Side effects = extrapyramidal symptoms (EPS) → dystonia or sustained
muscle contraction; akathesia→ inability to remain motionless; ataxia→
uncoordinated involuntary muscle movements; prolong QT interval →
can lead to Torsade de pointes (polymorphic ventricular tachycardia)

19 Alcoholics are often deficient in electrolytes and minerals presumably
due to poor dietary habits, nausea/vomiting, and alcohol-induced changes
in the digestive tract that impede absorption.

Automatically triggered orders include: thiamine, folic acid, and
multivitamin.

20 The importance of thiamine

Thiamine plays a role in the body's energy metabolism, specifically the metabolism of glucose to which the brain is particulary sensitive to.

Wernicke encephalopathy results from thiamine deficiency which is common in alcoholics.   Thiamine is administered before glucose because it is a co-factor necessary for glucose metabolism.

Wernicke encephalopathy→ severe confusion, amnesia, abnormal gait/ataxia, nystagmus and paralysis of external ocular eye muscles that may progress to an irreversible dementia—Korsakoff syndrome—if not treated.

21 AWS can have an impact on fluid and electrolyte status

Almost all patients in AWS are hypovolemic as a result of diaphoresis, hyperthermia, vomiting, anorexia, and tachypnea. Isotonic intravenous fluids are often ordered.

Thiamine has already been mentioned but there are other electrolytes and mineral abnormalities to consider. (defined→hypokalemia, hypomagnesium, hypophosphatemia, and folic acid deficiency)

22 The most severe manifestation of AWS includes hallucinosis, seizures and DT

Hallucinosis is a complication separate from DT. Patients with hallucinosis see, hear, or feel things that are not there even though they are fully conscious and aware of their surroundings. Their vital signs remain stable. It develops in 12 to 24 hours and resolves within 24 to 48 hours. Hallucinations and delirium in DT typically develops 72 to 96 hours after the last drink.

23 Illustrations →the variability and timing of AWS

24 Delirium Tremens (DT)

This is the most severe form of alcohol withdrawal characterized by
altered mental status and severe autonomic hyperactivity→the activation
of the nerves responsible for the body's response to stress –may lead to
cardiovascular collapse.   DT is a medical emergency! (chart with
description included)

25 Risk factors for the development of DT

- A history of sustained/prolonged drinking

- A history of a previous episode of DT

- Age greater that 30 years old

- The presence of a concurrent illness

- The presence of a significant alcohol withdrawal in the presence
  of an elevated blood alcohol level

- A longer period since the last drink

26 DT is associated with a mortality rate of up to 5%

Death is usually due to arrhythmia, complicating illness such as
pneumonia, pancreatitis, hepatitis, or other infection.

27 Seizures occur predominately in patients with a long history of chronic
alcoholism. (therapy illustrated)

28 Illustration showing how alcohol can affect the body.

29 What's going on in the brain?

Daily alcohol intake affects the brain at the cellular level. Alcohol
interferes with the transmission of neurotransmitters. (discussion of
GABA, NMDA, and glutamate included)

30 How nurse care for and manage AWS (picture)

31 Don't get discouraged!

Studies have been done that show nurses often have negative feelings related to caring for this population of patient in acute alcohol withdrawal. They are difficult to manage because there are such varying severities of withdrawal symptoms, many of which are vague and could be attributed to other conditions. This is why a careful screening on admission is so important to assess for alcohol abuse. The good news is that studies have also shown that education programs tailored to nurse regarding management have improved the knowledge base, the understanding of AWS, and confidence levels in caring for this patient population increases.

32 What can the nurse do?

(discussion on using the CIWA protocol included)

33 This slide discusses how to monitor a patient on the CIWA protocol, when to initiate medication, and when to hold medication.

34 This slide discusses the importance of monitoring vital signs, when to notify the provider and following the protocol.

35 This slide discusses the various treatment options at Sturdy Memorial hospital: Librium, Serax or Ativan.

36 The next two slides are the modified 8-item CIWA protocol utilized at Sturdy Memorial Hospital.

37 Alcohol withdrawal treatment protocol—chlordiazepoxide (Librium)

This slide discusses how to use the Librium protocol

38 Serax schedule/Ativan prn protocol

This slide discusses this protocol

39 Lorazepam with schedule dosing

40 Assessing for a CIWA score

This slide discusses how to use the CIWA score by taking vital signs and asking the patient the questions on the CIWA.

41 Goals of treatment

- To recognize the sign and symptoms of AWS

- To provide a safe withdrawal from the drug(s) of dependence, in this case alcohol, and enable the patient to become drug-free

- To manage the symptoms of AWS and prevent serious events (seizures, DT, Wernicke's encephalopathy…) by following the protocol

- To provide withdrawal with the goal of preparing the patient for ongoing treatment of his/her dependence on alcohol

Thank you for your participation.

Appendix B

Pre and post-survey

1. DT's are most common in--
   a. older adults who metabolize alcohol more quickly
   b. **adults with a history of prolonged alcohol use disorder**
   c. young patients who haven't developed a tolerance to alcohol
   d. older men who binge drink

2. Mr. Smith is started on the lorazepam with scheduled dosing CIWA protocol. He is agitated, restless and diaphoretic with a CIWA score of 8, the nurse should first---
   a. Reassess in 1 hour to see if the CIWA score if less than 8
   b. **Medicate with 2mg lorazepam and notify the provider**
   c. Notify the provider of the CIWA score of 8
   d. Reassess in 2 hours if CIWA score is less than 4

3. The CAGE questionnaire acronym includes--
   a. A for anxious
   b. C for caught
   c. **G for guilty**
   d. E for excuse

4. Which is not a symptom of alcoholism.
   a. **loss of tolerance**
   b. craving
   c. loss of control
   d. physical dependence

5. After patients with alcohol dependence stop drinking, when can they start to experience alcohol withdrawal symptoms?
   a. **within 6 hours**
   b. within 24 hours
   c. within 3 days
   d. within 1 week

6. Patients with alcohol withdrawal syndrome are given thiamine 100mg to prevent--
   a. seizures
   b. **Wernicke's encephalopathy**
   c. Hepatic encephalopathy
   d. Fatty liver disease

7. When is the appropriate timing to notify the provider regarding discontinuation of the CIWA protocol?
   a. The maximum dosing of 20 mg of Ativan/24 hours has been met
   b. The CIWA score has been less than 4 for 72 hours
   c. The patient is sleeping with no signs or symptoms of alcohol withdrawal
   d. The CIWA score has been less than 4 for 36 hours with no medication given

8. The term "kindling" refers to—
   a. A prolonged history of alcohol use disorder
   b. Signs and symptoms that are precursors to DT's
   c. Electrolyte disturbances related to chronic alcohol use
   d. Increasing frequency and severity of withdrawal episodes

Appendix C

Evaluation

1. I can recognize the signs and symptoms of alcohol withdrawal syndrome (AWS).
   a. strongly agree
   b. agree
   c. neutral
   d. disagree
   e. strongly disagree
2. I can explain the nursing role in managing a patient with AWS.
   a. strongly agree
   b. agree
   c. neutral
   d. disagree
   e. strongly disagree
3. The objectives of this educational module have been met.
   a. strongly agree
   b. agree
   c. neutral
   d. disagree
   e. strongly disagree
4. I feel more confident in utilizing the CIWA protocol after completing this educational module.
   a. strongly agree
   b. agree
   c. neutral
   d. disagree
   e. strongly disagree

5. Comments :
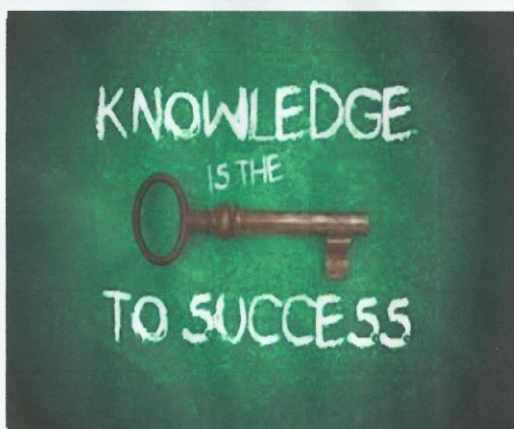
Appendix D

IRB approved flyer

THE Nursing Bulletin

Medical-Surgical floors

STURDY EXCLUSIVES

EXTRA, EXTRA READ ALL ABOUT IT!!!!!!!!!!!

KNOWLEDGE IS THE KEY TO SUCCESS

Continuing education for nurses

As part of my Master's project, I am recruiting medical-surgical nurses to participate in a NetLearning program on alcoholism and using the CIWA protocol.

Lisa Darling, RN
ICU – Sturdy Memorial Hospital X7450
Rhode Island College
Nurse Practitioner student
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ldarling@sturdymemorial.org

Managing Patients with Alcohol Dependence

Available on NetLearning **November 15, 2014**

Through -- **January 15, 2015!**

Participation is voluntary and includes: an eight question pre-survey; the education program; an eight question post-survey; and evaluation

Home access:

https://lms.netlearning.com/MyNetLearning/sturdy

Education is empowering!

* Alcoholism basics
* Assessing alcohol withdrawal
* Using the CIWA protocol

Please help me by participating!!

If you have any questions, please contact me.

Thank you!

Lisa

Appendix E

Informational letter

To all medical/surgical nurses,

My name is Lisa Darling, RN and I am a graduate student in an Adult-Gerontology Acute Care Nurse Practitioner program at Rhode Island College, Providence, RI.   You are all invited to participate in a study.

I will be conducting an educational program on NetLearning, <u>Managing Patients with Alcohol Dependence</u>, that includes a pre- and post-survey. The educational program is about managing hospitalized patients with alcohol withdrawal and utilizing the CIWA protocol. If you choose to participate you will be asked to complete the educational program which will be on netlearning and includes an 8 questions pre-survey, the educational presentation, followed by an 8 question post-survey and evaluation. The data off netlearning will be collected by nursing education with names and/or identifiers removed and coded, for example if I completed the module my name on the pre- and post-survey would be replaced with 1A for pre-survey and 1B for post-survey, the second participant would have the name removed and replaced with 2A and 2B, and so on. All information collected during this project will be treated confidentially so that you remain anonymous. All data will be stored in a closed envelope in the ICU nurse managers' office. The information collected will be presented in a written report in which your identity will not be revealed. I do not anticipate any risks associated with participating in this project. Participation in this project is voluntary.

Thank you in advance for you time and help with this project. I am available for any further discussion or concerns. The NetLearning program is available from November 15th, 2014 through January 15th, 2015 and can be accessed on the computers at Sturdy, or at your convenience at home by https://lms.netlearning.com/MyNetLearning/sturdy.

Sincerely,

Lisa Darling, RN, BSN
Rhode Island College graduate student
Ldarling_4649@email.ric.edu