Policy /Procedure Document	
Category/Source:	8.0 Patient Care
Origination Date:	4/2003
Last Review Date:	
Last Revised Date:	8/25/2015
Next Review Due:	8/1/2018
Policy Owner:	Chief Nursing Officer Vice President Medical Affairs
Required Approvals:	Hospital and Leadership Committee
	Pharmacy & Therapeutics Committee
	Trauma Committee
	Operations & Patient Safety
	Professional Practice & Research

TITLE:	**Alcohol Withdrawal Syndrome (AWS), Prevention Guideline**
SCOPE:	Adult and pediatric (defined as < 16 years of age) patients
PURPOSE:	To outline methods for monitoring for and preventing AWS
EQUIPMENT:	Alcohol Detoxification Orders (available in Cerner) Clinical Institute Withdrawal Assessment (CIWA) Power Form
POLICY/PROCEDURE:	

Risk Factors

1. Patients with alcohol present on admission, a stated history of alcohol dependence, a previous history of alcohol withdrawal, or a history of drinking heavily (generally more than 2 drinks daily or 14 drinks weekly) are at risk for alcohol withdrawal.
    a. Alcohol withdrawal generally manifests within 1-2 days after the cessation of alcohol. It may however appear much sooner, and even in the presence of alcohol in the system, in exceptionally heavy drinkers.
    b. Delirium tremens and alcohol withdrawal seizures, which are manifested by glutaminergic excess, generally present within 3-5 days after the cessation of alcohol.

2. Patients at suspected risk for alcohol withdrawal should be monitored with serial CIWA-Ar scores.
    a. The Clinical Institute Withdrawal Assessment (CIWA-Ar) scale is an objective tool to assess for the presence and severity of withdrawal.
    b. CIWA should be ordered at least every 4 hours for the first 24 hours of hospitalization in appropriate patients, and every 8 hours for the next 48 hours after that.
    c. Patients who have received sedation may suffer delayed withdrawal. Vigilance for withdrawal symptoms should remain high.

3. Benzodiazepine use is a risk factor for benzodiazepine withdrawal, which should be treated similarly to alcohol withdrawal.
    a. Patients taking benzodiazepines prior to admission are at risk of benzodiazepine withdrawal. These patients should be screened in the same fashion as alcohol dependent patients.

General Treatment Strategies:

1. Strategies for medication administration should be tailored to the individual patient based on presentation, history, prior symptoms and clinician resources. Treatment for alcohol withdrawal follows three general strategies:

a. **Fixed dose:** Prophylactic benzodiazepines are tapered over a scheduled amount of time, with as-needed doses given for additional symptoms.
b. **Symptom-triggered dosing:** Benzodiazepines are given only for symptomatic withdrawal as assessed by the CIWA scale.
c. **Front Loading:** Long acting benzodiazepine is administered in high doses to achieve symptomatic control. "Auto-tapering" of the initially dosed medication may allow for a faster taper.

2. Symptom-triggered dosing may decrease the amount of medication required and shorten time to liberation from benzodiazepines.

    a. Symptom-triggered dosing, in which medication is given only for objectively assessed symptoms, may lead to a faster taper and fewer patients who require any medication at all.
    b. Symptom-triggered dosing runs the risk of leading to inadequate dosing and exacerbation of withdrawal.

3. Patients with a history of previous withdrawal or seizure, or those in whom close monitoring is a concern, should be considered for standing doses of tapered benzodiazepines.

    a. While symptom-triggered dosing shows superiority in terms of duration of treatment and amount of medication administered, under-dosing may occur.
    b. Patients considered to be high risk for withdrawal should be evaluated for either a fixed or front-loaded dosing schedule to minimize the risk of withdrawal and seizure.

Agents: Benzodiazepines

1. Benzodiazepines are the first line therapy for treatment of symptomatic alcohol withdrawal syndrome.

    a. Benzodiazepine administration is the standard of care for the prevention and treatment of alcohol withdrawal. No studies have been performed comparing benzodiazepine administration with placebo. However, when compared to neuroleptic administration, benzodiazepine administration lowers mortality in alcohol withdrawal syndrome.

2. Benzodiazepines should be given orally or intravenously. Intramuscular administration should be avoided unless other routes are unavailable.

    a. Commonly used intravenous benzodiazepines have an onset of action between a few seconds to a few minutes, with peak effect between 5 and 15 minutes. Intramuscular absorption is erratic, though lorazepam (Ativan) has more predictable IM absorption.
    b. Some patients will require very large doses of benzodiazepines. Escalating dose and frequency may necessitate intensive care unit admission for administration as well as close monitoring of symptoms and airway. There is no evidence that continuous benzodiazepine infusion is superior to intermittent infusion, but it may be required in severe cases of alcohol withdrawal.

3. Long acting benzodiazepines may allow for smoother tapering.

    a. Long acting benzodiazepines such as Chlordiazepoxide (Librium) and Diazepam (Valium) have active metabolites which may allow for smoother withdrawal and less patient discomfort.
    b. Patients with impaired excretion or hepatic dysfunction should be considered for short acting benzodiazepines such as Oxazepam (Serax) or Lorazepam (Ativan).

Adjuvant Treatment Strategies

1. Propofol or phenobarbital should be considered in patients with refractory alcohol withdrawal. Patients receiving either drug require ICU admission.

a. Alcohol withdrawal necessitating escalating doses of intravenous agents may require adjunctive therapy and intensive care unit admission. Phenobarbital and propofol may be considered as adjunctive agents in treatment of the patient with refractory alcohol withdrawal.
b. Patients receiving propofol must be intubated for airway protection. Intubation should be strongly considered in patients receiving phenobarbital.

2. Use of dexmedetomidine should be considered as an adjunct to benzodiazepine administration in the patient with severe refractory alcohol withdrawal.

    a. Dexmedetomidine (Precedex) is a centrally-acting alpha-2 agonist with clonidine-like effects. It may reduce the severity of adrenergic symptoms in alcohol withdrawal.
    b. Dexmedetomidine does not cause significant respiratory depression and can be administered without establishing an airway. It may lead to modest decreases in heart rate and blood pressure. Bradycardia and hypotension may be more pronounced during administration of the initial bolus and patients should be monitored carefully upon initial administration.
    c. Dexmedetomidine may only be administered in the ICU.

3. Clonidine or nonselective beta blockers may be considered for adjunctive treatment of adrenergic symptoms.

    a. Clonidine may also be used in the patient with alcohol withdrawal and uncontrolled adrenergic symptoms such as tachycardia and hypertension.
    b. Beta blockers may also be considered as adjunctive therapy. Nonselective beta blockers are preferred for better suppression of autonomic symptoms.
    c. Caution is indicated as these agents may result in hypotension. These agents have not been shown to improve mortality in alcohol withdrawal. Beta blockers, particularly propranolol, may worsen delirium.

4. Antipsychotics may be considered as adjunctive therapy in patients suffering from hallucinations and other psychotic symptoms of alcohol withdrawal.

    a. Hallucinations, perceptual changes and other psychotic manifestations of alcoholic withdrawal are common. Treatment of these symptoms with antipsychotics alone results in increased mortality.
    b. However, antipsychotics may be cautiously used in conjunction with benzodiazepines if administration of the latter does not adequately treat psychotic symptoms.

5. Patients receiving antipsychotics should be monitored closely for QT prolongation.

    a. Nearly all antipsychotics are implicated in QT prolongation. They should generally not be used concurrently with other QT prolonging agents. The QT interval should be monitored closely in patients receiving antipsychotics.
    b. Haloperidol (Haldol) is not approved for IV usage and IV administration increases the risk of QT prolongation and torsades de pointe. This is of particular concern in alcoholics, in whom hypomagnesemia may also lead to torsades.

6. Alcohol should not be used as a treatment for alcohol withdrawal.

    a. While alcohol itself has historically been used in the treatment of alcohol withdrawal, its unpredictable absorption, difficulty in administration, and significant side effects contraindicate it to modern use in the treatment of alcohol withdrawal.

Alcohol Withdrawal and Seizure

1. Seizure due to alcohol withdrawal should be treated with benzodiazepines, phenobarbital or propofol in

doses sufficient to control seizure activity.

a. Alcohol withdrawal may, if inadequately treated, progress to seizure. Seizure in alcohol withdrawal should be treated with the same agents used to treat alcohol withdrawal.
b. Antiepileptic medications are not a first-line treatment for seizures related to alcohol withdrawal. They may be considered adjunctively in consultation with a neurologist.

2. Patients suffering from seizure due to alcohol withdrawal should be evaluated for alternate etiologies of seizure. Neurologic consultation should be considered.
    a. Many patients suffering from alcohol withdrawal seizures also have a prior history of traumatic brain injury. This may contribute to a lowered seizure threshold independent of withdrawal.
    b. Neurological consultation should be considered in the patient with alcohol abuse and seizure to evaluate for additional etiologies of seizure.

3. Patients suffering seizure due to alcohol withdrawal should be considered for ICU admission.
    a. Seizure is a late finding in alcohol withdrawal and greatly increases the patient's risk of in-hospital mortality.
    b. Witnessed or suspected seizure should trigger consideration of transfer to the ICU for more intensive monitoring and, in the case of refractory seizure, possible initiation of continuous IV agents such as propofol. Some patients suffering seizure may be able to remain on a general medical ward based on clinician judgment.

Nutritional Concerns in the Alcoholic Patient

1. Thiamine should be administered to all patients suspected of malnutrition, alcohol abuse, or who present with encephalopathy of unknown origin.
    a. Thiamine (Vitamin B1) deficiency is common in alcoholism and malnutrition. Ethanol itself leads to impaired thiamine absorption.
    b. While thiamine repletion has no significant side effects, deficiency, particularly in the context of dextrose infusion, can lead to mammillary body necrosis and Wernicke's Encephalopathy. This may be irreversible.

2. Most patients suffering from alcohol withdrawal suffer from magnesium deficiency. This should be corrected.
    a. Alcohol dependence is usually associated with magnesium deficiency. This may lead to musculoskeletal weakness, body aches, and cardiac arrhythmia.
    b. Serum magnesium levels may not reflect total whole body magnesium and should be periodically rechecked.
    c. Target serum magnesium should be greater than 2 mg/dL.
    d. Severe hypomagnesemia should initially be corrected parenterally. A slower infusion rate will result in more efficient absorption.

3. All patients suspected of malnutrition or alcohol dependence should receive supplemental folate and a daily multivitamin.
    a. Folate deficiency may be confirmed by sending a total RBC folate level.
    b. Supplemental zinc may be considered, in consultation with nutrition, to promote wound healing.

4. Electrolytes, including BMP, magnesium, and phosphorus, should be measured, at a minimum, once daily in alcoholic patients and repleted aggressively while they remain at risk of refeeding syndrome.
    a. Many alcoholic patients obtain much of their caloric needs from alcohol. The resulting ketogenesis leads to an insulin-deficient state.
    b. Institution of feeds in the alcoholic patient will often lead to insulin release and co-transport of potassium, magnesium, phosphorus and calcium intracellularly. These shifts may lead to life-threatening electrolyte imbalances.

Benzodiazepines Equivalence Table

Drug	Equipotent Dose (mg)	Approximate Half Life (hr)	Active Metabolite Half Life (hr)
Diazepam (Valium)	5	30 – 45	36 – 100
Chlordiazepoxide (Librium)	25	5 – 30	36 – 100
Oxazepam (Serax)	20	4 – 15	n/a
Lorazepam (Ativan)	1	10 – 20	n/a
Temazepam (Restoril)	20	8 – 22	n/a
Midazolam (Versed)	2.5	1 – 4	n/a

Adjunct Therapies and Example Doses

Drug	Example Dose
Propofol (Diprivan)	5-50 mcg/kg/min IV infusion
Phenobarbital (Luminal)	160 mg PO/IV Q15 min, titrated to symptoms
Haloperidol (Haldol)	5 mg PO/IM daily to Q4H, titrated to suppression of psychotic symptoms
Olanzapine (Zyprexa)	5 mg daily to BID
Quetiapine (Seroquel)	50 – 100 mg daily to TID
Dexmedetomidine (Precedex)	1 mcg/kg bolus followed by 0.2-1.2 mcg/kg/hr
Clonidine (Catapres)	0.1 – 0.2 mg TID, titrated to symptoms
Propanolol (Inderal)	10 – 20 mg TID

DEFINITIONS:	The DSM-IV Diagnostic Criteria for Alcohol Withdrawal require manifestation of at least two of

	the following symptoms: a. autonomic hyperactivity (HR > 100, diaphoresis) b. increased hand tremor c. insomnia d. nausea or vomiting e. transient visual, tactile, or auditory hallucinations or illusions f. psychomotor agitation g. anxiety h. grand mal seizures "Auto-tapering" refers to the naturally slow elimination and therefor diminishing effect of a drug with a long half-life.
REFERENCES:	Amato L, Minozzi S, Davoli M. Efficacy and safety of pharmacological interventions for the treatment of the alcohol withdrawal syndrome. Cochrane Database Syst Rev. 2011;6:CD008537 Bayard M, McIntyre J, Hill KR, Woodside J Jr. Alcohol withdrawal syndrome. Am Fam Physician. 2004 Mar 15;69(6):1443-50. PubMed PMID: 15053409. Mayo-Smith MF, Beecher LH, Fischer TL, et al. Management of Alcohol Withdrawal Delirium: An Evidence-Based Practice Guideline. *Arch Intern Med.*2004;164(13):1405-1412. doi:10.1001/archinte.164.13.1405. Rayner SG, Weinert CR, Peng H, Jepsen S, Broccard AF. Dexmedetomidine as adjunct treatment for severe alcohol withdrawal in the ICU. Ann Intensive Care. 2012 May 23;2(1):12. PubMed PMID: 22620986; PubMed Central PMCID: PMC3464179. Wood, Valerie. Guidelines for the management of alcohol issues in the acute general hospital setting. National Health Service Foundation Trust. June 2006. National Institute of Health: Alcohol Use Disorder: A Comparison Between DSM-IV and DSM-V. NIH Publication No. 13-7999. November 2013. World Health Organization: Management of Alcohol Withdrawal. World Health Organization Mental Health Gap Action Program. Update 2012. http://www.who.int/mental_health/mhgap/evidence/alcohol/q2/en/ The University of Michigan Alcohol Withdrawal Guidelines. University of Michigan, 8/25/9. https://www.med.umich.edu/clinical/images/ETOHCompleteTeachingPacket_FINAL082509.pdf

Document Revision History:			
Review Date:	Revised Date:	Reviewed/Revised By:	Summary of Changes:
	4/2003	Janet Howard, MSN, RN	Original Document
	8/2007	Janet Howard, MSN, RN	Changes to the CIWA Tool were incorporated. The entire document was reformatted according to the current template for online posting.
6/2010		Joan Madsen, BSN, RN	Review of document, no changes were made.
	2/2013	Janet Howard, MSN, RN and Cindy Lemp, MSW	This document is a revision of a previous version with the same title. Revised to clarify responsibility for screening and intervention.
	8/2015	Pulmonary/Critical Care (Luke White, DO)	Complete review and revision based on current evidence-based recommendations. Added medication reference tables. Changed to house-wide policy and removed from Trauma Department.