

Alcohol Withdrawal In the Cardiac Patient

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Goals

- Review the evidence based guidelines available for the management of alcohol withdrawal and alcohol withdrawal delirium
- Discuss limitations and potential adverse outcomes associated with protocol guided management of patients with medical co-morbidity and alcohol withdrawal.
- Discuss cardiac complications of excessive alcohol intake and their initial management in hospitalized patients

Alcohol Withdrawal Delirium

- Important to distinguish between alcohol withdrawal and alcohol withdrawal *delirium*
 - 1) Mortality rate is different between the two
 - 2) Therapeutic goals for managing in-hospital are different
 - 3) Length of stay in the hospital and cost for care are different

Timing of Alcohol Withdrawal

■ <u>Syndrome</u>	<u>Onset</u>
■ 1) Tremulousness <ul style="list-style-type: none">– Nausea, vomiting	6-36 hrs
■ 2) Hallucinations <ul style="list-style-type: none">– Mostly visual, but also auditory, tactile, odor	12-48 hrs
■ 3) Seizures	6-48 hrs
■ 4) Delirium Tremens <ul style="list-style-type: none">– Disorientation, confusion, agitation, fever, HTN	3-5 days

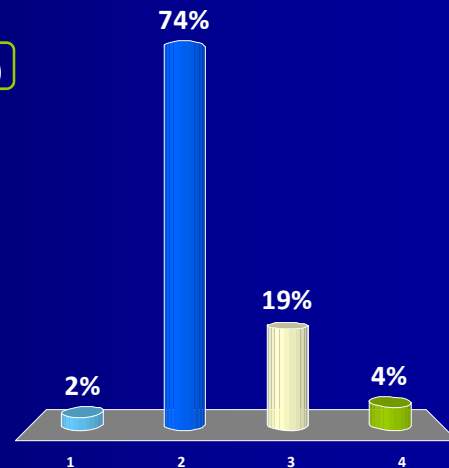
***The majority of alcohol withdrawal symptoms resolve within 5-7 days in treated patients.

Medical Conditions that Mimic Alcohol Withdrawal

- ICU delirium
- Thyrotoxicosis
- Drug/alcohol intoxication
- Respiratory Failure
- Meningitis
- Hepatic Encephalopathy
- Nicotine withdrawal
- Many more including benzodiazepine intoxication or sedative medication effect

What medication class is the first-line drug of choice for management of alcohol withdrawal and alcohol withdrawal delirium?

1. Beta Blocker (metoprolol)
2. Benzodiazepine (diazepam)
3. Antipsychotic (haloperidol)
4. Central alpha-2 agonist (clonidine)



Basics of ETOH Withdrawal Management

- Thiamine and folate
- Dextrose containing fluids
- Electrolyte abnormalities (Na,K,Phos)
- Magnesium and EKG
- Comorbid conditions (ETOH gastritis, pancreatitis, liver disease, pneumonia)
- Benzodiazepines are the first line agent for the treatment of alcohol withdrawal

Primary Agents- Benzos

TABLE 1. Pharmacokinetic Parameters for Most Commonly Used Benzodiazepines for Treating Delirium Tremens

Parameter	Chlordiazepoxide	Diazepam	Lorazepam	Midazolam
Equipotent doses	25 mg	5 mg	1 mg	2.5 mg
Absorption from IM injection	Erratic	Erratic	Almost completely absorbed	Almost completely absorbed
Duration of action	Short	Short	Intermediate	Very short
Lipophilicity	Less than diazepam	High	Less than diazepam	Less than diazepam
Elimination T 1/2	10-30 hr	20-50 hr	10-20 hr	1-4 hr
Active metabolites	N-desmethyl-chlordiazepoxide	N-desmethyl diazepam	None	None
T 1/2 of metabolite	16 hr	50-200 hr	N/A	N/A
Metabolism	Oxidation	Oxidation	Glucuronidation	Glucuronidation

Benzodiazepine Considerations

- Diazepam should be avoided in those >65yrs of age or with significant liver dysfunction
- Hepatic encephalopathy with elevated ammonia levels is an absolute contraindication to valium or Librium
- If the patient is sedated - do not give more benzodiazepine regardless of what their score is on the protocol

Other Agents Used in Withdrawal

- Antipsychotics have been used in management of AWD, but lower seizure threshold
 - Older studies showed increased risk of death compared to BZDs
- Beta blockers (propranolol) have been used, but can induce delirium independent of withdrawal
 - Does not prevent seizures
- Clonidine used with some success in symptom management
 - Tremors, hemodynamic instability,
 - Notably does not prevent delirium or seizures

Dexmedetomidine

- First alpha 2 agonist FDA approved for sedation. Bolus, then continuous drip
- Increasing experience in pts with alcohol withdrawal delirium
- Advantages: airway protection, ability to perform neurologic evaluation on patients
- Disadvantages: bradycardia, hypotension, cost, use >24 hours

Protocol Treatment and Evidence Based Recommendations

- Goal of protocols:
 - Minimize deviation from standard of care
 - Ensure all patients are treated the same based on best evidence
- Assumes all patients will respond the same to the protocol
- Also assumes patients are selected appropriately

“The ability of a protocol to treat a medical condition is no better than the quality of the treatment protocol, the strength of its diagnosis, and the application of the protocol to the treatment of appropriate patients.” (Mayo Clinic Proc. March 2008;83(3):270-71.)

Alcohol Withdrawal: Evidence Based Guidelines

- Pharmacologic Management of Alcohol Withdrawal: A Meta-analysis and Evidence-Based Practice Guideline
 - JAMA July 9, 1997. Vol 278 No. 12 (144-151)
 - American Society of Addiction Medicine Working Group on Pharmacologic Management of Alcohol Withdrawal
- Recommendations:
 - Benzodiazepines are first-line agent (safety, seizures, symptom control)
 - Longer acting benzodiazepines may be beneficial
 - Symptom triggered therapy is preferential to fixed dose scheduling
 - STT coupled to CIWA-Ar monitoring is advantageous
 - B-Blockers, clonidine, and carbamazepine are not recommended as monotherapy
 - Neuroleptics should not be considered as monotherapy as they do not decrease delirium and increase of seizures

Goal of Current ETOH WD Protocols

- Provide symptomatic relief to patients
- Prevent seizures and progression to ETOH withdrawal delirium
- Prevent need for transfer to a higher level of care by allowing nurse driven symptom-triggered therapy
 - transfer to the ICU dramatically increases the cost of care
- After publication of evidence-based practice guidelines in 1997 most hospital systems quickly developed their own CIWA-Ar based protocols for treating medical inpatients with alcohol withdrawal

UCSF

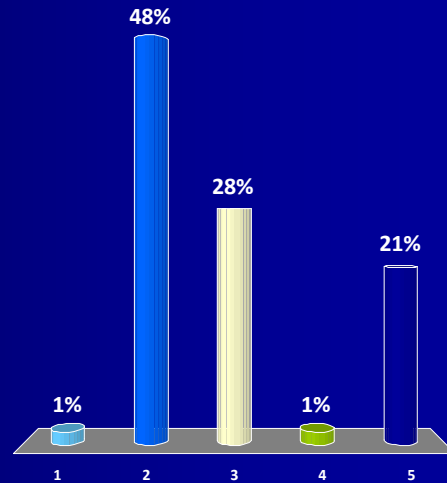
- Unintended Consequences of a Quality Improvement Program Designed to Improve Treatment of Alcohol Withdrawal in Hospitalized Patients
 - Joint Commission Journal on Quality & Patient Safety. 31(3):148-157, 2005 Mar.
- Implemented change to CIWA-Ar guided benzo therapy for ETOH withdrawal in medical inpatients
- Results
 - More deaths during the year after introduction of the guidelines
 - Small decrease in the number of patients requiring transfer
 - 18% increase in the median length of stay
 - Increase in the total dose of benzodiazepines administered to patients with cirrhosis and severe concurrent medical illness
 - Risk of death persisted even after adjustment for patient mix

Alcohol Withdrawal Delirium: Evidence-Based Guidelines

- Management of Alcohol Withdrawal Delirium: An Evidence-Based Practice Guideline
 - Arch Intern Med/Vol 164, July 12, 2004 pg 1405-14121
- “This guideline does not address the management of uncomplicated alcohol withdrawal syndrome or the prevention of alcohol withdrawal delirium as these topics are published in a previously published guideline”
- You will not find CIWA-Ar anywhere in the guidelines
- Recommendation:
 - Treat primarily with benzos
 - Dose should be determined specifically for each patient
 - **Medications should be given in doses sufficient to achieve and maintain light somnolence as the therapeutic goal**

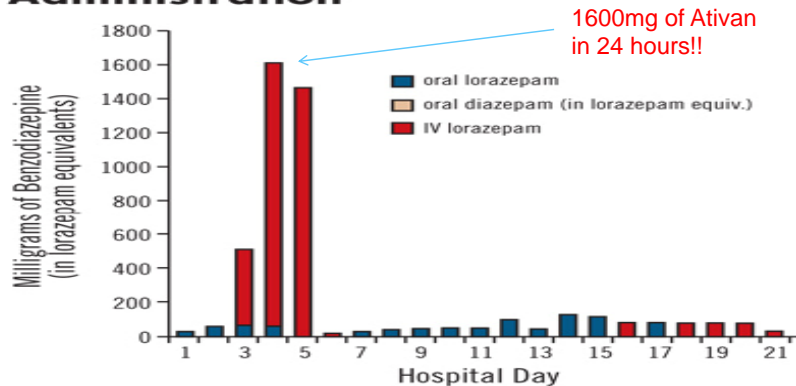
What symptoms are NOT included in our alcohol withdrawal assessments?

1. Tremor
2. Nausea/Vomiting
3. Tachycardia
4. Hallucinations
5. Anxiety



Titrate Benzo Dosage to Individual Response

FIGURE 1.
24 Hour Benzodiazepine Administration



IV=intravenous.

Kahn D, Barnhorst A, Bourgeois J. *CNS Spectr.* Vol 14, No 7. 2009.

Limitation of Allina's CIWA-based Assessment

- Modifications led to the lumping of several categories (hallucinations)
 - Removed headache all together
- Total possible score reduced from 67 to 38
- Thus, much harder to reach trigger for medication administration
- May lead to more under treatment
 - Worse symptoms, progression to delirium
 - Need for transfer to unit

Hypertension and Tachycardia

- Elevated heart rate and blood pressure, although common findings in patients with alcohol withdrawal, are generally not included in most hospital's assessment scales for severity of alcohol withdrawal.
 - Not specific for alcohol withdrawal (A fib, pain, hypercapnia etc.)
 - Severity of elevated heart rate and blood pressure do not correlate with severity of alcohol withdrawal and do not improve reliably with treatment

Arrhythmia and Alcohol Withdrawal

- Dr. Phillip Ettinger coined the term Holiday Heart in 1978
- Alcohol withdrawal is associated with a rebound beta-adrenergic hypersensitivity and elevated catechols, both of which can cause arrhythmias
 - especially with electrolyte deficiencies
- 15-30% of idiopathic A fib may be alcohol related
- Framingham showed having more than 3 alcoholic drinks/day increased the risk of A fib by 34%
- Brigham and Women's reported that women who consume two or more alcoholic drinks/day had a 60% increased risk of A fib

Ventricular Arrhythmias and Sudden Cardiac Death

- Not as clear of a relationship to ETOH as A fib
- Individuals with low alcohol intake (2-6 drinks/week) have a lower risk of V Tach and SCD than do those who never or rarely consume alcohol or those with high intake (3-5 drinks a day) and binge drinking
- Ventricular arrhythmias and SCD are both associated with prolongation of the QT interval and alcohol has been found to prolong the QT interval

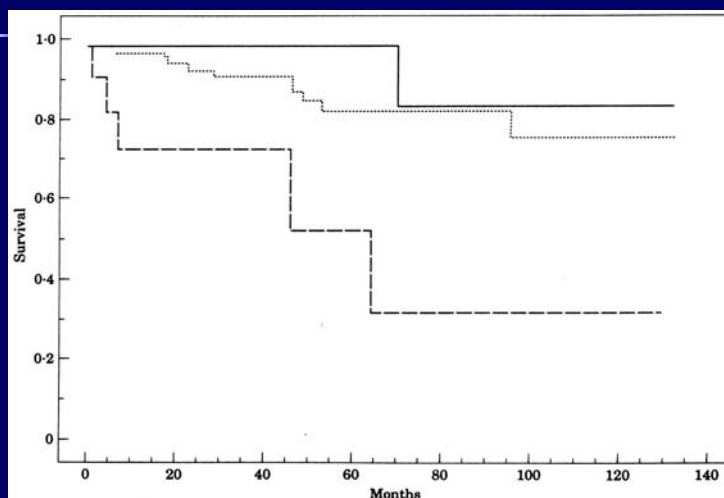
Arrhythmia Management in ETOH Withdrawal

- Electrolyte replacement (K, Mg, Ca)
- Optimize treatment of withdrawal state with benzodiazepines
- Use beta-blockers for arrhythmias, but NOT for sinus tachycardia unless myocardial infarction or diastolic heart failure
- Note evidence-based practice guidelines recommend against beta-blocker use and this recommendation should only apply to patients without medical co-morbidity

Alcoholic Cardiomyopathy

- Long-term heavy alcohol consumption is the leading cause of non-ischemic, dilated cardiomyopathy in the US
- Alcoholic patients consuming 7-8 alcoholic drinks per day for >5 years are at risk for alcoholic cardiomyopathy
- Goals of treatment are typical heart failure medications, but most important is abstinence from alcohol

Survival curves of cardiac deaths in male patients with ACM and IDCM. The solid line indicates patients with ACM and alcohol abstinence, the small dashed line indicates IDCM, and the large dashed line indicates patients with ACM without abstinence.



Piano M R Chest 2002;121:1638-1650

Acute Myocardial Infarction

- Previously believed to be the cause of death in 5% of patients who develop alcohol withdrawal delirium
- With modern medical treatment that number is likely closer to 1% currently
 - Mostly due to demand ischemia (not STEMI) from hyper-adrenergic state and high catecholamine levels
- Consider treating all AMI patients with alcohol withdrawal in the ICU initially
- Beta blockers should be considered mandatory unless significant underlying intolerance.
- Patients who develop cardiogenic pulmonary edema should be placed on BiPAP or sedated and intubated.

STEMI Management

- Initial standard STEMI care including ASA/Plavix, initial heparin, PTCA, Beta-blocker etc.
- Consider sedating patient based on RASS scale in ICU (on or off ventilator)
- Be aware of the high incidence of thrombocytopenia and its ability to increase bleeding risks on anti-platelet therapy
- Be aware of increased risk of underlying liver dysfunction and resulting coagulopathy
 - Places patients at increased risk of bleeding
- These patients are at high risk for arrhythmias over next several days and should remain on tele while in the hospital

Case Presentation: 68 yo M with hx of CHF, admitted for worsening dyspnea

- Orthopnea
- DOE walking 50 yds
- LE edema
- Nocturia
- Dizziness
- Post-prandial fatigue
- Last drink-2 beers with dinner
- Past Medical History:
 - CHF
 - HTN
 - Tobacco Dependence
 - Alcohol Abuse
- Medications:
 - Lasix 80mg BID
 - Digoxin 0.25mg QD
 - Captopril 50mg TID

Social History

- 1 PPD smoker
- "Immoderate" alcohol drinker - beer
 - In past, drank as much as 1 case/day
 - More recently drinking 6-12 beers/day
- History of blackouts
- History of withdrawal-related seizure
- Able to maintain employment until retired
- No history of alcohol treatment

Exam

- BP 110/60 P 100
- afebrile
- Wt 120 Kg
- Ruddy complexion, rhinophyma
- Spider angioma
- Insp. Crackles to mid-lung bilaterally
- Skin cool and clammy
- Difficult to hear heart sounds
- JVD at 45 degrees
- B LE pitting edema to mid thigh
- Obese, non tender, slightly distended abdomen
- Normal liver

Laboratory Studies

- K 5.5
- BUN 110/Cr 3.5
- Bicarb 22
- Mag 1.0
- pCO₂ 30 pO₂ 78
- No blood alcohol
- CXR-Fine interstitial pattern c/w pulm edema
- Enlarged heart with prominent LV
- EKG showed low voltage

Clinical Impression

- Congestive cardiomyopathy
 - Possible pericardial effusion
- Acute renal insufficiency
- Mildly intravascular volume depletion
- Started on Lasix for CHF, with good initial response

Follow up

- Diuresed well over 24 hours, but did not sleep at all: BP 122/84, HR 120
 - Noted becoming increasingly anxious and uncomfortable
 - Thought to be in with withdrawal, started on Librium 100mg Q8H
- Slept several hours after 1st Librium
 - BP 100/60, HR 100
- Awoke and was anxious->2nd dose
 - Slept again, now BP 90/40, HR 80

Why is his HR and BP falling?

- Improved withdrawal symptom control
- Respiratory depression with hypercapnea
- Cardiac ischemia
- Inhibition of catecholamines helping with compensation of his heart failure
- Other electrolyte disturbance

Patient awoke a few hours later...

- Displayed some agitation, discoordination, slurred speech
- Threatening nurses if they didn't call his wife so he could leave
- Given agitation, he was thought to have worsening withdrawal, and given an additional dose of Librium (100mg)

What's causing symptoms now?

- Withdrawal
- Benzo intoxication
- Hypoxia
- Hypercapnea
- Cerebral hypoperfusion from heart failure
- Other Acidosis

At next vitals check...

- Fell back asleep shortly after last dose
- At next vitals check, was unresponsive
- Code Blue was called, but patient was not able to be revived.

What else could have been done?

- This patient needed closer monitoring
 - Telemetry
 - Transfer to ICU/CCU
 - Lab tests, particularly ABG
- Alternative causes of his behavior needed to be considered
- We need to be cautious in ascribing behavioral symptoms to alcohol withdrawal in medically complex patients

Summary

- Alcohol withdrawal is a common problem in hospitalized patients
- Alcohol withdrawal can worsen or contribute to other medical problems
- Currently available protocols for management are not ideal, especially in co-morbid illness
- If protocol isn't working (i.e., worsening behavior/symptoms or instability) physician needs to consider other causes

Nursing Care of a Cardiac Patient with Alcohol Withdrawal

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Objectives

- Describe best practice for assessment of alcohol withdrawal.
- Discuss nursing considerations for treatment.

Assessment using CIWA-Ar Scale

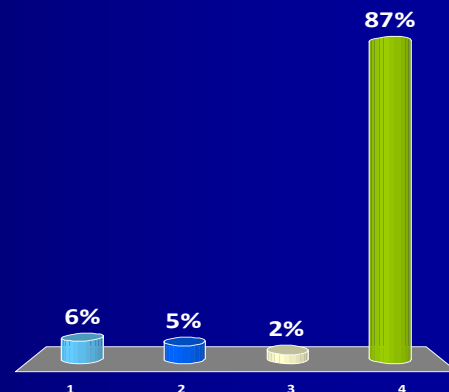
- Nausea and Vomiting
- Tremor
- Paroxysmal sweats
- Anxiety
- Agitation
- Tactile disturbances
- Auditory disturbances
- Visual disturbances
- Headache, fullness in head
- Disorientation (0-4)

J Clin Psychopharmacol 1991; 11:291-295

Your patient was admitted for CHF exacerbation 3 days ago and placed on the alcohol withdrawal protocol due to a remote history of alcoholism. Until this shift, he had required no benzos, but now is increasingly confused and agitated. He has received 8mg lorazepam per protocol over the last 3 hours, but his agitation has continued to escalate and now he seems to be hallucinating....

What should you do?

1. He clearly has advanced to alcohol withdrawal delirium (DTs), so continue to administer lorazepam per protocol
2. He is showing signs of simple alcohol withdrawal, so continue to administer lorazepam per protocol
3. His significant other has likely snuck alcohol into the hospital and he is intoxicated. Search his room and contact security.
4. Contact the physician to assess the patient, as his underlying medical condition may be getting worse.



ADVANTAGES

- Theoretically all staff are using the same criteria
- Allows for symptom-triggered protocol development

DISADVANTAGES

- Low scores may give false confidence
 - Could lead to under medication
- High scores may be related to other conditions
 - Could result in over medication
- Difficult to use in non-communicative or mechanically-ventilated patients
- Requires education of staff

Best Practice for Assessment

- Use CIWA-Ar assuring that symptoms scored are due to alcohol withdrawal
- If other conditions interfere with scoring, consult with physician for dosing
- If goal of treatment changes to sedation, switch to sedation scale (i.e., RASS)

Nursing Considerations

- Assure adequate hydration
- Correct electrolyte imbalances
- Assure thiamine, folic acid and MVI are ordered
- Institute seizure precautions if:
 - Medical history of seizures
 - Administering haloperidol
- Protect airway and provide good pulmonary toilet

Nursing Considerations

- Don't mix Benzodiazepines
 - Check continuation of benzos past 72 hours
- Nutritional consult – poor baseline status
- Increased fall risk
- Prevent complications (aspiration pneumonia, pressure ulcers, delirium, etc.)
- Family dynamics

Cardiac Considerations

- Benzos are metabolized via liver
- Close monitoring for atrial fib development
- Observe for AMI and HF symptoms in patients with cardiac history and elderly
- Monitor QTc
- Cardiac medications may mask tachycardia and hypertension

Summary

- Safely reduce severity of withdrawal symptoms
- Prevent seizures and delirium
- Facilitate the transition to alcohol treatment and rehabilitation
- Prevent complications

Thank You

- Any Questions?