



Perioperative Medicine Summit

Evidence Based Perioperative Medical Care

Rapid Fire

Answering challenging,
common clinical questions

Surgical Patients with Alcohol Abuse

Debra D. Pulley, MD

Associate Professor of Anesthesiology

Washington University in St. Louis

Objectives

- Review acute effects of alcohol ingestion
- Review associated illnesses and key organ damage from chronic heavy use of alcohol
- Review the potential perioperative complications and potential strategies to reduce the perioperative risk

Disclosures

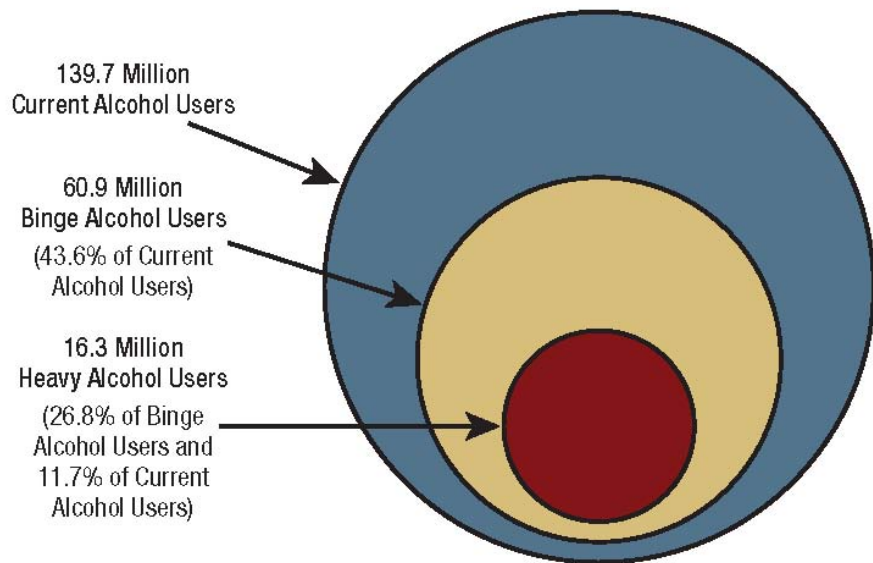
- No financial relationships to disclose.
- Immediate Past President of the Society for Perioperative Assessment and Quality Improvement (SPAQI)

Clinical Case

- 56 year old male presents to the ED after falling off a ladder.
- He appears to be sedate, but when aroused, he is belligerent.
- He has slurred speech but moves all extremities except for the right lower extremity which appears to have an open fracture. Head CT is WNL. Labs significant for Hb 11, a glucose of 60, mildly elevated AST and ALT, INR 1.2, and ETOH level 300 mg/dL.
- Orthopedic surgery wants to take him to the OR for urgent repair.

Alcohol Use

Figure 24. Current, Binge, and Heavy Alcohol Use among People Aged 12 or Older: 2014



Alcohol is one of the most commonly abused substances in the United States.

Center for Behavioral Health Statistics and Quality. (2015). *Behavioral health trends in the United States: Results from 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-44927 NSDUH Series H-50).

Acute Effects

- Central nervous depressant
- Symptoms of mild intoxication varies among individuals
- At low concentrations, may produce “stimulation” due to suppression of inhibition
- Blood levels of 25 mg/dL can cause impaired cognition and effects on coordination in non-heavy users

O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. Goodman & Gilman's The Pharmacological Basis of Therapeutics, 12e. New York, NY: McGraw-Hill; 2011

Acute Effects – Higher Doses

- As blood levels increase, sedation increases
- Memory can be impaired (“black outs”)
- With very high blood levels, coma, respiratory depression and even death can occur
- Blood alcohol levels higher than 500 mg/dL are usually fatal

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, Stoelting's Anesthesia and Co-Existing Disease, 6e. Philadelphia, PA: Saunders;2012

Tolerance, Physical Dependency, and Cross-Tolerance

- A lot of variability of sensitivity and tolerance to alcohol
- With chronic use develop physical dependency and withdrawal symptoms when blood alcohol levels drop
- With acquired tolerance, can get high alcohol levels without significant sedation, but the lethal dose does not increase proportionately to the sedating dose
- Alcohol addiction produces cross-tolerance to other sedatives such as benzodiazepines, but when taking simultaneously sedative/respiratory effects are additive
- Alcohol use frequently accompanies other substance use disorders

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012

O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Associated Illnesses & End Organ Damage - CNS

- Withdrawal syndrome when not drinking
- Psychiatric disorders (depression, antisocial behavior)
- Severe thiamine deficiency
 - Acute/subacute confusional state (Wernicke encephalopathy)
 - Cerebellar degeneration and cerebral atrophy leading to ataxia and cognitive deficits (Korsakoff syndrome)

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012
O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Associated Illnesses & End Organ Damage – Cardiovascular and Pulmonary

- Hypertension
- Dysrhythmias
- Alcoholic cardiomyopathy
- Hepatopulmonary shunt
- Pulmonary hypertension

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012
O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Associated Illnesses & End Organ Damage – GI and Hepatobiliary

- Esophagitis
- Esophageal varices
- Gastritis
- Pancreatitis
- Cirrhosis
- Portal hypertension

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012
O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Associated Illnesses & End Organ Damage – Endocrine, Metabolic, and Renal

- Decreased gluconeogenesis (hypoglycemia)
- Ketoacidosis
- Malnutrition
- Hypoalbuminemia
- Decreased testosterone
- Hepatorenal syndrome

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012

O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Associated Illnesses & End Organ Damage - Hematologic

- Anemia
- Leukopenia
- Thrombocytopenia
- Coagulopathies

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders; 2012

O'Brien CP. Chapter 24. Drug Addiction. In: Brunton LL, Chabner BA, Knollmann BC. eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*, 12e. New York, NY: McGraw-Hill; 2011.

Overall Perioperative Risk

- Overall 2 - 5 fold increased risk of postoperative complications
 - Alcohol withdrawal syndrome
 - Infections
 - Wound disruption
 - Cardiopulmonary insufficiency
 - Episodes of bleeding
 - Greater ICU treatment and prolonged length of stay in the hospital

Spies C et al: Perioperative Morbidity and Mortality in Chronic Alcoholic Patients. Alcoholism: Clinical and Experimental Research Vol 25 NO. 5 2001 p. 164S-170S

Strategies to Mitigate Complications

- Identify “unhealthy” alcohol use presently or in the past
- If indicated, use diagnostic testing to evaluate key organ dysfunction/damage that will be useful information to guide perioperative management of drugs and fluids/blood products and assess the risk for cardiopulmonary insufficiency
- Identify patients at risk for alcohol withdrawal symptoms/delirium tremens perioperatively and initiate prophylactic treatment with a benzodiazepine such as clordiazepoxide

Strategies to Mitigate Complications – cont'd

- “Teachable moment”
- Alcohol cessation programs prior to surgery can be effective in reducing perioperative risks

Oppedal K, Møller AM, Pedersen B, Tønnesen H. Preoperative alcohol cessation prior to elective surgery. Cochrane Database of Systematic Reviews 2012, Issue 7. Art. No.: CD008343. DOI: 10.1002/14651858.CD008343.pub2.

Disulfuram

- Used in preoperative alcohol cessation programs. Not commonly used to treat alcohol addiction.
- Perioperatively,
 - Avoid alcohol-containing skin preparation solutions
 - Disulfuram
 - Can cause sedation
 - Hepatotoxicity
 - Can inhibit metabolism of other drugs
 - Alter response of sympathomimetic medications

Hines RL and Marschall KE. Chapter 25 Psychiatric Disease, Substance Abuse, and Drug Overdose. In Hines RL and Marschall KE editors, *Stoelting's Anesthesia and Co-Existing Disease*, 6e. Philadelphia, PA: Saunders;2012

Strategies to Mitigate Complications – cont'd

- Get specialists such as addiction/psychiatry and acute pain involved early (ideally preoperatively)
- Intraoperatively,
 - Be aware of effects on anesthetic drugs – additive effects of acute alcohol ingestion, cross tolerance to some drugs, prolonged duration to some drugs
 - When bleeding occurs, intervene with appropriate blood products
 - Be aware of cardiopulmonary decompensation

Postoperatively

- Monitor for:
 - alcohol withdrawal syndrome
 - infections
 - wound disruptions
 - signs of bleeding
 - signs of cardiopulmonary decompensation

Timing of alcohol withdrawal syndromes

Syndrome	Clinical findings	Onset after last drink
Minor withdrawal	Tremulousness, mild anxiety, headache, diaphoresis, palpitations, anorexia, GI upset; Normal mental status	6 to 36 hours
Seizures	Single or brief flurry of generalized, tonic-clonic seizures, short post-ictal period; Status epilepticus rare	6 to 48 hours
Alcoholic hallucinosis	Visual, auditory, and/or tactile hallucinations with intact orientation and normal vital signs	12 to 48 hours
Delirium tremens	Delirium, agitation, tachycardia, hypertension, fever, diaphoresis	48 to 96 hours

ARS Question



Perioperative Medicine Summit
Evidence Based Perioperative Medical Care

Patient presents to a preop clinic for evaluation a week before a craniotomy for suspected glioblastoma. He tells you he is being treated with oral naltrexone for alcohol dependency. Which of the following is MOST appropriate?

- A. Switch to PO naloxone in the preop period
- B. Switch to SL buprenorphine/naloxone (Suboxone) in the preop period
- C. The naltrexone should be stopped immediately without tapering
- D. He should begin a slow tapering of the naltrexone to prevent naltrexone withdrawal

ARS Question- Answer



Perioperative Medicine Summit
Evidence Based Perioperative Medical Care

Patient presents to a preop clinic for evaluation a week before a craniotomy for suspected glioblastoma. He tells you he is being treated with oral naltrexone for alcohol dependency. Which of the following is MOST appropriate?

- A. Switch to PO naloxone in the preop period
- B. Switch to SL buprenorphine/naloxone (Suboxone) in the preop period
- C. The naltrexone should be stopped immediately without tapering**
- D. He should begin a slow tapering of the naltrexone to prevent naltrexone withdrawal

Naltrexone (ReVia, Vivitrol, Depade)

- Long acting opioid antagonist
- FDA approved for use in former alcoholics to decrease rate of relapse in 1994
- Chemically similar to morphine and naloxone
- Presumed mechanism of action is blockade of downstream effects that contribute to the euphoria and craving
- Usual dose 50 mg po
- Can be stopped with no tapering
- Low dose (5 mg) used in patients with chronic pain fibromyalgia

Incorporating Alcohol Pharmacotherapies Into Medical Practice.

Treatment Improvement Protocol (TIP) Series, No. 49.

Center for Substance Abuse Treatment.

Rockville (MD): [Substance Abuse and Mental Health Services Administration \(US\)](#); 2009.

Addiction Transfer Between Alcohol and Food

- From food to alcohol
 - Reports of increased prevalence of substance use following bariatric weight loss surgery – primarily alcohol
 - These patients may benefit from interventions postoperatively to minimize risk
- From alcohol to food
 - Reports of greater risk of obesity in patients who have had liver transplant due to alcohol use

Brunalt P, Salame E, Jaafari et al. Why do liver transplant patients so often become obese? The addiction transfer hypothesis? *Medical Hypotheses* 2015;85:68-75.

Heinberg LJ, Ashton K, Coughlin J. Alcohol and bariatric surgery: review and suggested recommendations for assessment and management. *Surg Obes Relat Dis* 2012;8:357-363.

Conason A, Teixeira J, Juse CH et al. Substance use following bariatric weight loss surgery. *JAMA Surg*. 2013;148:145-150.

Summary

- Perioperatively, commonly see patients who ingest alcohol.
- Preoperative evaluation should include routine questions about alcohol ingestion and other substances.
- In patients with known or suspected use disorder, need to assess associated illnesses and key organ damage.
- Watch for signs of alcohol withdrawal syndrome.
- Vulnerable patient population, early referral to appropriate specialists.



Washington University in St. Louis

SCHOOL OF MEDICINE

Department of Anesthesiology



pulleyd@wustl.edu

