

Unhealthy alcohol use in a 65-year-old man awaiting surgery

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Three months before elective hip arthroplasty, a 65-year-old man with osteoarthritis presents to his family physician to discuss his alcohol consumption. His surgeon had expressed concern and advised him to speak to his family physician about decreasing his drinking before surgery. He reports drinking around 6 to 10 ounces of whiskey daily for the past 5 years. His alcohol intake increased gradually after retirement, and he now has cravings daily. He recently abstained from alcohol for 4 days while visiting family and developed irritability, tremor, nausea and headache. He has never had withdrawal seizures or delirium tremens, and he does not use any other substances. He is otherwise healthy, apart from hypertension that is controlled with perindopril. He is alarmed by his cravings, withdrawal symptoms and surgeon's concerns, and is considering decreasing his alcohol use.

Why and how should alcohol use be assessed before surgery?

A meta-analysis of 55 observational studies including 1 234 923 participants found that unhealthy alcohol use was associated with increased risk of postoperative complications, including infections, wound dehiscence, severe alcohol withdrawal syndromes and death.¹ A meta-analysis of 3 randomized trials found that abstaining from alcohol reduces the risk of these postoperative complications.²

Unhealthy alcohol use comprises both high-risk drinking (i.e., alcohol consumption in amounts that increase risks of health consequences) and alcohol use disorder (i.e., a pattern of alcohol consumption associated with functional impairment or distress).³ A single-item screener, "How many times in the past year did you have more than 5 drinks (for men) or 4 drinks (for women) in a day?" was 81.8% sensitive and 79.3% specific in identifying unhealthy alcohol use in a cross-sectional validation study involving 286 primary care patients.⁴ Responses other than "0" should prompt further questioning, including quantity, frequency and recency of alcohol use, and prior withdrawal symptoms.

This patient had withdrawal symptoms, cravings, drank more than he intended and had not succeeded in previous attempts to cut down his drinking.³ Criteria for moderate to severe alcohol use disorder are therefore met, putting him at increased risk for postoperative complications.

Is this patient at risk of severe alcohol withdrawal syndromes if he stops drinking?

The severity of alcohol withdrawal symptoms varies greatly among individuals, and the risk for severe alcohol withdrawal syndromes (i.e., seizures or delirium tremens) can be challenging to predict. Mild alcohol withdrawal symptoms, including tremor, irritability and headache, usually begin within 6–24 hours after the patient's last drink and peak within 1–2 days.³ If left untreated, about 3% of patients will progress to autonomic instability and confusion, known as delirium tremens. For patients at risk, alcohol withdrawal-related seizures can occur any time during the course of withdrawal.^{3,5} Although patients at low risk of severe alcohol withdrawal syndromes may be able to safely stop drinking with outpatient management, patients at high risk require inpatient medical monitoring and potential prophylaxis or treatment with benzodiazepines.⁵

The Prediction of Alcohol Withdrawal Severity Scale (PAWSS) is a scoring tool to estimate risk for developing severe alcohol withdrawal syndromes (Box 1).⁶ In a prospective validation study, PAWSS scores of 4 or higher had 93.1% sensitivity and 99.5% specificity for predicting severe withdrawal, defined as a Clinical Institutes Withdrawal Assessment of Alcohol – Revised (CIWA-Ar) score of 15 or higher, or withdrawal symptoms requiring benzodiazepines or barbiturates.⁶ Patients without recent periods of abstinence beyond 48–72 hours' duration cannot report severity of withdrawal symptoms, making PAWSS inapplicable.

This patient is at relatively low risk of severe alcohol withdrawal syndromes. As he had been intoxicated within the past 30 days and had previously experienced withdrawal symptoms, and he had no history of withdrawal seizures or delirium tremens, his PAWSS score is 2. He could therefore consider outpatient withdrawal management, with or without benzodiazepine or gabapentin prophylaxis,³ or a managed alcohol taper⁵ before surgery.

How should unhealthy alcohol use be managed before surgery?

As part of continuing care after planning for withdrawal management, clinicians should offer counselling (e.g., brief intervention, motivational interviewing) to all patients with unhealthy alcohol

Box 1: Prediction of Alcohol Withdrawal Severity Scale (PAWSS)⁶

Threshold criteria (yes or no; no points)

- Patient consumed any amount of alcohol within the last 30 days OR patient had a positive blood alcohol level upon presentation

If yes, ask the patient (1 point each):

1. Have you been recently intoxicated/drunken, within the last 30 days?
2. Have you ever undergone alcohol use disorder rehabilitation treatment or treatment for alcoholism (i.e., inpatient or outpatient treatment programs or Alcoholics Anonymous attendance)?
3. Have you ever experienced any previous episodes of alcohol withdrawal, regardless of severity?
4. Have you ever experienced blackouts?
5. Have you ever experienced alcohol withdrawal seizures?
6. Have you ever experienced delirium tremens (DTs)?
7. Have you combined alcohol with other “downers” like benzodiazepines or barbiturates, during the last 90 days?
8. Have you combined alcohol with any other substance of abuse, during the last 90 days?

Clinical criteria (1 point each):

9. Was the patient’s blood alcohol level on presentation ≥ 200 mg/dL (≥ 43.4 mmol/L)?
10. Is there evidence of increased autonomic activity? (e.g., heart rate > 120 beats/min, tremor, sweating, agitation, nausea)

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Note: PAWSS scores ≥ 4 are associated with 93.1% sensitivity and 99.5% specificity for predicting severe alcohol withdrawal syndromes.⁶

use, and pharmacotherapy (e.g., acamprosate) to patients with moderate or severe alcohol use disorder, in support of patients’ individualized treatment goals (i.e., abstinence or reduction in alcohol consumption).³

Abstinence from alcohol at the time of surgery reduces the risk of postoperative complications. A meta-analysis of 3 randomized controlled trials involving 140 patients with unhealthy alcohol use found that perioperative interventions for alcohol cessation reduced rates of postoperative complications, including wound complications, secondary surgeries, severe alcohol withdrawal syndromes and admissions to the intensive care unit (risk ratio 0.62, 95% confidence interval 0.40–0.96).² The trial interventions all incorporated withdrawal management with benzodiazepines, as needed, motivational counselling and pharmacotherapy for alcohol use disorder with observed doses of disulfiram. Alcohol abstinence rates were 7% in the standard treatment group and 59% in the intervention group.² Although disulfiram is the only pharmacotherapy for alcohol use disorder that has been specifically studied in randomized controlled trials in the perioperative period, the total body of evidence regarding disulfiram does not support its routine use as first-line pharmacotherapy given safety concerns regarding alcohol–disulfiram reactions and low adherence rates.³

Acamprosate is a first-line pharmacotherapy option for alcohol use disorder to help patients maintain abstinence from alcohol.⁷ A

meta-analysis of randomized controlled trials showed that acamprosate is effective at preventing patients from returning to any drinking (number needed to treat of 12).⁷ The other first-line pharmacotherapy option for alcohol use disorder, naltrexone, should be avoided in the perioperative period as it interferes with opioid analgesia. Neither of these medications has been studied specifically in randomized trials in the preoperative setting.

As alcohol withdrawal and surgery can both precipitate Wernicke encephalopathy, clinicians should offer prophylactic thiamine and multivitamin supplementation. No high-quality evidence has evaluated the prophylactic use of thiamine and multivitamin supplementation in this setting, but it is reasonable to provide this low-risk intervention to all patients with unhealthy alcohol use in the perioperative period.⁸

Should further investigations be performed preoperatively?

Preoperative investigations should aim to detect serious complications of alcohol use, including alcohol-associated hepatitis, cirrhosis, dilated cardiomyopathy, cognitive impairment and cytopenias. Although no guidelines exist regarding the perioperative management of alcohol use disorder, it is reasonable to order liver enzymes (alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase and γ -glutamyltransferase) and function tests (international normalized ratio, partial thromboplastin time, bilirubin and albumin).⁹ These tests can identify evidence of alcohol-associated hepatitis and liver synthetic dysfunction, which could prompt cancelling or delaying elective surgery given the significantly higher postoperative mortality rates of patients with these conditions.¹⁰ Similarly, patients who have physical examination or laboratory signs of cirrhosis should have an abdominal ultrasound ordered to determine the presence of cirrhosis, as this finding would affect the decision to undergo elective surgery. Dilated cardiomyopathy can result from alcohol use, and echocardiography should be ordered preoperatively if there are clinical features of heart failure. If there is clinical concern for alcohol-related cognitive impairment, brief cognitive tests (e.g., the Mini-Cog) can inform risk of postoperative delirium.⁵

Case revisited

The patient elected to self-taper 1 ounce of whiskey every week and, despite meeting criteria for moderate to severe alcohol use disorder, he was not interested in pharmacotherapy. Instructions were given to the patient and his wife to measure his total daily alcohol amount for this taper and to spread the consumption out over the day. They were educated about the signs and symptoms of alcohol withdrawal and to call the office if they occurred.⁵ He also immediately started supplementation with thiamine (100 mg/d) and a daily multivitamin.

With the support of his wife and weekly clinic visits for counselling and assessment of withdrawal symptoms, he completed his taper and was abstinent for 1 week preceding his surgery and had no withdrawal symptoms.

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The clinical scenario is fictional.

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