



Alcohol use disorder: How best to screen and intervene

The USPSTF recommends the AUDIT, the AUDIT-C, or the single-question NIAAA screen. The CAGE screening tool has low sensitivity at lower levels of alcohol intake.

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> THE CASE

Ms. E, a 42-year-old woman, visited her new physician for a physical exam. When asked about alcohol intake, she reported that she drank 3 to 4 beers after work and sometimes 5 to 8 beers a day on the weekends. Occasionally, she exceeded those amounts, but she didn't feel guilty about her drinking. She was often late to work and said her relationship with her boyfriend was strained. A review of systems was positive for fatigue, poor concentration, abdominal pain, and weight gain. Her body mass index was 41, pulse 100 beats/min, blood pressure 125/75 mm Hg, and she was afebrile. Her physical exam was otherwise within normal limits.

○ HOW WOULD YOU PROCEED WITH THIS PATIENT?

Alcohol use disorder (AUD) is a common and often untreated condition that is increasingly prevalent in the United States.¹ The *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)* characterizes AUD as a combination of signs and symptoms typifying alcohol abuse and dependence (discussed in a bit).²

Data from the 2015 National Survey on Drug Use and Health (NSDUH) showed 15.7 million Americans with AUD, affecting 6.2% of the population ages 18 years or older and 2.5% of adolescents ages 12 to 17 years.³

Alcohol use and AUD account for an estimated 3.8% of all global deaths and 4.6% of global disability-adjusted life years.⁴ AUD adversely affects several systems (TABLE 1⁵), and patients with AUD are sicker and more likely to die younger than those without AUD.⁴ In the

United States, prevalence of AUD has increased in recent years among women, older adults, racial minorities, and individuals with a low education level.⁶

Screening for AUD is reasonable and straightforward, although diagnosis and treatment of AUD in primary care settings may be challenging due to competing clinical priorities; lack of training, resources, and support; and skepticism about the efficacy of behavioral and pharmacologic treatments.^{7,8} However, family physicians are in an excellent position to diagnose and help address the complex biopsychosocial needs of patients with AUD, often in collaboration with colleagues and community organizations.

Signs and symptoms of AUD

In clinical practice, at least 2 of the following

TABLE 1

Complications of alcohol use disorder⁵

System	Complications
Neurologic	Peripheral neuropathy, delirium tremens, alcoholic hallucinations, dementia, cerebellar degeneration, central pontine myelinolysis, Marchiafava-Bignami disease
Gastrointestinal	Gastritis, gastroesophageal reflux disease, peptic ulcer disease, cancer of the stomach and esophagus, pancreatitis
Hepatic	Fatty liver, hepatitis, cirrhosis, hepatocellular carcinoma, liver failure
Nutrition	Malnutrition
Cardiac	Cardiomyopathy, heart failure
Musculoskeletal	Sarcopenia
Reproductive	Sexual dysfunction
Psychiatric	Depression, Wernicke-Korsakoff psychosis
Social	Accidents, marital disharmony, divorce, increased drug dependence, criminality, financial problems



USPSTF recommends screening for alcohol use disorder with the 10-question AUDIT, 3-question AUDIT-C, or single-question NIAAA tool.

11 behaviors or symptoms are required to diagnose AUD²:

- consuming larger amounts of alcohol over a longer period than intended
- persistent desire or unsuccessful efforts to cut down or control alcohol use
- making a significant effort to obtain, use, or recover from alcohol

In moderate-to-severe cases:

- cravings or urges to use alcohol
- recurrent failure to fulfill major work, school, or social obligations
- continued alcohol use despite recurrent social and interpersonal problems
- giving up social, occupational, and recreational activities due to alcohol
- using alcohol in physically dangerous situations
- continued alcohol use despite having physical or psychological problems
- tolerance to alcohol's effects
- withdrawal symptoms.

Patients meet criteria for mild AUD severity if they exhibit 2 or 3 symptoms, moderate AUD with 4 or 5 symptoms, and severe AUD if there are 6 or more symptoms.²

Those who meet criteria for AUD and are able to stop using alcohol are deemed to be in early remission if the criteria have gone unfulfilled for at least 3 months and less than

12 months. Patients are considered to be in sustained remission if they have not met criteria for AUD at any time during a period of 12 months or longer.

How to detect AUD

Several clues in a patient's history can suggest AUD (TABLE 2^{9,10}). Most imbibers are unaware of the dangers and may consider themselves merely "social drinkers." Binge drinking may be an early indicator of vulnerability to AUD and should be assessed as part of a thorough clinical evaluation.¹¹ The US Preventive Services Task Force (USPSTF) recommends (Grade B) that clinicians screen adults ages 18 years or older for alcohol misuse.¹²

Studies demonstrate that both genetic and environmental factors play important roles in the development of AUD.¹³ A family history of excessive alcohol use increases the risk of AUD. Comorbidity of AUD and other mental health conditions is extremely common. For example, high rates of association between major depressive disorder and AUD have been observed.¹⁴

Tools to use in screening and diagnosing AUD

Screening for AUD during an office visit can be done fairly quickly. While 96% of primary care physicians screen for alcohol misuse in some way, only 38% use 1 of the 3 tools recommended by the USPSTF¹⁵—the Alcohol Use

TABLE 2

Signs and symptoms of alcohol use disorder^{9,10}

Symptoms	Tremors, insomnia, fatigue, poor concentration, depressed mood, generalized anxiety, panic attacks, poor appetite, poor balance, memory loss, headache, nausea or vomiting, hematemesis
Signs	Anemia, thrombocytopenia, elevated liver enzymes, cardiomyopathy
Treatment failure	Hypertension

Disorders Identification Test (AUDIT), the abbreviated AUDIT-C, or the National Institute on Alcohol Abuse and Alcoholism (NIAAA) single question screen—which detect the full spectrum of alcohol misuse in adults.¹² Although the commonly used CAGE questionnaire is one of the most studied self-report tools, it has lower sensitivity at a lower level of alcohol intake.¹⁶

The NIAAA single-question screen asks how many times in the past year the patient had ≥ 4 drinks (women) or ≥ 5 drinks (men) in a day.¹⁵ The sensitivity and specificity of single-question screening are 82% to 87% and 61% to 79%, respectively, and the test has been validated in several different settings.¹² The AUDIT screening tool, freely available from the World Health Organization, is a 10-item questionnaire that probes an individual's alcohol intake, alcohol dependence, and adverse consequences of alcohol use. Administration of the AUDIT typically requires only 2 minutes. AUDIT-C¹⁷ is an abbreviated version of the AUDIT questionnaire that asks 3 consumption questions to screen for AUD.

It was found that AUDIT scores in the range of 8 to 15 indicate a medium-level alcohol problem, whereas a score of ≥ 16 indicates a high-level alcohol problem. The AUDIT-C is scored from 0 to 12, with ≥ 4 indicating a problem in men and ≥ 3 a problem in women.

> THE CASE

The physician had used the NIAAA single-question screen to determine that Ms. E drank more than 4 beers per day during social events and weekends, which occurred 2 to 3 times per month over the past year. She lives alone and said that she'd been seeing less and less of her boyfriend lately. Her score on the Patient Health Questionnaire (PHQ), which screens for depression, was 11, indicating moderate impairment. Her response on the CAGE ques-

tionnaire was negative for a problem with alcohol. However, her AUDIT score was 17, indicating a high-level alcohol problem. Based on these findings, her physician expressed concern that her alcohol use might be contributing to her symptoms and difficulties.

Although she did not have a history of increasing usage per day, a persistent desire to cut down, significant effort to obtain alcohol, or cravings, she was having work troubles and continued to drink even though it was straining relationships, promoting weight gain, and causing abdominal pain.

The physician asked her to schedule a return visit and ordered several blood studies. He also offered to connect her with a colleague with whom he collaborated who could speak with her about possible alcohol use disorders and depression.

Selecting blood work in screening for AUD

Lab tests used to measure hepatic injury due to alcohol include gamma-glutamyltransferase, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and macrocytic volume, although the indices of hepatic damage have low specificity. Elevated serum ethanol levels can reveal recent alcohol use, and vitamin deficiencies and other abnormalities can be used to differentiate other causes of hepatic inflammation and co-existing health issues (TABLE 3^{10,18}). A number of as-yet-unvalidated biomarkers are being studied to assist in screening, diagnosing, and treating AUD.¹⁸

What treatment approaches work for AUD?

Family physicians can efficiently and productively address AUD by using alcohol screening and brief intervention, which have been shown to reduce risky drinking. Reimbursement for this service is covered by such CPT



The CAGE questionnaire has lower sensitivity when alcohol intake is lower.

TABLE 3

Testing for alcohol use disorder^{10,18}

Serum	Alcohol level, CBC including MCV, complete metabolic panel, viral hepatitis panel, HIV, TSH, gamma glutamyl transferase, vitamin B ₁₂ and folate
Urine	Drug toxicology screen
<i>If indicated</i>	<i>Electrocardiogram</i>

CBC, complete blood count; HIV, human immunodeficiency virus; MCV, mean corpuscular volume; TSH, thyroid stimulating hormone.

TABLE 4

Medications for treating alcohol use disorder⁹

Medication	Mechanism of action	Adverse effects	Dosage	Monitor	Comments
Disulfiram	Aldehyde dehydrogenase inhibitor	Skin flushing, nausea, vomiting, and autonomic effects; hepatotoxicity, optic neuritis, and peripheral neuritis	250 mg/d	Baseline LFT; repeat in 10-14 days	Does not reduce craving No FDA category for pregnancy
Naltrexone, nalmefene	Opioid antagonist; oral, long-acting IM injection available	Nausea, abdominal pain, headache, dizziness, and elevated liver enzymes	50 mg/d; can start at 25 mg/d	Baseline LFT; repeat again in 2-3 months	Use cautiously in comorbid drug disorder Category C for pregnancy
Acamprosate	Glutamate receptor antagonist	Diarrhea, headache, nausea, vomiting, flatulence, and dyspepsia	333 mg 2-3 times daily	Baseline renal function; retesting if impairment detected at baseline	May reduce craving Category C for pregnancy
Off label-anticonvulsants; topiramate, carbamazepine, valproic acid, gabapentin	Multiple mechanisms, including GABA-mediated inhibition	Benign side effects	Varies with agent	Monitoring of liver and kidney function is dose dependent	Fewer heavy drinking days Withdrawal symptoms are mild

FDA, US Food and Drug Administration; GABA, gamma-aminobutyric acid; IM, intramuscular; LFT, liver function tests.

codes as 99408, 99409, or H0049, or with other evaluation and management (E/M) codes by using modifier 25.

Treatment of AUD varies and should be customized to each patient's needs, readiness, preferences, and resources. Individual and group counseling approaches can be effective, and medications are available for inpatient and outpatient settings. Psychotherapy options include brief interventions, 12-step programs (eg, Alcoholics Anonymous—https://www.aa.org/pages/en_US/find-aa-resources), motivational enhancement therapy, and cognitive behavioral therapy. Although it is beyond the scope of this article to describe these

options in detail, resources are available for those who wish to learn more.¹⁹⁻²¹

Psychopharmacologic management includes US Food and Drug Administration (FDA)-approved medications such as disulfiram, naltrexone, and acamprosate, and off-label uses of other medications (TABLE 4⁹). Not enough empiric evidence is available to judge the effectiveness of these medications in adolescents, and the FDA has not approved them for such use. Evidence from meta-analyses comparing naltrexone and acamprosate have shown naltrexone to be more efficacious in reducing heavy drinking and cravings, while acampro-

sate is effective in promoting abstinence.^{22,23} Naltrexone combined with behavioral intervention reduces the heavy drinking days and percentage of abstinence days.²⁴

Current guideline recommendations from the American Psychiatric Association²⁵ include:

- Naltrexone and acamprosate are recommended to treat patients with moderate-to-severe AUD in specific circumstances (eg, when nonpharmacologic approaches have failed to produce an effect or when patients prefer to use one of these medications).
- Topiramate and gabapentin are also suggested as medications for patients with moderate-to-severe AUD, but typically after first trying naltrexone and acamprosate.
- Disulfiram generally should not be used as first-line treatment. It produces physical reactions (eg, flushing) if alcohol is consumed within 12 to 24 hours of medication use.

► THE CASE

Ms. E was open to the idea of decreasing her alcohol use and agreed that she was depressed. Her lab tests at follow-up were normal other than an elevated AST/ALT of 90/80 U/L. She received brief counseling from her family physician combined with cognitive behavioral therapy by a psychologist colleague. A subsequent ultrasound of her liver showed mild hepatomegaly and moderate-to-severe steatosis with nodularity of the liver, raising the possibility of cirrhosis.

She continued to get counseling for her AUD and for her comorbid depression in addition to taking a selective serotonin reuptake inhibitor. She is now in early remission for her alcohol use.

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