Screening for unhealthy use of alcohol and other drugs in primary care

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INTRODUCTION

Unhealthy alcohol and other drug use are among the most common causes of preventable death [1]. "Unhealthy use" describes use of amounts that risk consequences or have resulted in consequences, as well as an American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) substance use disorder.

Despite their frequent presentation in primary care, unhealthy alcohol and other drug use often go unrecognized. The combination of screening all adult primary care patients to identify individuals with unhealthy use and a brief counseling intervention has been proposed as a population-wide, preventive intervention in primary care [2]. Clinical trials support the use of screening and brief intervention in adults who have unhealthy alcohol use but not a moderate to severe alcohol use disorder. Screening is also the first step in identifying patients with a substance use disorder.

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) diagnoses, substance abuse and substance dependence, were replaced by one diagnosis, substance use disorder, in DSM-5 [3]. Although the crosswalk between the DSM-IV and DSM-5 disorders is imprecise, substance dependence is approximately comparable to substance use disorder, moderate to severe subtype, while substance abuse is similar to the mild subtype. Substance use disorders are important to identify so that appropriate counseling and pharmacotherapy can be offered.

This topic reviews screening tests for unhealthy alcohol and other drug use in primary care. Treatment of patients screening positive with a brief intervention, and the efficacy of screening combined with a brief intervention, are described separately. The epidemiology, clinical manifestations, and diagnosis of substance use disorders are described separately, as are pharmacotherapy and psychosocial interventions for the disorders.

- (See "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration".)
- (See "Risky drinking and alcohol use disorder: Epidemiology, clinical features, adverse consequences, screening, and assessment".)
- (See "Alcohol use disorder: Psychosocial management".)
- (See "Cocaine use disorder: Epidemiology, clinical features, and diagnosis".)
- (See "Opioid use disorder: Epidemiology, clinical features, health consequences, screening, and assessment".)
- (See "Opioid use disorder: Pharmacologic management".)
- (See "Cannabis use disorder: Clinical features, screening, diagnosis, and treatment".)

DEFINITIONS

Risky use — Risky use of alcohol or other drugs are consumption amounts that increase the likelihood of health consequences (eg, injury, interpersonal problems, medical consequences). (See 'Medical consequences' below.)

Alcohol — The National Institute on Alcohol Abuse and Alcoholism (NIAAA) in the United States estimates amounts of alcohol that increase health risks below [4]. Specifying these thresholds is an inexact science based on epidemiological evidence. Amounts are based on a "standard drink," which is defined as 12 grams of ethanol, 5 ounces of wine, 12 ounces of beer, or 1.5 ounces of 80 proof spirits.

- Men under age 65 – More than 14 standard drinks per week on average
  - More than four drinks on any day
- Women and adults 65 years and older – More than seven standard drinks per week on average
  - More than three drinks on any day

Drink size and assessment items for unhealthy use can vary internationally.

Other drugs — There are no widely agreed upon standards for unhealthy use of other drugs. However, any amounts of some drugs are unhealthy. As examples, a single use of cocaine can lead to myocardial infarction, and any injection drug use can lead to HIV infection. One might assume any use risks health consequences, particularly if one includes legal consequences, or the risk of developing addiction, in the definition of health. (See "Cocaine use disorder: Epidemiology, clinical features, and diagnosis".)

Unhealthy alcohol or drug use — Unhealthy use refers to the spectrum of use that can result in health consequences [5]. As such, it includes:

- Use of amounts that risk consequences. (See 'Risky use' above.)
- Use that has already resulted in consequences but not yet a diagnosable disorder (often referred to as problem use, misuse, or hazardous use). These terms can be confusing as they are sometimes used to refer to the full spectrum of unhealthy use.
- Use accompanied by features meeting DSM-5 diagnostic criteria for substance use disorder [3]. Substance use disorder in DSM-5 replaced the DSM-IV-TR diagnoses substance abuse and substance dependence. (See 'Substance use disorder' below.)

PREVALENCE OF UNHEALTHY USE

Fully 28 percent of adults in the United States have unhealthy alcohol use; 25 percent of those age 12 and older report “binge” alcohol use in the past month (five or more standard drinks for males, four or more for females on an occasion) and 18 percent report any illicit drug use in the past year, including nonmedical use of prescription drugs [5,6]. These numbers are much greater than for alcohol and drug use disorders – the most clinically obvious conditions in the spectrum of unhealthy use. A general population survey conducted in 2012 to 2013 found that 13 percent of adults in the United States had alcohol use disorder in the last 12 months [6,7]. (See "Risky drinking and alcohol use disorder: Epidemiology, clinical features, adverse consequences, screening, and assessment".)

Those with nondependent unhealthy use account for more morbidity, mortality, and cost than do the smaller number of people at the more severe end of the spectrum [8]. Patients across the spectrum of unhealthy use often go unrecognized as having an alcohol or other drug problem, and therefore go untreated.

INDICATIONS

The United States Preventive Services Task Force (USPSTF) has recommended that all adults in primary care be screened to identify unhealthy alcohol use, and that those with unhealthy use receive a brief counseling intervention [9]. The combined efficacy of screening and brief intervention is described separately. (See "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration", section on 'Efficacy' and "Ethanol intoxication in children: Epidemiology, estimation of toxicity, and toxic effects" and "Screening tests in children and adolescents", section on 'Nicotine, alcohol, and substance use' and "Guidelines for adolescent preventive services", section on 'Screening'.)

The USPSTF also recommends screening for unhealthy use of drugs other than alcohol when services are in place to ensure follow-up for diagnosis and treatment [10]. Screening is performed by asking questions about illegal drugs and prescription medications that are not used for medical purposes (see 'Screening tests' below). However, no randomized trials have found that screening reduces drug use, morbidity, or mortality [11].In addition, clinical trials have not consistently found brief intervention to be effective for use of substances other than alcohol or for any substance use disorder [12,13]. Nevertheless, screening is a reasonable clinical practice for identifying comorbidity, informing use of addictive medications, and diagnosing related conditions [12]. (See "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration", section on 'Efficacy'.)

SCREENING TESTS

The best approach to screening in primary care is to use a brief, simple set of questions that is validated in the setting for its intended use, and that identifies the full spectrum of unhealthy use. Brief questionnaires are easier for clinicians to memorize and use. Some longer, more complex tools (eg, with multiple response options that require scoring) provide assessment or risk information that can be useful for brief intervention, but that benefit may be outweighed by the added burden.

Many tools are available for detecting unhealthy alcohol use. Fewer are available for drug use and for nonmedical use of prescription drugs (use for the feeling it causes). Most screening questionnaires are validated against diagnostic interview reference standards, though some add laboratory testing or future consequences to these reference standards. In part because of limitations with laboratory testing, the best reference standard for current unhealthy substance use is a diagnostic interview (to identify substance use disorders) and a calendar-based questionnaire to determine consumption [14,15]. Ideally, the questionnaire used for screening for unhealthy use would be one that was used in trials that demonstrate efficacy of brief intervention.

Screening is insufficient for someone already known to have unhealthy substance use. For these patients, a full assessment for substance use disorders is more appropriate. (See "Risky drinking and alcohol use disorder: Epidemiology, clinical features, adverse consequences, screening, and assessment" and "Cocaine use disorder: Epidemiology, clinical features, and diagnosis" and "Opioid use disorder: Epidemiology, clinical features, health consequences, screening, and assessment" and "Cannabis use disorder: Clinical features, screening, diagnosis, and treatment".)

Unhealthy alcohol use — For screening adults for unhealthy alcohol use in primary care, we suggest the use of single-item screening. The AUDIT-C, which has some advantages over the single-item test, may be made feasible for use in some settings, eg, if embedded with associated decision support in an electronic health record. Although other screening tests have been validated, none have advantages over the single item screening, the AUDIT-C, and the Alcohol Use Disorders Identification Test (AUDIT) for use in primary care settings.

Single-item screening — Several single-item alcohol screening questions have been proposed and tested [16-20]. They are brief, memorizable, and require no scoring. One, validated in primary care in a single cross-sectional study [19], is asked following, “Do you sometimes drink beer, wine or other alcoholic beverages?”:

- How many times in the past year have you had five (four for women) or more drinks in a day?

The test is scored positive when the response is greater than 0 or when the patient states he or she is having difficulty coming up with the correct number (because it is therefore greater than 0). A positive test is 82 percent sensitive and 79 percent specific for unhealthy alcohol use. In a two-site cross sectional study of 459 adult primary care patients, the item was similarly accurate when self-administered on touchscreen tablet computers [21].

AUDIT-C — The AUDIT-C is a screening test comprised of three items on excess consumption from the Alcohol Use Disorders Identification Test (AUDIT) (table 1). The questions, below, have been validated primarily in male veterans but studies demonstrating validity in primary care and other populations are beginning to appear. The AUDIT-C is briefer than the original test, but still requires scoring. (See 'AUDIT' below.)

- How often do you have a drink containing alcohol?
- How many drinks containing alcohol do you have on a typical day when you are drinking?
- How often do you have six or more drinks on one occasion?

Scores considered positive for unhealthy drinking are [22]:

- Three or more in women, with 73 percent sensitivity and 91 percent specificity
- Four or more in men, with 86 percent sensitivity and 89 percent specificity

Although the AUDIT-C contains no items specific to disorders, the score is associated with severity; a score of 7 to 10 or greater suggests dependence [23]. As with the full AUDIT, it is best to alter the third question by replacing "six" with "four" when used in women, if feasible [24].

AUDIT — The AUDIT is the most widely validated instrument (figure 1). With 10 items, which take two to three minutes to complete, the AUDIT is not brief and does require scoring [25,26]. As a result, it is better suited to settings where visit times are longer or when it can be completed prior to a clinician visit and electronically scored.

The instrument and calculator shown here will determine the respondent's score on the AUDIT after completion (calculator 1).

With a score that can range from 0 to 40, a score of 8 or greater on the AUDIT is generally considered a positive test for unhealthy alcohol use, with greater than 90 percent sensitivity and 80 percent specificity [26-28]. Studies specifically focused on primary care settings in the United States suggest using lower scores (eg, four to seven) as positive for optimal sensitivity given the low cost and consequences of false positives [22]. We find it most useful to alter the number of drinks (particularly in the third question) to "5 or more" to account for United States drink sizes and to "4 or more" for administration to women, and using a cutoff of 5 for men and 3 for women (the traditional cutoff widely published is 8 or greater) [22,26,29]. A score of 20 or greater suggests the presence of alcohol dependence. The AUDIT was used in a large multisite international randomized trial of brief intervention in primary care [30].

CAGE questions — The four CAGE alcohol screening questions are geared towards detection of a substance use disorder. The questions are not sensitive for detecting the full spectrum of unhealthy use [28,31,32]. The CAGE is not recommended as a screening tool but it can be useful for quickly finding out if someone who screens positive on a single-item screening question has or has had a more severe problem (by answering two or more in the affirmative). The CAGE questions are:

- Have you ever felt you should **Cut down** on your drinking?
- Have people **Annoyed** you by criticizing your drinking?
- Have you ever felt bad or **Guilty** about your drinking?

- Have you ever taken a drink first thing in the morning (**Eye-opener**) to steady your nerves or get rid of a hangover?

Two affirmative responses are 77 percent sensitive and 79 percent specific for alcohol use disorder, but only 53 percent and 70 percent, respectively, for unhealthy alcohol use [28].

If CAGE questions are used for screening, a single affirmative response should be considered a positive test. The CAGE should be supplemented with consumption items that identify risky amounts [32]. These additions increase the number of screening items to seven with little advantage over the AUDIT-C (though advantages include the facts that scoring is not needed, and that responses to CAGE questions provide content for discussion of consequences during brief counseling).

Special populations — Screening tools have been validated for certain sub-populations (ie, women, pregnant women, elderly, adolescents). For women and the elderly, their test operating characteristics do not likely differ sufficiently from the AUDIT, AUDIT-C, or single-item questions to warrant introducing the complexity of implementing different instruments. In the cases of pregnancy and adolescents, different tools are warranted.

Older adults — The Comorbidity Alcohol Risk Evaluation Tool (CARET) assesses consumption, comorbidities, and medication use to identify older adults at risk for alcohol consequences [33]. The geriatric version of the Michigan Alcoholism Screening Test (G-MAST) primarily detects alcohol use disorders [34,35]. For practical reasons (eg, the difficulty of using multiple different tests for screening) these tests are most appropriate for practices comprised exclusively of elders.

Pregnancy — In pregnancy and peri-conception, the goal of screening is to detect any drinking, but because drinking in pregnancy may be a sensitive issue (pregnant women often feel guilty about drinking), several screening tests have been developed and validated for this circumstance, including the TWEAK, T-ACE, 4Ps Plus, and the NET [36-38]. Use of AUDIT-C and the CAGE has also been studied in pregnancy, and all approaches should add or include an item about any drinking (see below).

- The T-ACE questions can be useful in circumstances where the practice determines it is feasible to use a multi-item questionnaire specifically for pregnant women. The T-ACE questions, below, are adapted from the CAGE [36] yet despite this they are sensitive for detecting risky drinking amounts. An affirmative response to any item is considered a positive test.

- Tolerance – How many drinks does it take to make you feel high? (>2 drinks is an affirmative response)
- Annoyed, Cut down, Eye opener (See 'CAGE questions' above.)

- If the practice wishes to use a brief multi-item questionnaire that includes other drugs, the 4Ps Plus is the best choice. (See 'Pregnancy' below.)
- AUDIT-C is recommended if it is already being used by the practice for other populations, which reduces aforementioned sensitivity concerns regarding asking about drinking directly, because all patients are being asked. The advantage is that it is best at detecting the whole spectrum of unhealthy use, and includes an item that identifies any drinking. (See 'AUDIT-C' above.)
- If a clinician finds a multi-item questionnaire excessively burdensome, it may make sense to ask all pregnant women "Do you sometimes drink beer, wine or other alcoholic beverages?" to identify any use. Research studies have not yet assessed the value of this approach, yet since the behavior of interest is any consumption, asking all women this question is reasonable even if a validated multi-item tool is being used to identify risky drinking.

Adolescents — NIAAA recommends two questions for youth aged 14 to 18, below [39]. Results that indicate any days drinking, and any friends drinking more than three to four drinks (two for females) in a day suggest the need for further discussion and advice.

- "In the **past year**, **on how many days** have you had more than a few sips of beer, wine, or any drink containing alcohol"
- "If your friends drink, **how many drinks** do they usually drink on an occasion?"

A single screening question, "In the past year, how many times have you used alcohol?" and has been developed for self- or interviewer-administration [40]. A positive screen a response of "once or twice" (or more) versus "none." A cross-sectional study in several adolescent practices found that, among 213 adolescents (age 12 to 17), found the question to be sensitive and specific for alcohol use disorder (cutoff of monthly, 79 and 96 percent, respectively) and for severe alcohol use disorder (cutoff weekly or greater [almost daily or daily], 100 and 88 percent, respectively).

The CRAFFT instrument is the best validated tool to screen for substance use disorders in adolescents [41-43]. However, its use may be best reserved for assessing risk level because the target of screening in youth should be any use, not specific amounts or disorders [44], so the

questions above asking about any use over the past year makes sense. CRAFFT is an acronym for Car, Relax, Alone, Forget, Friends, Trouble. (See "Screening tests in children and adolescents", section on 'Nicotine, alcohol, and substance use'.)

Laboratory testing — In general, laboratory testing, which can establish recent use or heavy use, adds additional cost and is not useful for screening for unhealthy use. While not ideal, however, if a practice cannot or does not implement routine universal screening with questionnaires, then testing for serum carbohydrate deficient transferrin can detect very heavy drinking. This laboratory test option would be better than no screening, and in fact when added to questionnaires it can detect heavy use among some who are negative by questionnaire and is cost effective [45]. However, the patient should be informed of testing, which can be awkward since it means telling a patient who denies heavy drinking that they will be tested for heavy drinking. (See "Risky drinking and alcohol use disorder: Epidemiology, clinical features, adverse consequences, screening, and assessment".)

One rationale for laboratory testing is to have a result that can be repeated in follow-up to motivate the patient and confirm progress. A test can be useful for this purpose as long as it is elevated to begin with (which is often not the case in people who screen positive by questionnaire).

Laboratory testing can be helpful when a patient is critically injured or cannot speak. In such circumstances, patients may not be truthful, recall their consumption, or be able to be interviewed at the time of their injury. A blood or breath alcohol level that indicates use or levels consistent with intoxication can be useful information supplementing questionnaires that can be done later.

Unhealthy use of other drugs — Drug screening is more difficult than screening for unhealthy alcohol use. One challenge is that screening tools need to target a range of drugs, including prescription drugs, not simply one substance. Another challenge is that amounts that risk health consequences are not well-defined and differ across addictive drugs. (See 'Other drugs' above.)

We suggest use of a single question to screen for drug use rather than other brief screening tests, few of which have been well-validated in primary care settings.

Single-item screening — A single-item screening test is just as well validated in primary care settings as longer questionnaires. It has similar sensitivity and specificity for any drug use, drug use with consequences, and drug use disorders as the 10-item Drug Abuse Screening Test (DAST) [18]. A response of greater than 0 is a positive test and is 100 percent sensitive and 74

percent specific for a drug use disorder, and 93 percent and 94 percent, respectively, for past-year drug use.

The screening question is:

- “How many times in the past year have you used an illegal drug or used a prescription medication for nonmedical reasons?”

If asked to clarify the meaning of “nonmedical reasons,” add "for instance because of the experience or feeling it caused.”

In a two-site cross sectional study of 459 adult primary care patients, the item was similarly accurate when self-administered on touchscreen tablet computers [21].

A single screening question, “In the past year, how many times have you used alcohol?” described above for alcohol screening, has also been applied to cannabis, illegal drugs, prescription drugs that were not prescribed, over-the-counter medication, inhalants, and herbs or synthetic drugs. Sensitivity and specificity for nontobacco substance use was 100 and 84 percent, respectively. (See 'Adolescents' above.)

Because cannabis is now more widely legal, and because medical cannabis is often not prescribed (patients are certified and doses and frequencies are not usually specified by clinicians), single screening questions may miss recreational use or use beyond that recommended by a clinician. One solution is to remove the word “illegal” from the single item. Another is to add a question about frequency of cannabis use (eg “How many times in the past year have you used marijuana?”). Although a positive response may not mean high risk use, use can be further assessed and it remains relevant for clinicians to be aware of its use.

DAST — The DAST was developed in addiction treatment rather than primary care settings [18,46]. A score of 3 or more on this questionnaire with 10 yes/no items suggests drug use with adverse consequences. As such, it may have some utility for assessing severity.

SoDU — The screen of drug use (SoDU) is a misnomer, as it was validated in a cross-sectional study of 1283 veterans in primary care to detect drug use disorders, not use (92 percent sensitive and 93 percent specific). The two items are, “How many days in the past 12 months have you used drugs other than alcohol?” (positive if 7 or more and skip the next item) and “How many days in the past 12 months have you used drugs more than you meant to?” (positive if 2 or more) [47].

ASSIST — The length of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST; 8 questions each referring to up to 10 substances) precludes its broad use, but one

advantage is that it provides additional information useful for assessment and discussion during brief intervention [48]. Computerized administration and scoring can lessen the time needed to use the instrument.

A score of 4 or greater on any other drug on the ASSIST indicates moderate to high risk use. A lower nonzero score indicates recent or past use. A substance-specific score of 27 or greater may indicate dependence.

Laboratory testing — Laboratory testing is not particularly useful for screening populations for other drug use because routine tests generally detect only recent use. Outside the screening context, urine drug tests can be useful for assessing risk and monitoring patients with chronic pain treated with opioids, or as part of a diagnostic work-up of symptoms that may indicate drug use.

Drug detection depends in part on the half-life of the drug, distribution of the drug, and chronicity of use. Testing has not been well studied in a general preventive healthcare context that relies on trust and a collaborative relationship between patient and clinician. The clinician needs to inform the patient of the testing and its purpose, which means a discussion must occur, during which time one could simply ask screening questions instead. If the patient is informed testing will be done, it could increase the validity of the self-report questionnaire, but introduce an element of mistrust.

Testing is further complicated by the need to test for a wide range of drugs, and does not distinguish between appropriate and inappropriate use of prescription drugs. Routine serum and urine test panels often include opiates, cocaine, benzodiazepines, barbiturates, acetaminophen, alcohol, and aspirin. Possible false positives for addictive drugs require confirmation with gas chromatography-mass spectrometry.

Unhealthy alcohol and other drug use — A number of screening questionnaires ask about both alcohol and other drugs. Some allow identification of unhealthy alcohol and other drug use separately, and others identify that unhealthy alcohol or other drug use is present without specifying which is present.

- If brevity and simplicity are the primary concerns, asking the separate single items for alcohol and other drug use is recommended. (See 'Single-item screening' above and 'Single-item screening' above.)

- If computerized administration is possible or if there is more time available, the ASSIST is a reasonable choice because it can identify alcohol, tobacco and other drugs and provides a risk score for alcohol and drug use. A drawback of the ASSIST is that it does not directly

identify use of risky amounts of alcohol, and it is time consuming if the patient uses many different substances. (See 'ASSIST' above.)

- Other screening tools that ask about both alcohol and drugs include the CAGE adapted to include drugs (CAGE AID) [49,50], and a two-item "conjoint" questionnaire [49].

- The four-item Substance Use Brief Screen (SUBS) asks about tobacco, alcohol, illegal drugs, and prescription medications with three frequency response options (table 2) [51]. For each item, a response of "never" represents a negative screen, and the other two responses represent a positive screen. The SUBS was tested in a two-site cross-sectional validation study of 586 adult primary care patients. Sensitivity was 83 to 85 percent for unhealthy use of alcohol and other drugs, and specificity was 77 to 91 percent.

- The Tobacco, Alcohol, Prescription Medication, and Other Substance use (TAPS) tool was designed to detect "problem" use (one or more DSM-5 symptom) and disorders with an initial (the TAPS-1) four items with five response options for each [52]. Positive responses are 98 percent, 85 percent, 91 percent, and 85 percent sensitive for problem tobacco, alcohol, medication, and other drug use, respectively, and 70 to 91 percent specific in a cross-sectional study of 2000 adult primary care patients. Although designed for and tested in primary care, and with some advantages to being able to use one tool across substances, the major limitation is that the tool is not validated to identify any smoking, any illicit or nonmedical drug use, or risky amounts of alcohol.

Pregnancy — The 4Ps Plus is a validated screening tool that asks about both alcohol and other drug use in pregnancy (Past use, Pregnancy, use by Parents and Partners) [53]. Items are:

- Did either of your parents ever have a problem with alcohol or drugs?

- Does your partner have a problem with alcohol or drugs?

- Have you ever drunk beer, wine, or liquor?

- In the month before you knew you were pregnant, how many cigarettes did you smoke?

- In the month before you knew you were pregnant how many beers/how much wine/how much liquor did you drink?

The test is positive if questions about use during or before pregnancy are affirmative. (See 'Special populations' above.)

FREQUENCY

Although there is little evidence upon which to base a recommendation of screening frequency, federally-funded screening programs and the Department of Veterans Affairs recommend annual screening. The rationale is based on convenience (the assumption of an annual examination attending to preventive services) and an expectation that a year is sufficient time for health habits to change. Preliminary studies seem to support this with a 3 to 6 percent incidence of unhealthy alcohol use over one to three years [54,55].

IMPLEMENTATION

Although screening with brief questionnaires is feasible in real world practice settings, and significant initiatives have been undertaken, implementation has been disappointing. As examples:

- A randomized trial of implementing alcohol screening in 77 general medical practices in the Netherlands involved training, feedback, outreach visits, patient materials, and guideline dissemination, but did not result in improvement to practice screening rates, which remained at approximately 10 percent [56].
- A survey of 746 clinicians in Europe who agreed to participate in an implementation study of alcohol screening and brief intervention reported screening rates between 2 and 10 percent of patients [57].
- In the United Kingdom, an implementation study found no benefit of alcohol screening and brief intervention in primary care. All were screened, then patients were randomized to receive an informational pamphlet or one of two brief interventions) [58].
- An initiative to implement near-universal alcohol screening in United States Veterans' hospitals and clinics appears to have resulted in poor quality screening that is not associated with reductions in unhealthy alcohol use [59,60].
- An randomized implementation trial in 54 adult primary care clinics within a large United States private integrated health system found that screening rates were highest when done by nonphysicians and medical assistants compared with primary care physicians (51 versus 9 percent). Screening by nonphysicians rarely resulted in brief interventions among those who screened positive, and was much lower in comparison to physicians (3 versus 44 percent) [61].

Decades of recommendations of alcohol screening by governments and other organizations in several countries, sustained dissemination and implementation has not occurred. Barriers are potentially surmountable and may involve systems changes (integrating care for alcohol and other drug use disorders into general health settings), technology, training, ongoing monitoring of practice, and a range of health professionals to take on the screening.

Electronic health record support — Screening tests can be embedded into electronic health records (EHRs) that record and score responses, and display results. EHRs are capable of providing decision support that recommends, for example, further assessment and advice specific to patients based on their results [62-65]. At Veterans Affairs Medical Centers in the United States, where clinicians are required to screen all patients annually, the AUDIT-C is available and scored in the EHR [62,66]. A clinical reminder prompts the clinician to administer the screening at a patient visit.

ASSESSMENT AND SUBSEQUENT CARE

Following a positive screening test that newly identifies a primary care patient with unhealthy substance use, he or she should receive a full substance use assessment, including the amount of alcohol consumed, medical consequences of substance use, and symptoms of substance use disorder. In some circumstances, full assessment is more appropriate than screening. These include treatment settings in which the prevalence of substance use disorders is known to be very high (eg, mental health, criminal justice).

Drinking amounts — Positive screening tests do not necessarily provide the information needed to evaluate the patient for risky drinking. After a positive screening test, the patient should be asked about their consumption:

- On average, how many days per week do you drink alcohol?
- On a typical day when you drink, how many drinks do you have?
- What is the maximum number of drinks you had on any given occasion during the last month?

Medical consequences — A positive screening test for unhealthy substance use should prompt review of the patient's medical history, review of systems, and physical exam findings for possible medical risks and consequences of alcohol or drug use, as these risks can become part of a discussion of unhealthy substance use. The list of potential conditions is extensive and varies with the substance used. (See "Overview of the chronic neurologic complications of

alcohol" and "Hematologic complications of alcohol use" and "Clinical manifestations and diagnosis of alcohol-associated fatty liver disease and cirrhosis" and "Fetal alcohol spectrum disorder: Clinical features and diagnosis" and "Cardiovascular benefits and risks of moderate alcohol consumption", section on 'Effect of alcohol on cardiovascular risk' and "Alcohol-induced cardiomyopathy" and "Wernicke encephalopathy" and "Prenatal substance exposure and neonatal abstinence syndrome (NAS): Clinical features and diagnosis" and "Clinical manifestations, diagnosis, and management of the cardiovascular complications of cocaine abuse" and "Pulmonary complications of cocaine use" and "Substance use during pregnancy: Screening and prenatal care" and "Overview of pulmonary disease in people who inject drugs" and "Drug-induced myopathies" and "Drug-induced neutropenia and agranulocytosis" and "Leukoencephalopathy due to heroin use" and "Epidemiology and transmission of hepatitis C virus infection", section on 'Injection drug use' and "The natural history and clinical features of HIV infection in adults and adolescents" and "Overview of the evaluation of stroke".)

Substance use disorder

Diagnosis in DSM-5 — Substance use disorder, which replaced substance abuse and dependence in DSM-5, is diagnosed based on the following criteria [3]:

A problematic pattern of substance use leading to clinically significant impairment or distress, as manifested by at least two of the following occurring within a 12-month period:

- The substance is often taken in larger amounts or over a longer period than was intended.
- There is a persistent desire or unsuccessful efforts to cut down or control use of the substance.
- A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.
- Craving, or a strong desire or urge to use the substance.
- Recurrent use resulting in a failure to fulfill major role obligations at work, school, or home.
- Continued use despite having persistent or recurrent social or interpersonal problems caused by or exacerbated by its effects.
- Important social, occupational, or recreational activities are given up or reduced because of use.

- Recurrent use in situations in which it is physically hazardous.
- Use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
- Tolerance.
- Withdrawal.

Current severity can be specified in the diagnosis based on the number of symptoms present:

- Mild: Two to three symptoms
- Moderate: Four to five symptoms
- Severe: Six or more symptoms

Brief assessment strategies — Brief assessment strategies for a substance use disorder are preferable to full diagnostic interviews in the context of screening and brief intervention due to time constraints in primary care. However, these strategies, described below, have not been studied extensively for this purpose. Related strategies can also be useful to identify the presence and severity of the substance use disorder, as well as consequences of use, which provides useful information for treatment [4,67]. The main purpose of the brief assessment is to identify consequences of use to discuss with patients, and to identify moderate to severe disorders in patients for whom treatment goals are different.

- If a single question has been used for screening, then a moderate to severe substance use disorder should be identified by asking patients about DSM-5 symptoms. Such questions can also be useful to identify symptoms and consequences of use.
- If a questionnaire that provides severity information has been used for screening, then that result may provide sufficient initial assessment information.
    - A threshold severity score for some screening instruments has been associated with a DSM-IV diagnosis of substance dependence. (See 'AUDIT' above and 'AUDIT-C' above and 'CAGE questions' above and 'ASSIST' above.)
    - An affirmative response to specific questions on some screening instruments suggests the presence of dependence (and therefore, likely, moderate to severe DSM5 disorder). An example is the “eye-opener” question on the CAGE. (See 'CAGE questions' above.)

- Two single-item questions have been used to identify alcohol use disorder in patients with unhealthy alcohol use, with a sensitivity ranging from 77 to 95 percent and specificity from 62 to 86 percent [68]. The two items are:
  - In the past year, have you sometimes been under the influence of alcohol in situations where you could have caused an accident or gotten hurt?
  - Have there often been times when you had a lot more to drink than you intended to have?

A question about prior treatment for a substance use disorder (SUD) can provide a quick entry point into the treatment of an ongoing or recurrent disorder.

Implications of screening for brief intervention — The presence of a substance use disorder has implications for subsequent care. A brief intervention for a patient in primary care with unhealthy substance use, including a **mild** substance use disorder, would be aimed at abstinence or reduced substance use. The optimal goal of brief intervention in primary care for a patient diagnosed with a **moderate to severe** substance use disorder would be for the patient to enter and participate in SUD specialty care. Patients at risk for withdrawal (patients with physical dependence or consumption of current daily risky amounts) would first undergo detoxification. Some interventions may be done in the primary care setting if expertise is available and the structure of the practice supports it. (See "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration" and "Management of moderate and severe alcohol withdrawal syndromes" and "Alcohol use disorder: Psychosocial management" and "Opioid use disorder: Pharmacologic management" and "Stimulant use disorder: Treatment overview" and "Stimulant use disorder: Psychosocial management".)

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Insomnia in adults" and "Society guideline links: Opioid use disorder and withdrawal" and "Society guideline links: Benzodiazepine use disorder and withdrawal" and "Society guideline links: Alcohol use disorders and withdrawal" and "Society guideline links: Stimulant use disorder and withdrawal" and "Society guideline links: Cannabis use disorder and withdrawal".)

SUMMARY AND RECOMMENDATIONS

- Amounts of alcohol that increase health risks have been estimated in terms of a “standard drink” (approximately 12 grams of ethanol, 5 ounces of wine, 12 ounces of beer, or 1.5 ounces of 80 proof spirits) (see 'Unhealthy alcohol or drug use' above):
  - For men under age 65, unhealthy use is more than 14 standard drinks per week or more than four drinks on any day
  - For women and older adults, unhealthy use is more than seven standard drinks per week or more than three drinks on any day
- Unhealthy use of drugs other than alcohol varies by substance. As an example, any use of cocaine can lead to myocardial infarction. (See 'Unhealthy alcohol or drug use' above.)
- We recommend that all adult primary care patients be screened for unhealthy alcohol use (**Grade 1B**). In general, annual screening is suggested. (See 'Indications' above and 'Frequency' above and "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration".)
- We suggest use of the single-item alcohol screening question for most primary care practices and use of the AUDIT-C, which provides additional information useful to treatment, by practices with more resources (eg, staff, time, or the capacity to automate administration and scoring) (table 1) (**Grade 2C**). (See 'Single-item screening' above and 'AUDIT-C' above.)
- A patient who receives a positive screen should be assessed for a moderate to severe substance use disorder and for medical and other consequences of use. (See 'Assessment and subsequent care' above and "Alcohol use disorder: Psychosocial management" and "Cocaine use disorder: Epidemiology, clinical features, and diagnosis" and "Opioid use disorder: Pharmacologic management".)
- Brief intervention is the standard treatment for adult patients in primary care who are identified through screening to have unhealthy alcohol use, including those with a **mild** substance use disorder. The brief intervention would be aimed at abstinence or reduced substance use. The optimal goal of brief intervention in primary care for a patient diagnosed with a **moderate to severe** substance use disorder would be for the patient to receive more extensive substance use disorder treatment. (See 'Substance use disorder' above and "Brief intervention for unhealthy alcohol and other drug use: Efficacy, adverse effects, and administration".)

- For all adult primary care patients, we screen for unhealthy use of drugs other than alcohol when services are in place to ensure follow-up for diagnosis and treatment. (See 'Indications' above and 'Unhealthy use of other drugs' above and 'Substance use disorder' above.)
  - A single-item screening, with an additional question about cannabis use, is a reasonable choice for most practices when patients are screened for other drugs.
  - The Substance Use Brief Screen is a reasonable choice to screen for tobacco, alcohol, and other drugs using only four questions (table 2).
  - For practices with additional resources, screening with the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) can provide additional information that is useful for treatment.

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