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Clinical Practice Guideline: Assessment and Treatment of Adolescents and Young Adults With Substance Use Disorders and Problematic Substance Use (Excluding Tobacco)

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Objective: To enhance the quality of care and clinical outcomes for adolescents with substance use disorder (SUD) and problematic substance use (PSU). The aims are 2-fold: (1) to summarize empirically based guidance about the psychosocial, behavioral, and psychopharmacologic treatment of SUDs and PSU in adolescents and young adults; and (2) to summarize expert-based guidance about the assessment and clinical management of these disorders.

Method: Statements about the treatment of SUD/PSU are based upon empirical evidence derived from a critical systematic review of the scientific literature conducted by the Brown Evidence-Based Practice Center under contract with the Agency for Healthcare Research and Quality (AHRQ). To update the AHRQ/Brown findings, a subsequent literature search of meta-analyses was conducted and critically reviewed by the American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Quality Issues (CQI). Evidence that each studied intervention resulted in benefits that outweighed the harms was assigned a Strength of Evidence (SOE) rating as follows: A (high), B (moderate), C (low), or insufficient. Interventions with an SOE rating of C or higher were eligible to be assigned a category of Recommendation (1) or Suggestion (2). Guidance about the assessment and clinical management of treatments for SUD/PSU was informed by expert opinion and consensus as presented in previously published clinical practice guidelines, chapters in leading textbooks of child and adolescent psychiatry, the *DSM-5-TR,* and government-affiliated prescription drug information websites.

Results: Suggested (2C) safe and effective short-term treatments for SUD/PSU in adolescents and young adults include brief (1-2 sessions) motivational interviewing for alcohol use; non-brief (>2 sessions) motivational interviewing, family therapy, or cognitive–behavioral therapy for alcohol use or disorder with or without other drug use; motivational interviewing plus cognitive–behavioral therapy for illicit drug disorders; behavioral interventions for college students with problematic alcohol use; and longer-term buprenorphine treatment and slower buprenorphine taper for opioid use disorder. The SOE was insufficient to support suggestions or recommendations for the pharmacological or behavioral treatment of any other adolescent SUD/PSU.

Conclusion: Substance use in adolescents and young adults is known to cause dependence, overdose, accidents while intoxicated/under the influence, physical and mental health problems, academic and vocational failure, and premature death. This document highlights 4 empirically supported treatment suggestions for SUD/PSU in youth. Despite the magnitude of the problem, there is a paucity of safe and effective treatments for adolescents and young adults with SUD/PSU, suggesting the urgent need for additional research.

Keywords: clinical practice guideline; substance-related disorders; substance use treatment; child and adolescent psychiatry

Abbreviations: AAP = American Academy of Pediatrics; AHRQ = Agency for Healthcare Research and Quality; ASAM = American Society of Addiction Medicine; AUD = alcohol use disorder; BSTAD = Brief Screener of Alcohol, Tobacco and other Drugs (substance use measure); CBT = cognitive–behavioral therapy; CFR = United States Code of Federal Regulation; CM = contingency management; CRAFFT = Car, Relax, Alone, Forget, Friends, Trouble (substance abuse measure in which the letters are the key words of the 6 items in the second section); CRAFFT+N2.1 = 2020 revised version of the CRAFFT that includes additional questions about tobacco and nicotine use; CUD = cannabis use disorder; DAST = Drug and Alcohol Screen (substance use measure with 10-item and 20-item versions); FAM = family therapy; FDA = United States Food and Drug Administration; HIPAA = Health Insurance Portability and Accountability Act of 1996, a US law that requires the Secretary of the US Department of Health and Human Services to develop regulations protecting the privacy and security of health information; *ICD* = *International Classification of Diseases*; ICM = intensive case management; MAT = medication-assisted treatment; MET = motivational enhancement therapy; MI = motivational interviewing; MINI = Mini International Neuropsychiatric Interview, short standardized diagnostic interview for adults using *DSM-5* and *ICD-10* criteria; MINI-KID = Mini International Neuropsychiatric Interview for Children and Adolescents, short standardized diagnostic interviews using *DSM-5* and *ICD-10* criteria; MDFT = multidimensional family therapy; MTF = Monitoring The Future; NIAAA = National Institute on Alcohol Abuse and Alcoholism; NIDA = National Institute on Drug Abuse; NMD = net mean difference; NSDUH = National Survey of Drug Use and Health; OR = odds ratio; OUD = opioid use disorder; PDMP = Prescription Drug Monitoring Program; PSU = problematic substance use;

RCT = randomized controlled trial; S2BI = Screening to Brief Intervention (substance use measure); SAMHSA = Substance Abuse and Mental Health Services Administration; SOE = strength of evidence; SR = systematic review; SRAD = substance-related and addictive disorders; SUD = substance use disorder; SUD/PSD = substance use disorders and problematic substance use; TAPS = Tobacco, Alcohol, Prescription Medication and Other Substance Use (substance use measure); TAU = treatment as usual; USPSTF = US Preventive Services Task Force; YRBS = Youth Risk Behavior Surveillance Survey

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The objective of this Clinical Practice Guideline is to enhance the quality of care and clinical outcomes for youth with substance use disorders (SUD)[a] as defined by the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*.[1] Adolescent substance use is associated with poorer psychosocial, health, and functional outcomes and is of substantial clinical and public health significance.[2,3-67]

This guideline is based on a critical systematic literature review of therapeutic interventions for adolescent and young adult substance use conducted by the Brown Evidence-Based Practice Center (EBPC) under contract with the Agency for Healthcare Research and Quality (AHRQ).[2] The AHRQ/Brown review included studies enrolling subjects with SUD other than tobacco according to *DSM-III,*[9] *DSM-IV,*[10] or *DSM-5*[1,11] criteria, and also studies that enrolled subjects with problematic substance use (PSU) based on referral for treatment, a positive screening with a validated tool, self-report of use, or having experienced negative consequences of use (eg, emergency medical care). This definition of PSU overlaps in part with the *DSM* Unspecified Substance-Related Disorder,[1,11] in which substance use symptoms cause clinically significant distress or functional impairment but do not meet full criteria for any specific SUD. Therefore, the more general terms of SUD and PSU are used throughout this document. Because tobacco use disorder was not included in the AHRQ review, it is not included in this Guideline.

The primary aim of this Guideline is to summarize **empirically based guidance** about **therapeutic interventions** for SUD/PSU. A secondary aim is to summarize **expert-based guidance** about the **assessment** of SUD/PSU as an integral part of treatment, and about the **implementation** of empirically based interventions for SUD/PSU.

Prevalence of Substance Use and SUD Among Adolescents and Young Adults

The prevalence of substance use among adolescents in the United States has been extensively studied across many years through national surveys such as Monitoring The Future (MTF),[12,13] the National Survey on Drug Use and Health (NSDUH),[14] and the Youth Risk Behavior Surveillance Survey (YRBSS)[12,14,15] (see Table 1 for a summary of the most recent survey findings). Because each of these surveys uses a unique methodology, the prevalence rates differ across surveys.

Survey results over recent decades demonstrate a general decline in substance use among adolescents. Lifetime, past 12-month, past 30-day, and daily alcohol use as well as binge drinking have decreased substantially among 12th, 10th, and 8th graders, particularly from 2001 to 2023. Although cannabis remains the most widely used illicit substance among US adolescents and young adults, use peaked in the late 1970s and is decreasing overall. However, there are newer methods of cannabis use, including vaping (inhaling through a device that heats a liquid to create a vapor), eating, or consuming cannabis concentrates (different forms of high delta-9-tetrahydrocannabinol [THC]) that may affect future prevalence rates. During the COVID-19 pandemic, cannabis use approached the highest level of daily use since 1991, but decreased in 2022 and 2023. Adolescent opiate use has gradually declined since 2002, although there has been an alarming increase in adolescent overdose deaths since 2019. Three-fourths of adolescent overdose deaths, both intentional and unintentional, involve fentanyl, newly introduced into the US drug supply.[16-18] Many other substances, including amphetamines, methamphetamine, hallucinogens, and cocaine, also have shown marked decreases in use among adolescents; the exceptions demonstrating increases are cough medicines containing dextromethorphan and inhalants.

Risk Factors for SUD/PSU

Adolescence is a vulnerable neurodevelopmental period for experimentation with substances and the development of SUD/PSU. Adolescents undergo structural and functional changes in the brain regions associated with motivation, impulse control, and risk appraisal, including frontal cortical and subcortical monoaminergic systems, which may confer greater vulnerability to SUD.[19,20] In adolescence, the drive for immediate reward is relatively more developed than accurate risk appraisal and impulse control,

[a]The terminology of Substance Use Disorder and Problematic Substance Use was used in this Guideline to be consistent with that used in the systematic review by the Brown Evidence-Based Practice Center (EBPC)/Agency for Healthcare Research and Quality (AHRQ).[8]

TABLE 1 Summary of 2023 Monitoring The Future (MTF), 2021 Youth Risk Behavior Surveillance Survey (YRBSS), and 2021 National Survey on Drug Use and Health (NSDUH) Prevalence of Substance Use

Substance	Survey	Age group	Prevalence
Alcohol	MTF	12th grade	12-mo use: 73% to 46%
		10th grade	12-mo use: 65% to 31%
		8th grade	12-mo use: 43% to 15%
		12th grade	Binge drinking: 12%
		10th grade	Binge drinking: 6%
		8th grade	Binge drinking: 2%
	YRBSS	High school	30-day use: 23%
	NSDUH	18-25 y	30-day use: 50.1%
		12-17 y	30-day use: 7.0%
		18-25 y	Binge drinking: 29.2%
		12-17 y	Binge drinking: 3.8%
		12-17 y	AUD: 3.4%
		18-25 y	AUD: 15.0%
Cannabis	MTF	12th grade	12-mo use: 29%
		10th grade	12-mo use: 18%
		8th grade	12-mo use: 8%
		12th grade	Daily use: <7%
		10th grade	Daily use: <3%
		8th grade	Daily use: <1%
		12th grade	Vaping: ~20%
	YRBSS	High school	30-day use:16%
	NSDUH	18-25 y	30-day use: 24.1%
		12-17 y	30-day use: 5.8%
		18-25 y	Vaping: 6.5%
		12-17 y	Vaping: 2.3%
		12-17 y	CUD: 4.8%
		18-25 y	CUD: 14.4%
Opiates	MTF	12th grade	Non-prescribed use: 2.4%
		12th grade	12-mo use: 1%
		12th grade	30-day use: 0.4%
		All grades	Heroin use: ≤0.4%
	YRBSS	High school	Prescription misuse 6%
	NSDUH	18-25 y	12-mo use: 3.1%
		12-17 y	12-mo use: 1.9%
		18-25 y	OUD: 1.3%
		12-17 y	OUD: 1.0%
Other substances	MTF	12th grade	Amphetamines: 2.1%
		12th grade	Methylphenidate: <1%
		8th-12th grades	Methamphetamine: ≤0.6%
		All grades	Multiple substances: <10%
		12th grade	Inhalants: 1%
		12th grade	Hallucinogens: 4%
		12th grade	Cocaine: <1%
		12th grade	Tranquilizers: <1%
		12th grade	Ecstasy: <2%
	NSDUH	12-17 y	Stimulant use disorder: 0.9%
		18-25 y	Stimulant use disorder: 1.1%
		12-17 y	Hallucinogen use disorder: 0.2%

(continued)

TABLE 1 Continued

Substance	Survey	Age group	Prevalence
		18-25 y	Hallucinogen use disorder: 0.6%
		12-17 y	Cocaine use disorder: 0.0%
		18-25 y	Cocaine use disorder: 0.8%
		12-17 y	Tranquilizer use disorder: 0.3%
		18-25 y	Tranquilizer use disorder: 0.7%
		12-17 y	Methamphetamine use disorder: 0.1%
		18-25 y	Methamphetamine use disorder: 0.3%
		12-17 y	Overall SUD: 8.5%
		18-25 y	Overall SUD: 25.6%

Note: MTF: Annual classroom surveillance of a national sample of all 8th, 10th, and 12th grade students; conducted by the University of Michigan and funded by the National Institute on Drug Abuse. YRBSS: Biennial classroom surveillance of a national sample of high school (9th through 12th grade) students; conducted and funded by the US Centers for Disease Control and Prevention. NSDUH: Annual face-to-face and Web-based surveillance of a national sample of civilian, noninstitutionalized population aged 12 or older in the United States; conducted and funded by the Substance Abuse and Mental Health Services Administration.

which predisposes adolescents to engage in impulsive and risky behaviors including SUD/PSU.[6,19,20,25-27]

Neurocognitive and neuroanatomic vulnerabilities have also been shown in prospective studies to predispose to the development of SUDs, including poorer performance on tasks of inhibition and working memory,[21,22] smaller brain volumes in reward and cognitive control regions,[23,24] heightened reward responsivity, and heightened activation in the striatum.[23] There is a bidirectional relationship between cognitive deficits and SUD/PSU, such that there is also evidence that cannabis and alcohol use are associated with the worsening or emergence of cognitive deficits, and alterations in brain structure and function.[25,26]

The MTF and NSDUH surveys find that younger age of initiation of substance use is a major risk factor for developing an SUD/PSU.[6,27-31] A family history of SUD also increases risk,[32] with estimates from twin and adoption studies indicating a 50% heritability of SUD.[33] Male individuals tend to have higher rates of substance use than female individuals, but the gender gap has been narrowing over time.[34] Female individuals who use substances experience "telescoping" whereby their PSU may transition more quickly to SUD, and are more vulnerable to physical and mental health impacts of substance use.[35] Other risk factors include early exposure to traumatic life events,[36] prenatal exposure to alcohol and other drugs,[37] lack of parental supervision and monitoring,[38] parental approval of substance use,[39] lack of school connectedness and low academic achievement,[39] and affiliation with peers who use substances.[40-42] Mental health symptoms and disorders have also been found to be associated with increased risk of SUD/PSU. Of note, the risks are bidirectional. Associated disorders include the following: sleep problems[43]; externalizing problems including oppositional defiant disorder and conduct disorder[44]; depression[44,45]; bipolar disorder[46,47]; attention-deficit/hyperactivity disorder (ADHD)[45,48]; psychosis[49]; eating disorders[50]; borderline personality disorder[68]; posttraumatic stress disorder (PTSD)[51]; and autism spectrum disorder.[52] Youth with borderline to moderate intellectual disabilities are a particularly vulnerable population. Research shows that although the prevalence of alcohol and illicit drug use is low in this population, the risk of developing SUD is relatively high among substance users who have intellectual disabilities. This increase in risk is attributed to impulsivity, increased risk of trauma, and possible lack of understanding about the potential for abuse or consequences of use.[53]

Racism can be a risk factor for developing SUD and/or reduced access to treatment for SUD/PSU.[54-57] However, youth rates of use do not follow a pattern of higher use in racial/ethnic groups. In the 2022 MTF study, which presented combined 2021 to 2022 data to improve reliability,

12th grade student rates of overall use of any illicit drug and of cannabis were not different by racial/ethnic groups. However, White 12th grade students used certain substances (salvia, Vicodin, Ritalin, crystal methamphetamine, over-the-counter cough/cold medicines, Rohypnol, gammahydroxy-butyrate [GHB], steroids, and androstenedione) more frequently than other groups. Hispanic students did not have higher rates of use of any drugs in comparison with other racial/ethnic groups. Alcohol use, including binge drinking, and tobacco use, including via vaping, were both higher in Black 12th grade students than in other racial/ethnic groups, and overall reports of substance use by Black students was higher in the 2022 survey than in prior survey years.[12]

The 2021 NSDUH showed lower lifetime and past-year use of illicit drugs in Black compared to White and Hispanic 12- to 17-year-olds, but similar levels of recent use across racial/ethnic groups for past–30-day day use.[14] The 2021 YRBS data showed that Asian and Black high school students were less likely than students from nearly every other racial/ethnic group to have ever used cocaine, inhalants, heroin, methamphetamines, hallucinogens, or ecstasy; White students were more likely than Asian, Black, and Hispanic students to report drinking alcohol in the past 30 days; and Black students were more likely than Asian, Hispanic, and White students to report use of cannabis in the past 30 days.[15]

Identifying as LGBTQ+[58] is associated with an increased prevalence of SUD/PSU, and this is supported by data from the yearly YRBS.[59] The 2021 survey showed that students who identified as lesbian, gay, or bisexual had a higher prevalence of all substance use behaviors except binge drinking, compared with students who identified as heterosexual. Similarly, students who identified as not sure of their sexual identity had a higher prevalence of substance use behaviors compared to heterosexual students, including current prescription opioid problematic use, and lifetime problematic use of cocaine, methamphetamine, heroin, and injection drugs, and problematic use of prescription opioids. However, students who identified as not sure of their sexual identity had a lower prevalence of certain substance use behaviors compared with students identifying as lesbian, gay, or bisexual, including current marijuana use, current alcohol use, and lifetime marijuana use. The Trevor Project's report of their 2021 National Survey on LGBTQ Youth Mental Health reported rates of substance use among youth who self-identified as LGBTQ and found that 47% of those under 21 years of age reported regular alcohol use, and 5% of respondents under 21 years of age reported daily or weekly use of both alcohol and cannabis.[21-23,25,26,60]

Regarding alcohol, the 2023 MTF difference in rates of development of an SUD within 12 months of initiation of use was nonsignificant (5.6% and 5.1%, respectively), but the association between younger age at first drink and increased risk of developing alcohol use disorder (AUD) is supported by other research.[27] Alcohol use disorder that begins in adolescence can be either short-term or chronic,[28,29] with some chronic use associated with co-occurring depression or conduct problems[29] and autism.[30]

The NSDUH data show higher risk for SUD/PSU with heroin and methamphetamine use than other substances, but typically this risk starts in young adulthood. The 2015 to 2018 NSDUH surveys found too few adolescent-onset cases to reliably calculate the risk of adolescents developing an opioid use disorder (OUD) within a year of initiating heroin use. However the surveys found that 30% of young adults developed an OUD within a year of initiating heroin use, and 25% of young adults developed a stimulant-related disorder within a year of initiating methamphetamine use.[61] The NSDUH surveys may underestimate the risk, as they assess noninstitutionalized civilian populations, which excludes adolescents and young adults with higher risk, such as those who are unsheltered, psychiatrically hospitalized, in juvenile detention, or in foster care.

OVERVIEW OF THE GUIDELINE DEVELOPMENT PROCESS

Authorship, Source, and Scientific Review

The authors of this guideline (the Guideline Writing Group) are co-chairs and members of the AACAP Committee on Quality Issues (CQI). The CQI is charged by AACAP with the development of Clinical Practice Guidelines following standards promulgated by the Institute of Medicine (IOM)[62] and the Appraisal of Guidelines Research & Evaluation (AGREE) Next Steps Consortium.[63] Both standard sets emphasize *rigor* (critically appraised empirical evidence) and *transparency* (minimization of conflicts of interest and well-delineated guideline development process). CQI chairs are nominated by the AACAP president based on their expertise and experience in the synthesis of psychiatric knowledge and their lack of relevant conflicts of interest. CQI members are nominated by CQI co-chairs to broadly represent AACAP members in geographic, gender, race/ethnicity, career duration, and practice type and setting domains, and to have no relevant conflicts of interest. Prospective CQI members are reviewed and approved by the AACAP president.

In this guideline, statements about the treatment of SUD/PSU are based upon empirical evidence derived from

a critical systematic review of the scientific literature conducted by the Brown EBPC under contract with AHRQ,[2] and on evidence from meta-analyses published since the AHRQ/Brown review.

Because of sparse or absent empirical evidence, clinical guidance about the assessment and clinical implementation of empirically-based treatments for SUD/PSU is informed by expert opinion and consensus as presented in previously published clinical practice guidelines,[64] chapters in leading textbooks of child and adolescent psychiatry and adolescent SUD,[65-67,69-72] the *DSM-5-TR*,[1] and government-affiliated prescription drug information websites.[73,74] The peer review and approval process for the draft guideline spanned the period May 12, 2023, to August 31, 2024, and included reviewers representing the following stakeholder groups (see end of this document for complete list): (1) topic experts; (2) other members of the AACAP CQI; (3) other relevant AACAP committees; (4) the AACAP Assembly of Regional Organizations; (5) AACAP Executive Committee; and (6) AACAP members. All suggested edits were considered. However, the CQI Guideline Writing Group exercised editorial authority as to whether the suggested edits were included in the final document. Final approval of the guideline as an AACAP Official Action rested with the AACAP Council.

ASSESSMENT OF SUBSTANCE USE DISORDERS

Diagnostic evaluation is an essential prerequisite for the treatment of an SUD/PSU. Child and adolescent psychiatry training and experience are valuable in differentiating SUD from other disorders, evaluating for comorbid psychiatric disorders, and offering a genetic, developmental, and contextual framework for the onset and maintenance of the SUD/PSU.

Identification

Screening is often the first step toward the identification of SUD/PSU. In 2020, the United States Preventive Services Task Force (USPSTF) concluded that there was insufficient evidence to assess the balance of benefits and harms of screening for unhealthy drug use in adolescents who present to primary care for reasons other than substance use and related problems.[75] However, the American Academy of Pediatrics (AAP) and Substance Abuse and Mental Health Services Administration (SAMHSA) recommend routine substance use screening by interviewing the young person alone during adolescent health care visits across medical specialties.[65,76] Providing tiered interventions to youth based upon their risk level may improve public health outcomes related to youth substance use.[59]

Screening for symptoms of substance use can be supplemented by parent report[65] and through input from referral sources such as other health and mental health care providers, schools, and the legal system. SUD/PSU among youth who have juvenile justice involvement is a predictor of recidivism, and expanding screening and referral to services for that population have been shown to help prevent reoffending.[77]

The National Institutes of Health (NIH) host online sites that provide access to screening tools for adolescents and adults (Screening and Assessment Tools Chart | National Institute on Drug Abuse (NIDA) (nih.gov),[78] and https://www.phenxtoolkit.org/sub-collections/view/10,[74] Those tools that are available at no cost and are recommended for use with adolescents 12 to 18 years of age are summarized in Table 2.[79-95] Research showed good comparability among the Tobacco, Alcohol, and Prescription Medication and Other Substance Use (TAPS), SB2I, and the Brief Screener of Alcohol, Tobacco and other Drugs (BSTAD), and concluded that screening tools that use questions on past-year frequency of use were effective for identifying adolescents with SUDs.[96]

Evaluation

When an individual exhibits signs or symptoms of substance use or screens positive for a potential SUD, the next step should be a diagnostic evaluation.

In *DSM-5-TR*,[1] a mental disorder is defined as "a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning." By *DSM* convention, a mental disorder is diagnosed if a specific threshold for the number of diagnostic criteria for the given disorder is met. Included in most diagnostic criteria sets is the requirement for a specific frequency and duration of symptoms as well as clinically significant distress and functional impairment, along with the caveat that alternative medical, substance, and psychiatric explanations for the symptom presentation must have been considered before the diagnosis is applied.[1]

The *DSM 5-TR*[1] SUD diagnostic class includes 9 separate types of substances.[b] *DSM-5* criteria can be

[b]Alcohol; caffeine; cannabis; hallucinogens; inhalants; opioids; sedatives/hypnotics/anxiolytics; stimulants (including amphetamine-type substances, cocaine, and other stimulants); tobacco.

TABLE 2 Freely Available Screening/Assessment Measures to Assess for Substance Use Disorder (SUD) and Problematic Substance Use (PSU)

Measure	Informant / Time to administer	Method	Where to find
Rating scales			
Brief Screener of Alcohol, Tobacco and other Drugs (BSTAD)[79, a, b]	Patient report, can be clinician administered / Time: 2 min	Screening Measure. Asks a single frequency of use question per substance to identify risky substance use by adolescent patients and identifies the likelihood of a *DSM-5* SUD (no SUD, moderate SUD, and severe SUD). Asks one question about use across substances including tobacco, alcohol, marijuana, and other/illicit drugs. The accompanying resources assist clinicians in providing patient feedback and follow-up resources.	https://nida.nih.gov/bstad
Screening to Brief Intervention (S2BI)[80]	Patient report, can be clinician administered / Time: 2 min	Screening Measure. Single frequency-of-use question per substance. Identifies the likelihood of a *DSM-5* SUD (no SUD, moderate SUD, and severe SUD). Includes tobacco, alcohol, marijuana, and other/illicit drugs. The accompanying resources assist clinicians in providing patient feedback and follow-up resources.	https://nida.nih.gov/s2bi/
CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble)[2,7,8, 22, b]	Self or clinician administered / Time: 5 min	Screening Measure. The tool screens youth under 21 y of age for alcohol and other drug use and is recommended by the American Academy of Pediatrics. Version 2.1 has 3 questions that screen for alcohol and other drug use. The 2.1+N version has 4 questions, including a screening question for tobacco use and vaping. It is available in English and Spanish.	Microsoft Word - 2C6BD79387C674D67DA98191FB9A9027.docx (crafft.org)
NIAAA Youth Alcohol Screening and Brief Intervention[81]	Clinician administered / Time: 2 minu	Screening Measure. This 2-question tool to identify youth at risk for alcohol-related problems asks about friend use, then self-use. It was developed jointly by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the American Academy of Pediatrics for use in clinical interviews with adolescents.	https://www.niaaa.nih.gov/sites/default/files/publications/YouthGuide.pdfche
The Alcohol Use Disorders Identification Test: AUDIT[82,83, a, b]	Self or clinician administered / Time: 4 min	Screening Measure. This 10-item screening tool was developed by the World Health Organization (WHO) to assess alcohol consumption, drinking behaviors, and alcohol-related problems. Available in more than 40 languages.	https://nida.nih.gov/sites/default/files/audit.pdf
The Alcohol Use Disorders Identification Test—Concise: AUDIT-C[83,84, a, b]	Clinician administered / Time: 2 min	Screening Measure. This 3-question alcohol screening instrument reliably identifies persons as hazardous drinkers and identifies AUDs. The AUDIT-C is a modified version of the 10- question AUDIT instrument. Available in more than 40 languages.	https://cde.nlm.nih.gov/formView?tinyId=myWNfJaZwe

(*continued*)

TABLE 2 Continued

Measure	Informant / Time to administer	Method	Where to find
The American Psychiatric Association (APA) has developed self- and parent-rated Level 1 Cross-Cutting Symptom Measures[85] to screen for multiple psychiatric disorders including SUD[18, a, b]	Patient and parent reports / Time: 5 min	Screening Measure. 25-Item measure developed by the American Psychiatric Association as a useful tool to enhance clinical decision-making and not as the sole basis for making a clinical diagnosis. Has demonstrated good reliability in the *DSM-5* field trials conducted in clinical samples across the United States.[86]	https://www.psychiatry.org/psychiatrists/practice/dsm/educational-resources/assessment-measures
Personal Experience Screening Questionnaire (PESQ)[87]	Self-administered / Time: 10 min	Screening Measure. 40 Items; includes problem severity scale, brief checklist of psychosocial problems, recent drug use history, and invalid responding. Designed for ages 12-18 y, to identify problematic alcohol and other substance use, normed on adolescents. Psychometric data were collected in clinical and nonclinical settings (schools, juvenile detention centers, medical clinics). Spanish version available.	No website available. Copyrighted. Western Psychological Services. Permission granted for use without cost by Dr. Ken Winters (winte001@umn.edu)
Tobacco, Alcohol, and Prescription Medication and Other Substance Use (TAPS)[20,21, a, b]	Self or clinician administered / Time: <5 min	Screening Measure that can lead to brief assessment. The 4-item screen assesses for tobacco, alcohol, illicit drugs, and nonmedical use of prescription drugs. Used to assess primary care patients for tobacco, alcohol, prescription drug, and illicit substance use and problems related to their use. If an individual screens positive on TAPS-1, the tool will automatically begin the second component (TAPS-2), which consists of brief substance-specific assessment questions to arrive at a risk level for that substance.	https://nida.nih.gov/taps2/
The ASSIST (Alcohol, Smoking and Substance Involvement Screening Test)[88]	Clinician administered / Time: 10 min	Screening Measure. This 8-question tool, with responses for each one by substance, was developed for the World Health Organization (WHO) to assist with early identification of substance use—related health risks and substance use disorders in primary health care, general medical care, and other settings.	https://www.who.int/publications/i/item/978924159938-2

(*continued*)

TABLE 2 Continued

Measure	Informant / Time to administer	Method	Where to find
The American Psychiatric Association (APA), as part of its Level 2 Cross-Cutting Symptom Measures[86]	Patient and parent reports / Time: varies, 1-2 h	Screening Measure. This 25-item tool was developed for adolescents, parents of adolescents, and adults to assist with early identification of substance use and related health risks and substance use disorders. These measures are adapted from the ASSIST[88] and modified by the National Institute on Drug Abuse (NIDA) to skip items for individuals not endorsing substance use for streamlined administration. This measure is field tested and is designed for use during initial assessment and for treatment progress monitoring.	https://www.psychiatry.org/psychiatrists/practice/dsm/educational-resources/assessment-measures
Drug Abuse Screening Test (DAST-10)	Self or clinician administered / Time: 5 min	Screening Measure. 10-Item screening tool, which yields a quantitative index of the degree of consequences related to drug abuse. Also has 20- and 26-item versions.	https://cde.nida.nih.gov/instrument/e9053390-ee9c-9140-e040-bb89ad433d69
Clinical interviews			
Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version (K-SADS-PL)[89]	Clinician administered / Time: 75 min	Assessment Measure. This interview is the most widely used and well-validated diagnostic interview for children and adolescents that assesses *DSM* diagnoses including substance use disorders. This measure has a Web-based KSADS-COMP version that is widely used in research.	https://insideoutinstitute.org.au/assets/kiddie%20sads%20present%20and%20lifetime%20version%20k%20sads%20pl.pdf
Structured Clinical Interview for the *DSM-5* (SCID-5)[90]	Clinician or trained mental health professional administered / Time: 30-180 min	Assessment Measure. This semi-structured interview assesses major *DSM-5* diagnoses including substance use disorders.	https://www.appi.org/products/structured-clinical-interview-for-*DSM-5*-scid-5 https://www.columbiapsychiatry.org/research/research-labs/diagnostic-and-assessment-lab/structured-clinical-interview-dsm-disorders-11
Diagnostic Interview Schedule—IV (DISC-IV)[91]	Self or clinician administered / Time: 90-120 min	Assessment Measure. This standardized diagnostic interview addresses specific *DSM-IV* symptoms and has a step structure that minimizes interviewing time.	https://www.jaacap.org/article/S0890-8567(09)66098-6/fulltext

(*continued*)

TABLE 2 Continued

Measure	Informant / Time to administer	Method	Where to find
The Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID)[92, b]	Clinician administered / Time: 15-50 min	Assessment Measure. This short standardized diagnostic interview assesses *DSM-5* and *ICD-10* criteria for multiple SUDs, with follow-up questions if screening questions are answered positively. The instrument can be administered to the parent(s) and adolescents together or separately.	https://eprovide.mapi-trust.org/instruments/mini-international-neuropsychiatric-interview-for-children-and-adolescents#need_this_questionnaire.
Mini-International Neuropsychiatric Interview (MINI)[93]	Clinician administered / Time: 15 minutes	Assessment Measure. This standardized diagnostic interview assesses *DSM-5* and *ICD-10* criteria. The interview asks brief screening questions for each of multiple SUDs, with follow-up questions if screening questions are answered positively.	https://eprovide.mapi-trust.org/instruments/mini-international-neuropsychiatric-interview#need_this_questionnaire
The Teen Addiction Severity Index-2 (T-ASI)[94]	Clinician administered / Time: 60 min	Assessment Measure. This semi-structured interview sections on chemical (ie, drug) use, school status, employment/support status, family relations, peer/social relationships, legal status, and psychiatric status, as well as questions for the clinician about their observations. Has been translated into 14 languages.	No website available. Copyrighted and use without cost can be permitted by Dr. Yifrah Kaminer (kaminer@uchc.edu).

***Note**: An additional, commonly used assessment measure that is not available free of charge is the patient-reported Global Appraisal of Individual Needs (GAIN)[95] (https://gaincc.org/instruments/), which assesses both SUD/PSUs using a* DSM-5 *SUD symptom checklist as well as potentially associated mental health disorders, including internalizing disorders, externalizing disorders, and crime/violence, and is available for online administration. AUD = alcohol use disorder.*

[a]*Electronically administered.*

[b]*Adolescent validation.*

applied to adolescents as well as adults, and are considered highly reliable in adolescents based on data from a large adolescent assessment study.[97] Symptom diagnostic criteria for SUD fall into 4 categories[c]: impaired control over substance use (items 1-4), social impairment due to substance use (items 5-7), risky use of the substance (items 8 and 9), and pharmacologic tolerance and withdrawal (items 10 and 11).

For each type of substance, the *DSM-5-TR* includes diagnostic criteria for substance intoxication whenever applicable. *DSM-5-TR* defines intoxication as a constellation of reversible symptoms that develop during or shortly after recent ingestion of a substance and that are attributable to physiological effects of the substance on the central nervous system (CNS); and defines withdrawal as physiologic and cognitive symptoms due to reduction in or cessation of the use of a substance that result in changes in problematic behavior. Unlike in adults, in youth withdrawal symptoms are less common. Although not specific to substance use, common first signs of significant/problematic use are isolation from friends and/or family, decline in function, changing friends combined with reluctance to have family members meet friends, worsening school grades and attendance, mood and attitude changes such as irritability and less interest in formerly preferred activities, withdrawal from school/extracurriculars, difficulty maintaining hygiene, memory and concentration issues, or evidence of substance intoxication.[98]

Diagnostic evaluation should include consideration of the antecedents and consequences of the substance use behavior, and determination of which of the antecedents and consequences are potentially modifiable to reduce the likelihood of ongoing problem behavior. For each substance, one should ask about age and context of first use; frequency and age of greatest use and most recent use; route of use (oral/intravenous/intranasal); history of witnessing or experiencing an overdose; any history of SUD/PSU treatment or support including going to Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) meetings; any history of seizure or other withdrawal symptoms; and preferred substance.[99]

DSM-5-TR underscores the importance of estimating the severity of a SUD during the evaluation to determine the level of care and treatment modalities needed. SUD in *DSM-5-TR* combine the *DSM-IV* categories of substance abuse and substance dependence into a single disorder measured on a continuum from mild to severe. A mild SUD is indicated by the presence 2 or 3 criteria, moderate by 4 or 5 criteria, and severe by 6 or more criteria. In addition, *DSM-5-TR* allows for specifiers for the course of the SUD: "in early remission," "in sustained remission," "on maintenance therapy," or "in a controlled environment." *DSM-5* SUD checklists can aid in the assessment of SUDs, as has been found in adult primary care settings (see Symptom Rating Scales section below).[100]

Evaluation Structure. Evaluation is an ongoing dynamic process that begins at the first meeting and continues throughout treatment. It requires a clinical interview conducted with the patient independent from their parents, using nonjudgmental wording and conducted after the clinician has "set the frame" by discussing with the adolescent or young adult and their parent/caregiver the terms and limits of confidentiality. Parents may be able to provide additional information about the magnitude of the problem and the degree of impairment in daily life.

Although adolescents are considered the primary source of information, it is important to be aware that the adolescent or young adult may minimize the extent of their substance use in clinical interviews and is likely to be more forthcoming if their confidentiality is assured.[101] Explaining the reason for confidentiality to parents, including emphasizing the goal of promoting the adolescent's independent motivation for treatment, can help to avoid parental upset about maintaining their child's confidentiality. The obligation for confidentiality may be overridden by stronger conflicting considerations, which include duties to protect the patient and others from harm, as well as duties to obey the law and protect the public health (eg, suicidal ideation, intravenous drug use, driving while intoxicated, risk of exploitation or other harm, pregnancy).[101,102]

[c]*DSM-5-TR* Substance Related and Addictive Disorders (SRADs) are *defined as a problematic period of substance use leading to clinically significant impairment or distress, as manifested by at least two of the following symptom criteria occurring within a 12-month period. Severity of the disorder is defined as follows: Two or 3 (mild), 4-5 (moderate), or six or more (severe) of the following symptoms occur over a 12-month period:* 1. Substance taken in larger amounts or over a longer period of time than was intended; 2. Persistent desire or unsuccessful efforts to cut down or control substance use; 3. A great deal of time is spent in activities necessary to obtain substance, use substance, or recover from its effects; 4. Craving, or a strong desire or urge to use substance; 5. Recurrent substance use resulting in failure to fulfill major role obligations at work, school, or home; 6. Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance; 7. Important social, occupational, or recreational activities are given up or reduced because of substance use; 8. Recurrent substance use in situations in which it is physically hazardous; 9. Substance 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 substance; 10. Tolerance; 11. Withdrawal, but note that Withdrawal is not a criterion for repeated use of Phencyclidine, other hallucinogens, and inhalants. Reprinted with permission from the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision* (Copyright © 2022). American Psychiatric Association. All Rights Reserved.

Adolescent self-reports are often complemented by urine toxicology tests, which may detect only very recent use of select substances.[6] Parent report can also be valuable but is less consistent than self-report combined with urine testing.[6]

Importantly, obtaining information about an individual's personal, familial, and community strengths can allow for the implementation of a strengths-based approach to treatment.[103] Collateral information from teachers, parents, and significant others can also help identify the patient's social network members who may support recovery. Because of the multiple sources of information, a diagnostic evaluation of an adolescent or young adult may involve more than one session.

Because lack of appropriate linguistic ability or interpreter support has been associated with misdiagnosis as well as adverse clinical outcomes,[104] it is optimal to conduct the diagnostic evaluation in the language in which the adolescent and parents/guardians are proficient. If live interpreter services are not available, interpreter services via telephone or secure video are an acceptable alternative.

Differential Diagnosis. A detailed chronologic history of symptom onset and progression can help differentiate pre-morbid psychiatric conditions from symptoms associated with SUD/PSU. Psychiatric conditions that may include symptoms that are similar to those of SUDs include the following: ADHD (distractibility, restlessness), depression (distractibility, insomnia, somatic complaints), bipolar disorder, anxiety disorders, and posttraumatic stress disorder (distractibility, restlessness, irritability, insomnia), obsessive-compulsive disorder (intrusive thoughts, avoidance, reassurance seeking), psychotic disorders (restlessness, agitation, social withdrawal, distractibility), autism spectrum disorder (social withdrawal, social skills deficits, distractibility, restricted and intense interests), disruptive behavior disorders (oppositionality, antisocial behavior), and learning disorders (deteriorating school achievement).

An OUD can be misdiagnosed in patients with chronic pain or intermittent acute pain syndromes (eg, sickle cell disease, pancreatitis) when patients request higher doses and/or more potent opioid medications. However, pain is a risk factor for developing OUD, as is receipt of or access to a prescription opioid to treat pain in adolescents.[105] Opioid or sedative–hypnotic withdrawal should be considered when patients have nonspecific symptoms of anxiety combined with prominent aches and pains, and in those with autonomic instability, confusion, or seizures, which could indicate withdrawal from alcohol or benzodiazepines.[106-108]

Psychiatric Comorbidities. Studies of adolescents in SUD/PSU treatment have shown the most common comorbid psychiatric conditions and issues to be conduct problems, ADHD (both diagnosed and undiagnosed), mood disorders, and trauma-related symptoms.[109-112] Obsessive-compulsive disorder, eating disorder, and learning and language disorders also have evidence of comorbidity with substance use.

There is a complex and bidirectional relationship between most mental health disorders and SUD/PSU. Co-occurring psychiatric conditions can present before the onset of the SUD/PSU; conversely, SUD/ PSUs can be associated with the later development of co-occurring psychiatric conditions. SUD/PSUs and co-occurring psychiatric conditions can exacerbate each other and are associated with greater symptom severity and functional impairment, worse treatment engagement and outcomes, higher relapse rates, and elevated suicide risk compared to SUD/PSU alone.[101,113,114]

Results from multiple large longitudinal cohort/observational studies that have followed youth from childhood (before the onset of substance use) into adulthood have been conducted and analyzed both separately (as exemplified by the classic Dunedin longitudinal study),[44] and in some cases as part of large integrated meta-analyses.[115] Retrospective self-reports in surveys and prospective studies in general population samples suggest that mood (both depression and bipolar disorder), anxiety, and conduct disorders and ADHD often precede and increase the risk of SUD/PSUs.[101,109,110,116] PTSD has been shown in longitudinal surveys to increase the risk of developing OUD, and to be associated with higher severity of OUD in general population studies.[113] Obsessive-compulsive disorder, eating disorder, and learning and language disorders have evidence of comorbidity with substance use in adolescents.[117] There are increasing longitudinal and prospective data showing an association between regular cannabis use in adolescence and young adulthood and depression and suicidal ideation/attempts,[4,118] and anxiety.[119] A recent narrative literature review concluded that antidepressant medicines are less effective for adolescents with depression/anxiety who frequently use cannabis.[120] There is also evidence that reduced use of cannabis among youth who have a combination of substance use and depression predicted earlier improvement in depression symptoms.[5]

Problematic alcohol use and AUD have been shown in longitudinal general population surveys to predict mood disorders in men.[113] SUD/PSUs can also trigger new-onset psychiatric symptoms, including that use of one substance often leads to problematic use of other substances.[121-123] Evidence suggests that adolescents frequently use alcohol,

tobacco, and cannabis together.[124] Admissions for combined alcohol and other substance use treatment is more common than for alcohol use alone.[125]

Concerns for risk of psychosis are relevant across substances, including hallucinogens and stimulants (amphetamine-type and cocaine),[126,127] and especially with cannabis.[128] Longitudinal, prospective studies have shown that cannabis use, particularly early-onset (before age 16 years), chronic/persistent, high-frequency, and high–THC potency use can precipitate or exacerbate psychosis and contribute to the development of schizophreniform disorders or schizophrenia, with higher risk for male individuals and even when controlling for potentially confounding variables such as premorbid cognition, psychiatric diagnoses, socioeconomic status, and parental divorce.[129-133] Subsequent meta-analyses have concluded that heavy cannabis use increases the risk of developing schizophrenia and other psychotic disorders. However, cannabis use is not considered the primary cause of psychosis for most individuals who go on to develop schizophrenia in their lifetime.[129,130]

Caution is warranted regarding giving a new diagnosis of psychiatric conditions during the withdrawal period of a substance because symptoms of withdrawal can last for weeks to months after discontinuation of use.[25,26] However, experts advocate for integrated mental health and SUD treatment, such that re-consideration is possible.[134] Short-term comorbid psychiatric symptoms can manifest during substance intoxication and withdrawal, including delirium, mood changes, and anxiety. When a psychiatric symptom is *only* observed in the context of intoxication or withdrawal from substances, the symptom is likely to diminish and disappear within a week to a month of abstinence, and the recommendation in the first month of abstinence is to recognize and treat these symptoms with cognitive–behavioral therapy (CBT)–based approaches and supportive medications for withdrawal symptoms and monitoring, rather than giving a separate psychiatric diagnosis with pharmacological treatment. However, in many cases, there may be evidence that the psychiatric symptoms preceded regular substance use, in which case treatment of the comorbid psychiatric problem should not be delayed. Furthermore, it is important to note that in real-world practice settings, assessment of these relationships is complicated. For example, it is often difficult to disentangle substance use–psychiatric symptom relationships and to achieve abstinence among chronic substance-using adolescents outside of restricted settings (eg, inpatient unit).[117] Observational studies and clinical trials show that mental health problems increase with increased alcohol and cannabis use, and that abstinence from and reduction in alcohol and cannabis use are associated with improvements in mental health symptoms (ie, depression, ADHD, anxiety, and cognitive function),[4,5,115,117,135-138] including in youth.[115,138-140]

Medical Evaluation and Comorbidities. *Alcohol-related Medical Problems.* For alcohol, acute intoxication causes impairments in memory, decision making, and coordination, which all increase the risk of motor vehicle accidents, risky sexual behaviors, and sexual assault. Acute alcohol overdose can also cause nausea and vomiting that incur a risk for asphyxiation. At high doses, amnesic episodes (blackouts), stupor, coma, and death from respiratory depression can occur.[69,141] Alcohol suppresses rapid eye movement (REM) sleep and causes sleep fragmentation (arousals and awakenings that disrupt the normal stages and architecture of sleep).[142]

A variety of medical consequences of alcohol use, including abnormalities of cholesterol and triglycerides, a decrease in white blood cells and increase in size of red blood cells, and impaired platelet production, are more common in adults. Chronic or heavy alcohol use over the life course increases risks of cardiomyopathy and some cancer types, inflammation of the esophagus and dilation of esophageal veins, fatty liver and cirrhosis, pancreatic inflammation and pancreatitis, and ascites. Withdrawal symptoms from alcohol can occur between about 8 hours and 7 days of cessation of alcohol use after regular use, and last between 5 days and several weeks. Symptoms of alcohol withdrawal can include hand tremors; insomnia; increased anxiety; blood pressure, heart rate, respiratory rate, and body temperature abnormalities; gastrointestinal upset; hallucinations; and seizures.[142] Although delirium tremens (severe, life-threatening alcohol withdrawal that includes rapid onset of confusion and can include shaking, shivering, irregular heart rate, sweating, hallucinations, very high body temperature, or seizures) can occur among adults with chronic heavy alcohol use, it is not usually seen in adolescents or young adults.

Any amount of alcohol can be harmful to a human fetus, and the potential for toxicity increases with the amount of exposure. About 1% of all births in Western countries are estimated to exhibit alcohol-induced deficits, collectively known as fetal alcohol spectrum disorders (FASD), including fetal alcohol syndrome (FAS). FASD is likely when pregnant women binge drink or repeatedly use alcohol.

Cannabis-related Medical Problems. Acute cannabis use causes an increase in heart rate by 20% to 50% within 3 to 15 minutes of use, increased orthostatic hypotension, and dilation of small blood vessels, leading to redness of the

eyes. A review by the American Heart Association in 2020 concluded that because of limitations in the existing research, there are insufficient data to determine whether there is a link between cardiac health outcomes and the use of cannabis, including in patients with cardiac risk factors, and that more research is needed.[143] However, a subsequent review concluded that "cannabis use may be placing a younger, healthier population at risk of suffering major cardiovascular accidents particularly in the moments immediately following consumption."[144] In addition, an analysis from the Behavioral Risk Factor Surveillance System, which is a US health-related telephone survey, found significantly higher odds of stroke in younger adult cannabis users (aged 18-44 years; adjusted odds ratio [OR] = 1.82, 95% CI = 1.08-3.10) compared with nonusers, with even greater odds among frequent users (>10 days per month; adjusted OR = 2.45, 95% CI = 1.31-4.60).[145] At low to moderate doses, cannabis reduces nausea, but at higher doses it can induce nausea or vomiting. Acutely, cannabis impairs cognitive function and motor function in a dose-dependent manner that increases the risk of motor vehicle accidents. Cannabis withdrawal can cause emotional and behavioral symptoms that can include craving and seeking cannabis, irritability, anxiety, depression, sleep disruption including vivid dreams, and headaches.[146,147] Regular cannabis smoking impairs the functioning of large airways of the lungs, causes symptoms of chronic bronchitis such as coughing, sputum, and wheezing, and increases the risk of the development of lung cancer.

Long-term cannabis use impairs memory, attention, executive function, and integration of complex information, with earlier age of onset and higher cumulative dose increasing risk.[148] Long-term cannabis use in adolescence is also associated with anatomical brain changes found in the evaluation of magnetic resonance imaging studies over 5 years.[148] Greater cannabis use was associated with increased thinning of the left prefrontal and right prefrontal cortices, and that thinning in the right prefrontal cortices, from baseline to follow-up, and was associated with attentional impulsiveness at follow-up.[149] Case studies, but no controlled studies or rigorous trials, have described instances in which heavy cannabis use has been associated with an "amotivational syndrome" characterized by signs such as detachment, blunted emotion and drives, impaired executive functions such as memory and attention, disinterest, passivity, apathy, and a general lack of motivation. A review of research evidence concluded that impaired cognitive function in cannabis users appears to improve with sustained abstinence.[148]

Opioid-related Medical Problems. Opioid intoxication can include apathy, dysphoria, psychomotor agitation or retardation, impaired judgment, pupillary constriction, and slurred speech. Decreased body temperature can lead to cold clammy skin and cyanosis. Blood pressure decreases and cardiac arrhythmias can occur.[150] Synthetic opioids can lengthen the QT interval and cause cardiac arrhythmias.[150] In overdose, the person is unresponsive to external stimuli, has small or pinpoint but reactive pupils, and respiratory depression or apnea, and death may result. People who survive overdose can have anoxic brain injury with a variety of potential morbidities including peripheral neuropathy, movement disorders, intellectual impairment, and personality changes. Withdrawal from opioids can cause anxiety and irritability, restlessness, aching in legs and back, increased sensitivity to pain, nausea or vomiting, diarrhea and abdominal cramps, lacrimation and rhinorrhea, yawning, pupillary dilation, chills, and sweating.[150]

Opioid use is associated with lower nutrition, and a complete blood count, basic metabolic panel, and liver function tests are recommended. Medical issues with chronic opioid use include lower levels of testosterone, which can result in a lowered libido, impotence, and amenorrhea; chronic constipation; and sleep disturbance. Opioid withdrawal can last for months and includes depressed mood and anhedonia, irritability, labile mood, stress intolerance, insomnia, and opioid craving.[150]

Stimulant-related Medical Problems. Acute intoxication with illegal stimulants such as cocaine and methamphetamine can lead to symptoms including dizziness, tremors, headache, flushed skin, chest pain with palpitations, excessive sweating, vomiting, and abdominal cramps. In overdose, unless there is medical intervention, high fever, convulsions, and cardiovascular collapse can cause death.[151,152] Physical exertion increases the hazards of stimulant use.[152]

Hallucinogen-related Medical Problems. Hallucinogens such as LSD and ecstasy can cause elevated heart rate and increased blood pressure, dilated pupils, nausea and vomiting, ataxia, lack of awareness of surroundings, memory impairment during intoxication,[127] and hypertensive crisis or serotonin syndrome.[126,153] In addition, serious psychological harm such as fear, depression, anxiety, and paranoia can occur and be long lasting. Deaths from overdose of PCP or ketamine can occur due to respiratory depression with potential for respiratory arrest, coma, convulsions, and seizures. Deaths exclusively from acute overdose of LSD, psilocybin-containing mushrooms, and mescaline and other hallucinogens are uncommon, but increase the risk of fatality due to suicide, accidents,

dangerous behavior, inadvertently eating poisonous plant material, or poly–substance use.[153]

Intravenous, Intranasal, and Drug Use–related Medical Problems. In addition to the risks associated with the specific substance used, adolescents who use drugs intravenously are at increased risk for and should be tested for hepatitis B and C and HIV. Vaccination for hepatitis B is recommended. In addition, intravenous opioid administration increases the risk of acute infection, such as abscesses or cellulitis of the skin or subcutaneous tissues, thrombophlebitis, endocarditis, and pneumonia.[150]

"Chemsex" refers to misusing a substance(s) to enhance sexual experiences. Those substances can be ingested in a variety of ways, including anal use. Chemsex has been associated, in a systematic review, with increased risk for HIV, especially in sexual minority men.[154]

Vaping-related Medical Problems. Cannabis can be consumed via vaping, and concentrated cannabis vaping (often called dabbing) has had high uptake among American youth, with unclear long-term health implications. Vaping carries distinct and overlapping risks when compared to smoking and may be associated with greater risk for acute lung injuries, seizures, and acute psychiatric symptoms such as psychosis.[155]

Intranasal Drug Use–related Medical Problems. Risks of intranasal drug use, which occur in a subset of substance use, particularly stimulants and opioids, include overdose, sharing of equipment (eg, straws) increasing risk of hepatitis C, and experiencing violence from police and others when using in public areas.[156]

Structured Diagnostic Interviews. Although the use of structured interview guides is infrequent in non-research settings, such guides have been shown to enhance the reliability of psychiatric diagnosis over unstructured clinician interviews, which are vulnerable to several information collection biases.[157] Structured interview guides for adolescents and young adults have similar, moderately acceptable psychometric properties. Hence, the decision to use a structured interview (with a predetermined set of questions in a specific order), or semi-structured interview (with a mix of structured and open-ended questions) as part of a diagnostic evaluation, will depend upon consideration of the advantages (eg, enhanced diagnostic accuracy) and disadvantages (eg, time, cost, burden) specific to each situation and setting. Computerized versions of structured interviews could enable a psychiatric symptom review before the first appointment (ideally at home through a secure portal) as a structured, comprehensive first step in elucidating the differential diagnosis.[158] Structured interview guides for adolescents and young adults that include items for substance use are summarized in Table 2.

Symptom Rating Scales. Standardized symptom rating scales can be useful tools in guiding the diagnostic assessment, by characterizing the nature and breadth of specific symptoms and by quantifying pretreatment symptom severity as a baseline for tracking response to treatment over time. Moreover, in some situations, individual or combinations of multi-informant symptom rating scales may be comparable to certain diagnostic structured interviews (eg, the Schedule for Affective Disorders and Schizophrenia for School-Age Children [K-SADS]) in predicting SUD/PSU, thereby reducing assessment burden.[159]

A list of public domain tools developed by a panel of national experts to assess SUD/PSU is provided at https://www.phenxtoolkit.org/sub-collections/view/10.[74] Selected no-cost symptom rating scales that have acceptable psychometric properties and include assessment of both substance use and related problems (eg, psychiatric symptoms, school, and legal problems) in adolescents and young adults are summarized in Table 2.[82] Some of these assessment tools overlap with screening tools.[78]

Mental Status Examination. The mental status examination of adolescents with substance use problems varies, depending on the specific substances used, period of use, intoxication or withdrawal phase, and presence of comorbid mental health problems. Adolescents with substance use problems may present with abrupt weight changes, unkempt appearance, bloodshot or glazed eyes, odors (eg, of alcohol, tobacco products, or cannabis), poor dentition, tremor, and poor coordination. Some substances produce physical stigmata, such as "track marks" from injection drug use, perioral or perinasal "huffer's rash" from inhalant use, or tooth decay ("meth mouth") from methamphetamine use.[160] However, it is important to note that physical appearance may be unremarkable in many youth with active substance use. Interactions may be marked by poor eye contact, poor engagement/uncooperativeness, shy demeanor, and/or clinginess. Mood can range from depression to euphoria, with acute fluctuations. Anxiety and irritability are common. Acute changes in behavior are also common, and may include lethargy, hypervigilance, fidgetiness/restlessness, agitation, and disinhibited behavior. Cognitively, substance use can lead to impaired concentration, and, in some cases, perceptual abnormalities or delusions.[64] Because these signs are nonspecific to substance use (and may be absent), they are adjunctive to other diagnostic information.

Although Wernicke encephalopathy, a complication of chronic alcohol use, is much less common in adolescents than in adults, it can cause irreversible brain damage and is treatable with intravenous thiamine. Being alert for ophthalmoplegia (paralysis of muscles in and around the eye, which can present as nystagmus, papilloma, or gaze palsy) and ataxia (gait disturbance), and mental status changes such as memory impairment, agitated delirium, or coma, and treating with intravenous thiamine can be lifesaving and is not harmful in the absence of low thiamine.[161]

Clinical Formulation. In addition to using clinical history and structured assessments for diagnosis, the contextual (eg, stressors, environmental factors) and historical (eg, developmental, educational, family, social) sections of the diagnostic evaluation inform the development of a clinical formulation. A comprehensive clinical formulation summarizes potential biological, psychological, and social factors (biopsychosocial model) for the development of the disorder.

Another framework for formulation is organizing the various contributing factors according to the 4P's framework described in the *DSM-5*.[8] These include predisposing, precipitating, perpetuating, and protective (ameliorating) factors (the "4 P's"). Predisposing factors are areas of vulnerability that increase the risk for psychopathology and encompass primarily the biological factors of the biopsychosocial formulation. Precipitating factors are stressors or other contextual events that have a chronologic association with symptom onset. Perpetuating factors are any aspects of the patient, family, or community that serve to prolong the problem. Protective (ameliorating) factors include the patient's areas of strength, as well as strengths in the family and community. The cross-organization of both biopsychosocial and 4P factors can optimize the comprehensiveness of the treatment plan.

Safety. Safety risks are associated with substance use as well as co-occurring mental health and medical concerns. Therefore, regularly assessing safety is a critical component of assessment and treatment. The risks due to acute intoxication or withdrawal could be fatal and need immediate assessment and intervention. Safety assessment includes consideration of whether the patient is at current risk for medical complications of acute intoxication/withdrawal or overdose from substances, or at elevated risk for self-harm/suicide or aggression from SUD/PSU or co-occurring mental health disorder. In addition, the safety assessment considers whether the patient and family can adhere to recommendations regarding supervision, safeguarding, and follow-up care. The answers to these questions can inform decisions about the appropriate level and intensity of care. Specific safety considerations related to the assessment and management of overdose, suicide, and aggression risk among adolescents with SU/SUD are detailed below.

Difficulty of attaining and sustaining abstinence, and lack of willingness to enter treatment, have led to harm reduction approaches. Harm reduction, or practical strategies and ideas aimed at reducing negative consequences associated with drug use, has emerged as an evidence-based approach to engagement with adults, including college students, who use drugs and equipping them with life-saving tools and information to improve and potentially save their lives while offering but not forcing treatment.[162,163] Harm reduction strategies include setting goals other than abstinence, such as reduced use. Harm reduction is a key pillar in the US Department of Health and Human Services' Overdose Prevention Strategy.[164]

Overdose risk. Overdose risk should be assessed for all substances, and particularly for opioids. Overdose deaths are most common among adolescents using opioids, benzodiazepines, and stimulants, along with the combined use of these drugs (polysubstance overdose).[165] Opioid overdoses and overdose deaths among US adolescents and young adults have increased dramatically in the past decade and are currently at a 30-year high.[166] Opioid use and nonmedical prescription drug use have been made riskier by the expansion of illicit fentanyl and fentanyl analogs into the US drug supply, resulting in deaths related to unintentional fentanyl use. Acute opioid overdose constitutes a medical emergency and should be addressed as such in adolescent patients.

All adolescents who use opioids or meet criteria for OUD and their parents/caregivers should be counseled about the risks for opioid overdose, provided with overdose prevention counseling, and provided access to naloxone, an opioid antagonist rescue agent. This is especially important for adolescents with a history of prior overdose, which is the strongest predictor of fatal overdose.[165]

Access to naloxone has excellent evidence for preventing overdose death, and promoting access for patients and caregivers is evidence based and recommended.[167] However, it is not without risks, which do not preclude its usefulness but require monitoring after use.[167] Risks related to naloxone use in opioid-dependent patients include the following: (1) the induction of an acute withdrawal syndrome (which includes vomiting and the risk of aspiration); (2) naloxone wearing off, and opioid effects of respiratory depression re-emerging; and (3) catecholamine release and consequent pulmonary edema and cardiac arrhythmias in

patients treated for severe pain with high-dose or rapidly infused naloxone.

These risks may be less than the risk of overdose death in untreated or undertreated adolescents. Providers who administer naloxone to treat acute opioid overdose in their patients should monitor their patients' cardiorespiratory status and mentation. Efforts are underway to increase naloxone distribution to laypeople and first responder groups to maximize health gains and to reduce deaths via overdose. In March 2023, the US Food and Drug Administration (FDA) approved naloxone nasal spray for over-the-counter use, which is expected to increase access. To find naloxone in the United States, go to https://stopoverdose.org/.

Substance Use and Suicidal Behaviors. Among adolescents with problematic substance use, suicidal thoughts and behaviors frequently co-occur. SUD/PSU, along with certain comorbid psychiatric diagnoses (major depressive disorder, generalized anxiety disorder, panic disorder, ADHD, conduct disorder), has been associated with a 3-fold increased risk for suicide attempts among adolescents who were hospitalized psychiatrically as adolescents and followed longitudinally into adulthood.[168] A meta-analysis of prospective studies that included at least 2 years of follow-up has demonstrated that AUD, OUD, and intravenous drug use all increase the risk of death by suicide in comparison with expected rates.[168,169]

Substance Use, Risk Taking, and Aggressive Behaviors. Additional safety concerns include risk-taking behaviors. For example, smoking, drinking, illicit drug use, sexual risk taking, and aggression are all mutually predictive.[170] In addition, youth who are victims of commercial sexual exploitation differ from comparison peers in greater proportion engaging in SUD/PSU.[171,172] Providers should also consider safety risks associated with environmental factors such as family and neighborhood violence, which are also associated with SUD/PSU.[173]

Treatment Planning. Level of care is one of the most important factors to determine during the initial evaluation and ongoing treatment based on clinical presentation. The American Society of Addiction Medicine (ASAM) criteria[174] (https://www.asam.org/asam-criteria) are the most widely used and comprehensive set of guidelines for determining treatment setting, continued stay, and transfer/discharge of patients with SUD and co-occurring conditions. After assessment, they are used to determine the level of care across the continuum of substance use treatment options such as medically managed inpatient care, partial hospital programs (PHP), residential services, intensive outpatient programs (IOP), and outpatient services (OPS), and encourage patient-centered, holistic treatment services to meet the diverse needs of each patient. The ASAM criteria were the first in the family of instruments that later included the adult level of care utilization system (LOCUS; https://webpass.ndbh.com/doc/LOCUS%20Instrument%20Twenty.pdf), child and adolescent service intensity instrument (CALOCUS-CASII; https://www.calocus-casii.org/), and the early child service intensity instrument (ECSII; https://www.aacap.org/AACAP/Member_Resources/Practice_Information/ECSII.aspx).

Beyond the diagnosis, the ASAM criteria include a multidimensional framework comprising 6 dimensions: (1) acute intoxication, withdrawal, and addiction medications; (2) co-occurring biomedical conditions; (3) co-occurring psychiatric and cognitive conditions; (4) substance use–related risks; (5) recovery environment interactions; and (6) person-centered considerations. Ratings on each dimension are combined to determine the appropriate level of care, which, for adolescents, includes preventive interventions and levels of treatment (Level 1, OPS; Level 2, PHP or IOP; Level 3, residential/inpatient; and Level 4, intensive inpatient).

The ASAM criteria can be used for initial assessment, longitudinal monitoring of progress, treatment response, and movement across different levels of services.[175] However, limitations include a lack of availability of specific levels of care and evidence-based interventions from SUD specialists within and across levels of service.[176] Even when SUD/PSU can be managed at the lower levels of care, a significant concern for suicidal behavior should trigger safety planning and consideration of psychiatric hospitalization.[177]

After assessment and diagnosis, the evaluator provides recommendations consistent with the ASAM framework and obtains informed consent. In clinical practice, 5 components that generally are included in a discussion about informed consent for treatment are as follows: (1) the diagnosis or diagnoses; (2) the nature and purpose of the proposed treatment; (3) the attendant risks and benefits of the proposed treatment; (4) alternative treatments and their risks and benefits; and (5) the risks and benefits of declining treatment.[4]

The needs and goals of the patient are used to develop a person-centered plan that considers what treatment is medically necessary to address the person's diagnosis, symptomatology, and functional impairments. The level of care chosen is the most cost-effective option and is in the least restrictive environment that is consistent with clinical standards of care and with the patient's values and preferences. The treatment plan is reviewed and updated frequently. Because substance abuse is often comorbid with

other psychiatric disorders, each comorbid disorder requires a separate treatment plan, which may influence the selection of treatment for the SUD. Treatment for both conditions should be provided concurrently, as there is little evidence that treatment of one condition has "spillover" effects on other disorders. If treatment for both psychiatric and substance use problems cannot be provided by the same clinician, then coordination between clinicians regarding assessment, treatment planning, care coordination, and functioning is essential.[178] During and, optimally, after acute treatment, evaluation of ongoing substance use behaviors, relevant comorbid psychiatric symptoms, and impairment is paramount to reduce the risk of relapse after treatment.[179] SAMHSA and NIDA provide guidance about adapting treatment to the needs of patients with comorbid psychiatric, medical, and intellectual needs.[180,181]

Toxicology such as urine drug testing may be part of the treatment plan, to help with monitoring abstinence or drug use behaviors during treatment as more objective information that does not rely on patient self-report. Testing is often done by treatment programs. Parents may also consider home drug testing. The AAP Committee on Substance Abuse recommends that parents engage in home drug testing only if they have professional guidance.[182] Variations in detection times due to substance, dose, chronicity of use, cutoff used, and metabolism of user should be noted as potential limits of urine testing. In addition, some "designer" and synthetic substances may not be included among commonly available urine drug testing panels.[6]

The availability of treatment for adolescents and young adults with SUD is limited. According to SAMHSA,[183] whereas 1.8 million US adolescents met criteria for a SUD in 2023, fewer than 1 in 10 received SUD treatment. The majority of youth admitted to SUD treatment in the United States are referred by the juvenile justice system, due to both high rates of substance use in this population and existing screening measures in youth jail settings. Recent data indicate that the "treatment gap" for youth SUD is widening.[184] Better identification, assessment, and treatment of SUD/PSUs by clinicians from multiple disciplines could have a substantial impact on the individual and public health burden of mental illness in adolescents and young adults.

A major gap in the research about SUD treatment is a lack of data on the comparative effectiveness of higher levels of care (ie, residential care, PHP, IOP, etc). This is both a problem in terms of insurance coverage as well as having clearer guidelines for clinicians treating these populations. As a result, there is a lack of information to guide the treatment of more severe SUDs, particularly those that do not respond to brief or short interventions.[185] Research in residential treatment for adolescent substance use has identified key common elements and features related to positive outcomes, including longer residential substance abuse treatment courses, family involvement in treatment, use of a motivational approach focused on harm reduction, and medication-assisted treatment.[186] Access to medication treatment for SUD/PSU in adolescents and young adults is extremely limited, including in outpatient treatment and particularly within residential treatment.[187] A longitudinal meeting of experts in treating youth with SUDs recommends that young adults receiving addiction treatment should have access to a broad range of evidence-based assessment, psychosocial, and pharmacologic treatments, harm reduction interventions, and recovery services that are tailored to their needs and provided in the least restrictive environment possible.[187] The risk for relapse after effective treatment is high, with 2 of 3 adolescents or young adults who complete outpatient treatment relapsing within the first 6 months.[179] Predictors of better treatment outcomes include longer duration of treatment, greater readiness to change substance use behavior, family involvement in treatment, posttreatment aftercare involvement, lower levels of posttreatment peer substance use, family support, and the adolescent's continued commitment to abstain from substance use.[179]

Experts in youth SUD/PSD treatment, noting the typical disjointed treatment with frequent incomplete treatments, recommend the development of a continuum of care for youth who enter treatment for SUD/PSU that allows for varying levels of intensity.[188] Measurement-based monitoring of patients, including those with SUD/PSU, is recommended by the Institute of Medicine, and has been shown to improve outcomes in mental health treatment. Thus far, there have been no randomized controlled trials demonstrating improved outcomes with measurement-based care in youth SUD/PSU, but there are in adults. Recommended monitoring measures include the TLFB, T-ASI, the CASI, and the AUDIT-C.[189,190]

For clinicians who want more comprehensive recommendations about treatment options for SUD, the Centers for Disease Control and Prevention (CDC) provides an Addiction Medicine Toolkit (https://www.cdc.gov/overdose-prevention/hcp/toolkits/addiction-medicine.html), with a training module, case examples, and links to additional resources from the American Society of Addiction Medicine (ASAM). An additional resource is a narrative review of updated principles and practices of adolescent substance abuse services.[191] Parents of adolescents with SUD/PSUs also need support, and both SAMHSA (https://www.samhsa.gov/talk-they-hear-you/parent-resources)[192] and the Society of Adolescent Health and Medicine (SAHM) (https://www.adolescenthealth.org/

Resources/Clinical-Care-Resources/Substance-Use/Substance-Use-Resources-For-Parents-of-Adolesc.aspx)[73] provide resources for parents.

Protected Health Information. There is considerable state-to-state[193] and international[194] variability in adolescent privacy laws regarding sensitive health care information, including substance abuse. In the United States, there are both federal and state laws and regulations that treatment providers need to follow. The US Code of Federal Regulations (CFR) is the principal set of rules and regulations issued by federal agencies regarding public health. The 42 CFR part 2 sets regulations to protect patient records created by federally funded programs for the treatment of SUD, including prohibiting law enforcement's use of SUD patient records in criminal prosecution against the patient absent a court order.[195] The CFR regulations differ from those of the Health Insurance Portability and Accountability Act (HIPAA) by adding an additional layer of protection for individuals with SUD beyond what HIPAA requires.

The 42 CFR part 2 was updated in July 2020. The revision did not alter the basic framework for confidentiality protection of SUD patient records created by federally assisted SUD treatment programs, and it continued to restrict the disclosure of SUD treatment records without patient consent, other than as statutorily authorized in the context of a bona fide medical emergency; or for scientific research, audit, or program evaluation; or based on an appropriate court order. The revision was designed to further facilitate better coordination of care in response to the opioid epidemic while maintaining its confidentiality protections against unauthorized disclosure and use.

To allow patients to apply for benefits and resources more easily, a patient with SUD may consent to the disclosure of the patient's Part 2 treatment records to an entity (eg, the Social Security Administration), without naming a specific person as the recipient for the disclosure. The revision also allows treating providers to enroll in a state prescription drug monitoring program (PDMP), and to use PDMP to report when prescribing or dispensing medications on Schedules II to V, consistent with applicable state law.

In addition to federal regulation, each state has laws pertaining to consent and privacy for adolescents seeking SUD treatment that are highly variable and that, in some cases, do not reflect pediatric professional standards of care, as documented in a recent review.[193] The authors concluded that inconsistency among states is a barrier to operationalizing a consistent and equitable experience providing evidence-based medical care for SUD and ensuring adolescent privacy protection. If parents do not consent to SUD treatment for their child or adolescent, and if the assessing provider believes that such treatment is needed, involving child protective services to evaluate for medical neglect may be necessary. Each state defines abuse and neglect differently, such that the conditions considered to be neglect or abuse differ by state; however, each state requires that treatment providers report suspected abuse and neglect according to that state's definition.[196] Internationally, the legal status of children and adolescents regarding their competence and capacity to consent to treatment varies from country to country. International standards have been developed.[194]

TREATMENT OF PROBLEMATIC SUBSTANCE USE AND SUBSTANCE-RELATED AND ADDICTIVE DISORDERS

Development of Treatment Statements From the AHRQ/Brown Systematic Review

The objective of the AHRQ/Brown review[2] was to evaluate the benefits and harms of behavioral and pharmacological interventions for the treatment of adolescent and young adult PSU and SUD, including alcohol, cannabis, opioids (prescription and illicit), sedatives/hypnotics/anxiolytics, stimulants (prescription and illicit), inhalants, hallucinogens, and unspecified or polysubstances, and excluding tobacco. In May 2020, the AHRQ/Brown review[2] was made available online in its entirety (https://effectivehealthcare.ahrq.gov/products/substance-use-disorders-adolescents/research) and as an Evidence Summary (https://effectivehealthcare.ahrq.gov/sites/default/files/cer-225-substance-abuse-adolescents-evidence-summary%20225%20Substance%20Use%20Adolescents.pdf),[197] and as a synopsis in the journal *Pediatrics*.[198]

The key questions of the AHRQ/Brown review were 2-fold: in adolescents,

1) **What are the effects of behavioral,[d] pharmacologic,[e] and combined interventions to achieve**

[d]These included 7 categories: Motivational Interviewing (MI), Family Therapy (Fam), Cognitive–Behavioral Therapy (CBT), Peer Group Therapy (PeerGroup), Psychoeducation (Educ), Contingency Management (CM), and Intensive Case Management (ICM); behavioral interventions were divided by duration: brief interventions (1 or 2 sessions), non-brief interventions (>2 sessions). Intervention modifiers included group or parent involvement, culturally accommodated, and integrated (substance and mental health).

[e]Categories of pharmacologic interventions: Medications used specifically to reduce and/or eliminate substance use and to prevent relapse (for alcohol: gabapentin, naltrexone, acamprosate, disulfiram, topiramate, ondansetron; for cannabis: *N*-acetylcysteine; for opioids: methadone, buprenorphine, combination buprenorphine and naloxone, naltrexone); Medications to treat co-occurring psychiatric disorders in patients with concurrent problematic substance use or substance use disorder (regardless of primary goal of treatment with the drug).

abstinence, reduce quantity and frequency of use, improve functional outcomes, and reduce substance-related harms?

2) **What are the comparative effects of these interventions?**

Each of the key questions was paired with 2 subquestions:

1) **How do benefits and adverse outcomes of interventions vary by subpopulation characteristics?**
2) **How do benefits and adverse outcomes vary by intervention characteristics?**

Comparators for key question 1 were waitlist, placebo, treatment as usual (TAU), and non–substance-related education or materials. Comparators for key question 2 were any active intervention.

The *a priori* age range of participants in studies eligible for inclusion in the AHRQ/Brown review was age 12 to 20 years inclusive. The reviewers also screened the full text of otherwise eligible studies that also included transition age young adults (aged 21-25 years) and adults (aged 18 years and above) for reported subgroups. For studies of behavioral interventions, studies were excluded if they enrolled more than 20% of subjects older than the *a priori* upper age of 20 years. Because of the relative sparseness of studies of pharmacologic interventions, the review expanded the upper inclusion age to 25 years inclusive.

The study timeframe was any publication date. Study settings were multiple, including primary care, school, hospital, residential, and juvenile justice. The minimum timing of follow-up was 1 month since intervention initiation. Publication language was any if legible to reviewers.

Randomized controlled trials (RCTs) with $n \geq 10$ per study group were included for benefits outcomes; RCTs, prospective or retrospective nonrandomized comparative studies ($n \geq 100$ per study group), and prospective or retrospective single-group studies ($n > 200$) were included for harms outcomes. For studies of alcohol use among college students, systematic reviews of RCTs were included. Details of the AHRQ/Brown systematic review and evidence-grading process, including the flow diagram, search strategy, study inclusion/exclusion criteria, and individual study characteristics, are presented in the published review.[2]

Overall, 118 studies in 217 articles and records were included in the AHRQ/Brown review; details of all included and excluded studies can be found in the review.[2] Excluded studies primarily were those deemed by AHRQ/Brown reviewers to fail to meet inclusion criteria or predetermined standards for methodologic rigor.

AHRQ/Brown Risk of Bias Assessment of Individual Studies

The methodological risk of bias of all studies included in the AHRQ/Brown review was assessed by the reviewers in accordance with predefined criteria. For RCTs, the Cochrane Risk of Bias tool[199] was used to assess, for example, random sequence generation; allocation concealment; blinding of participants, care providers, and outcomes assessors; incomplete outcome data; and selective reporting. For observational studies, reviewers used relevant questions from the Newcastle–Ottawa Scale,[200] including similarity of groups at baseline, whether any cointerventions differed between groups, absolute and comparative compliance, and timing of outcome assessments. For systematic reviews, reviewers used the A Measurement Tool to Assess Systematic Reviews (AMSTAR), version 2,[201] including description of eligibility criteria, comprehensive search strategy, duplicate study screening, duplicate data extraction, adequate description of study details, assessment of risk of bias with its potential impact, appropriate meta-analysis methods, explanation of any heterogeneity, and reporting of conflicts of interest.

AHRQ/Brown Strength of Evidence Grading Procedure

Pairwise and network meta-analyses using a random effects model were used to compare individual outcomes in different arms of studies, both within studies and between studies. For each evaluated comparison, reviewers assessed the number of studies, the study design, the study limitations (ie, risk of bias and overall methodological quality), the directness of the evidence to the key questions, the consistency of study results, the likelihood of reporting bias, and the precision and magnitude of the effect estimated across studies using network meta-analysis.[200] Based on these multidimensional assessments and consistent with the AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Reviews[202] and Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) criteria,[203] reviewers assigned, for each comparison, a Strength of Evidence (SOE) rating of high, moderate, low, or insufficient. Insufficient ratings were assigned to outcomes with highly imprecise estimates, highly inconsistent findings across studies, or with data from only one study (with the exception that particularly large, generalizable single studies could provide at least low SOE).

Details of the AHRQ/Brown systematic review and evidence-grading process,

including the flow diagram, search strategy, study inclusion/exclusion criteria, and individual study characteristics, are presented in the published review.[2]

CQI Treatment Statement Rating/Grading Procedure

For each comparison in the AHRQ/Brown review, the CQI Guideline Writing Group via a consensus process aggregated the AHRQ/Brown ratings for individual outcomes across all available outcomes to rate **overall SOE for the entire body of evidence** for that comparison. Benefit outcomes for specific substances included **quantity and frequency of substance use**, **abstinence**, and **functional outcomes** (school performance, educational attainment, social/family function); harm outcomes included **substance-related harmful consequences** and **intervention-related adverse events**. Aggregate outcomes of use or abstinence were classified into 3 categories: (1) alcohol and other drugs (includes use of multiple substances); (2) drug use (excludes alcohol, includes cannabis and other drugs); and (3) illicit drug use (excludes alcohol and cannabis). Selection, definitions, and measurement of outcomes were defined by each AHRQ/Brown-included study and varied across studies.

- **If the preponderance of AHRQ/Brown SOE ratings across all available outcomes for a given comparison was high, the overall SOE rating for the corresponding treatment statement was high (denoted by the letter A).**
- **If the preponderance of AHRQ/Brown ratings across all available outcomes for a given comparison was moderate, the overall SOE rating for the corresponding treatment statement was moderate (denoted by the letter B).**
- **If the preponderance of AHRQ/Brown SOE ratings across all available outcomes for a given comparison was low, the overall SOE rating for the corresponding treatment statement was low (denoted by the letter C).**

Based on these overall ratings, the CQI Guideline Writing Group via a consensus process developed treatment statements for all comparisons for which sufficient evidence was available. If insufficient evidence was available per AHRQ/Brown SOE ratings, no treatment statement was written. The treatment statements were then graded by the Guideline Writing Group via a consensus process by weighing the potential benefits and harms of each treatment action and the level of confidence in that determination based upon the overall SOE.

- **A recommendation statement (denoted by the numeral 1) indicates confidence that the benefits of the action clearly outweigh the harms.**
- **A suggestion statement (denoted by the numeral 2) indicates greater uncertainty, in that the benefits of the action are considered likely to outweigh the harms, but the balance is more difficult to judge.**

Treatment statements underwent iterative blind voting by the CQI Guideline Writing Group members until at least majority consensus was achieved. If a voting outcome had not been unanimous, a dissenting opinion could have been written to accompany the statement.

An additional literature search was performed on February 16, 2024, that followed the AHRQ search strategy to incorporate subsequent meta-analyses considering data beyond the AHRQ review, and those were incorporated into the "Additional Research" sections below.

Applicability of Findings From the AHRQ/Brown Review

The applicability of findings from the AHRQ/Brown review was assessed in accordance with the AHRQ Methods Guide.[202] Factors identified *a priori* that could limit the applicability of evidence included age range of the sample in each study, severity and type of SUD/PSUs, comorbid conditions, history of previous episodes of SUD/PSUs or SUD treatment, and treatment setting. Because of the paucity or lack of sufficient evidence, treatment statements are limited to suggestions regarding problematic alcohol use/alcohol use disorders and opioid use disorders and do not include recommendations or suggestions regarding other specific substances, including cannabis, stimulants (amphetamine-type or cocaine), inhalants, hallucinogens, or sedatives/hypnotics/anxiolytics. Tobacco was not considered in the AHRQ/Brown review, so no recommendations about tobacco are presented. Clinical judgment and family preference necessarily must play a key role in determining the applicability of treatment statements to individual patients.

Treatment Statements

1. **AACAP suggests (2C) that brief motivational interviewing (MI) could be offered to adolescents and young adults with problematic alcohol use/alcohol use disorder.**

A total of 36 studies included in the AHRQ/Brown review[2] evaluated effects of brief (1 or 2 sessions) behavioral interventions in adolescents with SUD/PSU (mean age range, 14.8-18.9 years) (see the AHRQ/Brown review[2] for study summaries). All of the studies that were focused on

alcohol use evaluated MI interventions as opposed to other brief interventions.

Benefits & Harms. Benefits. Compared to TAU, brief MI (1 or 2 sessions) was effective in reducing heavy alcohol use days (n = 2,821 participants; net mean difference [NMD] −0.7 days per month [−1.6, 0.0]; low SOE) and alcohol use days (n = 3,726 participants; NMD −1.2 days per month [−2.2, −0.2]; moderate SOE). Compared to TAU, evidence of effectiveness of brief MI for improving alcohol abstinence was insufficient (n = 2,482; OR = 2.0 [0.9, 7.8]).

Compared to TAU, evidence of effectiveness of brief MI on use of substances other than alcohol was absent or insufficient, except that brief MI was effective in reducing substance use-related problems (1,854 participants; standardized mean difference [SMD] −0.5 [−1.0, 0.0] low SOE). Also, brief MI was ***not*** effective in reducing cannabis use days (n = 2,386 participants; NMD −0.2 days per month [−1.4, 0.5]; moderate SOE), compared to TAU.

Evidence of effectiveness for brief forms of other behavioral interventions (Educ, Fam, CBT, Peer, CM, ICM) was absent or insufficient for all substances.

Harms. No harm was reported for the use of brief MI.

Additional Support. No meta-analyses have been published since the AHRQ/Brown review that support or refute this suggestion.

Differences of Opinion. None. The CQI Guideline Writing Group voted unanimously in favor of this recommendation.

Implementation. Motivational interviewing is "a collaborative, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of acceptance and compassion."[147] MI sessions included in this review were specifically focused on building motivation to reduce substance use and/or to attain abstinence. MI requires the clinician to engage with the participant as an equal partner and to refrain from unsolicited advice, confronting, instructing, directing, or warning. Core elements of MI include drawing out the participant's priorities, values, and wisdom to explore their own reasons for change; taking a nonjudgmental stance and seeking to understand the person's perspectives; and compassionately and actively promoting and prioritizing the participant's wellbeing. The MI practitioner engages the patient by asking open-ended questions, and affirming the participant's strengths, efforts, and past successes. Through careful listening and reflecting of the person's perspective and exploring the person's reasons for their own behaviors, the patient and therapist together decide how the patient can change. The goal is to develop a plan based on the person's own insights and expertise and at their own pace.[204]

Training and regular practice is required in order for practitioners to learn MI techniques. The first step in training is often attending introductory workshops lasting around 16 hours. Introductory workshops are considered the start of the learning process, and by themselves are not enough to gain competence in MI. Following a workshop, practitioners within an agency or across agencies may form a peer learning group that meets regularly to deepen understanding of MI and build skills through practice. The most successful groups have some structure to provide direction and guidelines for provision of feedback to maintain a safe and productive learning environment. Tools for continued development of therapist competence include self-study and practice checks, in which practitioners can audio record samples of MI practice (15-20 minutes, with written consent) and either self-assess using any of the publicly available fidelity assessment instruments or seek professional coding services for feedback on competence and areas for improvement. In addition, group or individual coaching by clinical supervisors or external consultants with some level of skill or expertise in MI can help practitioners develop additional skills in MI.[205,206]

Agencies that provide treatment for problematic alcohol use face challenges of inconsistent resources including insurance reimbursement, need for the development and maintenance of staff skills, and high staff turnover rates. MI is a broadly applicable treatment strategy with studies demonstrating effectiveness, outside of the context of SUD/PSUs, for oppositional clients,[207] mandated populations,[208-211] and in juvenile justice settings.[212,213] Adolescents who present for treatment of problematic alcohol use may be mandated to attend by the criminal justice system or by their parents[214] and may be resistant to such efforts. A model of "Teen Court" has been developed and promoted to offer alternative, adolescent-centered sentencing options to repair harm and prevent future criminal behavior and is supported by local governments and community organizations.[215] MI can be accessed through Teen Court in most states, but MI for substance use has limited availability in the community outside of court.[216]

2. AACAP suggests (2C) that non-brief family therapy (Fam), motivational interviewing (MI), or

cognitive–behavioral therapy (CBT) could be offered to adolescents and young adults with problematic alcohol use/alcohol use disorder with or without other drug use, and CBT + non-brief MI could be offered to adolescents and young adults with illicit drug-related disorders.

A total of 59 studies in 103 papers included in the AHRQ/Brown review[2] evaluated effects of non-brief (>2 sessions) behavioral interventions in adolescents with SUD/PSU.

Benefits & Harms. Benefits. Compared to TAU, Fam was effective in reducing alcohol use days (n = 2,248; NMD –3.5 [6.9, –0.4]; low SOE).

Compared to TAU, both MI and CBT were effective in reducing alcohol with other drug use days (n = 1,202 participants; NMD –9.3 [–15.4, –3.5]; low SOE for MI and NMD –4.2 [–8.1, –0.4], low SOE for CBT).

Compared to TAU, Educ, CBT, CBT+MI, and CBT+MI+CM may result in relative ***increases*** in cannabis use days (1,643 participants; NMD 7.3 [1.2, 13.8], low SOE for Educ; NMD 4.2 [0.7, 7.5], low SOE for CBT; NMD 10.5 [4.0, 17.4], low SOE for CBT+MI; NMD 10.8 [4.1, 17.8], low SOE for CBT+MI+Fam).

Compared to TAU, CBT+MI was effective in reducing illicit drug use days (1,310 participants; NMD –3.0 [–5.1, –1.0]; low SOE).

Evidence of the effectiveness of other non-brief therapies (ICM, CM, Educ, Peer) was insufficient or absent for all substances.

Comparisons between non-brief interventions suggested that Fam (with sessions predominantly delivered with the entire family present and the focus of the therapy was changing substance use) may be more effective than ICM (where the primary focus was on linking to services), CBT (where the focus of therapy was changing cognitions, feelings, or behaviors to reduce substance use), and MI (with at least 1 session focused on building motivation to reduce substance use) in reducing alcohol use days (all low SOE). Also, MI was more effective than Peer (defined when sessions were delivered in group format and had interactive, process-oriented, and/or self-help approaches), CBT+MI, Fam, CBT+ICM, CBT+MI+ICM, CBT, and ICM in reducing alcohol with other drug use days (all low SOE). Comparison by length of treatment was not done, which is a limitation of the analyses.

Harms. No harms were reported for any of the non-brief interventions.

Additional Support. Since the AHRQ/Brown review, an additional systematic review of 40 RCTs and open-label studies of adolescents (17 studies) and adults (23 studies) was published that focused on Brief and Non-Brief MI for CUD.[217] In the 4 adolescent studies included in the accompanying meta-analysis, MI showed higher rates of 3-month abstinence than the comparator (OR = 2.02, 95% CI = 1.42, 2.89, $p < .0001$), but no reduction in the frequency or quantity of use.

Differences of Opinion. None. The CQI Guideline Writing Group voted unanimously in favor of this suggestion.

Implementation. With regard to family-based non-brief interventions, the main overarching goals are to improve adolescent functioning in family and social contexts; parental supervision skills; communication between family and social systems; decision making; and enhancing problem-solving skills to manage adolescent substance use.

In the context of adolescent substance use, multidimensional family therapy (MDFT) has been most studied. MDFT is a manualized family-based treatment and substance abuse prevention program that is typically delivered in an outpatient setting. MDFT can also be integrated into day treatment programs for adolescents with substance use problems. MDFT simultaneously targets 4 interdependent treatment domains: the adolescent, parent(s), family interactions, and extrafamilial community interactions. Treatment proceeds in 3 stages: (1) developing a therapeutic alliance with parents and adolescents and enhancing their motivation for behavioral change; (2) helping adolescents communicate effectively with their parents and other adults, develop emotional regulation and coping skills, and enhance social competence and alternatives to delinquency and substance use; in addition, the second stage also includes family work for decreasing conflict, deepening emotional attachments, improving communication and problem-solving skills, family competency with social systems in which the adolescent participates (eg, school, juvenile justice, recreational), and helping families to better advocate for themselves; and (3) solidifying changes by affirming and the accomplishments by parents and adolescents.

MDFT treatment typically occurs over 3 to 6 months. Specialized training and experience are necessary for effective practice of MDFT. Resources for clinicians, including training manuals, training programs, and institutions, are available in the United States (https://www.mdft.org/) and Europe (https://www.stichtingjeugdinterventies.nl/en/mdft).

CBT for SUD[218] focuses on how best to convey cognitive and behavioral skills to help individuals

successfully modify addictive behaviors, and how to reduce the risk of relapse and make such changes durable. A key component of CBT for SUDs, albeit not necessarily specific to it, is emphasis on extra-session practice assignments as a means of facilitating the generalization and maintenance of adaptive behavioral and cognitive skills. CBT skills are taught in modules such as functional analyses, coping with craving, refusing offers of drugs or alcohol, problem solving skills, recognizing and changing thoughts, decision-making skills, and HIV/HCV risk reduction. In addition to in-person CBT programs, computerized programs have been developed. Typical sessions include check-in and review of homework, introduction and teaching of the skill to be taught in that module, reinforced with interactive discussion of skill use to manage the challenging situation. Pairing skill-building with voucher-based contingency management occurs when users receive vouchers upon submission of drug-free urine specimens.[83]

3. AACAP suggests (2C) that behavioral interventions that include motivational interviewing (MI) or motivational enhancement therapy (MET) could be offered to college students with problematic alcohol use/alcohol use disorder.

Six systematic reviews of RCTs including between 16 and 73 RCTs each (median, 40) assessed treatments for alcohol use in the college setting and were included in the AHRQ/Brown review.[2] Two reviews focused on college students who self-identified as drinking alcohol; 2 reviews focused on college students mandated to receive interventions for alcohol use; and 2 reviews focused on college students who were identified as engaging in heavy or hazardous alcohol use. In general, these systematic reviews did not adequately perform and report risk of bias assessments and did not discuss the consistency of results; accordingly, SOE assessments were not made by AHRQ/Brown reviewers. Because the findings were qualitative, they are presented in narrative rather than quantitative form.

Benefits & Harms. Benefits. Among college students who drink alcohol, behavioral interventions on average were shown to reduce alcohol use (quantity and frequency) in the immediate term (≤3 weeks), short-term (4-13 weeks), and medium term (14-26 weeks) post-intervention. Effects waned in the long term (27 weeks or more), but the one persistent finding was lower frequency of days that included drinking alcohol. However, a different pattern emerged regarding the impact of behavioral interventions on alcohol-related problems such as drinking and driving, property damage, and fights. Such problems did not occur in the immediate term post-intervention, but began to emerge in the short term, peaked in the medium term, and persisted over the long term. Face-to-face interventions had superior efficacy to computer-based interventions.

Among college students mandated to receive interventions for alcohol use, behavioral interventions on average reduced alcohol use in the short to medium term but did not persist. Four specific commercially available interventions were found to be more effective in the short term than other interventions.

Among college students who engaged in heavy or hazardous levels of alcohol use, brief, single-session interventions and one commercially available program, Brief Alcohol Screening and Intervention for College Students (BASICS), reduced alcohol use compared to no intervention. Among the brief behavioral interventions, MI/Motivational Enhancement Therapy (MET) had the strongest effect.

Harms. No harms were reported for the use of these behavioral interventions.

Additional Support. No meta-analyses have been published since the AHRQ/Brown review that support or refute this suggestion.

Implementation. When a college student who engages in heavy episodic or problematic alcohol use is identified and needs specialized substance use treatment, the first step is to determine if the college has an established treatment program. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) College Drinking Task Force has issued recommendations to colleges about how to reduce heavy drinking by college students, including that each college offers evidence-based treatment.[219] National surveys of 4-year college administrators reported that nearly all 4-year colleges use educational programs to address student drinking (98%, n = 351)[220]; 90% provided counseling and treatment services for students (but not necessarily specific to alcohol abuse), and nearly as many provided prevention services (eg, alcohol education) for freshmen or other at-risk groups.[160] However, only 34% of 4-year colleges surveyed (n = 569) had both screening and intervention for problem alcohol use. The remainder either had screening but no intervention, or no screening and no intervention.[221,222] The availability of intervention is lower for college students attending 2-year community colleges,[223] even though national surveys of administrators of community colleges indicate a high level of concern for underage drinking and binge drinking among students.[224]

Access to care is highly variable across college settings within the United States.

NIAAA created a tool for schools to identify effective alcohol interventions: the College Alcohol Intervention Matrix (CollegeAIM).[225] CollegeAIM lists individual-level strategies and environmental-level strategies to address problematic alcohol use, and provides resource links to connect with training for individual strategies. Individual-level strategies with high effectiveness and low-to-mid–range costs include normative re-education; skills training, alcohol focus; skills training; alcohol plus general life skills; brief motivational intervention; and personalized feedback intervention. An individual strategy with high effectiveness and higher cost is the multi-component education-focused program (MCEFP). Environmental-level strategies are designed to change the campus and community environments in which student drinking occurs, to educate the student body, and to reduce the availability of alcohol; CollegeAIM provides links with more information about implementation of those strategies. Resources to support and educate parents of college students with problematic alcohol use have been developed by the National Institute for Alcohol Abuse and Alcoholism (NIAAA),[226] and the Treatment Research Institute.[227]

4. AACAP suggests (2C) that buprenorphine treatment could be offered to adolescents and young adults with opioid use disorder.

Four studies in 13 publications reviewed in the AHRQ/Brown review[2] assessed pharmacologic or combination pharmacologic and behavioral interventions to reduce opioid use (n = 330 participants; age range, 14-25 years).

Benefits & Harms. *Benefits.* Longer-course treatment (12 weeks) of buprenorphine–naloxone was more effective than shorter-course treatment (14 days) in achieving opioid abstinence (OR = 1.34 [0.70, 2.57]; low SOE). Slow buprenorphine taper over 56 days was more effective for opioid withdrawal and opioid abstinence than a 28-day taper (OR = 2.59 [0.73, 9.18]; low SOE).

With respect to comparative studies, buprenorphine combined with CBT+CM was more effective than clonidine+CBT+CM for abstinence from opioid use (OR = 4.00 [1.00, 16.0], low SOE). Buprenorphine+naloxone+memantine30mg+CBT was more effective for opioid abstinence than buprenorphine+naloxone+memantine 15mg+CBT (OR = 9.2 [2.6, 32.3], low SOE) or buprenorphine+naloxone+placebo+CBT (OR = 9.2 [2.7, 31.5], low SOE).

For all SUD/PSU other than OUD, evidence was insufficient regarding the benefits of pharmacologic treatment. For concomitant substance use and other psychiatric disorders (depression, ADHD, bipolar disorder), evidence was insufficient regarding the benefits of pharmacologic treatment.

Harms. No serious adverse events and no loss to follow-up due to adverse events were reported. Minor adverse events reported included nausea, insomnia, stomach ache, vomiting, and anxiety.

Additional Support. No meta-analyses have been published since the AHRQ/Brown review that support or refute this suggestion.

No meta-analyses have been published since the AHRQ/Brown review that support benefits of pharmacologic treatment of any SUD/PSU.

Differences of Opinion. None. The CQI Guideline Writing Group voted unanimously in favor of this suggestion.

Implementation. Buprenorphine and buprenorphine/naloxone are the only US Food and Drug Administration (FDA)–approved medication treatments of OUD for patients down to age 16 years, based on their assessment that it is safe and efficacious. Buprenorphine is a partial opioid agonist with strong affinity to opioid receptors that deters the use of illicit opioids. In people with OUD, it stabilizes cravings and prevents withdrawal without causing a high. It is available for sublingual administration both in a standalone formulation (called Subutex) and in combination with naloxone. The naloxone in the combined formulation (marketed as Suboxone) is included to deter abuse of the medication by causing a withdrawal reaction if it is intravenously injected.

A review published in the *Journal* recommends increasing adolescents' access to medication for the treatment of OUD by increasing screening, decreasing insurance and regulatory barriers to the use of medication, and offering choice in adolescents' preference of medication to treat OUD and duration of treatment.[191] In addition to considering medication, the review recommends offering psychosocial treatments to adolescents with OUD and their caregivers to enhance retention in treatment and prevent relapse, treating OUD concurrently with treatment of psychiatric disorders to maximize improvements, and providing education on overdose risk factors and prescribing naloxone for the prevention of opioid overdose in adolescents and caregivers.[228]

Initially, only physicians with special certification were approved to provide office-based buprenorphine treatment for detoxification and/or maintenance therapy. In January 2023, the United States Drug Enforcement Administration (DEA) eliminated the requirement to complete additional training ("X-waiver training"). However, the US Consolidated Appropriations Act of 2023 introduced a new 8-hour training requirement regarding the prevention, identification, and treatment of substance use disorders and co-occurring medical and psychiatric conditions. The American Academy of Addiction Psychiatry (AAAP) developed modules "Substance Use Disorder 101 Core Curriculum" (https://pcssnow.org/education-training/sud-core-curriculum/), with stand-alone modules available at no cost.

Initiation of buprenorphine treatment can occur in office or by the patient at home, and can be in tablet, sublingual film, or injectable formulations. To avoid precipitation of opioid withdrawal, buprenorphine is initiated only when the patient is already in opioid withdrawal. Long-acting opioids, such as methadone, require at least 48 to 72 hours since last use; short-acting opioids (eg, heroin) require approximately 12 hours since last use; however, fentanyl may require greater than 12 hours. The SAHMSA reference provides guidance on providing adequate informed consent, evaluation of withdrawal, and an algorithm for induction. The initiation dose is used to calculate subsequent daily doses, with the aim of achieving a maintenance dose. Relapse is common, especially during initial buprenorphine treatment, and is not incompatible with eventual successful treatment. Treatment with buprenorphine should continue for as long as the patient is benefiting from treatment and that treatment is aligned with the patient's goals. Risk of return to illicit opioid use is significant when treatment is discontinued, including elevated risk for a fatal or nonfatal opioid overdose, necessitating patient education. Combination with naloxone helps to prevent injection diversion, and is safer to use during pregnancy.[229]

More minor side effects of buprenorphine and buprenorphine–naloxone, which can be dose dependent, include headache, back pain, insomnia, chills, sweating, nausea, vomiting, and constipation. Buprenorphine can convey risk of addiction, abuse, and misuse. Other but rare serious side effects have included life-threatening respiratory and central nervous system depression (particularly in the context of benzodiazepine use and compromised respiratory function); central sleep apnea; sleep-related hypoxemia; adrenal insufficiency; risk of hepatitis; hypersensitivity reactions; adverse dental events; QTc prolongation; orthostatic hypotension; elevation of cerebrospinal fluid and intracholedochal pressure; and obscuring the diagnosis of acute abdominal conditions. Long-term agonist-based therapy is controversial because of concerns over the impact of chronic opioid agonism on brain and endocrine system development, and the effects of inducing a prolonged state of physical dependence in adolescents.[230]

The American Society for Addiction Medicine (AASAM) guidance supports that adolescents may benefit from treatment in specialized treatment facilities that provide multidimensional services.[174] However, the majority of specialized treatment facilities in the United States that treat adolescents do not offer medication for OUD. A survey of those facilities showed that only 25% offered buprenorphine, including through partnership with outside clinicians; 7.5% offered buprenorphine initiation but discontinued before discharge; 10.6% initiated buprenorphine and offered ongoing treatment; and less than 2% offered buprenorphine for ongoing treatment only.[231] The authors note that these practices stand in contrast to the ASAM[232] standard of care,[2] and also in contrast to the two-thirds of adult residential facilities that offer buprenorphine.

Buprenorphine can be used effectively and safely in less structured and familiar settings like ambulatory clinic and provides the flexibility of home-based self-administration due to less concern for use or diversion.[233]

Because of the potential for medication interactions, clinicians treating this population should consider the high prevalence of co-occurring psychiatric disorders treated with psychotropic medications in adolescents with OUD. Buprenorphine is metabolized by cytochrome P450 3A4 and may have interactions with commonly used medications that are inhibitors, inducers, or substrates of the same. For example, selective serotonin reuptake inhibitors (SSRIs) are 3A4 inhibitors and may increase buprenorphine levels.[234]

Behavioral therapies, including CBT and community reinforcement approach or CM, have been used concurrently with medication-assisted treatment (MAT) in adolescents. These interventions may have contributed to the overall positive effect of MAT. Although there is little empirical evidence about the role of behavioral therapies in adolescents with OUD, it is suggested that clinicians use evidence-based therapies such as CBT, MET, and CM simultaneously with pharmacotherapy.[220,235]

Areas for Additional Treatment Research

For many important domains of treatment for problematic substance use (listed below), the AHRQ/Brown review yielded insufficient information to draw conclusions about

the benefits of the treatment. As such, treatment statements for these domains are not offered, but some discussion of the state of the research is offered. Further research is urgently needed to support additional treatment statements in these domains for future guidelines, as enumerated below:

- Brief interventions, including brief motivational interviewing and brief education, for patients 12 to 20 years of age with problematic cannabis use.[f]
- Brief behavioral interventions for use of substances other than alcohol or cannabis.[g]
- Non-brief behavioral interventions for patients 12 to 20 years of age with problematic cannabis use.[h]
- Non-brief behavioral interventions for illicit drug use (drugs other than alcohol or cannabis).[i]
- Adaptations to allow treatment to be effective for youth with intellectual disabilities.[j]
- Self-help groups such as Narcotics Anonymous (NA) and Alcoholics Anonymous (AA).[k]
- Pharmacological and psychosocial interventions for psychiatric disorders in adolescents that are comorbid with problematic substance use.[l]
- Interventions focused on prevention of SUD/PSU in children and adolescents with psychiatric disorders.[m]
- Effectiveness of substance abuse by specific program settings (residential, partial hospitalization, intensive outpatient, ambulatory).[n]
- Models that could provide increased training of providers and increased access to care.[o]
- Effectiveness of recovery support services in educational settings (recovery high schools, collegiate recovery programs)[p]
- Effectiveness of personalizing interventions based on client preferences.[q]
- Effectiveness of cultural adaptation of interventions based on client identity.[r]

[f]AHRQ document: insufficient SOE.
[g]AHRQ document: studies not included in meta-analysis.
[h]AHRQ document: insufficient SOE.
[i]AHRQ document: insufficient SOE.
[j]Not examined in AHRQ review.
[k]The AHRQ search included a category of Recovery Support, which included 12-step programs, but no findings were attributed to that group.
[l]AHRQ document: insufficient evidence.
[m]AHRQ search did not focus on prevention.
[n]AHRQ search included consideration, but limited studies found.
[o]Not included in AHRQ search.
[p]AHRQ search included consideration, but limited studies found.
[q]Not included in AHRQ search.
[r]Not included in AHRQ search.

- Effectiveness of treatment of more severe SUDs, particularly those that do not respond to brief or non-brief interventions.[s]
- Interventions focused on nicotine use disorder.[t]
- Interventions focused on behavioral SRADs such as gambling disorder and Internet gaming disorder.[u]
- Treatment-emergent adverse events, serious adverse events, and negative impacts of treatment.[v]

LIMITATIONS

The limitations of the Treatment section of this guideline reflect the following limitations of the AHRQ/Brown review including the following:

Relatively small body of evidence, especially for medication studies and cannabis studies.

Use of both direct and indirect information to inform comparisons between interventions, with recognition that indirect comparisons rely on an assumption of consistency between direct and indirect evidence.

Focus on RCT-level evidence, with limited consideration of other types of evidence.

Limits to descriptions of the elements of the intervention, which may have led to mis-categorization.

Few studies in adolescents or young adults (aged 25 years or less) of pharmacologic agents, with or without behavioral intervention.

Limited evidence regarding treatment of psychiatric comorbidities.

Limited evidence regarding the treatment of youth with intellectual disabilities.

Brief follow-up for many of the studies.

Variable methods for reporting beneficial outcomes.

Variable approaches across studies to missing data regarding subjects who dropped out of treatment.

Inability to disaggregate findings for adolescents from those of young adults in studies with mixed age of participants.

Inability to disaggregate findings for study populations with mixed SUD/PSUs.

Lacking, or sparse descriptions and analyses of, potentially mediating or moderating variables (eg, intervention components, patient demographics, comorbidities, symptom severity).

Limited data on effectiveness of higher levels of care (ie, residential care, PHP, IOP).

[s]Not included in AHRQ search.
[t]Not included in AHRQ search.
[u]Not included in AHRQ search.
[v]Part of analytic framework, AHRQ searched for adverse effects of interventions, but found limited inclusion in studies examined.

Limited information to guide the treatment of more severe SUDs, particularly those that do not respond to Brief or Non-brief interventions.

Limited subgroup analyses (male vs female), racial and ethnic minorities, socioeconomic status and family characteristics, data within or between studies for brief and more intensive interventions.

Poor representation of minority group adolescent populations in study samples.

Lack of information about cultural adaptation of treatment to minority group participants.

A mismatch between the research definition of problematic substance use and the clinical criteria for SUD. Because there is not a universally accepted definition of problematic substance use, the treatment guidelines are more difficult to put into clinical practice than they would be if studies were based on SUDs.

Exclusion of nicotine use disorder from the AHRQ/Brown review.

Exclusion of behavioral SRADs such as gambling disorder and Internet gaming disorder from the AHRQ/Brown review.

Variable methods for reporting treatment emergent adverse events and serious adverse events.

Little attention to potential negative impacts of treatment.

The limitations of the Assessment and Implementation sections of this guideline reflect the derivation of the narrative from a single time-limited review by the CQI Guideline Writing Group of published expert opinion and consensus. When expert opinions differed, judgment was exercised by the CQI Guideline Writing Group to select among equally supported opinions. Although differences in professional judgment are possible, any differences are deemed unlikely to affect the overall conclusions of the guideline.

CONCLUSIONS

Despite the limitations noted, for alcohol problematic use or disorder with or without other substance use, the AHRQ/Brown review supported the effectiveness of motivational interviewing, family therapy, and cognitive–behavioral therapy, with family therapy having the strongest effect. For illicit drug use, the review supported the effectiveness of motivational interviewing plus cognitive–behavioral therapy. For college students, the review supported the effectiveness of behavioral interventions for those with problematic alcohol use. For adolescents and young adults with opioid use disorder, the review supported the use of longer buprenorphine treatment and slower buprenorphine taper. The review found insufficient evidence to support the use of pharmacotherapy or behavioral interventions for any other substance problematic use or disorder.

In the context of a protracted and severe shortage of child and adolescent–trained behavioral health specialists, and in the current state of lack of SUD/PSU treatment availability, research demonstrating safety and effectiveness of SUD/PSU treatment, along with mediators and moderators of effectiveness, is an urgent priority. Research regarding adolescents and young adults with comorbid psychiatric disorders and SUD/PSUs is also needed. Because most SUD/PSUs start in adolescence and few adolescents receive treatment, there is a substantial need for more effective prevention and early detection and intervention.

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Karen Ferguson served as the AACAP staff liaison for the CQI.

Data Sharing: AHRQ data are freely available online. Study protocol — supporting documents; statistical analysis plan — supporting documents; and clinical study report — supporting documents will be made available. https://effectivehealthcare.ahrq.gov/products/substance-use-disorders-adolescents/protocol.

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