

Interventions for Substance Use Disorders in Adolescents: A Systematic Review

Evidence Summary



Main Points

Adolescents, 12 to 20 years of age, with problematic alcohol and/or cannabis use or use disorder

Brief behavioral interventions (that involve 1 or 2 encounters only)

- Motivational interviewing decreases days of heavy alcohol use and overall alcohol use.
- Motivational interviewing has not been found to decrease cannabis use. Further research is needed to identify if any other brief interventions may decrease cannabis use.
- Motivational interviewing decreases problems associated with substance use.

Intensive behavioral interventions (that involve more than 2 encounters)

- Family-focused therapies reduce alcohol use.
- None of the interventions have been found to decrease cannabis use.
- Motivational interviewing decreases combined alcohol and other drug use.
- Combined cognitive behavioral therapy and motivational interviewing decrease illicit drug use.

Adolescents, 12 to 25 years of age, with substance use disorders

Pharmacological interventions

- In opioid use disorder, longer courses (2–3 months) of buprenorphine/buprenorphine-naloxone are more effective than shorter courses (14–28 days) to reduce days of opioid use and achieve abstinence.
- More research is needed to understand the role of medications in treatment of alcohol and cannabis use disorders and of pharmacological treatments typically used for comorbid psychiatric illnesses.

College students with problematic alcohol use

Behavioral interventions

- Mandated alcohol programs decrease alcohol use in the medium term, regardless of intervention. Four commercially available interventions are more effective in the short term than no intervention.
- Brief behavioral interventions, particularly those based on motivational interviewing, reduce alcohol use compared to no intervention in college students with heavy or hazardous alcohol use.



Background and Purpose

In 2017, an estimated 992,000 adolescents aged 12 to 17 in the United States (4% of the adolescent population) and 5.1 million young adults aged 18 to 25 (14.8% of the young adult population) met diagnostic criteria for a substance use disorder. When left untreated or ineffectively treated, adolescents with substance use disorders are at risk of experiencing a cascade of far-reaching adverse outcomes that often persist into adulthood. The pervasive negative consequences associated with untreated or ineffectively treated adolescent substance use, and the high lethality of opioid misuse, underscore the importance of identifying effective interventions to treat adolescent substance users.

The review aims to inform health care providers, policymakers, and a clinical practice guideline update from the American Academy of Child and Adolescent Psychiatry (AACAP) about the currently available evidence on interventions for adolescents to reduce or cease substance use. The review addresses both behavioral and pharmacological interventions used for adolescents or young adults with problematic substance use or a diagnosis of a substance use disorder (SUD), excluding tobacco.



Methods

We employed methods consistent with those outlined in the AHRQ EPC Program Methods Guidance (<https://effectivehealthcare.ahrq.gov/products/cer-methods-guide/overview>). We describe these in the full report. Our searches covered reports published from database inception to April 11, 2019. Behavioral interventions were described based on their inclusion of seven primary intervention components: motivational interviewing, family-focused therapy, cognitive behavioral therapy, psychoeducation, contingency management, peer group therapy, and intensive case management. Pharmacologic interventions were divided into those used primarily for problematic substance use (or use disorder) or primarily to manage psychiatric comorbidities. The PROSPERO registration number is [CRD42018115388](https://www.crd42018115388).



Results

We found 118 randomized controlled trials that evaluated treatment of adolescents or young adults with problematic substance use or substance use disorders. Most studies enrolled adolescents with some combination of alcohol and cannabis use. The most commonly reported outcomes included frequency of use and abstinence. We describe evidence about five major categories of interventions: (1) brief behavioral interventions (consisting of one or two encounters), typically targeted at adolescents with problematic use; (2) intensive (nonbrief) behavioral interventions; (3) pharmacological treatments for psychiatric comorbidities in adolescents with concurrent substance use disorder; (4)

pharmacological treatments used to treat use disorders; and (5) interventions of any kind for alcohol use in the college setting.

Our meta-analyses of brief interventions found that motivational interviewing reduced heavy alcohol use days by up to 0.7 days per month, alcohol use days by up to 1.2 days per month and overall substance use problems by a standardized mean difference of 0.5, compared to treatment as usual. However, brief motivational interviewing did not reduce cannabis use days (net mean difference of 0).

Of the multiple intensive interventions, family-focused therapies were most effective; they reduced alcohol use days by 3.5 days per month compared to treatment as usual. None of the intensive interventions were found to reduce cannabis use days.

For the subgroups of interest (male versus female, racial and ethnic minorities, socioeconomic status, and family characteristics), data within or between studies of brief and intensive interventions were sparse or not available. Therefore, no conclusions regarding differential effects in these subgroups is possible.

Pharmacologic treatment of opioid use disorder led to a more than 4 times greater likelihood of abstinence with an extended (2 to 3 month) course of buprenorphine compared to short courses (14 to 28 days). Similarly, a slow buprenorphine taper (over 56 days) was more effective than a 28-day taper.

A review of existing systematic reviews found that treatment of problematic alcohol use among college student with behavioral interventions resulted in small improvements in alcohol use. In students with heavy or hazardous use, single-session interventions resulted in a small reduction in alcohol consumption. In students mandated to treatment, there were small improvements in heavy drinking frequency and alcohol-related problems in the medium term.



Limitations

For many topics, evidence was sparse or entirely absent. Most studies enrolled some combination of adolescents with mixed use of alcohol, cannabis, and occasionally other drugs. Very few studies evaluated users of opioids, methamphetamines, or substances other than alcohol or cannabis. Studies often combined different types of interventions, making comparisons of specific interventions difficult. The available studies did not consistently report a common set of outcomes, which limited our ability to combine information from potentially relevant studies. For most outcomes, individual studies were deemed to have moderate risk of bias, most commonly due to incomplete outcome data, poor compliance, and a lack of blinding of participants, study personnel, and outcome assessors.

The existing systematic reviews addressing treatments for alcohol use in the college setting were inadequate in their assessment and reporting of risk of bias and did not discuss the consistency of results.



Implications and Conclusions

Compared with treatment as usual (e.g., brief advice and a handout), brief motivational interviewing for adolescents with problematic substance use reduces both heavy alcohol use and overall days of use and may decrease problems related to substance use, such as missing school or work or getting into trouble. Among intensive interventions, family therapy (with a focus on intervening in the entire family system) was the most effective in reducing alcohol use.

Neither brief motivational interviewing nor intensive interventions have been demonstrated to reduce cannabis use. For opioid use disorder, buprenorphine and buprenorphine-naloxone are more effective for the short-term management of opioid withdrawal if they are tapered over longer periods of time.

Further research is needed to identify: (1) effective brief and intensive interventions for problematic cannabis use and cannabis use disorder and (2) effective combinations of behavioral treatments and medication to treat alcohol and cannabis use disorder(s). In addition, (3) studies of longer term pharmacological treatment of opioid use disorder are needed in this population. Future studies should evaluate outcomes that are most meaningful to adolescents, such as better functioning in school and improved relationships with peers and parents.

Full Report

Steele DW, Becker SJ, Danko KJ, Balk EM, Saldanha IJ, Adam GP, Bagley SM, Friedman C, Spirito A, Scott K, Ntzani EE, Saeed I, Smith B, Popp J, Trikalinos TA. Interventions for Substance Use Disorders in Adolescents: A Systematic Review. Comparative Effectiveness Review No. 225. (Prepared by the Brown Evidence-based Practice Center under Contract No. 290-2015-00002-I.) AHRQ Publication No. 20-EHC014. Rockville, MD: Agency for Healthcare Research and Quality. May 2020. Posted final reports are located on the Effective Health Care Program [search page](#). DOI: <https://doi.org/10.23970/AHRQEPCCER225>.

