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## **Summary**

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Alcohol and other drug use among adolescents has been a public health problem for decades. Although some substance use may be developmentally routine, a concerning number of adolescents meet criteria for a substance use disorder and could greatly benefit from a quality treatment experience. However, parents and health care providers want evidence of the efficacy of adolescent-specific treatment programs. This review summarizes four factors surrounding the efficacy of current adolescent treatment programs: 1) adolescent-specific treatment services; 2) the variety of therapeutic modalities; 3) relapse and recovery rates; and 4) the need for evidence-based, quality assessments and research. Current adolescent treatment efforts are summarized, and the recent literature regarding the efficacy of adolescent treatment and recovery rates is discussed.



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## Advances in Adolescent Substance Abuse Treatment

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### Abstract

Alcohol and other drug use among adolescents has been a public health problem for decades. Although some substance use may be developmentally routine, a concerning number of adolescents meet criteria for a substance use disorder and could greatly benefit from a quality treatment experience. However, parents and health care providers want evidence of the efficacy of adolescent-specific treatment programs. This review summarizes four factors surrounding the efficacy of current adolescent treatment programs: 1) adolescent-specific treatment services; 2) the variety of therapeutic modalities; 3) relapse and recovery rates; and 4) the need for evidence-based, quality assessments and research. Current adolescent treatment efforts are summarized, and the recent literature regarding the efficacy of adolescent treatment and recovery rates is discussed.

### Keywords

Adolescents; Substance abuse; Substance use disorders; Drug treatment; Treatment effectiveness; Cognitive-behavioral therapy; Motivational interviewing; Recovery; Twelve-step program; Aftercare; Treatment outcome; Therapeutic community; Family-based therapy; Brief intervention; Contingency management reinforcement approach

### Introduction

Drug use, including alcohol, among adolescents has been a public health concern for decades [1•], and although drug use trends have waxed and waned over the years, recent research continues to show alarming rates of drug and alcohol use. The University of Michigan annually surveys adolescents nationwide in grades 8, 10, and 12 as part of its Monitoring the Future Study to determine trends in tobacco, alcohol, and other drug use. The 2010 survey indicated that daily marijuana use among high school seniors has increased to its highest point in 30 years [2]. In fact, daily marijuana use among adolescents at all three grade points surpassed daily tobacco use, which has been on the decline. Although alcohol use has declined slightly in comparison with previous years, nearly two thirds (65%) of high school seniors and nearly one third (29%) of eighth graders have used alcohol in the past month [2].

The public health significance of the aforementioned adolescent drug use is exacerbated by the fact that early initiation of drug use is correlated with an increased risk of a constellation of problem behaviors, such as legal problems (eg, selling drugs and violence-related

charges) [3]; driving under the influence of a substance [4]; and physical, sexual, and emotional abuse [5]. In addition, substance use problems in adolescence have been shown to increase the risk of later development of a substance use disorder (SUD) [6].

Considering the widespread use of drugs during adolescence, it is important to highlight the prevalence of problematic use. It is estimated that about 1.5 million teenagers meet criteria for an SUD [7]. Of those adolescents, only 111,000 (7%) receive treatment for the disorder [7]. This treatment gap may be due to a variety of factors, including (but not limited to) poor health care coverage, low motivation by the youth or parents, a lack of specialized adolescent treatment programs, and inconsistent quality in adolescent treatment services [8].

Another factor contributing to the unique challenges centered around adolescent drug use pertains to biological factors subject to maturity. Adolescent brain research suggests that the prefrontal cortex—which monitors impulsivity, goal setting, reasoning, and judgment—is immature throughout the period of adolescence. Simultaneously, the nucleus accumbens is also still developing and may increase an adolescent’s tendency for thrill seeking [9]. These biological immaturities may increase the propensity to act impulsively and disregard negative consequences such as those involved with drug and alcohol use. In addition, it is logical to assume that adolescents will have a stronger likelihood of successful recovery when their treatment options are tailored to their specific psychological, developmental, and social needs.

Thus, considering the combination of the prevalence of adolescent SUDs, the biological development of the adolescent brain, and the lack of adolescent-specific treatment services, the need for evidence-based, quality treatments for this population becomes quite clear. This review summarizes current adolescent treatment efforts and examines recent literature regarding the efficacy of adolescent treatment and recovery rates.

## Treatment Approaches

Historically, treatment approaches for SUDs were aggressively confrontational, presumably to break down the defense mechanisms that accompany the SUD [10]. Treatment programs were created for adult alcoholics and drug abusers, and adolescents were “treated” by sending them to correctional institutions or inebriate housing and asylums created for adults [11]. In the 1950s, hospitals and churches began to recognize that adolescent drug use behaviors did not mimic those of adults, and that adolescents may benefit from a different treatment approach. Riverside Hospital in New York City opened the first treatment center for juvenile addicts in 1952, marking the birth of adolescent-specific treatment programs [11].

Although developmentally inappropriate, most adolescents were still treated at adult-based programs through the 1980s. Research has since identified significant differences between adults and adolescents presenting with an SUD that are relevant to treatment design and efficacy. For example, adolescents present higher rates of binge use, lower problem recognition, and higher rates of comorbid psychiatric problems as compared with adults [12]. In addition, adolescents are more likely to be more susceptible to peer influence [13] and are more highly focused on immediate concerns [14].

Because adolescent and adult drug problems are often manifested differently, it is imperative that treatment programs be designed specifically for adolescents. However, treatment programs created specifically for teenagers did not materialize until the 1980s and slowly continued to grow through the 1990s [11]. Fortunately, advances in SUD assessment have led to more thorough needs assessment and improved service placement for individuals, especially adolescents. The majority of current substance abuse treatment programs

incorporate a set of services that can be dispensed in different formats and for different lengths of time. In most cases today, once an adolescent's substance use habits and related factors have been professionally assessed, the individual will be referred to one of five treatment levels, according to American Society of Addiction Medicine patient placement criteria [15]. These levels, ranging on a continuum of service intensity, include the following:

1. Early intervention services, which commonly consist of educational or brief intervention services.
2. Outpatient treatment, in which adolescents typically attend treatment for 6 h/wk or less for a period dependent on progress and the treatment plan.
3. Intensive outpatient, in which adolescents attend treatment during the day (up to 20 h/wk) but live at home (ranging in length from 2 months–1 year).
4. Residential/inpatient treatment includes programs that provide treatment services in a residential setting (lasting from 1 month–1 year).
5. Medically managed intensive inpatient, which is most appropriate for adolescents whose substance use, biomedical, and emotional problems are so severe that they require 24-hour primary medical care for a length dependent on the adolescent's progress.

Within these five levels of care, practitioners may utilize a wide variety of theoretical orientations or modalities. To date, most outpatient and inpatient adolescent programs will use an eclectic treatment approach, integrating multiple therapeutic models within their treatment service framework. The most commonly utilized therapeutic models include the following:

1. Family-based therapy. This approach seeks to reduce an adolescent's use of drugs and correct the problem behaviors that often accompany drug use by addressing the mediating family risk factors, such as poor family communication, cohesiveness, and problem solving. This approach is based on the therapeutic premise that the family carries the most profound and long-lasting influence on child and adolescent development [16]. Family therapy typically includes the adolescent and at least one other parent or guardian.
2. Individual and group therapy. As the name implies, individual therapy refers to one-on-one psychosocial therapeutic sessions between a patient and a therapist, whereas group therapy refers to psychosocial sessions between a group of individuals and a therapist (or two). Although both therapies are utilized in adolescent substance use treatment, group therapy is the most prevalent treatment modality [17]. They are grouped together in this description because in the field of adolescent substance use treatment, similar theoretical approaches are used within both modalities. Currently, the most researched and utilized theoretical approaches within individual and group therapy include cognitive-behavioral therapy (CBT), brief intervention/motivational interviewing (BI/MI), and the contingency management reinforcement approach.

CBT is centered on the notion that thoughts cause behaviors, and these thoughts determine the way in which people perceive, interpret, and assign meaning to the environment [18]. Thus, maladaptive behaviors can be changed by modifying our thought processes, even if our environment does not change. In the context of adolescent substance use, CBT encourages adolescents to develop self-regulation and coping skills by teaching the youth to identify stimulus cues that precede drug use, to use various strategies to avoid situations that may trigger the desire to use, and to develop skills for communication and problem solving [19].

BI/MI techniques have come to the forefront of therapeutic approaches for addiction in the past decade, and even more so recently for adolescents. This therapeutic approach uses a person-centered, nonconfrontational style in assisting the youth to explore different facets of his or her use patterns. Adolescents are encouraged to examine the pros and cons of their use and to create goals to help them achieve a healthier lifestyle. The therapist provides personalized feedback and respects the youth's freedom of choice regarding his or her own behavior. Although the relationship between the therapist and client is more of a partnership than an expert–recipient role, the therapist is directive in assisting the individual to examine and resolve ambivalence and to encourage the client's responsibility for selecting and working on healthy changes in behavior [20].

The contingency management reinforcement approach encourages healthy changes in behavior by rewarding adolescents for objective evidence of abstinence, such as negative urinalyses [21]. This approach, based on the conceptual framework of behavior analysis and behavioral pharmacology, regards substance use and related behaviors as operant behaviors that are reinforced by the effects of the drugs involved. Following the operant conditioning model, the adolescent's drug use will subside when tangible incentives are offered for abstinence.

- 3 Twelve-step programs. These programs incorporate a self-help approach centered within the context of reciprocal support [22]. They are organized around the basic tenets of Alcoholics Anonymous (AA), and are a commonly applied strategy in inpatient and outpatient treatment programs, as well as a standalone approach (ie, attending AA, Narcotics Anonymous, or Cocaine Anonymous meetings). Approximately 2.3% of AA members in the United States and Canada are under the age of 21 [23]. Within this approach, individuals support each other's sobriety through encouragement of mental and spiritual health via a lifelong spiritual journey through 12 steps.
- 4 Therapeutic community (TC) is typically rooted in self-help principles and experiential knowledge of the recovery community [24]. This treatment option is holistic in nature, viewing the community as the key agent of change and emphasizing mutual self-help, behavioral consequences, and shared values for a healthy lifestyle [25]. For adolescents, TCs tend to be long-term residential treatment programs that often implement a wide variety of therapeutic techniques, including (but not limited to) individual counseling sessions, family therapy, 12-step techniques, life skills techniques, and recreational techniques.
- 5 Pharmacotherapy. This treatment approach uses medication to address various aspects of addiction, including craving reduction, aversive therapy, substitution therapy, and treatment of underlying psychiatric disorders. Research is quite limited on this treatment strategy for adolescents, although several pharmacologic studies have been conducted in adult populations. However, the applicability of adult findings to adolescents is unclear given that youth may react differently to the potential side effects of medications [26].

## Research on Treatment Outcomes

Considering all the modalities and characteristics of adolescent treatment, it is important to note that as with many other medical conditions, treatment does not ensure a “cure.” The efficacy of treatment can be quite difficult to measure due to unique patient characteristics that may play a role in that person's treatment experience. However, recent research has greatly advanced the statistical and clinical efforts in determining which program characteristics and modalities have the most successful outcomes for adolescents.

Lipsey and colleagues [27••] conducted a meta-analysis of various treatment modalities to determine which programs yield the best adolescent outcomes. In their analysis, they compared 55 research studies of various therapeutic approaches that were tested against a control or alternate treatment sample. Although most of the studies reviewed in the meta-analysis were conducted roughly a decade ago, the Lipsey et al. [27••] review is highly regarded as a thorough and statistically sound evaluation of adolescent treatment programs.

The Lipsey et al. [27••] review focused on these approaches: 12-step-based therapy, TC, family-based interventions, CBT, motivational-based therapy (MI and BI), and mixed or other approaches. A consistent pattern emerged that showed overall positive effects for all treatment models when compared with comparison conditions, but family therapy, CBT, and motivational enhancement therapy/CBT tended to show the best outcomes. However, it is advisable to view these findings with caution given the relatively small number of studies and the fact that many studies' efforts to control for confounds were not optimal [27••].

Perhaps treatment effectiveness across all approaches could be enhanced if programs contained essential elements of effective treatment for adolescents. What are these key elements? There have been nonsystematic efforts in the literature to identify them [28]. Recently, Drug Strategies [29] used an expert consensus procedure to identify core elements presumed to be associated with effective drug treatment for adolescents. These elements include the following:

1. Screening and comprehensive assessment to ensure understanding of the full range of issues the youth and family are experiencing.
2. Comprehensive services to address the adolescent's substance abuse problem as well as any medical, mental health, familial, or education problems.
3. Family involvement. Parents' involvement in their adolescent's treatment and recovery increases the likelihood of a successful treatment experience.
4. Developmentally appropriate services and therapies offered address the different needs and capabilities of adolescents.
5. Strategies to engage and keep adolescents in treatment to help adolescents recognize the value of getting help for their problems.
6. Qualified staff: staff should have knowledge of and experience working with adolescents/young adults with substance abuse problems and their families.
7. Cultural and gender differences: programs should consider and address cultural and gender differences within their population.
8. Aftercare support: effective programs plan for care after the formal treatment program is completed to ensure support and successful recovery.
9. Data gathering to measure outcomes and success of the program.

Unfortunately, there are no national data on this topic, so it is unclear to what extent community programs include these core elements in their programs. We suspect that most programs fall short of offering all or nearly all of these services. This assumption is supported by two studies that assessed select programs; both found that very few programs provided all the core elements [30, 31].

## Recovery

Nearly all adolescent drug treatment approaches are based on an abstinence model. Unfortunately, a return to drug use (or relapse) is a fairly common occurrence among

adolescents [26, 32]. Among youth treated for alcohol or drug problems, one third to one half are likely to return to some drug use at least once within 12 months following treatment [33]. The aforementioned therapeutic elements and modalities can greatly affect the efficacy of treatment, but additional variables also have been shown to impact continued recovery and reduce the risk of relapse.

Current literature on adolescent relapse risk focuses largely on two classifications of variables: treatment variables and individual variables. Treatment variables include factors specific to the adolescent's treatment experience, such as discharge status, counselor rapport, and aftercare attendance. One of the most powerful predictors of treatment outcome in the general addiction field is the quality of the alliance between therapist and client. Continuing care, or aftercare, for adolescents also has been repeatedly shown to reduce the likelihood of relapse and enhance the maintenance of treatment gains [34, 35].

Individual variables, as the name suggests, refer to unique factors specific to the individual adolescent. Such variables that have been shown to be associated with relapse include psychiatric comorbidity, lack of family involvement, continuing influence with drug-using peers, and poor coping skills [26, 35, 36].

Our overarching conceptual view of the role of this constellation of treatment and individual factors is that they interact to influence the adolescent's decision making. Thus, if too many relapse factors are present, decisions to use drugs go unchallenged and are strengthened, yet if few or no relapse factors are present, the youth's decision making is more likely to steer him or her toward a drug-free lifestyle.

## Conclusions and Future Directions

Overall, great advances have been made in the past decade with regard to the development and evaluation of treatments for adolescent drug abuse. This body of research reflects a greater focus on varying interventions using different theory-based psychotherapies, as well as a recognition of the unique developmental milestones specific to adolescents. It currently appears that the research on adolescent SUD treatment is dominated by psychosocial-based modalities, and that family systems-based treatments and motivational enhancement therapy/BI approaches have received the most empiric support compared with other modalities.

Despite recent advances in research, we still know much less about the nature and extent of effective treatments for drug-abusing youth compared with adult-specific treatment. Future research needs to continue assessing adolescent treatment efforts, as well as include a more standardized measurement of outcome. Outcomes for the studies mentioned in this review include abstinence rates, number of symptoms, reduction in drug use, and effect size; a more uniform measurement practice across studies would facilitate comparisons across studies.

In addition, a need still exists for greater understanding of common practices and standards in community-based programs. Because most community-based treatment programs utilize an eclectic approach, research on stand-alone approaches may not be as generalizable to the greater treatment community. Furthermore, very little is still known as to what extent community programs provide essential clinical elements or characteristics of effective treatment (eg, use of standardized adolescent assessment measures and developmentally adjusted strategies for treatment engagement).

A related question is whether "aggressive" confrontational approaches, which have a longstanding tradition in many forms of addiction treatment for all ages [10], are effective with young people, or if variants of confrontational strategies are more effective with

adolescents (eg, attempts to raise an individual's problem recognition). In addition, few pharmacologic treatments of adolescents with SUDs have been published; their role as an effective adjunct to psychosocial-based approaches merits more research.

Additional investigations are needed to explore the mediating and moderating effects of recovery. The literature has begun to identify some promising candidates of specific elements: aftercare involvement, coexisting disorders, coping skills, peer drug use, parental support, and motivational factors. Similarly, new and upcoming features related to technology-based aftercare and treatment services, adolescent brain development, and long-term recovery show promising potential but need further empiric exploration.

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