

# ADULT ADHD AND SUBSTANCE USE



by David Teplin, PsyD

## ADULT ADHD RARELY OCCURS BY ITSELF.

Often, it coexists with other clinical disorders, including anxiety disorders, mood disorders, tic disorders, sleep disorders, substance use disorders, and personality disorders. The co-occurrence of ADHD and substance use disorders has been the subject of recent studies. Like ADHD, substance use disorders have profound social, psychological, and economic consequences.

The high heritability of ADHD and SUDs seen in both twin and adoption studies suggests that there is considerable overlap in the genetic influences between them. The high rate of co-occurrence between such disorders also suggests some shared underlying neurobiological mechanisms may be at play.

### Shared neurobiological mechanisms

Brain-imaging studies suggest similarities between people with ADHD and people with addiction-related craving. A possible explanation is that those with addiction have stronger cravings when they also suffer from ADHD, and that adequate treatment of ADHD actually reduces the craving and helps prevent relapses into substance use.

In addition to cravings, impulsivity is a risk factor for substance use, and poor inhibitory control is also a feature of ADHD. As such, the thinking has been that there is a common brain network that underlies such impulsivity in both disorders. Recent brain-imaging research, however, suggests that the brain networks underlying both disorders are actually distinct, and that impulsive behavior may result from one of several different brain networks.

While ADHD and SUDs are distinct, independent disorders, people affected by either or both often have a deficit of the neurotransmitter dopamine in the brain. Also, all addictive drugs strongly stimulate dopamine through which they excite the reward system, as well as learning, memory, and behavior.

Underfunctioning of dopamine is associated with reduced perception of reward, worsening cognition, and difficulty inhibiting behavior. This makes life boring, worsens the ability to recognize future negative consequences, and reduces the ability to ignore an inviting distraction. This is commonly found in both disorders. Additionally, the cognitive dysfunction associated with ADHD may decrease a person's ability to assess the negative consequences of substance abuse and to delay immediate gratification from drug or alcohol use.

Compared to individuals without the disorder, people with ADHD are at more than six times greater risk of developing an SUD. Individuals with ADHD experience an

**David Teplin, PsyD**, is an adult clinical psychologist in private practice in Richmond Hill, Ontario, Canada. His clinical focus is on the assessment, diagnosis, and treatment of adjustment disorders, adult ADHD, anxiety disorders, depressive disorders, personality disorders, and substance use disorders.

Teplin is on the editorial review boards of several clinical journals and is a member of the professional advisory boards of the Attention Deficit Disorder Association and the Centre for ADHD Awareness, Canada. He is also an adjunct professor in behavioral sciences at Yorkville University in New Brunswick.



THINKSTOCK



### FOR MORE INFO

References for this article are posted with the online version at [www.chadd.org](http://www.chadd.org).



earlier age of onset and a longer duration of SUDs. Those with both ADHD and SUD may take longer to achieve remission and are likely to have longer courses of treatment and poorer outcomes. Thus, ADHD is a risk factor for SUDs.

Substance use disorders are highly prevalent in adults with ADHD, and conversely, ADHD is overrepresented among those persons with SUDs. Up to forty-five percent of adults with ADHD have a history of alcohol abuse or dependence, and about one-third have a history of illegal drug abuse or dependence. Marijuana, nicotine, alcohol, and cocaine appear to be the most commonly used substances among this population.

It is estimated that thirty-five to seventy-one percent of alcohol abusers and roughly fifteen to twenty-five percent of substance-dependent patients also have ADHD. Adults with ADHD and co-occurring SUD report earlier onset and greater severity of their SUD than adults without ADHD.

People with ADHD also experience earlier onset of tobacco smoking and show higher rates by mid-adolescence. Knowing that ADHD actually increases the risk of nicotine addiction highlights the importance of prevention efforts aimed at the adolescent population and their families. There may also be biological mechanisms underlying both ADHD and nicotine dependence. Nicotine-based medications can treat ADHD symptoms, and it is now known that children of mothers who smoked during pregnancy are at a much greater risk of having ADHD.

While those with ADHD are more likely to begin smoking than those without, smoking cessation is less likely among those individuals. Evidence suggests that nicotine improves attentiveness and performance deficits amongst those with ADHD, which provides a self-medicating rationale that nicotine increases dopamine release in the brain.

People with ADHD are more vulnerable to SUDs if they also have a co-occurring condition, such as oppositional defiant disorder, bipolar disorder, or conduct disorder. Individuals with ADHD and conduct disorder are estimated to be almost nine times more likely to develop an SUD before age eighteen, compared to those with ADHD alone. Impaired executive functioning, behavioral dyscontrol, impulsivity, and peer rejection are common in both ADHD and conduct disorder and therefore may increase the risk of developing SUDs in individuals with both conditions.

### Clinical assessment

For the clinician, detecting SUDs in patients with ADHD can be challenging. Ideally, the best time to assess for ADHD symptoms is after prolonged abstinence from any influencing substance. However, in most clinical situations this is not practical. Perhaps a better approach is the longitudinal assessment for ADHD symptoms. Detailing evidence of early childhood onset of ADHD symptoms before the patient began using substances, and/or that persisted through periods of prolonged abstinence from substances, can be helpful in conducting a proper differential diagnosis.

When assessing for SUD risk, it is also important to consider the person's clinical condition, history of comorbid conditions that suggest SUDs, overall functional status, as well as collateral information from family members about the person's behavior and substance abuse.

Factors that can influence a person's risk of developing SUDs include their clinical condition, a history of co-existing conditions that suggest SUDs,



**Substance use disorders are highly prevalent in adults with ADHD, and conversely, ADHD is overrepresented among people with SUDs.**

and overall functional status. Along with collateral information from family members about the person's behaviors and history of substance abuse, these factors can help assess the person's risk of developing an SUD.

Treatment for people with coexisting ADHD and active SUDs should occur together. However, if possible, the SUDs should be initially treated to try and ensure stabilization. Since people with ADHD and active SUD are more likely to have severe SUD and a worse prognosis, many may relapse prior to obtaining ADHD treatment. Therefore, combined treatment approaches may be best, including cognitive-behavioral therapy, contingency management, motivational interviewing, family therapy, and mutual support groups.

### Treatment with medication

Some clinicians prefer to stabilize the SUD before initiating stimulant medication when treating co-occurring ADHD and SUD. Others prefer to use non-stimulants as a first-line treatment rather than stimulants, due to issues such as potential abuse, diversion, and a history of stimulant or amphetamine use problems. Nonstimulants have not demonstrated the same efficacy as compared to stimulants for treating ADHD, however.

To minimize the risk of SUDs when treating such patients with stimulants, longer-acting stimulant formulations are preferred over short-acting ones because they are less likely to be abused. Both close supervision and monitoring are recommended, including toxicology tests.

While stimulant medication may improve retention in addiction treatment, and in some cases, may decrease harm from substance use, stimulants have not been particularly effective in decreasing drug use, per se. As the prevalence of comorbidity is high in ADHD, there is a relatively high rate of treatment drop-out, as well as noncompliance with taking stimulant medication.

Some researchers have expressed concern that exposure to stimulant medication early on in childhood could predispose patients to future substance abuse. There is also the suggestion that early exposure to stimulants could increase the risk of later SUDs by "priming" the brain, which then becomes more receptive to illicit drug exposure.

Although there have been concerns that the use of stimulant medication does increase SUD risk, recent evidence suggests that stimulant medication use does not increase susceptibility to SUDs. Other studies suggest that the use of stimulant medication in ADHD patients may actually protect against SUDs.

Those children with ADHD who were treated with stimulant medication until adolescence were between three to six times less likely to develop SUDs compared to those who did not receive stimulant medication. This protective effect decreased when patients were followed into adulthood, but those treated with stimulant medication were still almost one and a half times less likely to develop SUDs than those who were not treated with stimulant medication. One possibility is that the use of stimulant medication may delay, but not prevent SUDs. Another possibility is that by adulthood, loss of parental supervision may lead to poor medication compliance, and therefore, increased susceptibility to SUDs.

As ADHD is a risk factor for SUDs, and because there is great overlap between these two distinct disorders, it is imperative that anyone being evaluated for adult ADHD also be assessed for the possible presence or history of SUDs. Failure to do so not only affects the diagnosis, but can have an enormous impact on the effectiveness and outcome of treatment. ●