

# SAMHSA ADVISORY

Substance Abuse and Mental Health  
Services Administration

## PRESCRIPTION STIMULANT MISUSE AND PREVENTION AMONG YOUTH AND YOUNG ADULTS

The misuse of prescription pain relievers, tranquilizers, sedatives, and stimulants among youth and young adults aged 12 to 25 is a major public health issue in the United States. The prevalence of prescription drug misuse is highest among young adults between the ages of 18 and 25; over 11 percent report the misuse of prescription drugs in the past year.<sup>1</sup> Similarly, over 4 percent of youth between the ages of 12 and 17 report prescription drug misuse in the past year.<sup>1</sup> Although the overall prevalence of prescription drug misuse among youth and young adults has declined in recent years,<sup>1</sup> its relatively high rate among young adults, in particular, is concerning. In this age category, the rates of prescription stimulant misuse are higher than the rates of misuse for other categories of prescription medications.<sup>1</sup>

In this advisory, prescription stimulant misuse includes:

- Using medication without a prescription of one's own, even if with therapeutic intent;
- Using medication in greater amounts, more often, or longer than prescribed;
- Using medication in any way other than directed by a prescriber (e.g., non-medical use); or
- Using medication for recreational purposes or without therapeutic intent.

This advisory occasionally uses the phrase "non-medical use of prescription stimulants" when citing studies that use this terminology.

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Key Messages	Definitions/Key Terms
<ul style="list-style-type: none"> <li>• The misuse of prescription stimulants among youth and young adults in the United States is a major public health concern.</li> <li>• Misuse of prescription stimulants typically entails taking them without a prescription or in a way other than how they were prescribed.</li> <li>• When taken at greater than therapeutic doses, prescription stimulants may have serious health consequences, which can include a dangerous increase in body temperature, seizures, and/or adverse cardiac events.</li> <li>• Diverted medications significantly contribute to the misuse of prescription stimulants. As many as one half of youth with valid prescriptions for these medications are approached by peers to sell or give away their medication.</li> <li>• The risk and protective factors for prescription stimulant misuse are similar to those for other types of substance use, including prescription drug misuse, but can vary by demographic and other factors.</li> <li>• Evidence-based prevention programs for prescription stimulant misuse are limited. However, several institutions of higher education have developed their own programs.</li> <li>• Communities have successfully implemented environmental strategies to reduce or prevent stimulant misuse.</li> <li>• General substance use prevention programs that target risk factors for substance use in general may be effective with youth and young adults at risk for prescription stimulant misuse.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Stimulant:</b> A class of drug that increases activity or speeds up the body’s central nervous system.</li> <li>• <b>Prescription Stimulants:</b> Medications that are generally used to treat ADHD and narcolepsy.</li> <li>• <b>Prescription Stimulant Misuse:</b> Improper or unhealthy use of a prescription stimulant medication, including using medication without a prescription of one’s own; in greater amounts, more often, or longer than prescribed; or in a way other than prescribed.</li> <li>• <b>Substance Use:</b> The use—even one time—of any substance.</li> <li>• <b>Substance Misuse:</b> The use of any substance in a manner, situation, amount, or frequency that can cause harm to users or those around them. For some substances or individuals, any use would constitute misuse (e.g., underage drinking, injection drug use).</li> <li>• <b>Substance Use Disorder (SUD):</b> Substance use disorder occurs when the recurrent use of a substance (alcohol and/or other drugs) causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home.</li> <li>• <b>Diversion:</b> Drug diversion is the unlawful transfer of prescription drugs from their licit medical purpose to the illicit marketplace.</li> </ul>

## About Stimulants

Prescription stimulants belong to a larger class of drugs that includes both legal and illegal substances. Stimulants may temporarily increase alertness, attention, and energy,<sup>2</sup> effects caused by the increased level of activity that occurs in the central nervous system as a result of stimulant use.

Although all stimulants have similar behavioral and physiological effects, they differ in their mechanism of action,<sup>3</sup> or the ways in which they produce an effect. Stimulants include certain foods, drinks, and tobacco products (e.g., coffee, chocolate, cigarettes); dietary supplements (e.g., appetite suppressants, energy boosters); over-the-counter medications (e.g., nasal decongestants); and prescription medications (e.g., methylphenidate [Ritalin], amphetamine [Adderall]), and illegal substances such as cocaine and methamphetamine. When taken as prescribed, prescription stimulants are effective for treating conditions such as attention deficit hyperactivity disorder (ADHD) and narcolepsy, a chronic sleep disorder characterized by overwhelming daytime drowsiness and sudden attacks of sleep.

However, the misuse of prescription stimulants can have serious health consequences that can be dangerous or even deadly. This advisory specifically focuses on prescription stimulants, which are classified as Schedule II-controlled substances and can be highly addictive.

## Types of Stimulants

There are several categories of stimulants with various uses and indications. Figure 1 provides an overview of the different amphetamine-type and other stimulants.

### Amphetamine-Type Stimulants

Amphetamine-type stimulants are a broad category of substances that encompass a large group of legal and illegal substances. They include amphetamines, methylphenidate, amphetamine derivatives, such as methamphetamine, and cathinones (“bath salts”).

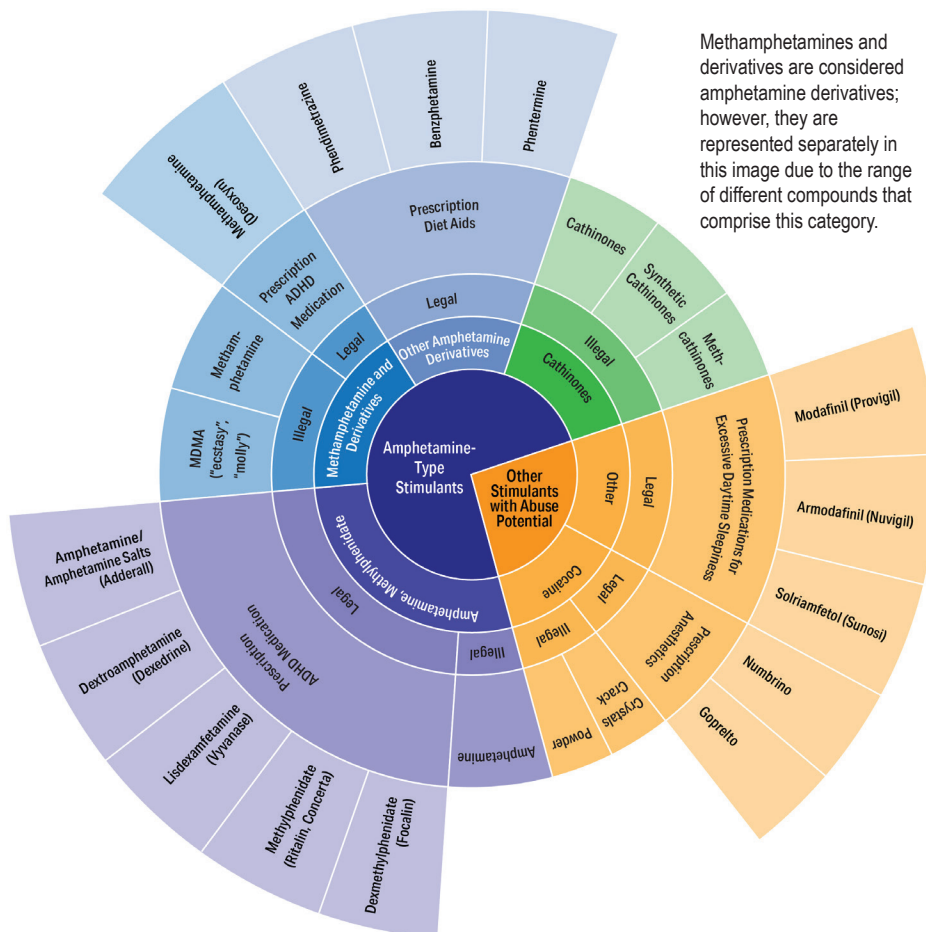
### Cocaine

Cocaine is a powerful stimulant processed from the leaves of the coca plant.<sup>4</sup> Cocaine has some medical uses; it is the only known compound to work as an anesthetic and also reduce the size of blood vessels to prevent bleeding during medical procedures.<sup>5</sup> However, most cocaine is used recreationally and obtained illegally. Illegal cocaine may be mixed with other stimulants, such as amphetamines or opioids (e.g., fentanyl). Cocaine can also be processed into a crystal form known as crack.<sup>4</sup> Cocaine differs from amphetamine-type stimulants in that it is derived from a plant (versus being manufactured) and has a shorter duration of action (it only takes one hour for the body to metabolize half of the ingested dose of cocaine compared to the 12 hours needed to metabolize amphetamine-type stimulants).<sup>3</sup>

### Other Stimulants

Other widely available stimulants include substances like nicotine, which can be found in tobacco products; caffeine, which can be found in many food and beverage items; and pseudoephedrine, a nasal decongestant.<sup>6</sup>

Figure 1. Categories of Stimulants and Their Uses



## Prescription Stimulants

Most prescription stimulants are amphetamine-type stimulants (see Figure 1) and primarily consist of medications used to treat ADHD and narcolepsy. They also include diet aids,<sup>2</sup> although most stimulant diet aids are no longer available in the United States. Prescription stimulants have several medical benefits for those who need them, including increased alertness, concentration, and attention.<sup>7</sup> These effects make prescription stimulants a first line treatment for ADHD, which is characterized by inattention, distraction, and/or hyperactivity and impulsivity<sup>8</sup> that can cause substantial functional impairment.<sup>9</sup> Prescription stimulants can benefit individuals with ADHD by improving day-to-day functioning and do not appear to increase the risk for later development of substance use disorders (SUD). Some studies suggest that when used to treat ADHD in childhood, stimulant medications may even have a protective effect against the later development of SUD and related conditions in adulthood, but the relationship is complex and not all studies are consistent.<sup>8-9</sup>

The use of prescription stimulants for ADHD has steadily increased since they were first administered to children for hyperactivity in 1937.<sup>10</sup> While some psychosocial treatments, such as cognitive behavioral therapy and child or parent training, have been shown effective for children and adolescents with ADHD,<sup>11</sup> FDA-approved medications are the first line of treatment for adolescents aged 12 to 17.<sup>12-13</sup> Prescription stimulants are generally considered safe and effective when taken as prescribed; however, their psychoactive properties make them subject to misuse for cognitive and physical performance enhancement and recreational purposes.<sup>14</sup>

## Prescription Stimulant Misuse

Youth and young adults often obtain prescription stimulants through diversion,<sup>2,8</sup> with more than 60 percent reporting they obtain them from a friend or relative.<sup>1</sup> Youth and young adults with legitimate prescriptions for stimulant medication will sometimes sell, trade, or give away their medications,<sup>14</sup> often at the request of others wanting to use them illegally.

Most prescription stimulants are taken orally and are available as tablets, capsules, or liquids.<sup>2</sup> Youth and young adults may misuse prescription stimulants orally, as well as by snorting/inhaling, smoking, or injecting a powder from crushed tablets or opened capsules,<sup>2</sup> with snorting/inhaling being the most common mode of non-oral use.<sup>17</sup> Oral misuse of prescription stimulants can be a precursor to the non-oral misuse of prescription stimulants, which itself can be a precursor to the use of other substances.<sup>18</sup> One study, based on data collected from youth in 10 U.S. cities, found that as many as 17 percent who used prescription stimulants, regardless of how they were obtained, misused them via a non-oral route in the past 30 days.<sup>19</sup> Some studies have found that participants who reported the non-oral use of prescription stimulants were more likely to report adverse mental health outcomes and negative health outcomes in general when compared to participants who used prescription stimulants orally and for medical purposes.<sup>19</sup>

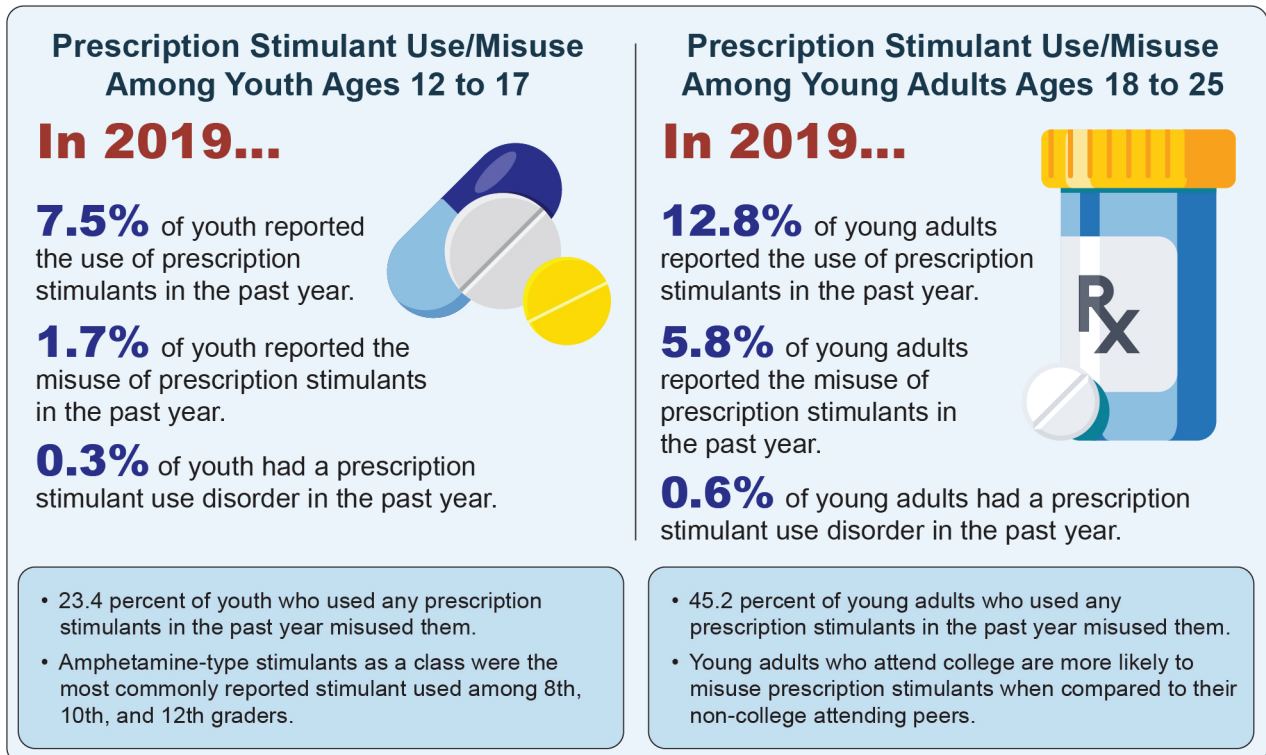
### Stimulant Misuse and COVID-19

The impact of the 2019 Novel Coronavirus Disease (COVID-19) pandemic on prescription stimulant misuse among youth and young adults is difficult to estimate. The pandemic placed this population at a greater risk for substance use in general, especially among those who experienced economic or academic hardship, were exposed to abusive relationships, or discovered substance use as a means of coping or for excitement during the pandemic.<sup>15</sup> A 2020 survey conducted by the Centers for Disease Control and Prevention found that just under 25 percent of young adults aged 18 to 24 initiated or increased substance use as a means of coping with pandemic-related stress and emotions.<sup>16</sup> (Similar data for youth aged 12 to 17 are not available.) However, certain aspects of the pandemic (e.g., staying at home for social distancing) may also have contributed to greater exposure to protective factors, such as an increase in parental supervision and reduced access to substances,<sup>15</sup> although this may not be true for youth and young adults with a stressful home environment.<sup>15</sup>

## Prevalence of Prescription Stimulant Use/Misuse

Rates of prescription stimulant use and misuse vary by demographic characteristics. Increases in prescription stimulant use<sup>20</sup> may be attributable to increases in the prevalence of ADHD diagnoses in the United States.<sup>21-22</sup> In recent years, between 11 and 13 percent of youth aged 12 to 17<sup>23</sup> and between 4 and 8 percent of young adults aged 18 to 25 have been diagnosed with ADHD.<sup>8,24</sup> More than two-thirds of youth and young adults diagnosed with ADHD are prescribed medication.<sup>25</sup>

**Figure 2. Prevalence of Prescription Stimulant Misuse Among Youth and Young Adults<sup>26-28</sup>**



## Other Substance Use

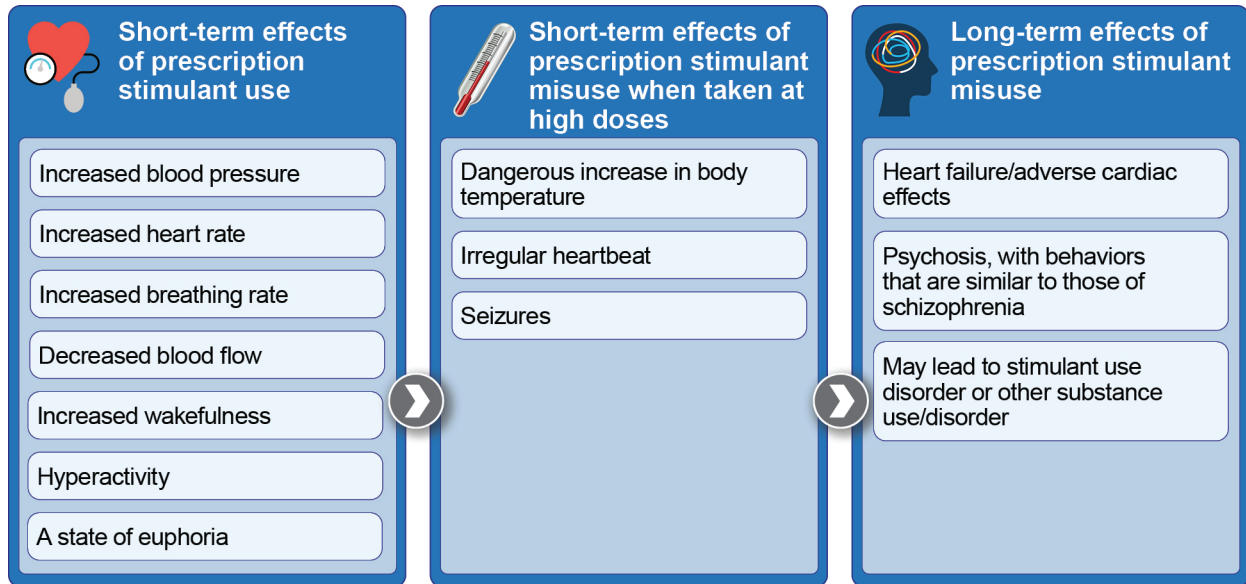
Over 97 percent of youth who misuse prescription stimulants by age 18 have also used at least one other substance in the past year.<sup>29</sup> Two-thirds of high school seniors who reported the misuse of prescription stimulants in the past year did so simultaneously with other substances, usually alcohol or marijuana.<sup>30</sup> Similarly, college students who misuse prescription stimulants are over six times more likely to report heavy drinking than those who do not.<sup>31</sup> A survey of college students from a Midwestern university found that those who used prescription stimulants non-medically tended to report polydrug use.<sup>17</sup>

## Health Effects of Prescription Stimulant Use Among Youth and Young Adults

Common side effects of prescription stimulants when taken at therapeutic doses may include: decreased appetite, weight loss, headache, insomnia, dizziness, and nervousness. More severe side effects include seizures, cardiac events (e.g., heart attacks), and sudden death, though these are rarely reported.<sup>10</sup> Individuals who use or misuse prescription stimulants may also experience other short- and long-term health effects, as presented in Figure 3. Using prescription stimulants

non-orally and/or in combination with other substances, as is typically done for recreational purposes, is more likely to cause adverse health effects than when taken orally.<sup>10,32</sup> Non-oral use also increases the risk of developing a stimulant use disorder.<sup>19</sup>

**Figure 3. Health Effects Associated with the Use/Misuse of Prescription Stimulants<sup>2,10,33-34</sup>**



## Risk Factors for Prescription Stimulant Misuse Among Youth and Young Adults

Risk factors associated with prescription stimulant misuse are similar to risk factors associated with other substance use and occur at each level of the socio-ecological model: individual, family and relationship, community and peers, and society and culture.<sup>36</sup> Protective factors that mitigate the risk of substance use may also exist at each level of the model. Figure 4 shows risk and protective factors associated with substance use broadly, as well as the misuse of prescription stimulants. While no causal relationship should be assumed for these risk and protective factors, identifying their presence within a community can help to guide selection of appropriate prevention programs and strategies.

### Socio-Ecological Model

The socio-ecological model is a four-level model that considers the complex interactions among the individual, family and relationships, community and peers, and societal and cultural factors that put individuals at risk for, or protect them from, substance use. The model also considers the context in which risk and protective factors exist and suggests that it is necessary to work across the different levels of the model simultaneously to sustain prevention efforts.<sup>35</sup>

Although risk and protective factors may influence the misuse of prescription stimulants, youth and young adults may also be motivated to misuse prescription stimulants for a number of other reasons. These reasons include cognitive enhancement, such as increasing concentration, alertness, and energy to cope with one's workload, improving performance on academic tests, and experiencing the euphoria, or high, produced when taken at higher than therapeutic doses.<sup>8,37-38</sup> Enhancing performance at school or work is one of the most common reasons youth and young adults misuse prescription stimulants.<sup>9,39</sup> Less frequently, youth and young adults give weight loss as their motivation for prescription stimulant misuse.<sup>14</sup>

**Figure 4. Risk Factors Associated with Substance Use and the Misuse of Prescription Stimulants Among Youth and Young Adults<sup>8,14,36,40-41</sup>**

Risk Factors			Protective Factors
For Substance Use/Rx Drug Misuse	For Rx Stimulant Misuse	For BOTH Substance Use/Rx Drug Misuse AND Rx Stimulant Misuse	
<b>Individual</b>			
<ul style="list-style-type: none"> <li>History of sexual abuse</li> </ul>	<ul style="list-style-type: none"> <li>Ages 18- 25</li> <li>White</li> <li>Diagnosis of ADHD</li> <li>Older/higher grade level</li> </ul>	<ul style="list-style-type: none"> <li>Mental health comorbidities (e.g., depression)</li> <li>Motivation for misuse</li> <li>Poor academic performance</li> <li>Other substance use history</li> <li>Engaging in other risk behaviors</li> </ul>	<ul style="list-style-type: none"> <li>Commitment to education</li> <li>Four-year college degree</li> <li>Social coping skills</li> </ul>
<b>Family and Relationships</b>			
<ul style="list-style-type: none"> <li>Social isolation or antisocial behavior</li> <li>Family problems and/or conflict</li> </ul>	<ul style="list-style-type: none"> <li>Household or family members as a source of prescription stimulants</li> </ul>	<ul style="list-style-type: none"> <li>Lack of parental support or monitoring</li> <li>Negative parental attitudes</li> <li>Substance use by family members</li> </ul>	<ul style="list-style-type: none"> <li>Parental disapproval of prescription drug misuse</li> <li>Stronger parental bond</li> <li>Parental supervision</li> <li>Family unity</li> </ul>
<b>Community and Peers</b>			
<ul style="list-style-type: none"> <li>Residing in neighborhoods where substance use is accepted</li> <li>Associating with peers accepting of substance use</li> <li>Lack of peer connections</li> </ul>	<ul style="list-style-type: none"> <li>Friends as a source of prescription stimulants</li> <li>Prescription stimulants are easily accessible</li> </ul>	<ul style="list-style-type: none"> <li>Substance use by peers</li> <li>Peers accepting of prescription drug misuse</li> <li>Greater prescription drug/stimulant misuse by peers</li> </ul>	<ul style="list-style-type: none"> <li>Positive social activities</li> <li>Positive youth development/ afterschool activities</li> </ul>
<b>Societal and Cultural</b>			
<ul style="list-style-type: none"> <li>Norms favorable to substance use</li> <li>High availability of substances</li> </ul>	<ul style="list-style-type: none"> <li>Pressure on academic achievement</li> </ul>		<ul style="list-style-type: none"> <li>Norms against substance use</li> </ul>

In adults, reasons for prescription stimulant misuse may include performance enhancement, although additional motivations may include recreational purposes, to adjust the effects of other substances, or to experiment. Adults who misuse prescription stimulants and have a history of SUD are more likely to be motivated by recreational purposes and less likely to be motivated by performance enhancement effects compared to adults who misuse prescription stimulants without a history of SUD.<sup>43</sup>

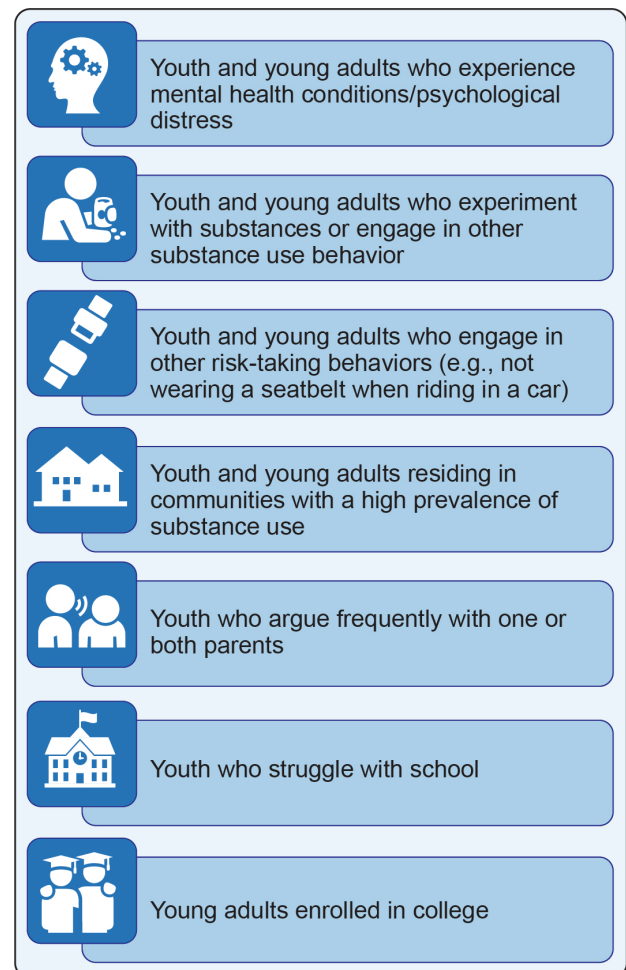
## Opportunities for the Prevention of Prescription Stimulant Misuse

There are three categories of prevention interventions—universal, selective, and indicated.<sup>35</sup> **Universal interventions** are broad, and attempt to prevent or reduce substance use across all people in specific target groups or populations—for example, a prevention intervention delivered during a required middle school health class. **Selective interventions** target high-risk populations with known biological, psychological, or social risk factors—for example, a prevention intervention delivered to a youth group residing in a low-income community. **Indicated interventions** are meant for individuals who are already involved in a risky behavior, such as illegal substance use or prescription misuse, or are beginning to have problems but have not yet developed a substance use disorder—for example, a prevention program for underage individuals who are using alcohol or involved with the criminal justice system. Being familiar with and able to identify demographic, psychosocial, and behavioral risk and protective factors associated with the misuse of prescription stimulants is a key component of selecting effective prevention strategies.

In addition to risk factors, motives for prescription stimulant misuse are typically different than those for illegal stimulant use (e.g., methamphetamines) and can range from academic motives, such as increased concentration, cognitive enhancement, and energy, to social motives, such as euphoria and social connectedness.<sup>37-38,43</sup> This difference is true for both youth and young adults and further reinforces the notion that approaches to preventing prescription stimulant misuse should also target specific populations and settings.<sup>37-38</sup> Figure 5 summarizes target populations for prescription stimulant misuse prevention based on motives and risk factors.

Risk factors are correlated and cumulative. In other words, they are associated with one another, and risk increases as the number of risk factors an individual experiences increases.<sup>35</sup> Therefore, prevention programming should target multiple, as opposed to single, risk factors.<sup>42</sup>

**Figure 5. Target Populations for Preventing Prescription Stimulant Misuse Among Youth and Young Adults<sup>37-38</sup>**





## ***Prescription Stimulant Misuse Prevention Programs***

Currently, there are no known prescription stimulant misuse prevention programs exclusively for youth, although one program has been designed for people of all ages, including youth and young adults.<sup>44</sup>

- **Generation Rx** This program educates individuals about the importance of using medications safely and preventing misuse. It can be delivered to youth in a classroom setting, after school programming, youth organization meetings, or any venue where youth congregate. For young adults, it can be delivered during college student orientation, in residence halls, during sporting events, or as part of any activity or in any venue where young adults get together. Although the program is geared toward general prescription drug misuse, there is a module for young adults that focuses specifically on prescription stimulant misuse.<sup>45</sup> However, as of 2021, this program has not been evaluated.

Similarly, there are only a handful of emerging prescription stimulant prevention practices targeted toward young adults (predominantly in the college environment).<sup>14</sup> The Canadian Centre on Substance Abuse identified and summarized several of these approaches, which included Generation Rx along with the following programs:

- **Expectancy Challenge**. This program challenges college students' beliefs about prescription stimulants with the goal of reducing misuse. Students receive a 30-minute expectancy challenge, during which they are told that prescription stimulants do not significantly enhance academic performance. The intervention involves a lecture and discussion of expectancy effects and potential negative health, legal, and psychological consequences of prescription stimulant misuse. An evaluation of this program was conducted by administering a placebo medication to an intervention and control group, with only the intervention group participating in the lecture and discussion. Both groups then performed a series of tasks. Students who were told prescription stimulants did not enhance academic performance had a significant reduction in their expectations related to cognitive enhancement of prescription stimulant use immediately after participating in the challenge compared to those who did not participate in the challenge, although this effect was not long-lasting. Researchers also found that participants who more strongly believed prescription stimulant misuse would have negative effects were less likely to misuse prescription stimulants later.<sup>46</sup>
- **Prescription Stimulant Misuse Prevention Program at Miami University in Ohio**. Miami University in Ohio provides a 90-minute workshop for students who visit the campus medical center to be prescribed stimulants. During the workshop, students are given tips on how to improve their study skills, time management, and sleep. At the end of the workshop, students receive a planner and goal completion worksheet they must complete to demonstrate they have adopted the skills presented during the workshop. Following the completion of this worksheet, a decision is made whether to pursue medication. Students who are prescribed stimulant medications through the campus medical center must attend another 60-minute workshop educating them on keeping medications safe and preventing diversion and misuse. As of 2021, this program has not been evaluated.<sup>14</sup>
- **Prescription Stimulant Misuse Prevention Program at Syracuse University**. Syracuse University has a peer-led program that is delivered during first-year orientation sessions. The program is delivered by upper class students trained in motivational interviewing techniques and includes a web-based intervention delivered through social media platforms. The program

also includes an academic skills component. As of 2021, no evaluation of this program has been published.<sup>47</sup> However, evaluation data have been collected from a randomized controlled trial, with preliminary results demonstrating that the program was associated with lower levels of prescription stimulant misuse (4.3 percent in the intervention group compared to 11.4 percent in the control group) and that the program had a greater impact on reducing positive expectations of stimulant use among those who participated (K. Antshel, personal communication [Email], July 6, 2021).<sup>48</sup>

### ***Use and Adaptation of Other Substance Misuse Prevention Programs***

Because few evidence-based programs are available for the prevention of prescription stimulant misuse among youth and young adults, other evidence-based prevention programs may be considered to help reduce the misuse of prescription stimulants. For example, prescription stimulant misuse is associated with alcohol and marijuana use, and programs to prevent the use/misuse of these substances may also help reduce prescription stimulant misuse. Similarly, programs aimed at preventing other substance use, such as alcohol and/or marijuana use, may be adapted to focus on the misuse of prescription stimulants.

### **Evidenced-Based Substance Use Prevention Programs for Youth and Young Adults**

A variety of evidence-based substance use prevention programs are available for youth. They include school-, family-, and community-based programs focused on substance use prevention generally or on specific substances like alcohol. While none is specific to prescription stimulant misuse, several were found effective at preventing or reducing illegal stimulant use (e.g., methamphetamine) in youth aged 10 to 17.

No known evidence-based programs are currently aimed specifically at preventing prescription stimulant misuse among young adults aged 18 to 25. However, several evidence-based interventions for preventing the misuse of other substances, or substance use in general, have been developed for this population, and have demonstrated lasting positive outcomes, particularly with respect to alcohol and marijuana use. These programs include cognitive behavioral skills training with norms clarification and motivational enhancement, motivational enhancement interventions delivered in student health centers and emergency rooms (e.g., Brief Motivational Intervention in Emergency Department), and policy initiatives (e.g., price and tax policies and age restrictions as they relate to alcohol prevention).<sup>49</sup>

Comprehensive lists of evidence-based prevention programming for youth and young adults can be found in the [Surgeon General's Report on Alcohol, Drugs, and Health](#) and in SAMHSA's evidence-based resource guide on [Substance Misuse Prevention for Young Adults](#). [Planning Alcohol Interventions Using the NIAAA's College Alcohol Intervention Matrix \(AIM\)](#) is a guide for planning evidence-based strategies for preventing underage drinking on college campuses, and includes additional prevention strategies that may be useful.

### **Evidence-Based Prevention Programs for Prescription Drug Misuse**

In recent years, the opioid epidemic, which was rooted in the misuse of prescription pain medications and inappropriate prescribing, contributed to an increase in efforts to prevent prescription drug misuse more broadly. While these prevention programs and practices are not specifically targeted toward prescription stimulant misuse, they may be useful in addressing the misuse of these, and other prescription medications. Strategies for preventing prescription drug misuse include education, tracking and monitoring, medication disposal, harm reduction, and multi-component programs.<sup>50</sup> Specific strategies and programs that may help prevent prescription drug misuse among youth and young adults

include: [Home Environmental Strategy to Reduce Access to Harmful Legal Products](#) (geared toward parents of 5<sup>th</sup> to 7<sup>th</sup> graders), [Think Smart](#) (for 5<sup>th</sup> and 6<sup>th</sup> graders), [Strengthening Families Program](#) (for 6<sup>th</sup> and 7<sup>th</sup> grade students and their parents), and [Communities That Care](#) (a coalition-based program for selecting evidence-based programs to address local needs and priorities).<sup>50</sup>

## ***Non-Programmatic Approaches to Prescription Stimulant Misuse Prevention***

Although prescription stimulant misuse prevention programming is limited, other practices may help reduce prescription stimulant misuse among youth and young adults.

### **Reducing Diversion**

The diversion of prescription stimulant medication contributes to the misuse of these substances among youth and young adults.<sup>51</sup> One study found that among a group of students with a prescription for stimulant medication, more than half had been approached by peers to divert their medication, most of whom felt pressure to do so.<sup>49</sup> Individuals taking prescription stimulant medications, their parents and/or guardians, and their prescribers can all help prevent the diversion of prescription medication. Educating youth and young adults about the proper disposal of unused medication and storing prescription medication in locked boxes are two strategies that may help reduce the potential for diversion.<sup>52</sup>

The [National Prescription Drug Take-Back Day](#) events held in April and October are sponsored by the Drug Enforcement Administration (DEA) and provide a safe, convenient, and responsible means for Americans to dispose of unwanted, unused, or expired prescription medications to prevent substance misuse, diversion, and overdose, including overdose deaths.

Prescribers of stimulant medications can make modifications to their current practices that may reduce diversion. These actions include:

- Carefully considering the use, type, and formulation of stimulant medication for patients;
- Limiting the frequency of prescription refills;
- Obtaining signed agreements from patients and/or guardians;
- Providing education and instructions on the proper use, administration, and storage of medication;
- Providing counseling on the consequences of misuse and diversion; and
- Carefully monitoring patients receiving stimulant medication using their state's prescription drug monitoring program (PDMP)—an electronic database that tracks certain prescription medications, including stimulants, and can help identify those who may be diverting or misusing their medications.<sup>53</sup>

Prescribers of stimulant medications may also benefit from education and training in patient education and counseling, diversion prevention strategies, and effective medication monitoring to reduce the diversion of prescription stimulants.<sup>54</sup>

Educating all youth and young adults about the consequences of prescription stimulant misuse and dispelling myths may help deter this behavior. Similarly, youth and young adults (and their guardians, as applicable) who are prescribed stimulant medication should be educated on the use, administration, and storage of medication, as well as alternative or supplementary therapies (e.g., behavioral approaches to help manage ADHD). Youth and young adults with ADHD and/or those receiving prescription stimulants should be regularly screened for substance use disorder and/or behavioral health concerns by providers to help prevent the misuse of these medications.

## Overamping Prevention

Because overamping can lead to serious adverse events such as heart attacks, strokes, and seizures, it is important to educate patients about these dangers when prescribing stimulants. Individuals prescribed stimulants should schedule regular visits with a primary care provider with whom they can discuss potential effects of their prescription and potential interactions or contraindications with other medications or substance use. The provider should regularly monitor cardiac function (e.g., blood pressure, heart rate, and respiratory rate), and patients should follow provider recommendations (e.g., taking blood pressure medication as prescribed).<sup>55</sup>

## Overamping

“Overamping” is a term generally used to describe an overdose of a stimulant medication. However, it can occur regardless of the amount consumed.<sup>55</sup> Signs of overamping include: nausea/vomiting, loss of consciousness, chest pain, overheating, increased heart rate and/or blood pressure, irregular breathing or shortness of breath, convulsions, severe headache, insomnia, heart attack, stroke, seizures, and psychological symptoms (e.g., anxiety, panic, hallucinations, paranoia, aggressiveness, irritability, and agitation).<sup>55</sup> Overamping is usually observed with cocaine and methamphetamine use, but it is possible to overamp on prescription stimulant medications alone.

## Developing a Comprehensive, Evidence-Based Substance Use Prevention Strategy

Stimulant misuse prevention approaches should be implemented as part of a larger, comprehensive substance use prevention strategy. This strategy should:

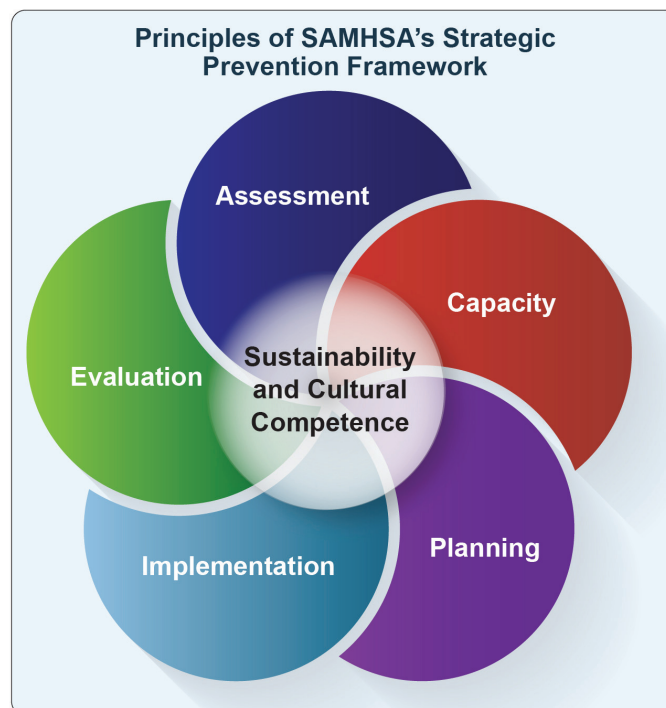
- Incorporate data-driven approaches guided by local needs;
- Be implemented in different settings across the socio-ecological model;
- Engage multiple sectors of the community; and
- Promote positive social and cultural norms around substance use.<sup>41</sup>

## SAMHSA’s Strategic Prevention Framework

The Substance Abuse and Mental Health Services Administration’s (SAMHSA) [Strategic Prevention Framework](#) (SPF) can help those working in prevention gather and use data to develop a comprehensive prevention strategy and guide prevention programming decisions. The SPF, a five-step model guided by the cross-cutting principles of sustainability and cultural competence, is a comprehensive approach to understanding and addressing substance misuse and related behavioral health problems facing states and communities.<sup>35</sup> The five steps are:

1. *Assessment*, or determining local prevention needs based on data;

**Figure 6. Principles of SAMHSA’s Strategic Prevention Framework**



2. Capacity, or building and mobilizing the community to address priority substance misuse problems;
3. Planning, or selecting the most appropriate prevention programs and strategies;
4. Implementation, or delivering evidence-based prevention programs and practices as intended; and
5. Evaluation, or collecting and analyzing information about prevention activities to determine their effectiveness, make improvements, and facilitate decision making.

The steps of the SPF should also integrate the principles of sustainability (e.g., building an effective prevention system that achieves and maintains desired long-term results) and cultural competence (e.g., developing and implementing prevention programs and practices that benefit individuals in diverse cultural groups). Figure 6 illustrates the SPF's steps and cross-cutting principles.

A primary goal of using the SPF, or other similar processes, when developing a comprehensive prevention strategy is to assess a community's priority substance use problems and determine the right combination of programs and practices that will address these needs and priorities. If prescription stimulant misuse among youth and young adults is identified as a problem that the community wants to address, the next step is to identify prevention programs that target the risk factors associated with prescription stimulant misuse.

### ***Screening, Assessment, and Treatment for Prescription Stimulant Misuse***

Screening and assessment is a two-step process that helps determine if an individual has a substance use problem and, if so, how serious the problem is.<sup>56</sup> Assessing the severity of one's substance use can help prevent it from worsening and protect against more serious consequences. Screening tools are brief, self or clinician-administered, instruments, that determine if substance use is problematic. Thus, screening determines if a comprehensive assessment is needed and can be provided in a range of settings, including primary care and other healthcare settings and community organizations, such as schools, campus organizations, youth organizations, and religious organizations.<sup>56</sup> Assessments, on the other hand, are almost always administered by a clinician and provide an in-depth examination of the nature of an individual's substance use to inform interventions and treatment.<sup>57</sup>

Once screening identifies someone at risk for a substance use disorder, next steps may include those that help to reduce or prevent adverse effects of substance use, such as a brief intervention or referral to treatment under the [Screening, Brief Intervention, and Referral to Treatment \(SBIRT\)](#) program.<sup>56,58</sup> SBIRT is a comprehensive approach to identifying a need for, and delivering, brief interventions for individuals with moderate substance use and referring those with serious substance use to more intensive treatment.<sup>58</sup> A brief intervention consists of a short conversation using motivational interviewing techniques to prevent progression to more serious levels of use and may incorporate approaches such as mobile applications or engaging peers.<sup>59-60</sup> Individuals with more serious substance use or a substance use disorder may be referred to treatment that includes evidence-based behavioral approaches such as motivational interviewing, contingency management, the community reinforcement approach, and cognitive behavioral therapy.<sup>61</sup>

There are currently no known screening tools or assessments specifically for identifying prescription stimulant misuse.<sup>49</sup> However, a variety of general substance use and physical and behavioral health screeners and assessments are available for youth/adolescents and young adults/adults (Figure 7).

**Figure 7. Substance Use and Physical and Behavioral Health Screeners and Assessments for Identifying Prescription Stimulant Misuse in Youth and Young Adults<sup>52</sup>**

Screeners and Assessments
<p><b>Adolescent Screeners:</b></p> <p><a href="#">Brief Screener for Tobacco, Alcohol, and other Drugs (BSTAD)</a></p> <p><a href="#">Global Appraisal of Individual Needs – Short Screener (GAIN-SS)</a></p> <p><a href="#">Patient Health Questionnaire for Adolescents (PHQ-A)</a></p> <p><a href="#">Screening to Brief Intervention (S2BI)</a></p> <p><b>Adolescent Assessments:</b></p> <p><a href="#">CRAFTT</a></p> <p><a href="#">Drug Abuse Screen Test (DAST-20: Adolescent version)</a></p> <p><b>Adult Screeners:</b></p> <p><a href="#">Global Appraisal of Individual Needs – Short Screener (GAIN-SS)</a></p> <p><a href="#">NIDA Drug Use Screening Tool: Quick Screen (NMASSIST)</a></p> <p><a href="#">Patient Health Questionnaire (PHQ-9)</a></p> <p><a href="#">Tobacco, Alcohol, Prescription Medication, and other Substance Use (TAPS)</a></p> <p><b>Adult Assessments:</b></p> <p><a href="#">Drug Abuse Screen Test (DAST-10)</a></p> <p><a href="#">NIDA Drug Use Screening Tool: Quick Screen (NMASSIST)</a></p> <p><a href="#">Tobacco, Alcohol, Prescription Medication, and other Substance Use (TAPS)</a></p>

### ***Tips and Action Steps for Practitioners***

The following tips and action steps are based on relevant principles of substance use prevention and communication.

#### ***Community Prevention Practitioners***

When developing prevention programming, community prevention practitioners should be familiar with the scope of prescription stimulant misuse among youth and young adults within the community. Prescription stimulant misuse prevention programming should, ideally:

- Be a component of a broader substance use prevention plan and strategy;
- Involve youth and young adults in the design and implementation of the plan, strategy, and programs to prevent prescription stimulant misuse;
- Address the misuse of prescription and other stimulants (e.g., methamphetamine and cocaine) separately;
- Target youth and young adults at high risk of prescription stimulant misuse;
- Be delivered in a variety of settings; and
- Incorporate the use of technology and social media.

Community prevention practitioners should educate youth and young adults in the community about:

- Myths around perceived benefits of prescription stimulant misuse;
- Legal consequences of misuse and diversion; and,
- Development of academic and executive functioning skills that promote healthy study and other habits.

### ***Prescribers and Other Providers***

Prescribers and other providers who care for youth and young adults with ADHD should consider practice changes to help prevent the misuse of prescription stimulants. These actions may include:

- Confirm an ADHD diagnosis before prescribing stimulant medications;
- Carefully consider medication, dose, and formulation (e.g., prescribing longer-acting formulations with lower abuse potential);
- Provide detailed counseling and education to youth and young adults (and their guardians, as applicable) who are prescribed prescription stimulants;
- Closely monitor all patients who receive prescription stimulant medications and regularly check those patients' histories in the state's PDMP; and
- Screen all patients who have a diagnosis of ADHD and/or receive prescription stimulant medication for substance use disorders and other behavioral health conditions.

### ***Tips and Action Steps for Educators***

Most youth and young adults who misuse prescription stimulants do so to improve academic performance and increase alertness and concentration when studying. Educators are well-positioned to provide prevention messages cautioning the misuse of prescription stimulants.

### ***K-12 Educators***

Educators in middle and high schools, and even those working with students in elementary grades, may consider the following to help reduce prescription stimulant misuse:

- Incorporate substance use prevention programming into the curriculum and emphasize the prevention of prescription stimulant misuse;
- Educate students on the dangers of prescription stimulant misuse, the personal, legal, and financial consequences of diversion and misuse, and dispel myths about prescription stimulant use (e.g., that it improves academic performance, is safe);
- Encourage social-emotional learning strategies;
- Offer methods to improve academic performance and healthy study habits, such as study tips and peer tutoring or academic studying programs; and
- Share evidence-based strategies that support healthy sleep.

## ***Educators Within Institutions of Higher Education***

In the college setting, prescription stimulant misuse prevention programming should be provided for all students and include components that address the following:

- Dangers of prescription stimulant misuse and consequences of diversion and misuse;
- Myths about prescription stimulant use (e.g., that it improves academic performance, it is safe); and
- Behaviors and subgroups at greater risk for misusing prescription stimulants.

Educators at the college level may also consider:

- Offering methods to improve academic performance and healthy study habits, such as study tips, peer tutoring, or programs to improve study skills;
- Sharing evidence-based strategies that support healthy sleep; and
- Ensuring appropriate academic and behavioral health resources are available for students who may be struggling with academics, the transition to college, depression or anxiety, homesickness, and social difficulties.

Higher education settings with health centers, other medical offices, and prescribers on staff should encourage these departments to adopt the prevention practices for prescribers described above.

## ***Tips and Action Steps for Parents***

Parents play a crucial role in preventing the misuse of prescription stimulants among youth and young adults. All parents should take the following steps to reduce the misuse of prescription stimulants:

- Familiarize yourself with the facts about prescription stimulants. Nearly one-third of parents falsely believe prescription stimulants can improve academic performance even if their child does not have ADHD;<sup>62</sup>
- Work to dispel myths that surround the use of prescription stimulants;
- Discuss the misuse of prescription drugs, including stimulants, with your child;
- Promote healthy study habits and provide encouragement on academic pursuits;
- Practice safe medication storage habits at home and teach your child about medication safety;<sup>63</sup> and
- Learn how to identify diversion and misuse.

Parents of youth and young adults who are being treated for ADHD with prescription stimulants can take the following steps to ensure that medications are used properly:

- Become familiar with the prescribed medication and potential interactions with other medications, and learn about the myths associated with prescription stimulant use;
- Discuss the use of the medication with your child and make sure they are aware of the medication's purpose, how to use it properly, and that it should not be shared with or taken by anyone else;



- Develop a treatment/medication plan with the prescriber that addresses home and school use. If recommended by the prescriber, consider including medication breaks or “holidays,” which is when your child pauses taking ADHD medication on the weekends, during school breaks, or on other days or time periods;<sup>64</sup>
- Maintain communications with the prescriber and report any side effects or adverse reactions to the medication;
- Make sure your child’s school (e.g., teacher, school nurse) is aware of the medication if it is not being taken while at school. Have teachers provide updates and observations about how your child seems to be doing on the medication that you can communicate with the prescriber; and
- Encourage a “team approach” to treatment that includes school staff, prescribers, and parents.

## Resources

Stimulant Prevention Resources	
<a href="#">Preventing Amphetamine-Type Stimulant Use Among Young People</a>	A policy and programming guide on preventing stimulant use among young people.
<a href="#">Prevention of Prescription Stimulant Misuse Among Youth</a>	A review of programs and strategies to prevent prescription stimulant misuse in youth and young adults.
<a href="#">Stimulant Medication Misuse Prevention: Peer Education Toolkit</a>	Programming guide to reduce the misuse of prescription stimulants on college campuses.
<a href="#">Stimulants: Recent Trends and Prevention Resources</a>	Summary of trends in prescription stimulant misuse and prevention resources.
<a href="#">Tips for Teens: Prescription Stimulants</a>	Fact sheet for teens that describes the short- and long-term effects of prescription stimulant use and dispels common myths.
<a href="#">Tips for Teens: Prescription Stimulants (Spanish Language)</a>	Fact sheet for teens in Spanish that describes the short- and long-term effects of prescription stimulant use and dispels common myths.
<a href="#">Tips for Teens: The Truth About Methamphetamine</a>	Fact sheet for teens that describes the short- and long-term effects of methamphetamine use and dispels common myths.
<a href="#">Tips for Teens: The Truth About Methamphetamine (Spanish Language)</a>	Fact sheet for teens in Spanish that describes the short- and long-term effects of methamphetamine use and dispels common myths.
<a href="#">Treatment of Stimulant Use Disorders</a>	Guide for supporting communities and providers in treating stimulant use disorders.
Prescription Medication Prevention Resources	
<a href="#">Preventing Prescription Drug Misuse: Overview of Factors and Strategies</a>	Decision support tools and strategies for preventing prescription drug misuse.
<a href="#">Preventing Prescription Drug Misuse: Understanding Who Is At Risk</a>	Individual, relationship, community, and societal-level factors that influence prescription drug misuse.
<a href="#">Preventing Prescription Drug Misuse: Data Resources</a>	Resources and programs for preventing prescription drug misuse.
<a href="#">Preventing the Non-Medical Use of Prescription Drugs in New England</a>	Recorded webinar that provides an overview of evidence-based strategies that address risk and protective factors associated with prescription drug misuse.
<a href="#">Prevention of Prescription Drug Misuse Among the Latino Community</a>	Recorded webinar describing how to use the Strategic Prevention Framework to develop and deliver bi-cultural prevention programming.
Broad Prevention Resources	
<a href="#">Prevention With a Purpose: A Strategic Planning Guide for Preventing Drug Misuse Among College Students</a>	A strategic planning guide highlighting key prevention steps and components.
<a href="#">Focus on Prevention</a>	Strategies and programs to prevent substance use.
<a href="#">Campus Drug Prevention</a>	Resources for institutions of higher education for preventing substance use among college and university students.
<a href="#">Preventing Polysubstance Use in Primary Care Settings</a>	Quick reference guide for clinicians on addressing and preventing polysubstance use in primary care settings
Other Relevant Resources	
<a href="#">AAP Guideline on Treatment of Children With ADHD</a>	Clinical practice guide on treating children with ADHD.
<a href="#">Your Guide to Healthy Sleep</a>	Recommendations for obtaining optimal sleep for performance.

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