Treatment for Stimulant Use Disorders

UPDATED 2021

33

SAMHSA

Rural Populations. . . . . .

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Foreword

The Substance Abuse and Mental Health Services Administration (SAMHSA) is the U.S. Department of Health and Human Services agency that leads public health efforts to reduce the impact of substance abuse and mental illness on America's communities. An important component of SAMHSA's work is focused on dissemination of evidence-based practices and providing training and technical assistance to healthcare practitioners on implementation of these best practices.

The Treatment Improvement Protocol (TIP) series contributes to SAMHSA's mission by providing science-based, best-practice guidance to the behavioral health eld. TIPs re ect careful consideration of all relevant clinical and health services research, demonstrated experience, and implementation requirements. Select nonfederal clinical researchers, service providers, program administrators, and patient advocates comprising each TIP's consensus panel discuss these factors, offering input on the TIP's speci c topics in their areas of expertise to reach consensus on best practices. Field reviewers then assess draft content and the TIP is nalized.

The talent, dedication, and hard work that TIP panelists and reviewers bring to this highly participatory process have helped bridge the gap between the promise of research and the needs of practicing clinicians and administrators to serve, in the most scienti cally sound and effective ways, people in need of care and treatment of mental and substance use disorders.

My sincere thanks to all who have contributed their time and expertise to the development of this TIP. It is my hope that clinicians will nd it useful and informative to their work.

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- Provides a more focused discussion of the neurobiology of stimulant use disorders than the original TIP's broad primer on the topic.
- Re ects updated empirical evidence that

Certain populations may be at an increased risk for stimulant use or, once they start using stimulants, may be at higher risk for negative outcomes (like contracting HIV). Such populations—including women, people living in rural areas, people of diverse racial/ethnic backgrounds, MSM, and people experiencing homelessness/housing instability—may bene t from targeted treatment engagement techniques, interventions, and monitoring approaches that are tailored to their unique needs and challenges.

Content Overview

This TIP is divided into seven chapters designed to thoroughly cover all relevant aspects of stimulant use disorders.

Chapter 1: Introduction

This chapter provides a broad introduction to stimulant use disorders and trends in stimulant use in the United States. The chapter also describes the goals and scope of the TIP as well as its intended audiences.

In Chapter 1, readers will learn about:

- Current rates of stimulant use disorders and overdose in the United States, including overdose involving the combination of stimulants with synthetic opioids (e.g., fentanyl) or semisynthetic opioids (e.g., heroin).
- Recent trends that are making stimulant use more lethal, such as the use of stimulants in combination with opioids or the increasing purity and decreasing price of cocaine and MA.
- The ongoing unmet treatment needs of people with stimulant use disorders, as well as the need for efforts to improve treatment retention.
- Rates of prescription stimulant misuse and how prescribers can help combat diversion.
- Legislation and regulations relevant to patients with stimulant use disorders and behavioral health and healthcare service providers who work with them.

Chapter 2: How Stimulants A ect the Brain and Behavior

This chapter reviews the ways in which brain structures, functions, and neurochemistry are altered in the presence of stimulants. The chapter also looks at the role of these alterations in the development and persistence of a stimulant use disorder.

In Chapter 2, readers will learn that:

- Neurological reinforcement systems (i.e., the reward system, the stress system) and other brain structures and mechanisms underlie the occurrence of stimulant use disorders and in uence key aspects of stimulant use disorders, like craving and memory dysfunction.
- Brain imaging technology has played an important role in helping researchers and clinicians understand the ways in which short- and long-term stimulant use can affect the brain.
- Stimulants alter the dopamine system in ways that can affect substance use. For instance, increased feelings of pleasure and euphoria when using a stimulant can reinforce its use.
- Providers should be aware of the speci c medical and psychological acute and chronic effects of each of the sSs shoe(e m in yptes of)]TJ T* stimul prescription stimulant medicptio,t sachats mthylpwheidRat (forADHDm.)Tj EMC /H4 <</MCID276 >>B eDisoerp

- Medical complications of stimulant use can be serious and in some cases life threatening; these complications include cardiovascular disease, respiratory effects, cerebrovascular dysfunction, muscular and renal toxicity, gastrointestinal complaints, infections (including HIV), and hepatitis.
- Psychological complications include psychosis, aggression, and violence.
- People with stimulant use disorders often grapple with co-occurring disorders and conditions that can complicate diagnosis, treatment, and recovery. These disorders and conditions are secondary substance use (especially co-occurring opioid use), speci c mental disorders (e.g., depression, anxiety, ADHD), medical conditions (e.g., dental problems, vein and nerve damage in the arm, cardiovascular disorders), and traumatic injury (e.g., due to violence/physical altercations).
- Patients' psychological reactions to stimulant use, like psychosis and violent behaviors, can also result in self-harm or harm to others if not managed properly.
- Coordinated care between medical and SUD treatment programs is a major aspect of properly identifying and treating co-occurring disorders and conditions of people with stimulant use disorders. Many patients will rst appear for treatment or services in non-SUD settings—mainly primary care clinics and emergency departments.

Chapter 4: Approaches to Treatment

This chapter describes the best supported nonpharmacologic approaches to helping patients begin and sustain recovery from stimulant use disorders.

In Chapter 4, readers will learn that:

- There are no FDA-approved medications for managing stimulant use disorders. This makes understanding available nonpharmacologic treatment options imperative.
- CM is by far the psychosocial treatment with the greatest scienti c support. In some studies, CM is even more effective when used in combination with other psychosocial treatments, like community reinforcement.
- After CM, the three other psychosocial interventions with the most support are CBT, community reinforcement, and MI.
- Other forms of psychosocial treatment with less but still some support are the Matrix model, behavioral family or couples therapy, and case management/coordinated care.
- There is growing evidence that physical exercise, mindfulness, and transmagnetic cranial stimulation also may help people with stimulant use disorders reduce their stimulant use or otherwise improve their health and well-being.
- Not all people with stimulant use disorders will be interested in formal SUD treatment. Offering harm reduction tools and strategies is critical because they can help people who continue to use stimulants stay alive. Harm reduction involves providing access to or information about:
  - Needle/syringe exchanges.
  - Fentanyl test strips (to determine whether drugs have been laced with fentanyl).
  - The opioid overdose reversal agent naloxone.
  - HIV prevention education.
- Rather than using a cookie-cutter approach to treatment selection (e.g., sending all patients to 60-day residential treatment), clinicians should consider each individual's unique SUD history and treatment needs and preferences. The American Society of Addiction Medicine's patient placement criteria can help guide the treatment selection process.

Chapter 5: Practical Application of Treatment Strategies

In Chapter 5, readers will learn that:

- People seek treatment for any number of reasons, and clinicians will better understand how to help their patients engage and stay in treatment if they know why their patients are entering treatment.
- Factors that can make treatment engagement more likely include:
  - Identifying barriers to treatment engagement.
  - Making treatment highly accessible.
  - Providing support for treatment participation.
  - Offering multiple treatment options.
  - Discussing with patients their expectations for treatment and any ambivalence they may have about treatment.
  - Working collaboratively with patients to develop a clear, exible treatment framework.
- Staff should be educated about how to provide person-centered, respectful, empathic services, which can help encourage patients to stay engaged in treatment.

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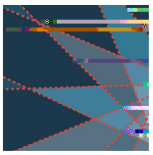


Chapter 1—Introduction

KEY MESSAGES

- Stimulant use disorders are a major public health concern in the United States, with more than 5 million people age 12 and older reporting past-year cocaine use, nearly 2 million reporting methamphetamine use, and almost 5 million reporting prescription stimulant misuse in 2019.
- Overdose deaths from stimulants have been increasing over the past 20 years, especially deaths attributable to stimulants taken with either synthetic opioids (e.g., fentanyl) or semisynthetic opioids (e.g., heroin). This underscores the importance of (1) having behavioral health and healthcare service providers understand and educate patients about the dangers of stimulant use disorders and (2) creating easy access to screening and treatment.
- Effective treatments for stimulant use disorders are available, but more behavioral health and healthcare service providers need to learn about these treatments and understand how and why to offer them to patients.

Chapter 1 of this Treatment Improvement Protocol (TIP) lays the groundwork for understanding the scope and effects of stimulant use disorders in the United States. The TIP generally uses the plural term “stimulant use disorders”—rather than the

Since the mid-1980s, there has been an explosion of knowledge about the effects of stimulants. Because these psychostimulants alter the functioning of the body and the brain, physicians and physician assistants, nurses and nurse practitioners, psychologists, social workers, licensed professional counselors, marriage and family counselors, SUD counselors, other behavioral health service providers, and peer recovery support specialists must understand the biologic aspects of stimulant use disorders. New areas of expertise include pharmacology, genomics, neurobiology, psychiatric and psychological manifestations, and treatment approaches for stimulant use disorders.

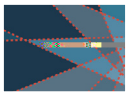
Stimulant use disorders do more than harm the people who have them. They can also negatively affect the lives of these individuals' family members, friends, neighbors, and coworkers. This wider effect makes it all the more important to help individuals with stimulant use disorders engage in SUD treatments and services.

This TIP presents current knowledge about the nature and treatment of stimulant use disorders. Because the Food and Drug Administration (FDA) has to date not approved any medications for stimulant use disorders, this TIP does not discuss pharmacology as a treatment strategy. The TIP is designed to provide scienti cally established information about the effects of stimulants in a manner that makes it available and relevant for frontline treatment providers. In addition, the document reviews what is known about treating the medical, psychiatric, and SUD problems associated with the use of cocaine and MA and misuse of prescription stimulants. The treatment section emphasizes those approaches that have empirical support.

Organization of the TIP

This TIP opens with a broad overview of the current state of stimulant use disorders in the United States (Chapter 1) and then moves into the neurobiologic aspects (Chapter 2), assessment and diagnosis (Chapter 2), and medical management (Chapter 3) of stimulant use disorders. Chapter 4 introduces readers to empirically supported nonpharmacologic treatments for stimulant use disorders, and Chapter 5 takes an indepth look at important clinical factors affecting the full continuum of care, including treatment initiation and abstinence maintenance. Chapter 6 discusses stimulant use among a range of special populations and speci c considerations to improve engagement and treatment for the described populations. Finally, Chapter 7 provides a compendium of resources, including links to online information and tools.

Exhibit 1.1 de nes important terms used in this publication. Also, note that the term "clinician" covers all healthcare providers and behavioral health service providers who work with people with stimulant use disorders and other SUDs. This could include psychologists, psychiatrists, national certi ed addiction counselors, licensed alcohol and drug counselors, marriage and family therapists, social workers, licensed professional counselors, physicians, nurses, and advanced practice healthcare providers (e.g., nurse practitioners, physician assistants). However, this term does not refer to peer recovery support specialists. Also, the TIP uses the term "patients" rather than "clients" or "consumers" to refer to people who are receiving any preventive services or care for stimulant use disorders or related conditions.



These patterns appear to be strongly driven by the increasingly popular trend of combining cocaine or MA with synthetic opioids (e.g., fentanyl) or nonsynthetic opioids (e.g., heroin). Most MA in the United States is cultivated and produced in Mexico, whereas Colombia is the United States' main supplier of cocaine (although the Mexico-Southwest border is the primary port of entry into the United States; Drug Enforcement Administration [DEA], 2019, 2021). Increasing amounts of the MA produced by Mexican cartels and transported into the United States now contain fentanyl in varying amounts. Much of the stimulant product sold on the street currently includes fentanyl.

Like MA, cocaine is increasingly being combined with fentanyl (or with both heroin and fentanyl, in what is known as a super speedball) to help offset the steep decline individuals experience when a cocaine "high" subsides (DEA, 2019, 2021). Most cocaine is adulterated with fentanyl at the "retail" level and not the "wholesale" level—that is, after it enters the United States (DEA, 2019, 2021).

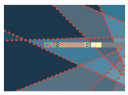
The connection of stimulant use to the opioid epidemic is very real and very dangerous:

- The State Unintentional Drug Overdose Reporting System found that, from January to June 2019, the most common stimulant in stimulant–opioid combinations leading to overdose death was cocaine (68.5% of cases), followed by MA (33.3%; O'Donnell et al., 2020).
- For both cocaine and MA, the number of overdose deaths also involving opioids has increased steadily since 2014. For cocaine, overdose deaths are primarily due to combinations with fentanyl or fentanyl analogs speci cally (NIDA, 2021a).
- Data from the National Vital Statistics System found the percentage of cocaine-related overdose deaths also involving any opioid increased from almost 30 percent in 2000 to 63 percent in 2015 (McCall Jones et al., 2017).

Price and purity have likely played a role in the changing statistics on U.S. stimulant use, overdose, and fatalities. In 2018, the average purity of wholesale cocaine bricks analyzed by DEA's Cocaine Signature Program was 85 percent (DEA, 2019). In the rst half of 2019, the average purity of MA was over 97 percent (DEA, 2021). From 2013 to 2017, the price of MA purchased in the United States decreased by more than 17 percent, from $68 to $56 per pure gram (DEA, 2019). Like MA, domestic purchases of cocaine also became less expensive from 2013 to 2017, falling from $213 to $153 per pure gram (DEA, 2019).

Also contributing to the increased lethality of MA is the shift toward production using phenyl-2-propanone as the chemical precursor to synthesis rather than ephedrine or pseudoephedrine. Using pseudoephedrine has been hindered somewhat by reduced access to sales of the over-the-counter product as a result of the Combat Methamphetamine Act of 2005 (see the text box "Legislative and Regulatory Milestones Since 2000"). The phenyl-2-propanone method bypasses the use of strictly controlled chemicals (i.e., ephedrine, pseudoephedrine) and yields a highly potent form of MA. More than 99 percent of MA samples analyzed in the rst half of 2019 by the DEA Methamphetamine Pro ling Program were manufactured using the phenyl-2-propanone method (DEA, 2021).

The breakdown of stimulant overdose patterns by race/ethnicity underscores differential effects among people of color. In 2019, the highest total number of psychostimulant-related deaths by race occurred among Whites (13,987), but the highest crude death rate by race was among American Indian/Alaska Native populations, at 8.1 deaths per 100,000 people (NCHS, 2020). (Crude death rates are a measure of the number of deaths within a given population during a speci ed period.) For cocaine, the highest crude death rate by race was among Blacks/African Americans, at 10.9 deaths per 100,000 people—more than twice that of the next-highest crude death rate (4.3 deaths per 100,000 Whites) and more than 4 times that of American Indian/Alaska Native populations (2.5 deaths per 100,000; NCHS, 2020).



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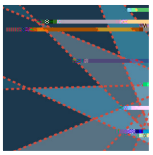


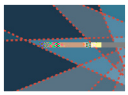
Chapter 2—How Stimulants A ect the Brain and Behavior

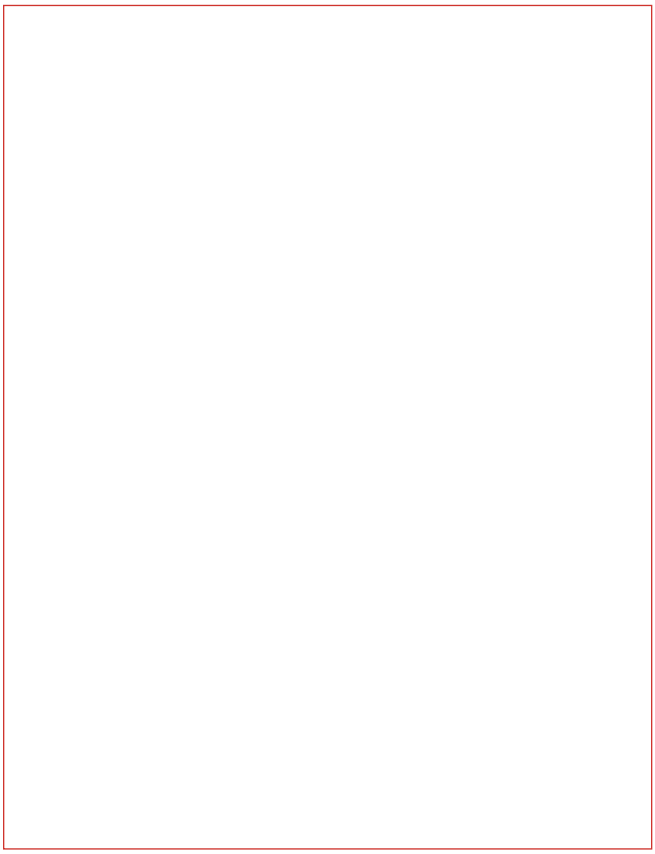
KEY MESSAGES

- A stimulant use disorder changes a person's brain in two major ways. One is neurotoxic (by affecting brain processes such as memory, learning, and other cognitive functions). The other way is by triggering the addiction process, such as by acting on the brain's reward system or through the development of craving. This information is critical for clinicians to understand because it explains the course of symptoms and recovery and underscores how dif cult it is to quit using/misusing substances without interventions.
- A host of harmful effects can occur from acute and chronic cocaine or methamphetamine use, with some evidence from human studies suggesting that long-term stimulant exposure can cause persistent damage to the brain.
- The neurobiology of stimulant use disorders underscores the biologic aspects of substance use disorders as a chronic, relapsing medical illness. Understanding the changes in the brain that occur as someone becomes addicted to stimulants, experiences withdrawal, or stops using stimulants can also help guide clinicians in their approaches to treatment as well as help them understand behaviors and moods that a patient may experience throughout recovery.

Over the past several decades, research on substances of misuse has vastly improved understanding of human behavior and physiology and the nature of substance use disorders (SUDs). Basic neurobiologic research has enhanced understanding of the biologic and genetic causes of SUDs. These discoveries have helped establish SUD as a biologic brain disease that is chronic and relapsing in nature (National Institute on Drug Abuse [NIDA], 2018c; Volkow et al., 2019). By mapping the neural pathways of pleasure and pain through the human brain, investigators are beginning to understand how psychoactive substances, including stimulants, interact with various cells and neurochemicals in the brain.

This new information has also improved understanding of appropriate treatment approaches for different SUDs. This chapter describes the effects that acute and chronic cocaine and methamphetamine (MA) use, and prescription stimulant misuse, have on a person's brain and behavior. The chapter also discusses how to assess for and diagnose stimulant use disorders. Knowledge of the neurobiologic effects of stimulants will give clinicians greater insight into people who use stimulants, how to detect a stimulant use disorder in an individual, and why the treatment approaches described in Chapter 4 are effective.





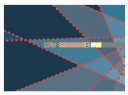
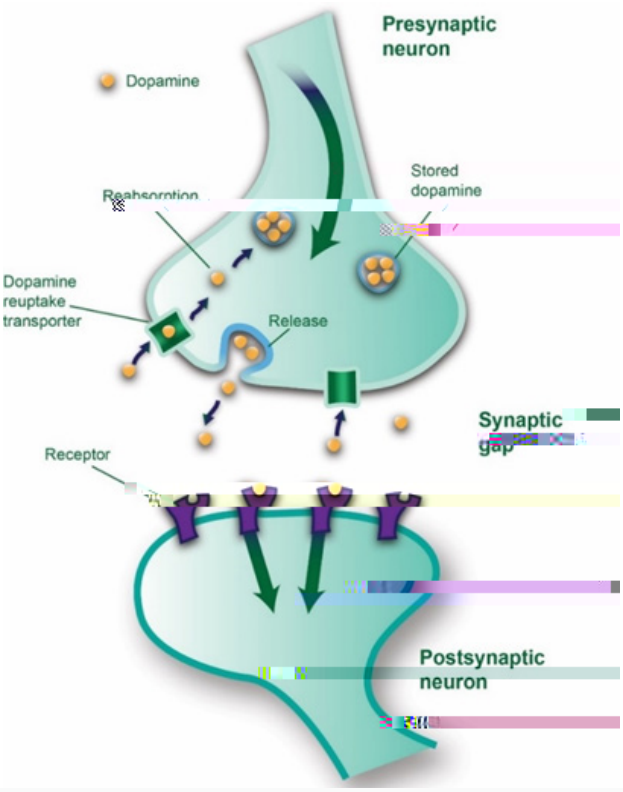


EXHIBIT 2.2. Normal Dopamine Transmission



As people experience negative withdrawal symptoms from not using a substance, their brain circuitry causes further dysregulation of executive function and other cognitive processes. This dysregulation creates negative effects in the absence of the substance, further driving the precontemplation/craving phase to reinforce the compulsive seeking and taking of the substance (Koob & Volkow, 2016).

Experimental evidence supports the theory that stimulants and other commonly misused substances imitate, facilitate, or block the neurotransmitters (especially dopamine) involved in brain reinforcement systems (Ashok et al., 2017; dela Peña et al., 2015; Nutt et al., 2015; Volkow et al., 2019). Negative reinforcement through overactivation of the stress system or the anti-reward system could also play a role in the perpetuation of chronic recurrent use to alleviate negative effects (Koob & Volkow, 2016).

Drug Craving and Memory

The degree to which learning and memory sustain the addictive process has also been addressed. Researchers believe that each time a neurotransmitter like dopamine oods across a synapse, circuits that trigger thoughts and memories and that motivate action become more strongly activated in the brain. Moreover, activation of the reward system creates a very powerful

people, objects, or places the individual is exposed to at the time; these people, objects, or places then can become cues for substance use (Of ce of the Surgeon General, 2016).

Craving, a central aspect of SUDs, is a very strong learned response with powerful motivational properties often associated with speci c memories (i.e., conditioned cues and triggers; Carmack et al., 2017). Cues—any stimuli (e.g., drug paraphernalia, moods, friends who use substances, locations associated with substance use) repeatedly paired with substance use over the course of a patient's SUD—can become so strongly associated with the substance's effects that the associated (conditioned) stimuli can later trigger arousal and an intense desire for the substance and lead to recurrent use (Carmack et al., 2017). High recurrence rates are common in people with stimulant use disorders even after treatment (Brecht & Herbeck, 2014).

Brain imaging studies have shown that cue-induced drug craving may be linked to distinct brain systems involved in memory (Moreno-Rius & Miquel, 2017; Perry et al., 2014). Brain structures involved in memory and learning, including the dorsolateral prefrontal cortex, amygdala, and cerebellum, have been linked to cue-induced craving (Moreno-Rius & Miquel, 2017; Sinha, 2013). A network of these brain regions integrates emotional and cognitive aspects of memory and triggers craving when it reacts to cues and memories. These cues and memories also play an important role in reinforcing substance use (Carmack et al., 2017). In contrast, negative experiences (e.g., violence, trauma, paranoia) that occur during acute intoxication do not seem to reinforce avoidance of intoxication.

Most SUD treatment approaches recognize the power of these factors in triggering recurrent use and warn patients to avoid everything previously associated with their substance use. Treatment approaches that address these learning and memory issues of SUDs may prove effective. For example, cue exposure therapy uses extinction (i.e., breaking the individual's association between the trigger or cue—like seeing drug paraphernalia—and the conditioned response—such as experiencing feelings of craving) to help decrease physiologic reactions to triggers and decrease cravings (Carmack et al., 2017; Torregrossa & Taylor, 2013).

Researchers have examined other methods of similarly reducing physiologic responses to triggers and thereby reducing craving, such as inhibiting memory reconsolidation (i.e., the process of stabilizing newly formed memories so they can be stored long term) and using pharmacologic agents (e.g., propranolol) to enhance the extinction process used in cue exposure therapy (Torregrossa & Taylor, 2013). People with SUDs may further bene t from cue exposure therapy that is combined with other psychosocial interventions, like cognitive therapy and motivational enhancement (Kaplan et al., 2011).

Role of Technologies

The development of noninvasive brain imaging (e.g., positron emission tomography [PET] scans) has created a powerful new tool for demonstrating not only the short-term effects of substance use but also the longer term consequences of chronic substance use and SUDs. These tools have allowed researchers to go where they previously could not—literally into a living human brain. However, this research is still maturing, and many questions remain about whether and how these technologies might inform clinicians' care of people with stimulant use disorders.

Such noninvasive techniques can depict higher or lower activity levels of different brain areas by measuring metabolic activity (e.g., glucose use; Fakhoury, 2014). They can identify substance-induced structural changes and physiologic adaptations (Fakhoury, 2014). Through a combination of techniques, researchers and clinicians can observe the altered processing of information in various circuits as the brain responds to substance use.

Using noninvasive imaging techniques, investigators have been able to identify brain structures involved in craving, map the emotions of people who use substances, and plot the neurobiologic basis of substance-induced euphoria. For example, researchers have used functional magnetic resonance imaging to predict substance use relapse and maintenance of abstinence (S. J. Moeller & Paulus, 2018). Additional neuroimaging studies have demonstrated signi cant changes in gray matter and in neurochemistry and have also predicted long-term effects of substance use and potential for recurrent use (S. J. Moeller & Paulus, 2018).

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The continuing development and application of new technologies such as noninvasive brain imaging will allow researchers to improve their understanding of how stimulants affect the human brain. Greater understanding of the underlying neuronal impairments of stimulant use will aid in the development of new and more effective treatment approaches.

Stimulant Use and the Brain

To better understand underlying drivers for substance use, it is important to learn the effects of any particular substance on a given person. For instance, someone with long-term stimulant use who is taking a stimulant and an opioid at the same time will be affected differently by that stimulant than someone taking a stimulant alone and for the rst time. How stimulants affect individuals (both universal effects as well as person-speci c effects) can provide helpful information to providers to assess, treat, and prevent recurrent use of the substance (Volkow et al., 2017).

Once a substance enters the bloodstream, it is transported throughout the body to various organs and organ systems, including the brain. To enter the brain, a substance's molecules must rst get through its chemical protection system, which consists mainly of the blood–brain barrier. Tight cell-wall junctions and a layer of cells around the blood vessels keep large or electrically charged molecules from entering the brain. However, small neutral molecules like those of cocaine and MA easily pass through the blood–brain barrier and enter the brain (Kousik et al., 2012; Turowski & Kenny, 2015). Once inside the brain, substances begin to exert psychoactive effects.

Stimulants' Mechanisms of Action

On a short-term basis, stimulants exert their effects by disrupting or modifying the normal communication that occurs among brain neurons and brain circuits. Cocaine and MA have both been shown to disrupt the dopamine neurotransmitter system—cocaine indirectly and MA both directly and indirectly (Ashok et al., 2017). Both cocaine and MA can inhibit the reuptake and release of dopamine by the presynaptic neuron, resulting in excess dopamine in the synaptic gap.

The two common forms of prescription stimulants—methylphenidate and amphetamine—affect the dopamine system differently, but, like cocaine and MA, both result in increased extracellular dopamine. Methylphenidate inhibits the reuptake of dopamine, as does amphetamine; but amphetamine also increases the amount of dopamine initially released into the synaptic gap (Yanofski, 2011).

Whereas the mechanism of action of prescription stimulants is not drastically different from that of cocaine and MA, differences in effects can occur based on who is taking the substance (e.g., someone with attention de cit hyperactivity disorder [ADHD] versus someone without it), the dose taken, and how it is administered. These differences in uence whether the prescription stimulant is a helpful therapy or a drug that can change the brain at the cellular and structural levels. Speci cally, if a person has ADHD and takes a prescription stimulant, the medication is provided at a dose that increases dopamine to a level that provides relief from ADHD. When taken as directed (i.e., orally at the prescribed dosage and according to schedule), it provides a constant blood level of the medication. People with ADHD will feel more focused and productive as a result. But when MA, cocaine, or prescription stimulants are injected or smoked (or, in the case of medications, taken in higher-than-prescribed amounts or taken by people without ADHD), they can lead to brain changes and stimulant use disorder.

The use of stimulants increases the amount of available dopamine in the brain (Paulus & Stewart, 2020). High levels of available dopamine in the brain generally enhance mood and increase body movement (i.e., motor activity) and motivation, but too much dopamine may produce symptoms that approximate positive symptoms of schizophrenia (e.g., delusions, hallucinations, paranoia; K(ougication.csi(wictiv 19p.

stimulant use, dopamine stores in the brain become temporarily depleted (Ashok et al., 2017), resulting in the depressive and exhaustive symptoms associated with stimulant withdrawal.

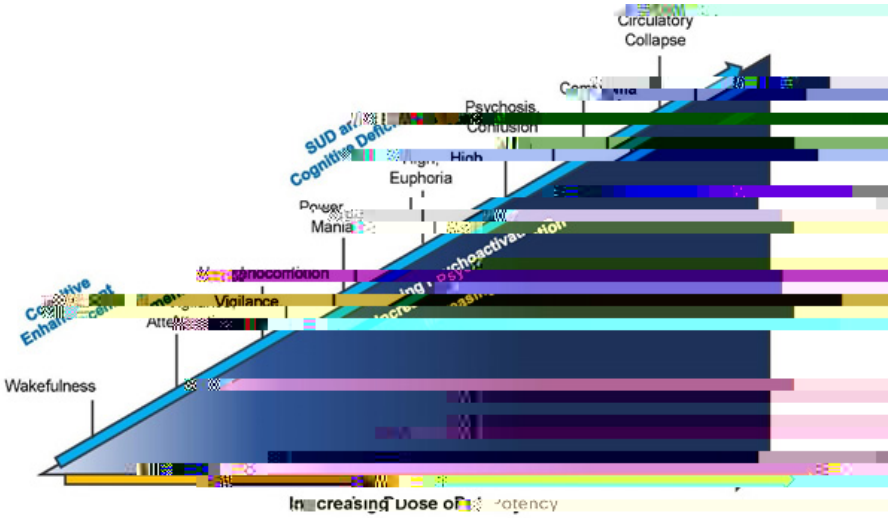
Although the neurochemical pathways of chronic stimulant use disorders are not de nitively established, a few researchers have found evidence of changes in the structure and function of brain neurons after chronic stimulant use in humans. Some researchers propose that the changes may come from dopamine depletion, changes in neurotransmitter receptors or other structures, or changes in cellular components or other brain messenger pathways that could cause the changes in mood, behavior (e.g., compulsivity, decision making), and cognitive function associated with chronic stimulant misuse (Ashok et al., 2017; Jan et al., 2012). (The medical aspects of stimulant use disorders are discussed in Chapter 3.)

General E ects of Stimulants

Stimulants affect the normal functioning of the dopamine neurotransmitter system (Volkow et al., 2019). Stimulants appear to increase the brain's levels of free dopamine (Ashok et al., 2017; dela Peña et al., 2015; MacNicol, 2017; Volkow et al., 2019). The higher the substance dose, the greater the individual's feelings of wakefulness, mania, and euphoria. As the dopamine levels and pleasurable feelings subside, the individual experiences an intense desire to replicate the feelings of pleasure by administering another dose of the substance. As with substance use generally, this tendency toward repeated administration is characteristic of stimulant use disorders and underlies most of the other effects of stimulants, as well as most other addictive substances.

Half-lives of stimulants vary by drug. Cocaine, being naturally derived, has a much shorter half-life (around 60 minutes), whereas MA, being synthetic, has a half-life of around 10 hours (Coe et al., 2018; Cruickshank & Dyer, 2009). The half-lives of prescription stimulants also vary by drug and by formulation (e.g., short-acting versus long-

EXHIBIT 2.3. Continuum of Psychostimulant Activation



Increasing cognitive activation as stimulant dose increases initially produces increased wakefulness and cognitive enhancement. These are the bene cial effects. As dose or potency increases, a sense of power and euphoria can ensue. These are the effects people with SUD seek. Such effects are accompanied by cognitive de cits. Higher doses can result in overdose, psychosis, coma, and eventual circulatory collapse

Source: Wood et al. (2014). Adapted with permission.

E ects of Combining Psychostimulants With Opioids

Psychostimulant-related overdose deaths involving opioids have been increasing over the past 20 years, with heroin and synthetic opioids (like fentanyl) largely accounting for psychostimulant-associated fatalities since 2010 (McCall Jones et al., 2017). Polysubstance use, speci cally the co-consumption of synthetic opioids and psychostimulants, like cocaine and MA, was largely responsible for the increases in cocaine- and MA-related overdose deaths observed from 2012 to 2017 (Kariisa et al., 2019).

Opioids can lead to potentially lethal respiratory depression. This is especially true of fentanyl and fentanyl analogs, which are rapid acting and are increasingly being taken in combination with cocaine or MA, by accident or on purpose (LaRue et al., 2019). Fentanyl can induce fatal respiratory depression in as little as 2 minutes (Kuczy =ska et al., 2018). Even if nonfatal, respiratory depression is dangerous and can lead to hypoxic brain injury (Kiyatkin, 2019). Because people naïve to opioids lack opioid tolerance, they may be at an increased risk of unintentional overdose when combining stimulants, like cocaine, with fentanyl or other synthetic and nonsynthetic opioids (LaRue et al., 2019).

E ects of Route of Administration

The ve most common routes of administering psychoactive (mood-changing) substances are:

- Oral consumption (i.e., swallowing, gumming [rubbing the substance on the gums]).
- Intranasal consumption (i.e., insuf ation).
- Inhalation into the lungs (i.e., smoking).
- Intravenously (i.e., injection).
- Vaginal or anal insertion.

Cocaine and MA can be smoked, snorted, injected, ingested orally, or absorbed intrarectally or intravaginally. Prescription stimulants can be taken orally or crushed and snorted. The route of administration affects the amount (i.e., the dosage) of stimulant delivered to the brain, the speed at which it is delivered, and the resulting intensity of the stimulant's effects—which in turn may affect the course of an SUD. Because a person's preferred route of administration affects the extent and depth of chronic effects, it has implications for treatment decisions (see Chapter 5). (For speci c information on drug use and peak effects, see Chapter 3, Exhibit 3.2.)

The long plateau effect and the much longer half-life of MA versus cocaine suggest considerable dangers in repeated use of MA (Cruickshank & Dyer, 2009). Because stimulants exert their effects in a dose-dependent manner, the route of administration has serious neurologic, physical, psychiatric, and neurocognitive implications for the person using the stimulant. Prolonged high doses of stimulants (e.g., during binges or chronic use) may cause greater and longer lasting neurologic damage, which in turn may lead to greater and longer lasting cognitive de cits.

The onset of stimulants' chronic effects varies across individuals, and although there are few data to predict how long it will take for any person to begin experiencing the chronic effects of stimulant use, onset is probably related to:

- The amount of stimulant used.
- The frequency of use.
- The route of administration.
- Signi cant medical comorbidities.
- Co-occurring mental disorders.
- Co-administration of other substances.
- The environment in which the substance is taken.
- Genetics and metabolic factors.

However, in general, higher, more frequent doses of stimulants used in combination with other substances result in more rapid transition to the effects of chronic stimulant exposure. (For a discussion of route-of-administration effects on toxicity and adverse reactions, see Chapter 3.)

Psychological and Neurocognitive E ects

The immediate psychological effects of stimulant administration include a heightened sense of well-being, euphoria, excitement, and alertness, and increases in motor activity, similar to what would be seen in a manic state. Stimulants also reduce appetite and may result in insomnia. Stimulants may also enhance focus and libido (Volkow et al., 2007).

High doses, particularly in the setting of sleep deprivation, may result in restlessness, agitation, and more profound psychiatric presentation, including altered perceptions of reality and hallucinations. Chronic psychological effects of stimulant use and withdrawal may include paranoia, psychosis, depression, and/or suicidal ideation.

Cocaine

Routes of Administration

Cocaine is most commonly taken by nasal insuf ation (snorting), intravenous injection, or inhalation of smoke vapors (smoking/inhalation). Less often, it is taken orally, vaginally, rectally, or sublingually. The half-life of cocaine is about 60 minutes (Coe et al., 2018) but can range from 40 to 90 minutes (ARUP Laboratories, 2019).

Pharmacology

Cocaine has two main pharmacologic actions. It is both a local anesthetic and a central nervous system (CNS) stimulant (NIDA, 2016a). Cocaine exerts its local anesthetic actions by blocking the conduction of sensory impulses within nerve cells. This effect is most pronounced when cocaine is applied to the skin or to mucous membranes. Cocaine has approved medical use as a local anesthetic in some surgery of the eye, ear, and throat (NIDA, 2016a).

effects including increased anxiety, irritability, paranoia, and restlessness (NIDA, 2016a). As cocaine use subsides, particularly among patients with a stimulant use disorder, withdrawal symptoms will be present, including depressive symptoms and mood lability (Ciccarone, 2011).

With continued escalating use of cocaine, the individual becomes progressively tolerant to the positive effects and sensitized to the negative effects, which can increase the risk of unintentional overdose (NIDA, 2016a). People report that the positive effects of cocaine use are not as profound and that the rebound negative and adverse effects may increase over time, leading to a dysphoric, depressed state. This constant cycle of seeking additional positive effects and eliminating negative effects may perpetuate the cocaine use disorder. (For details on the medical aspects of acute cocaine use, see Chapter 3.)

Chronic Physiologic E ects

Initial experimental cocaine use often progresses to more steady use, requiring larger and larger doses to achieve the desired effects (NIDA, 2016a). Someone with regular cocaine use may become obsessed with the rituals of cocaine use and nd that many common items or situations trigger cravings for the drug. Cocaine use disorder can develop, with overwhelming urges and cravings for cocaine, and an inability to self-limit or abstain from use.

The person addicted to cocaine will continue use despite the negative consequences. At this stage, the adverse consequences of cocaine use disorder have probably affected all aspects of the person's life.

There are no data that indicate how long it will take for any individual to begin to experience the chronic effects of cocaine use. Some individuals report an ability to use for extended periods with few signs of negative consequences. Others report a very dramatic onset of severe detrimental effects as soon as a few weeks or months after initiation of cocaine use. In general, however, similar to the effects of MA, the higher the doses and the more frequently the doses are administered, the more quickly the chronic effects of cocaine use will appear. In addition, intranasal administration (snorting) is associated with slower onset of chronic effects than is smoking cocaine (freebasing or smoking crack) or injecting it intravenously (Ciccarone, 2011).

Physically, the person with cocaine use disorder may appear thin or even emaciated. Personal hygiene and self-care may be neglected, and medical and dental needs may go unmet. Because cocaine suppresses appetite, the person fails to eat properly and may suffer from weight loss and nutritional de ciencies (Ciccarone, 2011). People with severe cocaine use disorder may ignore food, clothing, shelter, and sexual needs. Continued cocaine use can lead to erectile dysfunction and menstrual irregularities (Ciccarone, 2011), as well as anorexia, chest pain, and extreme fatigue.

Chronic Psychological E ects

Psychologically, cocaine's chronic effects oppose the often-desired initial effects. Chronic cocaine use increases paranoia and confusion (Ciccarone, 2011). The same substance that produced a mild sensation of arousal and decreased fatigue now causes insomnia and episodic depression.

Chronic use of cocaine may cause neuropsychological impairments (Quednow & Vonmoos, 2017; Spronk et al., 2013). Cocaine-induced cognitive de cits may affect multiple domains, but they appear to be reversible in patients with a mild or moderate cocaine use disorder within 1 year of cessation of use (Vonmoos et al., 2014).

The physical, psychological, and cognitive effects of chronic cocaine use re ect the underlying neurobiologic changes from cocaine's impact on the neurotransmitter dopamine. Spronk and colleagues (2013) found a strong association between the long-term use of cocaine and de ciencies in the following cognitive domains: attention, response inhibition (i.e., the ability to inhibit one's impulse to respond to a stimulus), working memory, cognitive exibility, and psychomotor performance.

Although clinicians may easily pick up on the extensive health-compromising effects of cocaine use when examining the behavioral and psychological pro le of patients entering SUD treatment, patients may need additional education to understand the correlation between their substance use and its negative health effects.

Methamphetamine

Routes of Administration

MA is typically taken orally, nasally (snorting/insuf ation), intravenously, or by inhaling smoke vapors (smoking/inhalation). Less often, MA is taken vaginally, rectally, or sublingually. The half-life of a single dose of MA is about 10 hours across routes of administration (Cruickshank & Dyer, 2009).

Pharmacology

The course of MA use disorder development is similar to that of cocaine use disorder. The underlying neurologic effects of MA are similar to the effects produced by cocaine: essentially, it increases levels of free dopamine in the brain's limbic reward system. (Exhibit 2.5 illustrates some of the acute effects of MA on dopamine transmission.)

Research has demonstrated that MA has neurotoxic effects, but the mechanism of action of neurotoxicity is still being studied, although it seems to be multifactorial. Oxidative stress, excitotoxicity, and neuroin ammation have all produced signals related to the neurotoxic effects of MA (Paulus & Stewart, 2020; Yang et al., 2018). Because MA crosses neuronal cell membranes and

History

An appropriate substance use history should include the substance(s) and medications used during the past 30 days; the speci c substance(s) or combinations typically used with the usual dose, frequency, and route of administration; the duration of use; and the time and amount of last use (Substance Abuse and Mental Health Services Administration [SAMHSA], 2020l). If the patient has been bingeing, a brief description of this and previous episodes is helpful. In addition, the history should include information about any previous seizures, delirium tremens, heart and pulmonary problems, paranoid reactions (with or without altered perceptions of reality and hallucinations), and other serious medical and psychological conditions and psychiatric diagnoses and if they occurred pre- or post-stimulant use, as well as all medications the patient is taking. Additionally, check to see if there are substance use or psychiatric problems within the person's family (SAMHSA, 2020l).

For most patients presenting in an emergency department, the substance use and medical history will, of necessity, be brief and focus on the potential causes for the observed symptoms and complaints and any potential medical or psychological problems that are likely to complicate treatment and the patient's response. Emergency department personnel should stabilize the patient medically and assess potential danger to self and others before trying to take a history. Patients in a heightened state of arousal and experiencing persecutory perceptions may not give an accurate accounting of their current and past substance use. Information from signi cant others or from a reliable source can help clarify the patient's history. In situations where the patient is delirious, psychotic, or unable to respond, information from accompanying friends or signi cant others about the antecedents of the problem is particularly important. Sometimes, the substance use history must await symptomatic management.

The history may be supplemented by a variety of SUD screening instruments, although these are not notably reliable if used with individuals who are intoxicated or acutely psychotic.

A number of these screening instruments are described in detail in Appendix B of SAMHSA's TIP 42, Substance Use Disorder Treatment for People With Co-Occurring Disorders (https://store.samhsa.gov/product/tip-42-substance-use-treatment-persons-co-occurring-disorders/)

Metabolites for some substances are detectable for days or weeks after last use but take some time after substance administration to be detectable in urine (K. E. Moeller et al., 2017).

MA can be detected in urine for approximately 48 hours following use, and cocaine metabolites may be detected for as long as 2 to 4 days following use (K. E. Moeller et al., 2017). Many prescription and over-the-counter medications (e.g., diet aids, cold remedies) contain phenylpropanolamine or ephedrine that may yield positive EMIT or radioimmunoassay tests for amphetamines. Certain agents (e.g., phenylpropanolamine, ephedrine) can produce cross-reactivity in amphetamine tests, causing immunoassays for the analysis of amphetamine-type substances to potentially produce false positives (K. E. Moeller et al., 2017). Urine screening tests are not con rmation of patient substance use but rather are one piece of information to help guide clinical decision making. Many substances may interact with an amphetamine screening test. For this reason, the preferred method for determination of stimulant substance use is con rmatory urine testing in the form of gas chromatography/mass spectrometry.

Physical Signs and Mental Status

Signs and symptoms of cocaine use can include extreme happiness or being very energetic; hypersensitivity to sight, sound, and touch; irritability; paranoia; and, in large amounts, bizarre and violent behavior (NIDA, 2016a). Signs of MA use can include increased attention, decreased fatigue, increased activity and wakefulness, decreased appetite, euphoric mood, (NIDA, 2019a) and, in large amounts, fever, sweating, tremors, a rapid heart rate, stroke, aggression, and paranoia (Radfar & Rawson, 2014). Increased sensitivity to noise, nervous physical activity like scratching, irritability, dizziness, confusion, extreme anorexia, convulsions, and blood pressure are also potential harmful effects of MA use (SAMHSA, 2018c). Prescription stimulant misuse can manifest as feelings of euphoria, but in large amounts can result in restlessness, tremors, overactive re exes, rapid breathing, confusion, aggression, hallucinations, panic, high fever, muscle pains, and weakness (NIDA, 2018b).

Data acquired from monitoring vital signs (temperature, blood pressure, pulse rate, respiration rate) can be used to document physical indicators of stimulant use. In addition, observations of physical manifestations related to acute or chronic stimulant use and to withdrawal can be documented. Similarly, a variety of instruments exists to determine mental status, although observational data regarding psychological and mental status may be adequate (see Appendix B of TIP 42, Substance Use Disorder Treatment for People With Co-Occurring Disorders at https://store.samhsa.gov/product/tip-42-substance-use-treatment-persons-co-occurring-disorders/PEP20-02-01-004. [SAMHSA, 2020l]).

ASSESSING FOR COGNITIVE DEFICITS

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toxicity may instead have a different cause. The cause of the symptoms or adverse events must be determined for optimal continuing care and medical management.

Before a differential diagnosis of a coexisting mental disorder can be made, the patient must be abstinent for at least 4 weeks following cessation of withdrawal or severe intoxication (APA, 2013). The presenting psychiatric syndrome and symptoms can be treated meanwhile, and a diagnosis of unspeci ed schizophrenia spectrum and other psychotic disorders can be given. More information regarding the diagnostic process for patients with symptoms that indicate coexisting substance use and mental disorders can be found in TIP 42, Substance Use Disorder Treatment for People With Co-Occurring Disorders (https://store.samhsa.gov/product/tip-42-substance-use-treatment-persons-co-occurring-disorders/PEP20-02-01-004).

New forms of brain imaging techniques could offer a promising approach for making certain differential diagnoses—for example, if current research determines that these techniques are useful for distinguishing among drug-induced and other forms of psychosis.

Summary

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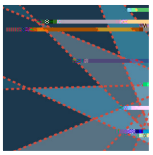


Chapter 3—Medical Aspects of Stimulant Use Disorders

KEY MESSAGES

- Healthcare service providers need to learn the medical signs, symptoms, and consequences of stimulant use to understand how best to medically manage patients with stimulant use disorders. Behavioral health service providers should also learn the medical aspects of stimulant use disorders so they can refer patients for medical intervention quickly and appropriately.
- The physical effects of stimulants will vary

EXHIBIT 3.1. Key Terms

Altered perception of reality: A phenomenon in which the way that an individual understands or interprets external stimuli or internal sensations is distorted. The term is used in Chapter 3 speci cally to refer to a delusion, which is a false belief based on an incorrect interpretation of reality, that is rmly

Continued

Psychosis: A group of symptoms de ned by diminished contact with reality. Individuals with psychosis can have positive symptoms characterized by odd or unusual thoughts, feelings, or behaviors, including the presence of hallucinations, altered perceptions of reality, and disorganized thoughts, speech, and behaviors. Alternatively, an individual with psychosis may experience negative symptoms de ned by an absence or loss of normal behaviors and experiences, including impaired emotional responsiveness, poverty of speech, reduced motivation to complete tasks, eteasued anatih10 (y)34 (., 0376at aff9 (ed)-6 (t)1-99 (o an)-2 (d bsocil with -2 (d r9 (e)10 (vw16 (atl

Toxicity, Addiction, and Other Adverse Reactions

Cocaine use impairs central and peripheral nervous system presynaptic nerve uptake of catecholamines, which increases catecholamine circulation (Bachi et al., 2017) and leads to impairment in the regulation of dopaminergic systems (Verma, 2015). The increased availability of extracellular dopamine as a result of cocaine exposure in the brain's reward centers is hypothesized to at least partially account for the drug's strong addiction potential and euphoric effects (Verma, 2015). This pattern is also seen in MA use, as MA both blocks dopamine reuptake and increases dopamine release (National Institute on Drug Abuse [NIDA], 2019b). Meta-analyses indicate a larger and more consistent dysregulation of dopaminergic systems with MA exposure than with cocaine (Ashok et al., 2017). The two common forms of prescription stimulants—methylphenidate and amphetamine—affect the dopamine system differently, but, like cocaine and MA, both increase extracellular dopamine. Methylphenidate primarily inhibits the reuptake of dopamine, whereas amphetamine both inhibits dopamine reuptake and also increases the amount of dopamine in the synapse (Yanofski, 2011).

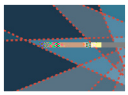
The precise clinical effects of cocaine, MA, and prescription stimulants depend on a complex mixture of the pharmacologic properties and purity of the drug used; the dose, frequency of use, and route of drug administration; the person's state of intoxication or withdrawal and previous experience with the drug; the context in which the drug is used; and other concomitant medical and psychiatric factors, including simultaneous use of other substances, as well as personality attributes and expectations regarding drug reactions. All of these factors not only mediate drug effects, but also in uence the person's susceptibility to an SUD and are an important part of screening and history taking (American Society of Addiction Medicine, 2015a).

Route of Administration

The method by which stimulants are taken—the route of administration—determines the dosage and the rapidity and intensity of effects. Route of administration also affects the potential for adverse reactions and the likelihood of developing an SUD. The principal routes for cocaine and MA use are oral ingestion, nasal insuf ation (snorting), intravenous injection, and inhalation of smoke vapors (smoking/inhalation). These stimulants can also be taken vaginally, rectally, or sublingually. When taken as prescribed, prescription stimulants are taken orally. But when misused, they can be taken orally or by snorting, smoking, or injecting.

In general, smoking and intravenous use rapidly evoke similarly intense responses, whereas oral ingestion and intranasal administration are slower delivery mechanisms, causing lower and more gradually rising blood levels and less intense subjective responses. The fact that cocaine is seldom taken orally may be attributed to the reduced systemic bioavailability with this route of administration (Coe et al., 2018).

Smoking crack cocaine rapidly delivers a highly concentrated dose to the brain. As the ef ciency of the delivery system increases, so does the intensity of both the pleasurable and the adverse effects. Subjective reports from people who smoke cocaine suggest that this route of administration delivers a more intense experience than do the intranasal or intravenous routes (Kiluk et al., 2013). Exhibit 3.2 depicts these general variations in response times according to the different routes of administration for cocaine, MA, and prescription stimulants.



The plasma concentration levels of cocaine peak and decline rapidly, with a half-life of about 60 minutes (Coe et al., 2018). MA plasma concentration levels also peak rapidly but remain high for much longer, with a half-life of about 10 hours across routes of administration (Cruickshank & Dyer, 2009). Typically, the half-life of cocaine is about 60 minutes but can range from 40 to 90 minutes (ARUP Laboratories, 2019). The plasma concentration levels from smoked cocaine both peak and decline rapidly, whereas those from smoked MA also peak relatively rapidly but decline more slowly because metabolism takes longer. Regular repeated use may be more common among people who use cocaine in an attempt to sustain the drug's effects.

The half-lives and peak plasma concentrations of prescription stimulants vary by type (e.g., amphetamine and methylphenidate), brand, and formulation (e.g., short acting and long acting). Time to peak concentration for short-acting formulations of amphetamine ranges from about 2 to 3 hours; for long-acting formulations, it ranges from about 4 to 8 hours (Markowitz & Patrick, 2017). Time to peak concentration for methylphenidate is about 1 to 2 hours for short-acting formulations and about 3 to 6 hours for long-acting formulations (Mariotti et al., 2013). The misuse of long-acting methylphenidate by

- Postacute withdrawal or "the wall." This period is characterized by a profound hypersomnolence, fatigue, mood lability, and increased appetite. People sometimes continue to have cravings during the postacute withdrawal period and return to recurrent use or a repeat binge during this period. The period of postacute withdrawal may extend to 2 weeks or more after the patient's last use. During the immediate period after the initiation of abstinence, after psychosis subsides, patients often report anxiety or worry about painful memories lingering from the binge, and confusion about which are real and which are imagined. These disturbing events, whether real or imagined, can be traumatizing. Criminal or abusive behaviors that occur during acute intoxication, either real or imagined, can lead to feelings of remorse or dread and can contribute to impulsive self-harm behaviors.
- Protracted withdrawal. Following acute withdrawal, the person may experience symptoms that are opposite to those of stimulant intoxication: fatigue, loss of physical and mental energy, depression, anhedonia, and a limited interest in his or her surroundings (Lerner & Klein, 2019). Severity and duration of protracted withdrawal symptoms is often correlated with the duration and severity of stimulant use. As in previous phases of withdrawal, a severe and persisting depression in this phase can result in suicidal ideation or suicide attempts and is a major concern. Anhedonia and dysphoria can last for months in people who use MA (D. Hunt et al., 2006; Rawson, 2013). In the protracted withdrawal phase, periods of drug craving may reemerge or become stronger. These cravings are often triggered by conditioned environmental cues and can only be extinguished by sustained abstinence. Patients may also experience breakthrough psychotic episodes during the protracted withdrawal phase.
- The post-crash euphoric phase or "the pink cloud." During the stage sometimes termed "the pink cloud," patients enter a euphoric state. This often occurs around the 1-month mark following withdrawal and completion of detoxi cation, when the brain is overproducing dopamine. Patients may express a sense of positivity and self-con dence ("I am never going to use drugs again!"). However, this period quickly subsides as the brain begins to underproduce dopamine, and patients typically fall into a depression at the 3- to 6-month mark, when they have a high likelihood of return to use.

Tolerance/Sensitization to Stimulant E ects

People with chronic stimulant use develop tolerance to many of the initial effects, often after only a few weeks of drug use. This means that a higher dose is required to achieve the same effects, or markedly diminished effects are attained if the same dose is continued (APA, 2013). (Note that this is not true of prescription stimulants when taken as prescribed.) Most notably, tolerance develops rapidly to the euphoric effects of stimulants and is the ostensible cause for most dose escalation by people who use stimulants, although dose increases may also stem from a desire to experience more intense effects. Tolerance also develops to the anorectic (appetite-reducing) effects of MA in humans because weight loss stops after several weeks. Tolerance also appears to develop to the cardiotoxic effects of large doses of MA that many people survive. In fact, many of the initial symptoms of stimulant intoxication disappear with chronic use: Blood pressure may be normal, and nausea and vomiting are seldom seen. This tolerance is not the result of increased MA metabolism (Cruickshank & Dyer, 2009).

Interestingly, people with chronic, high-dose stimulant use may also become sensitized to the drug, a unique phenomenon characteristic of psychomotor stimulants. Sensitization is essentially the reverse of tolerance and produces undesirable effects with lower doses of the drug than were required to yield these same reactions in an earlier phase of the addiction process. There appears to be some sensitization to the psychosis-inducing effects of stimulants in humans. After one psychotic episode is experienced following chronic, high-dose use, a lower minimal dose of cocaine or MA may induce another psychotic episode, with more rapid onset following drug intake and a longer duration than the initial psychosis. The sensitization process in stimulant use disorder is elaborated on in the "Stimulant-Induced Psychosis" section in this chapter.

Some researchers suggest that long-term use of stimulant medication may lead to tolerance in some patients and thus the need for patients with ADHD to increase their dosages over time; but it is unclear whether this tolerance and resulting need for more medication occur because of the chemical properties of the medication itself or because of other factors (Yanofski, 2011).

Manifestations of Stimulant Withdrawal/ Abstinence

A characteristic withdrawal syndrome usually develops within hours to days after cessation of prolonged and heavy stimulant use. The symptoms can follow long-term use or much shorter binges (Exhibit 3.5).

Some clinicians distinguish between stimulant withdrawal symptoms following a several-day binge and complaints that characterize withdrawal after more chronic high-dose use. People who use stimulants who have binged for 2 to 3 days are dysphoric and exhausted, and they sleep excessively for 24 to 48 hours. To reduce irritability and induce sleep, people may commonly use alcohol, cannabis, benzodiazepines, or opioids with cocaine or MA (often called “landing gear”). Following more chronic and regular stimulant use, severe withdrawal symptoms last several days, with less severe symptoms (e.g., fatigue, depressed mood, anxiety, drug craving, concentration dif culties) lasting 1 to 3 weeks (UNODC, 2019b).

A substantial number of people with chronic cocaine use may have subclinical evidence of withdrawal symptoms. Some people who use cocaine report withdrawal symptoms beginning 1 to 2 days after the last dose, with the crash lasting several days and withdrawal persisting from 1 to 2 weeks, with waxing and waning of the drug craving, although protracted withdrawal may last longer (Lerner & Klein, 2019). The mood state of the person may return to normal after several days to a month.

For MA, withdrawal symptoms seem to be most severe in the initial days following cessation of use (UNODC, 2019b). There may be some physical manifestations of a withdrawal syndrome when MA use is stopped (e.g., headache, increased or pounding heartrate, sweating, muscle or joint aches; Zorick et al., 2010). Symptoms begin 2 to 4 days after a person stops use and may persist for 2 to 4 weeks (Lerner & Klein, 2019). The patient initially feels depressed and anxious, with an intense craving for MA. This phase is followed by fatigue and sleepiness, possibly mixed with insomnia. Upon awakening after prolonged sleep, the patient may be very hungry and may have persistent anhedonia and dysphoria. Other symptoms include paranoia and agitation (Lerner & Klein, 2019).

Withdrawal from MA can mimic symptoms of depression, which complicates differentiating withdrawal from an independent depressive disorder (Hellem, Lundberg, & Renshaw, 2015).

Research on withdrawal from prescription stimulants is mostly concentrated on adults and suggests that vomiting, headache/migraine, and light sensitivity can occur with abrupt discontinuation or dose reduction

EXHIBIT 3.5. Common Signs and Symptoms of Stimulant Withdrawal/ Abstinence Syndrome

PHYSIOLOGIC	PSYCHOLOGICAL BEHAVIORAL
• Weight gain	•
•	•
•	•
•	•
•	•
•	•
•	•
•	

(Krakowski & Ickowicz, 2018). Other withdrawal symptoms in adults include depression, fatigue, appetite change, and sleep disturbance (Krakowski & Ickowicz, 2018). Symptoms of withdrawal in children are based mostly on case studies and can include symptoms like headache, depression, and a general feeling of malaise (Krakowski & Ickowicz, 2018).

Management of Stimulant Withdrawal

No consistent physiologic disruptions requiring gradual withdrawal have been observed, but some medications may attenuate symptoms and provide support and comfort throughout withdrawal.

The greatest risk during stimulant withdrawal is of doing harm to self. Because withdrawal-related dysphoria and depression can be particularly severe in people using stimulants, risk of suicide is intensi ed and sensitive management is essential (Lerner & Klein, 2019). Cocaine-induced depression usually dissipates fairly rapidly—in a matter of hours to days. The depression is agitated and often related to actual situations resulting from drug use (e.g., a patient is disturbed that he has spent all his savings on the cocaine binge or that his continuing SUD jeopardizes his interpersonal relationships).

Withdrawal-associated depression/suicidality following high-dose MA use is more prolonged. During the acute phase of withdrawal, the person using high-dose MA may exhibit agitated paranoia, extreme frustration, and the return of intense drug cravings. Suicidal ideation may be high. People in MA withdrawal have been known to become violent if they perceive that they are being persecuted.

Altered perceptions of reality after acute intoxication, particularly in a binge pattern of use, may result in patients perceiving caretakers' gestures and comments as persecutory. Stress reduction techniques and other approaches to prevent harm should be used; medical personnel can also use benzodiazepines (e.g., diazepam) to control agitation and tachycardia (see the section "Aggression and Violence" in this chapter).

For patients with preexisting diagnosed or

drug cravings and intensify a vulnerability for recurrent use. These dreams may be especially common in patients who have high ratings of drug craving and suicidality (Yee et al., 2004).

People who use stimulants will frequently self-medicate withdrawal symptoms with alcohol, benzodiazepines, or opioids. Patients may experience symptoms of withdrawal from these other substances if such use was regular or at high doses. These withdrawal symptoms require speci c management and may potentially require a medication titration schedule to alleviate symptoms and prevent an acute medical event.

Withdrawal from prescription stimulants can also occur and result in fatigue, depressed mood, and sleep dif culties (NIDA, 2018b). Amphetamine withdrawal is associated with depression, fatigue, sleep problems, agitation, irritability, and concentration dif culties (Harro, 2015). There is limited research on methylphenidate withdrawal, but Food and Drug Administration (FDA)-approved labeling suggests withdrawal can include depressed mood, fatigue, vivid and unpleasant dreams, insomnia, hypersomnia, increased appetite, psychomotor retardation, or psychomotor agitation (see, for example, Novartis Pharmaceuticals, 2019).

SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT FOR SUDS: WHAT PRIMARY CARE PROVIDERS NEED TO KNOW

Screening, brief intervention, and referral to treatment (SBIRT) is a highly studied, widely used approach to ensure access to comprehensive care that has demonstrated effectiveness in identifying and treating SUDs (e.g., alcohol use disorder, tobacco use disorder) as well as depression and anxiety (Hargraves et al., 2017). Primary care providers need to be aware of SBIRT and how to implement it in their service settings, because people with stimulant use disorders and other SUDs often rst present in primary care settings rather than SUD specialty treatment settings. Also, research suggests that primary care providers do not recognize and treat (or offer referral for) SUDs as often as needed (Pace & Uebelacker, 2018). Using SBIRT can help close these practice gaps.

SBIRT for SUDs involves (Hargraves et al., 2017; Pace & Uebelacker, 2018):

- Quick universal screening (using validated measures, such as the NIDA Modi ed Alcohol, Smoking, and Substance Involvement Screening Test) to determine SUD presence. Quick screening often includes items to help assess level of risk (i.e., low, moderate, or severe) for patients who screen positive; answers to these items help determine treatment or service needs.
- A brief motivational intervention that educates patients about substance use and prescription stimulant misuse and helps increase their motivation for behavior change.
- Referral to treatment and service providers for individuals who need specialty services, a higher level of care, or both.

Best practices for primary care providers and clinics wanting to implement SBIRT for SUDs include the following (Hargraves et al., 2017; Pace & Uebelacker, 2018):

- Identify a practice champion or team lead to promote staff buy-in and increase accountability.
- Use a multidisciplinary team of professionals and nonprofessionals, such as administrative staff and information technology experts.
- Determine a screening strategy, such as which SUD screening measures will be used, who will administer them, and how the team will follow up on positive and negative screens. Nursing and intake staff can administer basic screening tools, saving time during the clinical encounter.
- Make sure the team understands the SBIRT components and their individual roles in making SBIRT a success.

Continued on next page

- Cultivate close relationships with referral partners and maintain lines of communication when patients are referred.
- Lay out a process for the brief intervention, such as identifying which team members will conduct the intervention and what key information needs to be conveyed to patients in the short amount of time allotted.
- Implement ongoing SBIRT training so all team members can stay up to date on policies and procedures. This includes providing staff education to reduce stigma associated with drug and alcohol addiction and to help the team understand the scienti c evidence in support of SBIRT.
- Make sure SBIRT ts into the natural work ow of the of ce, and use visual diagrams to ensure that staff understand how and where each step of SBIRT is to take place.
- Leverage electronic health records to enhance the effectiveness of SBIRT; this will help ensure that appointments, billing, screening (e.g., reminders, ags for positive screens), and interventions are implemented, tracked, and monitored. Digital technology, such as tablets and mobile phones, can be used for screening before an appointment or while in the waiting room (Ramsey et al., 2019).
- Implement performance management tools and strategies to identify performance goals and benchmarks, barriers to implementation and positive outcomes, and potential solutions to these barriers. These efforts help organizations ensure continuous quality improvement.

Manifestations of Chronic Stimulant Use

Although fatalities from stimulant overdose or acute myocardial infarction following administration of cocaine by inexperienced people have been documented, and other medical and psychiatric complications have been observed at all dose levels and routes of administration among naïve individuals (i.e., people who previously have not been exposed to the drug), most serious stimulant-induced medical and psychological complications follow chronic, high-dose use. Potentially serious manifestations of chronic stimulant use may also be somewhat sensitive to the environment in which the person resides.

Long-term use can lead to stimulant use disorder, tolerance, and, upon cessation of use, withdrawal (UNODC, 2019b). This is also true for prescription stimulants, which are Schedule IIN drugs (DEA, Diversion Control Division, n.d.). A wide range of psychological and medical issues can arise with chronic stimulant exposure, from psychosis to depressive and anxiety disorders to numerous (potentially life-threatening) cardiovascular and respiratory complications (Petit et al., 2012; UNODC, 2019b).

Although the medical consequences of chronic MA and cocaine use differ somewhat, the incidence of

EXHIBIT 3.6. Common Symptoms of Chronic Stimulant Use or Prescription Stimulant Misuse

PHYSIOLOGIC	PSYCHOLOGICAL BEHA VIORAL
• Extreme fatigue—with physical exhaustion and disrupted sleep patterns • Nutritional disorders—extreme weight loss, anemia, anorexia, cachexia (body wasting) • Poor hygiene and self-care • Skin disorders and secondary skin infections—itching, lesions, hives, urticaria • Hair loss • Muscle pain/tenderness—may indicate rhabdomyolysis • Cardiovascular damage—from lethal doses of the drug and contaminants in MA production, with concomitant renal and hepatic problems • Hypertensive crises with renal damage from sustained hypertension • Dif culty breathing—may re ect pulmonary edema, pneumonitis, obstructive airway disease, barotrauma, and other complications • Myocarditis, infarcts • Headaches, strokes, seizures, vision loss • Choreoathetoid disorders • Impaired sexual performance and reproductive functioning • Cerebrovascular changes, including evidence of cerebral hemorrhages and atrophy with associated cognitive de cits •	• Paranoia with misinterpretation of environmental cues, psychosis with altered perceptions of reality, and hallucinations • Apprehension—with hopelessness and a fear of impending doom that resembles panic attacks • Depression—with suicidal thinking and behavior • Acute anxiety • Eating disorders • Mental exhaustion

Identi cation and Management of Medical Complications

The following sections brie y describe signs and symptoms of and treatments for common medical complications of stimulant use and prescription stimulant misuse. Certain populations of people with stimulant use disorders may be more likely than others to exhibit some of the medical complications described below (e.g., pregnant women exhibiting issues related to reproduction, pregnancy, childbirth, and the health of the fetus/newborn). Readers are encouraged to reference Chapter 6 for more detailed information about these special populations (i.e., people who engage in intravenous drug use, men who have sex with men, members of the transgender and gender nonconforming community, people in opioid treatment programs, individuals with co-occurring mental illness, people with medical illnesses [e.g., HIV, tuberculosis], people involved with the criminal justice system, racial/ethnic minorities, rural populations, women [including those who are pregnant], adolescents, and people experiencing homelessness/unstable housing) and consider their possible medical complications or other medical effects when developing patient-centered case conceptualizations and treatment plans.

Cardiovascular E ects

Cardiovascular complications are a leading cause of death among people who use MA. Hypertension, aortic dissection, acute coronary syndromes, pulmonary hypertension, and cardiomyopathy (heart muscle dysfunction) are frequently observed (Paratz et al., 2016; Paulus & Stewart, 2020). MA use damages the cardiovascular system via multiple mechanisms, including triggering surges in catecholamine (e.g., dopamine, norepinephrine) release, which cause vasoconstriction; direct toxicity to cardiac and vascular tissue; and in ammation of tissue and vessels (Kevil et al., 2019; Paratz et al., 2016). Hypertension and tachycardia are common and largely attributable to acute catecholamine release (Richards & Laurin, 2020). Vasoconstriction also triggered by catecholamine release can cause acute coronary syndromes and stroke. Damage to cardiac and vascular tissue, such as the endothelial cells, by molecular mechanisms triggered by MA causes aortic dissection, dilated cardiomyopathy, arrythmia, and pulmonary hypertension (Kevil et al., 2019). In ammation triggered by MA contributes to functional and structural changes in the cardiovascular system, such as brosis and atherosclerotic plaque formation (Kevil at al., 2019; Paulus & Stewart, 2020).

Cocaine has been linked with many forms of heart disease, including different forms of arrhythmias, hypertension, coronary vasospasm, arteriosclerosis, myocardial infarction, hypertrophic cardiomyopathy, and sudden cardiac death (Kim & Park, 2019). Arteriosclerosis is seen in younger-age individuals who take cocaine, as well as in individuals with co-occurring cardiovascular risk factors (Kim & Park, 2019). Myocardial infarction can occur with both low-dose and high-dose cocaine use (Kim & Park, 2019). Studies on the association between cocaine use and cardiovascular mortality have produced con icting results (Kim & Park, 2019). This may be due to variations in populations, as well as to study design issues, such as how studies control for other risk factors known to affect cardiovascular mortality, like cigarette smoking and depression. Some research suggests that individual factors may play a strong role in whether a person using cocaine experiences cardiovascular consequences (Kim & Park, 2019).

Life-threatening acute conditions like myocardial infarction and aortic dissection require emergency response to stabilize the patient. Treatment for these and other cardiac conditions, such as heart failure and stroke, should follow consensus-based guidelines from experts in cardiology (Havakuk et al., 2017). Sedation through benzodiazepines is a recommended treatment for cardiotoxicity and agitation (Richards & Le, 2020).

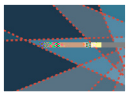
Prescription stimulants have been associated with increased resting heart rate and blood pressure (Torres-Acosta, 2020). In children and adolescents speci cally, prescription amphetamine has been linked to increased diastolic and systolic blood pressure and heart rate, whereas methylphenidate in this population has been linked to increased systolic blood pressure (Hennissen et al., 2017). In some cases, prescription stimulants have

also been associated with cardiac arrhythmias, cardiomyopathy, and sudden death (Torres-Acosta, 2020). Adults with long-term use of prescription stimulants have increased risk of transient ischemic attack and sudden death due to ventricular arrhythmia, but children or adolescents with chronic use have not been observed to have increased risk (Westover & Halm, 2012).

Pulmonary E ects

Shortness of breath and chest pain can be either cardiac or pulmonary in origin. Wheezing, coughing, dark or discolored sputum, and hemoptysis (coughing up blood) can be symptoms of acute or chronic lung injury due to cocaine or MA use (Akwe, 2017; McCarthy & McClaine, 2019).

Barotrauma is a complication of cocaine use and also occurs with MA (Guck & Munyon, 2018; Restrepo et al., 2007). Barotrauma is caused by spasmodic or violent coughing



use has been linked to increased occurrence of hemorrhagic stroke in people younger than age 45 (Lappin et al., 2017). Damage to the heart can cause inadequate perfusion of the brain, resulting in hypoxic brain injury and subsequent edema, which can also cause lasting impairment after resolution of the acute injury (Ciccarone, 2011). Headache associated with cocaine use is also triggered by vasoconstriction or in ammation of cerebral vasculature (Farooque et al., 2020).

Seizures are a well-known complication of stimulant use (Klega & Keehbauch, 2018) triggered by neuroexcitation. Seizures triggered by cocaine tend to be short tonic-clonic events that stop without intervention and have no residual effects, but repeat seizures are typically managed with intravenous benzodiazepines. Seizures that don’t stop on their own should be managed according

Although amphetamine-type substances have been hypothesized to increase the risk of stroke, a literature review of stroke incidence associated with prescription stimulant use found very little research on the subject and noted the need for additional, more robust research (Indave et al., 2018). Additionally, some studies have indicated long-term use of prescription stimulants might increase the risk of transient ischemic attack, but, again, more research is needed to reach rm conclusions (Westover & Halm, 2012).

For patients engaging in vaginal or anal consumption of stimulants, there is an elevated risk for toxicity and in some cases overdose or death (P. Jones et al., 2014). Patients using MA intravaginally or intrarectally should be educated on safety procedures to avoid tearing of rectal or vaginal tissues that may result in ssure or other microscopic tearing. Dissolution of the crystalline substrate is imperative to reduce the risk of microtears and associated acquisition of sexually transmitted infections.

Hepatotoxicity is a rare side effect of methylphenidate, but liver values should still be monitored throughout treatment (Tong et al., 2015). A review of the literature reveals few cases of methylphenidate-induced liver damage, and cases that do exist were generally mild in severity and resolved with discontinuation of methylphenidate (Tong et al., 2015).

E ects on Reproductive Function and on Fetus/Newborn

Chronic, high-dose stimulant use can affect reproductive and sexual functioning in both males and females. Men report gynecomastia (development of breasts), loss of sexual interest, impotence, and dif culty in maintaining an erection or ejaculating (Del Río et al., 2015; Longheu et al., 2016). Long-term stimulant use can lead to menstrual cycle irregularity (Shen et al., 2014). This may lead some women to believe they cannot become pregnant, which may not be true. Testing for pregnancy and regular use of birth control

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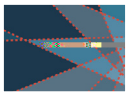


conditions produce more infant morbidity in pregnancies exposed to MA than in pregnancies exposed to cocaine. Cleft palate has a clear association with prenatal MA exposure, but the link with other birth defects is not yet established (Smid et al., 2019). Exposure to MA, a neurotoxin, may impact metabolism, chemical signaling such as with serotonin, and structure of the developing fetal brain (Smid et al., 2019). Gestational age and sex may be important considerations, whereas concurrent exposure to alcohol and tobacco are confounding variables (Smid et al., 2019).

MA use in pregnancy is associated with low birth weight, lower than expected gestational age at delivery, and smaller head circumference (Wright et al., 2015). Using MA throughout all trimesters has been linked to insuf cient prenatal care, early delivery, and lower birth weight (Wright et al., 2015). Adverse perinatal outcomes including preterm birth, fetal growth restriction, and fetal death have been described, but studies have not been able to determine whether these outcomes are caused by MA or other factors such as contaminants, other drugs, cigarette smoking, or poverty.

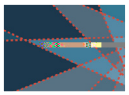
At birth, infants exposed to stimulants may manifest symptoms suggestive of withdrawal. As with other newborns with substance exposure, implementation of the Eat Sleep Console model of caring for the mother and infant as a dyad, focusing on nonpharmacologic care and treatment of the newborn, has produced positive results (Dodds et al., 2019). The most common presenting symptoms are lethargy, sleepiness, and poor feeding. Stimulant-exposed infants may have dif culty being consoled (Anbalagan & Mendez, 2021); the action of consoling can increase crying because of damage to the infant's nervous system. The interaction between this and the stimulant-affected mother's low frustration tolerance (due to protracted withdrawal) can interfere with bonding and create negative feedback, psychologically and

(Henning et al., 2019), probably because the short half-life of cocaine means that accumulating and sustaining high plasma concentration levels of that drug is dif cult. Stimulant-induced psychosis has been reported after acute intoxication in relatively naïve people and occasionally after low doses. Original reports of the condition describe onset of psychosis following typically high doses (i.e., 100 to 300 mg of amphetamine; Henning et al., 2019).

The prevalence of stimulant-related psychosis is unclear, with studies on MA-induced psychosis reporting estimates ranging from 7 to 76 percent (Lecomte et al., 2018). A review of the literature suggests an overall rate of 36.5 percent among people using MA, with rates somewhat diverging based on whether MA use was lifetime (42.7%) versus current (22.1%; Lecomte et al., 2018). Fear regarding the stigma associated with psychotic symptoms and the persecutory nature of the altered perceptions of reality likely contribute to the inconsistent description of stimulant-induced psychosis.

The prevalence of psychosis induced by prescription stimulants is low. In adolescents and young adults taking prescription methylphenidate or amphetamine for ADHD, psychosis has been reported in approximately 1 in 660 patients, with amphetamine carrying a greater risk than methylphenidate (1.78 per 1,000 people per year versus 2.83 per 1,000 people per year; Moran et al., 2019). Although these rates are low, FDA added a warning label to these medications in 2007 that reads “stimulants may cause treatment-emergent psychotic or manic symptoms in patients with no prior history” (Moran et al., 2019, p. 1,129). This is especially true when prescription stimulants are injected or snorted.

The presence of stimulant-induced psychosis has implications for determining the appropriate level of care. Patients with stimulant-induced psychosis may require more acute psychiatric care, where there are staff to ensure patient safety. (Learn more about determining levels of careoran8 (esi.3)032 745.ifeced psychosis.v can de arulam wi stimders



doses, from “watching the world” to feelings of

use. Hallucinations may stop within 24 to 48 hours of cessation of substance use, and paranoia and altered perceptions of reality decrease over the next week to 15 days. Clinicians also report that drug-induced psychosis dissipates more quickly for cocaine use—usually in 1 to 3 days—compared with up to 2 to 3 weeks for MA use. Resuming or continuing stimulant use, using other substances (including alcohol, when used heavily), and experiencing stress or lack of sleep can all trigger recurrence of psychosis after symptoms have resolved and after prolonged periods of abstinence (Glasner-Edwards & Mooney, 2014).

The duration of stimulant-induced psychosis is somewhat in dispute. Typically, uncomplicated psychosis induced by stimulants resolves ras(Glae-Edwate1iofof abstm Ja 0 0ed pThailing so 3 weeksucursinducedMAs

Chronic/persistent stimulant-induced psychosis warrants referral for psychosocial intervention, like cognitive–behavioral therapy, SUD treatment to initiate abstinence and promote recovery, and the use of antipsychotic agents to treat the persistent symptoms of psychosis (Braunwarth et al., 2016; Glasner-Edwards & Mooney, 2014). Individuals with co-occurring stimulant use disorder and schizophrenia (or other psychotic disorder) may also bene t from case management and comprehensive care to address a broader range of potential service needs, like those pertaining to housing and vocational rehabilitation (Glasner-Edwards & Mooney, 2014).

The antipsychotics olanzapine, haloperidol, aripiprazole, risperidone, and quetiapine each may be useful in treating stimulant-induced positive and negative psychotic symptoms (Bramness & Rognli, 2016; Fluyau et al., 2019). Each medication carries unique side effects (e.g., metabolic syndrome caused by second-generation atypical antipsychotics, extrapyramidal symptoms [medication-induced movement disorders] caused by haloperidol). Prescribing decisions should be based on each patient's risk–bene t pro le and reevaluated throughout the course of treatment (Fluyau et al., 2019).

Differential diagnosis of acute confusional states should include the possibility of head injury, intracranial hemorrhage, electrolyte imbalances, infection or medical comorbidity, acute trauma response, or thyrotoxicosis. Information from family and signi cant others is helpful, and toxicology testing may also help con rm a diagnosis (Glasner-Edwards & Mooney, 2014). Assessment tools like the Diagnostic Interview Schedule and the Composite International Diagnostic Interview can help differentiate between primary and stimulant-induced psychosis (Glasner-Edwards & Mooney, 2014).

Acute stimulant-induced psychosis should generally be managed in a hospital psychiatric department or similar facility. Minor psychotic episodes with low-grade symptoms that respond readily to neuroleptic medications may, on some occasions, be managed in a well-staffed, freestanding of ce-based addiction treatment program if suf cient personnel with training and experience in treating co-occurring disorders are readily available. Urine testing is recommended to con rm a diagnosis of stimulant-induced psychosis because the syndrome can closely mimic other disorders that may have psychotic symptoms, such as medical comorbidities, schizophrenia, mania, depression, other substance intoxication states, or catatonia.

The criteria for placement should re ect the persistence of the condition, the competence and training of personnel, and the drug taken. People with MA use who have accumulated high plasma concentration levels from longer binges and larger doses of stimulants with longer half-lives may be more prone to protective behaviors during psychosis. This is especially likely if psychotic

the life course and found an increased risk of both violence perpetration and violence victimization among people who used MA, suggesting that the population associated with violence is also a population that is disproportionately victimized.

Compared with MA, fewer studies have examined aggression and violence resulting from cocaine use (Kuypers et al., 2020). Cocaine may have some in uence on impulsivity, but evidence for this is largely from animal studies, and human studies have been too inconsistently designed to yield rm conclusions (Kuypers et al., 2020). Among the small number of human studies reporting a link between aggression and cocaine use, acute cocaine use has been associated with violence resulting in injury (Chermack et al., 2010), youth violence (Stoddard et al., 2015), and—in women who inject drugs—violent criminal behavior (Butler et al., 2017).

Because drug-induced psychoses can increase the potential for violence in response to perceived persecution and resulting paranoia, sound behavioral management techniques to prevent this negative and dangerous response are essential.

For more information about how to manage violent behaviors in people with SUDs (with or without psychosis), see the Substance Abuse and Mental Health Services Administration's (SAMHSA) Treatment Improvement Protocol (TIP) 25, Substance Abuse Treatment and Domestic Violence (

nonprescribed tranquilizers (Timko et al., 2018). Concomitant use of cocaine with benzodiazepines to blunt the dysphoric effects of the latter is also common.

Speedballing or goofballing—simultaneous use of an opioid and cocaine or other stimulant—is still prevalent in many places because the combination is perceived to smooth the effects of each drug. From 2011 to 2017, the number of people seeking

Differentiating co-occurring psychiatric disorders from stimulant-related disorders can be challenging. Acute or chronic stimulant intoxication can elicit symptoms of anxiety that are indistinguishable from phobias, obsessive compulsiveness, panic, and generalized anxiety. The parallels between symptoms of stimulant-induced psychosis and schizophrenia are discussed in the section "Stimulant-Induced Psychosis" earlier in this chapter. Withdrawal from stimulants can cause symptoms similar to major depression, resulting in symptoms like sad mood, fatigue, increased sleepiness, and thoughts of self-harm (UNODC, 2019b).

The prognosis for SUDs is worsened by the presence of other untreated psychiatric disorders (or polysubstance use). Patients with co-occurring SUDs and mental disorders need treatment for both; the psychiatric problems may or may not improve with reduction in use. Antidepressant and neuroleptic medications with low anticholinergic and sedative properties are preferred because of their low potential for addiction. Sedative–hypnotics and benzodiazepines must be used with caution in high-risk populations (e.g., older adults, people consuming alcohol, people with a history of prescription medication misuse; Guina & Merrill, 2018).

TREATING CO OCCURRING MENTAL DISORDERS

People with stimulant use disorders also frequently experience other mental disorders or psychiatric symptoms, such as depression and anxiety. Patients with stimulant use disorder and any co-occurring psychiatric illness or symptoms should have both disorders treated concurrently rather than wait to address the mental health issue until after they are in recovery. Most mental disorders can be treated while the person is pursuing recovery. If clinicians delay in treating those co-occurring symptoms or disorders, it can put at risk the person's chances of achieving and staying in recovery from their stimulant use disorder.

Preexisting Medical Conditions

Any preexisting acute or chronic physical conditions are also likely to be complicated and exacerbated by the stress of stimulant intoxication and withdrawal. Particularly dangerous coexisting medical conditions include any history of seizures, coronary heart disease and other cardiac problems, thyroid problems, hypertension, or respiratory and pulmonary disease. Hypertension, renal failure, and possibly diabetes mellitus, which are risk factors for stroke, can be exacerbated by cocaine use (Goel et al., 2014).

Patients who are already taking medications for other medical conditions may be at heightened risk for serotonin syndrome when stimulants are combined with certain antidepressants or neuroleptics. Additional cardiovascular risk exists for patients prescribed beta-blockers who continue to use stimulants, particularly cocaine.

Traumatic Injury

People who use stimulants may be at an increased risk of traumatic injury. A review of studies looking at amphetamine-type substance use and associations with traumatic injury or death from motor vehicle accidents found a mixed association in terms of traumatic injury but a moderately positive association with death (Hayley et al., 2016). In one sample of more than 2,500 trauma patients admitted to a Level II trauma center between 2005 and 2015, 6.5 percent tested positive for MA and 5 percent for cocaine (Neeki et al., 2018). Traumatic brain injuries appear to be prevalent in people with cocaine and MA use disorder (Duong et al., 2018; Yeung et al., 2013) and should be managed with appropriate interventions based on the cognitive de cits identi 4on theh bwhen t-iFb18 (uoxication)]TJ((Rameshe

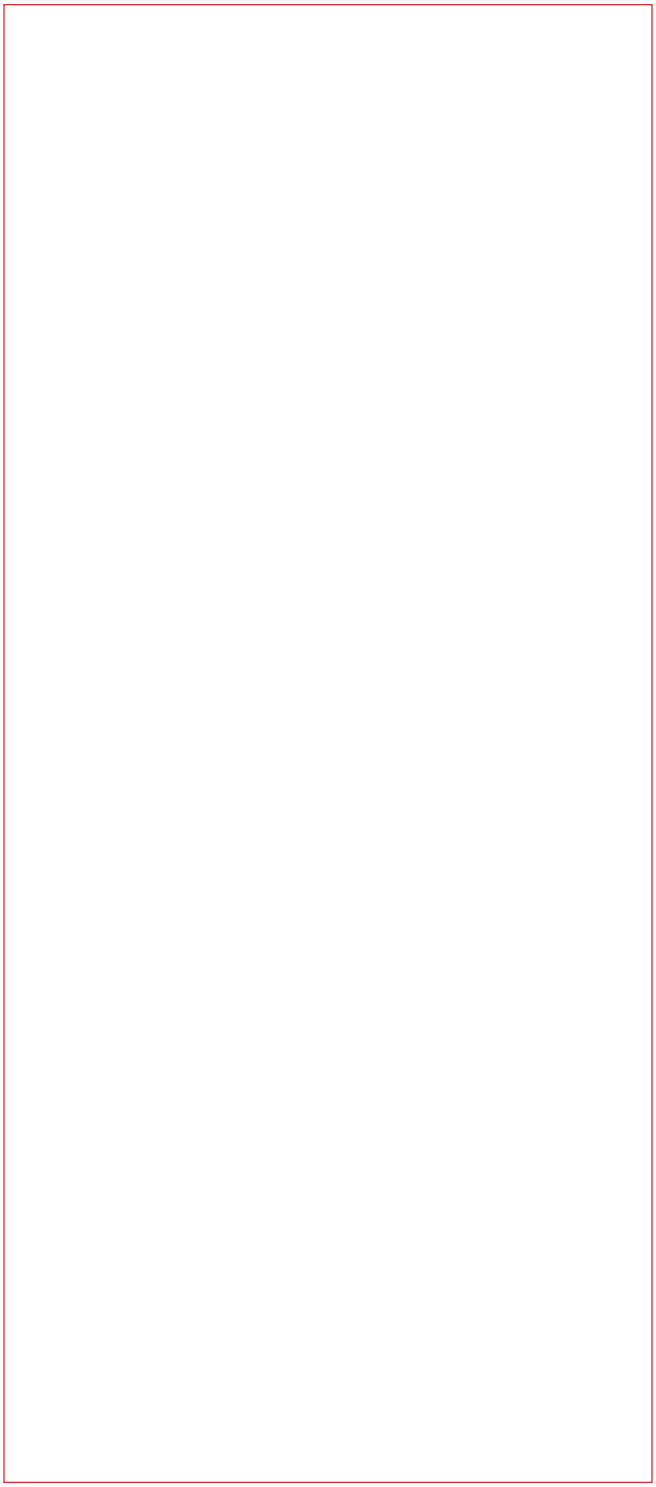
Stimulant use may be associated with not just an increased risk of traumatic injury but worse traumatic injury-related outcomes, such as mortality and healthcare resource use. A lifetime history of an SUD is associated with a signi cantly elevated mortality rate following inpatient discharge for traumatic injury (compared with people without lifetime SUDs); cocaine in particular has a 1.1 to 1.6 increased risk of all-cause mortality following discharge (Dezman et al., 2020). In individuals who sustain burn injuries, stimulant use is associated with longer hospital length of stay and a higher need for skin grafts, both of which suggest stimulant use may result in greater healthcare resource use (Hulsebos et al., 2020). In a survey of nurses, residents, and other faculty at a Level I trauma center, respondents largely agreed not only that patients who used MA tended to need more hospital resources and have a longer length of stay in the ED, but also that they required more effort on behalf of staff to treat and were perceived by staff to be more violent than patients who had not taken MA (Richards et al., 2019).

Sexual assault is also reported by an increasing number of both men and women who report stimulant use (Kittirattanapaiboon et al., 2017; Lutnick et al., 2015). Sexual assault while using stimulants is particularly problematic for women engaged in sex work for acquisition of the substance. Additionally, studies have examined the increased risk for intimate partner violence among both men and women who engage in regular stimulant use (Crane et al., 2014; Foulds et al., 2020; P. H. Smith et al., 2012). Clinicians should be familiar with appropriate places to which to refer patients to help them cope with trauma associated with sexual assault and intimate partner violence.

Linking Treatment Programs and Medical Facilities

Because the ED may be the rst point of contact with the medical system and potential treatment for people with stimulant use disorders, hospitals need to give attention to establishing and supporting a continuum of care in which appropriate linkages among all necessary services and programs for these patients are present. The task of developing and encouraging these linkages among treatment components cannot fall to hospital staff alone; all providers and staff should be encouraged to cooperate in the effort. If not connected to the treatment system, people who use cocaine or MA will likely return repeatedly to the ED and other hospital departments for care of more and more serious health and mental health problems. Stimulant use disorders, like all SUDs, are lifelong, relapsing conditions that require ongoing management and support.

Hence, treatment programs should take primary responsibility for developing linkages with hospitals, using several approaches. The best approach is to have an SUD treatment practitioner or trained nurse/social worker visit the hospital and other medical facilities regularly to identify, screen, encourage, and follow up with patients who have stimulant-related and other substance use problems and need access to the ongoing treatment continuum. Peer recovery support specialists also can be found in hospital settings and can help link patients with acute SUD crisis to longer-term SUD services outside the hospital (see the text box “Connecting Patients to Peer Recovery Support Specialists”). A face-to-face visit by an outreach specialist or peer recovery support specialist is particularly effective in supporting the crisis-precipitated motivation to enter treatment, especially if the patient is hospitalized for some time. Because a crisis creates an intervention opportunity, the patient may be unusually receptive to considering lifestyle changes and the need for longer term treatment.



Obtaining Consent for Treatment

In obtaining the patient's consent for treatment, gathering information from others about the patient's history of substance use, making referrals for continuing care, or seeking reimbursement from insurance carriers, hospital staff must be familiar with the provisions of special federal laws and regulations for protecting con dentiality of SUD patient records as set forth in 42 U.S.C. §290dd-2 and 42 C.F.R. Part 2, as well as any applicable state laws and regulations. Patients who are intoxicated or psychotic may have diminished capacity for providing informed consent to treatment. If consent is obtained, even temporarily, from a relative, this may be considered a "disclosure of identifying information" and be subject to federal guidelines. In referring a patient from a hospital to an outside treatment program and making an appointment, staff are also making a disclosure and will ordinarily need a written consent form from the patient containing speci ed information.

Special exceptions apply to disclosing information in SUD patient records when medical personnel need this information to treat a medical emergency. However, the Part 2 regulations require that the SUD treatment provider document in the patient's record the nature of the emergency, what information was released, the name of the person making the disclosure, and the date and time. For additional information about consent and con dentiality, see https://www.samhsa.gov/about-us/who-we-are/laws-regulations/con dentiality-regulations-faqs.

Summary

Patients who use cocaine or MA or who misuse prescription stimulants are at risk for multiple medical complications—some of which can have severe, long-lasting, or possibly even fatal consequences. The various routes of administration and pharmacokinetics of stimulants also play a role in the development of medical complications, as well as in the intoxication and withdrawal processes. Even SUD treatment providers who do not have medical training can bene t from knowledge about the medical risks of and treatments for cocaine use, MA use, and prescription stimulant misuse. These clinicians can play an important part in identifying symptoms and helping to connect patients with healthcare providers in a timely manner. Further, educating patients about the health consequences of stimulants might also help increase their motivation for engaging in and completing SUD treatment. (Chapter 4 discusses options for the nonpharmacologic treatment of stimulant use disorders in further detail.)

Some of the alternatives to RCTs common in the SUD treatment eld can provide useful information but have serious limitations that must be recognized. For example, following a group of patients who received a particular treatment in the absence of a comparison group can be informative in terms of characterizing what has happened to them (e.g., percentage who returned to use, percentage who received additional treatment, amount of change from pretreatment to posttreatment). However, such observations do not permit making any scienti cally valid inferences about the role of the treatment provided in bringing about any of the changes observed during follow-up. For that purpose, a comparison group is necessary. Any changes observed might have occurred in the absence of treatment. Without a comparison group, there simply is no way to rule out that possibility.

Similarly, when patients themselves select group membership, as opposed to being assigned by the researcher, one cannot make valid inferences about the role of treatment in the outcome. For example, comparing treatment completers to dropouts is common and may be informative in terms of characterizing how the groups fared, but it is not scienti cally valid to infer that any differences observed between them were due to the different amounts of treatment received. Some other factor (e.g., differences in the amount of other demands on their time) could have been responsible both for the differential retention rates and for the subsequent differences observed at follow-up.

THE IMPORTANCE OF TEACHING HARM REDUCTION

Many people with stimulant use disorders will not be interested in formal treatment. But that doesn't mean that clinicians can't help them. Abstinence does not have to be the only goal for people with stimulant use disorders. Harm reduction techniques can teach people how to stop using stimulants or how to use them in a way that will reduce the risk of injury or death. Also, people can change their minds, and by "meeting patients where they are," rather than being argumentative and trying to for
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Documented Psychosocial Treatment Approaches

The psychosocial interventions demonstrated to date to be ef cacious in RCTs and other high-quality studies with people with stimulant use disorders share a common feature of incorporating well-established psychological principles of learning. Currently, these psychosocial approaches to treating people with stimulant use disorders have the most research support: CM, CBT/RP, community reinforcement approaches, and MI. Many studies look at combinations of these treatments. Thus, in making treatment decisions, clinicians should consider whether one of these approaches alone versus a combination of two might be best for a given patient.

It is impossible to quantify all aspects of psychosocial treatment or to account for all factors that affect patient outcomes. However, given that effective treatments and associated manuals are available, using them is prudent and helps ensure that patients receive the services that research has shown to be effective. An often-stated but unsubstantiated belief is that using a manual will limit or eliminate clinicians' exibility and ability to exercise clinical judgment. A carefully prepared manual recognizes the importance of clinical judgment and exibility in addressing the individual needs of patients and incorporates those features.

Contingency Management

CM is a well-known behavioral intervention designed to increase desired behaviors by providing immediate reinforcing consequences (in the form of incentives) when the target behavior occurs, and withholding those incentives when the target behavior does not occur. CM has been used with considerable effectiveness in treating individuals with a variety of SUDs and is very useful for treatment planning because it sets concrete short- and long-term goals and emphasizes positive behavioral changes (Benishek et al., 2014; Minozzi et al., 2016).

A meta-analysis found that CM had small and medium-sized effects on stimulant use at 3-month follow-up but not at 6 months (Sayegh et al., 2017). In a network meta-analysis of almost 7,000

Cognitive–Behavioral Therapy/ Relapse Prevention

Despite the increase in research on CBT for stimulant use disorders over the past two decades, its effectiveness is still unclear (De Crescenzo et al., 2018; Ronsley et al., 2020). Nonetheless, many clinicians and researchers nd CBT to be helpful. A Cochrane review from 2018 found mixed outcomes for CBT (including some positive ndings, like an increase in percentage of abstinent days over a 90-day period and a reduction in symptoms). However, the review authors concluded that many CBT studies are small in size or poorly designed, making it dif cult to have full con dence in their ndings (Harada et al., 2018).

CBT in combination with CM may be especially helpful (De Crescenzo et al., 2018). One study reported that adding CM to CBT enhanced CBT's positive outcomes (e.g., cocaine-negative urine specimens) among people with cocaine use disorder (Carroll et al., 2016). Other researchers have found that CBT can have delayed positive effects on cocaine use disorder, with improvements appearing after study treatment has ended (Ronsley et al., 2020).

RP is a form of CBT that teaches patients strategies, skills, and lifestyle adaptations to help them change their thoughts and behaviors related to substance use. RP emphasizes (Hendershot et al., 2011):

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Clinicians can also help reduce diversion by checking prescription drug monitoring databases and checking urine drug screens. Other stimulant diversion prevention techniques include (Colaneri et al., 2017):

- Developing medication contracts that include the risks and bene ts of the stimulant medication, the risks of misusing the medication, an agreement that the patient will only take the medication as prescribed, conditions for determining adherence (e.g., pill counts), and consequences of the patient violating the contract.
- Providing materials that educate patients about the dangers of misusing prescription stimulants (e.g., the risk of potentially harming people with preexisting heart disease or cardiac structural abnormalities).
- Prescribing a smaller number of pills.
- Prescribing long-acting formulations rather than short-acting formulations.
- Conducting periodic pill counts.
- Learning about and prescribing nonstimulant medications instead of stimulants.

Clinicians should also build linkages with local SUD treatment providers (including ones specializing in working with adolescents and young adults), so they can refer patients in need of formal treatment and services. Finally, clinicians should be sure to conduct SUD assessments for patients who are prescribed stimulants (even if the patient is not misusing the prescription stimulant) and refer patients for SUD treatment as needed. People taking prescription stimulants—even lawfully and as prescribed—are vulnerable to tobacco, cannabis, cocaine, hallucinogen, and opioid use (Arria & DuPont, 2018; Compton et al., 2018). (See Chapter 2 for more information about stimulant use disorder assessment.)

Community Reinforcement Approach

Community reinforcement is an individualized treatment designed to promote key lifestyle changes that are conducive to successful recovery (see Meyers & Smith, 1995; Sisson & Azrin, 1989):

- Patients with partners/spouses who do not use stimulants are offered marital therapy to improve the quality of their relationships in a reciprocal and rewarding manner.
- Patients who are unemployed, employed in jobs that are high risk for substance use, or need vocational assistance for some other reason receive help in that domain.
- Patients are counseled and assisted in developing new social networks and recreational practices that promote and support recovery. Mutual-help group participation is not mandatory but is often used as an effective means of developing a new social network.
- Various types of skills training are provided depending on individualized patient needs, including substance refusal and associated skills, social skills, time management, and mood regulation.
- Patients with alcohol use disorder (AUD) and no medical contraindications are offered a program of disul ram therapy coupled with strategies to support medication compliance.

Very few recent studies have examined community reinforcement alone, so it is unclear whether this approach delivers better substance use outcomes than other psychosocial approaches or usual care (Ronsley et al., 2020). One study of community reinforcement did nd increased treatment retention and abstinence and decreased addiction severity after 24 weeks (De Giorgi et al., 2018).

More recently, research on community reinforcement has focused on the effectiveness of adding it to CM (Ronsley et al., 2020). When used together, these treatments appear to (De Crescenzo et al., 2018):

- Do a better job than usual care at retaining individuals in treatment.
- Do a better job than noncontingency-based approaches (either used alone or with 12-Step programs) at helping people achieve abstinence.
- Have better patient acceptance than treatment as usual.

In one review, community reinforcement combined with noncontingent vouchers was less effective at achieving abstinence from cocaine than was community reinforcement combined with CM (Schierenberg et al., 2012).

Motivational Interviewing

MI has been found to be an effective evidence-based, group- or individual-based treatment for people with SUDs, especially AUD (SAMHSA, 2019). MI and motivational counseling, as applied to SUDs, have been associated with decreased substance use, improved SUD treatment retention, lower rates of relapse, and better adherence to HIV risk-reduction behaviors (SAMHSA, 2019).

Recent studies of MI alone for stimulant use disorders show mixed results, with some nding no bene t and others nding improvements in reducing the number of days of cocaine use (De Giorgi et al., 2018). Intensive MI designed speci cally for MA use disorder demonstrated no different outcomes in MA use or in anxiety compared with an education control group that also received MI, although it was nonintensive (Polcin et al., 2014). A Cochrane review of psychosocial interventions for stimulant misuse (Minozzi et al., 2016) included ve studies comparing MI with no intervention. In these studies, receiving any psychosocial treatment (including MI) was associated with better treatment retention and greater abstinence than no treatment at all. However, the authors noted a fair amount of bias and study design problems across all of the studies in their review, including those pertaining to MI. Thus, results should be interpreted with caution.

Recent studies on combining MI with other treatment approaches were either inconclusive or had unreported results. One review noted that MI combined with CBT has yet to demonstrate reliable improvements over other treatments (De Giorgi et al., 2018). However, some individual studies have reported good results from adding MI to CBT.

In a sample of military veterans with SUDs, MI combined with CBT or combined with CBT and continuing care both showed signi cant decreases in substance use (including cocaine use) and reductions in aggression compared with treatment as usual (Chermack et al., 2019). MI added to CBT tailored to the unique needs of gay and bisexual men who are HIV positive was associated with lower MA use, better HIV medication adherence, and reduced risky sexual behavior (i.e., having sex without condoms) over the course of 12 months (Parsons et al., 2018).

THE ROLE OF TELEHEALTH IN TREATING STIMULANT USE DISORDERS

Technology use continues to grow as more people rely on smartphones and other electronic devices for access to information, social connection, and work-related activities. Telehealth is the use of technology to support and enhance healthcare delivery. Telehealth includes online education materials and treatments, mobile applications, and synchronous audiovisual services.

Research has shown that telehealth can be a useful and cost-effective tool for people with SUDs (Dallery et al., 2019; Murphy et al., 2016; Tait et al., 2015). Although more research is needed on the use of telehealth for people with stimulant use disorders speci cally, research on telehealth for SUDs in general or other substances speci cally can still provide useful insight into how these innovative tools and approaches may be effective and bene cial for patients.

Examples of ways that telehealth can help clinicians and their patients include:

- Supporting formal treatment.
  - Self-guided web-based interventions using techniques from CBT and motivational enhancement have shown promise in increasing help-seeking and reducing role impairment for people using amphetamine-type stimulants (Tait et al., 2015).

Continued on next page

- In 2017, a mobile application, reSET, became the rst prescription-based digital therapeutic cleared by FDA. The program is based on the community reinforcement approach model and allows physicians to prescribe an 84-day access period by providing a code required for download. A multisite clinical trial of more than 500 adults with an SUD (including stimulant use disorder) who were engaged in outpatient treatment and who used the reSET application had lower dropout rates and higher abstinence rates (FDA, 2017).
- Posttreatment telephone contact, whether structured or directive, is associated with perceived decreases in life events that contribute to substance use among people who use stimulants (Farabee, Cousins, et al., 2013). High dropout rates during treatment for stimulant use disorders suggest there may be utility to using telephone contact during treatment to encourage retention as well (Lappan et al., 2020).

- Reaching rural and underserved communities.
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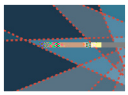
Among people with stimulant use disorders who received 12 weeks of CM, concurrent use of mindfulness-based RP was associated with greater reductions in depressed mood, greater reductions in Addiction Severity Index score, and lower odds of stimulant use compared with a health education control group (Glasner-Edwards et al., 2017). Close to half the sample had major depressive disorder (43%), and approximately one-quarter had generalized anxiety disorder (24%). Compared with CM plus health education, CM plus mindfulness RP was associated with lower scores of negative affect, greater reductions in depression severity and psychiatric symptom severity, and—among people with depressive and anxiety disorders—decreased stimulant use (Glasner-Edwards et al., 2017).

A residential mindfulness-based intervention for women with SUDs (most of whom had amphetamine/MA use) similarly showed greater chances of treatment completion compared with the control condition. Also, program attendance signi cantly correlated with improvements in mindfulness, distress tolerance, and mood (D. S. Black & Amaro, 2019).

Mindfulness-based RP combined with a single dose of ketamine was associated with longer cocaine abstinence than mindfulness plus midazolam in a 2019 study by Dakwar and colleagues. The



in nature, inpatient treatment was aimed at detoxifying patients, combating their denial, and beginning the process of engaging with mutual-help programs.

The 28-day standard treatment regimen also became common for patients experiencing other SUDs. It was especially widespread in the early 1980s, when the numbers of patients seeking treatment for cocaine use disorder began to rise dramatically. Most of these inpatient programs for treating cocaine use were adapted with few or no modi cations from the alcohol regimens and with little input from empirically based research. Such inpatient programs were called into question by insurance providers, and subsequently, their use steadily declined (Malcolm et al., 2013).

Today, acute treatment programs, colloquially referred to as "detoxes," may admit patients for between 3 and 10 days for observation during initial cessation of substance use and restoration of physiologic homeostasis (the body's natural ability to maintain critical functions, like normal core temperature and normal blood glucose levels) after signi cant periods of severe substance use. Acute treatment services vary greatly in the amount of recovery support available to patients and the number of medical staff onsite for the care and monitoring of patients.

Patients with signi cant medical or psychiatric comorbidity may be voluntarily admitted to medically or psychiatrically managed SUD care, often referred to as "Level 4 facilities" after the level that is assigned in the American Society of Addiction Medicine's (ASAM) levels of care (ASAM, 2015b; K. Hartwell & Brady, 2018). These hospital-based residential programs are capable of accommodating the highest acuity patients and are used for acute stabilization of medically or psychiatrically complex patients.

Clinical stabilization programs, or transitional support services, are inpatient programs for patients with fewer medical or psychiatric comorbidities. These programs typically offer more recovery services for patients, including mutual-help groups, therapeutic communities (TCs), education or therapy groups, individual counseling, a therapeutic milieu, and other integrated psychosocial services (ASAM, 2015b). These programs may last anywhere from 2 to 4 weeks (and often longer) and because of their extended nature may be the most bene cial in monitoring patients in early recovery from stimulants.

Special considerations should be made in treatment plans for patients experiencing stimulant withdrawal in inpatient settings (Braunwarth et al., 2016). Given the profound fatigue and excessive sleeping that can occur, considerations for exemptions from therapeutic sessions and educational services should be considered.

Nutritional support for patients recovering from SUDs is vital (Szydlowski & Amato, 2017). Increased access to high-calorie foods and foods with increased nutritional value may help in augmenting patients' weight and correcting electrolyte imbalances (Braunwarth et al., 2016). Programs should consider consultation with appropriate nutrition or dietary specialists when necessary.

Additionally, given the possibility of increased depressive symptoms throughout acute withdrawal from stimulants, patients should be assessed for changes to risk for self-injury or self-harm regularly while in the inpatient unit, and safety plans should be in place in case patients develop thoughts of self-harm or self-injury. Suicide has been shown to be a signi cant cause of mortality for individuals who misuse stimulants (Butler et al., 2017; Farrell et al., 2019; Marshall & Werb, 2010).

Legislation regulating involuntary commitment to inpatient treatment settings (also known as mandated treatment) for SUDs varies throughout the United States. Many states have enacted legislation that allows clinicians or, in some instances, family members to le petitions for involuntary assessment of SUDs when patients are unable to adequately care for themselves or they pose serious risks to themselves or others. A judge may dismiss the petition or issue a court order for SUD treatment. Patients can choose to refuse treatment and ignore court orders, which may result in undesirable legal consequences. For patients admitted for involuntary treatment, special consideration should be given to identifying the reason for the involuntary commitment and the best strategy to mitigate that condition.

Involuntary treatment may be confrontational initially, and staff generally use MI techniques to elicit change talk and capitalize on patients' mandated treatment status. In the setting of involuntary treatment, it is vital to establish referral partners for when the patients have completed their requisite amount of time in SUD treatment.

Inpatient treatment varies in both insurance coverage and credentialing of staff. It is important to understand the nuances of different inpatient treatment programs, especially the duration of treatment, the medical/psychiatric credentials of the staff, and the program's ability to collaborate with outpatient treatment partners (Of ce of the Surgeon General, 2016). Given that stimulant use disorders are chronic, relapsing conditions, treatment should not end once patients leave an inpatient setting. These patients should always be "stepped down" into outpatient care.

In the past two to three decades, more patients have received primary SUD care in outpatient settings rather than inpatient treatment facilities. As this shift continues, inpatient treatment will remain reserved for patients experiencing the most severe forms of an SUD, with the highest risk of morbidity or mortality related to their medical or psychiatric presentation while using or stopping their use.

Residential Treatment

Residential treatment may be indicated for people with SUDs who need more structured support for a speci c period of time in early recovery. The structure of residential treatment allows positive changes and stabilization in patients' attitudes and lifestyles. The duration of residential treatment varies. Some treatment may be as short as 30 days, whereas other treatment may last up to 1 year.

TCs, a common type of long-term residential treatment, typically use group activities directed toward effecting signi cant changes in the residents' lifestyles, attitudes, and values. They emphasize prosocial behavior and strengths-based strategies for improved decision making (NIDA, 2015). Many referrals to TCs take place through the court system. In fact, TCs were originally designed for patients with heroin use disorder, low socioeconomic backgrounds, and long-term histories of criminal involvement.

Halfway Houses

Halfway houses (also known as sober living environments or facilities) provide transitional support for people who have completed residential treatment and are still attending formal treatment, like outpatient care (Polcin et al., 2010), but would bene t more from increased structure or support than from solitary community living. Halfway-house program requirements usually include speci ed community involvement (e.g., employment or enrollment in school), and abstinence from mood-altering substances. Evening group activities are structured around residents' work schedules. Programs generally require out-of-pocket expenses and have limited insurance coverage or reimbursement.

PATIENT PLACEMENT: AVOIDING THE COOKIE CUTTER APPROACH

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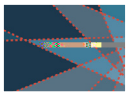

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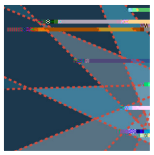

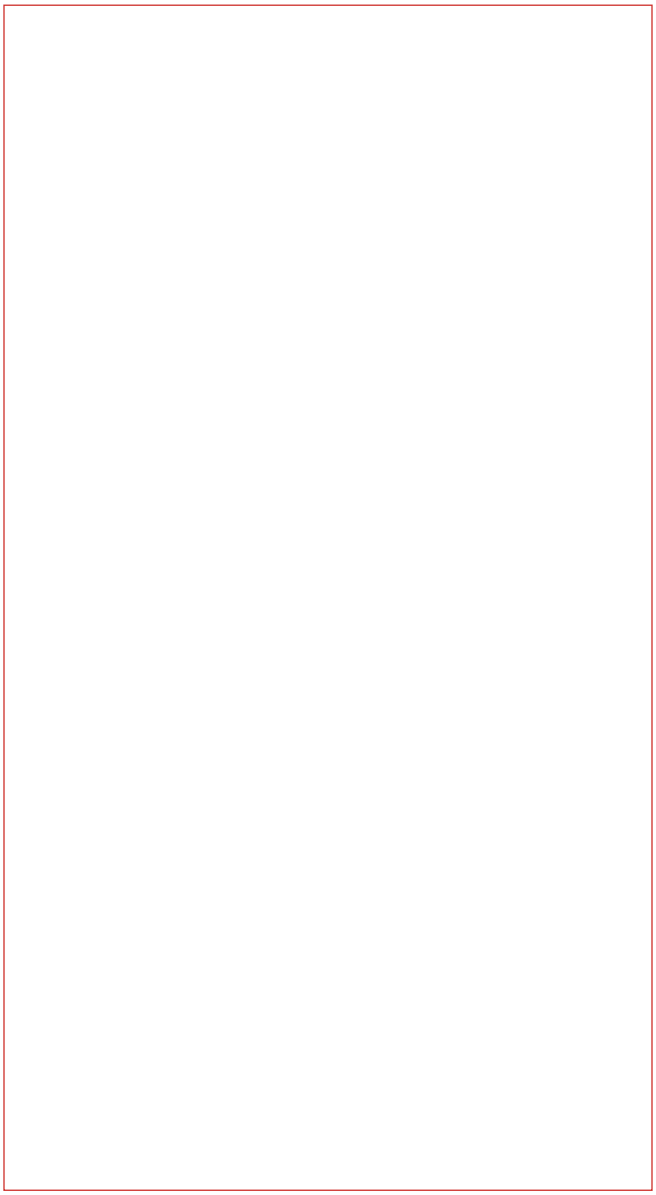

“Life Is Out of Control”

Patients engaging in treatment for stimulant use disorder may say, “My life is out of control.” They point to their excessive behaviors associated with obtaining, using, and recovering from using cocaine or methamphetamine (MA). These behaviors can lead to:

- Financial instability and/or illegal activities (Cheng et al., 2010; Gizzi & Gerkin, 2010; Maiorana et al., 2021).
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Craving

The experience of craving a substance characterizes almost all SUDs. However, the craving for stimulants may be more intense than any other cravings patients have experienced. Chapter 2 describes research on the neurophysiologic correlates of stimulant craving. People who use stimulants have likely experienced craving but may have little understanding of the biologic underpinnings of this experience.

The power and intensity of this craving response can make it exceptionally dif cult for people with stimulant use disorders to interrupt their pattern of use (Sinha, 2013), especially early in treatment. (This is especially true for those who use the rapid-delivery routes of smoking or injection.) Some people cannot imagine how counseling or other forms of nonresidential treatment can help with this overwhelming sensation.

WHY COORDINATED CARE IS SO CRITICAL

Coordinated care encourages members of the treatment team to work collaboratively and in a person-centered manner. Treatment occurs along a continuum that combines medical care with psychological and social interventions. Clinicians collaborate on treatment activities, which are tailored to each patient's needs. To facilitate coordinated care, clinicians should obtain a signed release form for all of the patient's care providers during the initial assessment. The patient may exit treatment quickly, so having a signed release form allows the treatment team to coordinate with other providers to help the patient reengage in treatment.

People with SUDs typically have numerous health- and behavioral health-related issues that interact with one another (Radfar & Rawson, 2014). Clinicians cannot effectively address SUDs using a fragmented approach that ignores other problems their patients are coping with and may or may not be receiving services to address. This interaction is why coordinated care is so critical to ensuring successful SUD treatment outcomes for patients.

Coordinated care models emphasize the engagement of multidisciplinary staff to fully address patients' physical and mental health needs through open communication, shared knowledge and decision making, individualized treatment plans, and the use of evidence-based best practices. For instance, a woman in treatment for cocaine use disorder might bene t from seeing a drug and alcohol counselor to help her with recovery and abstinence, a primary care provider to help monitor for any medical complications or conditions (e.g., those that accompany stimulant withdrawal), a psychologist or licensed professional counselor to help her better manage longstanding trauma symptoms and recent depressed mood, a psychiatrist to monitor her antidepressant medication, a social worker to assist in navigating access to public assistance programs (e.g., Temporary Assistance for Needy Families), a peer recovery support specialist to share common experiences and to serve as a mentor, and a case manager to help coordinate care.

Coordinated care ensures that all members of the care team are equipped with accurate, current information about a patient's diagnosis, history, treatments, and treatment goals. They work collaboratively to achieve those goals effectively, in a timely manner, and without redundancies. Coordinated care models have been scrutinized in research and deemed effective in the treatment of SUDs, particularly in primary care practices (LaBelle et al., 2016; Lagisetty et al., 2017; Pew Charitable Trusts, 2020).

- Addressing concrete needs. Research has demonstrated the importance of addressing patients' concrete needs, including transportation, housing, and nances (Browne et al., 2016; Priester et al., 2016). Clinicians may need to establish protocols for rapidly addressing transportation barriers (e.g., by providing bus fare cards or cab/rideshare fare, using vans to drive patients to and from their appointments). Locating SUD care settings near public transportation and in areas viewed as safe for evening visits improves accessibility for patients. Individuals with disabilities may need special accommodations (e.g., wheelchair access ramps, electronic doors, elevators, assistive communication devices). Clinicians and organizations can seek philanthropic funds as well as federal and state grants to assist with addressing these particular needs.
- Providing onsite services. Some logistical barriers can be overcome by providing onsite services, through agreements with subcontractors, or by referrals. These services can include providing onsite childcare, referrals to temporary shelters, vouchers for lunches, targeted nancial assistance, and help with insurance paperwork or ling for disability. "Warm handoff" referrals where treatment staff personally contact personnel from other settings facilitate a successful referral process.
- Reaching underserved populations. In rural areas, small satellite sites may be needed to bring treatment closer to patients (e.g., using

space in primary care clinics or social service agencies). SUD care services should also offer telehealth technology—in place of or in addition to face-to-face treatment—for people with mobility or distance barriers.

Respond Quickly and Positively to Initial Inquiries

People who use stimulants may make their first contact with the SUD treatment system by telephone, through email, or via online contact (e.g., the treatment center's website, social media). They may drop by a clinician's office, an SUD care facility, or a campus health center. Some may make initial contact with treatment when they check in with their probation/parole officer or engage with justice-involved staff. The manner in which the receptionist, intake worker, clinician, or other staff person handles the initial contact may affect whether the individual decides to enter treatment. Methods that promote successful treatment engagement include:

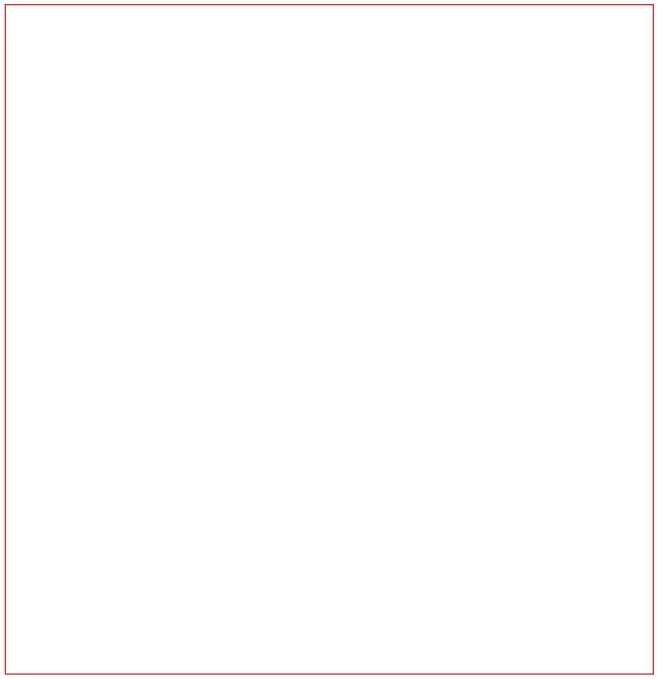
- Answering telephone or online inquiries immediately for as many hours per day as possible (e.g., not placing people on hold, not requiring callbacks).
- Using 24-hour hotlines to facilitate late-night and weekend inquiries.
- Monitoring websites (including chat features) and social media accounts for new messages daily.

Seeking SUD care can be a difficult and painful process. Access to care improves when there is maximum flexibility in responding to all kinds of treatment inquiries.

Schedule Initial Appointments With Minimal Delay

An individual's decision to seek help may last for only a brief period, so the initial interview should take place as soon as possible after first contact. SUD treatment providers may not always have the resources to conduct thorough intake interviews immediately, and these interviews may not always be feasible (i.e., if the patient is in crisis and needs immediate intervention services for stabilization). If possible, interim services should be provided until a more thorough intake can be completed, including any organization- or state-mandated health screenings. For example, a brief trauma-informed interview or a partial intake session within 24 hours of contact might identify acute needs that require immediate attention. SUD treatment providers can also hold orientation meetings in lieu of placing names on waiting lists. The use of telehealth can help clinicians stay connected to patients who are waiting for admission to higher levels of care. If a waiting list cannot be avoided, staff members can draw on the patient's treatment readiness by telephoning to express concern about the patient's well-being, conducting mini-assessments, providing basic recommendations (e.g., attending a mutual-help group meeting), connecting patients to peer recovery support specialists, and working with the patient to locate other available treatment options within the same level of care. These efforts serve as a temporary bridge between the initial contact and a thorough interview and assessment.

Assessment Procedures To



Create a positive environment

Research demonstrates that positive environments—ones that promote growth and well-being—improve mental health and social functioning (Corral-Verdugo & Frias-Armenta, 2016). Patients with stimulant use disorders may feel that they do not belong in treatment because they:

- Do not see themselves as having a disorder.
-

toxicology results, the clinician should emphasize that the results re ect the effectiveness of treatment and are not meant to identify patient failures. The clinician should use nonjudgmental language, such as “The results indicate a return to use,” and avoid value-laden terms like “clean” and “dirty.”

Typically, urine toxicology testing tapers as treatment progresses, patients stabilize, and the clinical relevance of the tests become less important. Tests are spaced to ensure that results from the previous test are available before the next test is conducted and to avoid exceeding the sensitivity limits of standard laboratory testing methods, which generally means spacing tests no more frequently than every 3 days. More frequent testing generally provides little information of clinical relevance. However, if the patient appears intoxicated or has admitted to misusing substances, testing may need to be repeated to establish a baseline. SUD treatment providers also conduct random testing, although it is advisable to test on days that closely follow periods of high risk, such as holidays, paydays, and weekends.

Urine collection should be conducted in a trauma-informed way. Strategies for this process include the following:

- Provide patients with information about the urine collection process so they know what to expect (Scoglio et al., 2020).
- Allow patients to voice concerns about the urine collection process, and respond in an empathic manner (Scoglio et al., 2020).
- Acknowledge that the urine collection process can trigger uncomfortable feelings for patients who have experienced trauma.
- Allow patients to make choices about the urine collection process, when possible. For example:
  - Give patients several different options for what time of day the collection will take place.
  - Allow patients to choose which trained staff member will collect the specimen.
- Offer the patient assistance from a peer recovery support specialist throughout the urine collection process.
- Refrain from direct observation of specimen collection. Rather, collection should be supervised by a staff member. This entails requiring patients to leave their belongings outside the bathroom and to collect their sample without ushing the toilet.

To learn more about trauma-informed urine collection strategies, see Trauma Informed Oregon’s tip sheet, Trauma Informed Urine Drug Screenings (https://traumainformedoregon.org/wp-content/uploads/2019/05/Urine-Drug-Screen-tip-sheet.pdf).

After the specimen has been collected, laboratory assistants or clinicians collecting urine samples use temperature strips or other methods if specimen tampering is a concern. Urine samples that staff suspect have been tampered with are not sent to the lab for testing. Instead, clinicians or other staff should repeat the urine collection, using the same trauma-informed process.

Encourage participation in mutual help groups

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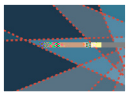

Expressions of suicidal ideation must be taken very seriously. The patient should be monitored for thoughts of self-harm and, when appropriate, provided with immediate intervention to ensure the patient's safety. After the crisis has passed, the clinician and the patient work together to develop a patient-centered safety plan that includes steps the patient can take if suicidal thoughts recur, methods for limiting access to lethal means, coping strategies the patient can use to reduce distress, and contact information for individuals who can help in a crisis (e.g., the patient's clinician, a family member, a close friend, hotlines). (Chapter 6 provides more information on treating co-occurring mental disorders.)

Assess for stimulant-associated compulsive behaviors

Research demonstrates an association between stimulant use disorders and a variety of compulsive sexual behaviors (Berry et al., 2020; Loza et al., 2020). These behaviors may include unprotected anal or vaginal intercourse, transactional sex, compulsive self-stimulation, compulsive seeking and viewing of pornographic material, and more diverse sexual activities and partners than the patient may have engaged in/with previously. Clinicians should screen for the presence of compulsive sexual behaviors in patients with stimulant use disorders.

Patients with stimulant use disorders can have tremendous concerns and anxieties about the compulsive sexual behaviors they engage in while using stimulants. Chemsex is a sexual encounter that is coupled with the use of mind-altering substances during intercourse (Giorgetti et al., 2017). Hypersexuality, sexual assault, and diverse sexual behaviors and partners in the context of stimulant use may result in concerns about sexual identity (Lyons et al., 2010; Ritchwood et al., 2016). When present, these feelings may be barriers to treatment engagement and retention.

Discussions on sexuality with this population must be conducted in a nonjudgmental and caring tone. Clinicians can discuss sexual risk reduction strategies, including initiation of nonoccupational postexposure prophylaxis (nPEP) or pre-exposure prophylaxis (PrEP) for HIV, condom use, serosorting (Centers for Disease Control and Prevention [CDC], 2020a) or sncerntal anTe Ting with p0ntext of3st h9hal mea/eown for

medical and mental health issues. Providing patients with lists of community and mutual-help resources is helpful. These materials should include the names, addresses, telephone numbers, websites, and descriptions of mutual-help groups and resources, medical clinics, social service agencies, food assistance programs, trauma-informed services or services for victims of violence or abuse, temporary housing and shelters, women's shelters, and children's resources. A peer recovery support specialist or case manager can help gather such information and work with patients to follow through.

FOCUSING ON TREATMENT RETENTION

Treatment engagement is critical to getting people into SUD care, but treatment retention is equally critical. Simply put, people are less likely to die when in treatment than when not in treatment. Clinicians should not turn away individuals—even those considered likely to drop out from treatment—except in very rare cases. Any amount of time people with stimulant use disorders remain in treatment is an opportunity for them to stay alive and improve their health.

The dropout rate of people in treatment for stimulant use disorders is high (Kampman, 2019). For instance, pharmacotherapy studies of people with amphetamine use disorder report a 40- to 50-percent dropout rate (Lee et al., 2018). People with other SUDs, such as OUD, who also misuse stimulants may be at higher risk for treatment dropout than people with SUDs who do not also misuse stimulants (Tsui et al., 2020).

Using CM may retain people in treatment better than using other psychosocial therapies because it offers them an incentive to stay, such as money or vouchers (Ronsley et al., 2020). But many trials of medication and nonmedication treatments have failed to show a difference in treatment retention between the medication or therapy in question and a placebo or other comparator (Ronsley et al., 2020).

Strategies for Treatment Initiation

During the first several weeks of treatment, individuals may stop or at least reduce their use of stimulants. They may also maintain their use at the same level during this period. However, these first few weeks can be considered successful if patients have engaged in treatment and taken initial steps to reduce stimulant misuse. Achieving abstinence becomes the focus of treatment engagement after the first 1 or 2 weeks. Although no clear delineation exists between those patients initiating abstinence and those maintaining abstinence, the initiating period begins 2 weeks into treatment and lasts through 6 weeks of treatment, roughly speaking.

During treatment initiation, the goals are to:

- Identify and break the cycle of compulsive, repetitive stimulant use.
- Initiate a period of abstinence from all substance use.
- Encourage the establishment of behaviors that support abstinence and an abstinent social support network.
- Initiate changes in attitude, behavior, and lifestyle that help maintain abstinence.

The immediate priorities for facilitating treatment initiation are to:

- Alleviate stimulant withdrawal symptoms.
- Establish structure and support.
- Address secondary substance use.
- Establish contingencies.
- Address compulsive behaviors associated with stimulant use.

sleep, eat, and gradually begin a program of exercise helps establish behaviors that have long-term utility. Engaging in these behaviors helps patients begin to think more clearly and feel some bene t from their initial efforts in treatment.

Clinicians should continue to encourage abstinence from all illicit psychoactive substances.

ALLEVIATING WITHDRAWAL: CHALLENGING BUT POSSIBLE

Alleviating stimulant withdrawal symptoms is dif cult, and withdrawing from stimulants carries a risk of harm to self or others. Fatigue, increased appetite, anxiety, paranoia, and insomnia commonly occur. Medication may provide some symptom relief (particularly for anxiety and sleep disturbance), highlighting the importance of including a psychiatrist or other prescribing professional in the patient's treatment. Rest, relaxation, exercise, and a healthy diet are also "prescribed" to aid in preventing or reducing symptoms.

Other steps clinicians can take to help patients overcome dif culties with withdrawal include (Grigg et al., 2018):

- Alerting patients of symptoms to expect and designing a plan to effectively manage these symptoms.
- Speaking with patients about how to stay motivated throughout the process.
- Monitoring and assessing on an ongoing basis for new or worsening symptoms, including physical symptoms requiring medical attention.
- Treating co-occurring medical and mental health issues as well as polysubstance use; these issues can complicate the withdrawal process.
- Offering supportive care during and after the withdrawal process so that patients receive emotional support and help with maintaining motivation.
- Optimizing sleep hygiene practices.

See the section "Management of Stimulant Withdrawal" in Chapter 3 for additional information.

Establish Structure and Support

Initiating abstinence from stimulant use is not a mental exercise. It requires a speci c plan to encourage changes in behavior. The plan provides a basic structure and daily routine to replace the lifestyle dominated by seeking and using drugs and then recuperating from them. Structure, stability, and predictability come from a simple daily plan that patients follow and that is built on the patients' participation in SUD care. This plan includes:

- Setting short-term goals. Reasonably achievable, short-term goals are established immediately. One such goal is complete abstinence from all substances for 1 week. To address binge use, a comparable goal is to achieve a period of abstinence approximately twice as long as the usual period between binges. Brief, frequent counseling sessions can reinforce the short-term goal of immediate abstinence and establish a therapeutic alliance between the patient and the clinician. During each session, events of the past 24 hours are reviewed, and the clinician works with the patient to identify goals and provide recommendations for navigating the next 24 hours. Having the patient set up a social support system and undergo urine toxicology screening also contributes to establishing structure, support, and accountability.
- Maintaining a daily schedule. Daily scheduling remains an extremely important organizing strategy during treatment initiation. Proactively planning time is a direct counterpoint to the impulsivity people with stimulant use disorder previously experienced. With the clinician, patients review their successes and struggles with the schedule they prepared in the previous session and develop a schedule for the next week. Some patients nd this task dif cult and resist this "regimentation" of their time. Clinicians may counteract this reticence by creating a strengths-based schedule that celebrates patients' accomplishments for completing daily tasks.

- Participating in urine testing. Urine testing is not presented or used as an investigative tool or as a method to test patients' honesty. Rather, it is presented and used as a way to support initiating and maintaining abstinence. SUD treatment providers conduct urine testing for the primary stimulant and for secondary substances during clinic visits. During treatment initiation, urine testing takes place no less than once a week.

Address Secondary Substance Use

People with stimulant use disorders commonly use other substances, such as alcohol or cannabis. They often do not perceive their use of a secondary substance as problematic. Indeed, for many patients, their secondary substance use may not have been associated with adverse consequences or compulsive use. As a result, patients need help connecting any use of other substances to their stimulant use disorder. Patients learn that:

- Using another substance (e.g., alcohol; Staiger et al., 2013) increases the likelihood of recurrent use of the primary substance and treatment nonparticipation (Wang et al., 2017).
- Combining secondary substances of choice, such as opioids or benzodiazepines, with injection drugs (including stimulants) can lead to accidental overdose (Riley et al., 2016).
- Using alcohol with cocaine may increase an individual's perception of euphoria. Some research appears to show that the combination of alcohol and cocaine may be more reinforcing than either substance alone. This combination produces a toxic metabolite—cocaethylene—that can harm the liver and heart (A. W. Jones, 2019; Liu et al., 2018). (For more information about cocaethylene, see Chapter 3.)
- Using low doses and infrequently using secondary substances can have disinhibiting effects, serve as cues for stimulant use, and evoke potent conditioned responses that negatively affect treatment outcomes and retention (Wang et al., 2017).
- Helping patients understand why they use secondary substances can promote behavior change. For example, some patients may use benzodiazepines, alcohol, or opioids as "landing gear" after a particularly intense stimulant binge. The depressant nature of the secondary substance allows the patient to relax and sleep after several days of prolonged use (Walley, 2013).

Patients are sometimes ready for treatment for their primary substance of choice but are not ready to address their secondary substance use. Thus, secondary substance use is common during treatment inita9hus, secoance use. e of the secocary dary .i8 [(o

develop signi cant compulsive behaviors, such as compulsive sexual behaviors (Berry et al., 2020; Loza et al., 2020) and gambling (Szerman et al., 2020). For these patients, interventions such as cognitive–behavioral therapy (CBT) or mindfulness meditation can be conducted that will decrease the likelihood of both the compulsive behaviors and recurrent stimulant use. Clinicians should provide a safe environment for such patients to talk about these behaviors, either in group sessions or in individual counseling.

Compulsive sexual behah5b5.1 (h)2 (mr)]TJ TMC /P <</MCID 12>>BDC 0 0 0 0.85 k /T1_0 1 Tf 00.5 0 0
iehaviors by:

- Provide patient education on factors that contribute to stimulant use.
- Teach basic conditioning.
- Identify cues and triggers.
- Develop action plans for cues and triggers.
- Enlist family participation.
- Help patients establish social support systems.
- Predict scenarios for return to use.
- Establish new activities.
- Respond to early slips.

Educate Patients About Managing Subacute and Protracted Withdrawal Symptoms

Once a patient discontinues stimulant use and develops healthier sleeping and eating habits, most symptoms collectively described as the "crash" typically lessen. (Chapter 3 provides more information about the crash concept in relation to withdrawal.) But the resolution of crash symptoms does not signal that the brain has returned to normal. Clinical observations show that signi cant biologic and psychological symptoms continue to hamper functioning 90 to 120 days after discontinuation of stimulant use, a phenomenon sometimes referred to as "the wall." Symptoms

- Breaking off contact with people who deal and use drugs. Patients develop plans to stop contact with dealers and other people who use stimulants, including removing contact information and deleting call histories from mobile devices. They also develop plans to assertively encourage family members and close friends who use stimulants to seek help. It may be dif cult to break off contact with people dealing and using drugs, because they could be family members or friends. Because of substance use, patients' healthy supports may no longer be in their life and the only supports they have may be people who use and deal drugs.
- Avoiding high-risk places. Patients identify places they strongly associate with stimulant use and come up with strategies for avoiding them. Strategies include taking different routes home from work, avoiding certain locations at certain times, and using a buddy system when going to a high-risk area. These high-risk places are sometimes living environments, neighborhoods, or work situations patients cannot avoid.
- Developing basic refusal skills. Patients learn to handle encounters with acquaintances and friends who still use stimulants by immediately leaving the situation after an encounter. They also prepare speci c drug-refusal statements that they can make during encounters. Patients practice these statements in individual therapy sessions and with fellow group members.

Provide Patient Education on Factors That Contribute to Stimulant Use

Many factors, including cognitive changes, traumatic experiences, and weight gain, may affect patients' memory or perception of their stimulant misuse. Patients may require education to understand the conditioning factors associated with stimulant use. Similarly, they need information about the impact of stimulants and other substances on the brain and behavior, such as cognitive impairment and forgetfulness. Information about stimulant-induced behavior helps explain episodes of mood lability, altered perceptions of reality, protective behaviors, sexual compulsivity, and impulsivity.

Clinicians provide patients, especially those with MA use disorder, with education about acute withdrawal symptoms. Patients should also:

- Learn how other substances they may use have an important role in recurrent stimulant use.
- Receive education about the biopsychosocial processes of SUDs, treatment, and recovery.
- Discuss with their clinicians the stages of treatment and recovery, as well as speci c tasks, goals, and pitfalls of each stage.
- Receive education about co-occurring mental disorders and their impact on SUDs, treatment, and recovery.

Teach Basic Conditioning

Although patients with stimulant use disorders may present with poor retention of information and other cognitive de cits early in treatment (Gould, 2010), they should be able to understand basic information about cues and triggers. Patients can be taught that:

- Conditioning factors elicit drug cravings and urges.

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This strategy can improve communication skills and the relationship. Research shows that marital and relationship counseling has positive effects on treatment outcomes for individuals with alcohol use disorder (O'Farrell & Clements, 2012). However, few studies have focused on stimulant use. Clinicians should screen for intimate partner violence (IPV) before initiating relationship counseling. Behavioral couples therapy is generally appropriate when (SAMHSA, 2020k):

- The partner does not have active problems with substance use (except for nicotine).
- There is no indication of active or acute risk for IPV. The clinician should use clinical judgment and consult state laws on mandatory reporting requirements when evaluating IPV and considering whether to recommend behavioral couples therapy.
- Neither partner has a signi cant co-occurring mental disorder.
- The partners are married or living together.

(See also the "Family and Couples Therapy" section in Chapter 4.)

Help Patients Establish Social Support Systems

Patients with stimulant use disorders typically have low frustration tolerance and are sometimes restless in the therapeutic process, especially during initiation and stabilization. Nevertheless, these patients should be introduced to a structured and therapeutic group process as soon as possible (generally within a few days). These groups provide a preexisting support network and a forum for openly talking about problems associated with early recovery.

At the same time, participating in mutual-help meetings, such as Cocaine Anonymous, Celebrate Recovery, Crystal Meth Anonymous, Narcotics Anonymous, SMART Recovery, and Wellbriety, should be strongly encouraged. Some patients bene t from short-term goals associated with attending 12-Step meetings, such as participating in 90 meetings in 90 days. Participating in these meetings reinforces the importance of implementing daily structure, immersing in treatment, and creating healthy habits.

Also, patients should be encouraged to reestablish relationships with friends and family who are not using substances and, perhaps, to seek out recovery allies who can be mentors/sponsors. These allies could be 12-Step sponsors whom patients can call during crises to discuss shared experiences in recovery. An abstinent social support network can be a useful tool for patients who need additional support throughout recovery.

Predict Scenarios for Return to Use

Research literature describes several predictors for recurrent stimulant use by patients who are trying to maintain abstinence (Brecht & Herbeck, 2014; Sánchez-Hervás & Llorente del Pozo, 2012):

- Continued or other drug use leading to recurrent stimulant use and treatment nonparticipation. Several studies have reported a relationship between alcohol use and recurrent cocaine use, and other studies support this same pattern with alcohol and cannabis for MA treatment nonparticipation (Staiger et al., 2013; Wang et al., 2017).
- Return to networks of people actively using substances. The clinical experiences of TIP consensus panel members suggest that returning to networks of people who use substances is a primary reason for an individual's recurrent use.
- Sexual behavior associated with stimulant use. Particularly for men, chemsex experiences and sexual behaviors associated with stimulant use (e.g., having sex with sex workers, viewing pornography or sexualized videos of people using substances) are an important contributor to recurrent stimulant use (Berry et al., 2020; Loza et al., 2020).
- Craving triggered by external and internal stimuli. People who use stimulants report that conditioned cues have a powerful in uence on the production of craving and contribute to a return to stimulant use (Tolliver et al., 2010).
- Negative affective states. Emotional states can be important antecedents to recurrent substance use (Kober, 2014). People who use stimulants typically nd anger, depression, loneliness, frustration, and boredom dif cult to manage. These feelings can initiate a behavioral

sequence that ends in stimulant use. However, celebratory and positive emotions associated with using can also be consequential if they are not identi ed.

- Academic demands. Studies have shown a relationship between prescription stimulant misuse and academic demands among college students (Weyandt et al., 2016), particularly when they have experienced academic impediments or grade strain during the previous academic year (Norman & Ford, 2018). Students who return to school at the beginning of a new academic year and continue to experience academic dif culties may return to misusing prescription stimulants.

Establish New Activities

People with stimulant use disorders typically have spent a considerable amount of time leading up to treatment entry on getting stimulants, using them, and recuperating. During the initial 6 to 12 months

There are several immediate and long-term priorities for patients who are stable and want to maintain abstinence from stimulants:

- Teach functional analysis of stimulant use.
- Maintain positive reinforcement.
- Teach relapse prevention techniques.
- Provide psychoeducation about preventing a return to use.
- Teach drug refusal skills.

Teach Functional Analysis of Stimulant Use

A functional analysis teaches patients how to understand their stimulant use so that they can engage in solving problems in a way that reduces the probability of future stimulant use. The core components of a functional analysis are:

1. Teaching patients to examine the types of circumstances, situations, thoughts, and feelings that increase the likelihood that they will use stimulants.
2. Counseling patients to examine the positive immediate, but short-term, consequences of their stimulant use.
3. Encouraging patients to review the negative, and often delayed, consequences of their stimulant use.

Maintain Positive Reinforcement

Employing CM agreements can help sustain initial treatment gains. These agreements are detailed in a written behavioral contract and include speci c objective criteria such as urinalysis results and attendance at group therapy sessions. Systematic and consistent implementation of agreements is crucial. Reinforcement is delivered promptly when the contract is satis ed and withheld when it is not. Frequent, positive reinforcement of success is critical. Clinicians should always incentivize positive behaviors while trying to avoid punishing negative behaviors because positive reinforcement is a more effective way of shaping behavior than punishment (i.e., punishment can be counterproductive and can lead to avoidance). The goal of positive reinforcement is to encourage patients to continue growing their strengths in recovery rather than to emphasize their struggles.

Teach Relapse Prevention Techniques

Relapse prevention techniques help patients recognize high-risk situations for substance use, implement coping strategies when confronted with high-risk events, and apply strategies to prevent recurring use should an episode of substance use occur (Glasner-Edwards et al., 2017; S. Grant et al., 2017; Marlatt & Gordon, 1985). The techniques involve several cognitive–behavioral interventions that focus on skills training, cognitive reframing, and lifestyle modi cation.

Relapse prevention techniques fall into several categories:

- Acquiring, through psychoeducation, knowledge about the process of returning to substance use and how to interrupt it
- Identifying high-risk situations and warning signs for a return to use
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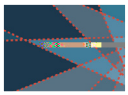

possible in treatment. However, people in recovery from stimulant use disorders may experience psychotic symptoms and an inability to concentrate that could interfere with initiating vocational services. Vocational services can be initiated after patients' psychotic symptoms have improved and their ability to focus has returned.

For more information about vocational services, see SAMHSA's TIP 38, Integrating Substance Abuse Treatment and Vocational Services (https://store.samhsa.gov/product/TIP-38-Integrating-Substance-Abuse-Treatment-Vocational-Services/SMA12-4216), and Integrating Vocational Services Into Substance Use Disorder Treatment Advisory (https://store.samhsa.gov/product/integrating-vocational-services-substance-use-disorder-treatment/pep20-02-01-019).

Provide Treatment and Services To Help Patients Manage Co-Occurring Disorders

Having co-occurring substance use and psychiatric disorders can make achieving and sustaining recovery from stimulant use disorders more dif cult. Pharmacologic and psychosocial interventions are available to help patients with common co-occurring psychiatric illness, like depression and anxiety. Clinicians should encourage patients to receive behavioral health services as needed and provide referrals, resources, and support to enhance treatment engagement and retention. Additional treatment considerations for co-occurring disorders are presented in Chapter 6.

Monitor Medications for Treatment of Co-Occurring Alcohol Use or Opioid Use Disorders

When clinically indicated, clinicians use evidence-based medications to treat patients with co-occurring secondary SUDs. Clinicians consult with an experienced SUD treatment provider to determine the best course of pharmacologic treatment for patients based on current use, medical comorbidities, and patient preference.

For patients with co-occurring alcohol use disorder, the FDA-approved pharmacologic therapies are naltrexone, acamprosate, and disul ram. For patients with co-occurring OUD, the FDA-approved pharmacologic therapies are methadone, buprenorphine, and naltrexone. For additional treatment considerations speci c to OUD, see Chapter 6.

Recommend Mutual-Help Strategies

Mutual-help strategies can be valuable components throughout treatment. These strategies, especially those that focus on substance use, are especially valuable as ancillary activities that support the treatment goals of maintaining abstinence. In general, mutual-help programs assist patients in developing appropriate social skills, creating healthy social networks, establishing healthy intimate relationships, and engaging in substance-free healthy activities. They also provide opportunities for patients to learn socially appropriate mores and norms, improve their ability to receive and give advice, and learn how to mentor others.

The most frequently used and available mutual-help strategy is the 12-Step approach. Most cities have many Alcoholics Anonymous group meetings every day, and most larger cities have numerous Cocaine Anonymous and Narcotics Anonymous meetings. Online meetings are also available. Clinicians or peer recovery support specialists provide patients with information on the 12-Step process, such as meeting format, the spiritual component, the basic content and meaning of the 12 Steps, the role of the 12-Step sponsor, and the role of anonymity.

Although SAMHSA's TIP consensus panel recommends participation in a 12-Step group, clinicians should not require patients' participation. Rather, clinicians encourage 12-Step participation, especially because 12-Step programs describe themselves as voluntary mutual-help programs of recovery. Similarly, patients' family members should be encouraged to participate in mutual-help programs for family members, such as Al-Anon. Scheduling onsite meetings is a good way to encourage participation. Both patients and family members receive lists with the addresses and times of meetings, and programs provide transportation when necessary and possible.

Other mutual-help strategies that do not follow the 12-Step approach are available. These programs include Save Our Selves, SMART Recovery, Wellbriety, and Women for Sobriety. Groups without a substance use focus, such as faith-based groups, cancer survivor groups, and domestic violence survivor groups, can also support patients' progress in treatment.

Next Steps

Treatment maintenance ends only when patients achieve the treatment goals documented in their treatment plans and agree with their clinicians to stop ongoing treatment.

The end of treatment maintenance is a good opportunity for patients to review their treatment experiences. Clinicians engage in activities and exercises that help patients examine their treatment successes, the areas where they experienced problems, and the ways in which they addressed these problems. Similarly, clinicians help patients evaluate the strength of their current recovery process and identify areas where they need strengthening. Through this process, the clinician and the patient develop a continuing care treatment plan that identi es remaining treatment needs and strategies that will be used to meet those needs.

Treatment maintenance ends with a transition to a lower level of care, not a termination. Abrupt termination is avoided. SUD treatment facilities should have strategies that encourage patients to remain connected with care (i.e., using a recovery-oriented system of care), because SUDs are chronic lifelong conditions that can have many pathways to recovery. Furthermore, clinicians should educate patients about the continuity of care available to them and encourage patients to engage with this care when they need it. SUD treatment facilities can help patients remain in contact by offering:

- Continuing care group meetings that patients can attend weekly or more often as needed.
- Individual counseling or psychotherapy that patients can participate in on an as-needed basis.
- Family therapy that is available to patients and their families or to family members.
- Alternative activities that focus on recreation, leisure, education, and social activities (e.g., dances, eld trips, barbecues and picnics, holiday events, lectures on topics not necessarily related to treatment or recovery).
- SUD treatment alumni meetings that all graduates can attend.
- SUD treatment alumni clubs that sponsor regional meetings and events (e.g., speakers on motivational and educational issues).
- Peer mentoring programs in which SUD treatment alumni help new patients by sharing experiences, advice, and service expectations.
- Surveys and newsletters that are sent to SUD treatment alumni as a way to collect posttreatment data, encourage participation in alumni activities, and motivate contact with SUD care staff, especially during times of need.

For more information about recovery-oriented systems of care, see SAMHSA's Recovery-Oriented Systems of Care (ROSC) Resource Guide (https://www.samhsa.gov/sites/default/ les/rosc_resource_guide_book.pdf).

Summary

Clinicians have multiple strategies that they can implement across the continuum of care to maximize patient engagement in treatment for stimulant use disorders. These strategies include discussing treatment expectations, offering multiple treatment options, using a person-centered and respectful approach, conveying empathy and concern, and collaborating m o ed

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Clinicians working with Black/African American patients should be aware of and sensitive to this dif cult history. The “war on drugs” has contributed to the Black/African American experiences of historical trauma, racial bias, and discrimination (Conner, 2020). Black/African American patients may have unresolved grief, deep emotional pain, and strong mistrust related to these experiences, which can create hesitancy to engage with SUD treatment and speak openly about their current or past substance use. Black/African American patients may express hesitancy to initiate treatment for SUDs because of fears about criminal prosecution.

Certain protective factors may help reduce substance use among Blacks/African Americans (Sanders, 2015). Strategies that clinicians can use, as appropriate, to leverage these protective factors include:

- Involving extended family members and nonrelatives with kinship-like ties to the patient in the patient’s recovery when needed and appropriate.
- Incorporating spirituality and spiritual beliefs into treatment, such as using spiritually based coping skills or providing access to SUD treatment in spiritual settings (Jordan et al., 2021).
- Using humor when appropriate.

A sense of belonging to a larger community and

The treatment rate for Hispanic/Latino populations in need of SUD care is extremely low, with almost 92 percent of the 3.2 million Hispanic/Latino people age 12 and older with an SUD in 2019 receiving no treatment (CBHSQ, 2020a). There may be several reasons for this gap. Clinicians may not recognize that subgroups of Hispanic/Latino populations—such as Mexicans, Puerto Ricans, Cubans, Central or South Americans, and Spanish individuals—are highly diverse and often differ in their substance use attitudes, behaviors, and ability to access treatment in the traditional medical setting. This heterogeneity is due in part to differences in these subgroups' degree of acculturation, immigration patterns, and geographic location (Chartier et al., 2015; SAMHSA, 2014). These groups may also differ in their race, language, and indigenous ties. All of these subgroup differences might have an effect on treatment engagement, retention, and completion (Chartier et al., 2015).

Language is another barrier for Hispanic/Latino engagement and retention in treatment for SUDs (SAMHSA, 2014). Where possible, SUD care should incorporate multilingual staff and offer culturally appropriate services (SAMHSA, 2014). For example, bicultural care providers have demonstrated improved SUD treatment outcomes for Hispanic/Latino populations (SAMHSA, 2014).

In a small qualitative study of treatment seeking among Hispanic/Latino individuals with SUDs, common reasons people gave for not seeking SUD care were (Pinedo et al., 2018):

- Experiencing cultural barriers, such as feeling as though clinicians did not understand Latino culture or that seeking treatment itself was not acceptable in Latino culture.
- Believing that treatment would not be effective or that clinicians did not have a lived experience with substance use problems and thus could not effectively help the patient.
- Not wanting to pursue abstinence, but rather, harm reduction (e.g., limiting intake).
- Feeling as though treatment was unnecessary because functioning did not seem impaired (e.g., no substance-related work absences, no signi cant family problems related to substance use).
- Fearing stigma (e.g., being seen as "weak" by others for seeking treatment).
- Lacking family support for treatment.
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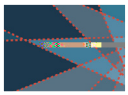

- A lack of support (emotional, nancial, or tangible) from family members who may not believe that treatment is necessary and may even be using substances themselves.

Additionally, Asians and NHOPI comprise numerous subgroups (e.g., Chinese, Japanese, Indian, Vietnamese, Hmong, Samoan) that have different attitudes toward and beliefs about substance use and treatment seeking ayout >>BDC port (eis necessary and may

Awareness of the following considerations can assist clinicians in providing culturally responsive care for AI/ANs with stimulant use disorders:

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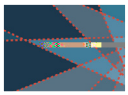

Women (Including Those Who Are Pregnant)

Treating stimulant use disorders in women can be signi cantly more complicated than treating

The ve core components of gender-responsive care are:

1. Addressing women's unique experiences.
2. Using a trauma-informed approach.
3. Using relational approaches.
4. Addressing women's needs in a comprehensive manner.
5. Providing a healing environment.

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Treatment for women should use a holistic, gender-responsive approach. Topics could include:

- Relationships with family (after addressing social functioning, issues of homelessness/unstable housing, social isolation).
- Treatment needs of children.
- Intimate partner violence.
- Parenting.
- Life skills.
- Education and vocational training.
- Economic self-suf ciency.
- Reproductive health issues.
- Education about long-term effects of using stimulants.
- Mental health.
- Self-esteem.
- Independent living skills.
- Nutrition.
-

ages 12 to 17, 5.2% of women ages 18 to 25, and 1 percent of women age 26 and older; CBHSQ, 2020a).

E ects on Pregnant Women

Stimulant use during pregnancy is associated with numerous harmful physical and psychological outcomes. Cocaine is toxic to multiple organ systems and can cause high blood pressure, heart attack, kidney failure, rupture of the liver, reduced blood ow to the heart and brain, strokes, seizures, and death (National Institute on Drug Abuse [NIDA], 2016b; Smid et al., 2019). As a result, cocaine toxicity can mimic preeclampsia (Cain et al., 2013). Cocaine use during pregnancy has a well-documented association with placental abruption (premature detachment of the placenta from the uterus) and preterm birth (Elkafrawi et al., 2020). Further, cocaine interacts with hormonal changes (e.g., increased progesterone) during pregnancy, which can worsen cardiovascular toxicity (Smid et al., 2019). Infection transmission is another risk of prenatal cocaine use, as women can transmit HIV, hepatitis, and syphilis to their fetuses. Women who misuse prescription stimulants during pregnancy can experience similar detrimental health effects, including high blood pressure, placental abruption, premature delivery, and postpartum hemorrhage (Worley, 2014).

MA has similar physiologic effects on pregnant women and is strongly associated with poor oral health and increased risk for infectious diseases, such as hepatitis and HIV (Smid et al., 2019). Studies have shown increased risk for miscarriage, stillbirth, placental abruption, and uterine rupture due to MA use. Stimulant use during pregnancy also has psychological consequences. A longitudinal study examining physical and psychological outcomes of prenatal cocaine use found poorer perceptions of mental health, higher rates of PTSD, and higher rates of other substance use among pregnant women with cocaine use compared with pregnant women without such use (Minnes et al., 2012). The study also demonstrated that prenatal cocaine use strongly predicts perceived psychological distress up to 10 years postpartum (Minnes et al., 2012). Similarly, pregnant women who misuse prescription drugs including stimulants have an increased risk for psychosocial consequences, including poor judgment, impaired decision making, violence victimization, inadequate housing, involvement with the legal system, poor engagement in prenatal care, and co-occurring mental disorders (Worley, 2014).

Perinatal, Neonatal, and Developmental E ects

Cocaine can cross the blood–brain barrier and the placenta. Prenatal cocaine use increases the risk for (Dos Santos et al., 2018; Gouin et al., 2011; Smid et al., 2019):

- Placental abruption.

- Lower IQ scores.
- Increased likelihood of cognitive problems affecting academic achievement.
- More problems with peers.

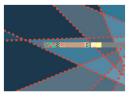
Less is known about misuse of prescription stimulants among pregnant women. However, studies of pregnant women taking prescription stimulant medications for attention de cit hyperactivity disorder (ADHD) have shown small increased risks for preeclampsia, premature delivery, and placental abruption (Smid et al., 2019).

Pregnant women should be screened for substance use, including stimulant use. Screening approaches can include brief self-report tools, brief intervention and referral to treatment screening methods, and urinalysis, following consent and appropriate counseling (American College of Obstetricians and Gynecologists [ACOG] Committee on Health Care for Underserved Women, 2011). Clinicians should be aware that many pregnant women are reluctant to admit or disclose stimulant use out of fear of losing custody of their children (A. O'Connor et al., 2021), highlighting the need for showing empathy and building rapport. Additionally, clinicians should expect to encounter women with diagnosed ADHD that may or may not be treated and women with undiagnosed ADHD (Marraccini et al., 2017).

Pregnant women who use stimulants require comprehensive prenatal care that is gender responsive and tailored to their needs (Chin & Bartholomew, 2020). This care should include nutritional assessment, testing for sexually transmitted infections and HIV, and access to social support services (ACOG, 2011). Given that stimulant use during pregnancy can impair fetal growth and increase the risk for pregnancy loss, pregnant women who use stimulants should have frequent ultrasounds and monitoring of fetal health throughout pregnancy, as clinically indicated (ACOG, 2011). Clinicians should ensure that these patients have established care with an OB/GYN and are connected to the appropriate ancillary services.

Patients taking prescription stimulants for ADHD should discuss with their healthcare providers the risks and bene ts of using these medications while pregnant. Continued use of prescription stimulants may be warranted in patients with severe ADHD symptoms that interfere with daily functioning (Marraccini et al., 2017). However, patients with milder forms of ADHD that do not signi cantly affect daily functioning may wish to discontinue their prescription stimulants while pregnant and engage in psychosocial treatments, such as cognitive–behavioral therapy (CBT).

ACOG (2011) recommends that pregnant women who are unable to stop using MA or other stimulants seek SUD care. Given the importance of SUD treatment in the context of pregnancy, pregnant women should voluntarily seek care at aJ T* [(fhat pr)18 (egnJ Twho ar)18 (e unabU T* th d18.pati p* [



- Services that address speci c adversities facing MSM (e.g., sexual assault, intimate partner violence, physical assault, abandonment).
- Referral to community-based and social services.
- Welcoming, nonhostile tone toward MSM and their needs (staff training is key).

The term “men who have sex with men” is an all-encompassing term to identify speci c behaviors rather than label someone’s sexual orientation. Recently, with changes in stigma toward the lesbian, gay, bisexual, transgender, queer, and intersex+ community, many patients feel comfortable sharing their gender identity and sexual orientation with clinicians or the outside world. Still, stigma persists, and fears of marginalization and homophobia—particularly in the healthcare setting—contribute to whether patients wish to disclose or self-identify their sexual orientation. Patients may choose to keep this information con dential or request that the

and subsequent sexual behaviors and ensuring that they understand that having risky sex while adopting PrEP could negate the HIV-prevention bene ts of PrEP by exposing them to other sexually transmitted infections. Patients should be both counseled on this risk and offered additional HIV risk reduction and prevention strategies (e.g., behavioral counseling, access to condoms).

Transgender and Gender Nonbinary Community

In the United States, approximately 0.3 percent of adults identify as transgender (Stroumsa, 2014). In a study of adults age 18 and older who self-identi ed themselves as within the gender spectrum or gender variant, 45.2 percent identi ed as neither male nor female, and 5.5 percent identi ed as both male and female (Kuper et al., 2012). Further, 72.3 percent of participants identi ed with more than one current gender identity (e.g., male, female, genderqueer, transgender, transsexual, crossdresser, two-spirit, bigender, intergender), with a reported average of 2.5 gender identities (Kuper et al., 2012).

Exhibit 6.1 includes key terms discussed in this chapter.

EXHIBIT 6.1. Key Terms

Cisgender: A term that refers to individuals who do not identify as transgender. These individuals' gender identities, expressions, and roles align with the sex assigned to them at birth and the culturally established categories of gender.

Transfeminine: Individuals who were assigned male at birth but identify with the feminine side of the gender spectrum or as nonbinary.

Transgender: An umbrella term for individuals whose gender identities, expressions, and roles occur on a continuum, often differ from the sex assigned to them at birth, and cut across culturally established categories of gender. Understanding of the transgender community continues to evolve. Therefore, some patients and health professionals may de ne "transgender" slightly differently.

Transmasculine: Individuals who were assigned female at birth, but who identify with the masculine side of the gender spectrum or as nonbinary.

Sources: American Psychological Association (2015); Center for Substance Abuse Treatment (2012); Coleman et al. (2012); Human Rights Campaign (n.d.); Mayo Clinic (2017a); Scheim et al. (2017).

Most substance use research with the TGNB population has focused on alcohol use. Signi cantly fewer studies have assessed the prevalence of illicit drug use. Results from these studies show cocaine and amphetamine use is somewhat more common among transgender people than cisgender people, with past-year cocaine use among transgender people an estimated 6.8 percent higher and past-year amphetamine use an estimated 1.3 percent higher (Scheim et al., 2017). A study of SUD treatment programs in San Francisco, CA, demonstrates that transgender identity predicts MA and injection drug use in women (Flentje et al., 2014).

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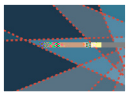

Transgender Individuals (https://store.samhsa.gov/product/Providers-Introduction-Substance-Abuse-Treatment-Lesbian-Gay-Bisexual-Transgender/SMA12-4104).

Adolescents

Substance use among adolescents is of critical

use substances that are convenient to obtain; thus, rates of stimulant use are likely to be higher in areas with ample availability. Nationwide, when 12th graders were asked about availability of various stimulants, more than a quarter (28.4%) said it was fairly or very easy to obtain cocaine; availability of powder and crack cocaine was roughly equal (18.3% and 16.5%, respectively; University of Michigan, 2020).

Few adolescents who need treatment for stimulant use disorder receive it. According to 2019 NSDUH data, only 0.5 percent of adolescents receive treatment for any SUD (CBHSQ, 2020a). By some estimates, SUD treatment reaches less than 6 percent of the adolescents who need it (Silvers et al., 2019).

The advantages of identifying substance use problems in adolescents and intervening successfully are signi cant. Most people who develop an SUD will do so in adolescence or young adulthood (Saitz et al., 2021). Identifying adolescents who are using substances can help prevent those individuals from developing SUDs later in life. Drug and alcohol use are the primary preventable risks that contribute to some of the leading causes of death for adolescents—namely, accidents, homicide, and suicide.

The American Academy of Pediatrics' clinical report, Substance Use Screening, Brief Intervention, and Referral to Treatment (eport, Ss:// /P <</MCIMCID 4 >>BDC 50.86 0.518 (evs' cli.aappubl 0 d Res.ing

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NIDA'S PRINCIPLES OF ADOLESCENT SUD TREATMENT

A NIDA (2014b) research-based guide sets out these 13 principles of adolescent SUD treatment:

1. Adolescent substance use needs to be identi ed and addressed as soon as possible.
2. Adolescents can bene t from a drug abuse intervention even if they are not addicted to a drug.
3. Routine annual medical visits are an opportunity to ask adolescents about drug use.
4. Legal interventions and sanctions or family pressure may play an important role in getting adolescents to enter, stay in, and complete treatment.
5. SUD treatment should be tailored to the unique needs of the adolescent.
6. Treatment should address the needs of the whole person, rather than just focusing on his or her drug use.
7. Behavioral therapies are effective in addressing adolescent drug use.
8. Families and the community are important aspects of treatment.
9. Effectively treating SUDs in adolescents requires also identifying and treating any other mental health conditions they may have.
10. Sensitive issues such as violence and child abuse or risk of suicide should be identi ed and addressed.
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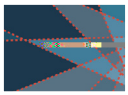

People Experiencing Homelessness/Unstable Housing

Per the 2020 Annual Homeless Assessment Report to Congress, approximately 580,000 Americans were homeless on any given night in 2020 (Department of Housing and Urban Development, 2021).

Some people experiencing homelessness or unstable housing also experience problems with stimulant use. Data from 12 SUD treatment programs in the National Drug Abuse Treatment Clinical Trials Network showed almost 32 percent of patients had unstable housing and nearly 6 percent were experiencing homelessness (Pan et al., 2020).

Compared with patients experiencing homelessness and those who were stably housed, patients with unstable housing had the highest prevalence of cocaine use (about 45%), opioid use (42%), and combination stimulant–opioid use (25%). In a primary care sample of people experiencing homelessness, 16 percent reported 3-month cocaine use (Stringfellow et al., 2016). The 2005–2015 Treatment Episode Data Sets show that, among people experiencing homelessness who entered SUD treatment, 13 percent reported cocaine as their primary substance and 8.5 percent reported MA (Famutimi & Thompson, 2018). People using injectable drugs and currently experiencing homelessness who were surveyed as part of the 20 i 5f23ipSIV Behavior3ipof Adoomecatiengs a/Lausindultness wso experienor pre surart /Layhnms Californiaess wss mis hou apprabo.39nt

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Rather than shaming or stigmatizing patients for engaging in functional stimulant use, clinicians should be empathetic and try to understand the extent to which people with homelessness/unstable housing sometimes engage in high-risk behaviors to protect themselves and survive.

When working with patients with stimulant use disorders who are homeless or housing insecure, clinicians should:

- Refer them to case managers who can help them navigate health and social support systems.
- Teach them harm reduction strategies (especially ones related to sex work and HIV prevention).
- Help connect them to available places to shower, use the toilet, and sleep.
- Link them with social services that can provide basic hygiene tools and health products—like soap, toothbrushes, toothpaste, condoms, and menstrual products—and, for patients who inject stimulants, soap and water or alcohol-based hand sanitizer or alcohol pads to cleanse the injection site and antibacterial ointment to heal injection sites.
- Consider using Housing First approaches to treatment initiation (Baxter et al., 2019). (For more information on Housing First, see https://www.hudexchange.info/resource/3892/housing-first-in-permanent-supportive-housing-brief/).

Given the unique challenges and complex issues facing people experiencing homelessness or unstable housing, such patients may bene t from referral to a peer recovery support specialist, if available. Peer support in this population has been associated with reduced drug and alcohol use and lower rates of return to substanceJ T* d4s hohol 0 uTSGom

areas identifying it as the greatest drug threat (NIDA, 2019d). In nonmetro areas, an estimated 8,000 adolescents ages 12 through 17 took part in past-year use of MA in 2019 (CBHSQ, 2020a). Similarly, an estimated 465,000 adults age 18 and older engaged in past-year use of MA in 2019 (CBHSQ, 2020a).

Rates of cocaine use in nonmetro areas were comparable to rates of MA use, with 10,000 adolescents ages 12 through 17 and an estimated 466,000 adults age 18 and older taking part in past-year use in 2019 (CBHSQ, 2020a).

Results from the 2019 NSDUH also showed that 48,000 adolescents ages 12 through 17 who were living in nonmetro areas engaged in past-year misuse of prescription stimulants (CBHSQ, 2020a). Further, 456,000 adults age 18 and older who were living in nonmetro areas engaged in past-year misuse of prescription stimulants (CBHSQ, 2020a).

Treatment admissions for MA are highest in Western states. Data from the National Drug Early Warning System suggest 12 to 29 percent of sites located west of the Mississippi River reported MA as the primary substance for treatment admission, compared with less than 1 percent of sites east of the Mississippi River (NIDA, 2019d).

In 2017, there were approximately 140,000 primary MA admissions among people age 12 and older in Western states, compared with approximately 13,000 primary cocaine admissions in the same group (CBHSQ, 2019). Primary MA admission rates rose consistently in Southern and Midwestern states between 2011 and 2017 (CBHSQ, 2019).

Challenges, Limitations, and Barriers to Treatment Services Faced by Rural Areas

Many rural areas have no specialized SUD treatment at all. Often, only one multiservice provider is available, and that provider can be overwhelmed by the area's various needs (L. B. Young et al., 2015). Additionally, rural areas have fewer formalized processes available to support and facilitate case management (Clary et al., 2020).
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- Provide education about stimulant use disorders to local community members to raise awareness regarding treatment options.
- Increase access to treatment by using one or more medical vans to take SUD services and other care to rural communities (Gibson et al., 2014).
- Provide safe, substance-free living arrangements for patients who do not reside nearby. Funds can be specially designated, solicited through recovery community networking, or obtained through donations.
- Provide treatment services that are exible in scope and structure (Browne et al., 2016; Timko et al., 2016). For example, an intensive outpatient (IOP) program might offer longer sessions on weekends instead of shorter, more frequent weekday sessions.
- Maximize patient engagement by assigning homework, arranging phone check-ins, having drug testing done by outlying clinics, using online communication, and holding weekend workshops or retreats.
- Use nontraditional sites and work arrangements to provide treatment services. If a treatment facility in a small rural community is not realistic, employ a part-time person who travels to satellite sites to provide outpatient services.
- Increase access to care via telemedicine and virtual visits (SAMHSA, 2016, 2021b). Additional research is needed to evaluate whether methods of access affect treatment outcomes for individuals with stimulant use disorders.
- Promote engagement in social–recreational activities beyond traditional mutual-help groups. Among rural people who use stimulants, increased engagement in social–recreational activities was associated with decreased substance use and decreased criminal recidivism (Timko et al., 2017).

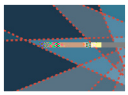
See this Rural Health Information Hub (https://www.ruralhealthinfo.org/topics/substance-use) webpage on substance use in rural areas for resources and more information.

People Involved in the Criminal Justice System

The number of people in state and federal prisons in the United States has been declining since its peak in 2008. Despite this decline, the United States still incarcerates a larger percentage of its population than any other country (Pew Research Center, 2020). According to the Department of Justice's Bureau of Justice Statistics (BJS), 0.42 percent of U.S. residents—1.43 million people—were in state or federal prison in 2019 (Carson, 2020).

The rate of imprisonment for Blacks/African Americans is at its lowest since 1989, before laws passed during the "war on drugs" imposed stiff mandatory jail sentences for drug-related crimes (BJS, 2020). Since 2006, the imprisonment rate for Blacks/African Americans has dropped 34 percent. Over the same period, Hispanic and White Americans' rates of imprisonment also dropped, by 26 and 17 percent, respectively. Even with the more rapid decline in their rates of incarceration, Blacks/African Americans are still imprisoned at a rate twice that of Hispanics and 5 times that of Whites (Pew Research Center, 2020).

Substance use and criminal justice involvement are highly correlated. The manufacture, possession, or sale of a variety of drugs are criminal offenses; thus, many people are in prison for committing drug-related crimes. Nearly 243,000 people nationwide are in state and federal prisons for drug offenses. As of May 2021, drug offenses accounted for almost half the inmates in federal prisons (46.3%, or more than 66,000 people; Federal Bureau of Prisons, 2021). In 2018, one in seven inmates in state prisons (14%, or more than 176,000 people) was serving time for a drug offense (Carson, 2020). About 21 percent of inmates in state prisons say they committed their crimes to obtain drugs or money to buy drugs (Bronson et al., 2017). Two out of every ve state prison inmates committed their crimes while on drugs. One in 6 was taking crack/cocaine; 1 in 10 was taking other stimulants, including MA (Bronson et al., 2017). Stimulant-related offenses account for 75 percent of all federal drug crimes (CDC, 2019).



through comprehensive SUD care, it is important to educate PWID regarding harm reduction principles and safer injection practices to avoid the negative consequences of injection drug use.

Evidence shows that multicomponent HIV prevention programs—which provide antiretroviral medication, HIV testing, access to and education about condoms, and behavioral prevention skills training to people with HIV and their partners—reduce the risk of transmission over time (CDC, 2016).

Syringe access programs have been implemented in a wide variety of circumstances throughout the world (Des Jarlais et al., 2013; Nguyen et al., 2014). Research on syringe access programs show that they reduce the risk of HIV and hepatitis and do not lead to more injection drug use (Abdul-Quader et al., 2013; Bramson et al., 2015; CDC, n.d.-f). Furthermore, education on safer injection practices reduces the risk of skin and soft tissue infection among PWID (Baltes et al., 2020). To learn about recommendations and guidelines for safer injection practices (e.g., supplies, injection sites, injection processes), see the National Harm Reduction Coalition's Getting Off Right: A Safety Manual for Injection Drug Users (https://harmreduction.org/issues/safer-drug-use/injection-safety-manual/) and the Boston Public Health Commission's Access Harm Reduction Overdose Prevention and Education Program Participant Guide (https://www.bphc.org/whatwedo/Recovery-Services/services-for-active-users/Documents/Client%20Manual%20FINAL.pdf).

Although research supports the use of syringe access programs (Platt et al., 2017) and safer injection education (Des Jarlais, 2017), barriers exist to using them for HIV and hepatitis risk reduction. For example, a study of adults who inject heroin identi ed greater distance from syringe access programs, worries about potential arrest for possession of syringes, and lack of appropriate preparation (i.e., not having alcohol, alcohol wipes, or new syringes available) as barriers to use of sterile needles (Phillips, 2016). Further, perceived stigma from pharmacists and syringe access program staff can also affect engagement among PWID (Paquette et al., 2018; Rivera et al., 2014).

Prior to the implementation of syringe access programs, the 1995 report Preventing HIV Transmission: The Role of Sterile Needles and Bleach, produced by a panel organized by the National Research Council and the Institute of Medicine (IOM; now the National Academy of Medicine), states that bleach disinfection, when performed according to the guidelines provided by CDC and SAMHSA's Center for Substance Abuse Treatment, is useful in preventing HIV infection for PWID who share injecting equipment. The IOM report recommends that PWID be trained in effective procedures and more research be conducted to identify the simplest effective disinfection procedures. Bleach disinfection is recommended in situations where alternative, effective interventions (e.g., syringe exchange programs) are not available.

People Living With HIV/AIDS

People who use stimulants are at higher risk for HIV acquisition, as they are more likely to (SAMHSA, 2020j):

- Engage in condomless sex.
- Have multiple sexual partners.
- Reuse or share injection drug equipment.

People who inject stimulants may be at elevated risk for HIV acquisition compared with individuals who inject other substances, because of the frequency with which injection of stimulants occurs (Tavitian-Exley et al. 2015). Sexual activity, in particular being an anal receptive partner, and needle sharing are common routes of HIV acquisition for people who inject stimulants. Exhibit 6.2 lists the probabilities of acquiring HIV from an infected source for various types of exposure. Providers need to address risk factors for HIV transmission with patients using stimulants.

Screening people with stimulant use disorders for HIV should be part of the standard of care provided by SUD treatment programs (SAMHSA, 2020j). Patients may be reluctant to undergo an HIV test because they fear the results or because of stigma related to HIV/AIDS. Clinicians can help to increase both HIV testing uptake and engagement among patients who have a positive test by educating patients about effective treatments for HIV and the concept of "undetectable equals untransmittable" (U=U). The U=U slogan, which is part of the Prevention Access Campaign, conveys to patients that they cannot transmit HIV sexually if they are adherent to antiretroviral therapy (ART) and they do not have detectable levels of HIV in their blood for at least 6 months (Eisinger et al., 2019). In the setting of highly active antiretrovirals, a durably suppressed HIV viral load truly is treatment as prevention.

Many factors may delay a diagnosis of HIV in patients who use stimulants and it is more likely that patients using stimulants will have an AIDS diagnosis at the time of their positive HIV test (United Nations Of ce on Drugs and Crime, 2019a). Patients living with HIV and using stimulants may have increased risk for progression to an AIDS diagnosis and increased all-cause mortality (Carrico et al., 2014).

For patients who have a positive HIV screen, clinicians should con rm the diagnosis and link the patients to HIV care immediately for evaluation by a treatment provider (SAMHSA, 2020j). This may be overwhelming for patients, particularly in the setting of active substance use. Clinicians can avoid delays in linkage to care and promote patient safety by using a warm-handoff approach, in which the patient's care is transferred between providers in the presence of the patient.

Treating people living with HIV/AIDS (PLWHA) is another area in which program linkages become critical to successful treatment. It is helpful, where possible, to have medical staff skilled in both HIV and SUD care to provide patients convenient access to treatment for both chronic health conditions. Given the complex stigma patients face when living with HIV and SUD, it is imperative to seamlessly transition patients and refer them to appropriate care providers.

Although ART has advanced signi cantly and new medication regimens like long-acting injectable products are on the horizon, daily medication adherence is still pivotal to having a durably suppressed viral load. In patients injecting stimulants, daily ART adherence is affected. Stimulant use is correlated with lower daily adherence, but does not necessarily correlate with increased levels of detectable HIV viral loads (Marquez et al., 2009). Additional research has found that positive affect intervention coupled with community-based CM may be effective in increasing viral suppression and limiting patients' stimulant use (Carrico, Hunt, et al., 2019; Carrico, Neilands, et al., 2019).

MA has been associated globally not only with higher rates of HIV acquisition, but also with more dif culty in patients reaching HIV viral suppression (Mastro et al., 2020). Among people who use MA and are living with HIV, there is an increased likelihood of transmitted drug resistance (Cachay et al., 2007). Multiple mechanisms of action have been indicated for the worsening outcomes for PLWHA and using MA, including in ammation (Castillo-Mancilla et al., 2016), increased viral replication (Mastro et al., 2020), and immunologic dysfunction (Carrico et al., 2018) related to substance use.

One of the critical aspects of providing SUD treatment to PLWHA is the continuing education that clinicians need regarding the changing and complex array of medication regimens available to this population. Further, clinicians need an awareness of the compounded stigma that many PLWHA who use stimulants may face in seeking treatment in traditional medical systems (Brinkley-Rubinstein, 2015; Pescosolido & Martin, 2015).

Peer support may be crucial in helping PLWHA feel understood, encouraged, and supported in their recovery journey. In addition to facing SUDs, PLWHA may also be dealing with mental health issues and trauma, all of which make the recovery process particularly complex. Support from a peer can be powerful because of their understanding of:

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For more information on this topic, see SAMHSA's publication Prevention and Treatment of HIV Among People Living with Substance Use and/or Mental Disorders (https://store.samhsa.gov/product/Prevention-and-Treatment-of-HIV-Among-People-Living-with-Substance-Use-and-or-Mental-Disorders/PEP20-06-03-001).

People With or At Risk for Hepatitis

Hepatitis is an in ammation of the liver. It is often caused by viruses, the most common of which in the United States are hepatitis A virus (HAV), hepatitis B virus (HBV), and HCV. HCV is the most prevalent hepatitis virus in the United States (CDC, 2021d). The primary mode of HCV transmission is injection drug use, particularly among young adults and rural populations (Harris et al., 2016; Iqbal et al., 2015; Page et al., 2013). Sexual contact is another common mode of transmission, particularly among PWID with sexual behavior with an elevated risk of tissue tearing (Tracy et al., 2014) or with co-occurring HIV infection (J. Chen et al., 2014).

The prevalence of lifetime HCV infection among PWID ranges from 65 to 90 percent (Crawford & Bath, 2013; P. K. Nelson et al., 2011). HCV seropositivity is correlated with duration and frequency of injection (CDC, 2011). Among PWID who are also MSM and have HIV infection, the prevalence of detectable HCV infection is 40 percent (Jordan et al., 2017).

In a study of individuals who reported lifetime use of MA and who had susceptibility to HBV, 6.95

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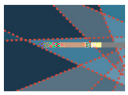

Providers who conduct these screenings need to recognize that individuals may hesitate to answer questions about injection drug use, sexual history, or potential risk for hepatitis because of mistrust, stigma, and discrimination. Further, hepatitis infection may be misattributed to sexual contact among PWID who provide accurate responses about their sexual practices but do not admit to injection drug use (Klevens et al., 2012), putting them at future risk for reinfection if they do not receive SUD treatment or harm reduction education.

SAMHSA's Hepatitis C Screening in the Behavioral Healthcare Setting Advisory (https://store.samhsa.gov/product/Advisory-Hepatitis-C-Screening-in-the-Behavioral-Healthcare-Setting/sma15-4917) provides an overview of how and why to conduct or make referrals for HCV screening, and also looks at the ways HAV, HBV, and HCV are transmitted. For additional information and resources, see the CDC Viral Hepatitis webpage (https://www.cdc.gov/hepatitis/index.htm).

Clinicians should also integrate education on hepatitis into SUD care. Education should include information, as appropriate, about the health bene ts of:

- Participating in syringe services programs.
- Using protection when engaging in sex.
- Getting vaccinated against HAV and HBV.
- Taking medication for HCV.

SAMHSA's comic book-style publication Take Action Against Hepatitis C: For People in Recovery From Mental Illness or Addiction (https://store.samhsa.gov/product/Take-Action-Against-Hepatitis-C/sma14-4853) provides information directed to patients.

Individuals With Co-Occurring Mental Disorders

A patient with CODs has a combination of two or more SUDs and mental disorders as de ned in DSM-5 (SAMHSA, 2020l). Although a stimulant use disorder can coexist with any mental disorder, this section focuses on some of the mental disorders that are most often diagnosed in people with a stimulant use disorder: depressive disorders, bipolar disorder, anxiety disorders, PTSD, ADHD, and schizophrenia.

Someone who displays symptoms consistent with a mental disorder does not necessarily have an organic mental disorder but may have a substance-induced disorder or symptoms mimicking an organic mental disorder (per DSM-5). For example, people in withdrawal from stimulant use may show symptoms of depression, but they do not necessarily have a depressive disorder. Similarly, people who use MA may exhibit psychotic symptoms like those common in people with schizophrenia, but the psychotic symptoms are not conclusive evidence of schizophrenia and may resolve with cessation of substance use.

Other symptom clusters commonly associated with speci c mental disorders are also frequently seen during the use of stimulants or during early abstinence. These symptom clusters include physical and psychological signs of anxiety, mood uctuations, and antisocial behavior.

Some people with stimulant use seek psychiatric care for symptoms related to their stimulant use before entering SUD treatment. Some patients may use substances to treat symptoms of their organic

is modi ed after additional data are collected. Additionally, for patients using stimulants like cocaine or MA, it is important to differentiate symptoms associated with an organic mental illness and symptoms of protracted withdrawal. For example, patients may have symptoms of depression and psychosis that accompany acute withdrawal symptoms, but they typically resolve within 1 week (Zorick et al., 2010).

Another important element in the diagnosis of a co-occurring mental disorder is obtaining a careful history of the chronological relationship between the onset of psychiatric symptoms and the substance use history. An accurate chronology can help clinicians determine whether there is a co-occurring mental disorder or the psychiatric symptoms are induced by the substance.

Clinicians should assess whether the outpatient setting is appropriate for evaluation of symptoms. Hospital admission allows for a more thorough evaluation of symptoms and factors that may contribute to the symptoms. Additionally, patients can be observed for resolution of particularly concerning symptoms, such as suicidal or homicidal ideation or psychotic symptoms that may affect individual or community safety (Kampman & Jarvais, 2015).

Given the many challenges people with CODs face, linking them with peer recovery support specialists may be bene cial. In one study, a treatment group of people with SUDs and co-occurring serious mental illness who participated in a peer support program spent more time living in the community before needing rehospitalization and had fewer rehospitalizations overall than did a comparison group without program participation (Min et al., 2007). Helping patients with CODs connect with peer recovery support specialists (including mutual-help programs devoted to CODs) should be a part of discharge planning, continuous care, and may even be combined with ongoing clinical interventions (e.g., CBT, medication treatment) to maximize positive outcomes (SAMHSA, 2020l).

Mutual-help programs for people with CODs—often called dual recovery mutual-help programs—are available to help patients nd

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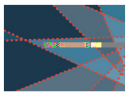

  - Teaching CBT techniques to recognize and manage symptoms of anxiety.
  - Discussing appropriate medication options, using motivational enhancement strategies.
  - Practicing mindfulness techniques.
  - Encouraging healthy lifestyle activities (e.g., diet, physical activity, sleep hygiene).
- Exercising extreme care in prescribing benzodiazepines for anxiety disorders, because of their high addiction potential.

Posttraumatic stress disorder

A strong association exists between PTSD and SUDs (B. F. Grant et al., 2015; B. F. Grant et al., 2016; Hasin & Kilcoyne, 2012). The lifetime prevalence of PTSD in people with SUDs is thought to range between 26 and 52 percent, and rates of current PTSD between 15 and 42 percent (Vujanovic et al., 2016).

People in treatment for a cocaine use disorder have double the odds of probable PTSD compared with people without cocaine use disorder, and the risk is greater for women than for men (Saunders et al., 2015). Among people who complete treatment for MA use disorder, PTSD is associated with more than 5 times greater odds of posttreatment MA

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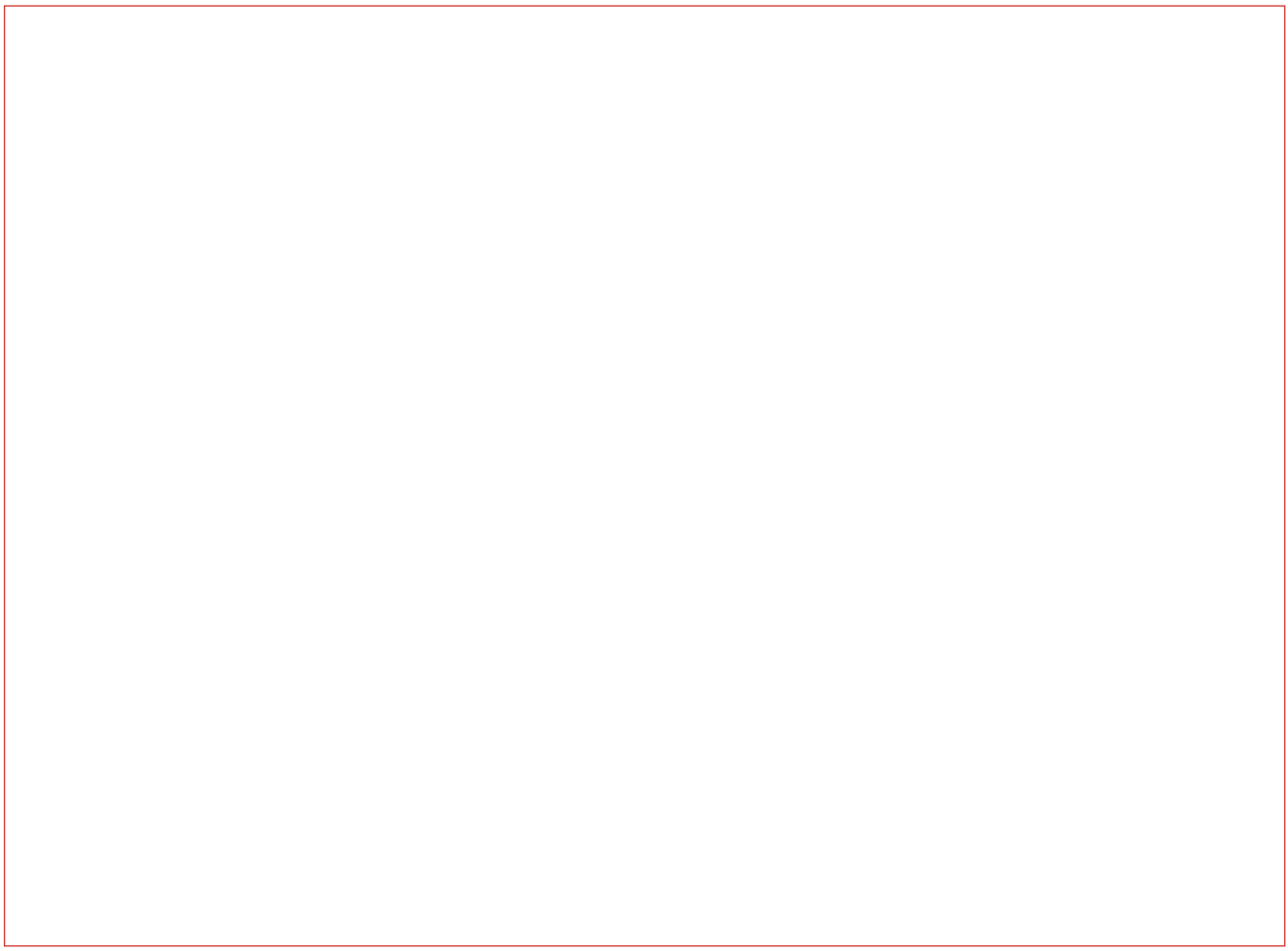

Several nonpharmacologic treatments for ADHD have demonstrated ef cacy and should be a core part of any ADHD treatment plan, regardless of whether medication is also prescribed. In patients with stimulant use disorder who want to remain abstinent, reliance on nonpharmacologic interventions becomes even more critical. Such interventions are (Katzman et al., 2017):

- Psychoeducation (e.g., learning organizational skills, nding resources and support groups).
- Psychotherapy (e.g., CBT, interpersonal therapy).
- Behavioral interventions (e.g., teaching patients how to manage their environment, helping patients make healthy lifestyle changes, such as getting more exercise or better sleep).
- Social interventions (e.g., social skills training, anger management).
- School/workplace accommodations (e.g., being given extra time to complete tests, being allowed to close one's of ce door to minimize distractions).

Both conditions can be treated concurrently, but if the patient is destabilized because of stimulant use, the provider may need to address the SUD and stabilize the patient before pursuing ADHD treatment (Katzman et al., 2017).

Schizophrenia

Schizophrenia is very uncommon in the United States, with somewhere between 0.3 and 0.7 percent of U.S. adults developing the disorder in their lifetime (APA, 2013). The prevalence of SUDs among people with schizophrenia is estimated to be as high as 55 percent (Kerner, 2015).

Key recommendations for clinicians working with patients who have co-occurring schizophrenia include:

- Treating SUD immediately to allow time for the medication for the mental illness to take effect. Both conditions should be treated at once, as substance use in schizophrenia can worsen disease course and may reduce adherence to antipsychotic medication (Werner & Covenas, 2017).
- Providing psychoeducation about schizophrenia, medication, and the importance of medication adherence for symptom control (SAMHSA, 2020l).
- Beginning treatment with deescalation and treatment of the psychotic symptoms through sleep, medications, and nutritional support. This is recommended because continuous cocaine or MA use, particularly in the setting of sleep deprivation, may result in psychotic symptoms and in severe cases may be completely indistinguishable from paranoid schizophrenia (J. M. Wilkerson et al., 2018).
- Providing treatment for both schizophrenia and stimulant use disorder with slight modi cations after a stabilization period.
- Teaching patients to detect early signs of relapse for both schizophrenia and stimulant use or prescription stimulant misuse (SAMHSA, 2020l).
- Teaching patients to manage positive and negative symptoms of psychosis, increase coping skills, improve social skills (e.g., communication with others), expand social networks, enhance problem-solving abilities, build distress tolerance, increase motivation, and set and achieve goals.
- Modifying group counseling, so that groups are smaller and more structured than in traditional SUD treatment. Confrontational situations should be avoided. To be effective, each group session should focus on a particular skill or topic. For patients with unstable schizophrenia currently exhibiting uncontrolled positive symptoms, deferment of group counseling and continued individual counseling may be appropriate until stabilization occurs.

Learn more about treating patients with CODs in TIP 42 (https://store.samhsa.gov/product/tip-42-substance-use-treatment-persons-co-occurring-disorders/PEP20-02-01-004).

Summary

Patients who belong to speci c populations with intrinsic vulnerabilities related to systems of care may have higher rates of stimulant use disorders and more dif culties engaging in care for these disorders. Factors that can in uence treatment engagement among these special populations include location and availability of SUD programs and culturally competent clinicians, clinicians' ability to foster trust and safe relationships, and clinicians' ability to apply individualized approaches. By understanding the needs of special populations with stimulant use disorders, as well as their care access issues and treatment considerations, clinicians can provide patient-centered, effective care that maximizes rapport and treatment engagement.

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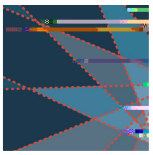

Chapter 7—Resources

Resources for Counselors, Providers, and Programs

Substance Abuse and Mental Health Services Administration (SAMHSA), Addiction Technology Transfer Center (ATTC) Network (https://attcnetwork.org): The ATTC Network is a multidisciplinary resource for professionals in the substance use disorder (SUD) treatment and recovery services eld. The network's 10 U.S.-based centers, 2 national focus area centers (the National American Indian & Alaska Native ATTC [https://attcnetwork.org/centers/national-american-indian-and-alaska-native-attc/home] and National Hispanic and Latino ATTC [https://attcnetwork.org/centers/national-hispanic-and-latino-attc/home]), and Network Coordinating Of ce provide news, tools and other resources, and free and low-cost training programs. The training includes a new series on contingency management (CM). Access the CM series at https://attcnetwork.org/centers/northwest-attc/news/new-online-course-contingency-management-healthcare-settings for Part 1 and https://attcnetwork.org/centers/network-coordinating-of ce/contingency-management-part-2-founding-principles for Part 2.

SAMHSA, Lesbian, Gay, Bisexual, and Transgender (LGBT) Behavioral Health Equity (https://www.samhsa.gov/behavioral-health-equity/lgbt): This webpage provides information on SAMHSA's programs related to the LGBT community and SAMHSA resources for providers and programs working with the LGBT population, as well as links to other federal initiatives that seek to expand services and improve behavioral health outcomes for these individuals.

SAMHSA, Mental Health Technology Transfer Center (MHTTC) Network (https://mhttcnetwork.org): The MHTTC Network supports resource development and dissemination, training and technical assistance, and workforce development for the mental health eld. The network includes 10 Regional Centers, a National American Indian and Alaska Native Center (https://mhttcnetwork.org/sites/default/ les/2020-12/AIAN_MHTTC_Year2_TwoPager%20edited.pdf), a National Hispanic and Latino Center (https://mhttcnetwork.org/sites/default/ les/2020-12/NHL%20MHTTC%20Year%202_%202%20pager.pdf), and a Network Coordinating Of ce (https://mhttcnetwork.org/centers/mhttc-network-coordinating-of ce/network-coordinating-of ce). These centers work with healthcare systems, organizations, and treatment practitioners involved in the delivery of mental health services to strengthen their capacity to deliver effective evidence-based practices to individuals.

SAMHSA, Prevention Technology Transfer Center (PTTC) Network (https://pttcnetwork.org): The PTTC Network seeks to improve implementation and delivery of effective substance abuse prevention interventions and provides training and technical assistance services to the substance abuse prevention eld. The network is comprised of 10 Domestic Regional Centers; 2 National Focus Area Centers, one focused on American Indians and Alaska Natives (https://pttcnetwork.org/centers/national-american-indian-alaska-native-pttc/home) and another focused on Hispanic and Latino populations (https://pttcnetwork.org/centers/national-hispanic-latino-pttc/home); and a Network Coordinating Of ce (https://pttcnetwork.org/centers/pttc-network-coordinating-of ce/about-network-coordinating-of ce). Together the network serves the 50 U.S. states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and the Paci c Islands of Guam, American Samoa, Palau, the Marshall Islands, Micronesia, and the Mariana Islands.

U.S. Department of Veterans Affairs (VA), National Center for PTSD (https://www.ptsd.va.gov/professional/index.asp): VA offers training materials, information, and tools to assess and treat trauma-related disorders. This website contains links to continuing education on posttraumatic stress disorder (PTSD), free training in prolonged exposure therapy for providers who treat veterans, and links to VA bene ts.

Publications

SAMHSA Publications

After Incarceration: A Guide to Helping Women Reenter the Community (https://store.samhsa.gov/product/After-Incarceration-A-Guide-To-Helping-Women-Reenter-the-Community/PEP20-05-01-001): This guide provides an overview of topics and resources for supporting women who are reentering the community after involvement with the criminal justice system. It was created for individuals who provide or coordinate reentry services (e.g., corrections staff, reentry organizations, substance use disorder and mental health treatment providers, reentry specialists, peer specialists).

Advisory: Hepatitis C Screening in the Behavioral Healthcare Setting (https://store.samhsa.gov/product/Advisory-Hepatitis-C-Screening-in-the-Behavioral-Healthcare-Setting/sma15-4917): Part of SAMHSA's Advisory series, this brief guide gives an overview of hepatitis C and discusses approaches to testing, treatment, and counseling.

Advisory: Integrating Vocational Services Into Substance Use Disorder Treatment (https://store.samhsa.gov/product/integrating-vocational-services-substance-use-disorder-treatment/pep20-02-01-019?referer=from_search_result): This Advisory is directed to programs serving clients who are unemployed, underemployed, or struggling in workplace settings. It presents strategies and resources for SUD treatment counselors and clinic directors to improve outcomes for clients in recovery by helping them nd and keep employment and manage workplace stressors.

Anger Management for Substance Use Disorder and Mental Health Clients: A Cognitive—Behavioral Therapy Manual (https://store.samhsa.gov/product/PEP19-02-01-001): This treatment manual describes the concept of cognitive—behavioral therapy (CBT) and its use of social learning theory for treating clients in a variety of clinical settings. CBT teaches clients with substance use and mental disorders how to control their anger and disrupt the aggression cycle. The manual may be used with the companion Participant Workbook (see entry below).

Anger Management for Substance Use Disorder and Mental Health Clients: Participant Workbook (https://store.samhsa.gov/product/PEP19-02-01-002): This workbook was developed for use with Anger Management for Substance Use Disorder and Mental Health Clients: A Cognitive–Behavioral Therapy Manual. Participants refer to the workbook during anger management group treatment and use it to complete homework assignments.

Clinical Guidance for Treating Pregnant and Parenting Women With Opioid Use Disorder and Their Infants (https://store.samhsa.gov/product/Clinical-Guidance-for-Treating-Pregnant-and-Parenting-Women-With-Opioid-Use-Disorder-and-Their-Infants/SMA18-5054): This guide recommends standard and feasible approaches to the care of pregnant and parenting women with OUD and their infants. These approaches can be adopted in a variety of care settings.

Finding Quality Treatment for Substance Use Disorders (https://store.samhsa.gov/product/PEP18-TREATMENT-LOC): This resource is for people seeking behavioral health services and treatment for SUDs. It provides guidance on how to nd a quality treatment center and the steps to complete before accessing treatment.

Guidance Document for Supporting Women in Co-ed Settings (www.samhsa.gov/resource/ebp/guidance-document-supporting-women-co-ed-settings): Most women in SUD treatment receive services in co-ed treatment and recovery centers where men outnumber women, yet women and men with SUDs differ in many ways. This guide explores the ways in which treatment providers can better understand these differences and meet women's speci c treatment needs.

In Brief: Rural Behavioral Health: Telehealth Challenges and Opportunities (https://store.samhsa.gov/product/SMA16-4989): This guide for behavioral healthcare providers describes the barriers associated with implementing telehealth services in rural and frontier communities and offers tips on how to overcome these challenges and improve patient outcomes.

In Brief: Treating Sleep Problems of People in Recovery From Substance Use Disorders (https://store.samhsa.gov/product/SMA14-4859): This publication explains how healthcare providers can help clients in recovery from SUDs who have sleep problems. It discusses the potential impact of poor sleep on recovery and offers recommendations on screening and treatment.

Matrix Intensive Outpatient Treatment for People With Stimulant Use Disorders: Client's Handbook (https://store.samhsa.gov/product/SMA15-4154): This handbook contains checklists and other recovery tools based on the Matrix model, including tips for managing emotions, substance use triggers, and other impediments to achieving and maintaining recovery from stimulant misuse.

Matrix Intensive Outpatient Treatment for People With Stimulant Use Disorders: Counselor's Treatment Manual (https://store.samhsa.gov/product/SMA13-4152): This manual is one of ve components of the Matrix model's intensive outpatient treatment package that provides structured, evidence-based treatment strategies for helping clients who misuse or are dependent on stimulant drugs, such as MA and cocaine.

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TIP 35: Enhancing Motivation for Change in Substance Use Disorder Treatment

TIP 63: Medications for Opioid Use Disorder
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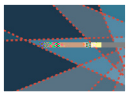
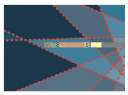
NAADAC, the Association for Addiction Professionals: Counseling African Americans With Substance Use Disorders (https://www.naadac.org/assets/2416/2015-06-04_counseling_african_americans_with_suds_webinarslides.pdf): This PowerPoint presentation showcases tools that can help practitioners work more effectively with African American clients who are dealing with chemical dependency and other SUDs.

National Center on Substance Abuse and Child





Narcotics Anonymous (NA) World Services (https://www.na.org/): NA is a global, community-based organization with a multilingual, multicultural membership that supports SUD recovery via a 12-Step program, including regular group meetings. This ongoing support network helps participants maintain a drug-free lifestyle.

National Mental Health Consumers' Self-Help Clearinghouse (https://www.mhselfhelp.org/): This clearinghouse offers a resource kit featuring the names and contact information of treatment and mutual-help support services that address SUDs and cooccurring disorders.

Partnership to End Addiction (https://drugfree.org/): Partnership to End Addiction is an online resource for families of individuals who use drugs, including stimulants. In addition to educational resources, the website includes a helpline, an online support community, peer-to-peer parent coaching, online skill-building courses, and a text message program that provides customized messages and resources. Resources are available in Spanish.

Pills Anonymous World Service (https://www.pillsanonymous.org/): This 12-Step mutual-help fellowship holds regular meetings for individuals in recovery from SUDs involving medication. Meeting participants share their experiences, build their strengths, and offer hope for recovery to one another.

Recoveries Anonymous (https://www.r-a.org/): This 12-Step mutual-help fellowship welcomes people with a broad range of problems, from SUDs to mental disorders to "problem behaviors" (e.g., compulsive spending, risk-taking, suicidal behaviors).

Secular Organizations for Sobriety (SOS) (http://www.sossobriety.org/): SOS is a nonpro t network of autonomous, nonprofessional local groups whose focus is on using a secular approach to maintaining abstinence from alcohol, other drugs, or other types of addictive behaviors.

SMART Recovery® (https://www.smartrecovery.org/): The SMART Recovery website provides information about the organization's science-based and self-empowering program, training opportunities, and a searchable database of local and online meetings in the United States and abroad.

The Trevor Project (https://www.thetrevorproject.org): The Trevor Project provides crisis intervention and suicide prevention services to lesbian, gay, bisexual, transgender, and queer & questioning (LGBTQ) young people age 24 and younger. The organization offers no-cost, judgment-free, online, hotline, and chat/text services that are available 24/7 to young people who want to socially network, are in crisis, or have questions about sexual orientation, gender identity, and other topics.

Women for Sobriety (WFS) (https://womenforsobriety.org/): WFS is a recovery program based on women's unique emotional needs. It focuses on helping women with SUDs begin and maintain recovery. WFS has certi ed moderators and chat leaders who facilitate mutual-help groups online and in person, as well as phone volunteers available for one-on-one support.

Laws and Regulations

SAMHSA, Fact Sheet: SAMHSA 42 CFR Part 2 Revised Rule (https://www.hhs.gov/about/news/2020/07/13/fact-sheet-samhsa-42-cfr-part-2-revised-rule.html): This resource provides a summary of changes to 42 CFR Part 2 (made in response to the opioid epidemic) pertaining to patient records in federally assisted SUD treatment programs.

SAMHSA, Substance Abuse Con dentiality Regulations (https://www.samhsa.gov/about-us/who-we-are/laws-regulations/con dentiality-regulations-faqs): This webpage provides information about consent and con dentiality regulations pertaining to release of patient records for SUD, as codi ed in 42 CFR Part 2 (revised).

CDC, Public Health Professionals Gateway, Health Insurance Portability and Accountability Act of 1996 (HIPAA) (https://www.cdc.gov/phlp/publications/topic/hipaa.html#:~:text=The%20Health%20Insurance%20Portability%20and,the%20patient's%20consent%20or%20knowledge): This webpage explains HIPAA standards, which require healthcare providers to protect sensitive patient health information from being disclosed without the patient's consent or knowledge.

Comprehensive Addiction and Recovery Act of 2016 (https://www.congress.gov/bill/114th-congress/senate-bill/524/text): This legislation authorizes grant programs designed to expand SUD (especially OUD) prevention, education, treatment, and recovery efforts. The Act includes provisions explicitly aimed at supporting such efforts in communities facing sudden increases in MA use.

Drug Addiction Treatment Act of 2000 (https://www.congress.gov/bill/106th-congress/house-bill/2634): This legislation, as amended, allows healthcare professionals who meet certain quali cations to offer FDA-approved narcotic medication treatment for OUD in settings other than opioid treatment programs. (At the time of this publication, buprenorphine is the only approved medication that meets the provisions of the Act.) This is relevant for patients with stimulant use disorder who are also using opioids and wish to initiate buprenorphine treatment. For statutory changes expanding buprenorphine prescribing, see https://www.samhsa.gov/medication-assisted-treatment/statutes-regulations-guidelines.

Fair Sentencing Act of 2010 (https://www.congress.gov/bill/111th-congress/senate-bill/1789): This Act reduced the 5- to 10-year "mandatory minimum" prison sentence for possession of low-level crack cocaine. It also removed the mandatory minimum for simple possession of cocaine.

U.S. Department of Justice, Drug Enforcement Administration, Diversion Control Division, Combat Methamphetamine Epidemic Act of 2005 (CMEA) (https://www.deadiversion.usdoj.gov/meth/index.html): This webpage interprets CMEA, the federal legislation that bans over - the-counter sales of cold medicines containing ingredients that are commonly used in the manufacture of MA, such as pseudoephedrine. It also limits the amount of these products that can be purchased at one time and tracks purchasers.

21st Century Cures Act: (https://www.congress.gov/114/plaws/publ255/PLAW-114publ255.pdf): Passed in 2016, this Act was intended to help increase the speed and ef ciency of the discovery, development, and delivery of medical cures. It provides U.S. research and healthcare delivery institutions, such as FDA and the National Institutes of Health, with funding to improve clinical trials, enhance data sharing, increase the recruitment of participants in clinical trials, and launch innovative research projects. It also established the State Targeted Response to the Opioid Crisis grant program.

Additional Resources

SAMHSA, Suicide Safe Mobile App (https://

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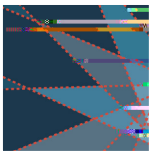


Bibliography

Anbalagan, S., & Mendez, M. D. (2021). Neonatal abstinence syndrome. In StatPearls. https://www.ncbi.nlm.nih.gov/books/NBK551498/

Andermann, A. (2016). Taking action on the social determinants of health in clinical practice: A framework for health professionals. CMAJ, 188(17–18), E474–E483.

Anderson, J. E., Brown, I. E., Olson, K. A., Iverson, K., Cocanour, C. S., & Galante, J. M. (2018). Nonocclusive mesenteric ischemia in patients with methamphetamine use. Journal of Trauma and Acute Care Surgery, 84(6), 885–892.

Anderson, J. L., Adams, C. D., Antman, E. M., Bridges, C. R., Califf, R. M., Casey, Jr., D. E., … Riegel, B. (2007). ACC/AHA 2007 guidelines for the management of patients with unstable angina/non–ST-elevation myocardial infarction: A report of the American College of Cardiology/American Heart Association Task Force on practice guidelines. Journal of the American College of Cardiology, 50(7), e1–e157.

Anderson, K. N., Ailes, E. C., Danielson, M., Lind, J. N., Farr, S. L., Broussard, C. S., & Tinker, S. C. (2018). Attention-de cit/hyperactivity disorder medication prescription claims among privately insured women aged 15–44 years—United States, 2003–2015. Morbidity and Mortality Weekly Report, 67(2), 66–70.

Anderson-Carpenter, K. D., Fletcher, J. B., Swendeman, D., & Reback, C. J. (2019). Associations between sociodemographic characteristics and substance use disorder severity among methamphetamine-using men who have sex with men. Substance Use and Misuse, 54(11), 1763–1773.

Andrade, C. (2018). Risk of major congenital malformations associated with the use of methylphenidate or amphetamines in pregnancy. Journal of Clinical Psychiatry, 79(1), 18f12108.

Anker, A. L., & Crowley, T. J. (1982). Use of contingency contracts in specialty clinics for cocaine abuse. NIDA Research Monograph, 41, 452–459.

Arkowitz, H., Miller, W. R., & Rollnick, S. (Eds.). (2015). Motivational interviewing in the treatment of psychological problems. Guilford Press.

Armenian, P., Effron, Z., Garbi, N., Dirks, R., Benowitz, N. L., & Gerona, R. R. (2019). Stimulant drugs are associated with violent and penetrating trauma. American Journal of Emergency Medicine, 37(4), 645–650.

Arria, A. M., & DuPont, R. L. (2018). Prescription stimulant use and misuse: Implications for responsible prescribing practices. American Journal of Psychiatry, 175(8), 707–708.

ARUP Laboratories. (2019). Drug plasma half-life and urine detection windows.

AshaRani, P. V., Hombali, A., Seow, E., Ong, W. J., Tan, J. H., & Subramaniam, M. (2020). Non-pharmacological interventions for methamphetamine use disorder: A systematic review. Drug and Alcohol Dependence, 212, 108060.

Ashok, A. H., Mizuno, Y., Volkow, N. D., & Howes, O. D. (2017). Association of stimulant use with dopaminergic alterations in users of cocaine, amphetamine, or methamphetamine: A systematic review and meta-analysis. JAMA Psychiatry, 74(5), 511–519.

Asser, A., & Taba, P. (2015). Psychostimulants and movement disorders. Frontiers in Neurology, 6, 75.

Attaran, H. (2017). Fatal small intestinal ischemia due to methamphetamine intoxication: Report of a case with autopsy results. Acta Medica Iranica, 55(5), 344–347.

Bachi, K., Mani, V., Jeyachandran, D., Fayad, Z. A., Goldstein, R. Z., & Alia-Klein, N. (2017). Vascular disease in cocaine addiction. Atherosclerosis, 262, 154–162.

Bahdila, D., Aldosari, M., Abdullah, A., Nelson, J. L., Hegazi, F., Badamia, R., … Agaku, I. T. (2020). Cocaine, polysubstance abuse, and oral health outcomes, NHANES 2009 to 2014. Journal of Periodontology. Advance online publication. doi:10.1002/JPER.19-0509

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. Lancet, 389(10077), 1453–1463.

Baldwin, J. A., Eaves, E. R., Brown, B. G., Elwell, K., & Williamson, H. J. (2020). The behavioral health of American Indian/Alaska Native populations: Risk and resiliency. In B. L. Levin & A. Hanson (Eds.), Foundations of behavioral health (pp. 205–230). Springer.

Baldwin, J. A., Johnson, J. L., & Benally, C. C. (2009). Building partnerships between indigenous communities and universities: Lessons learned in HIV/AIDS and substance abuse prevention research. American Journal of Public Health, 99(Suppl. 1), S77–S82.

Ballester, J., Valentine, G., & Sofuoglu, M. (2017). Pharmacological treatments for methamphetamine addiction: Current status and future directions. Expert Review of Clinical Pharmacology, 10(3), 305–314.

Balsam, K. F., Huang, B., Fieland, K. C., Simoni, J. M., & Walters, K. L. (2004). Culture, trauma, and wellness: A comparison of heterosexual and lesbian, gay, bisexual, and two-spirit Native Americans. Cultural Diversity and Ethnic Minority Psychology, 10(3), 287–301.

Baltes, A., Akhtar, W., Birstler, J., Olson-Streed, H., Eagen, K., Seal, D., … Brown, R. (2020). Predictors of skin and soft tissue infections among sample of rural residents who inject drugs. Harm Reduction Journal, 17(1), 96.

Baradhi, K. M., Pathireddy, S., Bose, S., & Aeddula, N. R. (2019). Methamphetamine (N-methylamphetamine)-induced renal disease: Underevaluated cause of end-stage renal disease (ESRD). BMJ Case Reports, 12(9), e230288.

Baral, S. D., Poteat, T., Strömdahl, S., Wirtz, A. L., Guadamuz, T. E., & Beyrer, C. (2013). Worldwide burden of HIV in transgender women: A systematic review and meta-analysis. Lancet: Infectious Diseases, 13(3), 214–222.

Center for Behavioral Health Statistics and Quality. (2016).
Results from the 2015 National Survey on Drug Use and
Health: Detailed tables. (om the 2015 National Survey on Drug Use and)]TJ 0 -1.222 T2961 c

Centers for Disease Control and Prevention. (2020c, December 17). CDC Health Advisory: Increase in fatal drug overdoses across the United States driven by synthetic opioids before and during the COVID-19 pandemic (CDCHAN-00438). https://emergency.cdc.gov/han/2020/han00438.asp

Centers for Disease Control and Prevention. (2021a). Estimated HIV incidence and prevalence in the United States, 2015–2019. (HIV Surveillance Supplemental Report, 26 [No. 1]).

Centers for Disease Control and Prevention. (2021b). HIV and people who inject drugs. https://www.cdc.gov/hiv/group/hiv-idu.html

Centers for Disease Control and Prevention. (2021c). Viral hepatitis surveillance report 2019: Hepatitis A. https://www.cdc.gov/hepatitis/statistics/2019surveillance/HepA.htm

Centers for Disease Control and Prevention. (2021d). Viral hepatitis surveillance report 2019 – Introduction. https://www.cdc.gov/hepatitis/statistics/2019surveillance/Introduction.htm

Centers for Disease Control and Prevention. (2021e, March 29). Widespread person-to-person outbreaks of hepatitis A across the United States. https://www.cdc.gov/hepatitis/outbreaks/2017March-HepatitisA.htm

Centers for Medicare & Medicaid Services. (2016). Drug diversion: What is a prescriber's role in preventing the diversion of prescription drugs? U.S. Department of Health and Human Services.

Cepeda, J. A., Vickerman, P., Bruneau, J., Zang, G., Borquez, A., Farrell, M., … Martin, N. K. (2020). Estimating the contribution of stimulant injection to HIV and HCV epidemics among people who inject drugs and implications for harm reduction: A modeling analysis. Drug and Alcohol Dependence, 213, 108135.

Charnigo, R., Noar, S. M., Garnett, C., Crosby, R., Palmgreen, P., & Zimmerman, R. S. (2013). Sensation seeking and impulsivity: Combined associations with risky sexual behavior in a large sample of young adults. Journal of Sex Research, 50(5), 480–488.

Chartier, K. G., Carmody, T., Akhtar, M., Stebbins, M. B., Walters, S. T., & Warden, D. (2015). Hispanic subgroups, acculturation, and substance abuse treatment outcomes. Journal of Substance Abuse Treatment, 59, 74–82.

Chen, H.-Y., Albertson, T. E., & Olson, K. R. (2016). Treatment of drug-induced seizures. British Journal of Clinical Pharmacology, 81(3), 412–419.

Chen, J., Feeney, E., & Chung, R. (2014). HCV and HIV co-infection: Mechanisms and management. Nature Reviews Gastroenterology and Hepatology, 11(6), 362–371.

Chen, L. Y., Crum, R. M., Strain, E. C., Alexander, G. C., Kaufmann, C., & Mojtabai, R. (2016). Prescriptions, nonmedical use, and emergency department visits involving prescription stimulants. Journal of Clinical Psychiatry, 77(3), e297–e304.

Cheng, W. S., Garfein, R. S., Semple, S. J., Strathdee, S. A., Zians, J. K., & Patterson, T. L. (2010). Binge use and sex and drug use behaviors among HIV(-), heterosexual methamphetamine users in San Diego. Substance Use and Misuse, 45(1–2), 116–133.

Chermack, S. T., Bonar, E. E., Goldstick, J. E., Winters, J., Blow, F. C., Friday, S., … Walton, M. A. (2019). A randomized controlled trial for aggression and substance use involvement among veterans: Impact of combining motivational interviewing, cognitive behavioral treatment and telephone-based continuing care. Journal of Substance Abuse Treatment, 98, 78–88.

Chermack, S. T., Grogan-Kaylor, A., Perron, B. E., Murray, R. L., De Chavez, P., & Walton, M. A. (2010). Violence among men and women in substance use disorder treatment: A multi-level event-based analysis. Drug and Alcohol Dependence, 112(3), 194–200.

Chettiar, J., Shannon, K., Wood, E., Zhang, R., & Kerr, T. (2010). Survival sex work involvement among street-involved youth who use drugs in a Canadian setting. Journal of Public Health (Oxford, England), 32(3), 322–327.

Chiesa, A., & Serretti, A. (2014). Are mindfulness-based interventions effective for substance use disorders? A systematic review of the evidence. Substance Use and Misuse, 49(5), 492–512.

Childress, A. C., Komolova, M., & Sallee, F. R. (2019). An update on the pharmacokinetic considerations in the treatment of ADHD with long-acting methylphenidate and amphetamine formulations. Expert Opinion on Drug Metabolism and Toxicology, 15(11), 937–974.

Childress, A. R., Mozley, P. D., McElgin, W., Fitzgerald, J., Reivich, M., & O'Brien, C. P. (1999). Limbic activation during cue-induced cocaine craving. American Journal of Psychiatry, 156(1), 11–18.

Chin, J. M., & Bartholomew, M. L. (2020). Methamphetamine use in pregnant women in Hawai'i: A case series. Hawai'i Journal of Health and Social Welfare, 79(5 Suppl. 1), 40–43.

Chiu, V. M., & Schenk, J. O. (2012). Mechanism of action of methamphetamine within the catecholamine and serotonin areas of the central nervous system. Current Drug Abuse Reviews, 5(3), 227–242.

Choi, K., Imrie, A., Lourie, R., & Cross, T. (2019). Intestinal ischemia due to methamphetamine use: A case report. International Journal of Surgery Case Reports, 58, 11–13.

Chou, R., Korthuis, P. T., McCarty, D., Cof n, P., Grif n, J., Davis-O'Reilly, C., … Daya, M. (2017). Management of suspected opioid overdose with naloxone by emergency medical services personnel (AHRQ Publication No. 17-EHC025-EF). Agency for Healthcare Research and Quality.

Christine, C. W., Garwood, E. R., Schrock, L. E., Austin, D. E., & McCulloch, C. E. (2010). Parkinsonism in patients with a history of amphetamine exposure. Movement Disorders, 25(2), 228–231.

Ciccarone, D. (2011). Stimulant abuse: Pharmacology, cocaine, methamphetamine, treatment, attempts at pharmacotherapy. Primary Care: Clinics in Of ce Practice, 38(1), 41–58.

Ciccarone, D., & Harris, M. (2015). Fire in the vein: Heroin acidity and its proximal effect on users' health. International Journal on Drug Policy, 26(11), 1103–1110.

Clague, J., Belin, T. R., & Shetty, V. (2017). Mechanisms underlying methamphetamine-related dental disease. Journal of the American Dental Association, 148(6), 377–386.

Clarke, K., Harris, D., Zwei er, J. A., Lasher, M., Mortimer, R. B., & Hughes, S. (2016). The signi cance of harm

Cortese, S., Panei, P., Arcieri, R., Germinario, E. A., Capuano, A., Margari, L., ... Curatolo, P. (2015). Safety of methylphenidate and atomoxetine in children with attention-de cit/hyperactivity disorder (ADHD): Data from the Italian National ADHD Registry. CNS Drugs, 29(10), 865–877.

Cos, T. A., LaPollo, A. B., Aussendorf, M., Williams, J. M., Malayter, K., & Festinger, D. S. (2020). Do peer recovery specialists improve outcomes for individuals with substance use disorder in an integrative primary care setting? A program evaluation. Journal of Clinical Psychology in Medical Settings, 27(4), 704–715.

Cosottile, D. W., & DeFulio, A. (2020). The compatibility of employment-based contingency management and vocational services at the Department of Veterans Affairs. Psychology of Addictive Behaviors, 34(1), 111–116.

Courtney, K. E., & Ray, L. A. (2014). Methamphetamine: An update on epidemiology, pharmacology, clinical phenomenology, and treatment literature. Drug and Alcohol Dependence, 143, 11–21.

Cousijn, J., Luijten, M., & Feldstein Ewing, S. W. (2018). Adolescent resilience to addiction: A social plasticity hypothesis. Lancet Child and Adolescent Health, 2(1), 69–78.

Cox, K. B., Malte, C. A., & Saxon, A. J. (2017). Characteristics and service utilization of homeless veterans entering VA substance use treatment. Psychological Services, 14(2), 208–213.

Craig, S. G., Davies, G., Schibuk, L., Weiss, M. D., & Hechtman, L. (2015). Long-term effects of stimulant treatment for ADHD: What can we tell our patients? Current Developmental Disorders Reports, 2(1), 1–9.

Crane, C. A., Oberleitner, L. M. S., Devine, S., & Easton, C. J. (2014). Substance use disorders and intimate partner violence perpetration among male and female offenders. Psychology of Violence, 4(3), 322–333.

Crawford, S., & Bath, N. (2013). Peer support models for people with a history of injecting drug use undertaking assessment and treatment for hepatitis C Virus infection. Clinical Infectious Diseases, 57(Suppl. 2), S75–S79.

Cruickshank, C. C., & Dyer, K. R. (2009). A review of the clinical pharmacology of methamphetamine. Addiction, 104(7), 1085–1099.

Cucciare, M. A., Ounpraseuth, S. T., Curran, G. M., & Booth, B. M. (2019). Predictors of substance use disorder and mental health treatment use among rural adults using stimulants over three years. Substance Abuse, 40(3), 363–370.

Cumming, C., Kinner, S. A., McKetin. R., Li, I., & Preen, D. (2020). Methamphetamine use, health and criminal justice system outcomes: A systematic review. Drug and Alcohol Review, 39(5), 505–518.

Cunha-Oliveira, T., Rego, A. C., Carvalho, 3[w1oute usfor tC /Span <</MC

Drug Enforcement Administration. (2017).

Food and Drug Administration. (2019, October 3). FDA approves second drug to prevent HIV infection as part of ongoing efforts to end the HIV epidemic [Press release]. https://www.fda.gov/news-events/press-announcements/fda-approves-second-drug-prevent-hiv-infection-part-ongoing-efforts-end-hiv-epidemic

Forray, A., & Foster, D. (2015). Substance use in the perinatal period. Current Psychiatry Reports, 17(11), 91.

Foster, M. A., Hofmeister, M. G., Kupronis, B. A., Lin, Y., Xia, G.-L., Yin, S., & Teshale, E. (2019). Increase in hepatitis A virus infections – United States, 2013–2018. Morbidity and Mortality Weekly Report, 68(18), 413–415.

Foulds, J. A., Boden, J. M., McKetin, R., & Newton-Howes, G. (2020). Methamphetamine use and violence: Findings from a longitudinal birth cohort. Drug and Alcohol Dependence, 207, 107826.

Fratto, G., & Manzon, L. (2014). Use of psychotropic drugs and associated dental diseases. International Journal of Psychiatry in Medicine, 48(3), 185–197.

Frazer, Z., McConnell, K., & Jansson, L. M. (2019). Treatment for substance use disorders in pregnant women: Motivators and barriers. Drug and Alcohol Dependence, 205, 107652.

Freeborn, K., & Portillo, C. J. (2018). Does pre-exposure prophylaxis for HIV prevention in men who have sex with men change risk behaviour? A systematic review. Journal of Clinical Nursing, 27(17–18), 3254–3265.

Friedman, S. M., Margo, C. E., Konicki, M., Campanelli, M., Jampol, L. M., & Plous, O. Z. (2010). Bilateral vascular occlusions of the anterior visual pathway and cocaine abuse. Retinal Cases and Brief Reports, 4(2), 95–98.

Friesen, B. J., Cross, T. L., Jivanjee, P., Thirstrup, A., Bandurraga, A., Gowen, L. K., & Rountree, J. (2015). Meeting the transition needs of urban American Indian/Alaska Native youth through culturally based services. Journal of Behavioral Health Services and Research, 42(2), 191–205.

Galloway, G. P., Singleton, E. G., Buscemi, R., Baggott, M. J., Dickerhoof, R. M., & Mendelson, J. E. (2010). An examination of drug craving over time in abstinent methamphetamine users. American Journal on Addictions, 19(6), 510–514.

Garg, L., Akbar, G., Agrawal, S., Agarwal, M., Khaddour, L., Handa, R., ... Dalal, B. D. (2017). Drug-induced pulmonary arterial hypertension: A review. Heart Failure Reviews, 22(3), 289–297.

Garofalo, R., Hotton, A. L., Kuhns, L. M., Gratzer, B., & Mustanski, B. (2016). Incidence of HIV infection and sexually transmitted infections and related risk factors among very young men who have sex with men. Journal of Acquired Immune De ciency Syndromes, 72(1), 79–86.

Gastfriend, D. R. (2018, March 14). Contingency management: The greatest unused treatment in opioid use disorder [Webinar handout]. Florida Alcohol and Drug Abuse Association.

Geisner, I. M., Huh, D., Cronce, J. M., Lostutter, T. W., Kilmer, J., & Larimer, M. E. (2016). Exploring the relationship between stimulant use and gambling in college students. Journal of Gambling Studies, 32(3), 1001–1016.

Genberg, B. L., Astemborski, J., Vlahov, D., Kirk, G. D., & Mehta, S. H. (2015). Incarceration and injection drug use in Baltimore, Maryland. Addiction, 110(7), 1152–1159.

George, T. C., Freet, D. J., Cross, J. M., & Huzar, T. F. (2019). Levamisole-induced vasculitis. Journal of the American Academy of Physician Assistants, 32(1), 23–27.

Gerstein, D. R., Johnson, R. A., Harwood, H. J., Fountain, D., Suter, N., & Malloy, K. (Eds.). (1994). Evaluating recovery services: The California Drug and Alcohol Treatment Assessment (CALDATA). California Department of Alcohol and Drug Programs, Resource Center.

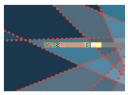
Gibson, B. A., Ghosh, D., Morano, J. P., & Altice, F. L. (2014). Accessibility and utilization patterns of a mobile medical clinic among vulnerable populations. Health and Place, 28, 153–166.

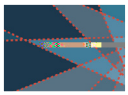
Giorgetti, R., Tagliabracci, A., Schifano, F., Zaami, S., Marinelli, E., & Busardò, F. P. (2017). When “chems” meet sex: A rising phenomenon called “chemsex.” Current Neuropharmacology, 15(5), 762–770.

Giovazolias, T., & Themeli, O. (2014). Social learning conceptualization for substance abuse: Implications for therapeutic interventions. European Journal of Counselling Psychology, 3(1), 69–88.

Gizzi, M. C., & Gerkin, P. (2010). Methamphetamine use and criminal behavior. International Journal of Offender Therapy and Comparative Criminology, 54(6), 915–936.

Glasner-Edwards, S., & Mooney, L. J. (2014). Methamphetamine psychosis: Epidemiology and management. CNS Drugs, 28(12), 1115–1126.





Kampman, K. M. (2019). The treatment of cocaine use disorder. Science Advances, 5(10), eaax1532.

Kampman, K., & Jarvis, M. (2015). American Society of Addiction Medicine (ASAM) national practice guideline for the use of medications in the treatment of addiction involving opioid use. Journal of Addiction Medicine, 9(5), 358–367.

Kaplan, G. B., Heinrichs, S. C., & Carey, R. J. (2011). Treatment of addiction and anxiety using extinction approaches: Neural mechanisms and their treatment implications. Pharmacology, Biochemistry, and Behavior, 97(3), 619–625.

Kariisa, M., Scholl, L., Wilson, N., Seth, P., & Hoots, B. (2019). Drug overdose deaths involving cocaine and psychostimulants with abuse potential—United States, 2003–2017. Morbidity and Mortality Weekly Report, 68(17), 388–395.

Karila, L., Weinstein, A., Aubin, H. J., Benyamina, A., Reynaud, M., & Batki, S. L. (2010). Pharmacological approaches to methamphetamine dependence: A focused review. British Journal of Clinical Pharmacology, 69(6), 578–592.

Katzman, M. A., Bilkey, T. S., Chokka, P. R., Fallu, A., & Klassen, L. J. (2017). Adult ADHD and comorbid disorders: Clinical implications of a dimensional approach. BMC Psychiatry, 17(1), 302.

Kaye, S., Darke, S., & Torok, M. (2013). Attention de cit hyperactivity disorder (ADHD) among illicit psychostimulant users: A hidden disorder? Addiction, 108(5), 923–931.

Keane, T. M., Rubin, A., Lachowicz, M., Brief, D., Enggasser, J. L., Roy, M., … Rosenbloom, D. (2014). Temporal stability of DSM-5 posttraumatic stress disorder criteria in a problem-drinking sample. Psychological Assessment, 26(4), 1138–1145.

Kecojevic, A., Corliss, H. L., & Lankenau, S. E. (2015). Motivations for prescription drug misuse among young men who have sex with men (YMSM) in Philadelphia. International Journal of Drug Policy, 26(8), 764–771.

Kecojevic, A., Jun, H.-J., Reisner, S. L., & Corliss, H. L. (2017). Concurrent polysubstance use in a longitudinal study of US youth: Associations with sexual orientation. Addiction, 112(4), 614–624.

Kelly, T. M., & Daley, D. C. (2013). Integrated treatment of substance use and psychiatric disorders. Social Work in Public Health, 28(3–4), 388–406.

Kerner, B. (2015). Comorbid substance use disorders in schizophrenia: A latent class approach. Psychiatry

in a u5em5 /P <er, 69DbstancS502h62]TPublic Health, 28624. 28.333Tj .-1., Bsb3). IntJ35 IntegrateEyl(, 617a.)18DtoracGubshntJ35JScottr

Kirby, K. C., Benishek, L. A., & Tabit, M. B. (2016). Contingency management works, clients like it, and it is cost-effective. American Journal of Drug and Alcohol Abuse, 42(3), 250–253.

Kirby, K. C., Carpenedo, C. M., Dugosh, K. L., Rosenwasser, B. J., Benishek, L. A., Janik, A., … Silverman, K. (2013). Randomized clinical trial examining duration of voucher-based reinforcement therapy for cocaine abstinence. Drug and Alcohol Dependence, 132(3), 639–645.

Kish, S. J., Boileau, I., Callaghan, R. C., & Tong, J. (2017). Brain dopamine neurone 'damage': Methamphetamine users vs. Parkinson's disease; A critical assessment of the evidence. European Journal of Neuroscience, 45(1), 58–66.

Kittirattanapaiboon, P., Srikosai, S., & Wittayanookulluk, A. (2017). Methamphetamine use and dependence in vulnerable female populations. Current Opinion in Psychiatry, 30(4), 247–252.

Kiyatkin, E. A. (2019). Respiratory depression and brain hypoxia induced by opioid drugs: Morphine, oxycodone, heroin, and fentanyl. Neuropharmacology, 151, 219–226.

Klassen, L. J., Bilkey, T. S., Katzman, M. A., & Chokka, P. (2012). Comorbid attention de cit/hyperactivity disorder and substance use disorder: Treatment considerations. Current Drug Abuse Reviews, 5(3), 190–198.

Klega, A. E., & Keehbauch, J. T. (2018). Stimulant and designer drug use: Primary care management. American Family Physician, 98(2), 85–92.

Klein, M. O., Battagello, D. S., Cardoso, A. R., Hauser, D. N., Bittencourt, J. C., & Correa, R. G. (2019). Dopamine: Functions, signaling, and association with neurological diseases. Cellular and Molecular Neurobiology, 39(1), 31–59.

Klevens, R. M., Hu, D. J., Jiles, R., & Holmberg, S. D. (2012). Evolving epidemiology of hepatitis C virus in the United States. Clinical Infectious Diseases, 55(Suppl. 1), S3–S9.

Kleykamp, B. A., Guille, C., Barth, K. S., & McClure, E. A. (2020). Substance use disorders and COVID-19: The role of telehealth in treatment and research. Journal of Social Work Practice in the Addictions, 20(3), 248–253.

Kloss, B. T., Broton, C. E., & Rodriguez, E. (2010). Pneumomediastinum from nasal insuf ation of cocaine. International Journal of Emergency Medicine, 3, 435–437.

Klostermann, K., Kelley, M. L., Mignone, T., Pusateri, L., & Wills, K. (2011). Behavioral couples therapy for substance abusers: Where do we go from here? Substance Use and Misuse, 46(12), 1502–1509.

Knapp, W. P., Soares, B. G., Farrel, M., & Lima, M. S. (2007). Psychosocial interventions for cocaine and psychostimulant amphetamines related disorders. Cochrane Database of Systematic Reviews. doi:10.1002/14651858.CD003023.pub2

Knight, K. (2020). Structural factors that affect life contexts of pregnant people with opioid use disorders: The role of structural racism and the need for structural competency. Women's Reproductive Health, 7, 164–171.

Kober, H. H. (2014). Emotion regulation in substance use disorders. In J. J. Gross (Ed.), Handbook of emotion regulation (pp. 428–446). Guilford Press.

Komaromy, M., Mendez-Escobar, E., & Madden, E. (2021). Addressing racial trauma in the treatment of substance use disorders. Pediatrics, 147(Suppl. 2), S268–S270.

Koob, G. F., & Volkow, N. D. (2016). Neurobiology of addiction: A neurocircuitry analysis. Lancet Psychiatry, 3(8), 760–773.

Köpetz, C. E., Lejuez, C. W., Wiers, R. W., & Kruglanski, A. W. (2013). Motivation and self-regulation in addiction: A call for convergence. Perspectives on Psychological Science, 8(1), 3–24.

Kousik, S. M., Napier, T. C., & Carvey, P. M. (2012). The effects of psychostimulant drugs on blood brain barrier function and neuroin ammation. Frontiers in Pharmacology, 3, 121.

Krakowski, A., & Ickowicz, A. (2018). Stimulant withdrawal in a child with autism spectrum disorder and ADHD: A case report. Journal of the Canadian Academy of Child and Adolescent Psychiatry, 27(2), 148–151.

Kral, A. H., Lambdin, B. H., Comfort, M., Powers, C., Cheng, H., Lopez, A. M., … Lorvick, J. (2018). A strengths-based case management intervention to reduce HIV viral load among people who use drugs. AIDS and Behavior, 22(1), 146–153.

Krans, E. E., Bogen, D., Richardson, G., Park, S. Y., Dunn, S. L., & Day, N. (2016). Factors associated with buprenorphine versus methadone use in pregnancy. Substance Abuse, 37(4), 550–557.

Kreek, M. J., Levran, O., Reed, B., Schlussman, S. D., Zhou, Y., & Butelman, E. R. (2012). Opiate addiction and cocaine addiction: Underlying molecular neurobiology and genetics. Journal of Clinical Investigation, 122(10), 3387–3393.

Kruse, C. S., Lee, K., Watson, J. B., Lobo, L. G., Stoppelmoor, A. G., & Oyibo, S. E. (2020). Measures of effectiveness, ef ciency, and quality of telemedicine in the management of alcohol abuse, addiction, and rehabilitation: A systematic review. Journal of Medical Internet Research, 22(1), e13252.

Kuczy ska, K., Grzonkowski, P., Kacprzak, ., & Zawilska, J. B. (2018). Abuse of fentanyl: An emerging problem to face. Forensic Science International, 289, 207–214.

Kunins, H. V. (2020). Structural racism and the opioid overdose epidemic: The need for antiracist public health practice. Journal of Public Health Management and Practice, 26(3), 201–205.

Kuper, L. E., Nussbaum, R., & Mustanski, B. (2012). Exploring the diversity of gender and sexual orientation identities in an online sample of transgender individuals. Journal of Sex Research, 49(2–3), 244–254.

Kuypers, K., Verkes, R. J., van den Brink, W., van Amsterdam, J., & Ramaekers, J. G. (2020). Intoxicated aggression: Do alcohol and stimulants cause dose-related aggression? A review. European Neuropsychopharmacology, 30,

Maiorana, A., Kegeles, S. M., Brown, S., Williams, R., & Arnold, E. A. (2021). Substance use, intimate partner violence, history of incarceration and vulnerability to HIV among young Black men who have sex with men in a Southern US city. Culture, Health and Sexuality, 23(1), 37–51.

Malcolm, R., Barth, K. S., & Veatch, L. M. (2013). Cocaine addiction. In P. M. Miller (Ed.), Principles of addiction (pp. 669–678). Academic Press.

Maloney, W. J. (2010). The signi cance of cocaine use to dental practice. New York State Dental Journal, 76(6), 36–39.

Mangado, E. O., & Madoz-Gúrpide, A. (2009). Is the capacity of forming abstract concepts affected by cocaine use? Application of Wisconsin Test in a prospective study. European Psychiatry, 24(S1), 1.

Mariotti, K. C., Rossato, L. G., Fröehlich, P. E., & Limberger, R. P. (2013). Amphetamine-type medicines: A review of pharmacokinetics, pharmacodynamics, and toxicological aspects. Current Clinical Pharmacology, 8(4), 350–357.

Markowitz, J. S., & Patrick, K. S. (2017). The clinical pharmacokinetics of amphetamines utilized in the treatment of attention-de cit/hyperactivity disorder. Journal of Child and Adolescent Psychopharmacology, 27(8), 678–689.

Marlatt, G. A., & Gordon, J. R. (1985). Relapse prevention. Guilford Press.

Marquez, C., Mitchell, S. J., Hare, C. B., John, M., & Klausner, J. D. (2009). Methamphetamine use, sexual activity, patient–provider communication, and medication adherence among HIV-infected patients in care, San Francisco 2004–2006. AIDS Care, 21(5), 575–582.

Marraccini, M. E., Weyandt, L. L., Gudmundsdottir, B. G., Oster, D. R., & McCallum, A. (2017). Attention–de cit hyperactivity disorder: Clinical considerations for women. Journal of Midwifery and Women's Health, 62(6), 684–695.

Marraccini, M. E., Weyandt, L. L., Rossi, J. S., & Gudmundsdottir, B. G. (2016). Neurocognitive enhancement or impairment? A systematic meta-analysis of prescription stimulant effects on processing speed, decision-making, planning, and cognitive perseveration. Experimental and Clinical Psychopharmacology, 24(4), 269–284.

Marschall-Lévesque, S., Castellanos-Ryan, N., Parent, S., Renaud, J., Vitaro, F., Boivin, M., … Séguin, J. R. (2017). Victimization, suicidal ideation, and alcohol use from age 13 to 15 years: Support for the self-medication model. Journal of Adolescent Health, 60(4), 380–387.

Marshall, B. D., & Werb, D. (2010). Health outcomes associated with methamphetamine use among young people: A systematic review. Addiction, 105(6), 991–1002.

Martin, C. E., Scialli, A., & Terplan, M. (2020). Unmet substance use disorder treatment need among reproductive age women. Drug and Alcohol Dependence, 206, 107679.

Mash, D. C. (2016). Excited delirium and sudden death: A syndromal disorder at the extreme end of the neuropsychiatric continuum. Frontiers in Physiology, 7, 435.

Maslow, A. H. (1943). A theory of human motivation. Psychological Review, 50, 370–396.

Masson, C. L., Shopshire, M. S., Sen, S., Hoffman, K., Hengl, N., Bartolome J., … Iguchi, M. (2013). Possible barriers to enrollment in substance abuse treatment among a diverse sample of Asian Americans and Paci c Islanders: Opinions of treatment clients. Journal of Substance Abuse Treatment, 44(3), 309–315.

Mastro, T. D., Akolo, C., & Shoptaw, S. (2020). Managing amphetamine use is critical to achieving HIV control. AIDS, 34(13), 1971–1973.

Matsumoto, R. R., Seminerio, M. J., Turner, R. C., Robson, M. J., Nguyen, L., Miller, D. B., & O'Callaghan, J. P. (2014). Methamphetamine-induced toxicity: An updated review on issues related to hyperthermia. Pharmacology and Therapeutics, 144(1), 28–40.

Matsuzaka, S. (2018). Transgressing gender norms in addiction treatment: Transgender rights to access within gender-segregated facilities. Journal of Ethnicity in Substance Abuse, 17(4), 420–433.

Maxwell, J. C. (2014). A new survey of methamphetamine users in treatment: Who they are, why they like "meth," and why they need additional services. Substance Use and Misuse, 49(6), 639–644.

Maxwell, S., Gafos, M., Moncrieff, M., Shahmanesh, M., & Stirrup, O. (2020). Pre-exposure prophylaxis use among men who have sex with men who have experienced problematic chemsex. International Journal of STD and AIDS, 31(5), 474–480.

Maxwell, S., Shahmanesh, M., & Gafos, M. (2019). Chemsex behaviours among men who have sex with men: A systematic review of the literature. International Journal of Drug Policy, 63, 74–89.

Mayer, K. H., Agwu, A., & Malebranche, D. (2020). Barriers to the wider use of pre-exposure prophylaxis in the United States: A narrative review. Advances in Therapy, 37(5), 1778–1811.

Mayer, K. H., Jones, D., Oldenburg, C., Jain, S., Gelman, M., Zaslow, S., … Mimiaga, M. J. (2017). Excellent HIV

Mayo Clinic. (2017a, September 1). Transgender facts. https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/transgender-facts/art-20266812

Mayo Clinic. (2017b, December 22). Aortic dissection. https://www.mayoclinic.org/diseases-conditions/aortic-dissection/symptoms-causes/syc-20369496

Mayo Clinic. (2018, October 19). Prescription drug abuse. https://www.mayoclinic.org/diseases-conditions/prescription-drug-abuse/symptoms-causes/syc-20376813

Mayo Clinic. (2020, January 18). Placental abruption. https://www.mayoclinic.org/diseases-conditions/placental-abruption/symptoms-causes/syc-20376458

McCabe, S. E., & West, B. T. (2013). Medical and nonmedical use of prescription stimulants: Results from a national multicohort study. Journal of the American Academy of Child and Adolescent Psychiatry, 52(12), 1272–1280.

McCall Jones, C., Baldwin, G. T., & Compton, W. M. (2017). Recent increases in cocaine-related overdose deaths and the role of opioids. American Journal of Public Health, 107(3), 430–432.

McCarthy, E., & McClain, E. (2019). Methamphetamine-induced lung injury. European Journal of Case Reports in Internal Medicine, 6(6).

McDonell, M. G., Srebnik, D., Angelo, F., McPherson, S., Lowe, J. M., Sugar, A., … Ries, R. K. (2013). Randomized controlled trial of contingency management for stimulant use in community mental health patients with serious mental illness. American Journal of Psychiatry, 170(1), 94–101.

McGowan, C. E., & Fried, M. W. (2012). Barriers to hepatitis C treatment. Liver International, 32(Suppl. 1), 151–156.

McHugh, R. K. (2015). Treatment of co-occurring anxiety disorders and substance use disorders. Harvard Review of Psychiatry, 23(2), 99–111.

McHugh, R. K., Hearon, B. A., & Otto, M. W. (2010). Cognitive behavioral therapy for substance use disorders. Psychiatric Clinics, 33(3), 511–525.

McHugh, R. K., Hu, M. C., Campbell, A. N., Hilario, E. Y., Weiss, R. D., & Hien, D. A. (2014). Changes in sleep disruption in the treatment of co–occurring posttraumatic stress disorder and substance use disorders. Journal of Traumatic Stress, 27(1), 82–89.

McKay, J. R. (2017). Making the hard work of recovery more attractive for those with substance use disorders. Addiction, 112(5), 751–757.

McKenna, S. A. (2013). “We’re supposed to be asleep?” Vigilance, paranoia, and the alert methamphetamine user. Anthropology of Consciousness, 24(2), 172–190.

l101.

Meyers, R. J., Roozen, H. G., & Smith, J. E. (2011). The community reinforcement approach: An update of the evidence. Alcohol Research and Health, 33(4), 380–388.

Meyers, R. J., & Smith, J. E. (1995). Clinical guide to alcohol treatment: The community reinforcement approach. Guilford Press.

Miguel, A. Q., Kiluk, B. D., Roos, C. R., Babuscio, T. A., Nich, C., Mari, J. J., & Carroll, K. M. (2019). Change in employment status and cocaine use treatment outcomes: A secondary analysis across six clinical trials. Journal of Substance Abuse Treatment, 106, 89–96.

Miller, W. R. (1985). Motivation for treatment: A review with special emphasis on alcoholism. Psychological Bulletin, 98, 84–107.

Miller, W. R. (1995). Increasing motivation for change. In R. K. Hester & W. R. Miller (Eds.), Handbook of alcoholism treatment approaches: Effective alternatives (2nd ed., pp. 89–104). Allyn & Bacon.

Miller, W. R., & Rollnick, S. (1991). Motivational interviewing: Preparing people to change addictive behavior. Guilford Press.

Mimiaga, M. J., Pantalone, D. W., Biello, K. B., Glynn, T. R., Santostefano, C. M., Olson, J., … Safren, S. A. (2018). A randomized controlled ef cacy trial of behavioral activation for concurrent stimulant use and sexual risk for HIV acquisition among MSM: Project IMPACT study protocol. BMC Public Health, 18, 914.

Min, S. Y., Whitecraft, J., Rothbard, A. B., & Salzer, M. S. (2007). Peer support for persons with co-occurring disorders and community tenure: A survival analysis. Psychiatric Rehabilitation Journal, 30, 207–213.

Minnes, S., Min, M. O., Singer, L. T., Edguer, M., Wu, M., & Thi, P. (2012). Cocaine use during pregnancy and health outcome after 10 years. Drug and Alcohol Dependence, 126(1–2), 71–79.

Minozzi, S., Saulle, R., De Crescenzo, F., & Amato, L. (2016). Psychosocial interventions for psychostimulant misuse. Cochrane Database of Systematic Reviews. doi:10.1002/14651858.CD011866.pub2

Mitchell, O., Wilson, D. B., & MacKenzie, D. L. (2012). The effectiveness of incarceration–based drug treatment on criminal behavior: A systematic review. Campbell Systematic Reviews, 8(1), i–76.

Moeller, K. E., Kissack, J. C., Atayee, R. S., & Lee, K. C. (2017). Clinical interpretation of urine drug tests: What clinicians need to know about urine drug screens. Mayo Clinic Proceedings, 92(5), 774–796.

Moeller, S. J., & Paulus, M. P. (2018). Toward biomarkers of the addicted human brain: Using neuroimaging to predict relapse and sustained abstinence in substance use disorder. Progress in Neuro-Psychopharmacology and Biological Psychiatry, 80(Pt. B), 143–154.

Molina, B. S. G., & Swanson, J. M. (2020). Why are
long-t 20edictMC /P/p1_2tTTj Tpr2018). essa notivatiod Alrulant 0 Tw]TJ

20). Cliniayo o-Psychopharmacoatry(1628 1436336154. MoellerT& Oyman

Nelson, N. P., Weng, M. K., Hofmeister, M. G., Moore, K. L., Doshani, M., Kamili, S., … Harris, A. M. (2020). Prevention of hepatitis A virus infection in the United States: Recommendations of the Advisory Committee on Immunization Practices, 2020. MMWR Recommendations and Reports, 69(RR-5), 1–38.

Nelson, P. K., Mathers, B. M., Cowie, B., Hagan, H., Des Jarlais, D., Horyniak, D., & Degenhardt, L. (2011). Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: Results of systematic reviews. Lancet, 378(9791), 571–583.

Nerlander, L. M. C., Hoots, B. E., Bradley, H., Broz, D., Thorson, A., & Paz-Bailey, G. (2018). HIV infection among MSM who inject methamphetamine in 8 US cities. Drug and Alcohol Dependence, 190, 216–223.

Newcomb, M. E., Ryan, D. T., Greene, G. J., Garofalo, R., & Mustanski, B. (2014.) Prevalence and patterns of smoking, alcohol use, and illicit drug use in young men who have sex with men. Drug and Alcohol Dependence, 141, 65–71.

Newton, T. F., De La Garza, R., Kalechstein, A. D., & Nestor, L. (2005). Cocaine and methamphetamine produce different patterns of subjective and cardiovascular effects. Pharmacology, Biochemistry, and Behavior, 82(1), 90–97.

Oei, J. L., Kingsbury, A., Dhawan, A., Burns, L., Feller, J. M.,

Perry, C. J., & Lawrence, A. J. (2017). Addiction, cognitive decline and therapy: Seeking ways to escape a vicious cycle. Genes, Brain and Behavior, 16(1), 205–218.

Perry, C. J., Zbukvic, I., Kim, J. H., & Lawrence, A. J. (2014). Role of cues and contexts on drug-seeking behaviour. British Journal of Pharmacology, 171(20), 4636–4672.

Pescosolido, B. A., & Martin, J. K. (2015). The stigma complex. Annual Review of Sociology, 41(1), 87–116.

Petit, A., Karila, L., Chalmin, F., & Lejoyeux, M. (2012). Methamphetamine addiction: A review of the literature. Journal of Addiction Research and Therapy, S1, 006. https://www.omicsonline.org/methamphetamine-addiction-a-review-of-the-literature-2155-6105.S1-006.php?aid=3893

Petry, N. M. (2011). Contingency management: What it is and why psychiatrists should want to use it. Psychiatrist, 35(5), 161–163.

Petry, N. M., Alessi, S. M., Barry, D., & Carroll, K. M. (2015). Standard magnitude prize reinforcers can be as ef cacious as larger magnitude reinforcers in cocaine-dependent methadone patients. Journal of Consulting and Clinical Psychology, 83(3), 464–472.

Pew Charitable Trusts. (2018). More imprisonment does not reduce state drug problems. https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2018/03/more-imprisonment-does-not-reduce-state-drug-problems

Pew Charitable Trusts. (2020). Care coordination strategies for patients can improve substance use disorder outcomes [Issue brief]. https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2020/04/care-coordination-strategies-for-patients-can-improve-substance-use-disorder-outcomes

Pew Research Center. (2020, May 6). Black imprisonment rate in the U.S. has fallen by a third since 2006. https://www.pewresearch.org/fact-tank/2020/05/06/share-of-black-white-hispanic-americans-in-prison-2018-vs-2006/

Pham, T., Milanaik, R., Kaplan, A., Papaioannou, H., & Adesman, A. (2017). Household diversion of prescription stimulants: Medication misuse by parents of children with attention-de cit/hyperactivity disorder. Journal of Child and Adolescent Psychopharmacology, 27(8), 741–746.

Philbin, M. M., Greene, E. R., Martins, S. S., LaBossier, N. J., & Mauro, P. M. (2020). Medical, nonmedical, and illegal stimulant use by sexual identity and gender. American Journal of Preventive Medicine, 59(5), 686–696.

Philip, S. S., Yu, X., Donnell, D., Vittinghoff, E., & Buchbinder, S. (2010). Serosorting is associated with a decreased risk of HIV seroconversion in the EXPLORE study cohort. PLoS One, 5(9), e12662.

Phillips, K. T. (2016). Barriers to practicing risk reduction strategies among people who inject drugs. Addiction Research and Theory, 24(1), 62–68.

Pilgrim, J. L., Woodford, N., & Drummer, O. H. (2013). Cocaine in sudden and unexpected death: A review of 49 post-mortem cases. Forensic Science International, 227(1–3), 52–59.

Pinedo, M., Zemore, S., & Rogers, S. (2018). Understanding barriers to specialty substance abuse treatment among Latinos. Journal of Substance Abuse Treatment, 94, 1–8.

Piper, B. J., Ogden, C. L., Simoyan, O. M., Chung, D. Y., Caggiano, J. F., Nichols, S.D., & McCall, K. L. (2018). Trends in use of prescription stimulants in the United States and territories, 2006 to 2016. PLoS One, 13(11), e0206100.

Plant, C. P., & Holland, J. M. (2018). Family behavior therapy for alcohol and drug problems in later-life. Clinical Gerontologist, 41(5), 508–515.

Platt, L., Minozzi, S., Reed, J., Vickerman, P., Hagan, H., French, C., … Hickman, M. (2017). Needle syringe programmes and opioid substitution therapy for preventing hepatitis C transmission in people who inject drugs. Cochrane Database of Systematic Reviews. doi:10.1002/14651858.CD012021.pub2

Polcin, D. L., Bond, J., Korcha, R., Nayak, M. B., Galloway, G. P., & Evans, K. (2014). Randomized trial of intensive motivational interviewing for methamphetamine dependence. Journal of Addictive Diseases, 33(3), 253–265.

Polcin, D. L., Korcha, R., Bond, J., & Galloway, G. (2010). What did we learn from our study on sober living houses and where do we go from here? Journal of Psychoactive Drugs, 42(4), 425–433.

Porcu, A., & Castelli, M. P. (2017). Cannabis and the use of amphetamine-like substances. In Handbook of cannabis and related pathologies (pp. e101–e110). Academic Press.

Potenza, M. N., Balodis, I. M., Derevensky, J., Grant, J. E., Petry, N. M., Verdejo-Garcia, A., & Yip, S. W. (2019). Gambling disorder. Nature Reviews Disease Primers, 5(1), 51.

Pradeep, T., & Standeven, L. R. (2019, January 3). Amphetamine.
anoeatswithand opi-he ung disor: (eltivatship006 es)]TJ T*moeattanua D
6018[(T)92 (r)18ateatt acc1 (iba terimues ave)]TJ Tng pateriammemob

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. American Psychologist, 47(9), 1102–1114.

Proctor, S. L., Hoffmann, N. G., & Raggio, A. (2019). Prevalence of substance use disorders and psychiatric conditions among county jail inmates: Changes and stability over time. Criminal Justice and Behavior, 46(1), 24–41.

Qiao, S., Zhou, G., & Li, X. (2018). Disclosure of same-sex behaviors to health-care providers and uptake of HIV testing for men who have sex with men: A systematic review. American Journal of Men's Health, 12(5), 1197–1214.

Quednow, B. B., & Vonmoos, M. (2017). Cognitive dysfunctions in chronic cocaine users. In V. R. Preedy (Ed.), The neuroscience of cocaine: Mechanisms and treatment (pp. 395–405). Academic Press.

Quinn, P. D., Chang, Z., Hur, K., Gibbons, R. D., Lahey, B. B., Rickert, M. E., … D'Onofrio, B. M. (2017). ADHD medication and substance-related problems. American Journal of Psychiatry, 174(9), 877–885.

Rabiner, D. L. (2013). Stimulant prescription cautions: Addressing misuse, diversion and malingering. Current Psychiatry Reports, 15(7), 375.

Radfar, S. R., & Rawson, R. A. (2014). Current research on methamphetamine: Epidemiology, medical and psychiatric effects, treatment, and harm reduction efforts. Addiction and Health, 6(3–4), 146–154.

Raiker, N., Aouthmany, M., & Ezra, N. (2016). Dermatologic signs and symptoms of substance abuse. Journal of Clinical and Experimental Dermatology Research, 7(2), 337.

Ramesh, D., Keyser-Marcus, L. A., Ma, L., Schmitz, J. M., Lane, S. D., Marwitz, J. H., … Moeller, F. G. (2015). Prevalence of traumatic brain injury in cocaine-dependent research volunteers. American Journal on Addictions, 24(4), 341–347.

Ramirez, R. L., III, Perez, V. D. J., & Zamanian, R. T. (2018a). Methamphetamine and the risk of pulmonary arterial hypertension. Current Opinion in Pulmonary Medicine, 24(5), 416–424.

Ramirez, R. L., III, Perez, V. D. J., & Zamanian, R. T. (2018b). Stimulants and pulmonary arterial hypertension: An update. Advances in Pulmonary Hypertension, 17(2), 49–54.

Ramsey, A. T., Satter eld, J. M., Gerke, D. R., & Proctor, E. K. (2019). Technology-based alcohol interventions in primary care: Systematic review. Journal of Medical Internet Research, 21(4), e10859.

Rash, C. J., Alessi, S. M., & Petry, N. M. (2017). Substance abuse treatment patients in housing programs respond to contingency management interventions. Journal of Substance Abuse Treatment, 72, 97–102.

Rash, C. J., Burki, M., Montezuma-Rusca, J. M., & Petry, N. M. (2016). A retrospective and prospective analysis of trading sex for drugs or money in women substance abuse treatment patients. Drug and Alcohol Dependence, 162, 182–189.

Ratcliffe, M., Burd, C., Holder, K., & Fields, A. (2016). De ning rural at the U.S. Census Bureau (ACSGEO-1). U.S. Census Bureau.

Rawson, R. A. (2010). Treatments for methamphetamine dependence: Contingency management and the Matrix model. In R. Pates & D. Riley (Eds.), Interventions for amphetamine misuse (pp. 83–100). Wiley-Blackwell.

Rawson, R. A. (2013). Current research on the epidemiology, medical and psychiatric effects, and treatment of methamphetamine use. Journal of Food and Drug Analysis, 21(4), S77–S81.

Rawson, R. (2020). Stimulant use by patients on medication for opioid use disorder: Do we have any answers? [PowerPoint slides]. _____ in ptamoal ae ae. desphetamine use. dent Censusindividualousina1 (espond)i]TJ pert(eatment of metsetcy m /T1_2

Rawson, R. A., Obert, J. L., McCann, M. J., & Ling, W. (1993). Neurobehavioral treatment for cocaine dependency: A preliminary evaluation. In F. M. Tims & C. G. Leukefeld (Eds.), Cocaine treatment: Research and clinical perspectives (pp. 92–115). NIDA Research Monograph Series, Number 135, DHHS Publication No. (ADM) 93-3639. National Institute on Drug Abuse.

Rawson, R. A., Schmidt, K., & Mooney, L. J. (2021). Treatment of stimulant-related disorders. In K. T. Brady, F. R. Levin, M. Galanter, & H. D. Kleber (Eds.), The American Psychiatric Association Publishing textbook of substance use disorder treatment (6th ed., pp. 161–178). American Psychiatric Association Publishing.

Ray, L. A., Bujarski, S., Courtney, K. E., Moallem, N. R., Lunny, K., Roche, D., … Miotto, K. (2015). The effects of naltrexone on subjective response to methamphetamine in a clinical sample: A double-blind, placebo-controlled laboratory study. Neuropsychopharmacology, 40(10), 2347–2356.

Reddy, P., Ng, T., Oh, E. E., Moady, G., & Elkayam, U. (2020). Clinical characteristics and management of methamphetamine-associated cardiomyopathy: State-of-the-art review. Journal of the American Heart Association, 9(11), e016704.

Regier, P. S., & Redish, A. D. (2015). Contingency management and deliberative decision-making processes. Frontiers in Psychiatry, 6, 76.

Reif, S., Braude, L., Lyman, D. R., Dougherty, R. H., Daniels, A. S., Ghose, S. S., ... Delphin-Rittmon, M. E. (2014). Peer recovery support for individuals with substance use disorders: Assessing the evidence. Psychiatric Services, 65(7), 853–861.

Restrepo, C. S., Carrillo, J. A., Martínez, S., Ojeda, P., Rivera, A. L., & Hatta, A. (2007). Pulmonary complications from cocaine and cocaine-based substances: Imaging manifestations. RadioGraphics, 27(4), 941–956.

Rhoades, H., Winetrobe, H., & Rice, E. (2014). Prescription drug misuse among homeless youth. Drug and Alcohol Dependence, 138, 229–233.

Richard, J., Potenza, M. N., Ivoska, W., & Derevensky, J. (2019). The stimulating nature of gambling behaviors: Relationships between stimulant use and gambling among adolescents. Journal of Gambling Studies, 35(1), 47–62.

Richards, J. R., Garber, D., Laurin, E. G., Albertson, T. E., Derlet, R. W., Amsterdam, E. A., … Lange, R. A. (2016). Treatment of cocaine cardiovascular toxicity: A systematic review. Clinical Toxicology, 54(5), 345–364.

Richards, J. R., Hamidi, S., Grant, C. D., Wang, C. G., Tabish, N., Turnipseed, S. D., & Derlet, R. W. (2017). Methamphetamine Use and emergency department utilization: 20 years later. Journal of Addiction, 2017, 4050932.

Richards, J. R., Hawkins, J. A., Acevedo, E. W., & Laurin, E. G. (2019). The care of patients using methamphetamine in the emergency department: Perception of nurses, residents, and faculty. Substance Abuse, 40(1), 95–101.

Richards, J. R., & Laurin, E. G. (2020). Methamphetamine toxicity. In StatPearls. Retrieved March 19, 2021, from https://www.ncbi.nlm.nih.gov/books/NBK430895/

Richards, J. R., & Le, J. K. (2020). Cocaine toxicity. In StatPearls. Retrieved March 19, 2021, from https://www.ncbi.nlm.nih.gov/books/NBK430976/

Richards, J. R., Mefford, J. M., Patel, J. J., Parikh, A. K., Eder, A. Z., & Elder, J. W. (2020). The association between cocaine use detected on drug screening and rhabdomyolysis. Toxicology Communications, 4(1), 18–24.

Richards, J. R., Wang, C. G., Fontenette, R. W., Stuart, R. P., McMahon, K. F., & Turnipseed, S. D. (2020). Rhabdomyolysis, methamphetamine, amphetamine and MDMA use: Associated factors and risks. Journal of Dual Diagnosis, 16(4), 429–437.

Rieckmann, T., Moore, L. A., Croy, C. D., Novins, D. K., & Aarons, G. (2016). A national study of American Indian and Alaska Native substance abuse treatment: Provider and program characteristics. Journal of Substance Abuse Treatment, 68, 46–56.

Riley, E. D., Evans, J. L., Hahn, J. A., Briceno, A., Davidson, P. J., Lum, P. J., & Page, K. (2016). A longitudinal study of multiple drug use and overdose among young people who inject drugs. American Journal of Public Health, 106(5), 915–917.

Ritchwood, T. D., DeCoster, J., Metzger, I. W., Bolland, J. M., & Danielson, C. K. (2016). Does it really matter which drug you choose? An examination of the in uence of type of drug on type of risky sexual behavior. Addictive Behaviors, 60, 97–102.

Ritchwood, T. D., Ford, H., DeCoster, J., Sutton, M., & Lochman, J. E. (2015). Risky sexual behavior and substance use among adolescents: A meta-analysis. Children and Youth Services Review, 52, 74–88.

Rivera, A. V., DeCuir, J., Crawford, N. D., Amesty, S., & Lewis, C. F. (2014). Internalized stigma and sterile syringe use among people who inject drugs in New York City, 2010–2012. Drug and Alcohol Dependence, 144, 259–264.

Robbins, J. L., Wenger, L., Lorvick, J., Shiboski, C., & Kral, A. H. (2010). Health and oral health care needs and health care-seeking behavior among homeless injection drug users in San Francisco. Journal of Urban Health, 87(6), 920–930.

Robertson, C. L., Ishibashi, K., Chudzynski, J., Mooney, L. J., Rawson, R. A., Dolezal, B. A., … London, E. D. (2016). Effect of exercise training on striatal dopamine D2/D3 receptors in methamphetamine users during behavioral treatment. Neuropsychopharmacology, 41(6), 1629–1636.

Sanchez, K., Chartier, K. G., Greer, T. L. Walker, R., Carmody, T., Rethorst, C. D., … Trivedi, M. H. (2015). Comorbidities and race/ethnicity among adults with stimulant use disorders in residential treatment. Journal of Ethnicity in Substance Abuse, 14(1), 79–95.

Sanchez, K., Greer, T. L., Walker, R., Carmody, T., Rethorst, C. D., & Trivedi, M. H. (2017). Racial and ethnic differences in treatment outcomes among adults with stimulant use disorders after a dosed exercise intervention. Journal of Ethnicity in Substance Abuse, 16(4), 495–510.

Sánchez-Hervás, E., & Llorente del Pozo, J. M. (2012).

Sewell, J., Cambiano, V., Miltz, A., Speakman, A., Lampe, F. C., Phillips, A., … Rodger, A. (2018). Changes in recreational drug use, drug use associated with chemsex, and HIV-related behaviours, among HIV-negative men who have sex with men in London and Brighton, 2013–2016. Sexually Transmitted Infections, 94(7), 494–501.

Sewell, J., Miltz, A., Lampe, F. C., Cambiano, V., Speakman, A., Phillips, A. N., ... Rodger, A. J. (2017). Poly drug use, chemsex drug use, and associations with sexual risk behaviour in HIV-negative men who have sex with men attending sexual health clinics. International Journal of Drug Policy, 43, 33–43.

Shahrokh, N. C., Hales, R. E., Phillips, K. A., & Yudofsky, S. C. (2011). The language of mental health: A glossary of psychiatric terms. American Psychiatric Publishing.

Sharma, A., & Stan, M. N. (2019). Thyrotoxicosis: Diagnosis and management. Mayo Clinic Proceedings, 94(6), 1048–1064.

Sharma, T., Kumar, M., Rizkallah, A., Cappelluti, E., & Padmanabhan, P. (2019). Cocaine-induced thrombosis: Review of predisposing factors, potential mechanisms, and clinical consequences with a striking case report. Cureus, 11(5), e4700.

Shearer, R. D., Howell, B. A., Bart, G., & Winkelman, T. N. A. (2020). Substance use patterns and health pro les among US adults who use opioids, methamphetamine, or both, 2015–2018. Drug and Alcohol Dependence, 214, 108162.

Shekarchizadeh, H., Khami, M. R., Mohebbi, S. Z., Ekhtiari, H., & Virtanen, J. I. (2013). Oral health of drug abusers: A review of health effects and care. Iranian Journal of Public Health, 42(9), 929–940.

Shen, W. W., Zhang, Y. S., Li, L. H., Liu, Y., Huang, X. N., Chen, L. H., & Zhou, W. (2014). Long-term use of methamphetamine disrupts the menstrual cycles and hypothalamic-pituitary-ovarian axis. Journal of Addiction Medicine, 8(3), 183–188.

Sherman, C. (2017, March 9). Impacts of drugs on neurotransmission. National Institute on Drug Abuse. https://www.drugabuse.gov/news-events/nida-notes/2017/03/impacts-drugs-neurotransmission

Shetty, V., Harrell, L., Clague, J., Murphy, D. A., Dye, B. A., & Belin, T. R. (2016). Methamphetamine users have increased dental disease: A propensity score analysis. Journal of Dental Research, 95(7), 814–821.

Shetty, V., Harrell, L., Murphy, D. A., Vitero, S., Gutierrez, A., Belin, T. R., … Spolsky, V. W. (2015). Dental disease patterns in methamphetamine users: Findings in a large urban sample. Journal of the American Dental Association (1939), 146(12), 875–885.

Shetty, V., Mooney, L. J., Zigler, C. M., Belin, T. R., Murphy, D., & Rawson, R. (2010). The relationship between methamphetamine use and increased dental disease. Journal of the American Dental Association (1939), 141(3), 307–318.

Shin, E. J., Dang, D. K., Tran, T. V., Tran, H. Q., Jeong, J. H., Nah, S. Y., … Kim, H. C. (2017). Current understanding of methamphetamine-associated dopaminergic neurodegeneration and psychotoxic behaviors. Archives of Pharmacal Research, 40(4), 403–428.

Shoptaw, S., Rawson, R. A., McCabb, M. J., & Obert, J. L. (1994). The Matrix model of outpatient stimulant abuse treatment: Evidence of ef cacy. Journal of Addictive Diseases, 13(4), 129–141.

Siciliano, C. A., Calipari, E. S., Ferris, M. J., & Jones, S. R. (2015). Adaptations of presynaptic dopamine terminals induced by psychostimulant self-administration. ACS Chemical Neuroscience, 6(1), 27–36.

Silvers, J. A., Squeglia, L. M., Rømer Thomsen, K., Hudson, K. A., & Feldstein Ewing, S. W. (2019). Hunting for what works: Adolescents in addiction treatment. Alcoholism: Clinical and Experimental Research, 43(4), 578–592.

Simon, D. P., & Kreek, M. J. (2016). Cocaine: Usage, misuse, and addiction processes—An overview. In V. Preedy (Ed.), Neuropathology of drug addictions and substance misuse (Vol. 2, pp. 5–13). Elsevier.

Sinha, R. (2013). The clinical neurobiology of drug craving. Current Opinion in Neurobiology, 23(4), 649–654.

Sisson, R., & Azrin, N. H. (1989). The community reinforcement approach. In R. K. Hester & W. R. Miller (Eds.), Handbook of alcoholism treatment approaches: Effective alternatives (Vol. 157, pp. 242–258). Pergamon Press. 2 Td m[(Chemical Neur)18 (osonzd0.667 -1.6f1l)1111_2 1 Tf T*06

K.

Smith, P. H., Homish, G. G., Leonard, K. E., & Cornelius, J. R. (2012). Intimate partner violence and speci c substance use disorders: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. Psychology of Addictive Behaviors, 26(2), 236–245.

Smith, V., & Tasker, F. (2017). Gay men's chemsex survival stories. Sexual Health, 15(2), 116–122.

Smullin, C., Wagman, J., Mehta, S., & Klausner, J. D. (2021). A narrative review of the epidemiology of congenital syphilis in the United States from 1980 to 2019. Sexually Transmitted Diseases, 48(2), 71–78.

Solingapuram Sai, J., Hurley, R. A., Dodda, M., & Taber, K. H. (2019). Positron emission tomography: Updates on imaging of addiction. Journal of Neuropsychiatry and Clinical Neurosciences, 31(4), A6–A288.

Soontornniyomkij, V., Kesby, J. P., Morgan, E. E., Bischoff-Grethe, A., Minassian, A., Brown, G. G., … Translational Methamphetamine AIDS Research Center (TMARC) Group. (2016). Effects of HIV and methamphetamine on brain and behavior: Evidence from human studies and animal models. Journal of Neuroimmune Pharmacology, 11(3), 495–510.

Spillane, N. S., Weyandt, L., Oster, D., & Treloar, H. (2017). Social contextual risk factors for stimulant use among adolescent American Indians. Drug and Alcohol Dependence, 179, 167–173.

Spiller, H. A., Hays, H. L., & Aleguas, A. (2013). Overdose of drugs for attention-de cit hyperactivity disorder: Clinical presentation, mechanisms of toxicity, and management. CNS Drugs, 27(7), 531–543.

Spronk, D. B., van Wel, J. H. P., Ramaekers, J. G., & Verkes, R. J. (2013). Characterizing the cognitive effects of cocaine: A comprehensive review. Neuroscience and Biobehavioral Reviews, 37(8), 1838–1859.

Staiger, P. K., Richardson, B., Long, C. M., Carr, V., & Marlatt, G. A. (2013). Overlooked and underestimated? Problematic alcohol use in clients recovering from drug dependence. Addiction, 108(7), 1188–1193.

Stanger, C., & Budney, A. J. (2019). Contingency management: Using incentives to improve outcomes for adolescent substance use disorders. Pediatric Clinics of North America, 66(6), 1183–1192.

Stanger, C., & Noel, V. (2014). A social skills and parental training intervention for disruptive boys reduces substance use behaviours in adolescence. Evidence-Based Mental Health, 17(1), 23.

Steingard, R., Taskiran, S., Connor, D. F., Markowitz, J. S., & Stein, M. A. (2019). New formulations of stimulants: An update for clinicians. Journal of Child and Adolescent Psychopharmacology, 29(5), 324–339.

Stevens, O., Moncrieff, M., & Gafos, M. (2020). Chemsex-related drug use and its association with health outcomes in men who have sex with men: A cross-sectional analysis of Antidote clinic service data. Sexually Transmitted Infections, 96(2), 124–130.

Stitzer, M. L., Gukasyan, N., Matheson, T., Sorensen, J. L., Feaster, D. J., Duan, R., … Metsch, L. R. (2020). Enhancing patient navigation with contingent nancial incentives for substance use abatement in persons with HIV and substance use. Psychology of Addictive Behaviors, 34(1), 23–30.

Stoddard, S. A., Epstein-Ngo, Q., Walton, M. A., Zimmerman, M. A., Chermack, S. T., Blow, F. C., … Cunningham, R. M. (2015). Substance use and violence among youth: A daily calendar analysis. Substance Use and Misuse, 50(3), 328–339.

Stoicescu, C., Ameilia, R., Irwanto, Praptoraharjo, I., & Mahanani, M. (2019). Syndemic and synergistic effects of intimate partner violence, crystal methamphetamine, and depression on HIV sexual risk behaviors among women who inject drugs in Indonesia. Journal of Urban Health, 96(3), 477–496.

Stoops, W. W., & Rush, C. R. (2013). Agonist replacement for stimulant dependence: A review of clinical research. Current Pharmaceutical Design, 19(40), 7026–7035.

Storebø, O. J., Ramstad, E., Krogh, H. B., Nilausen, T. D., Skoog, M., Holmskov, M., ... Gluud, C. (2015). Methylphenidate for children and adolescents with attention de cit hyperactivity disorder (ADHD). Cochrane Database of Systematic Reviews.

Substance Abuse and Mental Health Services Administration. (2009). American Indian and Alaska Native culture card: A guide to build cultural awareness. HHS Publication No. (SMA) 08-4354. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2010). Recovery-oriented systems of care (ROSC) resource guide [Working draft]. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2011). Screening, brief intervention and referral to treatment (SBIRT) in behavioral healthcare. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2012). Using Matrix with women clients: A supplement to the Matrix intensive outpatient treatment for people with stimulant use disorders. HHS Publication No. (SMA) 12-4698. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2013). Behavioral health services for people who are homeless. Treatment Improvement Protocol (TIP) Series 55. HHS Publication No. (SMA) 13-4734. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2014). Improving cultural competence. Treatment Improvement Protocol (TIP) Series 59. HHS Publication No. (SMA) 14-4849. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2015). Hepatitis C screening in the behavioral healthcare setting. Advisory, Vol. 14, Issue 1. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2016). Rural behavioral health: Telehealth challenges and opportunities. In Brief, Vol. 9, Issue 2. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2018a). Behavioral health services for American Indians and Alaska Natives. Treatment Improvement Protocol (TIP) Series 61. HHS Publication No. (SMA) 18-5070EXSUMM. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2018b). SAMHSA opioid overdose prevention toolkit. HHS Publication No. (SMA) 18-4742. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2018c). Tips for teens: The truth about methamphetamine. PEP NO. 18-03. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2019). Enhancing motivation for change in substance use disorder treatment. Treatment Improvement Protocol (TIP) Series 35. SAMHSA Publication No. PEP19-02-01-003. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020a). 2018 National Survey on Drug Use and Health: Lesbian, gay, and bisexual (LGB) adults [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt23252/7_LGB_2020_01_14_508.pdf

Substance Abuse and Mental Health Services Administration. (2020b). 2019 National Survey on Drug Use and Health: African Americans [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt31099/2019NSDUH-AA/AfricanAmerican%202019%20NSDUH.pdf

Substance Abuse and Mental Health Services Administration. (2020c). 2019 National Survey on Drug Use and Health: American Indians and Alaska Natives (AI/ANs) [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt31098/2019NSDUH-AIAN/AIAN%202019%20NSDUH.pdf

Substance Abuse and Mental Health Services Administration. (2020d). 2019 National Survey on Drug Use and Health: Asian/Native Hawaiians and Other Paci c Islanders (NHOPI) [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt31100/2019NSDUH-NHOPI/Asian_NHOPI.pdf

Substance Abuse and Mental Health Services Administration. (2020e). 2019 National Survey on Drug Use and Health: Hispanics [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt31101/2019NSDUH-Hispanic/Hispanic%202019%20NSDUH.pdf

Substance Abuse and Mental Health Services Administration. (2020f). 2019 National Survey on Drug Use and Health: Women [Handout showing PowerPoint slides]. Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/sites/default/ les/reports/rpt31102/2019NSDUH-Women/Women%202019%20NSDUH.pdf

Substance Abuse and Mental Health Services Administration. (2020g). Key substance use and mental health indicators in the United States: Results from the 2019 National Survey on Drug Use and Health. NSDUH Series H-55. HHS Publication No. PEP20-07-01-001. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020h). Medications for opioid use disorder. Treatment Improvement Protocol (TIP) Series 63. Publication No. PEP20-02-01-006. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020i). The opioid crisis and the Black/African American population: An urgent issue. Publication No. PEP20-05-02-001. Of ce of Behavioral Health Equity. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020j). Prevention and treatment of HIV among people living with substance use and/or mental disorders. Publication No. PEP20-06-03-001. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020k). Substance use disorder treatment and family therapy. Treatment Improvement Protocol (TIP) Series 39. SAMHSA Publication No. PEP20-02-02-012. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020l). Substance use disorder treatment for people with co-occurring disorders. Treatment Improvement Protocol (TIP) Series 42. SAMHSA Publication No. PEP20-02-01-004. Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2020m). Treatment of stimulant use disorders. SAMHSA Publication No. PEP20-06-01-001. Substance Abuse and Mental Health Services Administration, National Mental Health and Substance Use Policy Laboratory.

Substance Abuse and Mental Health Services Administration. (2020n, August 19). Co-occurring disorders and other health conditions. https://www.samhsa.gov/medication-assisted-treatment/medications-counseling-related-conditions/co-occurring-disorders

Substance Abuse and Mental Health Services Administration. (2020o, September 15). Naltrexone. https://www.samhsa.gov/medication-assisted-treatment/medications-counseling-related-conditions/naltrexone

Substance Abuse and Mental Health Services Administration. (2021a). Integrating vocational services into substance use disorder treatment. Advisory.

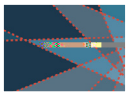
Substance Abuse and Mental Health Services Administration. (2021b). Using technology-based therapeutic tools in behavioral health services. Advisory.

Substance Abuse and Mental Health Services Administration. (2021c, February 5). ASAM criteria. https://www.samhsa.gov/resource/ebp/asam-criteria

Swann, A. C. (2010). The strong relationship between bipolar and substance-use disorder. Annals of the New York Academy of Sciences, 1187(2010), 276–293.

Swanson, J., Baler, R. D., & Volkow, N. D. (2011). Understanding the effects of stimulant medications on cognition in individuals with attention-de cit hyperactivity disorder: A decade of progress. Neuropsychopharmacology, 36(1), 207–226.

Szerman, N., Ferre, F., Basurte-Villamor, I., Vega, P., Mesias, B., Marín-Navarrete, R., & Arango, C. (2020). Gambling dual disorder: A dual disorder and clinical neuroscience perspective. Frontiers in Psychiatry, 11,



United Nations Of ce on Drugs and Crime. (2018). World drug report 2018: Drugs and age (Booklet 4).

United Nations Of ce on Drugs and Crime. (2019a). HIV prevention, treatment, care and support for people who use stimulant drugs [Technical guide].

United Nations Of ce on Drugs and Crime. (2019b). Treatment of stimulant use disorders: Current practices and promising perspectives [Discussion paper b(drug DCB0 0.85 k /GS0 gs /T1_9/T1_9/T1c(6 33622 Td [(Ul.0, Glob TfForumtionMSM)]TJ

Walley, A. (2013). Stimulants: Cocaine and methamphetamine [Handout showing PowerPoint slides]. Presentation at the Resident Immersion Training (CRIT) Program in Addiction Medicine at Boston University

Wilens, T. E., Carrellas, N. W., Martelon, M., Yule, A. M., Fried, R., Anselmo, R., & McCabe, S. E. (2017). Neuropsychological functioning in college students who misuse prescription stimulants. American Journal on Addictions, 26(4), 379–387.

Wilens, T. E., Martelon, M., Joshi, G., Bateman, C., Fried, R., Petty, C., & Biederman, J. (2011). Does ADHD predict substance-use disorders? A 10-year follow-up study of young adults with ADHD. Journal of the American Academy of Child and Adolescent Psychiatry, 50(6), 543–553.

Wilens, T., Zulauf, C., Martelon, M., Morrison, N. R., Simon, A., Carrellas, N. W., … Anselmo, R. (2016). Nonmedical stimulant use in college students: Association with attention-de cit/hyperactivity disorder and other disorders. Journal of Clinical Psychiatry, 77(7), 940–947.

Wilkerson, A. K., Sahlem, G. L., Bentzley, B. S., Lord, J., Smith, J. P., Simmons, R. O., ... Book, S. W. (2019). Insomnia severity during early abstinence is related to substance use treatment completion in adults enrolled in an intensive outpatient program. Journal of Substance Abuse Treatment, 104, 97–103.

Wilkerson, J. M., Noor, S. W., Rhoton, J. M., Li, D., & Rosser, B. R. S. (2018). Differentially classi ed methamphetamine-using men who have sex with men: A latent class analysis. Drug and Alcohol Dependence, 192, 129–136.

Wimberly, A. S., Hyatt, J. M., & McKay, J. R. (2018). Effect of continuing care for people with cocaine dependence on criminal justice sentences. Behavioral Sciences and the Law, 36(1), 116–129.

Winkelman, T. N. A., Admon, L. K., Jennings, L., Shippee, N. D., Richardson, C. R., & Bart, G. (2018). Evaluation of amphetamine-related hospitalizations and associated clinical outcomes and costs in the United States. JAMA Network Open, 1(6), e183758.

Winn, L. A. P., Paquette, K. L., Donegan, L. R. W., Wilkey, C. M., & Ferreira, K. N. (2019). Enhancing adolescent SBIRT with a peer-delivered intervention: An implementation study. Journal of Substance Abuse Treatment, 103, 14–22.

Wise, R. A. (2008). Dopamine and reward: The anhedonia hypothesis 30 years on. Neurotoxicity Research, 14(2–3), 169–183.

Wise, R. A., & Koob, G. F. (2014). The development and maintenance of drug addiction. Neuropsychopharmacology, 39(2), 254–262.

Wiss, D. A. (2019). The role of nutrition in addiction recovery: What we know and what we don't. In I. Danovitch & L. J. Mooney (Eds.), The assessment and treatment of addiction (pp. 21–42). Elsevier.

Wood, S., Sage, J. R., Shuman, T., & Anagnostaras, S. G. (2014). Psychostimulants and cognition: A continuum of behavioral and cognitive activation. Pharmacological Reviews, 66(1), 193–221.

Woolum, J. A., Travis, M., Running Cranem, C., Bailey, A. M., Baum, R. A., & Akpunonu, P. (2019). Use of lidocaine for treatment of pulseless ventricular tachycardia after massive cocaine overdose. Toxicology Communications, 3(1), 19–22.

Workowski, K. A., & Bolan, G. A. (2015). Sexually transmitted diseases treatment guidelines, 2015. MMWR Recommendations and Reports, 64(RR-3), 1–137.

World Health Organization & United Nations Of ce on Drugs and Crime. (2020). International standards for the treatment of drug use disorders: Revised edition incorporating results of eld testing. https://www.who.int/publications/i/item/international-standards-for-the-treatment-of-drug-use-disorders

Worley, J. (2014). Identi cation and management of prescription drug abuse in pregnancy. Journal of Perinatal and Neonatal Nursing, 28(3), 196–203.

Wright, T. E., Schuetter, R., Tellei, J., & Sauvage, L. (2015). Methamphetamines and pregnancy outcomes. Journal of Addiction Medicine, 9(2), 111–117.

Wu, L. T., Pan, J. J., Blazer, D. G., Tai, B., Stitzer, M. L., & Woody, G. E. (2010). Using a latent variable approach to inform gender and racial/ethnic differences in cocaine dependence: A National Drug Abuse Treatment Clinical Trials Network Study. Journal of Substance Abuse Treatment, 38(Suppl. 1), S70–S79.

Wunderli, M. D., Vonmoos, M., Niedecker, S. M., Hulka, L. M., Preller, K. H., Baumgartner, M. R., … Quednow, B. B. (2016). Cognitive and emotional impairments in adults with attention-de cit/hyperactivity disorder and cocaine use. Drug and Alcohol Dependence, 163, 92–99.

Yang, X., Wang, Y., Li, Q., Zhong, Y., Chen, L., Du, Y., … Yan, J. (2018). The main molecular mechanisms underlying methamphetamine-induced neurotoxicity and implications for pharmacological treatment. Frontiers in Molecular Neuroscience, 11, 186.

Yanofski, J. (2011). The dopamine dilemma—Part II: Could stimulants cause tolerance, dependence, and paradoxical decompensation? Innovations in Clinical Neuroscience, 8(1), 47–53.

Yasaei, R., & Saadabadi, A. (2021). Methamphetamine. In StatPearls. Retrieved June 1, 2021, from https://www.ncbi.nlm.nih.gov/books/NBK535356/

Yazdanian, M., Armoon, B., Noroozi, A., Mohammadi, R., Bayat, A. H., Ahounbar, E., … Hemmat, M. (2020). Dental caries and periodontal disease among people who use drugs: A systematic review and meta-analysis. BMC Oral Health, 20(1), 44.

Ye, L., Peng, J. S., Wang, X., Wang, Y. J., Luo, G. X., & Ho, W. Z. (2008). Methamphetamine enhances hepatitis C virus replication in human hepatocytes. Journal of Viral Hepatitis, 15(4), 261–270.