

# Substance Use Guidelines: Methamphetamine

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## Introduction

- Methamphetamine (MA) is a powerful central nervous system stimulant. It is a synthetic, easily dissolved, odorless, crystalline powder or crystal “rock” that can be ingested orally, smoked, inhaled/snorted, injected, or used rectally ([booty bumping](#)).
- Repeated and consistent use of MA can cause dependence. People who use MA can experience intense cravings and depression upon cessation.
- The methamphetamine currently available in the United States is predominantly a highly potent, illegally manufactured form of the drug made with the chemical precursor phenyl-2-propanone (P2P).<sup>i</sup> MA made with P2P is not just more potent but has also been associated with increased psychiatric side effects. There is one FDA-approved formulation of methamphetamine, manufactured under the brand name [Desoxyn](#). FDA-approved forms of amphetamine are also often available for sale in the street supply.
- Methamphetamine use rapidly releases large amounts of dopamine and impacts multiple other neurotransmitters. The rapid release of these neurotransmitters causes both the high associated with MA use as well as some of its unpleasant and unwanted acute and chronic impacts.<sup>ii,iii</sup>
- In the last decade, methamphetamine use in the United States has increased significantly, as have MA-related overdose deaths. There was a 43% increase in reported MA use between 2015 and 2019, with 2 million Americans reporting MA use in 2019. In 2020, there were 23,352 overdose deaths involving non-cocaine stimulants (mostly methamphetamine), up from 5,526 in 2015, a more than 300% increase.<sup>iv</sup>
- Like other drug supplies in the U.S., methamphetamine is often formulated or contaminated with fentanyl, increasing the risk of fentanyl poisoning and overdose related to MA use. Pressed pills made to resemble FDA-approved versions of amphetamine may also contain fentanyl.

## Key Terms and Definitions

- **Trauma-informed care (TIC):** A patient-centered approach to care that recognizes the impacts of trauma and actively works to prevent re-traumatization and promote recovery. The principles of TIC are grounded in establishing a trusting relationship and a safe physical and psychological space in which to address needs.
- **Harm reduction:** A philosophical approach to care that establishes individual agency and self-determination as central to all efforts toward well-being. Harm reduction approaches call for the non-judgmental, non-coercive provision of services and resources to people who use substances to assist them in reducing harms related to their substance use or other health behaviors. Harm reduction-based care is collaborative, provides education on available interventions, and centers the goals of the individual in care planning.
- **Overamping:** Refers to a broad spectrum of psychological and physical responses to using a large amount or a high frequency of methamphetamine. Frequently reported symptoms of overamping include severe anxiety, paranoia, auditory, visual, and physical hallucinations, severe agitation,

uncontrollable motor movements, and sudden sleep or loss of consciousness, frequently described as the “body shutting down.”<sup>v</sup>

- **Methamphetamine Overdose:** Unlike opiate overdose, which has a clearly defined clinical profile of decreased or absent respirations leading to death, MA overdose can be more difficult to define and identify. There are multiple, complex causes potentially leading to death from methamphetamine use. Causes of death related to MA use may include methamphetamine toxicity, combining MA with other substances – most notably opioids, cardiac and stroke events, accidental injury, and suicide.<sup>v</sup>

### Clinical Considerations

#### Physical and Behavioral Health Impacts

- Immediate physical and behavioral impacts of MA use may include euphoria, improved mood, increased energy, decreased appetite, rapid heart rate, hypertension, and hyperthermia.
- Severe, acute methamphetamine-related events include cardiac arrest, myocardial infarction, and hemorrhagic or ischemic stroke related to vasoconstriction, structural and electrical cardiac remodeling, and other atherosclerotic changes.<sup>vi</sup>
- Other potential physical health impacts of MA use include MA-related cardiomyopathy and associated heart failure, immune system dysregulation, renal disease, weight loss/malnutrition, and dental disease.<sup>vii,viii,ix,x</sup> Skin and soft tissue infections, bacteremia, and endocarditis can develop related to intravenous use. Soft tissue infections can also develop from skin picking related to the “skin crawling” sensations that can be caused by MA use.
- In addition to euphoria, psychological impacts of MA use can include delirium, paranoia, hallucinations, agitation, emotional distress, and related aggression. These symptoms can be very distressing to the person experiencing them as well as to those around them and can persist beyond the high.
- MA use can lead to permanent neurological remodeling that results in lifelong cognitive, decision-making, and memory deficits. While memory and cognitive abilities may rebound following cessation or reduction in MA use, some people may never return to their baseline.<sup>xi</sup>
- Because MA is a potent anti-depressant, people who are working to decrease use or who stop use completely can experience sudden and profound depressive symptoms and may need additional ongoing supports.<sup>xii</sup>

#### Use of Methamphetamine and Experiences of Homelessness

- While MA use is driven by multiple, individualized factors, for people experiencing homelessness (PEH) a key driver can be MA’s potent antidepressant effects. The immediate impact on mood can lead to euphoria and alleviate distress related to trauma and the challenges of homelessness.
- Methamphetamine helps keep people awake so they can work longer hours and/or safeguard themselves and their belongings on the street, in shelters, or in encampments.
- Methamphetamine decreases hunger, a frequent and painful challenge faced by people experiencing homelessness who may have limited food resources or access to meals.
- The potential behavioral manifestations of methamphetamine use, like agitation, paranoia, emotional distress, and hallucinations, put people at higher risk for involvement with law

enforcement and for being victims of violence or accidents. These symptoms can also make [transitioning into or maintaining housing](#) difficult.

### Harm Reduction Strategies

- Responding to overamping: address safety needs, including assessing for suicidality; meet physical needs for hydration, food, and rest; provide a safe environment and take measures to make the person feel more safe where they are – for example decreasing stimulation or the number of people around them. In instances where someone is exhibiting signs of a cardiac event or overdose or is at risk of harm to self or others, seek immediate emergency care.
- Provide education to people who use MA on the signs of overamping and overdose – in particular cardiac or stroke events, teach strategies for addressing distressing symptoms, and educate them on when to seek emergency care.
- Provide access or refer to syringe service programs to obtain safer use supplies. Provide education on [safer injection practices](#).
- Provide support for people who are trying to decrease or stop use, including mental health supports.
- Recognize that people who are in recovery from other substances, such as using medications like buprenorphine for opiate use, may still be struggling with MA use. MA use should not exclude people from receiving medications for opioid use disorder (MOUD) and should be included in discussions about recovery goals.

### Treatment and Supportive Services

- While there are currently no FDA-approved medications to treat methamphetamine dependence, there are psychosocial-based strategies that have shown good results, as well as some emerging data on medications to support decreasing or cessation of use.
- Contingency management is an evidence-based behavioral intervention that provides positive reinforcement for evidence of behavioral change, in this case, decreased MA use. Through monetary rewards for positive behavior changes, contingency management provides a competing incentive for the reward center of the brain that is also activated by methamphetamine use.
- A 2019 phase III clinical trial investigating the combination of injectable naltrexone and oral bupropion showed that the drug combination was safe and effective at treating moderate to severe methamphetamine use disorder.
- There have been some small studies suggesting that prescribed Methylphenidate has been effective at decreasing methamphetamine use, especially in individuals who have a history of ADHD.<sup>xiii,xiv</sup> Additionally, there have been discussions among harm reduction medical experts about the argument for safe supply of amphetamine prescribing to decrease the risk of overdose from methamphetamines, but this approach currently lacks an evidence base.<sup>xv</sup>
- People who use methamphetamine need comprehensive medical and behavioral health care services to provide preventive care and to treat conditions related to or impacted by use, including skin and wound care, cardiac care, and infectious disease prevention and management.

## Models of Care Delivery

- Leveraging an interdisciplinary model is vital for supporting people who use methamphetamine. Service providers should work to improve care coordination and communication between providers, including referrals to behavioral health and specialty care when appropriate.
- Medical outreach and Street Medicine models of care are particularly important for providing care and services for PEH who are using methamphetamine. Many people who need support with MA use, including substance use treatment and other primary health services may not be able or comfortable accessing care in more traditional settings. Meeting a person where they are and offering medical support along with necessities like clothes, food, and water, is essential.
- Medical respite may be a vital resource for supporting someone who needs additional assistance recovering after a hospitalization or injury, or someone learning how to manage new cardiomyopathy or memory and decision-making changes related to MA use.

### Additional Resources:

- Homeless and Housing Resource Center: [Guide to Methamphetamine Use, Treatment, and Related Housing Considerations for People Experiencing Homelessness](#)
- California Department of Health Care Services: [Contingency Management](#)
- National Harm Reduction Coalition: [Getting Off Right: A Safety Manual for Injection Drug Users](#)

### References

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