

Methamphetamine

Methamphetamine is a very addictive stimulant drug that activates certain systems in the brain. It is chemically related to amphetamine but, at comparable doses, the effects of methamphetamine are much more potent, longer lasting, and more harmful to the central nervous system (CNS).

Methamphetamine is a Schedule II stimulant, which means it has a high potential for abuse and is available only through a prescription that cannot be refilled. It can be made in small, illegal laboratories, where its production endangers the people in the labs, neighbors, and the environment. Street methamphetamine is referred to by many names, such as "speed," "meth," and "chalk." Methamphetamine hydrochloride, clear chunky crystals resembling ice, which can be inhaled by smoking, is referred to as "ice," "crystal," "glass," and "tina."

Methamphetamine is taken orally, intranasally (snorting the powder), by needle injection, or by smoking. Users may become addicted quickly, needing higher doses and more often. At this time, the most effective treatments for methamphetamine addiction are behavioral therapies such as cognitive behavioral and contingency management interventions.

Health Hazards

Methamphetamine increases the release of very high levels of the neurotransmitter dopamine, which stimulates brain cells, enhancing mood and body movement. Chronic methamphetamine use significantly changes how the brain functions. Animal research going back more than 30 years shows that high doses of methamphetamine damage neuron cell endings. Dopamine- and serotonin-containing neurons do not die after methamphetamine use, but their nerve endings ("terminals") are cut back, and regrowth appears to be limited. Noninvasive human brain imaging studies have shown alterations in the activity of the dopamine system. These alterations are associated with reduced motor speed and impaired verbal learning. Recent studies in chronic methamphetamine users have also revealed severe structural and functional changes in areas of the brain associated with emotion and memory, which may account for many of the emotional and cognitive problems observed in chronic methamphetamine users.

Taking even small amounts of methamphetamine can result in increased wakefulness, increased physical activity, decreased appetite, increased respiration, rapid heart rate, irregular heartbeat, increased blood pressure, and hyperthermia. Other effects of methamphetamine abuse may include irritability, anxiety, insomnia, confusion, tremors, convulsions, and cardiovascular collapse and death. Long-term effects may include paranoia, aggressiveness, extreme anorexia, memory loss, visual and auditory hallucinations, delusions, and severe dental problems.

Also, transmission of HIV and hepatitis B and C can be a consequence of methamphetamine use. Among users who inject the drug, infection with HIV and other infectious diseases is spread mainly through the re-use of contaminated syringes, needles, and other injection equipment by more than one person. The intoxicating effects of methamphetamine, however, whether it is injected or taken other ways, can alter judgment and inhibition and lead people to engage in unsafe behaviors. Methamphetamine use actually may worsen the progression of HIV and its consequences; studies with methamphetamine users who have HIV indicate that the HIV causes greater neuronal injury and cognitive impairment compared with HIV-positive people who do not use drugs.

Adapted from the [National Institute on Drug Abuse \(NIDA\)](http://www.drugscreening.org/methamp.aspx)

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