Center for Integrated Healthcare

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Information for Behavioral Health Providers in Primary Care

Methamphetamine

What is Methamphetamine?

Methamphetamine is a central nervous system stimulant drug that is similar in structure to amphetamine. Due to its high potential for abuse, methamphetamine is classified as a Schedule II drug and is available only through a prescription that cannot be refilled. Although methamphetamine can be prescribed by a doctor, its medical uses are limited, and the doses that are prescribed are much lower than those typically abused. Most of the methamphetamine abused in this country comes from foreign or domestic superlabs, although it can also be made in small, illegal laboratories, where its production endangers the people in the labs, neighbors, and the environment.

How Is Methamphetamine Abused?

Methamphetamine is a white, odorless, bitter-tasting crystalline powder that easily dissolves in water or alcohol and is taken orally, intranasally (snorting the powder), by needle injection, or by smoking.

How Does Methamphetamine Affect the Brain?

Methamphetamine increases the release and blocks the reuptake of the brain chemical (or neurotransmitter) dopamine, leading to high levels of the chemical in the brain—a common mechanism of action for most drugs of abuse. Dopamine is involved in reward, motivation, the experience of pleasure, and motor function. Methamphetamine's ability to release dopamine rapidly in reward regions of the brain produces the intense euphoria, or "rush," that many users feel after snorting, smoking, or injecting the drug.

Chronic methamphetamine abuse significantly changes how the brain functions. Noninvasive human brain imaging studies have shown alterations in the activity of the dopamine system that are associated with reduced motor skills and impaired verbal learning.[1] Recent studies in chronic methamphetamine abusers have also revealed severe structural and functional changes in areas of the brain associated with emotion and memory,[2,3] which may account for many of the emotional and cognitive problems observed in chronic methamphetamine abusers.

Repeated methamphetamine abuse can also lead to addiction—a chronic, relapsing disease characterized by compulsive drug seeking and use, which is accompanied by chemical and molecular changes in the brain. Some of these changes persist long after methamphetamine abuse is stopped.

Reversal of some of the changes, however, may be observed after sustained periods of abstinence (e.g., more than 1 year).[4]

What Other Adverse Effects Does Methamphetamine Have on Health?

Taking even small amounts of methamphetamine can result in many of the same physical effects as those of other stimulants, such as cocaine or amphetamines, including increased wakefulness, increased physical activity, decreased appetite, increased respiration, rapid heart rate, irregular heartbeat, increased blood pressure, and hyperthermia.

Long-term methamphetamine abuse has many negative health consequences, including extreme weight loss, severe dental problems ("meth mouth"), anxiety, confusion, insomnia, mood disturbances, and violent behavior. Chronic methamphetamine abusers can also display a number of psychotic features, including paranoia, visual and auditory hallucinations, and delusions (for example, the sensation of insects crawling under the skin).

Transmission of HIV and hepatitis B and C can be consequences of methamphetamine abuse. The intoxicating effects of methamphetamine, regardless of how it is taken, can also alter judgment and inhibition and can lead people to engage in unsafe behaviors, including risky sexual behavior. Among abusers who inject the drug, HIV/AIDS and other infectious diseases can be spread through contaminated needles, syringes, and other injection equipment that is used by more than one person. Methamphetamine abuse may also worsen the progression of HIV/AIDS and its consequences. Studies of methamphetamine abusers who are HIV-positive indicate that HIV causes greater neuronal injury and cognitive impairment for individuals in this group compared with HIV-positive people who do not use the drug.[5,6]

What Treatment Options Exist?

Currently, the most effective treatments for methamphetamine addiction are comprehensive cognitive-behavioral interventions. For example, the Matrix Model—a behavioral treatment approach that combines behavioral therapy, family education, individual counseling, 12-step support, drug testing, and encouragement for nondrug-related activities—has been shown to be effective in reducing methamphetamine abuse.[7] Contingency management interventions, which provide tangible incentives in exchange for engaging in treatment and maintaining abstinence, have also been shown to be effective.[8] There are no medications at this time approved to treat methamphetamine addiction; however, this is an active area of research for NIDA.

How Widespread Is Methamphetamine Abuse?

Monitoring the Future Survey*

Methamphetamine use among teens appears to have dropped significantly in recent years, according to data revealed by the 2009 Monitoring the Future survey. The number of high-school seniors reporting past-year†† use is now only at 1.2 percent, which is the lowest since questions about methamphetamine were added to the survey in 1999; at that time, it was reported at 4.7 percent. Lifetime use among 8th-graders was reported at 1.6 percent in 2009, down significantly from 2.3 percent in 2008. In addition, the proportion of 10th-graders reporting that crystal methamphetamine was easy to obtain has dropped to 14 percent, down from 19.5 percent 5 years ago.

Methamphetamine Prevalence of Abuse
Monitoring the Future Survey, 2009

	8th Grade	10th Grade	12th Grade
Lifetime**	1.6%	2.8%	2.4%
Past Year	1.0	1.6	1.2
Past Month	0.5	0.6	0.5

National Survey on Drug Use and Health***

According to the 2008 National Survey on Drug Use and Health, the number of past-month methamphetamine users age 12 and older decreased by over half between 2006 and 2008. Current (past-month) users were numbered at 731,000 in 2006, 529,000 in 2007, and 314,000 in 2008. Significant declines from 2002 and 2008 also were noted for lifetime and past-year use in this age group.

From 2002 to 2008, past-month use of methamphetamine declined significantly among youths aged 12 to 17, from 0.3 percent to 0.1 percent, and young adults aged 18 to 25 also reported significant declines in past-month use, from 0.6 percent in 2002 to 0.2 percent in 2008.

The above information was adapted from *NIDA InfoFacts: Methamphetamine*, available at: http://www.drugabuse.gov/infofacts/methamphetamine.html

Other Information Resources

For more information on the effects of methamphetamine abuse and addiction, visit www.drugabuse.gov/drugpages/methamphetamine.html.

To find publicly funded treatment facilities by State, visit www.findtreatment.samhsa.gov.

For street terms searchable by drug name, street term, cost and quantities, drug trade, and drug use, visit www.whitehousedrugpolicy.gov/streetterms/default.asp.

References

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