

Methamphetatamine

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Introduction

Methamphetatamine is a stimulant drug derived from the amphetamine class of drugs. Although it is available as a prescription drug, it is more commonly used as an illegal drug, where it is commonly smoked or snorted. It is also called Crystal Meth, Crystal, Crissy, Tina, Crank, Speed, Shards, Glass, Ice, Go, Whizz, Dope, among other nick-names.

Epidemiology

About 2% of the population of the United States, or 4.7 million individuals, have tried meth. It is slightly more common for men to use than women. Meth's use peaked in the early 2000's, where it was a popular drug in the west and mid-west areas of the US. In 2004, it was estimated that one out of every six meth users in the U.S. was a Californian. Interestingly, it is one of the few drugs that has a disproportionate use in the white poor.

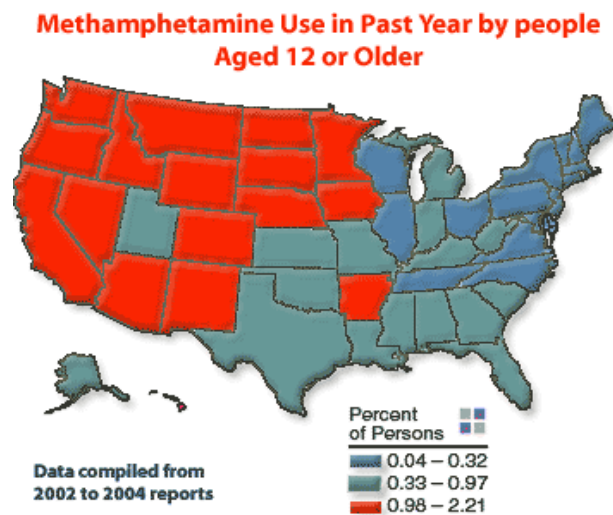


Figure 1. Meth use across the United States

Meth use began to decline in the late 2000's, partially because of restrictions placed on buying OTC precursors, particularly pseudo-ephedrine. According to the WHO, rates of meth abuse are similar to the United States among developed nations.

Meth also has a significant overlap with other conditions. A study of 198 meth users found that 28.6% had a co-morbid psychotic disorder, 32.3% had a mood disorder, and 26.5% had an anxiety disorder. However, from my experience with meth users, I imagine that it is difficult to extrapolate the effects of the drugs themselves vs the predisposition of individuals with mental health issues to use meth.

Pharmacology

Methamphetatamine and amephatamines in general are classified as “releasing agents” and re-uptake inhibitors of catecholamines. In particular, dopamine, and norepi. They are also weak MAO inhibitors, furthering the persistence of dopamine in the synaptic cleft.

Effects

Many of the effects of Methamphetamine use are predictable, and align well with what we know about stimulating the CNS.

The increased levels of **norepinephrine** increase the pulse and heart contractility. Blood pressure is elevated, mydriasis occurs, and the individual becomes euphoric and hyperactive. Conversely, individual may present with severe anxiety or irritability. Sympathetic stimulation can lead to chronic dry mouth and subsequent tooth decay (“meth mouth”). At high levels, this can lead to arrhythmias as well as ischemia in a variety of organs due to general over-activity (MIs, stroke, renal failure, liver failure).

Increases in **dopamine** levels are pleasurable, but also lead to paranoia, psychosis, hallucinations, and potential dyskinesias (movement abnormalities). Dopamine will also lead to a decreased appetite, which, combined with hyperactivity, leads to weight loss. Meth addicts are often underweight and have a gaunt appearance.

Both dopamine and norepi increase the basal temperature and, at very high levels, can lead to hyperthermia. An additional side effect of constantly elevated temperature is sweating and resultant dehydration. This dehydration will lead to dry skin, which feels itchy, causing users to constantly scratch their skin. This is the cause of the many scrapes commonly found in chronic meth users.

Meth has a unique “cat urine” smell that can be noticed in meth labs or in chronic users.



Figure 2. Progression of a meth users

As with many drugs, withdraw is characterized by many of the opposite spectrum of responses. Individuals will become depressed, lose interest in activities they once enjoyed (anhedonia), and will have severe cravings.

Addiction

According to UpToDate, “Methamphetamine users were more likely to become dependent soon after onset of use compared to users of other stimulants. Little is known about the factors that influence the transition from non-addicted use of methamphetamine to methamphetamine addiction.” However, it does seem like there is a subset of users that are able to use meth with moderations. One study found that the average meth user used 12 days per month, and that 63% of users had low, moderate, or decreasing use.

References

- UpToDate. Methamphetamine use disorder: Epidemiology, clinical manifestations, course, assessment, and diagnosis
- Kaplan Pharmacology
- Lippincott Pharmacology