

Cocaine and Other Stimulants - Amphetamines

What are stimulants?

A class of drugs that enhances the activity of monoamines (such as dopamine) in the brain, increasing arousal, heart rate, blood pressure, and respiration, and decreasing appetite; includes some medications used to treat attention-deficit hyperactivity disorder, narcolepsy or is used as a local anesthetic.(e.g., methylphenidate, amphetamines and cocaine)

Coca leaves

Cocaine was originally extracted from the leaf of the *Erythroxylon* coca bush, which grew primarily in Peru and Bolivia.

After the 1990s, and following crop reduction efforts in those countries, Colombia became the nation with the largest cultivated coca crop.



- Chewing coca leaves, as medicine



Crack and Cocaine Powder

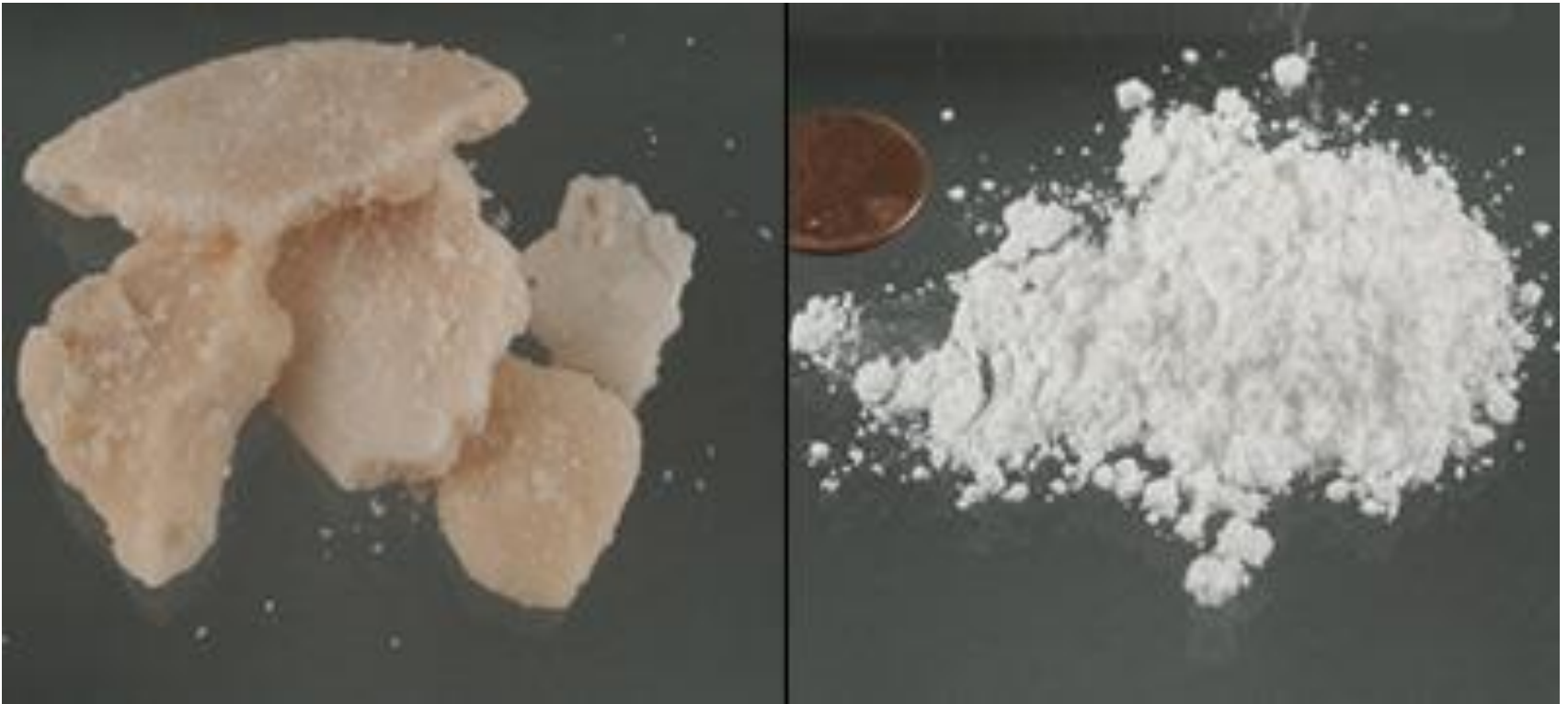


Photo courtesy [U.S. Drug Enforcement Administration](https://www.dea.gov/)

Cocaine

is generally sold on the street as a fine, white, crystalline powder and is also known as “coke,” “C,” “[snow](#),” “flake,” or “blow.”

Street dealers generally dilute it with immobile substances such as cornstarch, talcum powder, or sugar, or with active drugs such as procaine or amphetamine.

When abused, cocaine, can be injected or snorted. The base form of cocaine has been processed with [ammonia](#) or sodium bicarbonate (baking soda) and water, and then heated to remove the hydrochloride to produce a smokable substance. The term “crack,” which is the street name given to freebase cocaine, refers to the crackling sound heard when the mixture is smoked.

How is cocaine consumed?

Chewing coca leaves

The principal routes of cocaine administration are oral, intranasal, intravenous, and inhalation.

Snorting or intranasal administration, where it is absorbed into the bloodstream through the nasal tissues.

Cocaine use ranges from occasional to repeated or compulsive use, with a variety of patterns between these extremes.

Cocaine and Amphetamine

Have similar behavioral effects, because both act as potent DA agonists.

Activate mesolimbic DA system and reinforce drug-taking behavior.

Nucleus accumbens /NA/ is critical site for the reinforcing effects of cocaine and amphetamine.

IV injection of both increase concentration of DA in NA.

Neurons in the NA participate in the reinforcing effects of cocaine, with groups of neurons participating in triggering behavioral response, reinforcing effects, and cravings

Cocaine Vs Amphetamine

Have similar behavioral effects, because both act as potent DA agonists.

Cocaine binds with and deactivates the DA transporter proteins, thus **blocking reuptake**.

Amphetamine **directly stimulates** the release of DA from terminal buttons.

Excitatory behavioral effects (e.g. euphoria, feelings of power /energetic, talkative)

Short-term effects of cocaine use?

Cocaine's effects appear almost immediately after a single dose and disappear within a few minutes to an hour. Cocaine usually makes the user feel:

euphoric

energetic

talkative

mentally alert, especially to the sensations of sight, sound, and touch

Decreases the need for food and sleep.

Large amounts can lead to:

bizarre, erratic, and violent behaviour, to restlessness, irritability, anxiety, panic, paranoia.

Physiological effects

dilated pupils

increased body temperature

increased blood pressure

tremors

vertigo

muscle twitches

What are long-term effects of cocaine use?

irritability

restlessness,

panic attacks,

paranoia - full-blown psychosis

hallucinations.

dental decay

nasal problems

Severe medical complications

disturbances in heart rhythm

heart attacks

strokes

seizures

headaches

coma

Cocaine-related deaths are often a result of cardiac arrest or seizures followed by respiratory arrest.

A potentially dangerous interaction is between cocaine and alcohol. This mixture is the most common two-drug combination that results in **drug-related death**.

Cocaine withdrawal

lasts 1-10 wks

dysphoria

insomnia

depression

drug craving

decreased ability to experience pleasure

suicide a main risks

watch for paranoia, psychosis

Amphetamine withdrawal has similar picture

Medical treatment for cocaine dependence

Several medications marketed for other diseases (e.g., vigabatrin, modafinil, tiagabine, disulfiram, and topiramate) show promise and have been reported to reduce cocaine use in controlled clinical trials.

Among these, **disulfiram** (used to treat alcoholism) has produced the most consistent reductions in cocaine abuse.

Therapeutic Interventions

Many behavioural treatments for cocaine addiction have proven to be effective in both inpatient and outpatient settings.

Indeed, behavioural therapies are often the only available and effective treatments for many drug problems, including stimulant addictions.

The integration of behavioural and pharmacological treatments may ultimately prove to be the most effective approach.

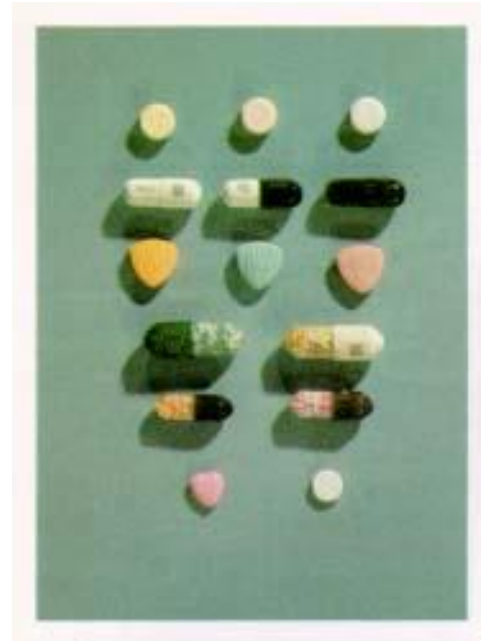
Methamphetamine

It is a white, odourless, bitter-tasting crystalline powder that easily dissolves in water or alcohol.

The drug was developed early last century from its parent drug, amphetamine, and was used originally in nasal and bronchial inhalers.

Methamphetamine is commonly known as “speed,” “meth,” and “chalk” “ice,” “crystal,” “crank,” and “glass.”

Methamphetamine



How is methamphetamine consumed?

Methamphetamine comes in many forms and can be smoked, snorted, injected, or orally ingested.

Smoking methamphetamine leads to very **fast** uptake.

Immediately after smoking the drug or injecting it intravenously, the user experiences an intense rush or “flash” that lasts only a few minutes and is described as extremely pleasurable.

Snorting or oral ingestion produces euphoria - a high but not an intense rush. Snorting produces effects within 3 to 5 minutes, and oral ingestion produces effects within 15 to 20 minutes.

Short-Term Effects of Methamphetamine

Increased attention

Decreased fatigue

Increased activity

Wakefulness

Decreased appetite

Euphoria and rush/hurry

Increased respiration

Rapid/irregular heartbeat

Hypertension

Hyperthermia

Convulsions

Long-Term Effects of Methamphetamine

Dependence

Psychosis, including:

paranoia, hallucinations, repetitive motor activity

Changes in brain structure and function

Memory loss

Aggressive or violent behaviour

Mood disturbances

Severe dental problems

Weight loss



2005© "Faces of Met



2.5 Years Later

Methamphetamine vs. Cocaine

Methamphetamine

Stimulant

Man-made

Smoking produces a long-lasting high

50% of the drug is removed from the body in 12 hours

Increases dopamine release and blocks dopamine re-uptake

Limited medical use

Cocaine

Stimulant and local anesthetic

Plant-derived

Smoking produces a brief high

50% of the drug is removed from the body in 1 hour

Blocks dopamine re-uptake

Limited use as a local anesthetic

Treatment

Cognitive-behavioral therapy (CBT)

Cognitive-behavioral therapy (CBT) is an effective approach for preventing relapse. CBT is focused on helping addicted individuals abstain - and remain abstinent - from cocaine and other substances.

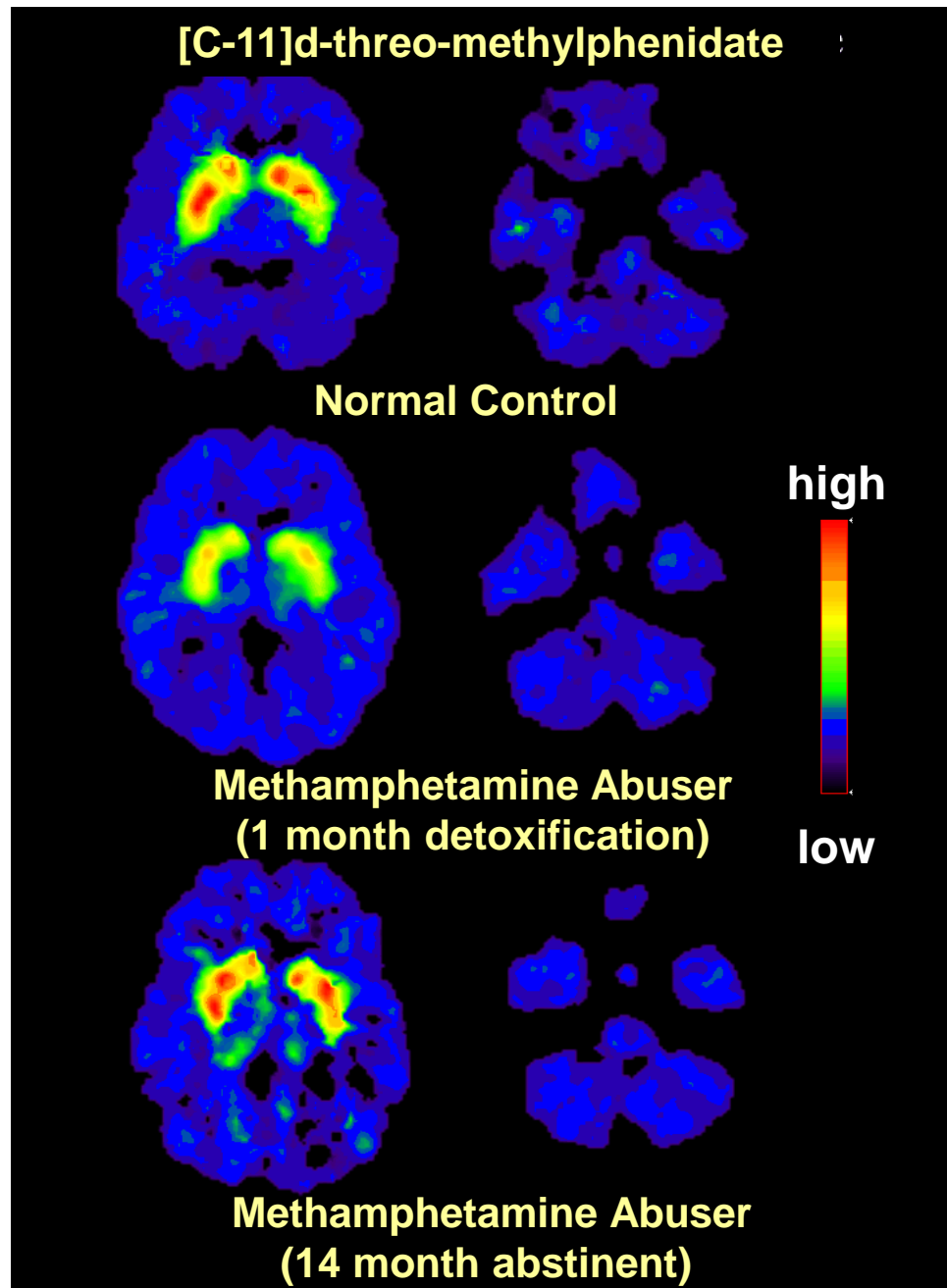
This approach attempts to help patients to:

recognize the dangerous situations

avoid these situations

cope with situations in a different way

DAT Recovery with prolonged abstinence from methamphetamine



HIGH RISK DANGER

All substance abusers who inject the substances and share needles transmission of HIV and hepatitis B and C can be consequences

References:

NIDA Research Report (2006) - Cocaine

NIDA Info Facts (2010) - Methamphetamin

NIDA Research Report (2006) - Methamphetamin

STAY SAFE AND HOME