NIDA InfoFacts
www.drugabuse.gov
National Institute on Drug Abuse • National Institutes of Health • U.S. Department of Health & Human Services

Crack and Cocaine

Cocaine is a powerfully addictive stimulant drug. The powdered, hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Crack is cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. The term "crack" refers to the crackling sound heard when it is heated.*

Regardless of how cocaine is used or how frequently, a user can experience acute cardiovascular or cerebrovascular emergencies, such as a heart attack or stroke, which could result in sudden death. Cocaine-related deaths are often a result of cardiac arrest or seizure followed by respiratory arrest.

Health Hazards

Cocaine is a strong central nervous system stimulant that interferes with the reabsorption process of dopamine, a chemical messenger associated with pleasure and movement. The buildup of dopamine causes continuous stimulation of "receiving" neurons, which is associated with the euphoria commonly reported by cocaine abusers.

Physical effects of cocaine use include constricted blood vessels, dilated pupils, and increased temperature, heart rate, and blood pressure. The duration of cocaine's immediate euphoric effects, which include hyperstimulation, reduced fatigue, and mental clarity, depends on the route of administration. The faster the absorption, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting may last 15 to 30 minutes, while that from smoking may last 5 to 10 minutes. Increased use can reduce the period of time a user feels high and increases the risk of addiction.

Some users of cocaine report feelings of restlessness, irritability, and anxiety. A tolerance to the "high" may develop—many addicts report that they seek but fail to achieve as much pleasure as they did from their first exposure. Some users will increase their doses to intensify and prolong the euphoric effects. While tolerance to the high can occur, users can also become more sensitive to cocaine's anesthetic and convulsant effects without increasing the dose taken. This increased sensitivity may explain some deaths occurring after apparently low doses of cocaine.

Use of cocaine in a binge, during which the drug is taken repeatedly and at increasingly high doses, may lead to a state of increasing irritability, restlessness, and paranoia. This can result in a period of full-blown paranoid psychosis, in which the user loses touch with reality and experiences auditory hallucinations.

Other complications associated with cocaine use include disturbances in hearth rhythm and heart attacks, chest pain and respiratory failure, strokes, seizures and headaches, and gastrointestinal complications such as abdominal pain and nausea. Because cocaine has a tendency to decrease appetite, many chronic users can become malnourished.

Different means of taking cocaine can produce different adverse effects. Regularly snorting cocaine, for example, can lead to loss of sense of smell, nosebleeds, problems with swallowing, hoarseness, and a chronically runny nose. Ingesting cocaine can cause severe bowel gangrene due to reduced blood flow. People who inject cocaine can experience severe allergic reactions and, as with any injecting drug user, are at increased risk for contracting HIV and other bloodborne diseases.

Added Danger: Cocaethylene

When people mix cocaine and alcohol consumption, they are compounding the danger each drug poses and unknowingly forming a complex chemical experiment within their bodies. NIDA-funded researchers have found that the human liver combines cocaine and alcohol and manufactures a third substance, cocaethylene, that intensifies cocaine's euphoric effects, while potentially increasing the risk of sudden death.

Treatment

The widespread abuse of cocaine has stimulated extensive efforts to develop treatment programs for this type of drug abuse.

One of NIDA's top research priorities is to find a medication to block or greatly reduce the effects of cocaine, to be used as one part of a comprehensive treatment program. NIDA-funded researchers are also looking at medications that help alleviate the severe craving that people in treatment for cocaine addiction often experience. Several medications are currently being investigated for their safety and efficacy in treating cocaine addiction.

In addition to treatment medications, behavioral interventions—particularly cognitive behavioral therapy—can be effective in decreasing drug use by patients in treatment for cocaine abuse. Providing the optimal combination of treatment and services for each individual is critical to successful outcomes.

Extent of Use

*Monitoring the Future Study (MTF)***

MTF assesses the extent and perceptions of drug use among 8th, 10th, and 12th grade students nationwide. Crack cocaine use decreased among 10th-graders for the lifetime, annual, and 30-day use categories.*** This was the only statistically significant change affecting cocaine in any form. These significant decreases were from 3.6 percent in 2002 to 2.7 percent in 2003 for lifetime use; 2.3 percent in 2002 to 1.6 percent in 2003 for annual use; and 1.0 percent in 2002 to 0.7 percent in 2003 for 30-day use.

Overall annual cocaine use increased in each grade from the early 1990s until 1998 or 1999 and has subsequently stabilized or declined somewhat. Among 12th-graders, the rate increased from 3.1 percent in 1992 to 6.2 percent in 1999, declined significantly to 5.0 percent in 2000, and remained stable through 2003 at 4.8 percent. Among 10th-graders, the rate increased from 1.9 percent in 1992 to 4.9 percent in 1999. In 2003, 3.3 percent of 10th-graders reported annual cocaine use, significantly below the peak in 1999, though year-to-year changes were not significant. Among 8th-graders, 1.1 percent reported annual cocaine use in 1991, a figure that increased to 3.0 percent in 1996, hovered around that point for several years, then dropped to 2.2 percent in 2003—significantly below the 1996 high point.

Use of Cocaine in Any Form by Students, 2003: Monitoring the Future Study

	8th-Graders	10th-Graders	12th-Graders
Lifetime	3.6%	5.1%	7.7%
Annual	2.2	3.3	4.8
30-day	0.9	1.3	2.1

Crack Cocaine Use by Students, 2003: Monitoring the Future Study

	8th-Graders	10th-Graders	12th-Graders
Lifetime	2.5%	2.7%	3.6%
Annual	1.6	1.6	2.2
30-day	0.7	0.7	0.9

*Community Epidemiology Work Group (CEWG)****

Cocaine/crack was endemic in almost all 21 CEWG areas in 2002. Rates of emergency department (ED) mentions were higher for cocaine than for any other drug in 17 CEWG areas. ED rates increased significantly between 2001 and 2002 in Baltimore, and were highest in Chicago, Philadelphia, Atlanta, Baltimore, Miami, Newark, Detroit, and New York.

Cocaine-related death mentions in 2001 were particularly high in Chicago, Baltimore, Dallas, Newark, San Antonio,

Atlanta, Boston, Denver, San Francisco, and New York, as measured by one Federal data source. Reports from local medical examiner data named Detroit, Philadelphia, Miami, and Phoenix as sites with the highest rates of cocaine-related deaths from 2000 through 2002.

Primary cocaine treatment admissions were high in 9 of the 21 CEWG areas reporting treatment data in 2002 (Atlanta, Miami, New Orleans, St. Louis, Washington, DC, Philadelphia, Texas, Detroit, and Illinois). Nearly half of adult male arrestees in Atlanta, New York, and Chicago tested positive for cocaine in 2002.

Nationwide, 61,594 kilograms of cocaine were seized by the DEA in 2002, 3.6 percent more than in 2001 and 35.9 percent more than in 1995.

*National Survey on Drug Use and Health (NSDUH)******

In 2002, 33.9 million Americans age 12 and over reported lifetime use of cocaine, and 8.4 million of these reported using crack. About 5.9 million reported annual use of cocaine, and 1.6 million of these reported using crack. About 2 million reported 30-day use of cocaine, and 567,000 of these reported using crack.

The percentage of youth ages 12 to 17 reporting lifetime use of cocaine increased from 2.3 percent in 2001 to 2.7 percent in 2002. Among young adults ages 18 to 25, the rate increased from 14.9 percent in 2001 to 15.4 percent in 2002.

---

* Snorting is the process of inhaling cocaine powder through the nose, where it is absorbed into the bloodstream through the nasal tissues. Injecting is the use of a needle to release the drug directly into the bloodstream; any needle use increases a user's risk of contracting HIV and other blood-borne infections. Smoking involves inhaling cocaine vapor or smoke into the lungs, where absorption into the bloodstream is as rapid as by injection.

** These data are from the 2003 Monitoring the Future survey, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted annually by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at www.drugabuse.gov.

***"Lifetime" refers to use at least once during a respondent's lifetime. "Annual" refers to use at least once during the year preceding an individual's response to the survey. "30-day" refers to use at least once during the 30 days preceding an individual's response to the survey.

**** CEWG is a NIDA-sponsored network of researchers from 21 major U.S. metropolitan areas and selected foreign countries who meet semiannually to discuss the latest epidemiology of drug abuse. CEWG's most recent reports are available at http://www.drugabuse.gov/about/organization/cewg/pubs.html.

***** NSDUH (formerly known as the National Household Survey on Drug Abuse) is an annual survey conducted by the Substance Abuse and Mental Health Services Administration. Findings from the latest survey are available at www.samhsa.gov.

Revised 9/04

NIDA NATIONAL INSTITUTE ON DRUG ABUSE 30 Years 1974-2004

National Institutes of Health – U.S. Department of Health and Human Services