

## Heroin

Heroin is an addictive drug, and its use is a serious problem in America. Recent studies suggest a shift from injecting heroin to snorting or smoking because of increased purity and the misconception that these forms are safer.

Heroin is processed from morphine, a naturally occurring substance extracted from the seedpod of the Asian poppy plant. Heroin usually appears as a white or brown powder. Street names for heroin include "smack," "H," "skag," and "junk." Other names may refer to types of heroin produced in a specific geographical area, such as "Mexican black tar."

### **Health Hazards** ———

Heroin abuse is associated with serious health conditions, including fatal overdose, spontaneous abortion, collapsed veins, and, particularly in users who inject the drug, infectious diseases, including HIV/AIDS and hepatitis.

The short-term effects of heroin abuse appear soon after a single dose and disappear in a few hours. After an injection of heroin, the user reports feeling a surge of euphoria ("rush") accompanied by a warm flushing of the skin, a dry mouth, and heavy extremities. Following this initial euphoria, the user goes "on the

nod," an alternately wakeful and drowsy state. Mental functioning becomes clouded due to the depression of the central nervous system. Long-term effects of heroin appear after repeated use for some period of time. Chronic users may develop collapsed veins, infection of the heart lining and valves, abscesses, cellulitis, and liver disease. Pulmonary complications, including various types of pneumonia, may result from the poor health condition of the abuser, as well as from heroin's depressing effects on respiration.

Heroin abuse during pregnancy and its many associated environmental factors (e.g., lack of prenatal care) have been associated with adverse consequences including low birth weight, an important risk factor for later developmental delay.

In addition to the effects of the drug itself, street heroin may have additives that do not readily dissolve and result in clogging the blood vessels that lead to the lungs, liver, kidneys, or brain. This can cause infection or even death of small patches of cells in vital organs.

The Drug Abuse Warning Network\* lists heroin/morphine among the four most frequently mentioned drugs reported in drug-related death cases in 2002. Nationwide, heroin emergency department mentions were statistically unchanged from

2001 to 2002, but have increased 35 percent since 1995.

## **Tolerance, Addiction, and Withdrawal** ———

With regular heroin use, tolerance develops. This means the abuser must use more heroin to achieve the same intensity of effect. As higher doses are used over time, physical dependence and addiction develop. With physical dependence, the body has adapted to the presence of the drug and withdrawal symptoms may occur if use is reduced or stopped.

Withdrawal, which in regular abusers may occur as early as a few hours after the last administration, produces drug craving, restlessness, muscle and bone pain, insomnia, diarrhea and vomiting, cold flashes with goose bumps (“cold turkey”), kicking movements (“kicking the habit”), and other symptoms. Major withdrawal symptoms peak between 48 and 72 hours after the last dose and subside after about a week. Sudden withdrawal by heavily dependent users who are in poor health is occasionally fatal, although heroin withdrawal is considered less dangerous than alcohol or barbiturate withdrawal.

## **Treatment** ———

There is a broad range of treatment options for heroin addiction, including medications as well as behavioral

therapies. Science has taught us that when medication treatment is integrated with other supportive services, patients are often able to stop heroin (or other opiate) use and return to more stable and productive lives.

In November 1997, the National Institutes of Health (NIH) convened a Consensus Panel on Effective Medical Treatment of Heroin Addiction. The panel of national experts concluded that opiate drug addictions are diseases of the brain and medical disorders that indeed can be treated effectively. The panel strongly recommended (1) broader access to methadone maintenance treatment programs for people who are addicted to heroin or other opiate drugs; and (2) the Federal and State regulations and other barriers impeding this access be eliminated. This panel also stressed the importance of providing substance abuse counseling, psychosocial therapies, and other supportive services to enhance retention and successful outcomes in methadone maintenance treatment programs. The panel’s full consensus statement is available by calling 1-888-NIH-CONSENSUS (1-888-644-2667) or by visiting the NIH Consensus Development Program Web site at [consensus.nih.gov](http://consensus.nih.gov).

*Methadone*, a synthetic opiate medication that blocks the effects of heroin for about 24 hours, has a proven record of success when prescribed at a high enough dosage level for people addicted to heroin. Other

approved medications are *naloxone*, which is used to treat cases of overdose, and *naltrexone*, both of which block the effects of morphine, heroin, and other opiates.

For the pregnant heroin abuser, methadone maintenance combined with prenatal care and a comprehensive drug treatment program can improve many of the detrimental maternal and neonatal outcomes associated with untreated heroin abuse. There is preliminary evidence that buprenorphine also is safe and effective in treating heroin dependence during pregnancy, although infants exposed to methadone or buprenorphine during pregnancy typically require treatment for withdrawal symptoms. For women who do not want or are not able to receive pharmacotherapy for their heroin addiction, detoxification from opiates during pregnancy can be accomplished with relative safety, although the likelihood of relapse to heroin use should be considered.

Buprenorphine is a recent addition to the array of medications now available for treating addiction to heroin and other opiates. This medication is different from methadone in that it offers less risk of addiction and can be dispensed in the privacy of a doctor's office. Several other medications for use in heroin treatment programs are also under study.

There are many effective behavioral treatments available for heroin addiction. These can include residential and outpatient approaches. Several new behavioral

therapies are showing particular promise for heroin addiction. *Contingency management* therapy uses a voucher-based system, where patients earn "points" based on negative drug tests, which they can exchange for items that encourage healthful living. *Cognitive-behavioral interventions* are designed to help modify the patient's thinking, expectancies, and behaviors and to increase skills in coping with various life stressors.

## **Extent of Use** ———

### **Monitoring the Future Study (MTF)\*\***

According to the 2003 MTF, rates of heroin use are almost 50 percent lower than recent peak rates in all three grades surveyed. However, only annual use by 10th-graders showed a significant decline.

#### **Heroin Use by Students, 2003: Monitoring the Future Study**

	<b>8th-Graders</b>	<b>10th-Graders</b>	<b>12th-Graders</b>
Lifetime***	1.6%	1.5%	1.5%
Annual	0.9	0.7	0.8
30-day	0.4	0.3	0.4

### **Community Epidemiology Work Group (CEWG)<sup>s</sup>**

In December 2003, CEWG members reported that heroin indicators were mixed but relatively stable, continuing

at higher levels in Northeastern, north-central, and mid-Atlantic areas where high-purity powder is available, and also in the Northwest where black tar heroin predominates. Heroin injection and the health risks associated with it, such as the spread of HIV/AIDS and hepatitis C, are of growing concern at several CEWG sites. Rates of heroin emergency department mentions exceeded 200 per 100,000 in Chicago, Newark, and Baltimore and exceeded 100 per 100,000 in Seattle, New York City, San Francisco, Boston, and Philadelphia. The reporting of heroin/opiate-related

deaths was highest in Detroit (464) and Philadelphia (111).

### **National Survey on Drug Use and Health (NSDUH) <sup>§§</sup>**

The 2003 NSDUH reports stability at low levels for heroin use among young people. In 2002, 13,000 youth between the ages of 12 and 17 had used heroin at least once in the past year ("annual" use), compared with 12,000 in 2003. Among the general population age 12 and older, 404,000 had used annually in 2002, compared with 314,000 in 2003.

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\* The Drug Abuse Warning Network survey is funded by the Substance Abuse and Mental Health Services Administration (SAMHSA). Copies of the latest survey are available from the National Clearinghouse for Alcohol and Drug Information at 1-800-729-6686, or at [www.samhsa.gov](http://www.samhsa.gov).

\*\* 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 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](http://www.drugabuse.gov).

\*\*\* "Lifetime" refers to use at least once during a respondent's lifetime. "Annual" refers to an individual's drug use at least once during the year preceding their response to the survey. "30-day" refers to an individual's drug use at least once during the month preceding their 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 current epidemiology of drug abuse. CEWG's most recent report is *Epidemiologic Trends in Drug Abuse*, Volume II, December 2003.

§§ 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. Copies of the latest survey are available from the National Clearinghouse for Alcohol and Drug Information at 1-800-729-6686.