

Dangerous Amphetamines

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AMPHETAMINES ARE GENERALLY described as "stimulants." They are more appropriately called psychomotor stimulants because of their many actions that stimulate the brain. They are agents that can improve physical performance by increasing alertness, reducing sleepiness or prolonging endurance.

Amphetamines are a group of synthetic chemicals that structurally resemble the naturally-occurring chemicals in the body, neurotransmitters, which are found in the brain. In fact, amphetamines are capable of displacing neurotransmitters to exert their actions, causing a variety of central nervous system (CNS) effects.

Moreover, amphetamines are fat-soluble and enter the brain easily to create a general "artificial" feeling of well-being, which enhances their abuse potential. With repeated use, the drug tends to accumulate in the brain and fatty cells of the body.

Stimulants consist of compounds ranging from nicotine and caffeine to more potent substance such as codeine and amphetamines. In general, there are two broad categories of stimulants.

Those under the first group are culturally accepted while the second group are under strict regulatory control as "dangerous drugs." Some of these dangerous drugs are available only on prescription for very limited medical purposes. In sports, the use of any stimulant is considered illegal if there is no proper medical supervision.

Unfortunately, some amphetamines are available in large quantities for distribution in the black market. Supplied by clandestine manufacturers, they are known by various street names such as "speed", "bennie", "flake", "coke", depending on the type of stimulant used.

Some are generally referred to as "uppers."

Users tend to rely on stimulants to feel stronger, more decisive and soft-possessed. The consumption of stimulants may result in a temporary sense of exhilaration, super-abundant energy, hyperactivity and extended wakefulness. It may also induce irritability, loss of appetite, anxiety and apprehension.

Fatalities under conditions of extreme exertion have been reported among athletes who take stimulants in moderate amounts. It should be added that physical exertion increases the hazards of the stimulant use since accidental death is due in part to its effects on the cardiovascular and body temperature regulating systems.

For example, in 1960, Dane sportsman Kun Jensen died due to a violent reaction after using a stimulant. Seven years later, another death due to stimulant use involving cyclist Tommy Simpson on Mount Ventoux was reported. Last year alone, 64 weightlifters were caught using illegal drugs, mostly involving anabolic steroids (see *Healthtrack*, July 6).

Cellular adaptations occur with repeated use of amphetamines. These may take the form of changes in the nerve structures or the processes involved. In other words, amphetamines are neurotoxic, resulting in the death of the nerves themselves.

With continued long-term use of stimulants, this adaptation rapidly causes tolerance to both the euphoric and appetite suppressant effects of the drug. Because of this people who resort to stimulants for the euphoric effects tend to consume large doses sporadically. Sufficiently large doses may cause various mental aberrations, of which the early signs include repetitive grinding of teeth., touching and picking the face, performing the same task repeatedly, preoccupation with one's own thought processes, a sense of being watched and suspiciousness.

Paranoia with auditory and visual hallucinations characterise the toxic syndrome resulting from continued high doses.

Regular users often go on to experiment with other drugs as a result of being "tolerant" to the effects of the stimulants.

Dizziness, tremor, agitation, hostility, panic attacks, headache, flushed skin, chest pain with palpitations, excessive sweating, vomiting and abdominal cramps are among the symptoms of a sub-lethal overdose. In the absence of medical intervention, high fever, convulsions and cardiovascular collapse may precede the onset of death.

The protracted use of stimulants too can be followed by a period of depression known as "crashing" which is invariably described as unpleasant. However, since the depression can be easily counteracted by a further injection of stimulants, the abuse pattern becomes increasingly difficult to break.

In fact, because of the cumulative effects of the drugs, chronic users often follow a pattern of taking stimulants (or "uppers") in the morning and reversing the effects by taking the other group of drugs such as alcohol or sleeping pills ("downers") at night. Such chemical manipulation interferes with normal body processes and can lead to mental as well as physical illness.

All these effects of stimulants are greatly intensified with intravenous injections, which may produce a sudden sensation known as a "flash" or "rush."

Heavy users may inject themselves every few hours, a process sometimes continued to the point of delirium, psychosis or physical exhaustion.

The cellular adaptations in the brain caused by amphetamines also account for the withdrawal syndrome. If deprived of stimulants, chronic high-dose users exhibit profound depression, apathy fatigue and disturbed sleep for up to 20 hours a day. The immediate withdrawal symptoms may last for several days.

In addition, there may also be a lingering impairment of perception and thought processes. Anxiety, an incapacitating tenseness and suicidal tendencies may persist for weeks or months. Many experts now interpret these symptoms as an indication that stimulant drugs are capable of producing physical dependence, besides psychological dependence as well.

Amphetamines and its derivatives

Amphetamines or "pep pills" and derivatives such as dextro-amphetamines are similar in the effects they induce. Hence, they can only be differentiated from one another by laboratory analysis.

Amphetamines were first used clinically in the mid-30s to treat narcolepsy, a rare disorder resulting in an uncontrollable desire for sleep. Its use was widespread among soldiers during World War II and even later among American soldiers in Vietnam.

After the introduction of amphetamines into medical practice, the number of conditions for which they were prescribed multiplied, as did the quantities made available. In the United States, significant abuse problems began when doctors started prescribing amphetamines as a treatment for heroin dependence.

For a while, they were also sold without prescription in the form of inhalers for nasal congestion and other over-the-counter preparations. Today, treatments using amphetamines have been largely replaced by other medicines that do not cause CNS effects.

Abuse of the inhalers became popular among teenagers and prisoners. Housewives, students and truck drivers used amphetamines orally in excessive amounts while "speed freaks" who injected them won notoriety in the drug culture for their bizarre and often violent behaviour.

Whereas a prescribed dose is between 2.5 mg and 15 mg per day, those on a "speed" binge have been known to inject as much as 1000 mg every two to three hours. In such situations, it may mask normal fatigue states and cause over-exertion which may lead to fatal conditions.

Amphetamines may also interact with other drugs such as anti-coagulants (blood thinning drugs), anti-epileptic drugs (Phenytoin, primidone), anti-depressants (tricyclic anti-depressants, monoamine oxidase inhibitors) and anti-hypertensive medicines. The drug too can exert harmful effects on conditions such as anxiety, thyrotoxicosis, glaucoma and heart disease.

Recognition of the deleterious effects of amphetamines and their limited therapeutic value has led to a marked reduction in their use. Their medical use is now limited to narcolepsy, hyperkinetic, behavioural disorders in children (an attention deficit disorder) and certain cases of obesity. They are used as a short-term adjunct treatment for patients refractory to other forms of therapy.

Their illicit use closely parallels that of cocaine in short-term and long-term effects. Despite broad recognition of the risks, clandestine laboratories produce vast quantities of amphetamines, particularly methamphetamines, for distribution in the black market. Sometimes, a portion of legally produced amphetamines are diverted to illegal use.

Other Amphetamine-like stimulants

Phenmetrazine and methylphenidate also amphetamine-like in that their medical indications, patterns of abuse and adverse effects closely resemble those of amphetamines.

Phenmetrazine is medically used only as an appetite suppressant and methylphenidate mainly for treatment of hyperkinetic behavioural disorders in children.

While the abuse of phenmetrazine involves both oral and intravenous use, most of that associated with methylphenidate results from injection after the drug in tablet form is dissolved in water. Complications arising

from such use are common since the tablets contain insoluble materials, which upon injection, block small blood vessels and cause serious damage, especially in the lungs and retina of the eye.

Other examples of psychomotor stimulants that can act as doping agents include chlorphentermine, cocaine diethylpropion, decamfamine, pemoline, phendimetrazine and phentermine. Other related compounds are fenproporex, meclfenoxate, pipradol and prolintane.

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