Dealing with Drug Addiction

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INTRODUCTION

Life can be crazy. Life can be stressful. Life can be hard to take. These are all truths that are just simple facts. Because life can be difficult, people look for different ways to cope with the stress that life brings.

Regrettably, drugs have become the most prominent coping mechanism that people use to deal with life's problems. There are many reasons why people begin using drugs. They are looking for a way out – an escape – a way to forget life for just a little while.

Methamphetamine use has grown to alarming rates in the United States with over 25 percent of the population addicted to this drug. Twenty-three percent of high school seniors use marijuana on a regular basis. Forty-three percent of adults report having a problem with alcohol.

The statistics also reveal that drug use, including alcohol and cigarettes, is beginning earlier in life. Children are experimenting with drugs as young as 10 years old, and many middle schoolers have already had their first taste of alcohol by seventh grade.

What are even more disturbing are the health effects that drug use and abuse causes. Last year alone, there were over 20,000 alcohol-induced deaths not including car accidents, and deaths due to heroin overdoses have increased by two percent in just the course of one year.

Drug addiction doesn't discriminate either. Many famous celebrities have struggled with addiction as has the common man. You can be a regular housewife or the head of a company and find yourself struggling with drug dependence.

What can you do? The answer is – a lot. If you find yourself with a problem, the time to take action is now. You could check yourself into a rehabilitation facility, but you can also try some self-help steps first.

This book is intended for both the person who is addicted and for those who have a loved one with addiction. We'll look at the signs of a problem and address the various drugs that are most likely to cause dependence. Then, with the help of experts, we'll give you some strategies that you can try to get you back on the road to a drug-free life.

You can overcome your dependence on drugs. It won't be easy, but you can do it. But you have to start now. Don't be addicted anymore. Start your journey today!

WHY PEOPLE USE DRUGS

The reasons people use drugs are varied. Essentially, though, drugs give us a desired effect producing a feeling of euphoria that makes us feel better – at least temporarily. There are hundreds of ways that drugs help people cope with life and each person has their own reason why they choose a certain drug.

Drugs can help calm you down, give you energy, overcome shyness, and avoid feelings of loneliness. They may you feel bolder and want to take risks you wouldn't normally take. They are used to perhaps fit into social situation and get into a "party" mood and even to celebrate happy occasions.

Medically, drugs are used to alleviate pain, help you to sleep, suppress anger, combat anxiety, and avoid depression. They can be used to cope with stress, stimulate your desire for sex, and lose weight.

Many people report that they began using drugs as a response to peer pressure. Those around them would use drugs, so to fit in, they began using as well.

The ways drugs affect us are countless—for everyone. So much so that often it seems that drugs can cure all our ills and help us overcome whatever bothers us. If that's all there were to it, we might consider each drug to be some kind of "wonder drug."

This is where the thought process gets a little skewed. People begin to crave the feeling of euphoria that they get when they use drugs and that's when it becomes a problem. It can be a vicious cycle. You feel you can't live without the feelings that drugs give you and that you just won't be able to cope with life without those drugs. That's what breeds addiction.

Let's look at various drugs of choice that people often use and what those specific drugs can do.

METHAMPHETAMINE

Methamphetamine is an addictive stimulant that is closely related to amphetamine, but has longer lasting and more toxic effects on the central nervous system. It has a high potential for abuse and addiction.

Methamphetamine use is on the rise around the country. It has reached epidemic proportions mainly because it is easy to make using common household items.

Meth is often referred to as speed, chalk, ice, crystal, and glass.

The drug increases wakefulness and physical activity and decreases appetite. Chronic, long-term use can lead to psychotic behavior, hallucinations, and stroke. People who use meth often don't sleep – sometimes for days on end. They lose weight quickly because the drug suppresses appetite.

Meth addicts often have lost some of their teeth, look gaunt, and will have sores on their body from nervous energy they are trying to get rid of.

National health statistics report that over 12 million Americans have tried methamphetamine with many of them quickly becoming addicted to the drug.

Methamphetamine is taken orally, intra-nasally (snorting the powder), by needle injection, or by smoking. Abusers may become addicted quickly, needing higher doses and more often.

Methamphetamine increases the release of very high levels of the neurotransmitter dopamine, which stimulates brain cells, enhancing mood and body movement. Chronic methamphetamine abuse significantly changes how the brain functions.

Animal research going back more than 30 years shows that high doses of methamphetamine damage neuron cell endings. Dopamine- and serotonin-containing neurons do not die after methamphetamine use, but their nerve endings ("terminals") are cut back, and re-growth appears to be limited.

Human brain imaging studies have shown alterations in the activity of the dopamine system. These alterations are associated with reduced motor speed and impaired verbal learning.

Recent studies in chronic methamphetamine abusers have also revealed severe structural and functional changes in areas of the brain associated with

emotion and memory, which may account for many of the emotional and cognitive problems observed in chronic methamphetamine abusers.

Taking even small amounts of methamphetamine can result in increased respiration, rapid heart rate, irregular heartbeat, increased blood pressure, and hyperthermia. Other effects of methamphetamine abuse may include irritability, anxiety, insomnia, confusion, tremors, convulsions, and cardiovascular collapse and death.

As we've already indicated, long-term effects may include paranoia, aggressiveness, extreme anorexia, memory loss, visual and auditory hallucinations, delusions, and severe dental problems.

Also, transmission of HIV and hepatitis B and C can be a consequence of methamphetamine abuse. Among abusers who inject the drug, infection with HIV and other infectious diseases is spread mainly through the re-use of contaminated syringes, needles, and other injection equipment by more than one person.

The intoxicating effects of methamphetamine, however, whether it is injected or taken other ways, can alter judgment and inhibition and lead people to engage in unsafe behaviors. Methamphetamine abuse actually may worsen the progression of HIV and its consequences; studies with methamphetamine abusers who have HIV indicate that the HIV causes greater neuronal injury and cognitive impairment compared with HIV-positive people who do not use drugs.

Meth is a scary drug with horrible health implications.

HEROIN

Heroin is an addictive drug that is processed from morphine and usually appears as a white or brown powder. Its street names include smack, H, ska, junk, and many others. Heroin use is on the rise and it has become a serious problem in America.

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 reports that eight percent of drug-related emergency department (ED) visits in the third and fourth quarters of 2003 involved heroin abuse. Unspecified opiates, which could include heroin, were involved in an additional 4 percent of drug-related visits.

With regular heroin use, tolerance develops. This means the abuser must use more 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.

MARIJUANA

There are a lot of people who are of the opinion that marijuana is not a harmful drug and that it should be as legal to buy and use as alcohol. Marijuana is the most commonly used illegal drug in the United States. Besides alcohol, marijuana is the most commonly used drug by young people.

Marijuana is a dry, shredded green/brown mix of flowers, stems, seeds, and leaves of the hemp plant Cannabis sativa, it usually is smoked as a cigarette (joint, nail), or in a pipe (bong). It also is smoked in blunts, which are cigars that have been emptied of tobacco and refilled with marijuana, often in combination with another drug. It might also be mixed in food or brewed as a tea.

As a more concentrated, resinous form it is called hashish and, as a sticky black liquid, hash oil. Marijuana smoke has a pungent and distinctive, usually sweet-and-sour odor. Some people think that the smoke smells like burning rope.

There are countless street terms for marijuana including pot, herb, weed, grass, widow, ganja, and hash, as well as terms derived from trademarked varieties of cannabis, such as Bubble Gum, Northern Lights, Fruity Juice, Afghani #1, and a number of Skunk varieties.

The main active chemical in marijuana is THC (delta-9-tetrahydrocannabinol). The membranes of certain nerve cells in the brain contain protein receptors that bind to THC. Once securely in place, THC kicks off a series of cellular reactions that ultimately lead to the high that users experience when they smoke marijuana.

Scientists have learned a great deal about how THC acts in the brain to produce its many effects. When someone smokes marijuana, THC rapidly passes from the lungs into the bloodstream, which carries the chemical to organs throughout the body, including the brain.

In the brain, THC connects to specific sites called cannabinoid receptors on nerve cells and influences the activity of those cells. Some brain areas have many cannabinoid receptors; others have few or none. Many cannabinoid receptors are found in the parts of the brain that influence pleasure, memory, thought, concentration, sensory and time perception, and coordinated movement[4].

The short-term effects of marijuana can include problems with memory and learning; distorted perception; difficulty in thinking and problem solving; loss of coordination; and increased heart rate. Research findings for long-term

marijuana abuse indicate some changes in the brain similar to those seen after long-term abuse of other major drugs.

For example, cannabinoid (THC or synthetic forms of THC) withdrawal in chronically exposed animals leads to an increase in the activation of the stress-response system and changes in the activity of nerve cells containing dopamine. Dopamine neurons are involved in the regulation of motivation and reward, and are directly or indirectly affected by all drugs of abuse.

Marijuana can have an adverse effect on the heart. One study has indicated that an abuser's risk of heart attack more than quadruples in the first hour after smoking marijuana. The researchers suggest that such an effect might occur from marijuana's effects on blood pressure and heart rate and reduced oxygen-carrying capacity of blood.

A user’s lungs are also affected. A study of 450 individuals found that people who smoke marijuana frequently but do not smoke tobacco have more health problems and miss more days of work than nonsmokers. Many of the extra sick days among the marijuana smokers in the study were for respiratory illnesses.

Even infrequent abuse can cause burning and stinging of the mouth and throat, often accompanied by a heavy cough. Someone who smokes marijuana regularly may have many of the same respiratory problems that tobacco smokers do, such as daily cough and phlegm production, more frequent acute chest illness, a heightened risk of lung infections, and a greater tendency to obstructed airways.

Smoking marijuana possibly increases the likelihood of developing cancer of the head or neck. A study comparing 173 cancer patients and 176 healthy individuals produced evidence that marijuana smoking doubled or tripled the risk of these cancers.

Marijuana abuse also has the potential to promote cancer of the lungs and other parts of the respiratory tract because it contains irritants and carcinogens. In fact, marijuana smoke contains 50 to 70 percent more carcinogenic hydrocarbons than does tobacco smoke. It also induces high levels of an enzyme that converts certain hydrocarbons into their carcinogenic form—levels that may accelerate the changes that ultimately produce malignant cells.

Marijuana users usually inhale more deeply and hold their breath longer than tobacco smokers do, which increases the lungs' exposure to carcinogenic smoke. These facts suggest that, puff for puff, smoking marijuana may be more harmful to the lungs than smoking tobacco.

Some of marijuana's adverse health effects may occur because THC impairs the immune system's ability to fight disease. In laboratory experiments that exposed animal and human cells to THC or other marijuana ingredients, the normal disease-preventing reactions of many of the key types of immune cells were inhibited. In other studies, mice exposed to THC or related substances were more likely than unexposed mice to develop bacterial infections and tumors.

Research clearly demonstrates that marijuana has the potential to cause problems in daily life or make a person's existing problems worse. Depression, anxiety, and personality disturbances have been associated with chronic marijuana use.

Because marijuana compromises the ability to learn and remember information, the more a person uses marijuana the more he or she is likely to fall behind in accumulating intellectual, job, or social skills. Moreover, research has shown that marijuana’s adverse impact on memory and learning can last for days or weeks after the acute effects of the drug wear off.

Students who smoke marijuana get lower grades and are less likely to graduate from high school, compared with their nonsmoking peers. A study of 129 college students found that, among those who smoked the drug at least 27 of the 30 days prior to being surveyed, critical skills related to attention, memory, and learning were significantly impaired, even after the students had not taken the drug for at least 24 hours.

These "heavy" marijuana abusers had more trouble sustaining and shifting their attention and in registering, organizing, and using information than did the study participants who had abused marijuana no more than 3 of the previous 30 days. As a result, someone who smokes marijuana every day may be functioning at a reduced intellectual level all of the time.

More recently, the same researchers showed that the ability of a group of long-term heavy marijuana abusers to recall words from a list remained impaired for a week after quitting, but returned to normal within 4 weeks. Thus, some cognitive abilities may be restored in individuals who quit smoking marijuana, even after long-term heavy use.

Workers who smoke marijuana are more likely than their coworkers to have problems on the job. Several studies associate workers' marijuana smoking with increased absences, tardiness, accidents, workers' compensation claims, and job turnover.

A study among postal workers found that employees who tested positive for marijuana on a pre-employment urine drug test had 55 percent more industrial accidents, 85 percent more injuries, and a 75-percent increase in absenteeism compared with those who tested negative for marijuana use.

In another study, heavy marijuana abusers reported that the drug impaired several important measures of life achievement including cognitive abilities, career status, social life, and physical and mental health.

Research has shown that some babies born to women who abused marijuana during their pregnancies display altered responses to visual stimuli, increased tremulousness, and a high-pitched cry, which may indicate neurological problems in development.

During the preschool years, marijuana-exposed children have been observed to perform tasks involving sustained attention and memory more poorly than non-exposed children do. In the school years, these children are more likely to exhibit deficits in problem-solving skills, memory, and the ability to remain attentive.

Long-term marijuana abuse can lead to addiction for some people. That is, they abuse the drug compulsively even though it interferes with family, school, work, and recreational activities.

Drug craving and withdrawal symptoms can make it hard for long-term marijuana smokers to stop abusing the drug. People trying to quit report irritability, sleeplessness, and anxiety. They also display increased aggression on psychological tests, peaking approximately one week after the last use of the drug.

COCAINE

Cocaine is a powerfully addictive drug that is snorted, sniffed, injected, or smoked. Crack is cocaine that has been processed from cocaine hydrochloride to a free base for smoking. Its street names include coke, snow, flake, blow, and many others.

Cocaine is a 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.

Cocaine is a strong central nervous system stimulant that interferes with the re-absorption 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 hyper-stimulation, reduced fatigue, and mental alertness, depends on the route of administration.

The faster the absorption of the drug, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting might 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 convulsive 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 heart 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 the 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 all injecting drug users, are at increased risk for contracting HIV and other blood-borne diseases.

When people mix cocaine and alcohol, they are compounding the danger each drug poses and are 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.

ALCOHOL

Alcohol is one of the most commonly abused drug in the United States. For most people who drink, alcohol is a pleasant accompaniment to social activities. Moderate alcohol use—up to two drinks per day for men and one drink per day for women and older people—is not harmful for most adults. (A standard drink is one 12-ounce bottle or can of either beer or wine cooler, one 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits.)

Nonetheless, a large number of people get into serious trouble because of their drinking. Currently, nearly 14 million Americans—1 in every 13 adults—abuse alcohol or are alcoholic. Several million more adults engage in risky drinking that could lead to alcohol problems. These patterns include binge drinking and heavy drinking on a regular basis. In addition, 53 percent of men and women in the United States report that one or more of their close relatives have a drinking problem.

The consequences of alcohol misuse are serious—in many cases, life threatening. Heavy drinking can increase the risk for certain cancers, especially those of the liver, esophagus, throat, and larynx (voice box). Heavy drinking can also cause liver cirrhosis, immune system problems, brain damage, and harm to the fetus during pregnancy.

In addition, drinking increases the risk of death from automobile crashes as well as recreational and on-the-job injuries. Furthermore, both homicides and suicides are more likely to be committed by persons who have been drinking. In purely economic terms, alcohol-related problems cost society approximately $185 billion per year. In human terms, the costs cannot be calculated.

Alcoholism, also known as “alcohol dependence,” is a disease that includes four symptoms:

Craving: A strong need, or compulsion, to drink.

Loss of control: The inability to limit one’s drinking on any given occasion.

Physical dependence: Withdrawal symptoms, such as nausea, sweating, shakiness, and anxiety, occur when alcohol use is stopped after a period of heavy drinking.

Tolerance: The need to drink greater amounts of alcohol in order to “get high.”

Although some people are able to recover from alcoholism without help, the majority of alcoholics need assistance. With treatment and support, many individuals are able to stop drinking and rebuild their lives.

Many people wonder why some individuals can use alcohol without problems but others cannot. One important reason has to do with genetics. Scientists have found that having an alcoholic family member makes it more likely that if you choose to drink you too may develop alcoholism.

Genes, however, are not the whole story. In fact, scientists now believe that certain factors in a person’s environment influence whether a person with a genetic risk for alcoholism ever develops the disease. A person’s risk for developing alcoholism can increase based on the person’s environment, including where and how he or she lives; family, friends, and culture; peer pressure; and even how easy it is to get alcohol.

Alcohol abuse differs from alcoholism in that it does not include an extremely strong craving for alcohol, loss of control over drinking, or physical dependence. Alcohol abuse is defined as a pattern of drinking that result in one or more of the following situations within a 12-month period:

- Failure to fulfill major work, school, or home responsibilities
- Drinking in situations that are physically dangerous, such as while driving a car or operating machinery

- Having recurring alcohol-related legal problems, such as being arrested for driving under the influence of alcohol or for physically hurting someone while drunk

- Continued drinking despite having ongoing relationship problems that are caused or worsened by the drinking. Although alcohol abuse is basically different from alcoholism, many effects of alcohol abuse are also experienced by alcoholics.

Although alcoholism can be treated, a cure is not yet available. In other words, even if an alcoholic has been sober for a long time and has regained health, he or she remains susceptible to relapse and must continue to avoid all alcoholic beverages. “Cutting down” on drinking doesn’t work; cutting out alcohol is necessary for a successful recovery.

However, even individuals who are determined to stay sober may suffer one or several “slips,” or relapses, before achieving long-term sobriety. Relapses are very common and do not mean that a person has failed or cannot recover from alcoholism.

Keep in mind, too, that every day that a recovering alcoholic has stayed sober prior to a relapse is extremely valuable time, both to the individual and to his or her family. If a relapse occurs, it is very important to try to stop drinking once again and to get whatever additional support you need to abstain from drinking.

NICOTINE

Through the use of cigarettes, cigars, and chewing tobacco, nicotine is one of the most heavily used addictive drugs in the United States. In 2004, 29.2 percent of the U.S. population 12 and older—70.3 million people—used tobacco at least once in the month prior to being interviewed.

This figure includes 3.6 million young people age 12 to 17. Young adults aged 18 to 25 reported the highest rate of current use of any tobacco products (44.6 percent) in 2004.

Findings for high school youth indicate that 25.9 percent of 8th-graders, 38.9 percent of 10th-graders, and 50.0 percent of 12th-graders had ever smoked cigarettes when asked in 2005. These figures were lower for all three grades

from 2004 data, and for 8th-graders and 12th-graders, the decreases were statistically significant.

Statistics from the Centers for Disease Control and Prevention indicate that tobacco use remains the leading preventable cause of death in the United States, causing approximately 440,000 premature deaths each year and resulting in an annual cost of more than $75 billion in direct medical costs attributable to smoking.

Over the past four decades, cigarette smoking has caused an estimated 12 million deaths, including 4.1 million deaths from cancer, 5.5 million deaths from cardiovascular diseases, 2.1 million deaths from respiratory diseases, and 94,000 infant deaths related to mothers smoking during pregnancy.

Secondhand smoke, also known as environmental tobacco smoke, is a mixture of the smoke given off by the burning end of tobacco products (side stream smoke) and the mainstream smoke exhaled by smokers. It is a complex mixture containing many chemicals (including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine), many of which are known carcinogens.

Nonsmokers exposed to secondhand smoke at home or work increase their risk of developing heart disease by 25 to 30 percent and lung cancer by 20 to 30 percent.

In addition, secondhand smoke causes respiratory problems in nonsmokers such as coughing, phlegm, and reduced lung function. Children exposed to secondhand smoke are at an increased risk for sudden infant death syndrome, acute respiratory infections, ear problems, and more severe asthma.

Since 1964, 28 Surgeon General's reports on smoking and health have concluded that tobacco use is the single most avoidable cause of disease, disability, and death in the United States. In 1988, the Surgeon General concluded that cigarettes and other forms of tobacco, such as cigars, pipe tobacco, and chewing tobacco, are addictive and that nicotine is the drug in tobacco that causes addiction.

Nicotine provides an almost immediate "kick" because it causes a discharge of epinephrine from the adrenal cortex. This stimulates the central nervous system and endocrine glands, which causes a sudden release of glucose. Stimulation is then followed by depression and fatigue, leading the user to seek more nicotine.

Nicotine is absorbed readily from tobacco smoke in the lungs, and it does not matter whether the tobacco smoke is from cigarettes, cigars, or pipes.

Nicotine also is absorbed readily when tobacco is chewed. With regular use of tobacco, levels of nicotine accumulate in the body during the day and persist overnight. Thus, daily smokers or chewers are exposed to the effects of nicotine for 24 hours each day. Adolescents who chew tobacco are more likely than nonusers to eventually become cigarette smokers.

Addiction to nicotine results in withdrawal symptoms when a person tries to stop smoking. For example, a study found that when chronic smokers were deprived of cigarettes for 24 hours, they had increased anger, hostility, and aggression, and loss of social cooperation. Persons suffering from withdrawal also take longer to regain emotional equilibrium following stress. During periods of abstinence and/or craving, smokers have shown impairment across a wide range of psychomotor and cognitive functions, such as language comprehension.

Women who smoke generally have earlier menopause. Pregnant women who smoke cigarettes run an increased risk of having stillborn or premature infants or infants with low birth weight. Children of women who smoked while pregnant have an increased risk for developing conduct disorders. National studies of mothers and daughters have also found that maternal smoking during pregnancy increased the probability that female children would smoke and would persist in smoking.

In addition to nicotine, cigarette smoke is primarily composed of a dozen gases (mainly carbon monoxide) and tar. The tar in a cigarette, which varies from about 15 mg for a regular cigarette to 7 mg in a low-tar cigarette, exposes the user to an increased risk of lung cancer, emphysema, and bronchial disorders.

The carbon monoxide in tobacco smoke increases the chance of cardiovascular diseases. The Environmental Protection Agency has concluded that secondhand smoke causes lung cancer in adults and greatly increases the risk of respiratory illnesses in children and sudden infant death.

Research has shown that nicotine, like cocaine, heroin, and marijuana, increases the level of the neurotransmitter dopamine, which affects the brain pathways that control reward and pleasure. Scientists have pinpointed a particular molecule [the beta 2 (b2)] subunit of the nicotine cholinergic receptor as a critical component in nicotine addiction.

Mice that lack this subunit fail to self-administer nicotine, implying that without the b2 subunit, the mice do not experience the positive reinforcing properties of nicotine. This finding identifies a potential site for targeting the development of nicotine addiction medications.