It is not the purpose of this book to discuss all of the drugs of abuse. This is left to other texts such as *Uppers, Downers, All Arounders* by Inaba and Cohen (2007). All counselors should keep a copy of this excellent text close by their desk. Addicts are constantly inventing some new way to get high so the drug of abuse will always be changing. The major drugs of abuse seen in treatment are alcohol, cocaine, opioids, and methamphetamine (Centers for Disease Control and Prevention [CDC], 2009; www.cdc.gov).

All psychoactive drugs of abuse alter feelings, thoughts, and behavior. They directly affect the brain or the central nervous system (CNS). The specific actions of these drugs are highly complex. Feelings are altered when the drugs affect neurotransmitters and intercellular communications that seek a
balance between excitatory and inhibitory functions. Every organism is driven toward establishing a balance between these two systems called homeostasis. Only humans seem to seek drug intoxication states. Other organisms avoid altered mind states because it makes vulnerable to predation and death. The only way laboratory animals can be enticed to ingest drugs of abuse is to mix them with water or food. However, once addicted, animals use drugs compulsively to the point of choosing drugs over food, water, or sex. An addicted brain is a changed brain. Addiction is abnormal behavior that results from dysfunction in brain tissue. Addiction is just as physical a disease as heart disease or cancer (Leshner, 1997).

It is widely believed by many experts in the field that the level of drug use in the United States is the highest in the industrialized world. An estimated 21.1 million Americans used a drug illegally during the month prior to being surveyed in the 2008 National Household Survey on Drug Use and Health: National Findings (see Appendix 42). Nearly half of Americans (51.6%) 12 years old or over had used alcohol, 17.3% were binge drinkers, and 28.4% used tobacco products.

Specific drug action depends on the route of administration, the dose, the presence or absence of other drugs, and the clinical state of the individual. In general, psychoactive drugs can be classified by their primary action on the CNS.

**Central Nervous System Depressants**

The CNS depressants depress nervous tissue at all levels of the brain and nervous system. The CNS depressants include all sleeping medications, antianxiety drugs (also called minor tranquilizers), opium derivatives, cannabis, and inhalants (Hardman, Limbird, Molinoff, Ruddon, & Gilman, 1996; Inaba & Cohen, 2007; Schuckit, 1984).

**Central Nervous System Stimulants**

The CNS stimulants achieve their effect either by the stimulation of nervous tissue through blocking the actions of inhibitory cells or releasing transmitter substances from the cells or by the direct action of the drugs themselves. These drugs include all of the amphetamines and cocaine. Nicotine and caffeine also stimulate nervous tissue but to a much lesser degree (Hardman et al., 1996; Inaba & Cohen, 2007; Schuckit, 1984).

**The Hallucinogens**

The effect of these drugs is the production of an altered perception, thought, or feeling that cannot be experienced otherwise except in dreams. The hallucinations usually are of a visual nature. These drugs have no known medical usefulness. The most common hallucinogen currently found on the street is lysergic acid diethylamide (LSD) (Carroll & Comer, 1998; Inaba & Cohen, 2007; Jaffe, 1980).

**The Reinforcing Properties of Drugs**

Drugs of abuse are powerful reinforcers. Animals quickly learn to self-administer most of these drugs for their rewarding properties. Animals will press a lever more than 4,000 times to get a single injection of cocaine. They will continue to self-administer for weeks, alternating between self-imposed abstinence and drug administration. These animals generally die of drug toxicity and lack of food. They would rather use drugs than eat (Wise & Kelsey, 1998).

When given continuous access to drugs of abuse, animals show patterns of self-administration strikingly similar to those of human users of the same drug. These drugs are strongly reinforcing even in the absence of physical dependence. An addicted brain is a brain that has changed in chemistry, structure, and genetics to the point that the drug or addictive behavior undermines voluntary control. Chronic drug exposure alters neurons in dopamine-related circuits causing compulsive drug administration and poor inhibitory control. It is estimated that 40% to 60% of vulnerability to addiction is genetic (Thompson & Pickens, 1970; Uhl & Grow, 2004; Volkow & Li, 2009; Woods & Carney, 1977).
Tolerance and Dependence

Tolerance and physical dependence develop after chronic administration of any one of a wide variety of mood-altering substances. With increasing tolerance, the individual needs more of the drug to get the same effect. Tolerance and dependency develop as the nerve cells chemically and structurally counteract the drug’s psychoactive effects. Tolerance is a complex generalized phenomenon that involves many independent physiological and behavioral mechanisms. It leaves the chemically dependent individual physiologically and psychologically craving the drug. The individual becomes obsessed with obtaining the drug for a sense of well-being. The chemically dependent person becomes inflexible in his or her behavior toward the drug despite adverse consequences. The intensity of this felt “need” or dependence may vary from a mild craving to an intense overwhelming obsession. At severe levels, the individual becomes very preoccupied with the drug (Inaba & Cohen, 2007; Kalant et al., 1978; Nestler, 1998; Wilcox, Gonzales, & Erickson, 1994).

Physical dependence is characterized by withdrawal symptoms. Withdrawal develops in an addicted individual when the drug is discontinued too quickly. Physical dependence occurs throughout the entire nervous system (Smith, 1977). The withdrawal symptoms are a rebound effect in the physiological systems modified by the drug. For example, alcohol depresses the CNS, whereas withdrawal stimulates the CNS. In studying the effects of withdrawal, look for the opposite effect that the drug was used for initially. Amphetamines are used to stimulate or to give energy, so amphetamine withdrawal causes depression and a lack of energy. The time required to produce physical dependence can vary. Withdrawal symptoms can develop in a day with large quantities of CNS depressants (Alexander, 1951; Inaba & Cohen, 2007). For most drug users, development of physical dependence is gradual, occurring over weeks, months, or years of chronic administration.

Cross-Tolerance

The ability of one drug to suppress withdrawal symptoms created by another drug is referred to as cross-dependence or cross-tolerance. Cross-tolerance drugs may partially or completely remove symptoms of withdrawal. All drugs of abuse cause intoxication and induce a psychological dependency. The individual is self-administering the drug to change his or her level of consciousness or to increase psychological comfort (Schuckit, 1984).

Alcohol

No one knows when alcohol was first produced, but it was most likely to be a natural occurrence. If any watery mixture of vegetable sugars or starches is allowed to stand for about 3 months in a warm place, alcohol will make itself. Yeast that exists in the air everywhere will land on the juice and begin to eat the sugar, making carbon dioxide and alcohol as waste. The alcohol content in the juice continues to rise until all of the yeast cells are killed. Therefore, alcohol is a poison to all living creatures even to the organisms that make it. Nature alone cannot produce anything stronger than 14% alcohol, but by distillation, the percentage can then be increased to 93% (Courtwright, 2001).

The early detection of alcohol abuse and dependency is complicated by denial that is found in the individual, in the family, and in society. Long-term alcohol dependence has profound effects on personality, mood, cognitive functioning, and a variety of physiological problems involving virtually all organ systems. The interaction of alcohol and other drugs may lead to fatal overdoses (Frances & Franklin, 1988).

Alcoholism is the result of a complex interaction of biological vulnerability and environmental factors. Environmental factors such as childhood experience, parental attitudes, social policies, and culture strongly affect the vulnerability to alcoholism. Genetic variables significantly influence the disease. There is no personality that causes alcoholism (Goodwin, 1985; Vaillant, 2003).
Alcohol-Induced Organic Mental Disorders

Alcohol Intoxication

Alcohol intoxication is the most frequent organic-induced mental disorder. It is time limited, and it may occur with varying amounts of ingested alcohol. The intoxicated individual exhibits maladaptive behavioral changes due to recent ingestion. These changes may include aggressiveness, impaired judgment, impaired attention, irritability, euphoria, depression, emotional liability, and other manifestations of impaired social functioning. Although alcohol is a CNS depressant, its initial effects disinhibit the individual. Early in intoxication, the person may feel stimulated with an exaggerated sense of well-being. With further use, the person may slow down and become depressed, withdrawn, and dull. The person may even lose consciousness (Inaba & Cohen, 2007; Spitzer, 1987; Woodward, 1994).

Alcohol Amnesic Disorder (Blackout)

Alcohol amnesic disorder, or a blackout, is a period of amnesia during periods of intoxication. The person may seem fully conscious and normal when observed by others, but the person is unable to remember what happened or what he or she did while intoxicated. The disorder may last for a few seconds or for days. The severity and duration of alcoholism correlate with the frequency of occurrence of these blackouts (Goodwin, 1971; Goodwin, Crane, & Guze, 1969).

Wernicke-Korsakoff Syndrome

Wernicke-Korsakoff syndrome is a neurological emergency that should be treated by the immediate intramuscular administration of thiamine. The symptoms begin with a sudden change in organic functioning. The client becomes ataxic with a wide-based unsteady gait. The person may be unable to walk without support. The client is mentally confused and unable to transfer memory from short- to long-term memory. The client may be disoriented, listless, inattentive, and indifferent to the environment. Questions directed at the client may go unanswered, or he or she may fall asleep while being examined. The etiology of this syndrome involves a thiamine deficiency due to dietary, genetic, or medical factors. All clients with compromised mental functioning or a deficit in memory need to be examined by the medical staff as soon as possible to prevent further brain damage (Braunwald et al., 1987).

Alcohol Withdrawal

Alcohol withdrawal symptoms relate to a relative drop in alcohol blood levels. Withdrawal can occur when the individual is still drinking. The classic withdrawal symptom is a coarse fast frequency tremor observed when the client’s hand or tongue is extended. The tremor is made worse by motor activity or stress. The client may experience nausea and vomiting, malaise, weakness, elevated pulse and blood pressure, anxiety, cravings, depressed mood, irritability, transient hallucinations, headache, and insomnia. These symptoms follow several hours after cessation or reduction in alcohol intake and peak within 72 hours. They usually
disappear within 5 to 7 days of abstinence. The client in alcohol withdrawal is treated with a cross-tolerant drug similar in pharmacological effects to alcohol, usually one of the benzodiazepines. This stabilizes the client in a mild withdrawal syndrome (Mayo-Smith, 2009).

**Alcohol Withdrawal Seizures**
Withdrawal seizures may occur 7 to 38 hours after the last alcohol use in chronic drinkers. The tendency to seizure peaks within 24 hours (Adams & Victor, 1981; Mayo-Smith, 2009).

**Alcohol Withdrawal Delirium (Delirium Tremens)**
One third of clients with seizures go on to develop alcohol withdrawal delirium, or delirium tremens. This is characterized by confusion, disorientation, fluctuating or clouded sensorium, and perceptual disturbances (Adams & Victor, 1981; Mayo-Smith, 2009). Typical symptoms include delusions, vivid hallucinations, agitation, insomnia, mild fever, and marked autonomic arousal. The client frequently reports visual hallucinations of insects, small animals, and other perceptual disturbances. The client may be terrified. The delirium typically subsides after a few days, but it can continue for weeks (Gessner, 1979).

**Sedatives, Hypnotics, and Anxiolytics**
Benzodiazepines and barbiturates are useful medications with a potential for abuse and dependence. They are medically useful for a variety of symptoms such as insomnia and anxiety. Approximately 15% of the population uses a benzodiazepine each year (Gottschalk, McGuire, Heiser, Dinovo, & Birch, 1979; Inaba & Cohen, 2007). About 16% of clients abuse the sedatives that are prescribed by their physicians (Richels, Case, Downing, & Winokur, 1983). In 1977, 18% of young adults reported nonmedical use of sedatives (Abelson, Fishburne, & Cisin, 1977). There are no sharp lines that can be drawn among appropriate use, abuse, habituation, and addiction. Both the client and the physician might not recognize symptoms of dependence. Both might assume that the anxiety, tremulousness, and insomnia that develop when the drug is discontinued are a return of the original anxiety (Jaffe, 1980). Some of these clients have been on a succession of various benzodiazepines for years. When the medication is withdrawn, anxiety symptoms may increase for months. These clients must be followed by someone experienced in treating anxiety disorders. The therapist can work to reduce the anxiety symptoms while the client is experiencing withdrawal (Burant, 1990; Dickinson & Eickelberg, 2009; Geller, 1994; Juergens, 1994).

Diagnosis of sedative abuse may prove to be difficult. The abuse can start in the context of medical treatment for anxiety, medical disorders, or insomnia. Physical dependence can develop to low doses over several years or to high doses over a few weeks (Dietch, 1983). Intoxication, withdrawal, withdrawal delirium, and amnesic disorder are similar to those found with alcohol. Benzodiazepines have a much longer half-life, so withdrawal might not begin until 7 to 10 days after cessation of use. The client may have a protracted withdrawal that can last for months (Geller, 1994). Alcohol and opioid CNS depression may interact with sedative hypnotics and potentiate the depression. Adding small amounts of alcohol or opioids to the sedatives can quickly lead to overdose (Frances & Franklin, 1988). Treatment for sedative, hypnotic, or anxiolytic withdrawal is similar to that for alcohol withdrawal. A cross-tolerant sedative is administered to prevent severe withdrawal symptoms. This medication is gradually decreased until the client is clear of the drug.

**Opioids**
Opium has been around since humans first discovered that the opium poppy was not only good for food and oil but had medicinal and psychoactive properties. During the late 1960s, the use of heroin increased in the United States. Once centered in large urban areas, the use of heroin infiltrated smaller communities.
Members of lower socioeconomic groups continue to be overrepresented in this client population, but the use of heroin is now observed with greater frequency among affluent members of society. In 2005, there were 108,000 persons aged 12 or older who had used heroin for the first time within the past 12 months. A survey in 1977 indicated that 2% to 3% of young adults had tried heroin at some time in their lives. A large proportion of the individuals recently beginning heroin use are young. The existence of opioid addiction among physicians, nurses, and health care professionals is many times higher than that of any group with a comparable educational background (Courtwright, 2001; Gilman, Goodman, & Gilman, 1980; U.S. Department of Health and Human Services, 1999).

Rapid intravenous injection of an opioid produces a warm flushing of the skin and sensations in the lower abdomen described by addicts as similar to orgasm. This lasts for about 45 seconds and is known as the “kick” or “rush” (Inaba & Cohen, 2007; Jaffe, 1980). Tolerance to this high develops with repeated use. Physical signs of intoxication include constricted pupils, marked sedation, slurred speech, and impairment in attention and memory. Daily use over days or weeks will produce opioid withdrawal symptoms on cessation of use. The withdrawal symptoms are intense but generally not life threatening. Withdrawal starts approximately 10 hours after the last dose (Frances & Franklin, 1988; Inaba & Cohen, 2007). Mild opioid withdrawal presents itself as a flu-like syndrome with symptoms of anxiety, yawning, dysphoria, sweating, runny nose, tearing, pupillary dilation, goose bumps, and autonomic nervous system arousal. Severe symptoms include hot and cold flashes, deep muscle and joint pain, nausea, vomiting, diarrhea, abdominal pain, and fever. Protracted withdrawal may extend for months (Gold, 1994b; Kosten, Rounsaville, & Kleber, 1985; Tetrault & O’Connor, 2009).

The treatment of opioid addiction can be grouped into opioid maintenance with methadone or buprenorphine versus abstinence approaches. Choice of the proper treatment depends on the client’s characteristics. The course of heroin addiction typically involves a 2- to 6-year interval between the start of regular heroin use and the seeking of treatment. The need to participate in criminal activity to procure the drug predisposes the addict to further social problems. Treatment takes total psychosocial rehabilitation.

Many heroin addicts cannot or will not give up using opioids. Methadone or buprenorphine maintenance programs can return these clients to a productive lifestyle. Methadone substitutes long-acting methadone for short-acting heroin. Methadone has a half-life of 24 hours whereas heroin has a half-life of 4 to 6 hours. Buprenorphine clings tightly to the mu-opioid receptor. Research over the past 15 years has shown that buprenorphine and buprenorphine combined with the opioid blocker naloxone is a safe and effective alternative to methadone for opioid maintenance therapy. Buprenorphine with or without naloxone is also used to ease withdrawal symptoms. Levomethadyl acetate hydrochloride (LAAM) is no longer used because of its history of causing fatal cardiac arrhythmias. Buprenorphine has a ceiling dose, and low toxicity reduces the danger of overdose. Buprenorphine along with the opioid antagonist naloxone also helps to prevent the client from getting high on other opioids such as heroin during maintenance therapy (Tetrault & O’Connor, 2009).

Worldwide opioid maintenance remains the major modality for the treatment of opioid dependency. The research supporting methadone or buprenorphine maintenance benefits to the heroin user are well documented (Institute of Medicine, 1995; Lowinson, Marion, Herman, & Dole, 1992; Tetrault & O’Connor, 2009). Methadone has been found to be medically safe even when used continuously for 10 years or more (Leshner, 1998). Methadone is administered to the client orally at established methadone clinics. Although a mainstay of treatment, these programs reach only 20% to 25% of addicts, with program retention rates from 59% to 85% (Stimmel, Goldberg, Rotkopf, & Cohen, 1977). Opioid detoxification should be slow to avoid relapse. The drug should be removed in weeks rather than days. Total abstinence might be the only alternative for many clients (Tetrault & O’Connor, 2009).

Buprenorphine is related to morphine but is a partial opioid agonist that possesses both agonist and antagonist properties. Partial agonists exhibit ceiling effects; increasing the dose has effects only to a certain level. Therefore, partial agonists usually have greater safety profiles than do full agonists such as heroin, morphine, and certain analgesic products chemically related to morphine. This means that buprenorphine is less likely to cause respiratory depression, the major toxic effect of opiate drugs, in comparison to full agonists such as morphine and heroin. Another benefit of buprenorphine is that the withdrawal syndrome
seen on discontinuation with buprenorphine is mild to moderate and often can be managed without administration of narcotics (Tetrault & O’Connor, 2009).

**Cocaine and Amphetamines**

Moderate doses of psychoactive stimulants produce an elevation in mood, a sense of increased energy and alertness, and decreased appetite. Task performance that has been impaired by boredom or fatigue improves. Some individuals may become anxious or irritable. Cocaine addicts describe the euphoric effects of cocaine in a way that is indistinguishable from that of amphetamine addicts. In the laboratory, research participants familiar with cocaine cannot distinguish between the two drugs when both are given intravenously (Fischman et al., 1976). Animals use the drugs in a similar fashion, and the toxic and withdrawal symptoms of the drugs are indistinguishable. There is a difference in the half-lives of the drugs’ effects. Cocaine’s effects tend to be brief, lasting a matter of minutes, whereas amphetamine effects last for hours (Griffith, Cavanaugh, Held, & Oates, 1972; Inaba & Cohen, 2007; Wesson & Smith, 1977).

The user of a psychoactive stimulant such as cocaine or methamphetamine at first feels increased physical strength, mental capacity, and euphoria. The person feels a decreased need for sleep or food. A sensation of “flash” or “rush” immediately follows intravenous administration. It is described as an intensely pleasurable experience. With time, tolerance develops, and more of the drug is necessary to produce the same effects. With continued use, toxic symptoms appear. These include gritting the teeth, undue suspiciousness, and a feeling of being watched. The user becomes fascinated with his or her thinking and the deeper meaning of things. Stereotypical repetitious behavior is common. The individual may become preoccupied with taking things apart and then putting them back together. The mixture of another CNS depressant drug, such as an opioid (speedball) or alcohol, can be used to decrease irritable side effects. The client often becomes addicted to both drugs (Wesson & Smith, 1977).

**Pattern of Use**

Stimulants may be injected or taken intranasally every few minutes to every few hours around the clock for several days. Such a “speed run” usually lasts until the individual has exhausted the drug supply or is too paranoid or disorganized to continue. Stopping administration is followed within a few hours by deep sleep. On arising, the individual feels hungry and lethargic. Sometimes the individual is depressed. Cocaine is inhaled, smoked, or injected intravenously. Cocaine users who try to maintain the euphoric state will ingest the drug every 30 to 40 minutes (Inaba & Cohen, 2007; Wesson & Smith, 1977). Animals given free access to stimulants develop weight loss, self-mutilation, and death within 2 weeks (Jaffe, 1980). Given a choice between food and cocaine, monkeys consistently choose cocaine (Aigner & Balster, 1978).
A toxic psychosis may develop after weeks or months of continued stimulant use. A fully developed toxic syndrome is characterized by vivid visual, auditory, and tactile hallucinations and paranoid delusions indistinguishable from paranoid schizophrenia (Griffith et al., 1972; Inaba & Cohen, 2007). Unless the individual continues to use the drug, these psychotic symptoms usually clear within a week. The hallucinations are the first symptom to disappear (Jaffe, 1980). Craving for the drug, prolonged sleep, general fatigue, lassitude, and depression commonly follow abrupt cessation of chronic use (Inaba & Cohen, 2007; Post, Kotin, & Goodwin, 1974).

Adolescent cocaine or methamphetamine abuse leads to more rapid and severe consequences than adult stimulant abuse. Cocaine’s price has decreased to the point where it costs as little as $5 to get high. During the mid-1980s, the distribution of the ready-to-smoke freebase cocaine known as “crack” spread nationwide (Courtwright, 2001; Featherly & Hill, 1989). With the potent freebase form, there is an almost instantaneous euphoric high that is extremely desirable (Frances & Franklin, 1988). Cocaine’s half-life is less than 90 minutes, but the euphoric effect lasts for only 15 to 30 minutes (Jaffe, 1980).

The Stimulant Abstinent Syndrome

The stimulant abstinent syndrome has three phases. The first phase is the crash, where the individual reports depression, anhedonia, insomnia, anxiety, irritability, and intense craving. These symptoms can last for 7 to 14 days. In the second phase, low-level stimulant craving continues along with irritability, anxiety, and decreased capacity to experience pleasure. Over several days, the negative consequences of stimulant use fade, the person feels more normal, and the craving for stimulants increases, especially in the context of environmental cues. The third phase consists of several weeks of milder episodic craving triggered by environmental stimuli. Many clients will appear to have a major depression shortly after cessation of stimulant use. These clients may become suicidal. Most of these symptoms will clear, but some symptoms, such as sadness and lethargy, can last for months (Gawin & Kleber, 1986a; Inaba & Cohen, 2007; Schuckit, 1984).

The treatments for stimulant rehabilitation are similar to the treatment for alcoholism. The euphoria that stimulants offer needs to be replaced by more adaptive coping skills. Stimulant intoxication can be managed with the benzodiazepines or propranolol. Stimulant psychosis might have to be treated with antipsychotic medication. Clients who are psychotic need to be kept in a quiet place, supported, and reassured. Antidepressants such as desipramine may ease the withdrawal syndrome (Gawin & Kleber, 1986b).

Phencyclidine

Phencyclidine (PCP) is an anesthetic initially manufactured for animal surgery. For a short time, it was used as a general anesthetic for humans. Street use of PCP became widespread during the 1970s, when it was introduced as a drug to be smoked or snorted (Jaffe, 1980). It is still epidemic in certain eastern U.S. cities (Caracci, Megone, & Dornbush, 1983; Inaba & Cohen, 2007).

In humans, small doses of PCP produce a subjective sense of intoxication with staggering gait, slurred speech, and numbness of the extremities. The user may experience changes in body image and disorganized thought, drowsiness, and apathy. There may be hostile or bizarre behavior. Amnesia for the episode may occur. With increasing doses, stupor or coma may occur, although the eyes may remain open (Domino, 1978). Animals will self-administer PCP for its reinforcing properties (Balster & Chait, 1978). Psychoactive effects of PCP generally begin within 5 minutes and plateau in 30 minutes. In contrast to the use of hallucinogens, the use of PCP may lead to long-term neurological damage (Davis, 1982; Inaba & Cohen, 2007).

Few drugs are able to produce a more wide range of subjective effects than can PCP. Among the effects that users like are increased sensitivity to external stimuli, stimulation, mood elevation, and a sense of intoxication (Carroll & Comer, 1994). Other effects, seen as unwanted, are perceptual disturbances, restlessness, disorientation, and anxiety. Smoking marijuana cigarettes laced with PCP is the most common form of administration (Frances & Franklin, 1988). PCP produces several organic mental disorders including intoxication,
delirium, delusional mood, and flashback disorders (Spitzer, 1987). Acute adverse reactions to this drug generally require medication to control symptoms. Benzodiazepines usually are the drug of choice, but antipsychotics might become necessary.

**Dissociative Anesthetics (Phencyclidine, Ketamine, and Dextromethorphan)**

PCP and ketamine are dissociative anesthetics, and ketamine is still legally marketed. In recent years, ketamine has developed greater popularity as a club drug. Dextromethorphan (DXM) is widely available as an over-the-counter cough and cold medication. Dissociative anesthetics produce a range of intoxicated states that are grouped into three stages. Clients, particularly adolescents, use large doses of DXM to get a “high” that they describe as feeling numb.

1. **Stage I:** Conscious with mild psychological effects
2. **Stage II:** Stuporous or light coma, yet responsive to pain
3. **Stage III:** Coma, unresponsive to pain

Clients may emerge from one state to the other, and many of them become agitated and delirious. Treatment is largely supportive by getting the client in a quiet room and reassuring them that the intoxicated state will improve over time. Sedatives and antipsychotic medications may be necessary to calm psychotic and agitated states (Wilkins, Danovitch, & Gorelick, 2009).

**Hallucinogens**

There is no clear line that divides the psychedelics from other psychoactive drugs that cause hallucinations. Anticholinergics, bromides, antimalarials, opioid antagonists, cocaine, amphetamines, and corticosteroids can produce illusions and hallucinations, delusions, paranoid ideation, and other alterations in mood and thought similar to psychosis. What seems to distinguish the psychedelic drugs from the others is the unique characteristic to produce states of altered perception that cannot be experienced except in dreams (Carroll & Comer, 1994; Inaba & Cohen, 2007; Jaffe, 1980).

The psychedelic most available in the United States is LSD. The psychedelic psilocybin has long been used in religious ceremonies by Southwest American Indians. Fortunately, the use of this drug is on the decline.

Hallucinogens are not reinforcing to animals, only to humans. Using more than 20 times is considered chronic abuse. Hallucinogens produce a variety of organic brain syndromes including hallucinogen hallucinosis, delusional disorder, mood disorder, and flashback disorder (Spitzer, 1987). Flashbacks may occur in as many as 25% of users (Naditch & Fenwick, 1977). Chronic delusional and psychotic reactions, and rarely schizophreniform states, have been reported in some psychedelic users (Vardy & Kay, 1983).

**The Psychedelic State**

During the psychedelic state, there is an increased awareness of sensory input often accompanied by a sense of clarity. There is a diminished ability to control what is experienced. The user experiences unusual and vivid sensory sensations. Hallucinations are primarily visual. Colors may be heard, or sounds may be seen. Frank auditory hallucinations are rare. Time seems to be altered. The user frequently feels like a casual observer of the self. The environment may be experienced as novel, often beautiful, and harmonious. The attention of the user is turned inward. The slightest sensation may take on profound meaning. There commonly is a diminished ability to differentiate the boundaries of objects and the self. There may be a sense of union with the universe. The state begins to clear after about 12 hours (Freedman, 1968; Inaba & Cohen, 2007). The
intoxicated client generally can be talked down without sedation. This client needs to be placed in a quiet environment free of excess stimulation. A sedative occasionally may be necessary to calm the client.

**Cannabis**

Cannabis is an India hemp plant that has been used for medicinal purposes for centuries. Marijuana is a varying mixture of the plant’s leaves, seeds, stems, and flowering tops. The psychoactive ingredient in cannabis is delta-9-tetrahydrocannabinol (THC). Hashish consists of the plant’s dried resin, and it contains a higher percentage of THC (Turner, 1980).

Marijuana remains the most commonly used illegal drug in the United States. Surveys reveal that 31% of teenagers, 40% of young adults, and 10% of older adults have tried marijuana. It is generally acknowledged that marijuana use among adolescents peaked during the 1970s. Daily users of marijuana dropped from 10.2% in 1978 to 5.0% in 1984 (Frances & Franklin, 1988).

Cannabis produces effects on mood, memory, motor coordination, cognitive ability, sensorium, time sense, and self-perception. Peak intoxication with smoking generally occurs within 10 to 30 minutes. Most commonly, there is an increased sense of well-being or euphoria, accompanied by feelings of relaxation and sleepiness. Where individuals can interact, there is less sleepiness and there often is spontaneous laughter (Hollister, 1974; Inaba & Cohen, 2007; Jones, 1971). Physical signs of use include red eyes, strong odor, dilated pupils, and increased pulse rate. With higher doses, short-term memory is impaired, and there develops a difficulty in carrying out actions that require multiple mental tasks. This leads to a tendency to confuse past, present, and future. Depersonalization develops with a strange sense of unreality about the self (Melges, Tinklenberg, Hollister, & Gillespie, 1970). Balance and stability of stance are affected even at low doses (Evans et al., 1973). Performance of simple motor skills and reaction times are relatively unimpaired until high doses are reached (Hollister, 1974; Jones, 1971).

Marijuana smokers frequently report an increase in hunger, dry mouth and throat, an increase in vivid visual imagery, and a keener sense of hearing. Subtle visual and auditory stimuli may take on new meanings (Cloptin, Janowsky, Cloptin, Judd, & Huey, 1979; Inaba & Cohen, 2007). Higher doses can produce frank hallucinations, delusions, and paranoid feelings. Thinking becomes confused and disorganized, and depersonalization and altered time sense increase. Anxiety to the point of panic may replace euphoria. With high enough doses, the client has a toxic psychosis with hallucinations, depersonalization, and loss of insight. This syndrome can occur acutely or after months of use (Chopra & Smith, 1974; Nahas, 1973; Thacore & Shukla, 1976).

Chronic smoking of marijuana and hashish has long been associated with bronchitis and asthma. Smoking affects pulmonary functioning—even in young people. The tar produced by marijuana is more carcinogenic than that produced by tobacco (Secretary of Health, Education, and Welfare, 1977). Individuals using marijuana chronically exhibit apathy, dullness, impairment of judgment, concentration, and memory problems. They lose interest in personal appearance, hygiene, and diet. These effects have been observed in young users who regularly smoke a few marijuana cigarettes a day. These chronic effects take months to clear after cessation of use (Jaffe, 1980; Tennant & Grossbeck, 1972).

The pharmacological effects of marijuana begin within minutes after smoking. Effects may persist for 3 to 5 hours. THC and its metabolites can be found in the urine for several days or weeks after a single administration. THC is a highly lipid soluble, and its metabolites tend to accumulate in the fat cells. They
have a half-life of approximately 50 hours (Hollister, 1974; Secretary of Health, Education, and Welfare, 1977). Tolerance to and dependence on marijuana develop, and abrupt cessation after chronic use is followed by headaches, mild irritability, restlessness, nervousness, decreased appetite, weight loss, and insomnia. Tremor and increased body temperature may occur (Gold, 1994a; Jones, Bennowitz, & Bachman, 1976; Wikler, 1976). Because the withdrawal symptoms tend to be mild, detoxification usually is not necessary (Frances & Franklin, 1988).

**Inhalants**

Inhalants include substances with diverse chemical structures used to produce a state of intoxication—gasoline, airplane glue, aerosol (spray paints), lighter fluid, fingernail polish, typewriter correction fluid, a variety of cleaning solvents, amyl and butyl nitrate, and nitrous oxide. Hydrocarbons are the most active ingredients in these substances (Frances & Franklin, 1988; Inaba & Cohen, 2007).

Several methods are used to inhale the intoxicating vapors. Most commonly, a rag soaked with the substance is applied to the mouth and nose, and the vapors are breathed. The individual may place the substance in a paper or plastic bag and inhale the gases. The substance also may be inhaled directly from containers or sprayed into the mouth or nose (Spitzer, 1987).

Dependent individuals may use inhalants several times per week, often on weekends and after school. Inhalants sometimes are used by children as young as 9 to 13 years of age. These children usually use with a group of friends who are likely to use alcohol and marijuana as well as the inhalant. Older adolescents and young adults who have inhalant dependence are likely to have used a wide variety of substances (Spitzer, 1987).

Whereas high doses of these agents produce CNS depression, low doses produce an increase in CNS activity and a brief period of intoxication. Intoxication can last from a few minutes to 2 hours. Impaired judgment, poor insight, violence, and psychosis may occur during the intoxicated period. Inhalants are easily acquired and they are cheap. This makes them attractive to children who cannot drink legally. Animals will self-administer inhalants for reinforcement. There is a strong cross-tolerance with inhalants and the CNS depressants. Studies of inhalers have found indications of long-lasting brain damage (Cohen, 1979; Sharp & Brehm, 1977; Sharp & Carroll, 1978). Long-term damage to the bone marrow, kidneys, liver, and brain also has been reported (Frances & Franklin, 1988). There have been a number of deaths among inhalant abusers attributable to respiratory depression or cardiac arrhythmia. These deaths often appear to be accidental (King, Smialick, & Troutman, 1985).

**Nicotine**

Crew members who accompanied Columbus to the New World were the first Europeans to observe the smoking of tobacco. They brought the leaves and the practice of smoking back to Europe. Tobacco addiction is the number one preventable health problem in the United States (Courtwright, 2001). Cigarettes are responsible for more than 443,000 premature deaths each year in the United States (CDC, 2010). About 4,000 different compounds are generated by the burning of tobacco, but tobacco’s main psychoactive ingredient is nicotine. Nicotine produces a euphoric effect and has reinforcing properties similar to cocaine and the opioids (Henningfield, 1984). Tolerance to some of the effects of nicotine quickly develops, but even the chronic smoker continues to exhibit an increase in pulse and blood pressure after smoking as little as two cigarettes. Nicotine has a distinct withdrawal syndrome characterized by craving for tobacco, irritability, anxiety, difficulty in concentrating, restlessness, increased appetite, and increased sleep disturbance (Hughes & Hatsukami, 1986; Inaba & Cohen, 2007; U.S. Surgeon General, 1979).

Tobacco addiction has many properties similar to opioid addiction. The use of tobacco usually is an addictive form of behavior (Frances & Franklin, 1988). Tobacco produces a calming, euphoric effect, particularly on
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chronic users. Nicotine in cigarette smoke is suspended on minute particles of tar, and it is quickly absorbed from the lungs with the efficiency of intravenous administration. The compound reaches the brain within 8 seconds after inhalation. The half-life for elimination of nicotine is 30 to 60 minutes (U.S. Surgeon General, 1979).

Chronic use of tobacco is causally linked to a variety of serious diseases ranging from coronary artery disease to lung cancer. The likelihood of developing one of these diseases increases with the degree of exposure that is measured by the number of cigarettes per day. Cigarette smoking men have a 70% higher death rate than do nonsmoking men. Smoking in women is increasing along with smoking-related diseases (Braunwald et al., 1987).

About 50 million Americans are still smoking, and most of them want to quit. More than 90% of successful quitters do so on their own without participating in an organized cessation program. Smokers who quit “cold turkey” are more likely to remain abstinent than are those who decrease their daily consumption of cigarettes gradually, switch to cigarettes with lower tar or nicotine, or use special filters or holders. Quit attempts are nearly twice as likely to occur among smokers who receive nonsmoking advice from a physician. Heavily addicted smokers who smoke more than 25 cigarettes per day are more likely to participate in an organized cessation program (Pierce, Fiore, Novotny, Hatzianandreu, & Davis, 1989).

Counselors need to advise their clients against smoking and help them quit (see the American Cancer Society Guide to Quitting Smoking, Appendix 60). Smokers can and do quit. All smokers should consult with the staff physician for advice on not smoking. Self-help material can be presented to the clients who request more information. A pharmacological alternative, such as gum containing nicotine or a nicotine patch, can be substituted to ease withdrawal. Formal smoking cessation programs, such as the American Lung Association’s “Freedom from Smoking” clinic, may be beneficial for heavier smokers (Glynn, 1990). The 12 steps can be useful in giving smokers support in their attempts to quit. Some clients will want to quit smoking while in treatment. This should be highly encouraged and supported.

**Club Drugs**

Club drugs are typically used by teenagers and young adults at bars, clubs, concerts, and parties. The most common club drugs include Ecstasy (3–4 methylenedioxymethamphetamine or MDMA), gamma hydroxybutyrate (GHB), Rohypnol, ketamine, methamphetamine, and acid (LSD).

**MDMA**

MDMA is a synthetic drug with effects similar to methamphetamine and the hallucinogen mescaline. MDMA can decrease the body’s ability to regulate temperature resulting in dehydration, hyperthermia, and death. MDMA damages serotonin neurons in as little as 4 days. Twenty minutes to 1 hour after ingestion, MDMA causes stimulation and mild distortions of perception. The user also feels a calming effect that heightens empathy for others and the desire to dance. Physical dependence is generally not a problem, but tolerance can quickly develop with any amphetamine-like substance. Starting in 1990 in Europe and then spreading to the United States, there has been an increase in “rave” clubs. Flyers are handed out during the week and a few hundred to 1,000 teenagers get together at an empty warehouse to dance (Inaba & Cohen, 2007).

**GHB**

Since about 1990, GHB has been abused in the United States. The drug causes the user to feel euphoric and sedated. It also has anabolic (bodybuilding) effects and is used to increase growth hormone production, build muscle mass, and decrease water retention. It has been called liquid Ecstasy. GHB is usually dissolved in water or alcohol by the capful or teaspoonful. The effects last 3 to 6 hours and can cause amnesic effects; it can be used by sexual predators to lower the inhibitions and defenses of women (Inaba & Cohen, 2007).
Ketamine

Ketamine is an anesthetic that was initially used to put animals to sleep for surgery. About 90% of the ketamine used on the street is stolen from veterinary supplies. Ketamine is also known on the street as “special K” or “vitamin K.” Doses of ketamine can cause dreamlike states and hallucinations. In high doses, it can cause delirium, amnesia, impaired motor function, high blood pressure, depression, respiratory problems, and death.

Rohypnol

Rohypnol is a powerful benzodiazepine that is often mixed with alcohol to cause decreased inhibitions and sedation. Rohypnol can incapacitate victims and prevent them from resisting sexual assault. It can produce “anterograde amnesia,” which means the user cannot remember the events they experienced while under the effects of the drug (Inaba & Cohen, 2007).

Polysubstances

Few drug abusers abuse only one drug. There is a strong correlation between misuse of heroin and alcohol problems, abusers of stimulants frequently use depressants to cut irritable side effects, and alcoholics are at a higher risk for abusing other depressants and stimulants (Schuckit, 1984).

In Western society, youths begin drug use with caffeine, nicotine, and alcohol. If they go on to use other drugs, then the next drug of choice most likely will be marijuana or prescription opioids followed by one of the hallucinogens, depressants, or stimulants. These drugs first are taken on an experimental basis. They are reinforcing and lead to few serious consequences. Marijuana is seen as a step on the road to the use of other substances. Once the illegal barrier is crossed, it becomes easier to take a second and a third drug (Gould & Keeber, 1974; Kandel, 1978).

The effects of a drug may be either increased or decreased by adding an additional drug. Depressants taken together may potentiate the effect of either drug taken alone. Depressants and stimulants taken together may decrease the level of side effects encountered when one of the drugs is used alone. Marijuana has been shown to potentiate the effects of alcohol; it may increase the likelihood of a flashback from hallucinogen use (Schuckit, 1984). More than half of the clients who go to a polydrug clinic report the use of three or more substances (Cook, Hostetter, & Ramsay, 1975).

The most common multiple drug withdrawal syndromes are those seen following concomitant use of multiple depressants or depressants and stimulants. Depressants produce the most severe and life-threatening withdrawal symptoms. When depressants and stimulants are used together, the withdrawal syndrome more closely follows the clinical picture of depressant withdrawal, but it probably includes greater levels of sadness, paranoia, and lethargy (Schuckit, 1984).

Treatment Outcome

The Treatment Outcome Prospective Study (TOPS) is the largest and most comprehensive study of drug abuse treatment ever completed. It collected data on more than 10,000 clients admitted for chemical dependency treatment nationwide. The clients were in 37 different programs that varied from methadone maintenance, to residential, to outpatient treatment. The major finding was that treatment works. Drug abuse is significantly reduced after treatment, and the amount of decrease is greater in clients who remain in treatment longer. Clients needed to remain in treatment at least 6 months before a significant impact on drug abuse was achieved. Associated problem behaviors decreased (e.g., criminal behavior, family problems, suicidal thoughts).
This study found that drug addiction is a chronically relapsing condition usually requiring prolonged or repeated treatment (Hubbard et al., 1989).

The overwhelming weight of evidence from a large number of outcome studies and epidemiological studies indicates that treatment contributes significantly to positive behavior change in chemically dependent clients (Anglin & Hser, 1990; Gerstein & Harwood, 1990; Hoffmann, 1994; Hubbard, 1992).

The Institute of Medicine’s Committee for the Study and Treatment and Rehabilitation Services for Alcoholism and Alcohol Abuse (1990) and many individual reviewers (e.g., Anglin & Hser, 1990; Hubbard & DesJarlais, 1991) have concluded that chemical dependency treatment changes clients for the better. Other studies confirm that the benefits of these changes considerably outweigh the costs of treatment (e.g., Hubbard, 1992).

Follow-up studies of proprietary programs reviewed by the Institute of Medicine (1989) found abstinence rates between 40% and 60% during the first year after treatment. Similar results were found in studies of state and private programs (Hoffman & Harrison, 1987; Hubbard & Anderson, 1988; Institute of Medicine, 1989).

Comprehensive Assessment and Treatment Outcome Research (CATOR) is the largest independent evaluation service for the chemically dependent field in the United States. Since 1980, CATOR has collected data on more than 50,000 adults and 10,000 adolescents who have entered treatment programs. CATOR finds that there are large differences in the clinical characteristics of clients admitted to inpatient programs versus outpatient programs. Cocaine dependence is much higher in the inpatient group; marijuana and stimulant dependence also is higher. Half of the inpatients are dependent on illicit drugs, whereas only one third of the outpatients are so addicted. Nearly 20% of inpatients admit to using at least two drugs other than alcohol on a weekly basis, whereas only 8% of outpatients admit to such heavy use. Recent ingestion is more common in the inpatient population, with 44% using alcohol or drugs within the past 24 hours of admission, compared to 23% of outpatients.

Detailed analysis of the CATOR research has encouraging words for chemical dependency counselors. A client who completes treatment—either outpatient or inpatient—has a 50% chance of staying clean and sober for the year following treatment. If the client completes treatment and attends Alcoholics Anonymous (AA)/Narcotics Anonymous (NA) once a week for the next year, then he or she has a 70% chance of staying sober. If the client completes treatment and attends one AA/NA meeting and one continuing care session per week, then he or she has a 90% chance of remaining sober for the next year. These are fantastic results: Fully 90% of clients can stay sober if they complete treatment and attend AA/NA and continuing care on a regular basis (Hoffmann, 1991, 1994).