

## The Dental Learning Network



# Substance Abuse and Chemical Dependency

*3 Homestudy Credit Hours*

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# Answer Sheet - Substance Abuse and Chemical Dependency - 3 Hours

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## Course Objectives

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After finishing this course, the dental professional will be able to:

- Describe one theory of chemical dependency.
- Identify epidemiological factors related to chemical dependency.
- Discuss the process of neurotransmission.
- Describe signs that may indicate a patient is chemically dependent.
- List components of chemical dependency treatment.
- Discuss modifications in dental treatment necessary when treating a patient who is chemically dependent or recovering from chemical dependency.
- Describe the dental professional's role in preventing substance abuse.
- Describe how drugs and alcohol may interact with dental therapeutic agents.
- Discuss how chemical dependency affects the oral health team.
- Gain confidence in your ability to assess and provide appropriate dental treatment for patients who are chemically dependent or who are recovering from chemical dependency.

## Course Introduction

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Substance abuse, improper or excessive use of alcohol or other mood altering substance, occurs at an alarming rate in today's society. It is estimated that approximately 1:5 male patients in a dental practice abuse alcohol. Approximately 1:16 female patients have a substance abuse problem <sup>1</sup> alarming new trend is the misuse of prescription medications, following alcohol and tobacco use, it is the most commonly abused substance. Would you be able to identify patients in your practice who are abusing, dependent or addicted to alcohol or drugs? Although the scope of dental practice does not include diagnosis or treatment of chemical dependency, the oral health team must be aware of signs and symptoms of substance abuse and addiction. Treatment modifications are often necessary. Medical emergencies such as heart attack or stroke may occur.

Not only should dental offices and clinics should provide prevention information related to substance abuse, if a chemically dependent patient is identified, your role includes:

- assisting the individual in recognizing that he or she has a substance abuse problem,
- doing what you can to help prevent a relapse in a patient recovering from chemical dependency, and
- implementing necessary treatment modifications to ensure each patient receives safe and effective dental care.

This course will also assist you in understanding:

- prevalence and incidence of substance abuse,
- pathophysiological and psychological features of substance abusers,
- clinical manifestations of substance abuse,
- treatment options available for substance abuse, and
- dental treatment modifications for patients who are abusing or recovering from substance abuse.
- implications if a member of the oral health team is impaired.

This course is informational in nature and is not intended to provide legal advice or set a standard of care. The oral health team must comply with state and federal laws and ethical standards of their respective professional organizations, and be familiar with all aspects of providing care to individuals who are chemically dependent or in recovery. This course provides an overview of *Chemical Dependency* and should not be used as the sole basis for practice decisions.

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## Background Terminology

This section will introduce you to terms used throughout the course. Words printed in **bold** text can be found in Appendix A. It may be useful to review (Appendix A: Glossary) now. Three commonly used terms are *abuse*, *dependency* and *addiction*. Often these terms are used interchangeably. It is important to consider the differences.

**Substance abuse:** The use of illegal drugs or the inappropriate use of legal drugs. The repeated use of drugs to produce pleasure, to alleviate stress, or to alter or avoid reality (or all three).<sup>2</sup>

For example, tobacco use in any amount is considered abuse; limiting consumption of wine to one glass with dinner is not considered abuse. Abuse leads to social and legal problems and risk taking behavior such as driving under the influence.

**Chemical Dependence:** dependence is the continued use and abuse of mood altering substances despite repeated adverse consequences to self and others. The illness is determined by genetic, physiological, biochemical and emotional vulnerability.<sup>3</sup>

**Drug Addiction:** addiction is a complex brain disease. It is characterized by compulsive, at times uncontrollable, drug craving, seeking, and use that persist even in the face of extremely negative consequences. Drug seeking becomes compulsive, in large part as a result of the effects of prolonged drug use on brain functioning and on behavior. For many people, drug addiction becomes chronic, with relapses possible even after long periods of abstinence.<sup>2</sup>

Note: The difference among abuse, dependence, and addiction can be confusing and often these words are used interchangeably. For the purpose of this course, “abuse’s” definition and intent is clear chemical dependence and addition may overlap. Addiction professionals are in disagreement about how these terms should be used, and whether or not some of these terms should be abandoned. For the purpose of this course, we will use the terms as defined here and again in Appendix A: Glossary.

### Prevalence<sup>4</sup>

(U.S. Public Health Service, Substance Abuse and Mental Health Services Administration, (2006))

The **prevalence** of substance abuse is simply the number of individuals who are currently abusing drugs and/or alcohol. It is important for you to know the demographics of substance abuse. This knowledge helps you identify individuals in your own practice who are at risk, or who are currently abusing drugs or alcohol. The National Survey on Drug Use and Health (NSDUH) is conducted annually by the Substance Abuse and Mental Health Service Administration (SAMHSA) and was previously named the National Household Survey on Drug Abuse (NHSDA). This representative survey provides an estimate of the prevalence of **illicit** drug, alcohol and tobacco use in the United States (U.S.). The sample population consists of uninstitutionalized individuals age 12 or older. (Note: the term **current** means individuals who used the substance in the month prior to their interview.) Although this survey gives us a general description of drug and alcohol use in the U.S., it should not be used solely to judge individuals for risk of substance abuse.

According to the 2005 NSDUH, 22.7% of the population are **binge** drinkers, 6.6% are **heavy** drinkers.

- 29.3% of the population are current smokers, 3.3% use smokeless tobacco.
- 8.1% of the population are current illicit drug users.
- In 2005, an estimated 19.7 million Americans aged 12 or older were current (past month) illicit drug users, meaning they had used an illicit drug during the month prior to the survey interview. This estimate represents 8.1 percent of the population aged 12 years old or older.
- The overall rate of current illicit drug use among persons aged 12 or older in 2005 (8.1 percent) was similar to the rate in 2004 (7.9 percent), 2003 (8.2 percent), and 2002 (8.3 percent).
- Tobacco is the second most commonly used substance in the United States next to alcohol. However, it is the leading preventable cause of death and disability in the U.S.
- Marijuana was the most commonly used illicit drug (14.6 million past month users). In 2005, it was used by 74.2 percent of current illicit drug users. Among current illicit drug users, 54.5 percent used only marijuana, 19.6 percent used marijuana and another illicit drug, and the remaining 25.8 percent used only an illicit drug other than marijuana in the past month.
- Alarmingly, the past few years showed an increase in the abuse of pain medications, namely oxycodone (brand names such as Oxycontin, Percocet, Percodan, Tylox, and hydrocodone (Lortab, Vicodin, many other brand names.)). Beginning in 2002, new items were added to the, *2005 Monitoring the Future (MTF) Survey*, asking specifically about the use of OxyContin and Vicodin.

**Misuse of prescription medications:**

- For example, the *2006 Monitoring the Future* report of 8th, 10th, and 12th graders found that 10.5 percent of 12th graders reported using Vicodin for non-medical reasons and 4.5 percent of 12th graders reported using OxyContin without a prescription.
- Annual use of OxyContin by 12th-graders has risen from 4.0 percent in 2002 to 5.5 percent in 2005. Annual OxyContin use has remained more stable in the lower grades since 2002, with 1.8 percent of 8th-graders and 3.2 percent of 10th-graders reporting annual use in 2005. The annual prevalence rate for Vicodin was considerably higher than for OxyContin, at 9.5 percent among 12th-graders, 5.9 percent among 10th-graders, and 2.6 percent among 8th-graders in 2005. Considering the addictive potential of oxycodone and hydrocodone, these are disturbingly high rates of use. Recent news stories have highlighted the increasing number of teens and adults abusing prescription drugs, particularly painkillers.

**Table 1: Epidemiology of Drug Use (Monitoring the Future Report, 2006) <sup>5</sup>**

<b>Age</b>	<p>In 2005, Rates of current use of illicit drugs were higher for young adults aged 18 to 25 (20.1 percent) than for youths aged 12 to 17 and adults aged 26 or older, with 16.6 percent using marijuana, 6.3 percent using prescription-type drugs non-medically, 2.6 percent using cocaine, and 1.5 percent using hallucinogens</p>
<b>Race</b>	<p>Current illicit drug use was associated with race/ethnicity in 2005. The rate was lowest among Asians (3.1 percent). Rates were 12.8 percent for American Indians or Alaska Natives, 12.2 percent for persons reporting two or more races, 9.7 percent for blacks, 8.7 percent for Native Hawaiians or Other Pacific Islanders, 8.1 percent for whites, and 7.6 percent for Hispanics.</p>
<b>Gender</b>	<p>Males were more likely in 2005 to report current illicit drug use than females (10.2 vs. 6.1 percent, respectively). Males were about twice as likely to use marijuana as females (8.2 vs. 4.0 percent). However, the rates of non-medical use of prescription-type psychotherapeutics were similar for both males (2.8 percent) and females (2.5 percent).</p> <p>Among pregnant women aged 15 to 44 years, 3.9 percent reported using illicit drugs in the past month based on combined 2004 and 2005 NSDUH data. This rate was significantly lower than the rate among women aged 15 to 44 who were not pregnant (9.9 percent). The 2002-2003 combined rate of current illicit drug use among pregnant women (4.3 percent) was not significantly different from the 2004-2005 combined rate.</p>
<b>Geography</b>	<p>Among persons aged 12 or older, the rate of current illicit drug use in 2005 was 9.0 percent in the West, 8.9 percent in the Northeast, 7.5 percent in the South, and 7.5 percent in the Midwest.</p> <p>The rate of current illicit drug use in metropolitan areas was higher than the rate in non-metropolitan areas in 2005. The rates were 8.4 percent in large metropolitan counties, 8.4 percent in small metropolitan counties, and 6.9 percent in non-metropolitan counties as a group. Within non-metropolitan areas, counties that were urbanized had a rate of 7.8 percent, less urbanized counties had a rate of 6.5 percent, while completely rural counties had a rate of 5.1 percent.</p> <p>The rate of current illicit drug use in completely rural counties had declined between 2002 and 2003, from 6.7 to 3.1 percent, but then increased to 5.1 percent in 2005. The rate in 2005 was not significantly different from the rate in 2004 (4.6 percent).</p> <p>Among youths aged 12 to 17, there was evidence of regional differences in trends of marijuana use between 2002 and 2005. Current marijuana use rates declined in the Northeast, Midwest, and South between 2002 and 2005. In the West, the rates were steady between 2002 and 2004 (8.0 percent in 2002, 8.7 percent in 2003, and 9.3 percent in 2004) and then declined to 6.8 percent in 2005.</p>

**Table 1: Epidemiology of Drug Use (Monitoring the Future Report, 2006) <sup>5</sup>**

<b><i>Education</i></b>	Illicit drug use in 2005 was associated with educational status. Among adults aged 18 or older, the rate of current illicit drug use was lower among college graduates (5.0 percent) compared with those who did not graduate from high school (9.8 percent), high school graduates (8.6 percent), and those with some college (8.9 percent). However, adults who had graduated from college were more likely to have tried illicit drugs in their lifetime when compared with adults who had not completed high school (51.7 vs. 37.7 percent).
<b><i>Employment</i></b>	Illicit drug use in 2005 was associated with educational status. Among adults aged 18 or older, the rate of current illicit drug use was lower among college graduates (5.0 percent) compared with those who did not graduate from high school (9.8 percent), high school graduates (8.6 percent), and those with some college (8.9 percent). However, adults who had graduated from college were more likely to have tried illicit drugs in their lifetime when compared with adults who had not completed high school (51.7 vs. 37.7 percent).

## **Incidence**

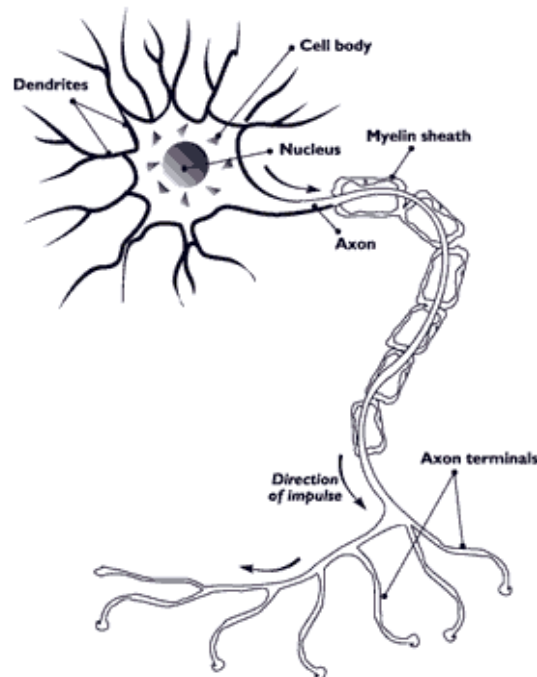
The **incidence** of drug and alcohol use is defined as the number of individuals who tried drugs or alcohol for the first time within a given time period. The incidence of drug and alcohol abuse provides a useful measure of emerging patterns of substance abuse. These estimates are for 2005 NSDUH unless otherwise indicated. In 2005, an estimated 2.9 million persons aged 12 or older used an illicit drug for the first time within the past 12 months; this averages to nearly 8,000 initiates per day. Most initiates (56.1 percent) were younger than age 18 when they first used, *and the majority of new users (56.2 percent) were female*. The average age at initiation among persons aged 12 to 49 was 18.7 years.

<b>Substance</b>	<b>New Users During 2005</b>
<b><i>Alcohol</i></b>	4.3 million
<b><i>Prescription Drug Abuse</i></b>	2.5 million
<b><i>Cigarettes</i></b>	2.3 million
<b><i>Marijuana</i></b>	2.1 million
<b><i>Hallucinogens</i></b>	953,000
<b><i>Inhalants</i></b>	877,000
<b><i>Cocaine</i></b>	872,000
<b><i>Methamphetamine</i></b>	192,000
<b><i>Heroin</i></b>	108,000

**Anatomy: Diagram of a Neuron**

An understanding of brain anatomy is the next important component of learning how the addiction process occurs. The brain is made up of millions of nerve cells, or **neurons**. Neurons act as the body's communication system. Neurons are made up of four basic parts, (a) the cell body, or soma, (b) dendrites, (c) axon, or nerve fiber, and (d) axon terminal (Figure 1).

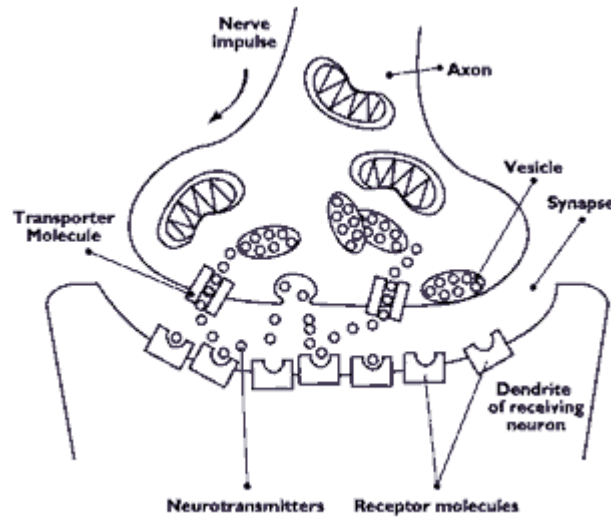
**Figure 1**



The cell body and dendrite are primarily responsible for receiving messages from other neurons. The axon is the transmitter, taking messages away from the cell body. This message transfer from the axon of one nerve cell to the dendrite of another nerve cell is called **neurotransmission**. When action potentials reach axon terminals **neurotransmitters** are released. **Neurotransmitters** are a chemical messenger of neurologic information that is released from a nerve cell, which thereby transmits an impulse from a nerve cell to another nerve, muscle, organ, or other tissue. Next, neurotransmitters diffuse across the synaptic cleft to bind with specific receptors on the dendrite of the 'message receiving' neuron.

The neurotransmitter *stimulates* or *inhibits* an electrical response in the receiving neuron. It is important to appreciate that it is the receptor that dictates the neurotransmitter's effect.

**Figure 2. Neurotransmission (NIDA, 2006)** [6](#)



More than 40 neurotransmitters have been identified. **Psychoactive** drugs change neurotransmission. Table 3 lists several neurotransmitters, their function and the drugs that affect them.

**Table 3: Neurotransmitters and Their Function, NIDA, 2006 <sup>16</sup>**

Neurotransmitter	Function	Substance
<b>Acetylcholine</b>	Usually excitatory. Controls fine muscle, memory.	Nicotine Marijuana
<b>Norepinephrine</b>	Usually excitatory. Controls brain activity and mood.	Nicotine Caffeine Cocaine Amphetamines
<b>Dopamine</b>	Inhibitory. Pleasure, satisfaction and reward.	Cocaine Amphetamines Nicotine
<b>Glutamate</b>	Excitatory.	Alcohol PCP
<b>GABA (Gamma Amino Butyric Acid)</b>	Inhibitory. Calming. Anti-anxiety.	Alcohol Benzodiazepines Barbiturates
<b>Endorphins &amp; Enkephalins</b>	Inhibitory. Controls pain. Satisfaction.	Alcohol Nicotine
<b>Serotonin</b>	Inhibitory. Controls pain. Mood control & Sleep.	Alcohol Amphetamines Cocaine Caffeine

### **Epidemiology**

*Biological factors* are that of cellular alteration. Change at the cellular level can lead to tolerance, dependence and eventually create withdrawal symptoms if the cellular affecting substance is no longer used. The National Institute of Drug Abuse provides extensive information on physiological aspects of addiction.

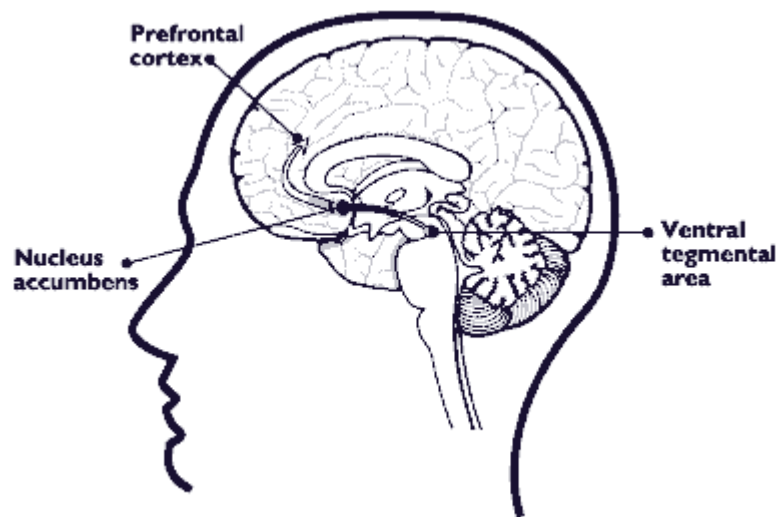
*Behavioral or environmental process* of addiction holds that a person goes through specific behavioral stages (Table 4). According to Nakken, (1996) <sup>7</sup> during Stages 1 and 2 it is possible for the individual to abstain from use of the drug. Once the individual enters Stage 3, it is impossible for the substance-using individual to choose abstinence without intervention, treatment, and long-term after care.

Table 4: Stages of Addiction (Nakken, 1996) <sup>7</sup>		
Stage	Name	Description
1	Internal Change	Changes occur within the individual. May not be noticeable to others
2	Life Style Change	Lifestyle changes occur. Intoxication occurs often.  May encounter consequences for use.
3	Life Breakdown Stage	Addicts want to stop but cannot. Suicide and accidental death more frequent.

**A Brain Disease:** Most recent research on addiction has focused on the brain's drug reward system. Pleasure is a powerful reinforcer of behavior. The brain's pleasure center, the ventral tegmental area (VTA), is part of the "survival center" of our brain. Although it is not the only brain system involved in reward, the ventral tegmental system can be activated by both **exogenous** and **endogenous** stimuli. This system also offers natural rewards associated with eating, sexual and maternal behavior. Once activated, brain reward systems produce a range of mood changes from slightly elevated to euphoric.

Addictive drugs activate the VTA's pleasure circuit in powerful way, creating in the individual a strong desire to repeat the behavior (drug taking). This continued use of psychoactive drugs might eventually alter neurons and their normal functions forever. This alteration causes the user to be less sensitive to "normal activators" of the reward system (e.g., sex and eating) and creates in the individual a drug-seeking behavior.

Figure 3, (NIDA, 2006) <sup>8</sup>



## **Models of Addiction and Alcoholism**

Addiction and alcoholism, like any other chronic diseases, are multifactorial in nature. The role of how certain biological, social, and environmental factors interact is not completely understood. As a result of this cunning, baffling disease, several different models of addiction/alcoholism appear in the literature.

The American Society of Addiction Medicine (2006) <sup>8</sup> regards addiction as a lifelong disease involving biological, environmental, psychosocial and spiritual factors.

<b>Table 5: Signs of Addiction</b>
Increased consumption with increased <b>tolerance</b>
Increased desire for persistent and regular use of the drug
Loss of control, attempts to stop result in inability to stop and/or withdrawal
Continued use despite physical, psychological, social and legal ramifications
Compulsive drug-seeking behavior
Social Isolation
Suicidal thoughts and attempts

The factors that may play a role in making an individual susceptible to chemical dependency and addiction include:

### **Biological Factors:**

- Genetics (heredity)
- Age
- Race/ethnicity
- Gender
- Route of administration (inhalation, oral, mucosal)

### **Psychosocial Factors:**

- Family of Origin
- Education
- Occupation
- Cultural/religious beliefs

**Environmental Factors:**

- Availability of substance
- Peer pressure
- Media
- Substance abuse by family members
- Community environment (poverty, unemployment, crime)
- Geographic location
- Legal ramifications

**Table 6: Incidence of Dependence and Abuse,  
2005 National Survey of Drug Use and Health**

<b>Substance Depended On or Abused</b>	<b>Number of People</b>
<b><i>Alcohol</i></b>	14.8 million
<b><i>Illicit Drugs</i></b>	3.8 million
<b><i>Both Alcohol and Illicit Drugs</i></b>	3.1 million

# Classification and Characteristics of Psychoactive Substances

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## **Introduction**

This section provides a general description of several psychoactive substances including depressants such as opiates, opioids, and benzodiazepines and barbiturates, stimulants including methamphetamine and others, hallucinogens, and inhalants. Although the following information does not contain every known substance in each category, the more commonly abused substances are provided.

Oral findings and dental management will be covered later in this course in the section “Implications for Dental Treatment.”

It is important to recognize that addiction to a substance is more likely the faster the onset of action is. In prescribing medication, choosing one with a longer onset of action may be better choice for a recovering abuser than to risk the more addictive, faster onset of action medications.

## **Central Nervous System Depressants** <sup>(9, 10)</sup>

CNS depressants include such drugs as alcohol, benzodiazepines, and barbiturates.

## **Action & Use**

These drugs slow nervous system activity and are used to produce sedation, treat pain, reduce anxiety and treat sleep disorders. These drugs have a high potential for abuse and tolerance to the drug develops quickly. These drugs are often abused in combination with alcohol.

Alcohol is the most widely abused drug. It reaches the bloodstream within 5 minutes of ingestion and is carried to all parts of the body. Alcohol affects many neurotransmitter receptors and is believed to activate the pleasure/reward system of the brain. Alcohol is often abused in conjunction with other substances. Alcohol acts to affect other drug’s availability. This means it may increase or decrease the activity and effectiveness of other drugs and may alter the drug into a toxic chemical that can damage the liver and other organs.

Some alcohol-drug interactions include antibiotics, anticoagulants, antidepressants, antidiabetic medications, antihistamines, antipsychotic drugs, antiseizure medications, narcotic and non-narcotic pain relievers and cardiovascular medications.

**Binge drinking** is defined as consuming more than five drinks or more on one occasion on one day within the past 30 days. Results from the 2004 National Survey on Drug Use and Health. <sup>4</sup>

**Moderate drinking** is defined as two drinks per day for males and one drink per day for females. A drink is defined as a 12-ounce beer or wine cooler or 5 ounce glass of wine or 1.5 ounces of distilled liquor. <sup>10</sup>

Barbiturates (e.g., Amytal, Phenobarbital, Seconal, Nembutal) are used to treat anxiety, insomnia, and as an anticonvulsant. These drugs produce effects similar to alcohol. These drugs enhance GABA receptors, which inhibit CNS activity. They do not reduce sensations of pain. Medical use of barbiturates has decreased with the introduction of benzodiazepines.

Benzodiazepines <sup>9, 10</sup> (e.g., Valium, Xanax, Ativan, and Halcion) are often abused by both adolescents and adults. Most commonly used in the treatment of panic disorders with or without agoraphobia, anxiety disorders or for short-term relief of symptoms of anxiety including anxiety associated with depression, and prevention of seizures. Dental patients who abuse or are dependent may complain of TMJ pain or fear of dental treatment. Patients who abuse or are addicted to stimulant drugs may also seek sedatives to abate withdrawal from such drugs as cocaine and methamphetamine.

Withdrawal from this drug group can be lethal and should be done under a physician's direction. Alcohol heightens the effects of these drugs and can lead to lethal overdose.

Rohypnol (brand name for flunitrazepam), while illegal in the United States, is a legal drug in many countries and is used to treat sleep and psychiatric disorders. This drug is commonly taken with other drugs (heroin, cocaine and alcohol) and is ten times stronger than Valium. This drug has become increasingly popular because it is easy to obtain and relatively inexpensive. It is also known as "the date rape drug" because men have been known to drop it into women's drinks causing them to black out and thereby creating a potential rape situation. If given a sufficient dose (2-mg), the woman will have no recollection of events occurred while under the influence.

Ketamine is used in veterinary medicine. It produces a disassociated state and impaired perception. It has both analgesic and amnesic properties. There is no depression of the CNS, but there is depressed respiratory function. It has been used in sexual assaults. It goes by the street name "Special K." <sup>(10)</sup>

<b>Table 7: CNS Depressants</b>	
<b>General Effects</b>	<ul style="list-style-type: none"> <li>• Slow down nervous system activity</li> <li>• Decrease anxiety</li> <li>• Drowsiness</li> <li>• Relax muscles</li> <li>• Sedation</li> <li>• Dilated blood vessels</li> <li>• Dilated pupils</li> </ul>
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"> <li>• Ingested</li> <li>• Injected</li> <li>• Smoked</li> <li>• Snorted</li> </ul>
<b>Withdrawal Symptoms</b>	<ul style="list-style-type: none"> <li>• Seizures</li> <li>• Hallucinations</li> <li>• Tremors</li> <li>• Agitation</li> <li>• Irritability</li> <li>• Sweating</li> <li>• Anxiety</li> </ul>

### **Opioids and Opiates (Narcotics)** <sup>9,10</sup>

Opioids are a synthetic form of opiates and include Darvocet, Vicodin, Dilaudid, Demerol, Percocet, Oxycontin, and Fentanyl. Opioids are commonly prescribed for relief of dental pain because of their effective analgesic, or pain relieving, properties. Studies have shown that properly managed medical and dental use of opioid analgesic compounds is safe and rarely causes addiction. Taken exactly as prescribed, opioids can be used to manage pain effectively.

Hydrocodone is one of the most abused prescription drugs. Our patients who are abuse or are addicted to opioids may feign dental pain in order to get a prescription. This is one example of drug seeking behavior.

Fentanyl is a potent opioid drug 80-100 times more potent than morphine. This drug is commonly used during surgery and has lead to addiction and death of health care workers who have access to this to it. Fentanyl has been formulated into a “lolly-pop,” intended for use by chronic pain patients. Several narcotics are now available in transdermal patches again intended for management chronic pain. Abuse of both patches and “lolly-pops” by both teens and adults is increasing at alarming rates.

The opiate class includes such drugs as opium, codeine, morphine, and heroin. Opium, codeine and morphine can be extracted directly from the opium plant. Heroin is the most addictive opiate because it penetrates the brain the fastest. There is no therapeutic use for heroin. There has been an increase in the use of heroin in the past few years. The increase is due to modification of heroin into a more pure form that can be smoked or ingested rather

than injected intravenously a practice that became popular as the public learned that IV drug use was responsible for spread of infectious diseases such as HIV and/or hepatitis.

<b>Table 8: Opiates &amp; Opioids (Narcotics) <sup>9, 10</sup></b>	
<b>Action &amp; Use</b>	These drugs (along with amphetamines and cocaine) offer the most powerful activation of the drug reward system. Activation of opiate receptors in the brain produces sensations of pleasure (reward) and pain relief (analgesic). Opiates may also be used as antidiarrheal and <b>antitussive</b> agents.
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"> <li>• Oral (ingested and transmucosal)</li> <li>• Snorted</li> <li>• Smoked</li> <li>• Injected (increased risk of hepatitis, HIV and blood poisoning)</li> </ul>
<b>Effects</b>	<ul style="list-style-type: none"> <li>• Vomiting</li> <li>• Drowsiness</li> <li>• Depressed respiration</li> <li>• Constricted (pinpoint) pupils</li> </ul>
<b>Prolonged Use/Abuse</b>	<ul style="list-style-type: none"> <li>• Physical and psychological dependence</li> <li>• Constipation</li> <li>• Congested lungs</li> <li>• Peptic and duodenal ulcers</li> <li>• Diabetes</li> <li>• Liver disease*</li> <li>• Death</li> </ul> <p>*narcotics pain relievers are commonly made with acetaminophen; abuse of these drugs expose the user to prolonged doses of acetaminophen</p>
<b>Withdrawal Symptoms</b>	<p>(Usually begin within 24 hours after the last use and may last up to 10 days)</p> <ul style="list-style-type: none"> <li>• Yawning</li> <li>• Diarrhea</li> <li>• Runny, itchy nose</li> <li>• Uneasiness</li> <li>• Weight loss</li> <li>• Abdominal cramps</li> </ul>
<b>Withdrawal Symptoms</b>	<p>A careful review of opiate withdrawal symptoms is important for dental professionals. Persons seeking drugs in the dental office often present with these clinical manifestations.</p>

DMX (dextromethorphan) <sup>9,10</sup> Recent news reports have addressed the abuse of DMX found in over the counter (OTC) cough depressants taken in extremely high doses. At the doses recommended for treating coughs (1/6 to 1/3 ounce of medication, containing 15 mg to 30 mg dextromethorphan), the drug is safe and effective. At much higher doses (4 or more

ounces), dextromethorphan produces dissociative effects similar to those of PCP and ketamine. One slang term for use is “skittling” since pills resemble Skittles candy.

“Robo shaking” describes a behavior that involves drinking large amounts of DMX containing cough syrup. Once the syrup is consumed vomiting is immediately induced making most of the DMX absorb into the stomach lining. The purpose is to enhance DMX effects and expel unwanted ingredients. (National Clearinghouse on Drug Abuse, 2001)

### **Central Nervous System Stimulants** <sup>9, 10, 11</sup>

Cocaine, amphetamines, methamphetamines, nicotine and even caffeine stimulate brain and/or spinal cord activity. The physiologic process for each is slightly different. These substances (along with opiates and opioids) powerfully activate the brain’s reward system and decrease the rewarding effect of normal behavior.

#### **Action & Use**

Cocaine prevents the reabsorption of dopamine, which results in intense feelings of pleasure. Effects occur within a few minutes and disappear within an hour. Because of its immediate effects, cocaine is highly addictive.

Crack is an even more addictive form of cocaine. Unlike cocaine, the effects of crack only last a few minutes and many users become addicted after their first use of the drug. There are more hospitalizations per year resulting from crack and cocaine use than any other illicit substance. <sup>10</sup>

Amphetamines may be used medically to treat attention deficit disorders and obesity among other conditions. They are also used to avoid sleep and improve performance. Amphetamines act by altering the amount of neurotransmitters in the brain.

Methamphetamine initially causes release of dopamine and norepinephrine from their storage vesicles in the neuron. Once released, methamphetamine prevents the breakdown of dopamine and norepinephrine within the nerve cell. This excess of neurotransmitters is then carried into the synapse. Increased, synaptic concentrations of dopamine causes feelings of euphoria, while excess norepinephrine may be responsible for the alertness and anti-fatigue effects of methamphetamine.

Nicotine is only found in the tobacco plant. Nicotine stimulates acetylcholinergic receptors located in the pleasure center of the brain. Nicotine is highly addictive.

Caffeine, the most widely used stimulant, inhibits an enzyme that acts as a messenger for several neural transmission systems including norepinephrine. It does not ordinarily pose a threat to health.

Adderall® <sup>12</sup>, a single-entity amphetamine product, was introduced in 1996 as instant-release tablets, which has since become available as the generic formulation "mixed amphetamine salts." The active ingredients of Adderall include a combination of dextroamphetamine and racemic amphetamine salts. The sale of Adderall XR has been suspended in Canada due to fatalities related to its use. Reports of misuse by children and teens include crushing the drug and then snorting or smoking the powder.

Ritalin®, Concerta®, and Strattera®, are other drugs commonly prescribed to children to control attention deficit disorder.

<b>Table 9: CNS Stimulants</b>	
<b>General Effects</b>	<ul style="list-style-type: none"> <li>• Increase nervous system activity</li> <li>• Increase heart rate and blood pressure</li> <li>• Increase gastric and adrenal secretions</li> <li>• Nausea, vomiting, diarrhea</li> <li>• Xerostomia</li> <li>• Headache</li> <li>• Fever</li> <li>• Loss of coordination</li> <li>• Mood swings</li> <li>• Loss of appetite</li> <li>• Dilated pupils</li> <li>• Long periods without sleep (24-120 hours) followed by long periods of sleep (24-48 hours) (methamphetamine)</li> </ul>
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"> <li>• Snorted</li> <li>• Smoked</li> <li>• Injected</li> <li>• Ingested</li> <li>• Rubbed into gums</li> <li>• Rectal insertion</li> </ul>
<b>Withdrawal Symptoms</b>	<ul style="list-style-type: none"> <li>• Depression</li> <li>• Severe hunger</li> <li>• Exhaustion</li> </ul>
<b>Mental Symptoms</b>	<ul style="list-style-type: none"> <li>• Paranoia</li> <li>• Anxiousness</li> <li>• Nervousness</li> <li>• Agitation</li> <li>• Extreme Mood Swings</li> <li>• Hallucinations</li> <li>• Delusions</li> </ul>

**Hallucinogens (Psychedelics)** <sup>9, 10</sup>

These drugs cause an altered state of perception and distortion of reality. There is no physical or psychological need to repeat drug use, but individuals often desire to repeat the experience. These drugs have no medical purpose. Hallucinogens can be man-made or grown naturally.

## Action & Use

The effect on brain chemistry varies depending on the substance but generally these substances overly activate serotonin receptors and may cause excess dopamine to be released.

LSD (Acid) is produced from a fungus that grows on grain, especially rye. It produces widespread hallucinogenic effects by binding with serotonin receptors causing greatly increased activation.

DOI <sup>10</sup>: According to *Street Drugs*, DOI is a hallucinogenic phenethylamine that has recently appeared on college campuses in the United States. Its effects are similar to LSD and is distributed in tablet and paper form.

MDMA (Ecstasy), a synthetic drug, is similar to methamphetamine and causes an increase in the release of serotonin and dopamine. This drug is believed to permanently destroy serotonin receptors. (See Appendix B)

PCP is not considered a true hallucinogen, but is included in this group due to the similarity in effects with hallucinogenic drugs. It rarely produces hallucinations. PCP alters body perception and may mimic symptoms of schizophrenia. Long-term use may cause permanent memory loss and difficulty with speech.

<b>General Effects</b>	<ul style="list-style-type: none"><li>• Visual and/or auditory distortions</li><li>• Rapid emotional swings</li><li>• Delusions</li><li>• Sexual dysfunction</li><li>• Decreased muscle coordination</li><li>• May develop chronic mental disorders following long term use</li></ul>
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"><li>• Injected</li><li>• Ingested</li><li>• Swallowed (e.g., paper soaked with LSD)</li><li>• Ocular (LSD dropped into eyes with an eyedropper)</li><li>• Smoked</li><li>• Sniffed</li></ul>
<b>Withdrawal Symptoms</b>	Although psychological dependence is likely, no withdrawal symptoms occur when use is discontinued.

### **Cannabis (Marijuana)** <sup>(13)</sup>

Marijuana is the most abused illicit drug. It is the dried leaf of the cannabis plant. The active ingredient in marijuana is Tetrahydrocannabinol (THC). Marijuana cigarettes contain more of the known carcinogen, benzopyrene, than tobacco cigarettes. It is often referred to as a gateway drug. This means that an individual is likely to begin any experimentation with illicit drugs with marijuana and then progress to, so-called, harder drugs (e.g., cocaine, heroin, acid). In recent years the THC content of marijuana has increased from approximately one percent in 1974 to 6-33% today. SD page 69. Nearly 45% of U.S. teenagers try marijuana before finishing high school. <sup>13</sup>

#### **Action & Use**

THC binds to cannabinoid receptors and interferes with the part of brain that is responsible for muscle movement, sensory perception and memory. The addictive potential of marijuana is still under debate. THC has been used to counteract the nausea an individual may experience while undergoing chemotherapy, provide relief from glaucoma, stop convulsions, reduce muscle spasms and stimulate appetite. The use of marijuana for medical purposes is a highly controversial issue.

**Table 11: Cannabis** [9](#), [10](#), [13](#)

<b>General Effects</b>	<ul style="list-style-type: none"><li>• Increased pulse rate</li><li>• Bronchial passages relax and expand</li><li>• Blood vessels of eyes dilate</li><li>• Xerostomia</li><li>• Increased appetite</li><li>• Apathy</li><li>• Impaired immune symptoms</li><li>• Confusion</li><li>• Impaired coordination</li><li>• Increased risk of lung cancer, chronic bronchitis</li><li>• Impaired memory (temporary and permanent)</li></ul>
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"><li>• Smoked</li><li>• Oral ingestion</li></ul>
<b>Withdrawal Symptoms</b>	<ul style="list-style-type: none"><li>• Irritability</li><li>• Sleeplessness</li><li>• Anxiety</li><li>• Increased aggression has been displayed peaking approximately one week after the last use of the drug</li></ul>

### **Inhalants** <sup>(14)</sup>

Inhalants are breathable chemicals that produce vapors that alter brain activity. Deaths have been reported. Inhalants are often among the first drugs used by children and teens since they are readily available in their homes and easier to procure than alcohol. Most inhalant abusers are younger than age 25. One national survey indicates that about 3 percent of U.S. children have tried inhalants by the time they reach fourth grade. Today 46 states have induced legislation to prevent sell of inhalants to minors <sup>9</sup>

### **Actions & Use**

Most inhalants slow down body function yet the individual user may, depending on dosage levels, feel stimulated. Inhalants affect both the Central Nervous System (CNS) and the peripheral nervous system (PNS). Inhalants are attracted to fatty tissues within the body. The absorption of the chemical agent into **myelin** (fatty tissue surrounding the nerve axon) may result in polyneuropathy. As described later in this section, inhalants are used for legitimate non-medical purposes. Medical/Dental uses of inhalants include nitrous oxide (conscious sedation) and amyl nitrite (treatment of angina pectoris). Interestingly, individuals do not develop a **tolerance** to inhalants. Immediate death is very likely when using inhalants. Users may suffer asphyxia, suffocation, choking on vomit or sudden sniffing death

syndrome (SSD). SSD is the result of a sudden and unexpected disturbance of the heart's rhythm. All inhalants, including nitrous oxide, can produce SSD.

Volatile solvents - (Paint thinners, gasoline, glue, cleaning solutions, nail polish, etc.) Commonly found in the workplace, home and at school, volatile solvents contain toluene. Vital organs rapidly absorb and store toluene, causing serious tissue damage and alteration. SSD caused by cardiac arrhythmia can also occur. Serious burn injury is common due to the highly flammable nature of these substances.

Aerosols - (Spray paint, hairspray, air fresheners, lighter fluid, etc.) Individuals abusing these substances risk permanent damage to vital organs, and SSD due to cardiac arrhythmia and pulmonary collapse.

Nitrous oxide - Nitrous oxide mixed with oxygen provides effective analgesia for dental and medical procedures. Nitrous oxide is also used as a propellant for whipped cream and as a source of injected oxygen in the automotive industry. Nitrous oxide can be easily procured at restaurant supply stores. Another source is coffee specialty shops where teenagers often work and have easy access to nitrous oxide cartridges or "whippets." A "high" can be reached in less than 30 seconds when inhaling 50 to 75 percent nitrous oxide. Deaths have been reported when users attempt to achieve a higher state of euphoria by breathing higher concentrations or pure N<sub>2</sub>O in by placing their head inside a plastic bag. Long-term exposure (several minutes) is not necessary before death occurs.

The Compressed Gas Association, OSHA, and NIOSH are some reputable agencies that provide information on how to protect personnel from accidental exposure and how to prevent nitrous oxide abuse in the dental practice setting. (See Appendices)

Nitrites - Amyl nitrite (poppers) was once used to treat angina pectoris. Nitrites are abused to enhance sexual experiences. Combining "popper" use with Viagra has also been reported along with subsequent death of some individuals. [9](#)

Studies have linked the chronic abuse of solvents to severe, long-term damage to the brain, the liver, and the kidneys.

Harmful irreversible effects that may be caused by abuse of specific solvents include:

- **Hearing loss** - toluene (spray paints, glues, dewaxers) and trichloroethylene (dry-cleaning chemicals, correction fluids)
- **Peripheral neuropathies, or limb spasms** - hexane (glues, gasoline) and nitrous oxide (whipped cream dispensers, gas cylinders)
- **Central nervous system or brain damage** - toluene (spray paints, glues, dewaxers)
- **Bone marrow damage** - benzene (gasoline)

**Table 12: Inhalants**

<b>General Effects</b>	<ul style="list-style-type: none"><li>• Loss of appetite</li><li>• Dizziness</li><li>• Slurred Speech</li><li>• Halitosis</li><li>• Eye Irritation</li><li>• Headache</li><li>• Tinnitus</li><li>• Chest pain</li><li>• Muscle weakness</li><li>• Permanent damage to nervous system</li><li>• Brain, liver, kidney, blood and bone marrow damage</li></ul>
<b>Peri-oral signs</b>	<ul style="list-style-type: none"><li>• Chemical burns and/or sores around nose and mouth</li><li>• Colored areas (paint and other inhalants around nose and mouth)</li></ul>
<b>Method(s) of Administration</b>	<ul style="list-style-type: none"><li>• Inhaling</li><li>• Bagging (inhaling fumes from a plastic bag or balloon) OR placing bag over head and releasing inhalant</li><li>• Huffing (stuffing an inhalant soaked rag into the mouth)</li></ul>
<b>Withdrawal Symptoms</b>	Although psychological dependence is likely, no withdrawal symptoms occur when use is discontinued.

Prochaska, DiClemente and Norcross have studied the process of change known as the *Transtheoretical Model of Change*, <sup>15</sup> although this change model was originally designed for smoking cessation it is applicable to any form of substance abuse.

Stages of change include:

1. Precontemplation
2. Contemplation
3. Preparation
4. Action
5. Maintenance
6. Relapse

**Precontemplation stage** - an individual may be unaware of their problem and if aware, has no intention of changing.

**Contemplation stage** - an individual devotes serious thought to overcoming the problem but has not yet committed to any action.

**Preparation stage** - an individual plans to take action within a certain time frame.

**Action stage** - an individual is successful in modifying their behavior.

**Maintenance stage** - an individual continues to change and takes action to prevent relapse. An individual who has been drug free post-6 months to 5 years is considered in this stage.

**Relapse** - recovery from addiction is considered a continuous process rather than a discrete event. By definition, relapse is expected in and defined as, a criterion for chemical dependency and addiction.

The dental professional's must understand which stage of change the user is in so effective communication can occur. Precontemplators have no interest in changing behavior and are also known as contented users. During this stage, our role is to communicate the message that oral health team members can serve as a referral source if the user does decide to make a quit attempt. Our greatest role is to motivate contemplators into the preparation stage of change by showing empathy and understanding of this disease. We must never be judgmental or critical. Influence is greatest during the *Contemplative* and *Maintenance* phase. By actively questioning the patient about substance use and abuse, you cause the patient to consider their current drug or alcohol problem. Patients who have entered the *Maintenance* phase will require dental treatment modification to avoid relapse. Patients who have relapsed should be treated, as precontemplators or contemplators and the oral health team should encourage another cessation attempt.

Today, there are several components and combinations of care commonly offered to individuals seeking or requiring treatment for substance abuse, dependency and addiction.

These options include:

1. Detoxification programs
2. Intensive treatment
3. Residential programs
4. Outpatient services

Pharmacotherapy (Antabuse®, Methadone®, naltrexone, bupernorphrine, Chantix®, nicotine replacement products,)

5. Aftercare
6. Maintenance
7. Education
8. Adjunctive services
9. Combination of above listed treatment modalities

Nontraditional treatments may include:

- self-help groups (Alcoholics Anonymous, Narcotics Anonymous, Cocaine Anonymous, Rational Recovery etc.),
- controlled or moderated drinking (the individual rejects total abstinence),
- acupuncture
- biofeedback.

Individuals may require all of these components over time and some may only need a select few. Additionally, the length of stay, intensity or amount of treatment, characteristics of patient and therapist, and costs related to treatment are factors in treatment success.

**Behavioral Treatments** help patients engage in the treatment process, modify their attitudes and behaviors related to drug abuse, and increase healthy life skills. Behavioral treatments can also enhance the effectiveness of medications and help people stay in treatment longer.

**Pharmacotherapy.** Understanding the affect of different agents used in pharmacotherapy is important for the dental professional.

Buprenorphine is a relatively new and important treatment medication. NIDA-supported basic and clinical research led to the development of buprenorphine (Subutex or, in combination with naloxone, Suboxone), and demonstrated it to be a safe and acceptable addiction treatment. It is commonly used in treatment for opioid addiction. While these products were being developed in concert with industry partners, Congress passed the Drug Addiction Treatment Act (DATA 2000), permitting qualified physicians to prescribe narcotic medications (Schedules III to V) for the treatment of opioid addiction. This legislation created a major paradigm shift by allowing access to opiate treatment in a medical setting rather than limiting it to specialized drug treatment clinics. <sup>16</sup>

Methadone, a synthetic narcotic, is used in treatment of narcotic addiction. Methadone is usually taken once per day and will nearly block the euphoric effect of heroin. Individuals can become addicted to Methadone.

Naltrexone, (Depade®, ReVia®), may also be useful in treating alcoholics. In addition, an injectable, long-acting form of naltrexone (Vivitrol®) is available. This medication acts in the brain to reduce craving for alcohol after someone has stopped drinking.

Acamprosate (Campral®) is now used in the treatment of alcoholism. It is thought to work by reducing symptoms that follow lengthy abstinence, such as anxiety and insomnia. [17](#)

Chantix (varenicline) used in conjunction with nicotine replacement therapy and behavioral counseling has been scientifically evaluated and shown to increase quit success among smokers. According to Gonzales et al, varenicline was significantly more efficacious than placebo for smoking cessation at all time points and significantly more efficacious than bupropion SR at the end of 12 weeks of drug treatment and at 24 weeks. [18](#)

A once commonly used medication for treatment of alcoholism; disulfiram (Antabuse®) is infrequently used today. It does not block cravings but discourages drinking by making the person taking it feel sick after drinking alcohol.

# Identification of the Abusing Patient

## Introduction

Understanding the general nature of chemical abuse, dependency and addiction is critical for any oral health team member. As informed members of the health care community, dental professionals are responsible for recognizing drug-abusing behavior and clinical manifestations of substance abuse and dependency. Every member of the oral health team must understand how a patient's substance use or abuse impacts dental care.

## Screening Methods

Screening for drug and alcohol problems is appropriate:

- as part of the routine dental visit,
- before prescribing or using a medication or agent that will adversely interact with drugs or alcohol or cause relapse in a recovering substance abuser, and
- in response to manifested problems that may be alcohol or drug related

The screening method for alcohol and drug problems may be a formal or informal procedure and can occur in many settings. Written or verbal tests, observation of behavior, health questionnaires, physical exams or laboratory tests can be used to assess an individual's current or previous drug use. The dental professional will mostly likely rely on observation of behavior, physical findings and verbal or written tests to aid in identification of substance abusers.

## Written Assessments

The **CAGE Questionnaire (Table 13)** consists of four questions and inquires only about alcohol use. <sup>19</sup>

<b>Table 13: CAGE Questionnaire</b>
Have you ever felt you should <b>C</b> ut down on your drinking or drug use?
Have people <b>A</b> nnoyed you by criticizing your drinking or drug use?
Have you ever felt bad, or <b>G</b> uilty about your drinking or drug use?
Have you ever taken a drink or used drugs first thing in the morning to steady your nerves or get rid of a hangover? ( <b>E</b> ye opener).
<i>Two or more positive answers suggest that the individual may have an alcohol or drug-related problem</i>

NIDA suggest the following screening questions to be used with adolescent patients:

1. Have you ever ridden in a car driven by someone (including yourself) who had been using alcohol or drugs?
2. Do you ever use alcohol or drugs to relax, feel better about yourself, or fit in?
3. Do you ever use alcohol or drugs when you are alone?
4. Do you ever forget things you did while using alcohol or drugs?
5. Does your family or friends ever tell you to cut down on your drinking or drug use?
6. Have you ever gotten into trouble while you were using alcohol or drugs?

NIDA recommends use of several drug use questionnaires, one of which is the *Drug Abuse Screening Test (DAST-10)*. This questionnaire provides definitions of drug abuse prior to the questions section to promote clarity. Although not generally used in the private dental practice settings, these instruments may be useful and can be administered in 10 to 15 minutes with minimal special training.

### Health History

Questions regarding current or previous drug and alcohol use (licit or illicit) should be a part of a dental health history questionnaire. The American Dental Association is a resource for such form.<sup>20</sup> Since patients may be reluctant to answer honestly, they should be reassured that honest responses are both kept confidential and are necessary to in order to provide the best oral health care possible. When patients sign HIPAA documents the office manager or receptionist may reiterate this to the patient.

Examples of questions that can be included in a dental health questionnaire:

1. Please list all prescription and nonprescription drugs/medications you are currently taking.
2. Have you taken any prescription or nonprescription drugs/medications within the past 48 hours?
3. Do you consume alcoholic beverages?
  - a. Type?
  - b. Frequency?
4. Do you use tobacco products?
  - a. Type?
  - b. Frequency?
  - c. Are you interested in quitting?
5. Are you currently undergoing treatment for alcohol or drug addiction?
6. Have you ever been treated for alcohol and/or drug addiction?

Verbal questioning should be handled in a private, non-threatening to ensure patient confidentiality. An empathic and nonjudgmental style is critical to gathering accurate

information about alcohol and drug use. The dental professional should convey confidence in the *patient's* ability to be responsible for their drug and alcohol use. If patients are not ready to change their behavior, it is necessary for you to restate your concern for their health. Reinforce your willingness to help and monitor alcohol, tobacco, and drug use at future visits.

### Physical Assessment

As previously discussed, certain drug-related and alcohol-related behaviors may help identify the substance-abusing patient. Alcohol and most other drugs produce intraoral signs and symptoms and are discussed in Table 14 of this text.

#### *Signs and Symptoms of Substance Abuse*

**Behavioral:** Changes in work habits such as absenteeism, tardiness, inattention to detail, mood swings, decline in personal hygiene, social isolation, and apathy may appear. Heavy cigarette smoking may predict heavy alcohol abuse or alcoholism. <sup>21</sup>

**Cognitive and Psychomotor Function:** Inability to recall information, slurred speech, uncoordinated body movement, changes in handwriting and instrumentation\* (\*impaired professional) may also indicate substance abuse.

**Physiological Changes:** Were discussed under each drug or drug group.

## Implications for Dental Treatment

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### **Introduction**

It is important to recognize the signs and symptoms of substance abuse because patients are rarely truthful about their drug and alcohol use. Treatment modification is necessary for both the substance abuser and the recovering substance abuser. Patients, who have been through treatment and are in recovery, will be apprehensive about spending time in an environment that might cause relapse. Consultation with patient's physician or primary care provider is also advised.

Drug and alcohol interaction is common and should be considered when treating an individual with a substance abuse problem. Of the 20 most prescribed drugs, over 50% have at least one ingredient that will negatively react with alcohol. <sup>22</sup>

**Alcohol:** Patients who abuse alcohol but do not suffer from alcoholic liver disease (ALD) are very different when considering dental treatment modifications. Often patients will self-medicate with alcohol to decrease anxiety related to dental treatment. The oral health team member's role is to discourage this practice by explaining how we are prepared to decrease anxiety through safer techniques such as use of behavior modifications, pharmacotherapy, or both.

The patient who has ALD presents a unique challenge during dental treatment. Elective dental treatment is not recommended if the ALD patient is not receiving medical treatment.

In addition, three major dental treatment considerations exist when treating the ALD patient:

1. First is bleeding tendencies,
2. unpredictable metabolism of certain drugs and
3. risk of spread of infection.

*Bleeding Tendencies:* Since the liver is a primary source for agents involved in clotting, ALD patients should have a complete blood count with differential, AST and ALT, prothrombin time and platelet count checked prior to treatment. If treatment will involve excessive bleeding, local hemostatic agents should be used, and treatment avoided if an acute drinking episode has occurred within the last 4 to 5 days. <sup>23, 24</sup>

*Unpredictable Metabolism:* Unpredictable metabolism of certain medications: Increased amount of local anesthetic agents and sedatives may be necessary to achieve desired effects. Acetaminophen should be used with caution in both the ALD patient and patients who consume alcohol when fasting. Considering ALD patients who present with increased lab results related to liver function, ascites, and encephalopathy, and/or malnutrition, drug metabolism will most likely be impaired. <sup>1</sup>

Alcohol acts to decrease or increase the effect of prescribed and non-prescribed drugs. Individuals who are abusing alcohol and have problems with gastric bleeding and other

hemostatic problems should avoid aspirin and non-steroidal anti-inflammatory drugs (NSAIDS). These drugs could increase gastric bleeding.

Metronidazole, commonly used to treat periodontitis, can cause a profound reaction if used in combination with alcohol (similar to an alcohol/disulfiram reaction). The combination of opioids (e.g. hydrocodone, oxycodone) and alcohol enhances the sedative effect of both and increases the risk of overdose.

*Risk of spread of infection:* ALD patients may require use of prophylactic antibiotics if ongoing infection is present. While policy does not require use, ALD patients often present with diminished immune response. Coupled with ongoing infection, use of antibiotics should be taken into account on an individual patient basis.

**Cocaine and Methamphetamine:** If you suspect a patient is under the influence of cocaine, methamphetamine, or other stimulant, do not treat the patient for at least 24 hours after the patient reports last using the drug. Vasoconstrictive drug interactions have been well documented when treating patients who are under the influence of cocaine. To insure patient safety, adrenergic vasoconstrictors be completely avoided.<sup>25</sup>

### **Other Considerations**

Alcohol and tobacco are known risk factors for head and neck cancers, including oral cancer. A complete extensive extra- and intraoral exam should be included in this group of high-risk patients' treatment.

Non-alcohol containing rinses and topical agents should be used as a part of daily patient home care regimens when treating chemically dependent patients.

Pain control methods should be carefully considered and discussed with the alcoholic's primary care physician or substance abuse therapist before use.

Even one drink during pregnancy may result in Fetal Alcohol Syndrome, which produces facial abnormalities and is the leading cause of mental retardation in our country.

**Anxiety and Pain Management:** Nitrous oxide should not be used when treating chemically dependent, addicted or recovering individuals without permission of the patient's addiction medicine physician's recommendation. An open dialog between the recovering patient and the dental practitioner is used to relieve anxiety surrounding dental treatment. Methods used for pain control should be discussed thoroughly before treatment begins. NSAIDS are a good choice except for individuals with hemostatic problems. Local anesthetics are not contraindicated.

Narcotics prescription should be written for a limited number of the medication and a responsible party should administer it to the alcoholic patients. Because chronic and acute episodes of alcohol intake affect drug metabolism, the dentist should consider avoiding prescribing acetaminophen in large amounts for extended time as concomitant alcohol and acetaminophen use increases the risk of hepatotoxicity.

All members of the oral health team should be educated about chemical dependency and drug seeking behavior. Individuals may falsely claim to experience dental pain in order to

get a prescription for a narcotic. You should be wary of a patient claiming an allergy to a weaker pain reliever, requesting specific drugs or asking for more than a normal amount of drug to be prescribed.

Keep prescription forms away from areas where patients have access to them and never pre-sign prescription forms. Drugs should be stocked in a locked cabinet away from treatment areas and only in quantities that are sufficient for immediate use. Disposal of unused drugs and spent carpules and needles should be handled according to OSHA guidelines. Drug users often search trash receptacles outside medical and dental offices looking for drugs or drug paraphernalia.

Patients who abuse alcohol and drugs often do not attend scheduled dental appointments and neglect to pay for services. This can cause emotional and financial strain on any dental practice.

Health care professionals have a responsibility to ensure the safety of their patients and those who may be affected by their behavior. Legal responsibility in reporting drug or alcohol abuse is cloudy. Certain patient confidentiality laws prevent the health care provider from reporting patients' substance abuse problem. This becomes a bigger issue if the abuse problem is an immediate threat to public safety (e.g., airline pilot, health professional). You should contact your state dental association and legal council regarding your obligations under state and federal laws.

**Intraoral Findings**

<b>Table 14: Intraoral Findings</b>	
<b>Drug</b>	<b>Intraoral Manifestations</b>
<b><i>Alcohol Abuse and alcoholism</i></b>	<ul style="list-style-type: none"> <li>• Oral cancer</li> <li>• Leukoplakia and other premalignant conditions</li> <li>• Oral mucosal changes</li> <li>• Inflammation of one or both parotid glands</li> <li>• Oral ulceration</li> <li>• Glossitis</li> <li>• Angular cheilitis</li> <li>• Candidiasis</li> <li>• Glossodynia</li> <li>• Prolonged bleeding</li> <li>• Facial tics</li> <li>• Oral and facial</li> <li>• High dental caries rate <a href="#">26</a></li> <li>• Dental erosion <a href="#">26</a></li> <li>• Bruxism</li> <li>• Increased calculus deposits</li> <li>• Halitosis (fruity acetone breath)</li> <li>• Delayed wound healing and unpredictable treatment response</li> <li>• Reduced tolerance to pain <a href="#">26</a></li> </ul>
<b><i>Stimulants</i></b>	<ul style="list-style-type: none"> <li>• Xerostomia</li> <li>• Clenching, grinding bruxism</li> </ul>
<b><i>*Methamphetamine</i></b>	<ul style="list-style-type: none"> <li>• Xerostomia</li> <li>• Clenching, grinding bruxism</li> <li>• Extensive and severe dental caries</li> <li>• Tooth loss</li> </ul>
<b><i>Cocaine, crack cocaine</i></b>	<ul style="list-style-type: none"> <li>• Xerostomia</li> <li>• Dental caries</li> <li>• Tooth loss</li> <li>• Localized attachment loss (cocaine testing-rubbing on gingival to test potency) <a href="#">27</a></li> </ul>
<b><i>Heroin</i></b>	<ul style="list-style-type: none"> <li>• Dental erosion associated with frequent vomiting</li> </ul>
<b><i>Long term opiate or opioid use</i></b>	<ul style="list-style-type: none"> <li>• Xerostomia</li> <li>• Clenching, grinding bruxism</li> </ul>

<b>Table 14: Intraoral Findings</b>	
<b>Drug</b>	<b>Intraoral Manifestations</b>
<b><i>Marijuana</i></b>	<ul style="list-style-type: none"> <li>• Stains often greenish gold in appearance, xerostomia, halitosis,</li> <li>• Increased caries? (Due to increased appetite and consumption of highly cariogenic foods)</li> </ul>
<b><i>MDMA (Ecstasy)</i></b>	<ul style="list-style-type: none"> <li>• Clenching, grinding bruxism</li> <li>• Xerostomia</li> </ul>
<b><i>Tobacco</i></b>	<ul style="list-style-type: none"> <li>• Oral cancer and precancerous lesions</li> <li>• Leading risk factor for tooth loss</li> <li>• Periodontitis</li> <li>• Delayed wound healing</li> <li>• Poorer prognosis following surgical and non surgical treatment</li> <li>• Implant failure</li> <li>• Abrasion (spit tobacco use)</li> <li>• Increased supra and subgingival calculus deposits</li> </ul>
<b><i>Inhalants</i></b>	<ul style="list-style-type: none"> <li>• Sores around mouth or nose</li> <li>• Stains from paint, colored markers, etc., around mouth and nose</li> </ul>

\*Methamphetamine <sup>28</sup>: Methamphetamine-induced caries has been a topic of recent concern among dental professionals. The cause, while under extensive investigation, is not understood. Factors that may attribute to the unique caries pattern include xerostomia, increased sugar intake, increased ingestion of sodas flavored with citric acid that may result in a chelation reaction that cleaves enamel from dentin, severe bruxism, poor oral hygiene, not seeking dental treatment due to fear of being identified and reported due to unique caries pattern, financial difficulty. To date, no studies have been conducted that looked at base line dental caries, decalcification, or dental plaque scores so baseline dental status is unknown.

## Impaired Oral Health Team Members

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Dental professionals are at increased risk for substance abuse.

Precipitating factors include:

- Genetics
- Family of origin issues
- Substance abuse prior to dental education
- High levels of stress: dental and dental hygiene education
- Dental practice
- Isolated practice settings
- Perceived limitations of reward in providing care to others
- Economic factors
- Access and availability of substances
- Unrealistic expectations of performance by self and others
- Belief in medication as a solution to problems
- Demand for quick results
- Focus on the needs of others

Members of the oral health team suffer from chemical dependency. Incident rates vary. Fears of losing one's license and damage to one's professional reputation keep dental professionals from seeking treatment. Clues that you may be working with an impaired person include, withdrawal from daily activities, decline in personal hygiene and appearance, disruption of appointment schedule, unexcused absences from work, in the office after hours, and excessive and/or unapproved ordering of drugs.

The dentist is responsible for his/her DEA number and privileges. To prevent employees from obtaining unauthorized prescriptions for hydrocodone and other medications, the dentist should write and/or call in all narcotic prescriptions and monitor personal prescription activity through the DEA.

Be aware of nitrous oxide abuse by the oral health team.

In some states it is the second drug of choice following alcohol abuse.

1. Monitor purchase frequency and amount
2. Be aware of dentist or staff members in the office after hours, and
3. Confine tanks to an area that can be secured and limit number of personnel who have keys.

Providing quality dental care, preventing complications, and helping patients avoid relapse should be the primary goals of dental practitioners who treat chemically dependent individuals. Table 15 is a modified version of The National Institute on Alcohol Abuse and Alcoholism’s screening and intervention procedures. [29](#)

<b>Table 15: Screening and Intervention</b>	
<b>ASK about drug and alcohol use</b>	Use the health history and verbally inquire about drug and alcohol use. CAGE or other screening inventories may be used.
<b>ASSESS for drug and alcohol related problems</b>	<i>Determine whether there is a maladaptive pattern of alcohol use, causing clinically significant impairment or distress. Note any behavioral or clinical manifestations of substance abuse such as premalignant oral lesions or unexpected drug interactions.</i>
<b>ADVISE and ASSIST</b>	<p>State your conclusion and recommendation clearly: “You are drinking more than is medically safe.” Relate to patient’s concerns and medical findings. “I am concerned that that the sore you brought to my attention may be related to your smoking and alcohol intake; we will refer you for a biopsy. I strongly recommend that you quit.”)</p> <p><b>Gauge readiness</b> to change abuse status “Are you willing to consider making changes in your drinking and or smoking?”</p>
<b>At Follow-up: Continue Support</b>	Provide ongoing support for the patient. Monitor efforts to cut down or abstain. Reinforce positive behavior.

Remember, your role as an oral health team member is not the diagnosis or treatment of individuals with a substance abuse problem. Your role includes identification of substance abuse and dependency, education of the patient as to risks related to substance abuse, and making necessary modifications in dental treatment to prevent harm or relapse.

Actions you can take include:

- Review your office health questionnaire and make sure it includes questions regarding current and previous drug and alcohol use.
- Ask other dental professionals about ways in which they screen patients for substance abuse.
- Discuss potential drug and alcohol interactions with your patients.
- Offer your patients alternatives for pain and anxiety control.
- Make printed information about substance abuse prevention available in your practice.
- If you educate oral health team members, include courses on chemical dependency in your curriculum.
- Find out what community substance abuse resources are available for information and treatment referral.
- Screen patients for signs of substance abuse and educate patients as to the potential risks of the use and abuse of alcohol, tobacco and drugs.
- Be aware of the connection between alcohol and /or drug abuse and infectious diseases (Hepatitis, tuberculosis, HIV).
- Examine your own health behavior, and do not engage in activity that is illegal or unhealthy.
- Become involved in a peer-assistance program.

The problem of chemical dependency directly or indirectly affects every individual in the United States. It is a long-term problem with no clear-cut solution. Our communities suffer through lost workplace productivity, unsafe highways, criminal activity, higher health care costs and disease transmission. A commitment to understanding the nature of addiction, providing a supportive climate and active participation in efforts to reduce the destructive effect of substance abuse is the obligation of every dental professional.

Please mark only one **best** answer to the following questions on the one page answer sheet.

This test contains 20 questions. Please mark your answers in spaces numbered 1 through 20 on your answer sheet.

1. According to this text, approximately how many male dental patients abuse alcohol?
  - a. 1:5
  - b. 1:20
  - c. 1:50
  - d. 1:100
  
2. Drug and or alcohol abuse can **best** be defined as:
  - a. The use of any drug that deviates from approved medical or social patterns
  - b. Physical or psychological reliance on an exogenous substance
  - c. Chronic, progressive and compulsive use of a substance
  - d. Unlawful and improper
  
3. Considering a patient who has alcoholic liver disease (ALD) the dentist should:
  - a. Expect prolonged bleeding times
  - b. Expect delayed wound healing
  - c. Consult the patient's physician prior to invasive treatment
  - d. All of the above
  
4. According to the 2005 National Household Survey on Drug Abuse the age group reporting the highest level of current drug use was:
  - a. 12-14 year olds
  - b. 18-25 year olds
  - c. 20-35 year olds
  - d. 40-55 year olds
  
5. Extraoral signs of inhalant abuse include:
  - a. stained teeth
  - b. sores or burns around mouth and/or nose
  - c. paint stains around mouth and/or nose
  - d. B and C
  
6. The brain's reward system only responds to exogenous stimuli.
  - a. True
  - b. False

7. Intraoral signs of methamphetamine use include:
- Severe and extensive carious lesions
  - Xerostomia
  - Dental attrition
  - All of the above
8. Drugs, which slow nervous system activity, include:
- Alcohol, codeine, nicotine and methamphetamine
  - Nitrous Oxide, alcohol and crack cocaine
  - Adderall, PCP and LSD
  - Benzodiazepines, barbiturates and alcohol
9. A narcotic abuser in withdrawal (within 24 hours to 10 days after their last drug use) is likely to exhibit which of the following signs and symptoms:
- Drug seeking behavior
  - Runny nose, abdominal cramps, and weight loss
  - Increased attention to detail
  - All of the above
10. The recent increase in inhalant use may be attributed to:
- Availability in the home
  - Readily available information related to use such as Internet resources
  - Obscure signs and symptoms
  - All of the above
11. If you suspect your patient is under the influence of cocaine or methamphetamine, you should:
- Alert police
  - Refuse to treat the patient
  - Defer care for at least 24 hours after patient reports last use of drug
  - None of the above
12. The most widely used stimulant is:
- Nicotine
  - Amphetamines
  - Cocaine
  - Caffeine
13. Individuals abuse hallucinogens because:
- They often desire to repeat the experience
  - They experience physical need for the drug
  - They are readily available and inexpensive
  - They cannot be detected in the system after 24 hours

14. The oral health team member's greatest challenge is to motivate the patient in the stage of contemplation into the next stage of change.
- True
  - False
15. Intraoral signs/symptoms of marijuana use include(s):
- Goldish green staining of teeth
  - Benign migratory glossitis (geographic tongue)
  - Halitosis
  - A and C
16. Screening for drug and alcohol problems:
- Is not appropriate in the dental office
  - Is completed only at the request of the patient
  - Conducted during routine dental visits
  - None of the above
17. If chemically dependent/addicted patients are not ready to change their behavior you should:
- Call the police immediately and have the patient arrested
  - Restate your concern for their health and modify dental treatment accordingly
  - Dismiss the patient from your practice
  - Arrange for a psychiatrist to visit during the dental exam
18. The use of local anesthetics is contraindicated when treating:
- Individuals under the influence of Cocaine
  - Recovering alcoholics
  - Former marijuana users
  - None of the above
19. You should modify dental treatment for patients recovering from chemical dependency by doing all of the following **except**:
- Consult with patient's substance abuse counselor regarding pain control
  - Use non-alcohol containing mouth rinse
  - Criticize the patient about former drug abuse and addiction
  - Discuss potential drug interactions or pain control methods
20. Primary goals for the dental practitioner when treating chemically dependent patients are:
- Diagnosis of chemical dependency and coordinating treatment
  - Treatment of chemical dependency and monitoring of behavior
  - Diagnosis of chemical dependency and distribution of clean needles
  - Providing quality dental care, preventing complications and helping patients avoid relapse

## Appendix A: Glossary

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**Abuse, substance** - The use of illegal drugs or the inappropriate use of legal drugs. The repeated use of drugs to produce pleasure, to alleviate stress, or to alter or avoid reality (or all three).

**Addiction** - is a complex brain disease. It is characterized by compulsive, at times uncontrollable, drug craving, seeking, and use that persist even in the face of extremely negative consequences. Drug seeking becomes compulsive, in large part as a result of the effects of prolonged drug use on brain functioning and on behavior. For many people, drug addiction becomes chronic, with relapses possible even after long periods of abstinence.

**Agonist** - Any chemical that binds to a receptor and elicits a pharmacologic response.

**Antagonist** - A chemical that competes for receptor binding sites with agonists.

**Antitussive** - Cough suppressing.

**Binge drinking** - defined as consuming more than five drinks or more on one occasion on one day within the past 30 days.

**Current Use (alcohol)** - At least one drink in the past month (includes binge and heavy use). <sup>(4)</sup>

**Dependence** - the continued use and abuse of mood altering substances despite repeated adverse consequences to self and others. The illness is determined by genetic, physiological, biochemical and emotional vulnerability.

**Drink** - 12-ounce beer or wine cooler or 5 ounce glass of wine or 1.5 ounces of distilled liquor.

**Endogenous** - created within the body.

**Exogenous** - created outside the body.

**Illicit** - Illegal

**Methadone** - A synthetic narcotic used as a substitute for the narcotic analgesic drugs. Prevents withdrawal symptoms without providing euphoric effects and will almost completely block the effects of heroin <sup>(3)</sup>.

**Moderate drinking** - defined as two drinks per day for males and one drink per day or females.

**Myelin** - Fatty tissue surrounding nerves.

**Neurons** - Nerve cell. Fundamental component of the nervous system.

**Neurotransmission** - message transfer from the axon of one nerve cell to the dendrite of another nerve cell.

**Neurotransmitters** - are a chemical messenger of neurologic information that is released from a nerve cell, which thereby transmits an impulse from a nerve cell to another nerve, muscle, organ, or other tissue. Next, neurotransmitters diffuse across the synaptic cleft to bind with specific receptors on the dendrite of the 'message receiving' neuron. NIDA

**Psychoactive** - alter mood, cognition and/or behavior. <sup>(3)</sup>

**Relapse** - Recurrence of alcohol or drug-dependent behavior in an individual who has previously achieved and maintained abstinence for a significant time beyond the period of detoxification <sup>(1)</sup>.

**Tolerance** - Physiological adaptation to the effects of the drugs, so as to diminish effects with constant dosages or to maintain the intensity and duration of the effects through increased dosage. <sup>(1)</sup>

**Treatment** - Application of planned procedures to identify and change patterns of behavior that are maladaptive, destructive, or health injuring; or to restore appropriate levels of physical, psychological or social functioning. <sup>(1)</sup>

**Withdrawal** - Cessation of drug or alcohol use by an individual in who dependence is established. Withdrawal Syndrome is the onset of a predictable constellation of signs and symptoms involving altered activity of the central nervous system after the abrupt discontinuation of, or rapid decrease in dosage of a drug <sup>(1)</sup>.

1. Clarification and standardization of substance abuse terminology. (1998). *Journal of the American Medical Association*, 259, 555-557.
2. McNeece, C.A., and DiNitto, D. M. (1998). Chemical dependency: A systems approach. Needham, MA: Allyn and Bacon.
3. SAMHSA. Preliminary results from the 1997 national survey on drug abuse.
4. NIAAA (National Institute on Alcohol Abuse and Alcoholism) Advisory - <http://www.niaaa.nih.gov/>

## Appendix B: Common Slang Terms

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**Alcohol** - Booze, sauce, juice, grog, piss

**Amphetamine** - Uppers, bennies, black beauty, speed, crank, candy, upper, white cross

**Barbiturate** - Blue, barbs, M&M, red devil, sleeper, yellow jacket, goof balls, peanuts

**Benzodiazepine** - Downer, lib tranq, V

**Booty bumping** - Insertion of methamphetamine into the rectum prior to anal intercourse

**Cocaine** - Blow, girl, lady, sniff, snort, snow, toot, flake, Bernice, dream, nose candy

**Codeine** - School boy

**Dextromethorphan** - DMX, Skittling, Robo, Robo tripping

**Fentanyl** - By prescription: Actiq, Duragesic, and Sublimaze. Street names: Apache, China girl, China white, dance fever, friend, goodfella, jackpot, murder 8, TNT, Tango and Cash.

**Heroin and Cocaine** - Speedball, bombita

**Heroin** - Black tar, Harry, junk, crap, flea powder, H, smack, white horse, chiva, junk

**Hydrocodone and muscle relaxer**, Soma: Hillbilly heroin

**Inhalant** - Huff, sniff, whiteout, snappers

**Amyl and Isobutyl Nitrite** - Poppers, rush, snappers

**LSD** - Acid, tab, trip, purple haze, blaze

**Marijuana laced with Opium** - Thai Sticks

**Marijuana** - Pot, Colombian, herb, joint, stick, broccoli, weed

**Mescaline** - Peyote, chif, cactus

**Methadone** - Dollies, munk, jungle juice

**Methamphetamine** - Crystal meth, speed, crank

**Methaqualone** - Quaaludes, ludes, Valium

**Morphine** - M, cube, morf, mu

**Narcotics** - Hard stuff

**Nitrous Oxide** - Whippits, oz, laughing gas

**PCP** - Angel dust, hog, wack

**Rohypnol** - Date Rape Drug, roofies, rophies, ruffies, R2, robe

**Smokable Cocaine** - Crack, freebase, eggs

**Smokable Methamphetamine** - Ice

**Tobacco** - Butt, chew, weed, cig, chaw, smoke

**Club Drugs** - X, Adam, MDMA, G, Georgia Homeboy, Chalk

<http://www.drugs.indiana.edu/drug-slang.aspx>

<http://www.streetdrugs.com>

## Appendix C: Online Resources

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### **Club Drugs**

This NIDA site provides detailed descriptions and educational materials related to substances classified as “club drugs”.

<http://www.clubdrugs.org>

### **RXLIST**

This site lists the top 300 drugs prescribed in past years and provides links to specific information about each one.

<http://www.rxlist.com>

### **Controlling Exposures to Nitrous Oxide During Anesthetic Administration**

<http://www.cdc.gov/niosh/oxidalr.html>

### **The Substance Abuse and Mental Health Services Administration (SAMHSA)**

<http://www.samhsa.gov/>

### **Substance Abuse and Mental Health Data Archive**

A searchable database for information related to substance abuse.

<http://www.icpsr.umich.edu/SAMHDA/>

### **National Clearinghouse for Alcohol and Drug Information (NCADI)**

NCADI is the world's largest resource for current information and materials concerning substance abuse.

<http://www.health.org/>

### **The National Institute on Alcohol Abuse and Alcoholism**

<http://www.niaaa.nih.gov/>

### **Drug Enforcement Administration**

<http://www.usdoj.gov/dea/index.htm>

### **Food and Drug Administration**

<http://www.fda.gov/default.htm>

### **National Institute on Drug Abuse**

<http://www.nida.nih.gov>

### **American Society of Addiction Medicine**

"The nation's medical specialty society dedicated to educating physicians and improving the treatment of individuals suffering from alcoholism or other addictions."

<http://www.asam.org/>

### **The National Center on Addiction and Substance Abuse at Columbia University**

A unique think/action tank that brings together under one roof all of the professional disciplines (health policy, medicine and nursing, communications, economics, sociology and anthropology, law and law enforcement, business, religion and education) needed to study and combat all forms of substance abuse

<http://www.casacolumbia.org/>

### **Join Together Online**

National resource center and meeting place for communities working to reduce substance abuse (illicit drugs, excessive alcohol & tobacco) and gun violence.

<http://www.jointogether.org>

### **The Web of Addictions**

Dedicated to providing accurate information about alcohol and drug addiction.

<http://www.well.com/user/woa/>

### **Erowid.org**

<http://www.erowid.org/> is an online library containing thousands of pages of information about psychoactive drugs, plants, and chemicals, including entheogens, psychedelics, etc.

### **U.S. Department of Labor**

The State Alcohol and Drug Abuse Agency Directory contains contact information for all State Alcohol and Drug Abuse Agencies, and provides a link to the Agency's Web site, if one exists. It is provided via the Center for Substance Abuse Treatment's (CSAT) Treatment Improvement Exchange (TIE) Web site.

<http://www.dol.gov/asp/programs/drugs/nationalresources/NationalResource-1593.htm>

### **Street Drugs.org**

<http://www.streetdrugs.org/>

### **National Clearinghouse on Alcohol and Drug Information**

NIDA Research Reports, *Printed March 2001.*

<http://ncadi.samhsa.gov/>

**Healthcare professionals and parents** should be aware of drug information that our children can find that instructs them on how to safely use drugs. Two such sites are <http://www.erowid.org/> and <http://www.tweaker.org/>. **Warning:** this content should be viewed with discretion.

**Drugs.com** (<http://www.drugs.com/>) provides a dictionary of prescription drugs along with a pill identifier program.

### **Nitrous Oxide Safety**

<http://www.cdc.gov/niosh/topics/nitrousoxide/>

<http://www.osha.gov/SLTC/healthguidelines/nitrousoxide/recognition.html>

## Appendix D: Treatment and Informational Related Resources

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*(Updated April 24, 2007)*

### **American Dental Association**

Linda Kittelson Keating, MS, RN, CSADC Manager,  
Dentist Health and Wellness Council on Dental Practice  
American Dental Association  
Phone: 312-440-2622  
Fax: 312-440-2924  
[keatingl@ada.org](mailto:keatingl@ada.org)

### **American Dental Hygienists' Association**

444 North Michigan Avenue, Suite 3400  
Chicago, Illinois 60611  
<http://www.adha.org/>

### **Adult Children of Alcoholics (ACA/Ace)**

<http://www.adultchildren.org/>  
P.O. Box 3216  
Torrance, CA 90510  
Phone: 1-310-534-1815

### **Al-Anon / Alateen**

Family Group Headquarters, Inc.  
For meeting information in Canada, the US, and Puerto Rico you can call 1-888-4AL-ANON  
(1-888-425-2666) Monday through Friday, 8:00am to 6:00pm ET.

### **Alcoholics Anonymous (A.A.)**

General Service Office  
Box 459,  
Grand Central Station,  
New York, NY 10163  
<http://www.alcoholics-anonymous.org/>

### **U.S. Department of Justice Drug Enforcement Agency**

Guidelines for a Drug-Free Workforce 4th Edition Summer 2003  
<http://www.usdoj.gov/dea/demand/dfmanual/index.html>

### **Center for Substance Abuse Treatment**

National Drug and Alcohol Treatment Referral Service  
(800) 662-HELP (4357) (English and Español)  
(800) 487-4889 (TDD)

### **Hazelden Educational Materials**

Phone: 800-257-8790  
<http://www.hazelden.org/>

**Monitoring the Future Survey**

<http://www.monitoringthefuture.org/pubs/monographs/overview2006.pdf>

provides the most current information on alcohol, drug use and other behaviors by high school students.

**National Inhalant Prevention Coalition**

322 - A Thompson Street  
Chattanooga, TN 37405  
Phone: 800.269.4237 or 423.265.4662  
E-mail: [nipc@io.com](mailto:nipc@io.com) or  
Internet: <http://www.inhalants.org/>

**National Alcohol and Substance Abuse Information Center**

drug and alcohol abuse website and hotline.  
Open 24 hours a day, seven days a week.  
1.800.784.6776

**Narcotics Anonymous World Services, Inc.**

Main Office  
PO Box 9999  
Van Nuys, California 91409 USA  
Telephone (818) 773-9999  
Fax (818) 700-0700

Business hours are Monday through Friday, 8:00 AM to 5:00 PM local time.  
We are closed on USA holidays.

**Mothers Against Drunk Driving (MADD)**

MADD National Office  
511 E. John Carpenter Frwy. Suite 700  
Irving, TX 75062  
800-GET-MADD (438-6233) or

Dallas Metro - 214-744-6233  
Victim Services 24-Hour Helpline 877-MADD-HELP (877-623-3435)

## Appendix E: References

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## Appendix F: American Psychiatric Assoc. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)

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*Three or more of these criteria within the same 12-month period defines dependence:*

1. Substance often taken in larger amounts or over a longer period of time than was intended.
2. Persistent desire or unsuccessful efforts to cut down or control substance use.
3. A great deal of time spent in activities necessary to get the substance, use the substance, or recover from its effects.
4. Frequent intoxication or withdrawal symptoms when expected to fulfill major role obligations at work, school, or home.
5. Important social, occupational, or recreational activities given up or reduced because of substance abuse.
6. Continued substance use despite knowledge of having a persistent or recurrent psychological or physical problem that is likely caused or exacerbated by the use of the substance.
7. Tolerance, as defined by either:
  - a. Marked tolerance (need for markedly increased amounts of the substance).
  - b. Markedly diminished effect with continued use of the same amount of the substance.
8. Withdrawal, as manifested by either of the following:
  - a. Characteristic withdrawal symptoms.
  - b. Substance often taken to relieve or avoid withdrawal symptoms.

Substance abuse does not require tolerance, withdrawal, or a pattern of compulsive use to be present and instead includes only the harmful consequences of repeated use.

*Substance abuse is defined as (where the criteria for dependence have not been met) meeting one or more of the following criteria:*

1. Continued use despite knowledge of having persistent or recurrent social problems caused by or exacerbated by the effects of the substance.
2. Recurrent substance use in situations in which use is physically hazardous.
3. Recurrent, substance-related legal problems.
4. Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home.

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## Appendix G: Schedules of Controlled Substances

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The *Controlled Substances Act (CSA)*, Title II of the *Comprehensive Drug Abuse Prevention and Control Act of 1970*, provides the legal foundation for regulation and enforcement of laws pertaining to the manufacture and distribution of drugs. All drugs are placed in one of five schedules. Prescription authority of health care providers is based on this schedule.

**According to the DEA**, these lists are intended as general references and are not comprehensive listings of all controlled substances.

### Schedule I

- Drug or other substance has a high potential for abuse
- Drug or other substance has no currently accepted medical use
- Lack of accepted safety for use of the drug or substance under medical supervision (Examples: Marijuana, Heroin, and LSD)

### Schedule II

- Drug or other substance has high potential for abuse
- Drug or other substance has a currently accepted medical use in treatment
- Abuse of the drug or substance may lead to psychological or physical dependence (Examples: Cocaine, Percocet®, Ritalin®, Demerol®, Morphine, Fentanyl®, Adderall, and Oxycontin)

### Schedule III

- Drug or other substance has a potential for abuse less than the drugs or other substances in schedules II or I
- Drug or other substance has a currently accepted medical use in treatment
- Abuse of the drug or other substance may lead to a moderate or low physical dependence or high psychological dependence (Examples: Opium (may be schedule IV depending on amount of opium), Vicodin®, Tylenol w/codeine, Vicoprofin, buprenorphine, and some amphetamines)

#### Schedule IV

- Drug or other substance has a ***low potential for abuse*** relative to drugs or substances in schedule III
- Drug or substance has a currently accepted medical use
- Abuse of the drug or substance may lead to limited physical or psychological dependence compared to drugs or substances in schedule III (Examples: Darvocet®, Valium®, Xanax®, Ativan®, Talwin-NX®, Phenobarbital, and Halcion®)

#### Schedule V

- Drug or other substance has a low potential for abuse compared to the drugs or substances in schedule IV
- Drug or substance has a currently accepted medical use
- Abuse of the drug or substance may lead to a limited physical or psychological dependence (Examples: Lomotil®, Phenergan®, Robitussin AC)

[http://www.deadiversion.usdoj.gov/schedules/listby\\_sched/sched1.htm](http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched1.htm)  
retrieved April 24, 2007.

## Appendix H: Substance Abuse Community Referral Resources

**1. Alcohol and Other Drug Specialist(s):**

Name \_\_\_\_\_ Ph. Number \_\_\_\_\_

Name \_\_\_\_\_ Ph. Number \_\_\_\_\_

**2. Physicians with expertise in alcohol and drug disorders:**

Name \_\_\_\_\_ Ph. Number \_\_\_\_\_

Name \_\_\_\_\_ Ph. Number \_\_\_\_\_

**3. State Resource phone number \_\_\_\_\_**

**4. AA phone numbers \_\_\_\_\_**

**5. Community Substance Abuse Services (publicly funded):**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Hours \_\_\_\_\_ Contact Person \_\_\_\_\_

Type of facility (circle): residential/ outpatient/ evening/ adolescent/ adult

Payment accepted: insurance/ sliding scale/ indigent care

**6. Veterans Administration Treatment Resources:**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Hours \_\_\_\_\_ Contact Person \_\_\_\_\_

Type of facility (circle): residential/ outpatient/ evening/ adolescent/ adult

Payment accepted: insurance/ sliding scale/ indigent care

**7. Other Treatment Programs:**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Hours \_\_\_\_\_ Contact Person \_\_\_\_\_

Type of facility (circle): residential/ outpatient/ evening/ adolescent/ adult

Payment accepted: insurance/ sliding scale/ indigent care

Name \_\_\_\_\_ Phone \_\_\_\_\_  
Hours \_\_\_\_\_ Contact Person \_\_\_\_\_

Type of facility (circle): residential/ outpatient/ evening/ adolescent/ adult

Payment accepted: insurance/ sliding scale/ indigent care