

Substance Abuse: Considerations for the Oral Health Professional When the Client is Suspected to be Abusing Substances



A continuing education course presented by the Tennessee Dental Hygienists' Association for two (2) credit hours of credit to meet Tennessee requirements for a course on chemical dependency. Tennessee Board of Dentistry approved May 18, 2007. To earn credit the article must be read and the questions that follow be completed at a 80% or better level in order to be accepted to meet state requirements for the continuing education credit. A certificate of credit will be mailed within two (2) weeks of completing the online course and should be placed in an official file for verification of earning the credit(s).

Objectives:

The student will

1. Understand addiction.
2. Identify stages of substance abuse.
3. Consider oral effects of substance abuse
4. Review alerting behaviors by the substance abuser.
5. Identify dental management considerations for the client abusing chemical substances.

Most scientists now consider addiction to be a brain disease caused by persistent changes to brain structure and function. Using drugs repeatedly over time changes the brain in ways that persist long after the individual stops using them. There are implications for oral health professionals in identifying and managing the client who is abusing illegal substances. Management issues relevant to delivery of oral care, include (1) identifying potential drug interacting substances used during oral care, (2) offering tobacco cessation information and (3) dealing with the erratic behavior of a client who presents to the oral care appointment while under the influence of illegal drugs or alcohol . This course is presented in two parts: the client who is abusing chemical substances, and the second part, the substance abusing practitioner.

Substance Abuse

Dentists must be aware of "drug shoppers" who may call the dental office with a complaint of "pain" and request a prescription for a narcotic analgesic. The current health history developed by the American Dental Association includes questions about substance abuse as some narcotic agents interact with drugs used in the provision of oral healthcare (cocaine interacts with vasoconstrictors in local anesthetics). As a secondary strategy to identify those taking abused substances, it is important to recognize extraoral and behavioral signs of using abused drugs. Drug misuse refers to indiscriminate use of drugs whereas drug abuse refers to chronic self-medication of a drug in excessive quantities, resulting in physical and/or psychological dependence, functional impairment and behavior that deviates from approved social norms.

Addiction

In 2003, an estimated 21.6 million Americans aged 12 or older were classified as having substance dependence or addiction. Oral healthcare professionals will likely be presented with a patient under the influence of abused substances, some illegal (cocaine, methamphetamine, other), others not illegal (alcohol, tobacco). Addiction is a medical condition involving serious psychological and physical changes from repeated heavy use of a substance. Using drugs repeatedly over time changes brain structure and function in long lasting ways that can persist after drug use is stopped. The amount of the drug to cause this defect is different for everyone, but it is felt that after a certain amount of a drug is consumed, it is as if a switch in the brain is flipped from normal to addiction. Addiction is a medical condition involving serious psychological and physical changes from repeated heavy use of a substance. The symptoms of addiction are uncontrollable alcohol or other drug craving, seeking, and use that persists even in the face of negative consequences. It is a progressive illness that worsens over time if left untreated. Treatment methods include community resources based on twelve-step programs, such as Alcoholics Anonymous, outpatient or residential treatment programs and various drug treatments, such as methadone treatment in heroin addiction.

Psychological dependence, also referred to as addiction, is a behavioral pattern characterized by drug craving, out of control drug usage, overwhelming desire to obtain a drug supply, drug use causing personal and legal problems, denial about the personal drug use, and continuing to use the drug despite personal and legal difficulties. Physical dependence

is an adaptive state, occurring after prolonged use of a drug, in which discontinuation of the drug causes physical symptoms that are relieved by re-administering the same drug or a pharmacologically related drug. Both types of dependence can lead to compulsive patterns of drug use where the user's lifestyle is focused on taking the drug. Drug abuse is not confined to any particular socioeconomic, cultural or ethnic group and is related to assaults, rapes, child abuse, commission of crimes, traffic accidents (nearly 80% of accident fatalities that occur between 8 pm and 4 am), suicides, homicides and unintentional injury fatalities.¹

Stages of Substance Abuse

- Experimentation
- Regular to risky use
- Dependence

Experimentation, regular use, risky use, dependence and addiction are the stages of substance use (Box 1). These behaviors can be addressed and treated at any stage, despite popular myths that people must hit bottom before they can benefit from help.

(1) Experimentation. Substance use starts with a voluntary use of alcohol or other drugs. Often the person is trying to erase another emotional problem but there are other examples. An older person may self-medicate by drinking alcohol to cope with depression after losing a spouse. A teenager, angry about a parental divorce, may start smoking marijuana or huffing inhalants. Experimentation may even include a husband taking his wife's prescription painkiller to cope with recurring back pain.

(2) Regular to risky use. The transition from regular to risky use and why it happens, differs from every individual. While it doesn't happen to everyone, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) estimates that nearly one-third of Americans engage in risky drinking patterns. As a result, what constitutes "risky behavior" can be difficult to define. If a person's behavior worries those close to others, the behavior and suspicions should be addressed. The slope from risky behavior to dependence is often hidden and there are interventions that may reduce stop the progression to dependence. The Partnership for a Drug-Free America [www.drugfree.org] has a comprehensive web site to educate and provide information for interventions [www.intervenenow.org].

(3) Dependence. Alcohol or drug dependence follows risky behavior. At this stage, alcohol or other drug use may not yet be compulsive and out of control. Many dependent people are able to work, maintain family relationships and friendships, and limit use of alcohol or other drugs to certain time periods, such as weekends or evenings. However it is also difficult for the impaired individual (and for others) to recognize the effects their substance use may be having on themselves, friends, coworkers and family members. There are appropriate interventions for substance users in this stage and for those close to them. Characteristics of dependence include

- Repeated use of alcohol or other drugs leading to failure to fulfill major responsibilities related to work, family, school or other roles
- Repeatedly drinking or using drugs in situations that are physically hazardous, such as driving while intoxicated or using heavy machinery when intoxicated
- Repeated legal problems

Causative Factors or Etiology

The difference in susceptibility to addiction is considered to mainly be related to genetic influences. Very few people are able to return to occasional use after becoming addicted. This does not absolve the addict of responsibility for the behavior, but it explains why an addict cannot stop using by sheer force of will alone. Substance abusers often begin taking the drug to achieve a desirable pharmacologic effect. The drug is continued to relieve personal problems and used as a coping mechanism, then dependence develops. When the individual becomes dependent on the drug for the effects a genetically associated psychological mechanism leads to an alteration of the state of mind. This is a feature of CNS drugs that leads to addiction. In 1990 alcoholism and other chemical dependencies were described by the American Society of Addiction Medicine (ASAM) as primary, chronic, relapsing diseases with genetic, psychosocial, and environmental factors influencing their development and manifestations.²

Central Nervous System Depressants

Over dosage of narcotic drugs is characterized by pupils that are sluggish and miotic, respiration that is shallow and slow, absence of deep tendon reflexes (or attenuated reflex action), and patients who are unresponsive. Although benzodiazepines are rarely lethal, they enhance the effects of other depressants (dose-dependent CNS depression, including somnolence, impaired coordination, confusion, and coma), especially alcohol, which is often taken concurrently. When CNS depressant drugs are combined the usual cause of death is CNS depression leading to respiratory collapse (asphyxiation), followed by cardiac arrest.

Repeated use of CNS depressant drugs produces psychological and physical dependence. Cross-dependence occurs among other barbiturates, non-barbiturate sedatives, benzodiazepines, and alcohol [dependence on one of the above will result in dependence on all of the above]. Signs and symptoms of depressant withdrawal are often opposite to the acute pharmacological effects of these drugs. They include dysphoria, anxiety and restlessness, hyper-reflexiveness, insomnia, muscle weakness, and tremor. The occasional appearance of convulsions and delirium make depressant withdrawal a medical emergency.

Methamphetamine Abuse

Methamphetamine (METH) abuse has increased significantly as the National Survey on Drug Use and Health reports between 2002 and 2004 the percentage of METH users who were dependent on the drug increased from 27.5% to 59.3%. [www.oas.samhsa.gov/nhsda.htm] They estimate that there are 12.3 million Americans over the age of 12 who have used the drug at least once, with the majority of users between ages 18-34 years. The drug can be made from inexpensive medications, sold over-the-counter and chemicals (lye, muriatic and sulfuric acids) purchased at local retail outlets. Street names include speed, Ice, Chalk, Crank and Crystal.

Methamphetamine is a highly addictive synthetic amine that stimulates the release and blocks the re-uptake of serotonin, dopamine and norepinephrine in the brain. The action of these neurotransmitting monoamines is to stimulate the reward centers and give the characteristic high of the substance. Loss of appetite frequently accompanies this effect. The high can last up to 14 hours, during which time the user is impaired, unable to care for children or prepare meals. Long term use leads to depletion of these neurotransmitters, eliciting a resulting emotional depression.³

Behaviors That Alert for Substance Abuse

Behaviors that can alert the oral health professional to the possibility of substance abuse include (1) a history of broken appointment, (2) dramatic, unexpected complaints about current or past oral care, and (3) a history of oral pain (and often no reason is observed for the pain) with repeated requests for scheduled drug prescriptions. Common oral problems include oral neglect, increased caries prevalence (and often no effort to repair disease), periodontal disease, and oral mucosal infections (e.g. candidiasis). The dentist must be suspicious of an individual walking into the office near closing time claiming severe pain and seeking pain medication (e.g. hydrocodone (Vicodin), oxycodone) until "I can get in and have this tooth pulled!". If this client is seated for oral examination the professional prescription pads should be stored in a secure area. In actuality, prescription pads should always be stored in a location to ensure they are not stolen. Substance abuse can affect all age groups and all income levels and there is no reliable stereotypical profile.

Oral Effects of Substance Abuse / Periodontal Effects of Alcoholism

A prospective analysis of the association between alcohol consumption and periodontitis among men who participated in the Health Professionals Follow-up Study (HPFS) suggested that alcohol consumption is an independent modifiable risk factor for periodontitis.⁴ The HPFS is a prospective study initiated in 1986 of 51,529 male health professionals (58% dentists, 20% veterinarians, 8% pharmacists, 7% optometrists, 4% osteopathic physicians and 3% podiatrists) who were free from periodontitis at the start of the follow-up period, and aged 40-75 years. Alcohol intake was assessed at baseline and updated every 4 years. After adjustment for age, men who regularly drank alcohol were at an 18-27% higher risk of periodontal disease compared with non-drinkers. Several plausible biological explanations exist for a detrimental effect of alcohol on the periodontitis risk. Studies have shown that impaired neutrophil phagocytosis is associated with periodontal disease. Alcohol impairs neutrophil function, contributing to bacterial overgrowth and increased bacterial penetration that may lead to periodontal inflammation. As well, alcohol may have a direct toxic effect on periodontal tissue similar to other tissues of the oropharynx. Finally, high alcohol intake increases monocyte production of inflammatory cytokines such as

tumor necrosis factor-alpha (TNF- α), interleukins-1 and 6, in the gingival crevice and is associated with periodontitis. Alcohol drinking has been associated with oral cancer and poor oral hygiene in other studies, however no information was collected on malignancy or oral hygiene in the HPFS study.

Cocaine abuse

There is a report by a periodontist of cocaine placed within the vestibule as a mode of administration. The vasoconstrictive effects of the drug resulted in loss of attachment in the local area, and severe recession of the associated buccal periodontal tissue. When this situation is found in an otherwise healthy periodontal condition, cocaine abuse should be suspected and followed up with the client.⁵

Nicotine and cannabis abuse

The literature has identified smoker's keratosis or pigmentation changes, oral cancer, a predisposition to periodontal disease, acute necrotizing gingivitis, candidiasis and xerostomia as oral effects of nicotine abuse. Although bleeding is a sign of periodontal inflammation, in nicotine abuse, vasoconstriction in oral tissues leads to reduced bleeding on probing, giving a false clinical indication.

Tobacco smoking is a recognized behavioral risk factor for periodontal disease and cannabis smoking may contribute to periodontal disease in a similar way. A recent study looked at individuals who reported smoking cannabis at ages 18, 21, 26 and 32 years of age in New Zealand.⁶ When measurements of oral health between ages 26 and 32 in the group reporting high cannabis use were compared there were 23.6% more sites with clinical attachment loss compared with 11.2% in the age 26 years group. After controlling for tobacco smoking it was concluded that cannabis smoking may be a risk factor for periodontal disease that is independent of the use of tobacco.

Cannabis smoking has been implicated in cardiovascular effects. A recent systematic review found that in healthy young males there were reports of atrial fibrillation, an increased heart rate, and a risk for postural hypotension when in the supine position.⁷ In older adults cardiovascular changes led to anginal attacks from lack of oxygenated blood in cardiac muscle.

Methamphetamine or METH abuse

Oral consequences of using METH are profound with black to brown areas of extensive decay along the cervical third of teeth, often involving the entire labial surfaces. The chief complaint may present as "My teeth are crumbling and falling apart". Frequently teeth cannot be restored and must be extracted. The rapid decay is thought to be due to frequent use of the drug, coupled with drug effects of chronic xerostomia and frequent ingestion of carbonated, sugary beverages. Drug use incites bruxing during the euphoric state which leads to TMJ dysfunction, masseter muscle enlargement and incisal attrition. Fractured teeth, leaving retained roots may be found. Oral manifestations of nutritional deficiency may be found as chronic users have suppression of the appetite and do not eat nutritional foods. Periodontal disease can be significant as oral hygiene needs are ignored. The active METH user commonly presents for emergency dental care only and missed dental appointments and nonpayment for services is common.³ Pain tolerance may also decrease, resulting in failure of local anesthetic effects.

Dental Management Implications / Alcoholism and other substance abuse

When alcohol abuse is suspected in the dental patient, management depends on if the patient is intoxicated or simply shows signs of alcohol abuse (red face, bloodshot eyes, hypertrophy of parotid glands, breath odors of alcohol) or reports substance abuse on the health history. A patient who comes to the appointment in an inebriated state should be rescheduled. The client should be escorted and accompanied to their home by a responsible person. This can include a family member, friend or caregiver. Dental implications for the alcohol abuser includes the need for a thorough oral examination due to the increased risk for oral cancer, monitoring of oral self care (neglect of oral care is common), and questioning about a history of liver disease and subsequent bleeding problems. The diseased liver is unable to store adequate levels of vitamin K and the conversion of vitamin K to coagulation factors is reduced. This reduces the vitamin K-dependent coagulation factor (II, VII, IX and X) levels and increased bleeding. Other comorbid conditions include thrombocytopenia, esophageal varices, spontaneous bleeding and abdominal distension associated with liver failure. The drugs used in dentistry that are metabolized in the liver are amide local anesthetics and benzodiazepines. These drugs

may have reduced metabolism and blood levels will not fall as rapidly as in the normal patient. Single doses of the drug do not require reduction, but repeated doses may need to be reduced, or the interval between doses prolonged, to prevent excessive blood levels.

When CNS depressant drugs (e.g. cocaine, heroin, narcotics in general) are taken there can be dangerous drug interactions with local anesthetics containing vasoconstrictors. Cocaine and vasoconstrictors have a strong interaction that can lead to cardiac arrest. Other specific drugs should be investigated in a reliable drug reference for specific interactions with drugs used in oral care.

Smoking Cessation Programs

The American Dental Hygienists' Association established guidelines for a smoking cessation program [<http://www.askadviserefer.org/>] within the dental office. This effort is to assist oral healthcare providers to encourage patients to stop using tobacco products. In 2000 a National Youth Tobacco Survey (NYTS) was administered anonymously to school aged children. The NYTS was administered to a nationally representative sample of 35,828 students in grades 6 to 12 in 324 schools. A study describing the patterns of *tobacco use counseling* among physicians and dentists (as reported by these adolescents) determined the association between provider advice to quit and cessation activities among current smokers.⁸ The findings were 33% of adolescents who visited a physician or a dentist in the past year reported that a physician counseled them about the dangers of tobacco use, and 20% reported that a dentist provided a similar message. Among students who smoked in the past year, 16.4% received advice to quit from a physician and 11.6% received advice to quit from a dentist. Physician or dentist advice to quit was correlated with 1 or more quit attempts in the past 12 months. Researchers concluded that physician and dentist practice patterns on smoking cessation are well below recommended guidelines and that failure to suggest smoking cessation may represent a missed opportunity to affect adolescent smoking behavior.

Appointment considerations

Regular visits for oral health services are difficult due to the lifestyle of the addict. Substance abusers have frequent missed appointments and failure to pay for services may occur. Behavior management problems are possible. Medical complications may cause treatment to be delayed in order to complete medical consultations. Vital signs must be measured at every appointment to assess systemic health. Needle tracks may be evident when the blood pressure cuff is placed. Pain tolerance may be decreased, resulting in failure of local analgesic agents to relieve pain. Oral healthcare providers should require anyone suspected of drug abuse to sign a statement indicating drugs have not been used within the previous 24 hours.^{3,4}

Dental Hygiene Applications

The dental hygienist must use the medical history information as well as extraoral observation and clinical examination to identify the patient with substance abuse problems. Breath odors may be indicative. Enlarged parotid glands should be investigated for etiological factors. The practitioner should be aware of the possibility for increased blood pressure and tachyarrhythmia and monitor vital signs each appointment. Awareness of the potential for excessive bleeding when poor liver function is likely and monitoring bleeding during periodontal procedures is necessary. If excessive bleeding is observed treatment should be stopped and digital pressure applied. Referral for medical evaluation and necessary blood coagulation tests should be requested before treatment progresses. Since alcohol and tobacco use increases the risk for oral cancer an oral cancer exam should be completed at each maintenance visit. Reduced salivary flow may cause increased caries or candidiasis. Anticaries agents should be recommended if needed and antifungal therapy prescribed by the dentist, if indicated. Because opioid abusers develop tolerance to the analgesic effects of opioids managing dental pain can be difficult. Nonsteroidal analgesics (ibuprofen, naproxen) may be used. If the patient is in recovery, giving an opioid-containing analgesic can cause the recovery to fail and stimulate the person to begin abusing opiates again. For the alcoholic patient, acidic drugs, such as aspirin and NSAIDs should be avoided due to the risk of inducing bleeding in the stomach. Acetaminophen can be used up to 4 gm daily. There is an absolute drug interaction between vasoconstrictors and cocaine that prohibits using the two drugs together. Vasoconstrictors should also be avoided when methamphetamine has been used within the past 24 hours. This must be explained to the patient and the patient must provide assurance that drugs will not be used within 24 hours prior to a dental hygiene appointment where local

anesthesia with a vasoconstrictor is indicated. The vasoconstrictor is needed to reduce periodontal bleeding and use of a local anesthetic alone may not provide the duration of anesthesia or the degree of hemostasis necessary for the procedure. Non-alcohol mouth rinse products should be recommended when substance abuse is suspected or in those with a history of alcohol abuse. Practitioners can advise counseling for drug addiction when the abusing client admits to using drugs. Awareness of the paranoia that accompanies long term METH use, however, is an indication to avoid confronting the suspected METH user about practitioner suspicions.

The identification of dental patients with substance abuse issues is an important function of dentistry. Negative outcomes related to oral care is essential, but also assisting the client in seeking treatment to become sober is important. It is difficult to talk with a client about seeking treatment for substance abuse. There are suggestions on the website for Partnership for a Drug Free America, as well as the National Clearinghouse for Alcohol and Drug Abuse Information. Licensed Alcohol, Tobacco and Other Drug (ATOD) treatment facilities are available in most communities.

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**CE Article Post-Test:
Substance Abuse: Considerations for the Oral Health Professional
When the Client is Suspected to be Abusing Substances
for the State of Tennessee**

1. All of the following EXCEPT one are examples of "drug shopping behaviors". Which is the EXCEPTION?
 - a. Appearing at the office early in the work-day
 - b. Complaints of pain
 - c. Promises to return for oral care
2. Chronic self-medication with a drug in excessive quantities that leads to dependence and functional impairment is the definition of
 - a. drug abuse.
 - b. drug misuse.
3. Which of the following lead to compulsive patterns of drug use where the user's lifestyle is focused on taking the drug?
 - a. Psychological dependence
 - b. Physical dependence
 - c. Both of these
4. An etiologic factor in addiction is _____.
 - a. Emotional insecurity
 - b. Genetic factors
 - c. Taking a drug that affects the central nervous system
5. The usual cause of death from narcotic drug overdose is
 - a. Cardiac arrest
 - b. Multiple organ system collapse
 - c. Respiratory collapse followed by cardiac arrest
6. A medical emergency associated with drug withdrawal when the substance abuser tries to stop taking narcotics is
 - a. cardiac arrest.
 - b. seizures.
 - c. stroke.
7. Street names of "Ice, Crank and Crystal" are names for ...
 - a. Cocaine
 - b. Heroin
 - c. Marijuana
 - d. Methamphetamine
8. All of the following EXCEPT one are behaviors suggestive of substance abuse. Which is the EXCEPTION?
 - a. Complaints about oral care
 - b. History of broken appointments
 - c. Pain complains with evidence of no disease
 - d. Repeated requests for pain medication
 - e. None of these
9. Oral effects of nicotine abuse include which of the following?
 - a. Lack of bleeding on probing
 - b. Rampant caries
 - c. Recession of gingivae
10. A local anesthetic with epinephrine is absolutely contraindicated when cocaine has been used soon before the dental appointment.
 - a. True
 - b. False

CE Article Post-Test Answer Sheet:

Instructions: Use this answer sheet to record your answers to the above exam. Please place the **corresponding letter** answer for each question in the blank provided. Only one answer is correct.

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2.	_____	7.	_____
3.	_____	8.	_____
4.	_____	9.	_____
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