



Meth Mouth

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Educational objectives

Upon completion of this course, participants should be able to achieve the following:

- Summarize the historical development of methamphetamine.
- Describe the “typical” meth user.
- Discuss the behavioral, physical and psychological indicators observed in meth users.
- Identify the oral manifestations of meth use.
- Utilize appropriate management skills for safe treatment of a meth abuser.
- Discuss the treatment modalities available for meth rehabilitation.
- Recognize that meth’s toxic ingredients and production byproducts have legal and environmental ramifications.
- Select resources for patient education.

Introduction

Methamphetamine (meth) abuse is on the rise and represents a problem that must be dealt with on a national level. Meth has a profound effect on the user’s entire body including the oral cavity. As health professionals, we have an obligation to seek education on the symptoms of methamphetamine use and the precautions to take when treating the methamphetamine abuser. This article explores the history, physical and psychological effects, implications for dental team members and other topics related to the meth phenomenon.



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Methamphetamine is currently in the forefront of the public's awareness due to media attention, but it has existed as a drug since the late 1800s. In the margin is a brief historical timetable.

Meth is known by a wide variety of street names. The purest forms of meth are known as ice, crystal or Tina. "Glass" usually indicates a chunk form of meth. Meth is also known as "poor man's cocaine" because of its lower cost and the longer high it produces. Additional names include crank, speed, yaba, and zoom. Users are known as "tweakers" or "speed freaks." Manufacturers are known as "cookers."

Due to the variety of ingredients and recipes, the forms and colors of meth vary widely. This lack of consistent color and form makes it difficult for law enforcement agents to identify. The powder form of meth is usually white, pink or yellow. Meth also comes in pill form and can be almost any color. A third form is rock crystals or chunks.

Current Problems with Methamphetamine Use

The problems with meth are widespread. Children can be affected by the fumes from meth labs operating in or near their homes. The prison system is overwhelmed by the dental needs of incarcerated meth users. Hospital emergency rooms report that meth is the most common drug problem, and ER visits by meth users are increasing. Users and cookers have been characterized as paranoid, armed and violent. Meth labs are often booby-trapped and put law enforcement officers at risk. Due to the explosive and toxic nature of the manufacturing process, meth labs in homes, hotel rooms and cars both on the street and in parking lots put us all at risk.

According to the National Drug Intelligence Center, the manufacture of one pound of meth creates five to seven pounds of toxic waste that is as dangerous as the drug. When the toxic waste is dumped, protected lands and ground water are contaminated. This contamination places domestic animals, wild animals and humans at risk for sickness and death. In order to clean up meth labs and dump sites, personnel must have special training and wear biohazard suits and respirators. A typical cleanup can take eight to 15 hours and can cost anywhere from \$5,000 to \$20,000.

Methamphetamine Ingredients

Meth is "cooked" from a variety of common, easily obtainable ingredients. Recipes for cooking meth can be found on the Internet. It is inexpensive to make; \$1,000 of raw materials yield approximately \$20,000 of meth. The main ingredient is pseudoephedrine or ephedrine found in over-the-counter cold and allergy medicines. Additional ingredients may include anhydrous ammonia, gasoline, lithium and red phosphorus.

Demographics of Use

Methamphetamine users come from many populations. The typical meth user is Caucasian and between the ages of 19 and 30. Prevalence of meth use is increasing among college students and young professionals who frequent nightclubs.

By the 1980s, Mexican drug cartels were manufacturing meth for distribution in Hawaii and Southern California. The use of methamphetamine has spread across the Western states, the Midwest and the South over the last five years. Recently, the Northeast has experienced increased use.

Cooking labs are becoming more prevalent in rural areas. The pronounced unpleasant odors associated with meth production have caused cookers to use less-populated areas, including national parks and other federal lands, to avoid detection.

Meth Timeline

- **1887** – German scientist first makes amphetamine.
- **1919** – A more potent methamphetamine is synthesized in Japan and used to treat asthma, schizophrenia, depression, alcoholism and narcolepsy.
- **1940s-1950s** – Soldiers use meth to stay awake and fight depression; truck drivers use it to stay awake during long drives; students use it to stay awake to study; and women try it for weight control and to meet the demands of being a wife, mother and employee.
- **1960** – Outlaw biker gangs become "cookers" of meth as it becomes a part of the drug culture.
- **1970s** – Problems with use/abuse lead to federal legislation that restricts legal production, leading to an increase in illegal production.
- **1980s** – A purer and smokeable form of meth appears in Hawaii.
- **1990s** – New recipes make meth easier to make and more potent. Meth use begins to move to Mid-western states and lawmakers take an increased interest.
- **2000-Present** – Rural labs increase, and Oklahoma is the first state to limit access to raw materials.

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Figure 1



Figure 2

Methamphetamine Effects

Methamphetamine use can produce devastating, sometimes fatal consequences that affect all systems of the body. Numerous acute and chronic physical, behavioral and psychological side effects are evident.

CNS Effects

Methamphetamine dramatically affects the central nervous system (CNS). It acts as a potent CNS stimulant and is highly addictive. Meth use causes the release of the neurotransmitters dopamine, norepinephrine and serotonin and blocks their re-uptake, which results in a sense of euphoria. This drug causes the release of three times more dopamine than cocaine and a more intense high. Because meth is metabolized slowly, the high is also longer and the potential for damage, including neurological damage, is greater than other drugs of abuse. Whereas cocaine is metabolized in one hour, meth takes 12 hours. Meth is rapidly absorbed and reaches its peak effect in two to three hours. Continued meth use reduces the levels of dopamine in the brain, and symptoms similar to those of Parkinson's disease become evident. However, since meth is a neurotoxin, abusing it can also result in cerebral edema, cerebral hemorrhage, paranoia and hallucinations.

Short-term CNS effects of meth abuse include insomnia, hyperactivity, decreased appetite and tremors. Extended meth abuse can cause depletion of monoamines in the brain, which can have a deleterious effect on learning. Long-term use of meth can also lead to psychological addiction, stroke, violent behavior, auditory hallucinations, mood disturbances, delusions, seizures and short- or long-term psychosis. Withdrawal from the drug produces severe depression.

Cardiovascular and Respiratory Effects

The ingredients of methamphetamine stimulate the cardiac and respiratory systems, causing uncontrolled hypertension, tachycardia and possibly arrhythmias. Increased respiration and shortness of breath can result. Pericarditis and permanent coronary artery disease have been shown in long-term abusers. Users can experience dangerous hyperthermia, which can lead to seizures, permanent brain damage or death.

Physical Indicators

Clinically, the chronic meth user may present with formication (the sensation of insects crawling beneath the skin) and unusual lesions and scabbing on the face, arms and legs (Figure 1). These cutaneous manifestations are commonly caused by the users scratching at the imaginary insects ("crank bugs").

When a meth user is under the influence of the drug, they have decreased appetite and increased activity. Consequently, the long-term user will often have a marked weight loss and may show effects of malnutrition. Additional physical indicators of meth use include unusual body odors, dilated pupils, unexplained bruises from falling, severe lung and kidney damage, inflamed or eroded nasal septum and track marks at injection sites. The oral manifestations will be discussed later. Figure 2 demonstrates some of the physical effects of methamphetamine use.

Behavioral Indicators

Many meth users abuse the drug in pursuit of the behavioral side effects, which can last for hours and sometimes days. The user may experience prolonged periods of insomnia and increased activity, which can be desirable to an overworked mother or student preparing for examinations. However, undesired effects include bizarre behavior, tremors and slurred/rapid speech. Meth users frequently abuse other illegal drugs as well as tobacco and alcohol.

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Figure 3



Figure 4

Psychological Indicators

There are numerous psychological effects associated with methamphetamine use, which can range from anxiety and confusion to depression, paranoia and homicidal and suicidal thoughts. Hallucinations are also common among those abusing methamphetamine. These hallucinations can lead to psychotic symptoms that persist after the drug has been stopped. Additionally, the user's personality profile may change, involving changes in habits, friends and drug-seeking behaviors.

Other Effects

There is an increased incidence of HIV/AIDS and hepatitis B and C among methamphetamine abusers, primarily due to sharing of needles and to increased libido, which can lead to unprotected and rougher sex. Acute lead poisoning has been documented among intravenous meth users. Meth use during pregnancy poses a significant risk to the developing fetus, causing prenatal complications, increased rate of premature delivery and altered neonatal behavioral patterns.

Oral Manifestations of Methamphetamine Abuse

The oral signs and symptoms of meth abuse are significant and severe. The dental professional is often the first to observe the signs of meth abuse, the most dramatic sign of which has been termed "meth mouth" (Figure 3). This is a distinctive pattern of caries on the facial and proximal surfaces of teeth, especially the anterior teeth. It is an aggressive erosion of enamel accompanied by destruction of periodontal tissues. The rampant caries resembles radiation caries, early childhood caries or "pop rot" but lacks the associated etiology.

Etiology of Manifestations

The etiology of this dental disease stems from the caustic nature of the drug as well as the lack of concern by the user for daily personal hygiene and professional dental care. The method in which the drug is administered plays a significant role in the oral effects: When smoked, the drug emits toxic fumes. These corrosive vapors produce significant damage to the oral structures. Nasal insufflations (snorting) can also have dental implications. The noxious substances proceed down the nasal pharynx into the back of the throat and coat the oral cavity with the destructive substances.

Caries

Meth mouth, or crank decay, is commonly observed in methamphetamine users. The cause of meth mouth is multifactorial. Meth users commonly experience drug-induced cravings for high-calorie carbonated beverages. As a result, soft drinks containing high amounts of sugar and caffeine are often consumed to prolong the high and assuage the cravings. The drug produces xerostomia, reducing the amount of protective saliva and buffering capacity around the teeth. The oral bacterial levels can drastically increase, exacerbating the decay. Often, the caries are so significant and rampant that full-mouth extractions are indicated (Figure 4).

Periodontal Disease

Methamphetamine users have an increased incidence of periodontal disease. The drug causes vasoconstriction of the vessels that supply blood to the oral tissues. With repeated use of the drug and repeated vasoconstriction, the blood vessels are permanently damaged and the oral tissues die.

Bruxism

Methamphetamine can cause users to feel anxious and nervous, resulting in clenching and grinding of their teeth. The vasoconstriction can also affect the vitality of the teeth, increasing the likelihood of enamel fractures.

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Special Considerations

Keep in mind the following six safety tips for approaching a methamphetamine abuser:

1. Keep a safe distance. Coming too close can be perceived as threatening.
2. No bright lights. Bright lights might cause them to react violently.
3. Speak slowly, using a low voice.
4. Use slow movements. The patient might misunderstand sudden movements.
5. Keep hands visible. The patient might feel threatened and become violent.
6. Keep the patient talking. A methamphetamine user who falls silent can be extremely dangerous. Silence often means that paranoid thoughts have altered their perception of reality and anyone present can become the object of the delusions.

Recommendations for the Dental Team

When methamphetamine use is suspected, hygienists need to document all relevant oral findings; provide appropriate and safe treatment; and encourage medical evaluation, intervention and follow-up as well as subsequent dental visits.

Treatment of meth mouth includes dietary restrictions, daily prescription fluoride treatments, oral homecare instructions and restorations/extractions.

Caution should be used when administering local anesthetics, sedatives or general anesthesia or nitrous oxide and when prescribing narcotics. These treatments could cause hypertensive episodes or other health problems. It is the dental professional's obligation to encourage the user to seek a medical evaluation. If it is suspected that a child is living in the environment of a meth lab, reporting of this suspected child endangerment is mandatory.

Legal Response to the Problem

A major victory in the battle against methamphetamine has been achieved. Several states have passed laws requiring that products containing pseudoephedrine be placed behind the counter. In other states, major retailers including Target, Kmart, and Wal-Mart have voluntarily restricted access to these products. Inconsistent state laws and voluntary actions might be insufficient to curb meth's widespread abuse. One possible solution is a national standard that limits access to pseudoephedrine. The Patriot Act would create a uniform national policy.

Many states have child abuse or endangerment laws that specify penalties for manufacturing meth in the presence of a child. Children in homes with meth labs are exposed to toxic chemicals and commonly experience physical, sexual or emotional abuse or neglect by parents experiencing a high or coming down from one.

Rehabilitation Programs

The treatment for meth abuse is cognitive-behavioral intervention in an outpatient setting. This teaches clients to recognize the cues that lead to meth use and the cravings produced. Meth recovery support groups also appear to be effective adjuncts to behavioral interventions. There are no pharmacological treatments for dependence on amphetamines and methamphetamines. Antidepressant medications are only helpful in combating the symptoms of meth withdrawal.

Conclusion

Methamphetamine abuse is increasing within the general population. It is essential that the dental professional have the knowledge to appropriately treat dental concerns and refer the patient for necessary medical intervention. ■

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Author's Bio

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1. Users of meth are known as
 - a. Cookers
 - b. Icers
 - c. Speeders
 - d. Tweakers
2. Street names for meth include
 - a. Tips
 - b. Syrup
 - c. Ice
 - d. Quartz
3. Meth pills can be colored
 - a. Blue
 - b. Green
 - c. Pink
 - d. All of the above
4. The main ingredient in meth is
 - a. Phenylphrine
 - b. Pseudoephedrine
 - c. Pseudomorphos
 - d. Psyllium
5. The typical meth user is
 - a. Male
 - b. Female
 - c. Between the ages of 19-30
 - d. A college student with a low grade point average
6. Meth labs are found in rural areas because
 - a. Unpleasant odors may be less noticeable
 - b. Raw ingredients are more easily obtained
 - c. Meth producers tend to live in rural areas
 - d. All of the above
7. Short term effects of meth use include
 - a. Narcolepsy
 - b. Increased salivation
 - c. Hyperactivity
 - d. Lethargy
8. Effects of long term meth use include
 - a. Asthma
 - b. Stroke
 - c. Depression
 - d. Narcolepsy
9. Smoking meth is damaging to the oral cavity because
 - a. The caustic vapors are drawn into the mouth
 - b. Meth users don't attend to oral hygiene needs
 - c. Users consume sugared beverages
 - d. All of the above
10. Safety tips for dealing with a meth user include
 - a. Keep your hands visible to the user
 - b. Talking loudly to keep their attention
 - c. Get closer to the user to keep them in control
 - d. All of the above

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