

Prescription Drug Abuse & Meth Mouth: What's Cooking in Your Office

**141st SCDA Annual Session
Thursday April 29, 2010
9:00 a.m. – noon**

Drug abuse is a major problem affecting dental practice as well as our families. The illegal use of prescription drugs, meth abuse, meth mouth in teens, all impact dental practice. Learn about the rampant illicit use of the painkillers, internet drug trafficking, dangers of cough medicine abuse in children, doctor/shopper cons, the meth abuse trends, and what we can do about it. Dental teams can play a huge role in drug abuse identification, prevention and treatment. Learn how to prevent initial drug use, recognize early signs and symptoms of use, give prevention messages/brief interventions, identify patients abusing drugs, and refer patients with drug problems.

By the end of this course participants will be able to:

- Describe how drug abuse can lead to addiction and drug seeking behavior.
- Recognize the clinical problems associated with narcotic and OTC drug abuse.
- Describe meth users' behaviors, drug effects and etiology of meth mouth.

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Impact of Alcohol and Other Drug Misuse and Abuse in America and in our Dental Practices

Cost of Alcohol and Drug Abuse

\$500 billion annually

Lost productivity

- Illness and premature death

Health care expenditures

- Medical consequences and treatment

Motor vehicle accidents

Crime, law enforcement, property destruction, correction services

ADA Policy Statements, Guidelines and Resolutions

Res. 8H-2005 Recognizes the extent of problems associated with the abuse of controlled substances, particularly opioids, and guidelines for the use of opioids in the treatment of dental pain

Res. 14H-2005 Treatment for patients with substance use disorders

Res. 15H-2005 Alcohol and other substance use by pregnant and postpartum patients

Res. 16H-2005 Policy related to child and adolescent patients

Res. 11H-2005 Statement on substance abuse among dentists

Prescription and OTC Drug Abuse and Diversion

Prescription Drug Abuse

Illegal use of these drugs is responsible for multiple overdoses and fatalities

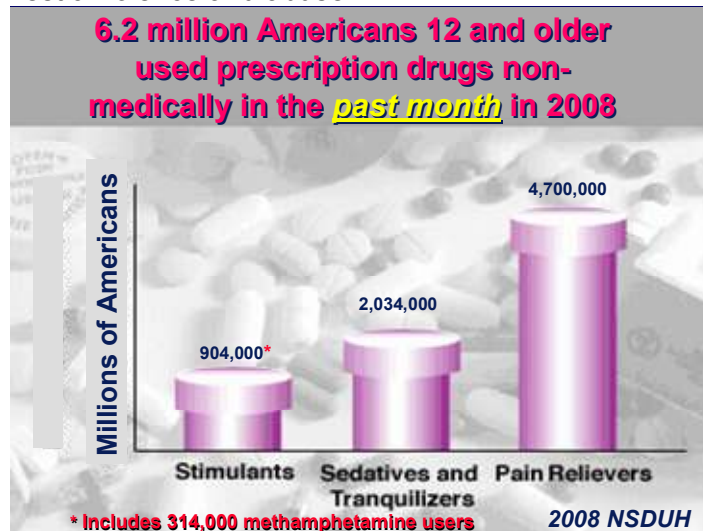
Opiate addiction is blamed for causing a surge in crime:

Robberies and break-ins at pharmacies

Harassments, assaults, and robberies of patients leaving drugstores

Shoplifting and burglaries to support addiction

Domestic violence and abuse



National Center on Addiction and Substance Abuse (CASA)

National study of diversion and abuse of controlled prescription drugs on the Internet:

Americans are abusing prescription drugs at alarming rates

CASA's Study and Findings:

Identified 365 Web sites advertising or selling controlled prescription drugs

85% of the Sites did not require a prescription

Many offered an "online consultation"

Internet provides a wide-open channel of prescription drug distribution

Ease of availability has enormous implications for public health

“Online Pharmacy Consumers Protection Act”

Prohibit sale or purchase of controlled prescription drugs on the Internet without an original copy of a prescription

Require certification of online pharmacies to assure that they meet rigorous standards of professional practice

Particular concern of prescription drug abuse for:

Adolescents - Sharp increase in 12 to 17 yr. olds and the 18 to 25 yr. olds

Women - Increase rate of use in younger women

Older adults - 17% of 60+ yr. olds may be affected by prescription drug abuse

Why are Prescription Drugs so Popular?

Legal, Easy to Obtain, Cheap and Safe

Legal: Perception that there is less legal risk than illicit drugs

- Federal law does not distinguish between CI & CII drugs

Easily obtainable:

- From users, diverters, clinics, hospitals, Emergency Departments and practitioners

- Easy to steal

Cheap: Low or no co-pay cost may motivate people to use or sell PD's

Safer:

- Easily identify and less stigma than street drugs

- Higher purity and less risky

- Easier to use, no IV injecting

- Less HIV or hepatitis risk

Why do People Become Prescription Drug Abusers?

1. Some people who abuse PD's do so intentionally from the outset

2. For others, what began as prescribed use escalates over time

“Started using on their own, self-medicate, take care of their own anxiety, depression, pain ...”

This misuse may escalate over time to abuse and addiction

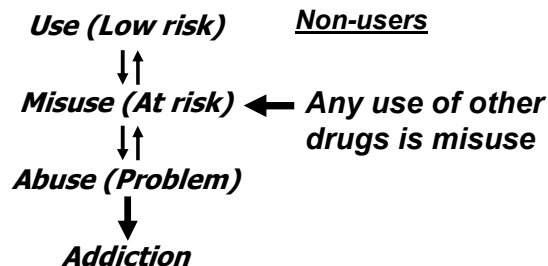
From Use to Misuse to Abuse to Addiction:

The Continuum Model - Institute of Medicine: *Broadening the Base of Treatment for Alcohol Problems.*

Substance misuse is use of a drug that varies from a socially or medically accepted use.

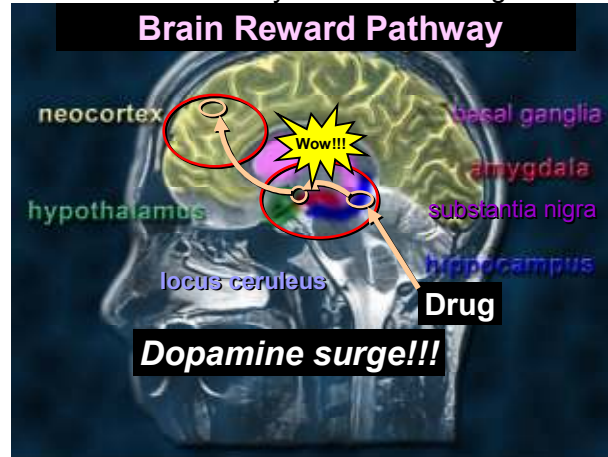
Substance abuse - any use of drugs that cause physical, psychological, economic, legal or social harm to the individual user or to others affected by the drug use's behavior.

Identify Patients as:



Brain Reward Pathway

Nucleus Accumbens (NAc) is the “Pleasure Center” and is activated by pleasurable behavior
 Frontal Cortex is involved in inhibitory control and assigns value to stimuli



The “Wow!!!” is a big reason people take drugs but other things happen...

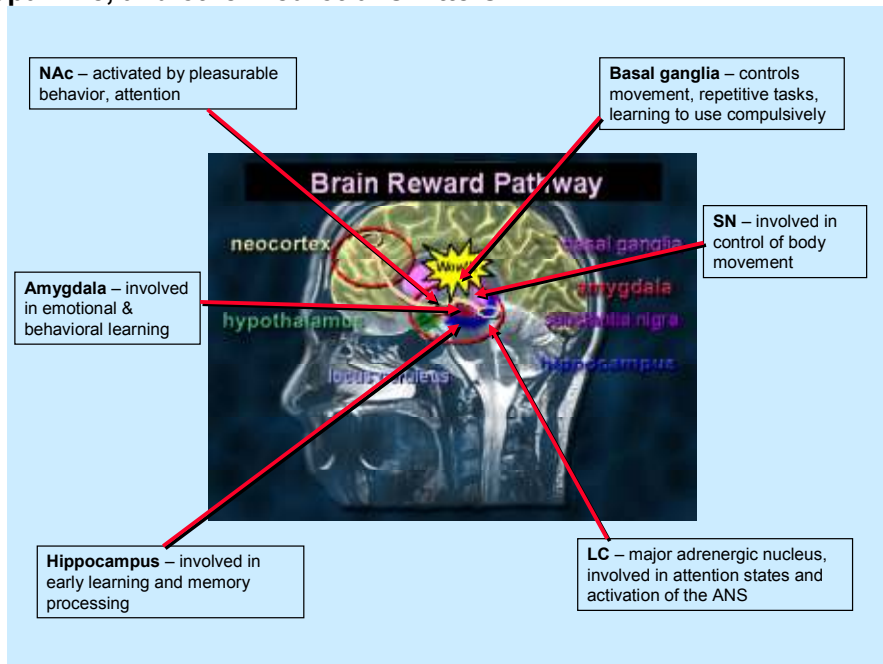
Neurotransmitter

Dopamine (pleasure, learning)
 Serotonin (emotional stability)
 Norepinephrine/ epinephrine (behavioral & physical activity)
 Glutamate
 GABA

Normal Functions

Pleasure (hunger/thirst/sexual), attention, organization of thought, muscle control and motor function
 Mood stability, thought processes, sleep control, appetite, self-esteem
 Energy, motivation, attention span, alertness, pleasure, assertiveness, confidence, heart rate, blood pressure, etc.
 Excitatory neurotransmitter
 Inhibitory neurotransmitter

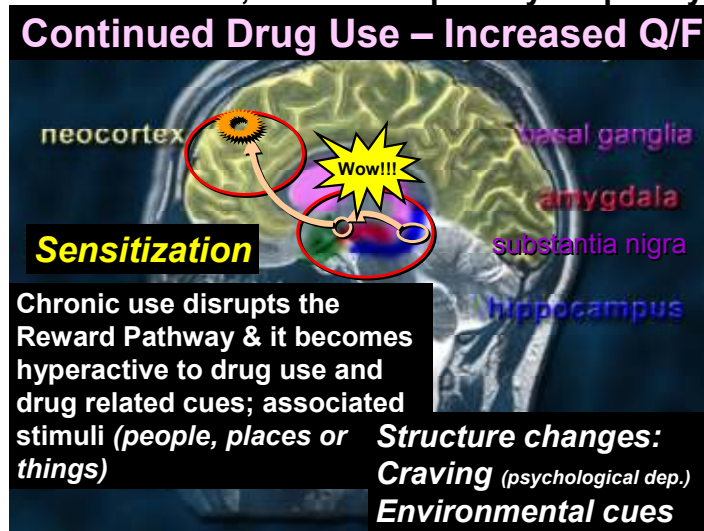
Psychoactive addictive drugs act directly or indirectly on the Reward Pathway increasing the release of dopamine, and other neurotransmitters



Tolerance and withdrawal

A physiological state of adaptation to a drug or alcohol usually characterized by the development of tolerance to drug effects and the emergence of a withdrawal syndrome during prolonged abstinence.

What happens with continued use; increased quantity/frequency of use?



Sensitization refers to persistent hypersensitivity to the effect of a drug in a person with a history of exposure to that drug. Sensitization is one of the neurobiologic mechanisms involved in craving and relapse.

Craving is an intense desire to re-experience the effects of a psychoactive substance. The emotional state of craving a drug either for its positive effect or to avoid negative effects associated with its absence; can range in severity from mild desire to compulsive drug seeking behavior. Craving is the cause of relapse.

Addiction is a brain disease

A “molecular switch” is thrown in the brain

- Compulsive drug seeking behavior
- Loss of control over drug use

Addiction or Chemical Dependency

A disease characterized by continued use and abuse of a drug despite recurring negative consequences in a person's life

Loss of control over taking a substance or doing a process

A behavioral pattern of drug use, characterized by overwhelming involvement with the use of a drug (compulsive use), the securing of its supply, and a high tendency to relapse after withdrawal

Dental Professionals Have an Excellent Opportunity To:

- **Identify/screen for alcohol and other drug use in patients**
- **Give drug use prevention messages to patients**
- **Do brief interventions on patients who are misusing and abusing drugs**
- **Refer addicted patients for assessment and/or treatment**
- **Support/monitor addicted patients during their recovery**
- **Minimize relapse in recovering patients**

Opioids/Opiates examples: *Vicodin, Percocet, OxyContin*

How they work...

Attach to certain brain and spinal cord receptors

Block the transmission of pain messages to the brain

Increase the level of *dopamine* in the Reward System of the brain

What's the Opiate High?

Euphoria, “*rush of pleasure*”

Fall into a pleasant dreamy state, “*feeling of tranquility*”

Drowsiness - “*on the nod*”

Decreased sensitivity to pain

Codeine – used for mild pain:

Tylenol IV (with codeine) for dental pain
Cough suppressants e.g. Robitussin A-C

Dextromethorphan

An effective antitussive agent
Dose is 15-30mg 3-4x/day
Abused on the street; a.k.a. DXM or Robo
Abusers use 300-900 mg (3-9 oz.) all at once
Produces hallucinations or dissociative “out-of-body” effects similar to PCP or Ketamine:
- Stimulation, loss of coordination, visual and auditory hallucinations

DXM Effects/Signs & Symptoms

Pupil dilation, skin sensitivity, alters tactile (touch) sensations
Confusion, disorientation, lack of coordination, reduced agility
Robotic, zombie-like walking, "robo-walk"
Dizziness, nausea, vomiting, fever, tachycardia
Dissociative effects may last 6 hours
Hangover/depression lasting 1-2 days

Commonly Abused Opiates

Hydrocodone (Vicodin, Lorcet) CIII
Oxycodone (OxyContin, Percocet, Percodan, Tylox) CII
Meperidine (Demerol) CII
Hydromorphone (Dilaudid) CII
Fentanyl (Sublimaze) CII

Hydrocodone - *derived from morphine*

(Lorcet, Vicodin)
Moderately strong opiate, CIII drugs, very widely abused
Combination drugs 5/500, 10/650 w/acetaminophen

Oxycodone - a strong CII analgesic

Synthesized from thebaine

Combination drugs:

Percodan - w/aspirin; Percocet, Tylox -w/acetaminophen

Percodan or Percocet:

Pharmacy price: \$0.60each
Street value: \$10each

OxyContin - a highly potent CII analgesic - a time release preparation

- Very widely abused and in Eastern U.S., very addictive
Good News – Powerful pain reliever for cancer and chronic pain sufferers
Bad News – Replacing other prescription narcotics as the drug of choice
Used for moderate to severe pain expected to last more than a few days
Boon for patients suffering from cancer, crippling arthritis and other problems
Timed release gives a biphasic response

When Abused Oxy Gives a Powerful High

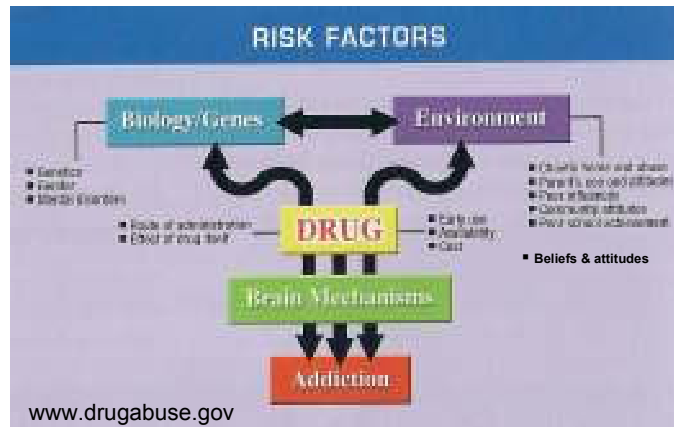
High concentration of Oxycodone in time release pills
Abusers grind pills up and snort or inject them all at once
Oxy or OC's gives a “heroin-like” high

“OC's or Oxy” (\$1-2/mg):

	<u>Pharmacy cost</u>	<u>Street value</u>
10mg	\$1.60	\$10–20
40mg	\$4.70	\$40–80
80mg	\$8.80	\$80–160

Risk Factors for Alcohol/Drug Use

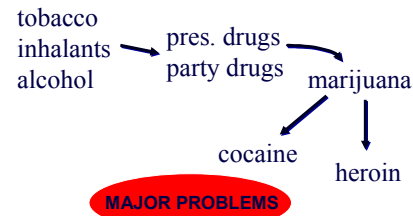
Individual/Family/School/Community/Environmental Risk Factors



www.drugabuse.gov
Drugs, Brains, and Behavior: The Science of Addiction; NIDA, March 2007

- Favorable attitude toward alcohol and other drugs
- Family history of drug abuse
- Availability and cost of alcohol and other drugs
- Early onset of use

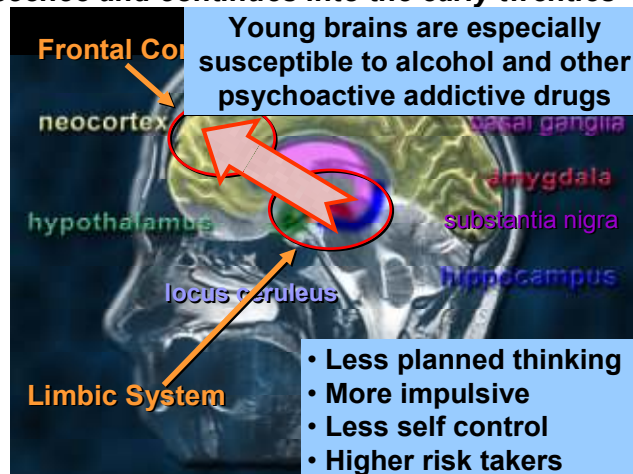
The Progression of Use



- Teens who begin drinking before age 13 years are 5X more likely to develop alcoholism

Brain Maturation in Adolescents and Young Adults

Recent brain imaging research shows that brain development is ongoing during adolescence and continues into the early twenties



Research Conclusions:

- Young brains are more susceptible to drug use than adults
- Drug use may impact normal brain development and maturation:
 - Learning ability and emotional development
- Implications of these studies are **enormous** for parents

Young adults may be less likely to develop serious alcohol and other drug problems if the age of first use is delayed beyond childhood or adolescence

Family conflict or stress

Poor parent-child relationship:

- Lack of caring and support
- Lack of monitoring and supervision
- Inconsistent or excessive discipline

Parental drug misuse and/or abuse

Association with drug-using peers

Lack of involvement in school/community

Little commitment to academic achievement

Portrayal of ATOD on T.V. and in the movies

Advertising impact on norms and behavior

Web sites popularize and glamorize drug use and promote various drug cultures

One Major Web Site: Vaults of Erowid

An encyclopedic type site

Its purpose is “documenting the complex relationship between humans and psychoactives”

Availability and cost of alcohol and other drugs

Poor enforcement of laws concerning alcohol and illegal drug use

Higher Risk for Health Care Professionals

- High Incidence of Familial Alcoholism
- Stress of the Educational Process and Practice
- *Access to Controlled Substances*
- *Tendency to Self-treat*

Heroin

Most infamous product of opium poppy; huge resurgence in use

Improved quality and price fallen; heroin gets to brain faster

Methods of Opiate Use:

Snorting Heroin: Since IV injection is more difficult and dangerous many users start by snorting but as tolerance develops progression to IV use becomes necessary!

Intravenous (IV)

Reaches brain in 15-30 sec, “rush”; effects last 3-5 hours

Addict needs several doses a day to avoid withdrawal, “on the hustle” to find a “connection”

IV drugs are not designed for “Slamming”

Grinding up pills and injecting suspension is extremely risky

Pill components do not dissolve well:

Particles may clog blood vessels and block blood flow

Particles irritate blood vessels and may cause vascular inflammation and permanent damage; watch for track marks

Serious Complications of IV use

Danger of bolus injection

Damage to blood vessels

Viral infections

Hepatitis B and HIV

Bacterial infections

Meningitis, osteomyelitis, endocarditis, abscesses, gangrene

Physical Effects of Narcotics

Flushing of the skin, sweating, itching

Sedation, confusion, memory problems

Dizziness, anxiety, seizure

Nausea and vomiting

Constipation (Lomotil - travelers diarrhea)

The effects on breathing can be extremely dangerous

Opioid/Opiate Overdose

Overdose can be lethal

Breathing slows to the point that it ceases

It can happen with first time use, not an accumulative effect

Medical intervention is critical

Opiate Withdrawal Syndrome

Begins in 8-10 hours

Earliest signs are watery eyes, running nose, yawning

Restlessness, irritability, loss of appetite

Flu like symptoms appear:

Watery eyes, running nose, yawning; Shivering and sweating, *“cold turkey”*

Abdominal cramps and muscle aches; Involuntary leg movements, *“kicking the habit”*; Diarrhea; an increased sensitivity to pain; difficulty in sleeping;

These intensify over the next several days and then start to diminish

Dysphoria – the ***“just-feeling-lousy feeling”*** lasts for a long time

Opiate addicts just feel bad and bad in a way that they know opiates will solve

The craving for a fix can last for months, long after the physical symptoms

Methamphetamine – CNS stimulant

A tremendous resurgence in use

Increased purity - from 12% to 90⁺% in the last several years

Easy to make it

Cheap and long-lasting effects

A.k.a.: “meth, crank, crystal, ice, glass “

Methamphetamine like other amphetamines produces:

Feeling of euphoria, elevates mood

Increased sense of self-esteem & self-confidence

Enhanced performance, alertness

Reduce fatigue

Decreases appetite

Oral, snort, smoke, IV

Meth: Illicit manufacturing

Precursor materials and chemicals:

OTC diet pills or decongestants - pseudoephedrine

Lithium batteries, solvents (acetone, ether, etc.), ammonia, salt, battery acid (sulfuric acid), HCl gas

All these materials can cause serious health risks and the solvents are extremely flammable

Meth users claim:

“I thought I was perfect” - enhances the mood

“Get more stuff done”, “Can work or party for hours on end - energizes its user

“Keeps my weight down” - suppresses the appetite

Also sought for its performance enhancing and aphrodisiac effects

Kids can get hooked on Meth

Behavior Warning Signs:

Erratic behavior, constantly misplacing things, lying, skipping school,

Isolation, paranoia, weird eating & sleeping patterns

Danger signs, things to look for:

Burns on thumb, red or irritated nostrils, butane lighters, cards for crushing, hollowed out pens, straws, gum wrappers

Progression of Effects:

Short Term Effects:

Euphoria, enhanced mood, increased alertness, increased energy, talkativeness, enhanced sexual activity
Light/Sound Sensitivity, shakes/tremors, elevated pulse and blood pressure, increased respiratory rate, elevated body temperature, sweating, jaw clenching, teeth grinding, insomnia, and hyperactive behavior

“Methamphetamine spree”: Binge Pattern of Abuse:

Very addictive, rapid tolerance develops

Chronic binge begins to continue the “high” or “orgasm-like reaction”

User increases dose but high decreases:

“Run“, repeated injections of up to a gm. every 2-3 hrs for days

“Tweaked” or “Zoned”

Finally user can't stay high any longer

Forgo food, sleep, etc... until supply gone or too disorganized to continue or drug doesn't work any more

“Crash“ after several days of use:

- exhausted, ravenous appetite

- rebound depression - dysphoria and restlessness

Long Term Effects:

Nervousness/Irritability, anxiety, depression, mood swings, weight loss, hallucinations, paranoia, hyperthermia, body burnout, Meth Psychosis

Signs and Symptoms of Methamphetamine Abuse

Headache, dizziness, confusion

Muscle aches and pains, nausea, vomiting

Meth mouth”: cavities, periodontal disease, fractures in teeth

Xerostomia may contribute to increased occurrence of caries due to lack of buffering capacity of saliva:

- Acidic foods and plaque build up and can wreck havoc w teeth/gums

Drug induced dehydration gives perception of dry mouth and users crave sugar-containing carbonated beverages

Distinctive pattern of decay on buccal smooth surfaces and interproximal surfaces of anterior teeth

Bruxism and Trismus

Stimulants increase muscle tension which can cause clenching and grinding wear and crack teeth

Drug induced nervousness and anxiety may also cause patients to clench and grind teeth

Smoking or snorting meth also exposes the oral cavity to caustic ingredients

Neglect in oral health care in drug users is also a big problem

Increased blood pressure, irregular heart rate (palpitations)

Hyperactivity, weight loss, insomnia - sweating, pallor, body odor

Pupil dilation, eyelid twitches, blurred vision

Hyperthermia, tremors, convulsions

Psychological disturbances - irritability, agitation, anxiety

Progression of social and occupational problems

With long term chronic abuse:

Violence, belligerence, aggressive behavior

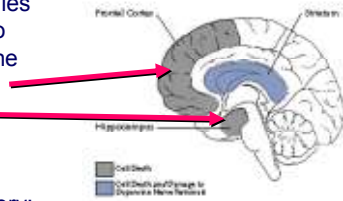
Hallucinations, withdrawal from reality

Body “burn out”- severe damage to heart, lungs, liver, brain, kidneys...

“*Methamphetamine psychosis*”: paranoia, compulsive repetitive behaviors, (tics, “crank bugs”, “speed bumps”)

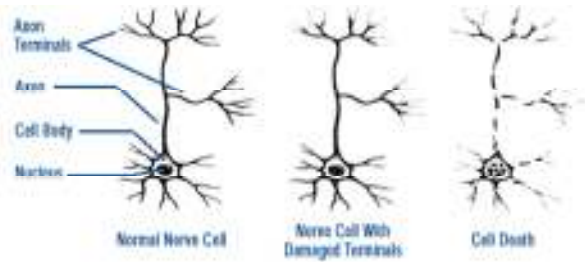
Meth is Neurotoxic

- Brain imaging studies showed damage to nerve endings in the frontal cortex and hippocampus

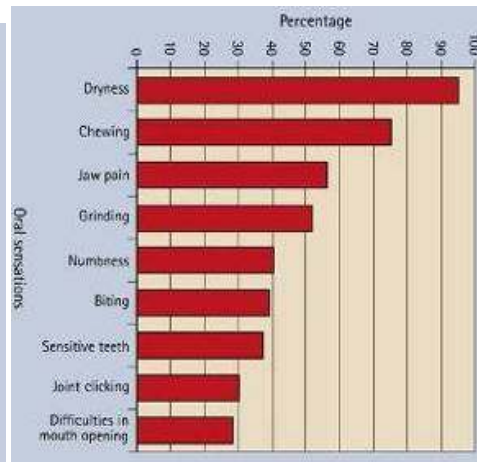
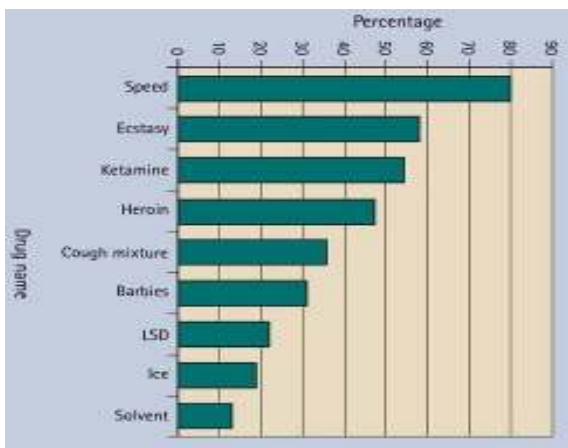


- Areas involved in learning and memory:
 - Verbal learning and motor tasks were diminished

- Histological studies show that meth triggers brain cell death in these brain areas



Oral Health Sensations Associated w Drug Abuse: BDJ: 198 p159, 2005



- Dryness**
- Chewing problems**
- Jaw pain**
- Grinding complaints**

- Numbness**
- Biting problems**
- Sensitive teeth**
- Joint clenching**
- Difficulty opening mouth**

References and Additional Reading

Prevention of Alcohol and Other Drug Problems *What We Can Do!* A Program for Parents: <http://www.uky.edu/~pjsamm1/PtPrevProg.ppt>

Drug Information Web Sites:

www.drugabuse.gov

www.samhsa.gov

www.health.org

www.drugfreeamerica.org

www.jointogether.org/sa/news/features

The CASA report: "*Under the Counter: The Diversion and Abuse of Controlled Prescription Drugs in the United States*" 2005 **publication can be obtained off the National Center on Addiction and Substance Abuse at Columbia University Web Site:** <http://www.casacolumbia.org/>

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