The Truth About Methamphetamines

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LABIO MED/ Options for Recovery

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Please note that this Power Point presentation is an educational tool that is general in nature. It is not intended to be an extensive review of methamphetamines as data and information on most substances changes frequently. The presenters are clinicians who work with women with methamphetamine use disorders. Materials in this presentation may encompass the use of other resources and will be cited appropriately at the close of the presentation.
Learning Objectives

1. The history of methamphetamines in the U.S
2. The impact of methamphetamines on the individual and community risk factors
3. Treating methamphetamine addiction
4. Strategies for helping pregnant and parenting women succeed in stopping and recovering from methamphetamine use.
History of Methamphetamine

- Amphetamine created in Germany in 1887
- Used widely during WWII by the Nazi and Japanese armies
- Japanese kamikaze pilots were documented to be high on meth
- Major challenge in postwar Japan
- Biker gangs in California after WWII began to distribute meth

Source – www.history.com
THE HISTORY OF METHAMPHETAMINE

1893
Methamphetamine is synthesized.

1932
Amphetamine inhaler called Benzedrine is introduced.

1939
Soldiers use meth during WWII to improve endurance.

1950s
Negative effects of meth are well-known but Benzedrine abuse is common.

1959
FDA requires prescriptions for Benzedrine.

1970
Meth becomes illegal in the U.S.

1980s
Ephedrine regulations increase and illegal meth is made with pseudoephedrine instead.

1994-2004
Meth use grows from 2% of the U.S. population to 5%.

2005
Congress passes the Combat Methamphetamine Act.

2006
WHO declares meth the most abused hard drug on earth.

2012
Prescription stimulant use explodes. 16 million Adderall prescriptions are written.

2014
Meth overdose deaths more than double, from 1,400 in 2010 to nearly 4,000.

2017
Meth is the greatest drug threat reported by 30 percent of agencies in the 2017 National Drug Threat Survey.

2018
Meth seizures at the border triple between 2012 and 2018.
What is Methamphetamine?

- Produced most commonly using the ephedrine/pseudoephedrine reduction method

- Meth is commonly manufactured in illegal, hidden laboratories, mixing various forms of amphetamine or derivatives with other chemicals to boost its potency.

(+)-amphetamine (AMP)  
(+)-methamphetamine (METH)
Meth is a highly addictive drug made from a variety of toxic ingredients.

Man made substance using common household chemicals

Meth is a central nervous system stimulant, similar to cocaine.

Meth produces a rush, followed by a state of agitation.
Highly Toxic Substances

- Drain Cleaner
- Battery Acid
- Antifreeze
- Over-the-counter asthma medicine containing ephedrine or pseudoephedrine
- Match-box striker (Red phosphorous)
- Lantern Fuel
- Hydrochloric Acid
- Lye
What Does Methamphetamine Look Like?

• Typically an odorless powder that dissolves quickly in water.
• Another form of meth is clear chunky crystals referred to as crystal meth or ice smoke-able meth which includes terms like Hanyak, Hironpon, Hiropon, Hot Ice, Cristy, Batu, Kaksonjae, LA Glass, LA Ice, Quartz, and Super Ice.
• May be in the form of small brightly colored tablets, referred to as YABA.
Methamphetamine Laboratories
AKA Meth Labs

- Contain dangerous chemicals which are potentially explosive.
- Meth cooks are typically individuals with substance use disorder problems who make a significant amount of money from meth sales.
- Cooking can cause severe burning, disfigurement and explosions that are dangerous.
The illegal laboratories create a lot of toxic waste — the production of one pound of methamphetamine produces five pounds of waste.

People exposed to this waste material can become poisoned and sick.

Nearby homes or buildings along with health concerns for the community.
Methamphetamine releases large amounts of dopamine in the brain, causing feelings of pleasure and euphoria.

How meth affects the brain

1. We feel pleasure when neurons in “reward pathways” release a neurotransmitter called dopamine into various brain areas.

2. Dopamine in the reward centers is released into the gap (synapse) between neurons, crosses to the next neuron and binds to receptors, providing a jolt of pleasure.

3. Methamphetamine stimulates the release of excess dopamine heightening the feeling of pleasure.

Source: National Institute of Health (NIH)
The Reward Circuit
How the Brain Responds to Methamphetamine
Craving for Stimulants is a Central and Very Powerful Component of Stimulant Dependence

- Classical conditioning and craving
- The brain and addiction
- Craving is automatic and creates a powerful push to use
- For many the craving seems overpowering and uncontrollable
- The craving is triggered by external (people, places, things, times of day) and internal (emotional states) stimuli
- Managing exposure to triggers and responses to triggers is important
Forms of Distribution
How is Methamphetamine Used?

- Smoked
- Injected
- Snorted
- Ingested
Why Methamphetamine

- Methamphetamine is three times as powerful as cocaine and is among the most difficult drugs to permanently quit.
- It triggers dependency faster than a majority of other illicit substances.
- Methamphetamine forces the brain to release an unnatural amount of dopamine at a given time, as well as norepinephrine, also known as adrenaline.
- The result is a rush, followed by a high. This chemical combination deeply affects the brain’s limbic system, which is responsible for emotion and memory.
People who use meth will often spiral into something called a binge, in which they become hyperactive and repeatedly dose with methamphetamine in hopes of maintaining the initial, euphoric high.

This uncontrolled drug use will often decrease its potency, however, making achieving the high impossible.

Many users continue to seek lines of meth to attempt to obtain the same high.
Eventually, a user will stop experiencing a high and “tweaking” begins. While tweaking, a user feels emptiness and unease.

Many people testify to feeling a loss of identity during this time. It is also common for users to experience hallucinations and extreme itchiness.

Addicts at this stage are at high risk for self-harm.
Eroding the Mind

Researchers have mapped brain decay caused by methamphetamine use. The damage affected memory, emotion and reward systems.

Average difference in brain tissue volume of methamphetamine users, as compared with non-users:

- Emotion, reward (limbic system)
- Memory (hippocampus)

Source: Dr. Paul Thompson, U.C.L.A.
Effects of Drugs on Dopamine Levels

**AMPHETAMINE**
- Graph showing % of Basal Release over time after amphetamine administration.
- Graph includes curves for DA, DOPAC, and HVA.

**COCOAINE**
- Graph showing % of Basal Release over time after cocaine administration.
- Graph includes curves for DA, DOPAC, and HVA.

**NICOTINE**
- Graph showing % of Basal Release over time after nicotine administration.
- Graph includes curves for Accumbens and Caudate.

**MORPHINE**
- Graph showing % of Basal Release over time after morphine administration.
- Graph includes curves for different doses (0.5, 1.0, 2.5, 10 mg/kg).
Effects of Methamphetamine Use

- Increased alertness
- Decreased appetite
- A distorted sense of well-being
- Effects that can last 8 to 24 hours
Behavior Changes

- Psychotic behavior
- Paranoia
- Aggression
- Anxiety
- Fatigue
- Depression
- Delusions
- Mood swings
- Confusion
- Insomnia
- Hallucinations

Health Changes

- Stroke
- Brain damage
- Weight loss
- Death

Source: Congressional Research Sites
Methamphetamine - Acute Psychological Effects

- **Increases**
  - Confidence
  - Alertness
  - Mood
  - Sex drive
  - Energy
  - Talkativeness

- **Decreases**
  - Boredom
  - Loneliness
  - Timidity
Methamphetamine - Acute Psychological Effects

- Increases
  - Heart rate
  - Blood pressure
  - Pupil size
  - Respiration
  - Sensory acuity
  - Energy

- Decreases
  - Appetite
  - Sleep
  - Reaction Time

Diagram:
- Psychological Effects
  - Delusions
  - Euphoria
  - Heart Rhythm Changes
  - Aggression
  - Nausea
  - Feeling Hot or Cold
- Physical Effects
  - Self-Confidence
  - Extreme Use
  - Heart Problems*
  - Seizures
  - Death
  - Addiction

*May occur with minimal use in susceptible individuals
Treatment Approaches

- Counselor relationship
- Classes and discussion on other addictions; Physical Health Classes, Emotional Health Classes, Life Skills
- No judgment (Weight and Teeth)
- Support and motivation
- Specialized relapse prevention techniques
- Focus on the entire family
- Empathy
Clinical Challenges With Stimulant Dependent Individuals

- Limited understanding of Stimulant Addiction
- Ambivalence about need to stop use
- Cognitive impairment and poor memory
- Short attention span
- Anhedonia
- Powerful Pavlovian trigger-craving response
- Sleep Disorders
- Poor retention in outpatient treatment
- Elevated rates of psychiatric co-morbidity

Key Points with Clinical Implications

- Powerful reflexive, conditioned cravings
  - Requires behavior change
  - Avoid drug using friends
  - Treatment session can trigger cravings

- Cognitive Impairment
  - With currently active users, memory is impaired
  - Long therapy sessions are pointless
  - Provide simple, redundant, information
  - Schedule. Write it down.

Methamphetamine Use & Pregnancy

- Studies suggest that stimulant use and physical effects of the use can cause miscarriages.
- Methamphetamine use can cause a greater chance of premature delivery prior to 37 weeks.
- Babies born with poor growth.
- Low birth weight.
- Increase in blood pressure during pregnancy.
- Placental eruption.
- SIDS Sudden Infant Death Syndrome.
Babies can experience withdrawal when mother used excessively in last trimester.

Symptoms include trouble eating, sleeping problems.

Poor muscle control.

Breathing problems.

Children exposed to methamphetamine in embryo could have a higher chance of having a child with learning difficulties and behavior problems.
- Danger of children being exposed to toxic fumes
- Children are more at risk than adults to environmental hazards, as their bodies are immature
- Risk of explosion, fire, and chemical burns
- Exposure to weapons, finished drugs, and unsanitary conditions
More Impacts on Families

- Increase in child abuse and neglect cases
- Increased risk for substance abuse among children in later life
- A rise in domestic disputes
- Incarceration
- Trauma
- Greater risk of family cycle of abuse increasing
Approaches in Working with Women Who Use Methamphetamine

- Cognitive Behavioral Therapy
- Individual Counseling
- Weekly sessions on Women’s Health related issues
- Trauma Groups
- Mindful Parenting/Temperance
- Contingency Management
- Mental Health Counseling
- Motivational Interviewing
- Peer relationship vs. authority
- Different life experiences of women in recovery and staff
- Being able to share about domestic violence and other issues openly
What Treatments Are Effective for Stimulant Use Users?

- Stimulant use and addiction is a complex problem involving biological changes in the brain as well as a myriad of social, familial, and environmental factors.
- Treatment strategies need to assess the psychological, social, and pharmacological aspects of the patient’s drug use.

SOURCE: National Institute on Drug Abuse, 2016
Is there an Effective Treatment for Methamphetamine Abuse?

- Cognitive behavioral interventions designed to help modify the patient's thinking, expectancies, and behaviors
- CBT and MI Motivational interviewing increase skills in coping with various life stressors.
- Methamphetamine recovery support groups also appear to be effective adjuncts to behavioral interventions that can lead to long-term drug-free recovery.
Resources


Rawson, Richard PhD. (2018) Stimulant Use Among Patients on Medication for Opioid Use Disorder (MOUD)” Do We Have Any Answers?

Thompson, P., Dr. (n.d.). Eroding the Mind [Photograph]. University of California, Los Angeles, Los Angeles.

Thank you!