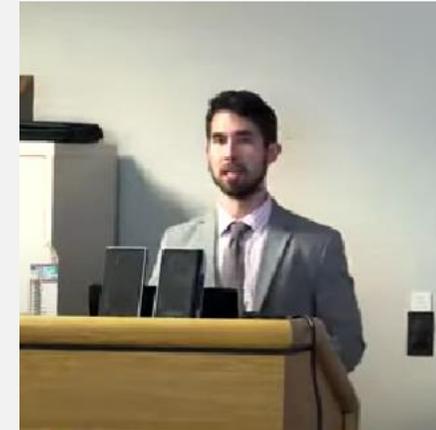
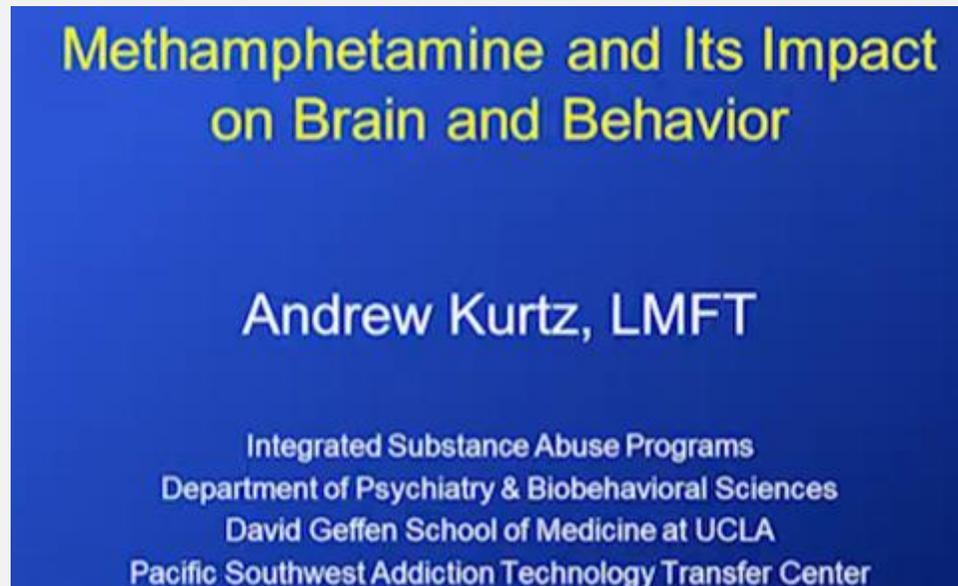


Meth and the Brain by Dr. Andrew Kurtz, LMFT

Click the link below to watch Andrew's excellent talk on how meth impacts on the brain and body:
https://www.youtube.com/watch?v=4-gkOBwus8s&t=669s&ab_channel=PAETC-TheLosAngelesArea



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Patterns of Use

- Smoking or injecting causes an immediate, intense "rush" which lasts a few minutes
 - Snorting or oral ingestion produces euphoria—a high, but not an intense rush.
 - Snorting produces effects within 3 to 5 minutes
 - Oral ingestion produces effects within 15 to 20 minutes
 - Often abused in "binge & crash" pattern
 - "Run": foregoing food and sleep while continuing to take the drug for up to several days
-



Prescription Stimulants

Stimulant medications (e.g., amphetamines) are often prescribed to treat individuals diagnosed with attention-deficit hyperactivity disorder (ADHD)

Stimulants enhance alertness and concentration

May be diverted from medical use to non-prescription use

Amphetamines increase wakefulness and have been misused by:

- military, pilots, truck drivers, and other workers to keep functioning past their normal limits



Common
names

- Dex
- Dexamphetamine
- Bennies,
Minibennies
- Dexies
- Copilots
- Crank
- Eye Openers
- Uppers
- Wake Ups
- Black Beauties
- Whizz
- Ups
- Pep Pills
- Lid Poppers

The big question, why do it?

In other words:

A Major Reason People Take a Drug is they Like What It *Does to Their Brains*

Why do people take drugs?

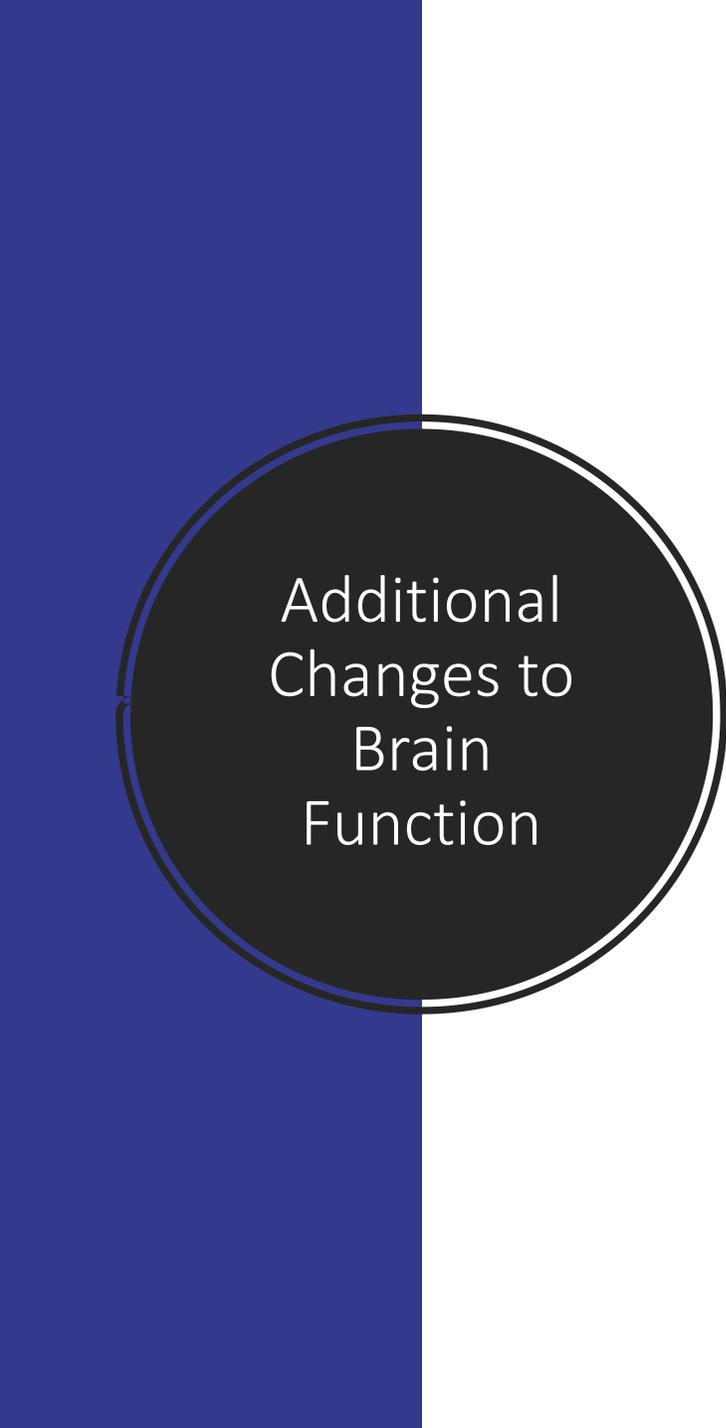
To feel good
To have novel:
Feelings
Sensations
Experiences
AND
To share them



To feel better
To lessen:
Anxiety
Worries
Fears
Depression
Hopelessness
Withdrawal

Meth and Stimulant Incubation

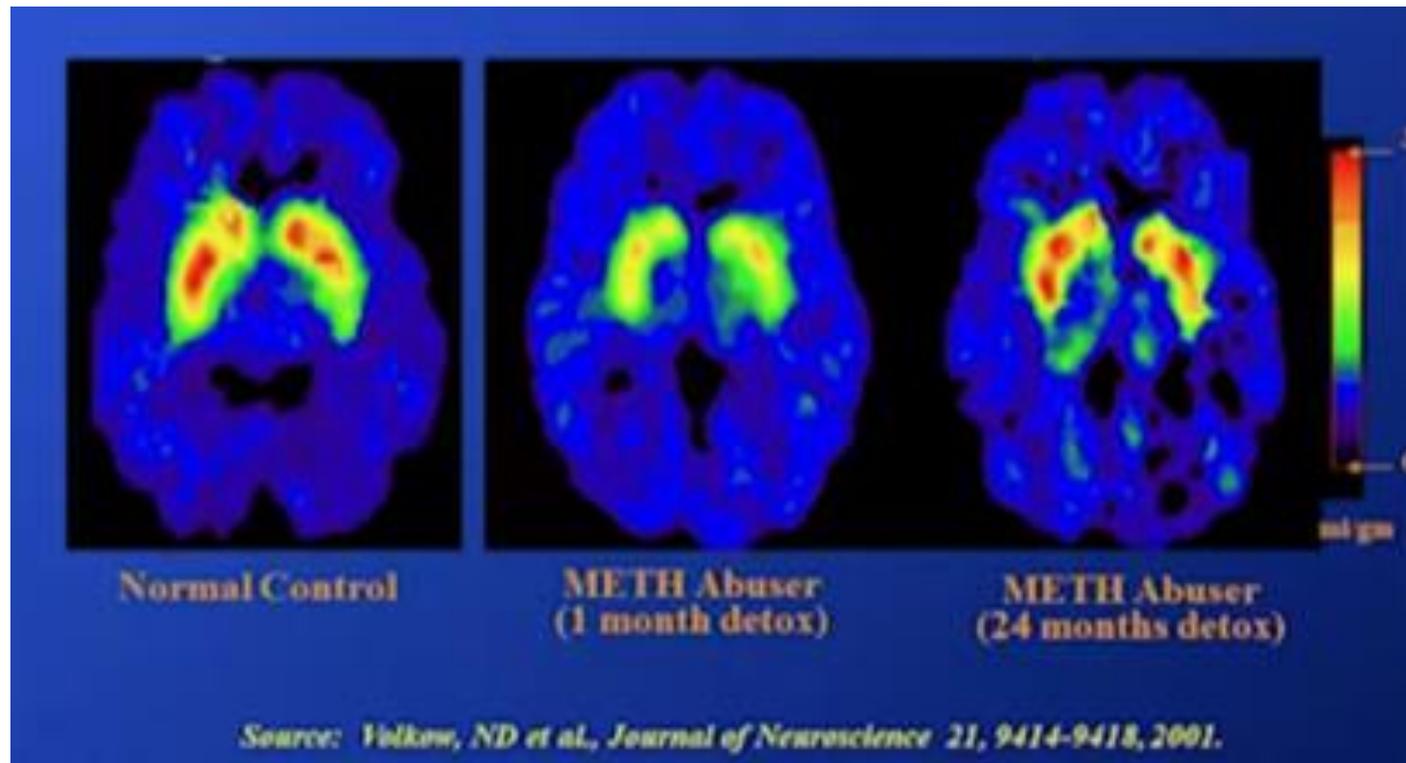
- Long-term use of amphetamine and stimulants are associated with long-term changes in cognitive functioning and higher likelihood of relapse even after prolonged abstinence
- Cue-induced drug craving progressively increases and remains high for months
- Incubation of craving has been demonstrated in forced-abstinence conditions among individuals addicted to methamphetamine, nicotine, and alcohol
- Animal studies have also shown that incubation of methamphetamine craving occurs even when abstinence is self-imposed



Additional
Changes to
Brain
Function

- Blood brain barrier (BBB) responsible for blocking certain substances from entering the brain
- Permeability increased by meth use
- Can also be affected by hyperthermia/hypothermia, oxidative stress and inflammation

Partial Recovery of Brain Dopamine Transporters after Protracted Abstinence



MethUse and Acute Physical Effects

Increases

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

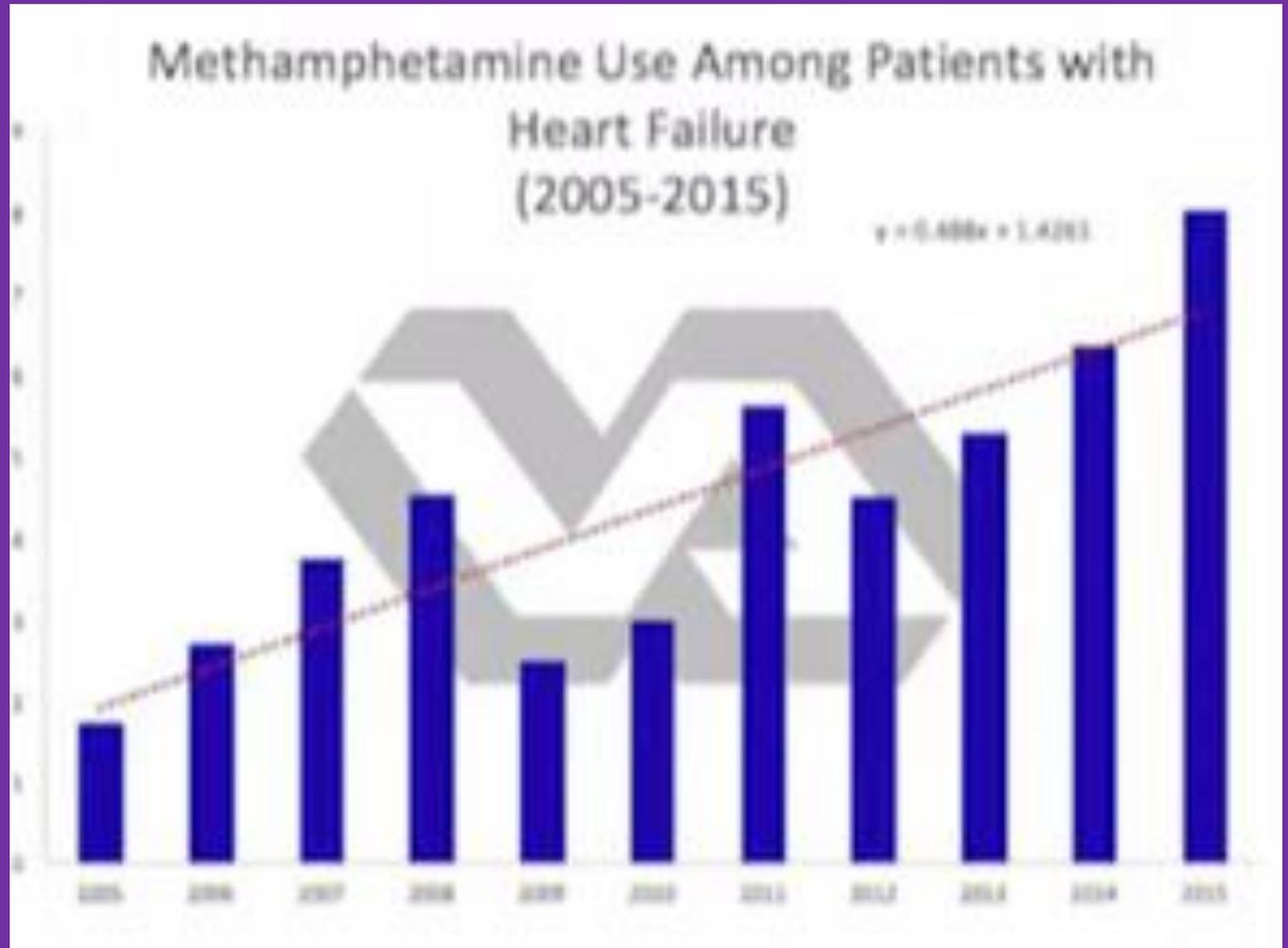
Decreases

- Appetite
- Sleep
- Reaction time

Medical Risks of Meth Use

- Norepinephrine release causes constriction of blood vessels, elevated blood pressure and rapid heart rate
- Increased activity levels
- Elevated body temperatures
- Increased risk of seizures
- Potentially fatal arrhythmias, heart attack, or stroke

Methamphetamine-associated Heart Failure



Acute Overdose

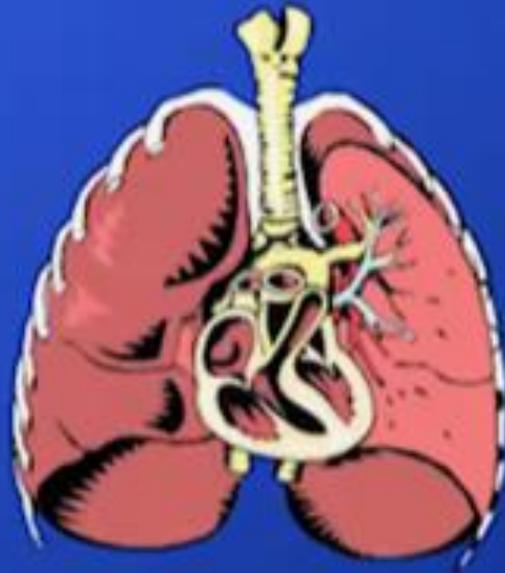
- With acute overdose:
 - Severe hyperthermia
 - Convulsions
 - Severe dehydration
 - Rhabdomyolysis (too much myoglobin being filtered by the kidneys) → acute renal failure
 - Stroke
 - Myocardial infarction

Cardiovascular Problems



- ↑ heart rate
- Palpitations
- Tachycardia
- Arrhythmia
- ↑ blood pressure
- Chest Pain
- Valve thickening

Respiratory Problems



- ↑ Respirations
 - Dyspnea (shortness of breath)
 - Pulmonary hypertension
 - Pleuritic chest pain
(inflammation of pleura)
- Lung capacity,
especially if smoked

Neurological Problems



- Seizures
- Stroke
- Cerebral hemorrhage
- Cerebral vasculitis
 - (inflammation of neural blood vessels)
- Mydriasis
 - (excessive pupil dilation)

Renal/Hepatic Toxicity from Meth Abuse

Renal / Hepatic Toxicity from MA Abuse



- Rhabdomyolysis –
can lead to:
- Renal failure
- Hepatic failure



Other Problems from Meth Abuse



- Eye ulcers
- Over-heating
- Obstetric complications
- Anorexia / weight loss
- Tooth wear, cavities
- "Speed bumps"

Skin Problems



Say Goodbye to the Pearly Whites

- “Meth mouth” is characterized by **severe tooth decay** and **gum disease**
- Teeth often **break or fall out**

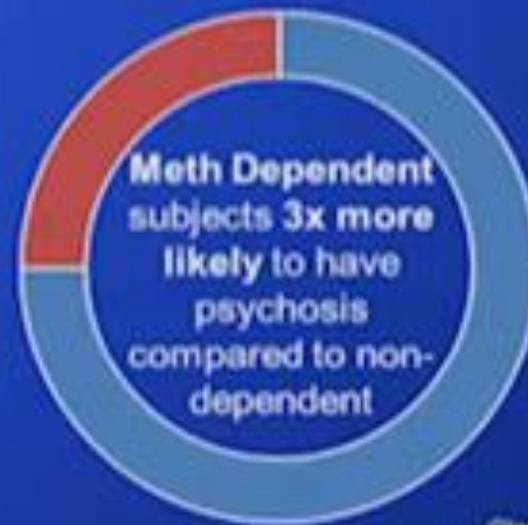


Chronic Physical Effects of Meth Abuse

- Tremor
- Weakness
- Dry mouth
- Weight loss
- Cough
- Sinus infection
- Sweating
- Burned lips; sore nose
- Oily skin/complexion
- Headaches
- Diarrhea
- Anorexia

Meth and Psychosis

- There is a strong association between methamphetamine and psychosis, even after controlling for history of schizophrenia and other psychotic disorders



24-46% of meth dependent patients have MA psychosis

Time from first use to psychosis
Smokers: 1.7 years
Injectors: 4.4 years

Treatment for Meth Psychosis

- Meth produced positive symptoms of psychosis and affective d/o, with no evidence of negative symptoms
- No large randomized clinical trials have been conducted. Therefore, no evidence-based clinical recommendations
- Clinical experience and the limited data suggest that using medications to treat symptoms is helpful
- Behavioral interventions to reduce use

Meth and
HIV Infection
– Disease
Progression

Methamphetamine use:

- Lowers **sexual inhibitions**, impairs judgment, and provides **energy and confidence** to engage in sexual activity for long periods of **time**
- Causes **erectile dysfunction**
- Causes **mucosal dryness**
- Decreases **adherence** to HIV treatment and **medical follow-up**
- Increases **HIV replication**
- Accelerates ~~progress of HIV-related~~ **dementia**

Brain of a Person Infected with HIV

- HIV and meth are thought to have synergistic cognitive and neurological impacts
- In the presence of HIV, methamphetamine can cause:
 - Even greater dopamine release and cellular damage
 - Additive damage to the frontal cortex and basal ganglia
 - Difficulty in adhering to antiretroviral regimen
 - Deficits in attention/working memory, abstract decision-making, and psychomotor speed