

# Underlying Issues with Opioid Use and HIV Dual Epidemics: HIV and Methamphetamine Use

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# Disclosure

Nothing to disclose

# Objectives

1. Describe the basic methods of screening for and dressing both methamphetamines use and opioid use in people with HIV
2. Explain how to initiate treatments for methamphetamine and opioid use disorders
3. Discuss the basic principles of caring for people with HIV and substance use disorders.

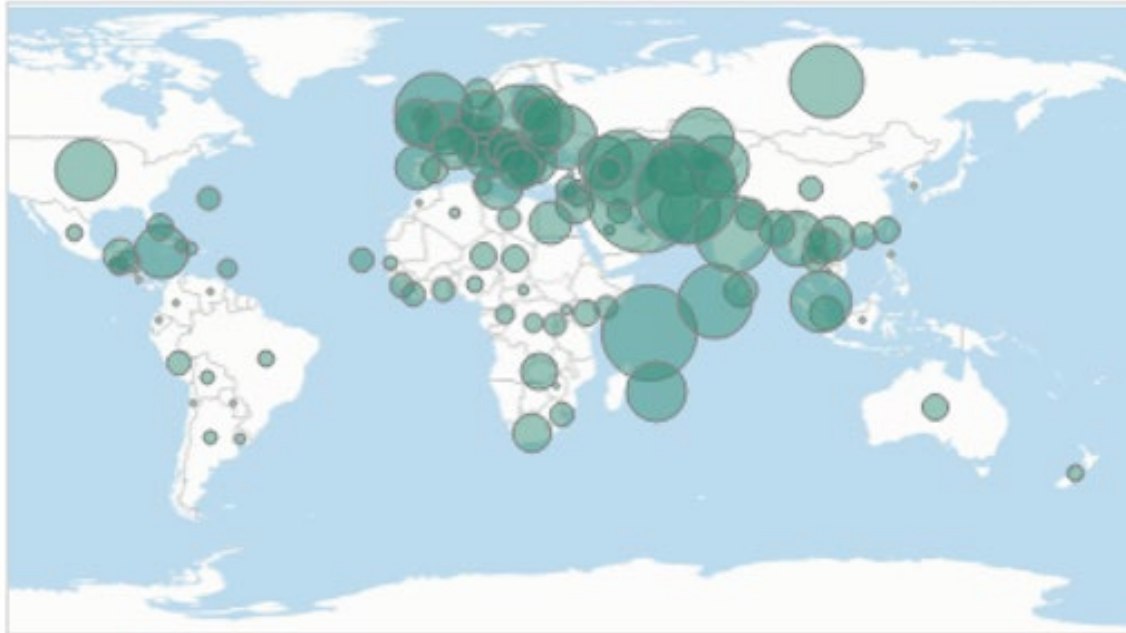
## The Global Drug Problem – UN World Drug Report 2019

- In 2017, an estimated 271 million people, (5.5% of the global population aged 15–64) used drugs in the previous year, while 35 million people are estimated to be suffering from drug use disorders.
- Around 53 million people worldwide used opioids in the previous year, these estimates are 56% higher than previously estimated.
  - Among those people around 29 million had used opiates such as heroin and opium – these estimates are also 50% higher than previously estimated.
- Opioids continue to cause the most harm, accounting for two-thirds of deaths attributed to drug use disorders.

<https://wdr.unodc.org/wdr2019/en/exsum.html>

**Annual prevalence of drug use**  
(or latest year available)

Opiates



## More Epidemiology

- People who inject drugs — some 11 million worldwide in 2017 — endure the greatest health risks. More than 50% live with hepatitis C, and approximately 1 in 8 live with HIV.
- The Global Burden of Disease Study 2017 estimated that, globally, in 2017, there were 585,000 deaths and 42 million years of “healthy” life lost as a result of drug use. Around half of the drug related deaths were attributed to untreated hepatitis C.
- For people with drug use disorders, the availability of and access to treatment services remains limited: only 1 in 7 people with drug use disorders receive treatment each year.

<https://wdr.unodc.org/wdr2019/en/exsum.html>

## Substance Use Disorder (Addiction)

- A state in which a person engages in compulsive behavior
  - The behavior is **reinforcing** (that is, pleasurable or rewarding)
  - There is a **loss of control** in limiting the intake of the substance

# Why do people do drugs?

## To feel good

To have novel:  
feelings  
sensations  
experiences  
AND  
to share them

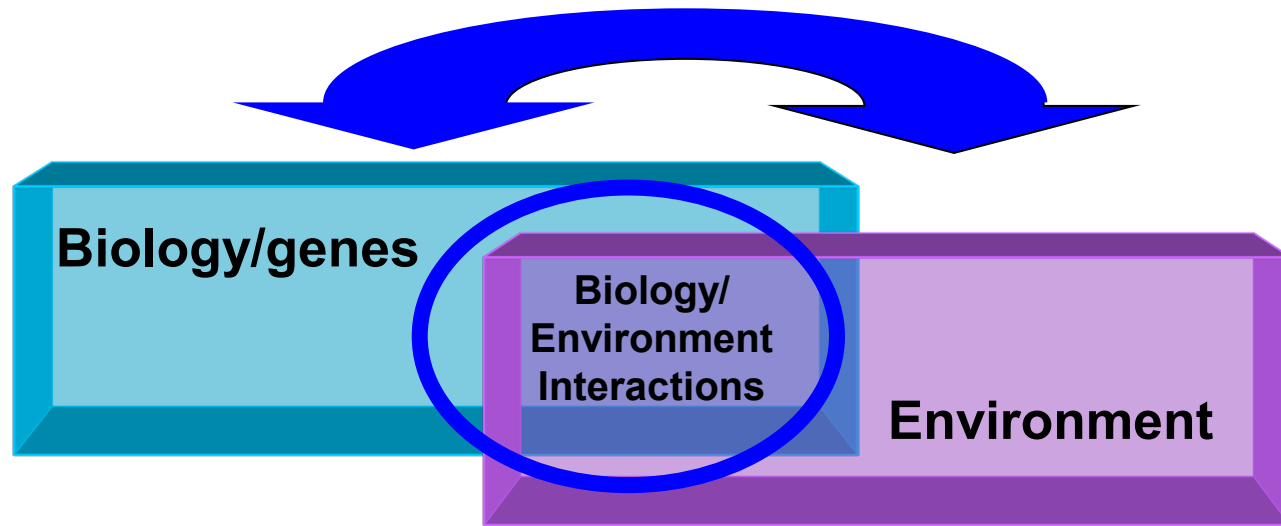


## To feel better

To lessen:  
anxiety  
worries  
fears  
depression  
hopelessness



# Why do some people become addicted?



Biology is important, but not the whole story

# Key points on Substance Use and HIV

- Ongoing substance use is **not** a contraindication to ART. ART reduces the risk of HIV transmission to sexual and drug using partners.
- Selection of ART among individuals who use substances should account for
  - Potential adherence barriers (<https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv/30/adherence-to-the-continuum-of-care>)
  - Co-morbidities which could impact care (e.g., advanced liver disease from alcohol or HCV),
  - Potential drug-drug interactions, and
  - Possible adverse events associated with the medications.

<https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv/22/substance-use-disorders-and-hiv>

## Practical Initial Step: Screening

- How many times in the past year have you had 5 or more standard drinks in a day?
- How many times in the past year have you used an illegal drug or a prescription medication for nonmedical reasons?

## Practical Next Step: Think about systems

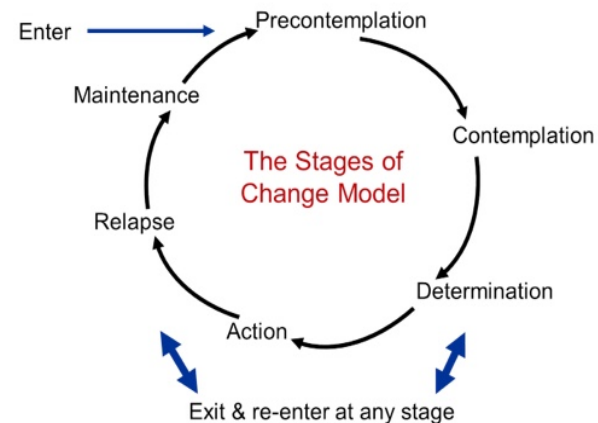
- ▶ Provision of low threshold, rapid access, appropriately dosed treatment (e.g., buprenorphine, methadone, or other treatments)
- ▶ Culturally appropriate counseling for addiction [can be simple (NA) to more complex (CBT)]

## Practical Steps: Treat everyone

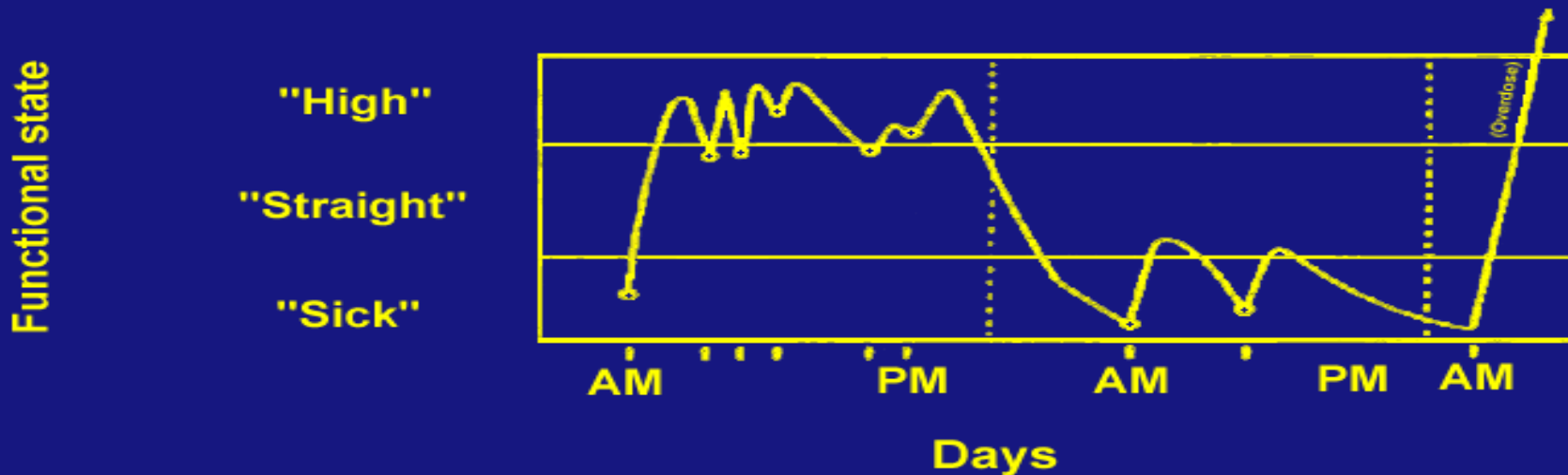
- ▶ Provide naloxone
- ▶ Treatment of the medical issues associated with addiction (e.g., HIV, hepatitis B/C, and Tuberculosis)
- ▶ Treat substance use disorders (more below)

# Not everyone wants to change – harm reduction

- Transtheoretical Model of Change:
  - Helping patients to move along the stages of change
  - MI – “Roll with resistance”
- Harm Reduction
  - Syringe exchanges
  - Naloxone
- When helping hurts
  - Enabling vs. boundaries



# The Struggles of a Person who uses Heroin



**Diagrammatic summary of functional state of typical "mainline" heroin user. Arrows show the repetitive injection of heroin in uncertain dose, usually 10 to 30 mg but sometimes much more. Note that addict is hardly ever in a state of normal function ("straight").**

From "Narcotic Blockade," by V. P. Dole, M. E. Nyswander, and M. J. Kreek, 1966, *Archives of Internal Medicine*, 118, p. 305.

# Opioid Use Disorder Treatment

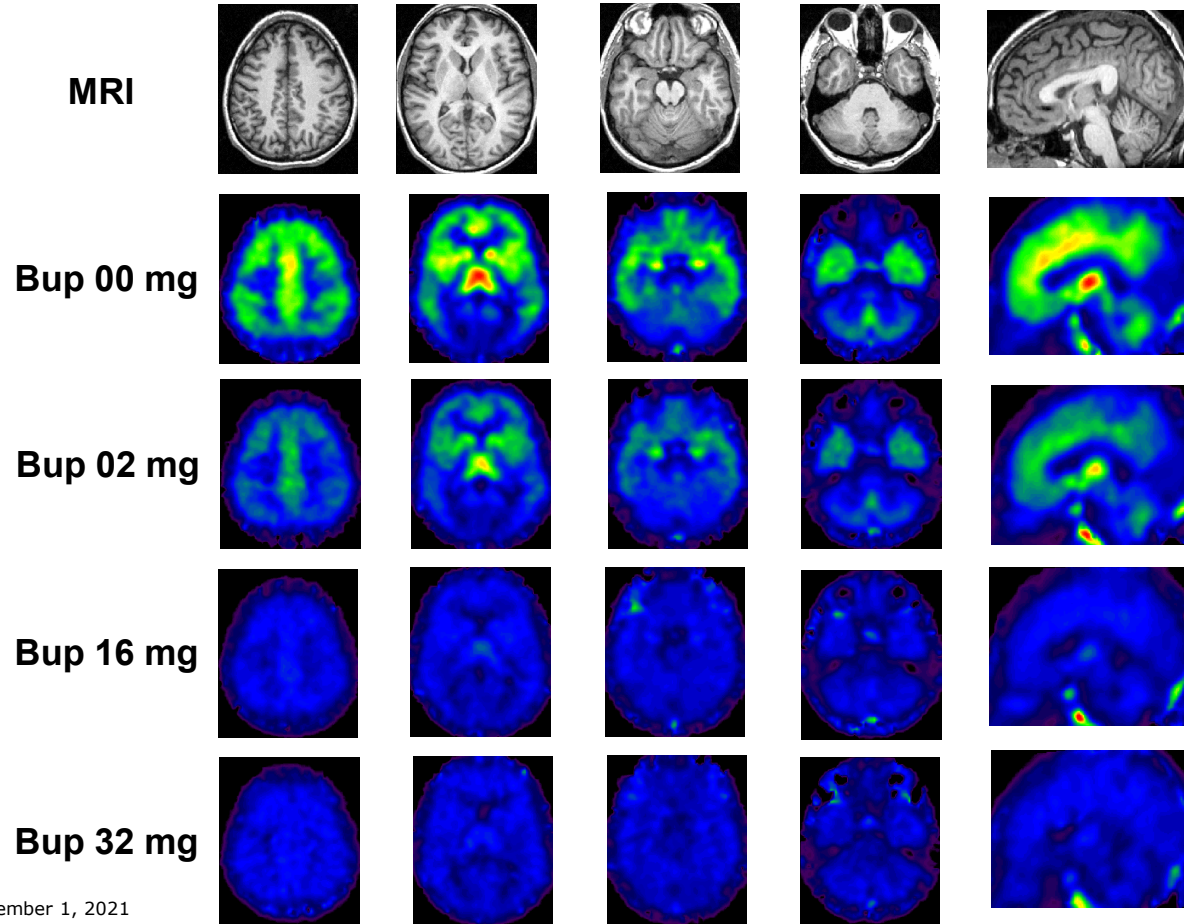
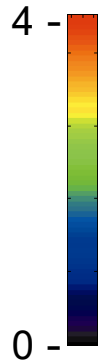
- Methadone
  - Efficacious, best retention
  - Can start at any time
- Buprenorphine
  - Efficacious, retention less than methadone
  - Must be in mild withdrawal
- Naltrexone
  - Retention less than methadone & buprenorphine
  - No opioids for 7 days

## What is methadone? A medicine that...

- reduces injection related HIV risk behavior
- decreases psychosocial & medical morbidity
- increases access to and retention with ARV
- improves overall health status
- is associated with decreased criminal activity

# Medication and mu-opioid receptors

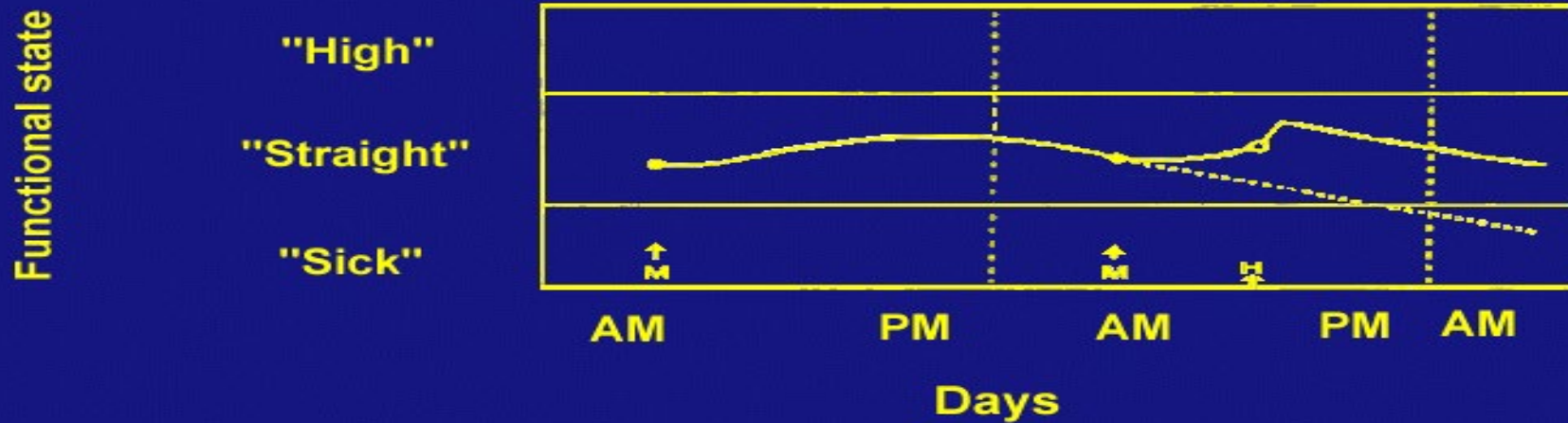
Binding Potential (Bmax/Kd)



November 1, 2021

*Slide  
Courtesy of  
Laura  
McNicholas,  
MD, PhD*





**Stabilization of patient in state of normal function by blockade treatment. A single daily oral dose of methadone prevents him from feeling symptoms of abstinence ("sick") or euphoria ("high"), even if he takes a shot of heroin. Dotted line indicates course if methadone is omitted.**

From "Narcotic Blockade," by V. P. Dole, M. E. Nyswander, and M. J. Kreek, 1966, *Archives of Internal Medicine*, 118, p. 305.

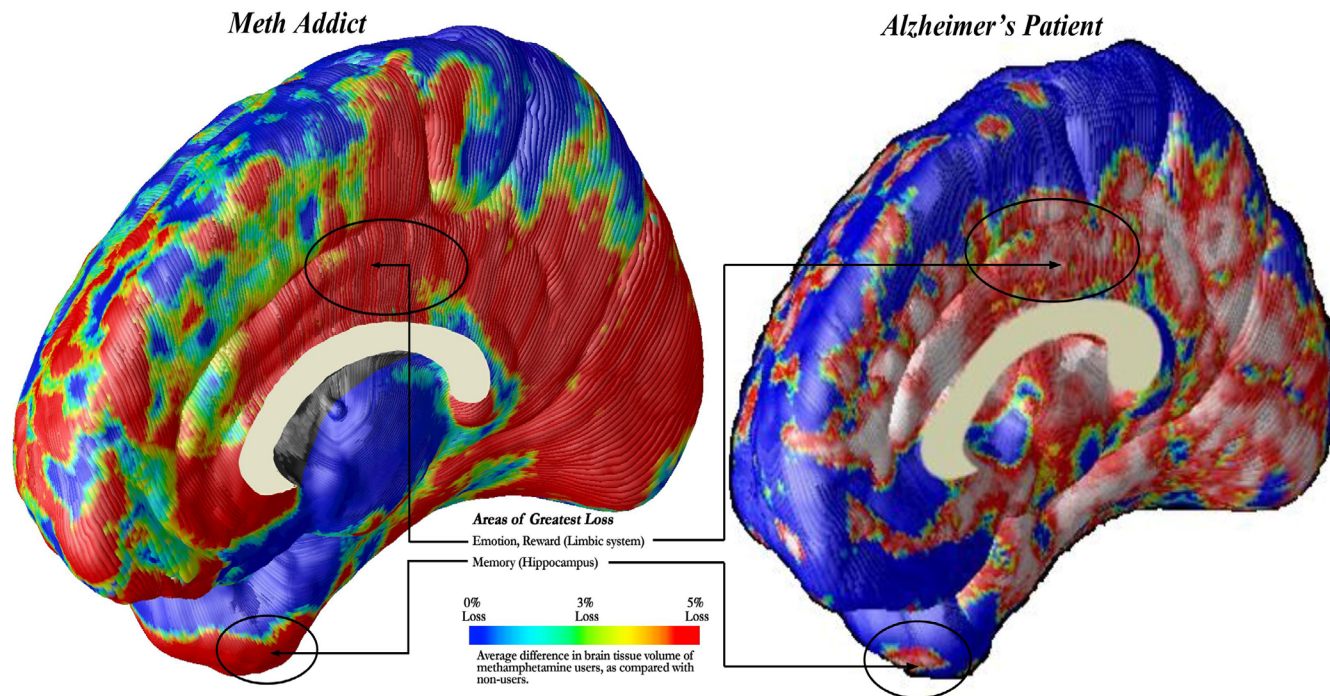
# Stimulants

1. Amphetamine
2. Cocaine
3. Methamphetamines

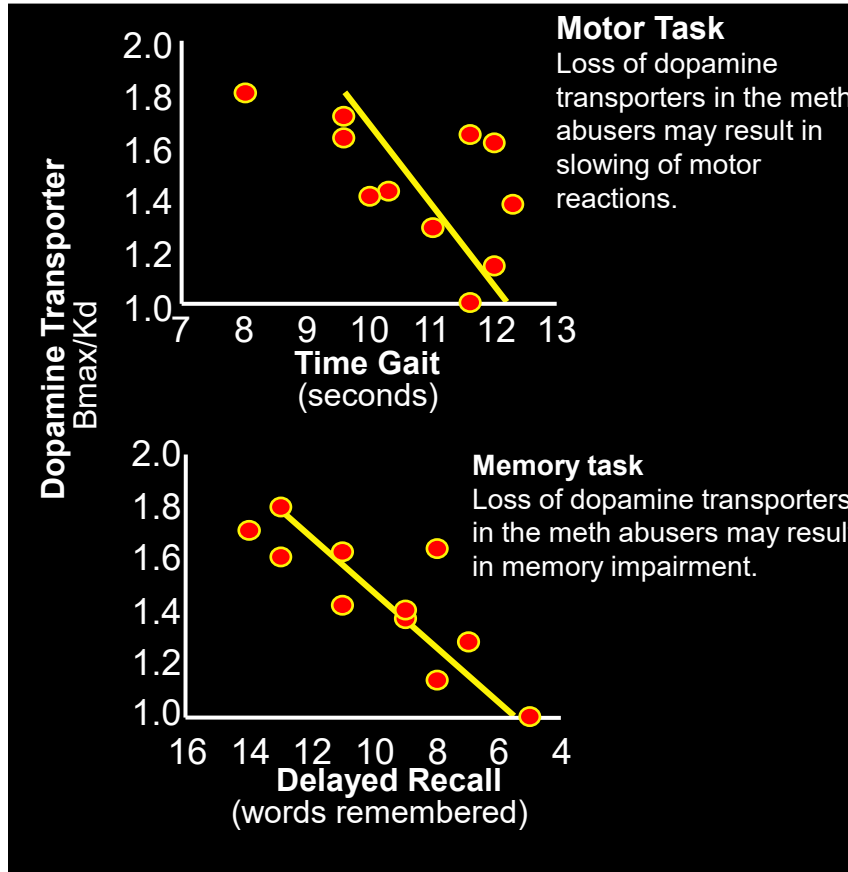
Stimulants are associated with multiple detrimental effects to people with HIV.

# Structural Changes: Methamphetamines

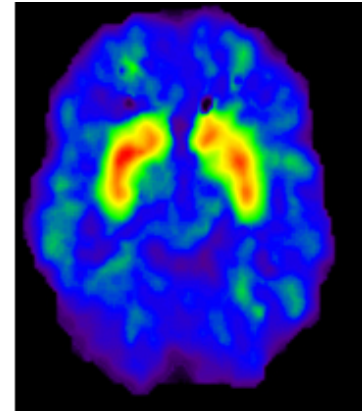
*Eroding the Mind:* Researchers have mapped brain decay caused by methamphetamine use (left). The damage affected memory, emotion, and the reward system. Notice the similarities to the brain decay caused by Alzheimer's Disease (right).



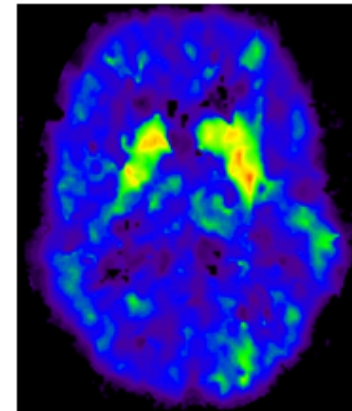
# Methamphetamines and Dopamine Effects



Volkow et al., Am. J. Psychiatry, 2001. .



Normal Control



Methamphetamine Abuser

# HIV Specific Methamphetamines Effects

- Neurocognitive effects and HIV may result in permanent neurobiological changes.
- Methamphetamine increases HIV replication and expression of CCR5 on macrophages and these events may contribute to the immunopathogenesis of HIV-infected methamphetamine users.
- Reduced neurocognitive performance can severely compromise HIV clinical care and is associated with HIV nonadherence and the development of HIV resistance.

# Treatment

- Pharmacological Treatment
- No pharmacological agents have demonstrated efficacy through Phase 2 trials. Morley, K. C., et al. (2017). "Pharmacotherapeutic agents in the treatment of methamphetamine dependence." Expert Opin Investig Drugs **26**(5): 563-578.
- Behavioral Treatment (Therapy)
- Motivation Interviewing –motivated to do treatment
- Cognitive Behavioral Therapy – getting you to think differently about drug use

# Medications that do NOT work

Aripiprazole

Baclofen

Bupropion

Dextroamphetamine

Gabapentin

Mirtazapine

Modafinil

Ondansetron

Risperidone

Sertraline

# Riluzole

- Riluzole is a glutamate regulator and effective in treatment of neuropsychiatric conditions.
- Double blind placebo controlled trial in men 18 to 65 to 50 mg riluzole (n=34) or placebo (n=54) twice daily for 12 weeks.
- Patients were excluded for serious medical conditions or neurologic disorders, comorbid psychiatric disorders other than methamphetamine dependence including other drugs of abuse



# Riluzole cont'd

- **RESULTS:** Visit attendance went up and the number of positive methamphetamine urine test results was significantly lower in the riluzole arm.
- Patients in the riluzole arm experienced significantly greater improvement on all the craving, withdrawal, and depression measures regarding mean score changes from baseline to endpoint
- **ISSUE:** Small study, only men, needs larger study to validate.

# XRT-naltrexone and oral bupropion-ER

- Double blind, placebo controlled RCT with extended release injectable naltrexone plus oral extended release bupropion in adults with moderate to severe methamphetamine use disorder
- Weighted average response of methamphetamine free urine toxicology for active medication was 13.6% compared with 2.5% for placebo.
- Overall response low – most patients continued to use methamphetamines.

# Lisdexamfetamine forthcoming trial

- Agonist therapy has been tried with mixed results in the past.
- LDX – used for ADHD and binge eating has potential as an agonist therapy for methamphetamine dependence, and possible benefits of reduced risk of aberrant use due to its novel formulation.
- RCT ongoing in Australia. TRIAL REGISTRATION NUMBER: ACTRN12617000657325

1. Which medication(s) has the best retention in treatment for people with opioid use disorder?

- A) Buprenorphine
- B) Methadone
- C) Naltrexone
- D) A and C
- E) B and C
- F) They are all the same with regards to retention

ANSWER: B

2. How long should a person with substance use disorder be sober before starting treatment for HIV?

- A) 0 months
- B) 3 months
- C) 6 months
- D) 9 months
- E) 12 months

ANSWER: A

3. Although the overall response rate was low, a recent trial of which drug or drugs listed below showed a higher response of methamphetamine free urine samples when compared to placebo?

- A) Aripiprazole
- B) Bupropion
- C) Dextroamphetamine
- D) Modafinil
- E) Naltrexone
- F) Naltrexone & Bupropion



ANSWER: F

# Questions?

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