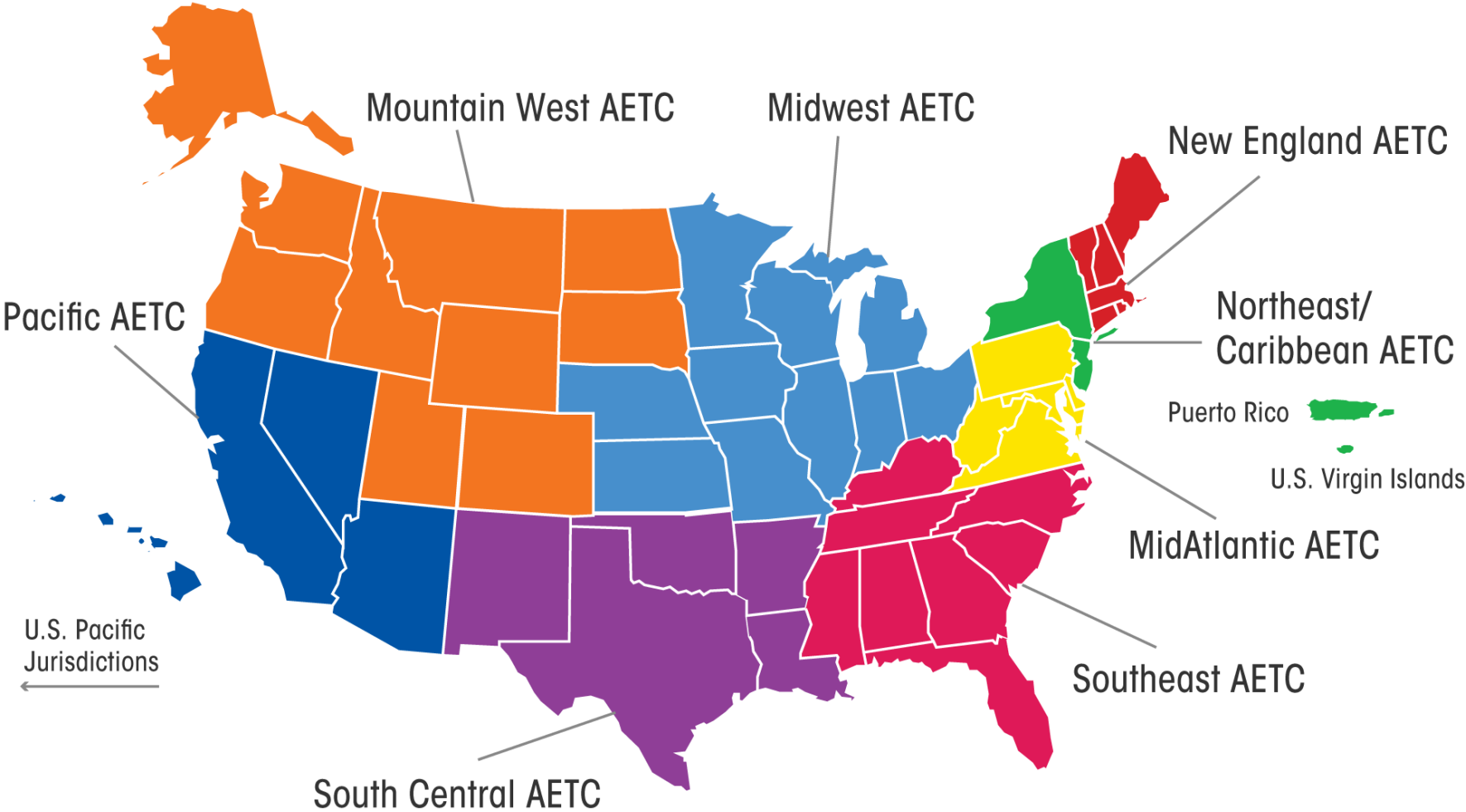


Methamphetamine Use Disorder: Recent Trends and Treatment Updates

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AETC Regional Training Centers



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Panel Discussants

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Disclosures

No conflicts of interest or relationships to disclose

We will discuss off-label use of medications

Outline

- Neurobiology and epidemiology
- Individual and societal complications
- Behavioral Treatments
- Medication Treatments
- Discussion / Q&A

Reminders

- Methamphetamine *use* ≠ methamphetamine *use disorder*
 - Loss of control
 - Cravings
 - Social consequences
 - Tolerance and withdrawal

AVOID

USE

Meth addict, meth head

Person with meth use disorder

Meth abuse/dependence

Meth use disorder

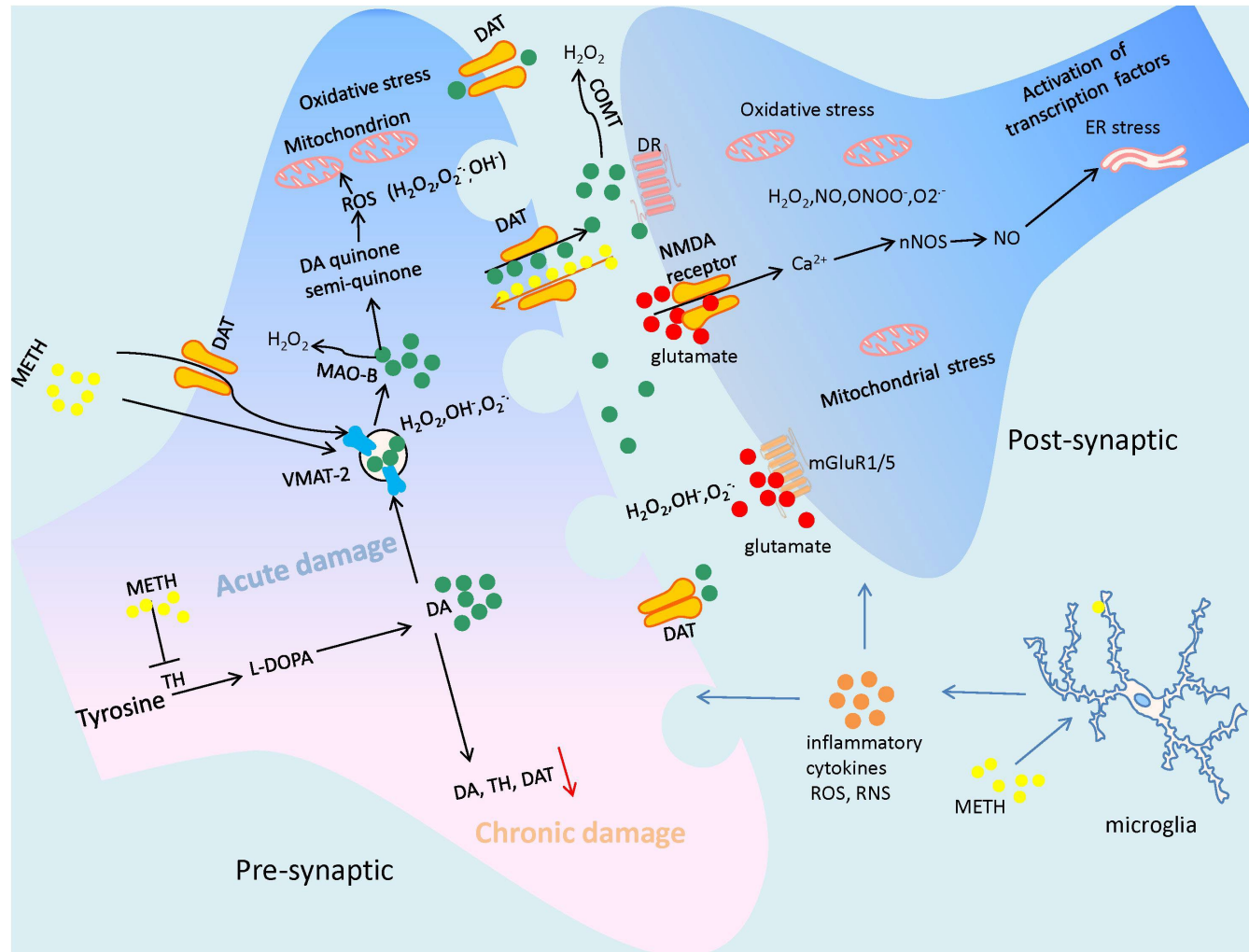
Clean & sober/lapse or slipup

In recovery/ongoing use

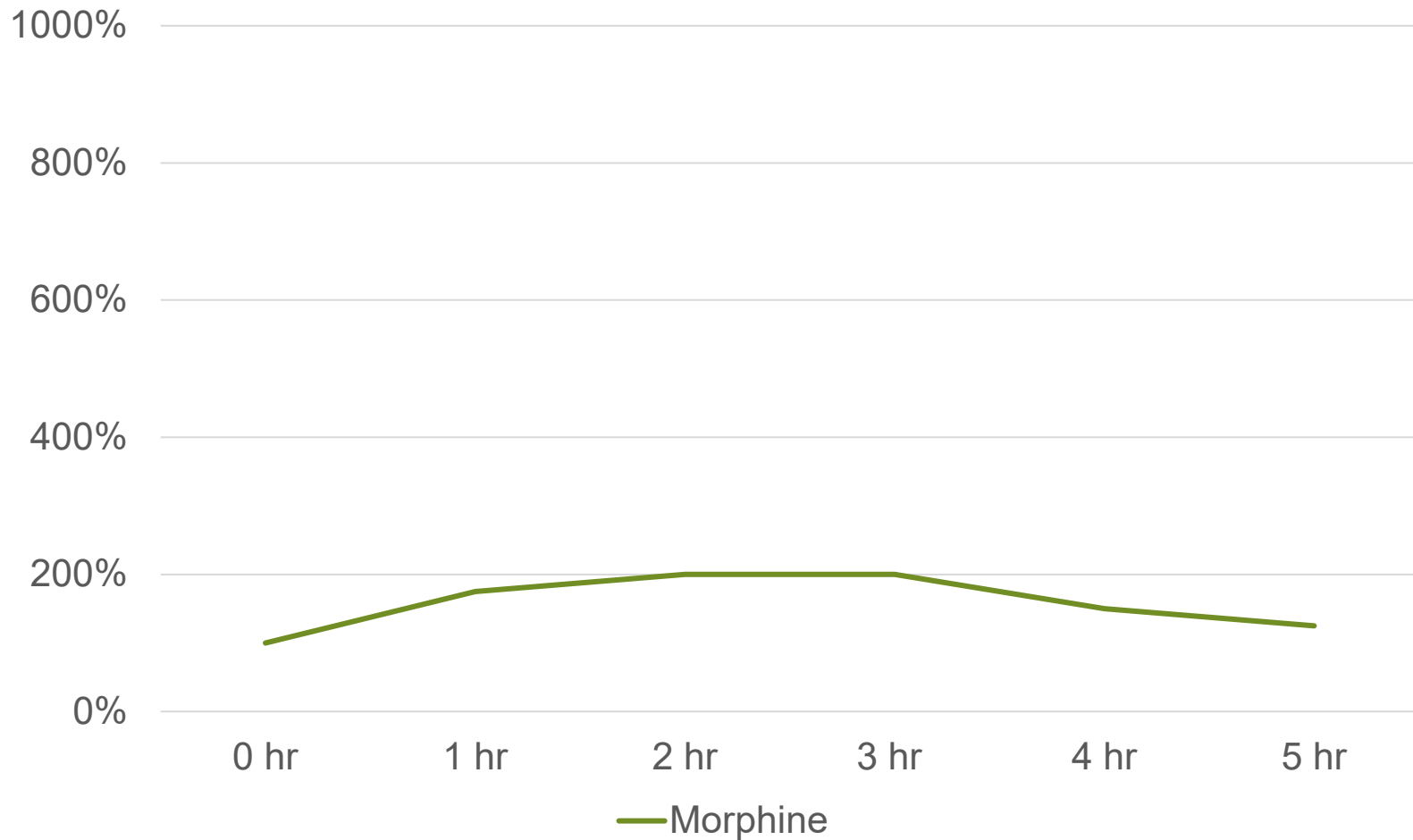
Treatment failure

Treatment attempt

The role of dopamine



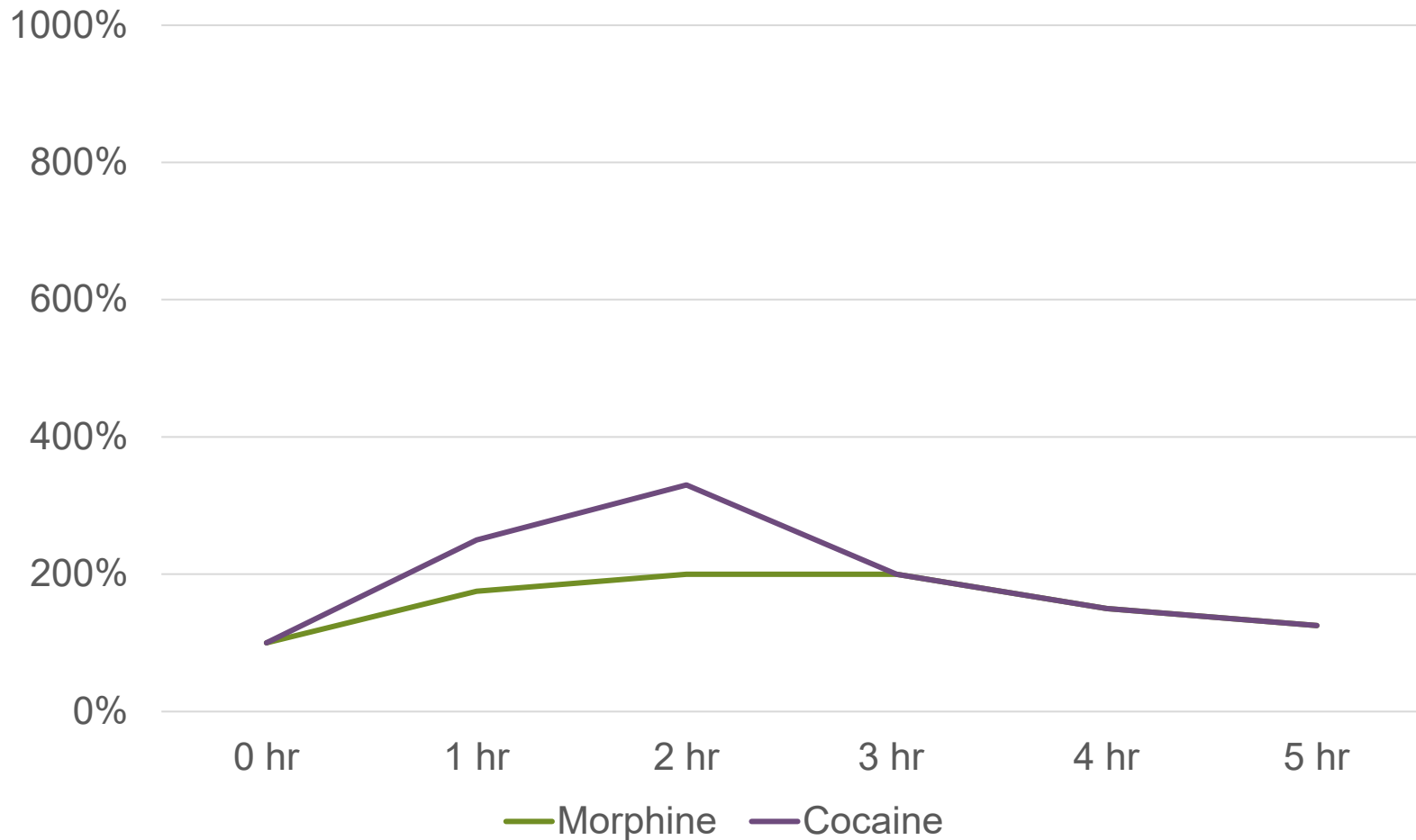
Methamphetamines are the most reinforcing



Adapted from Di Chiara G, Imperato A. Proc Natl Sci. 1988

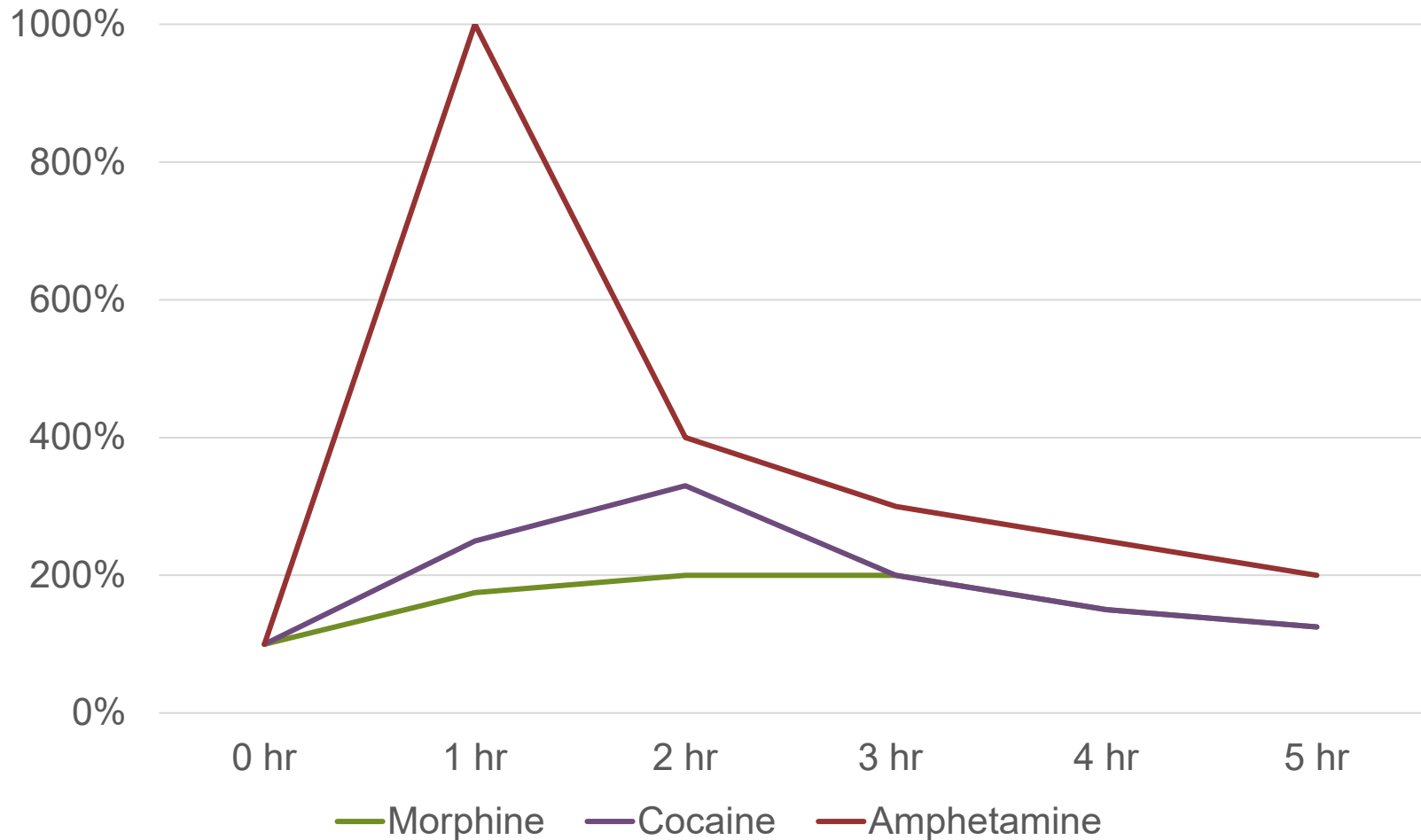


Methamphetamines are the most reinforcing



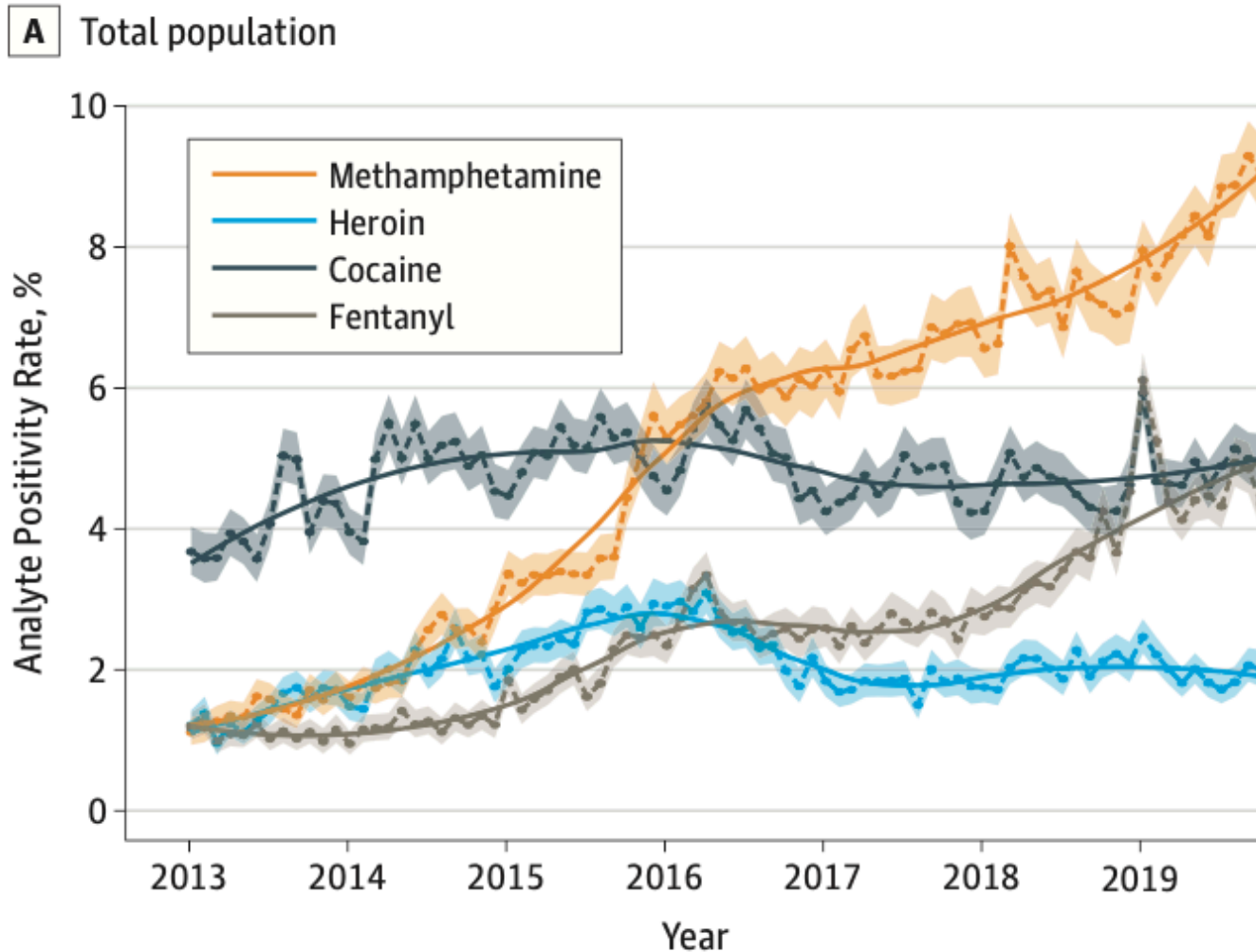
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Methamphetamines are the most reinforcing



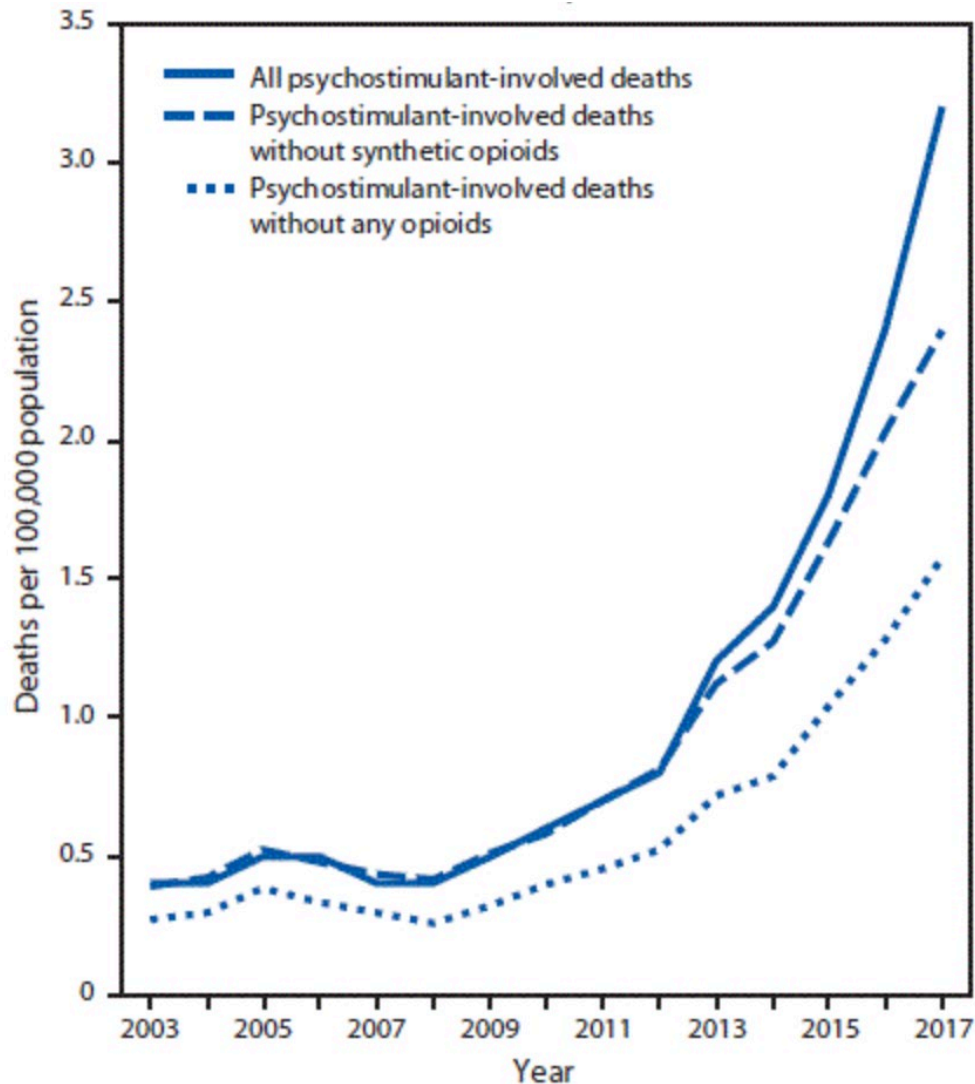
Adapted from Di Chiara G, Imperato A. Proc Natl Sci. 1988

Rising rates of meth and fentanyl in urine tests



Source: JAMA Network Open. 2020;3(1)

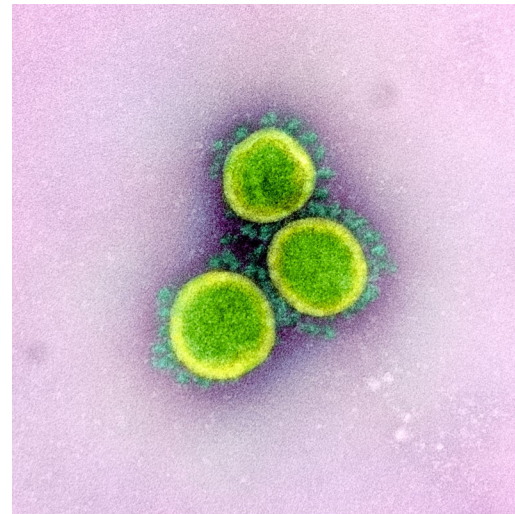
Skyrocketing overdose rates in US



Source: MMWR 68(17);388–395.

Methamphetamine use during the pandemic

- Minimal data
- Substantial concern about rising rates of use and overdose during pandemic
- Meth use might lead to increased COVID susceptibility and/or poorer outcomes
 - Cardiovascular disease
 - Concurrent tobacco use
 - Risk during incarceration
 - Barriers to access care



How do overdose and withdrawal present?

Overdose

- Tachycardia, hypertension
- Hyperthermia
- Psychosis, agitation

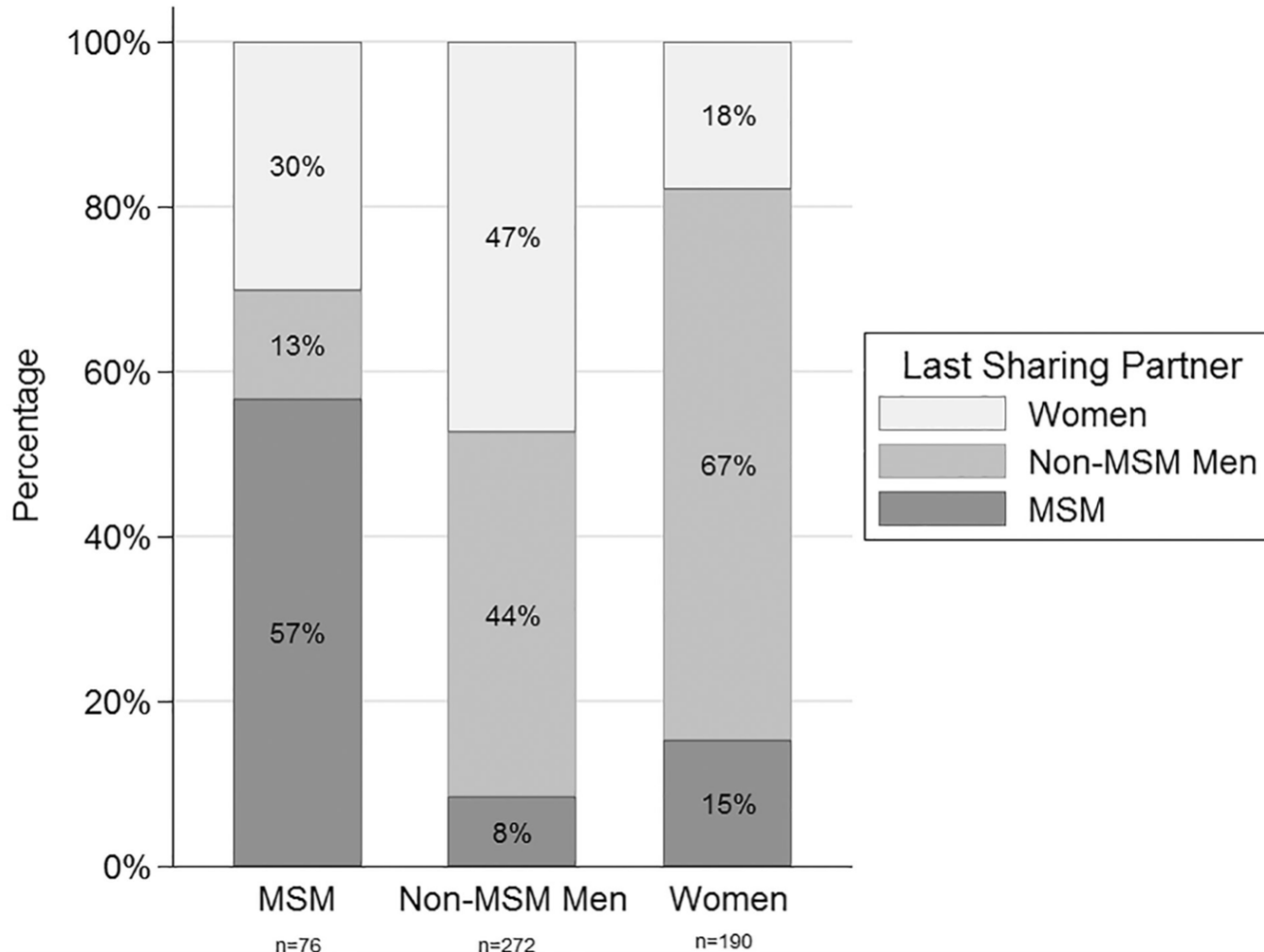
- *Lasts up to 24 hours*

Withdrawal

- Dysphoria
- Fatigue, somnolence
- Anxiety

- *Lasts 1-3 days*

Risk of HIV acquisition

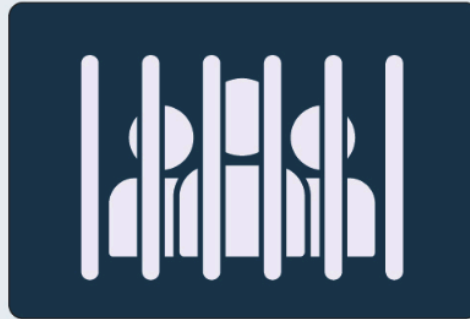


Societal costs

COST OF STIMULANT MISUSE TO SOCIETY



In 2018, there were **27,342 stimulant overdose deaths** – roughly **40%** of all overdose deaths in the United States.



Stimulant-related offenses accounted for more than **75%** of all federal drug offenses.



Amphetamine-related hospital costs totaled **\$436 million** in 2003, and increased to **\$2.17 billion** by 2015.

2019 Annual Surveillance Report of Drug-Related Risks and Outcomes.
Drug Offenders in Federal Prison: 2015. NCJ 248648.
JAMA Netw Open. 2018 Oct 5;1(6)

Behavioral Treatments

Motivational
Interviewing

Contingency
Management

Community
Reinforcement
Approach

Cognitive
Behavioral
Therapy

Behavioral Treatments

Motivational Interviewing



- Communication technique designed to help patients resolve ambivalence.
- Focus empathy, reasons to change, optimism/resilience
- Can be delivered by any provider or peer
- Single, brief (15 min) or multiple longer sessions

Behavioral Treatments

- Operant conditioning: incentivized to attend treatment, provide negative urine specimens
- Fishbowl method, voucher method
- Delivered in primary and specialty care settings, frequent urine drug testing
- Often 12-week treatment course has been studied

Contingency Management



Behavioral Treatments

 ***Strong Evidence*** 

Community
Reinforcement
Approach

- Multi-pronged intervention including counseling, job skills training, building new social networks
- Often combined with contingency management
- Most often delivered in inpatient/residential settings
- Usually 24-week program

Behavioral Treatments

- Psychotherapy technique to evaluate faulty patterns of thinking, actions and negative feelings about substance use
- Goal is to develop realistic strategies to change use
- Usually delivered one-on-one by trained provider
- Often weekly 1-hour sessions for 6 months

 ***Strong Evidence*** 

Cognitive
Behavioral
Therapy

Medications Treatments

Topiramate

Mirtazapine

**Weak evidence,
Off-label use**

Methylphenidate

Medications Treatments

Topiramate

Anticonvulsant

↓ *Na channels*, ↑ *GABA*

Dose: 50-200 mg/day

- 1 RCT (n=140)
 - Did not improve abstinence rates (primary outcome)
 - Reduced the amount of methamphetamine taken (secondary outcome)
 - Decreased rates of returning to use in those who were already abstinent (subgroup analysis)

Medications Treatments

- 2011 RCT of Men who have sex with Men (n=60)
 - More negative Urine Analysis in the Mirtazapine group
 - NNT = 3.1 for abstinence from methamphetamine
 - No difference in retention
- 2019 RCT of Men and transwomen who have sex with Men (n=120)
 - More negative urine analyses in mirtazapine group
 - Effect persisted after treatment ended
 - Adherence was only 38%

Mirtazapine

Antidepressant (TCA)

↑ *NE, serotonin*

Dose: 15-30 mg/day

Medications Treatments

- 5 RCTs
 - 2 studies found small reduction in methamphetamine use (*6.5% of samples negative for meth with methylphenidate versus 2.8% with placebo*)
 - No trials showed a difference in retention
- Notable limitations
 - Low dose of methylphenidate
 - Abstinence/detoxification prior to treatment
 - Unclear implications of concurrent ADHD and methamphetamine use

*CNS
stimulant*

Methylphenidate

*Dose:
18-54+ mg/day*

Still lots to figure out

Weak evidence of no effect

- Dexamphetamine
- Modafinil
- Bupropion
- Aripiprazole
- Naltrexone

Insufficient evidence

- Atomoxetine
- Gabapentin
- Baclofen
- Sertraline
- Varenicline

Don't forget harm reduction!

Stay Healthier

Test your
drugs

Stay well
hydrated

Use More Safely

Ingest,
don't inject

Use with
others

Use Less

Set a limit

Take a
break

Panel Discussion

- What challenges have you experienced in treating patients with methamphetamine use disorder?
- How feasible is it to employ behavioral treatments for methamphetamine use disorder in your clinical setting?
- Do you have any experience with medication treatments for methamphetamine use disorder?

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