An Introduction to Stimulant Use Disorders

A Primer for the Healthcare Provider

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November 5, 2025

Opioid Response Network

Working with communities.

- The SAMHSA-funded *Opioid Response Network (ORN)* assists states, organizations and individuals by providing the resources and technical assistance they need locally to address the opioid crisis and stimulant use.
- Technical assistance is available to support the evidence-based prevention, treatment and recovery of opioid use disorders and stimulant use disorders.

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Working with communities.

- The *Opioid Response Network (ORN)* provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis and stimulant use.
- *ORN* accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.

Contact the Opioid Response Network

- To ask questions or submit a request for technical assistance:
  - Visit www.OpioidResponseNetwork.org
  - Email orn@aaap.org
  - Call 401-270-5900

Disclosures

- Presenter has no financial disclosures.

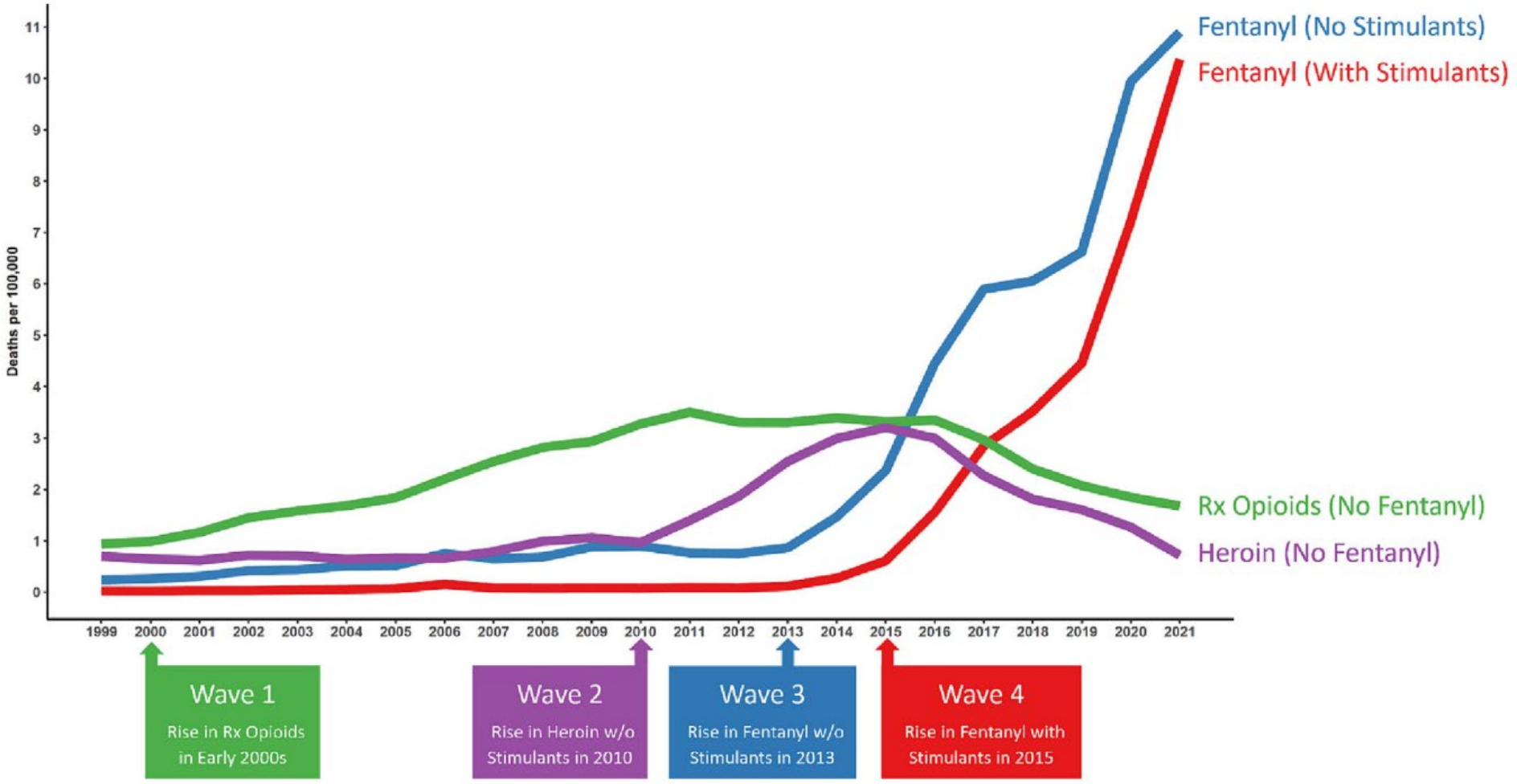
Objectives

Participants will be able to:

- Understand the role of psychostimulant in the overdose epidemic and recognize population disparities.
- Recognize signs of stimulant intoxication, overdose (overamping), and withdrawal.
- Identify evidence-based medications and behavioral health interventions to treat StUD.
- Name at least 2 common co-morbid medical or psychiatric conditions associated with StUD.

Epidemiology of Stimulant Use

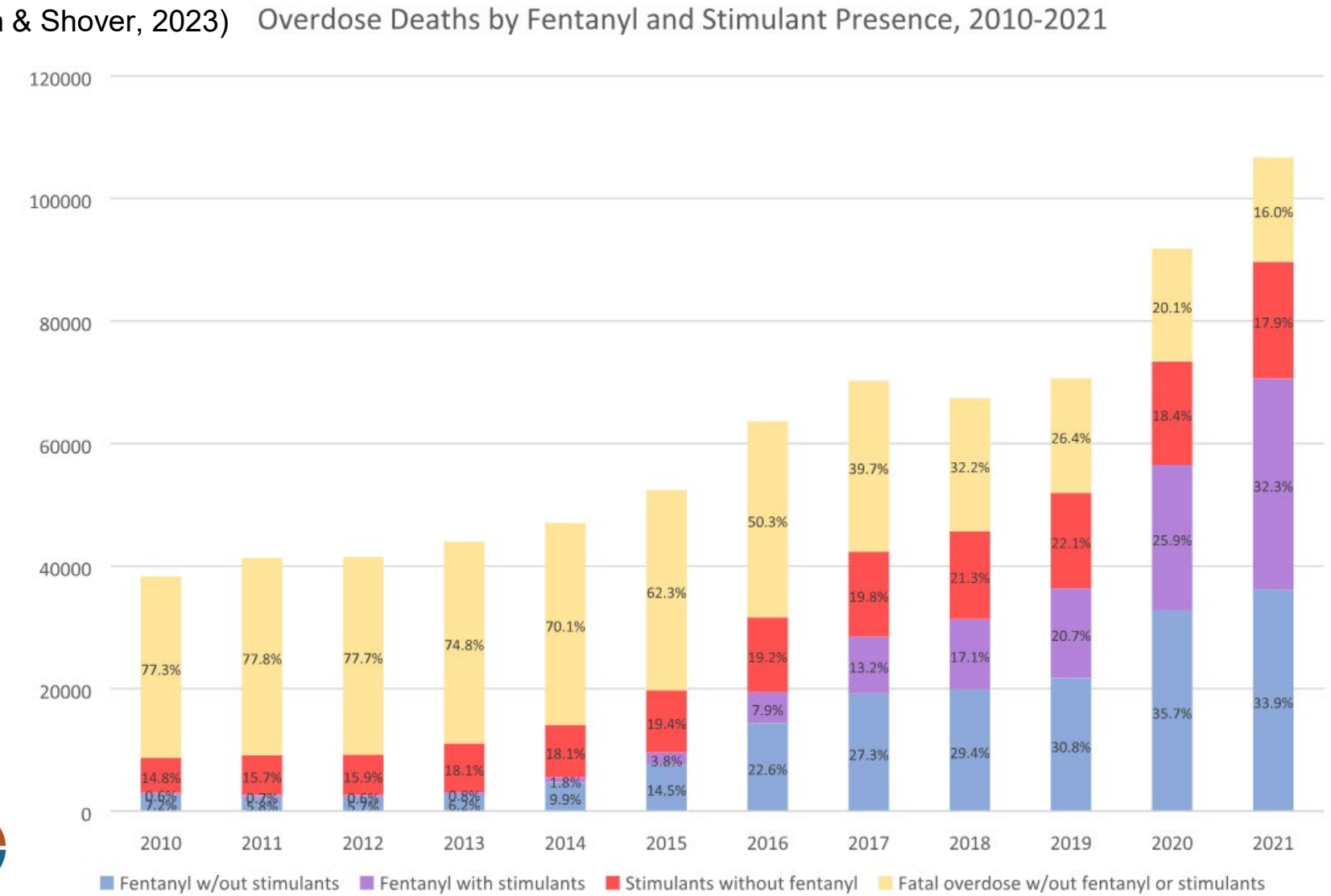
What 4th wave?



(Friedman & Shover, 2023)

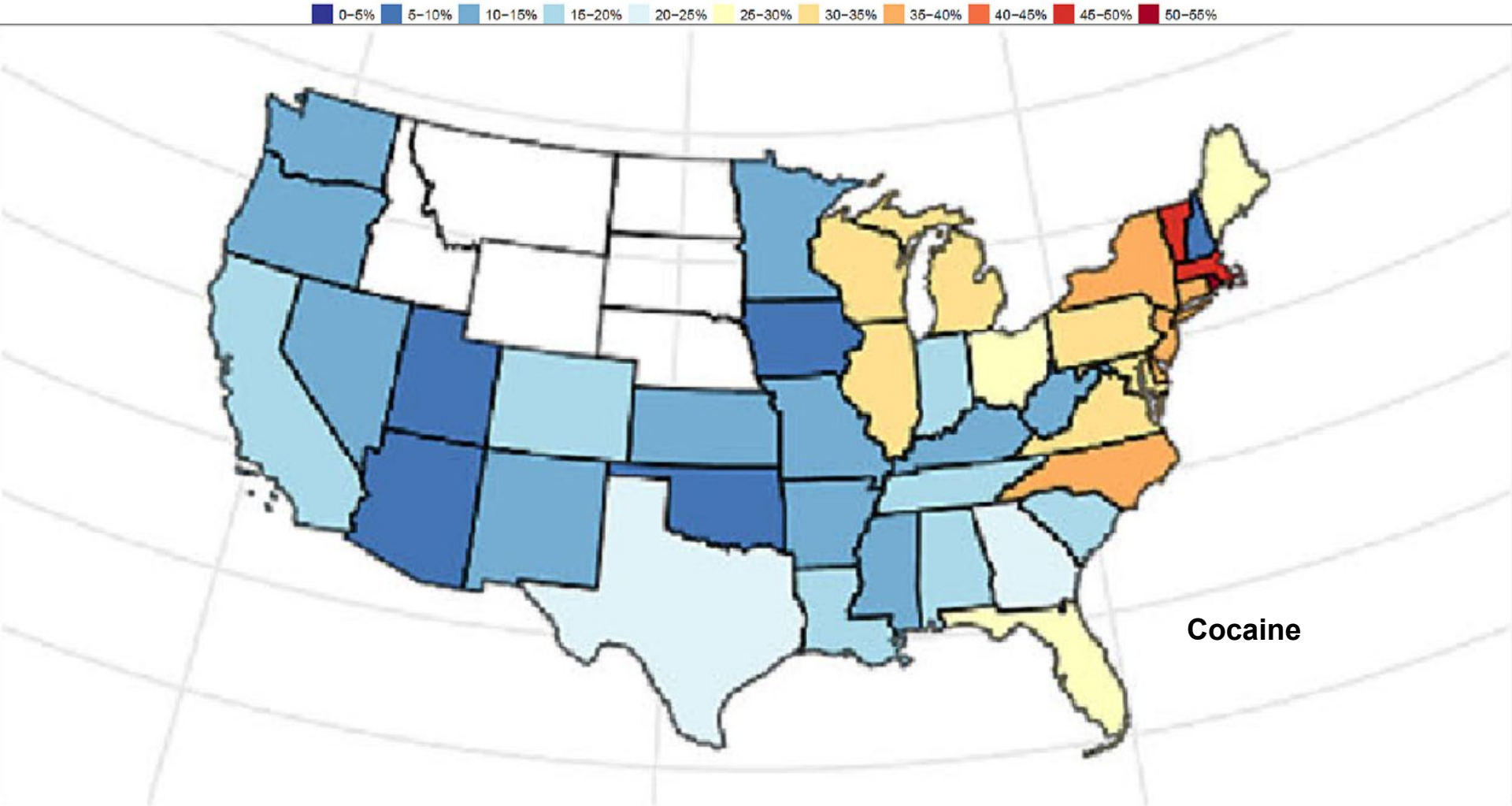
Polysubstance Overdose

(Friedman & Shover, 2023)

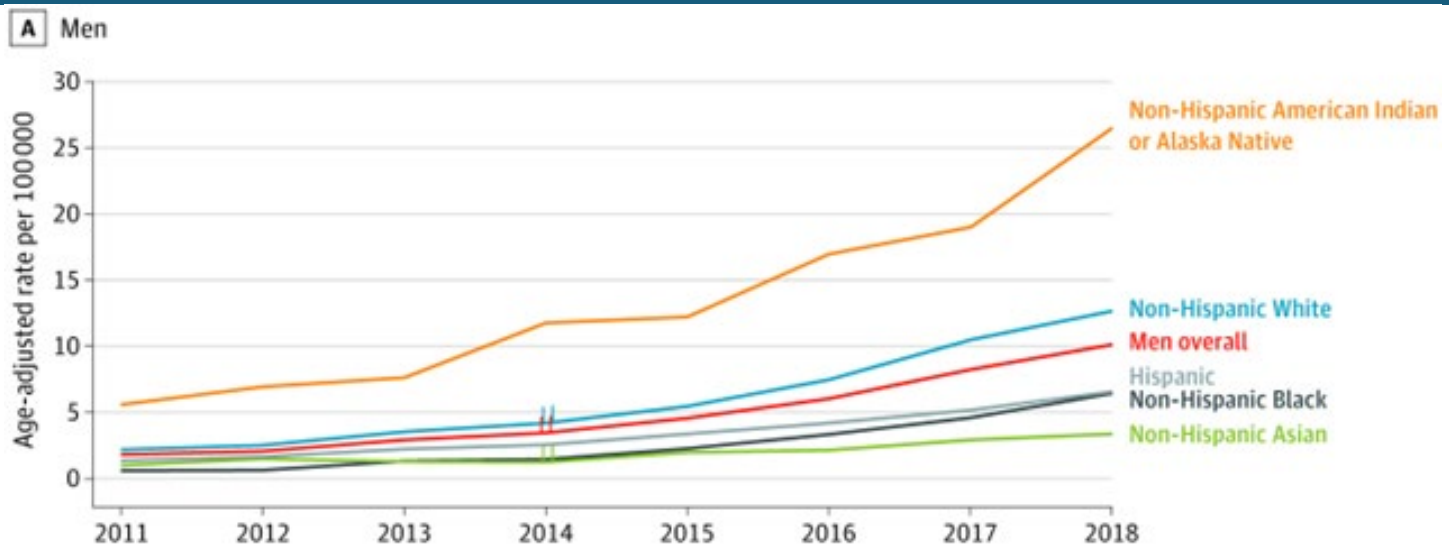


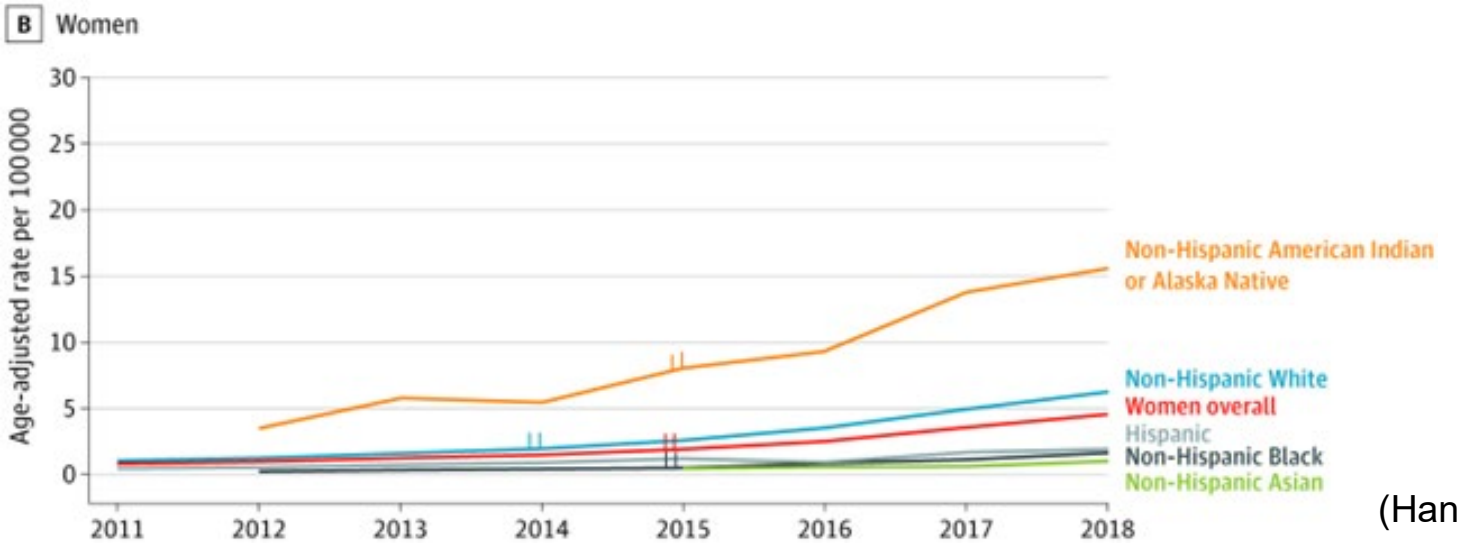
Geography Matters

(Friedman & Shover, 2023)



Affected Populations

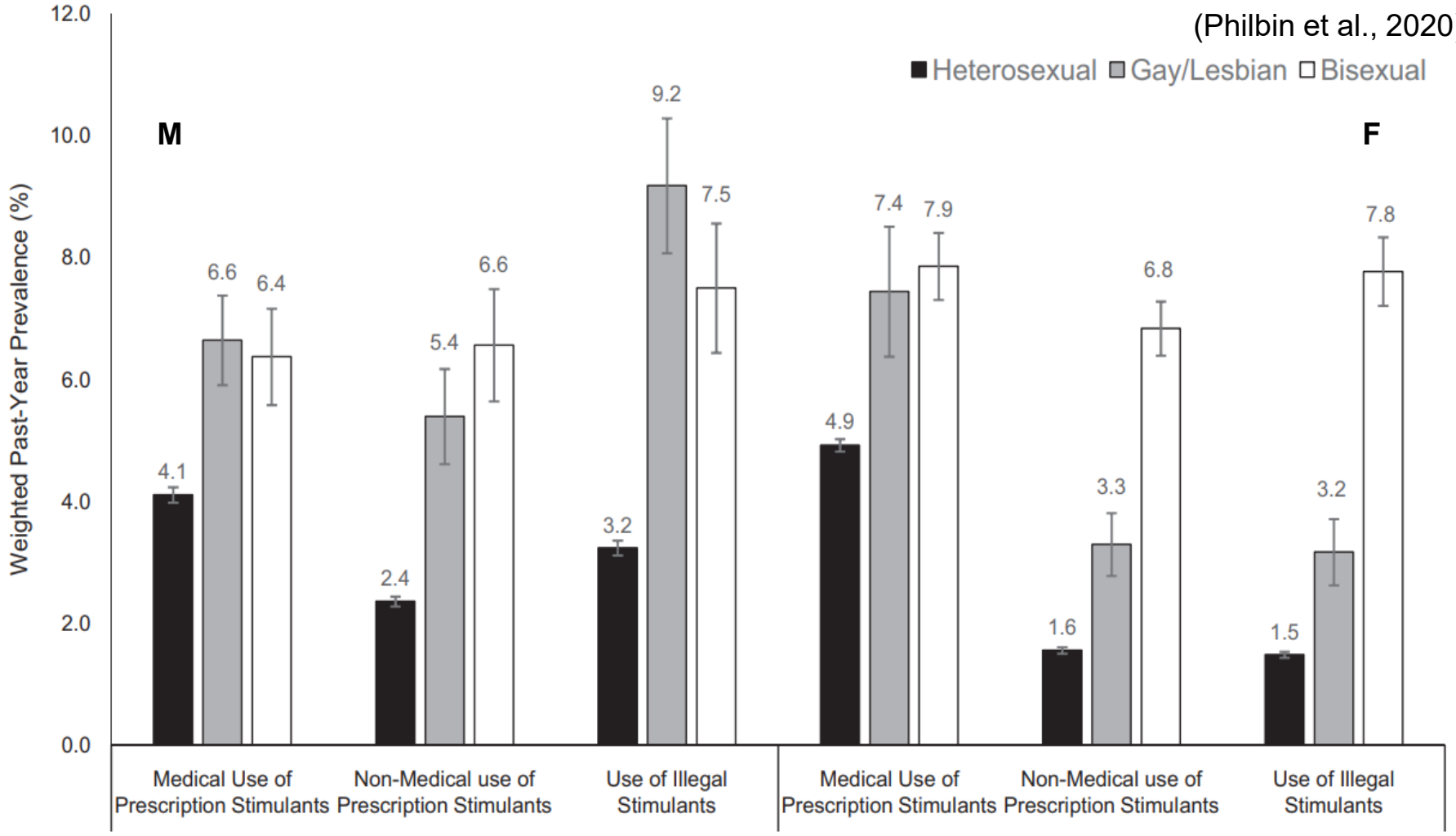




(Han et al., 2021)

Affected Populations

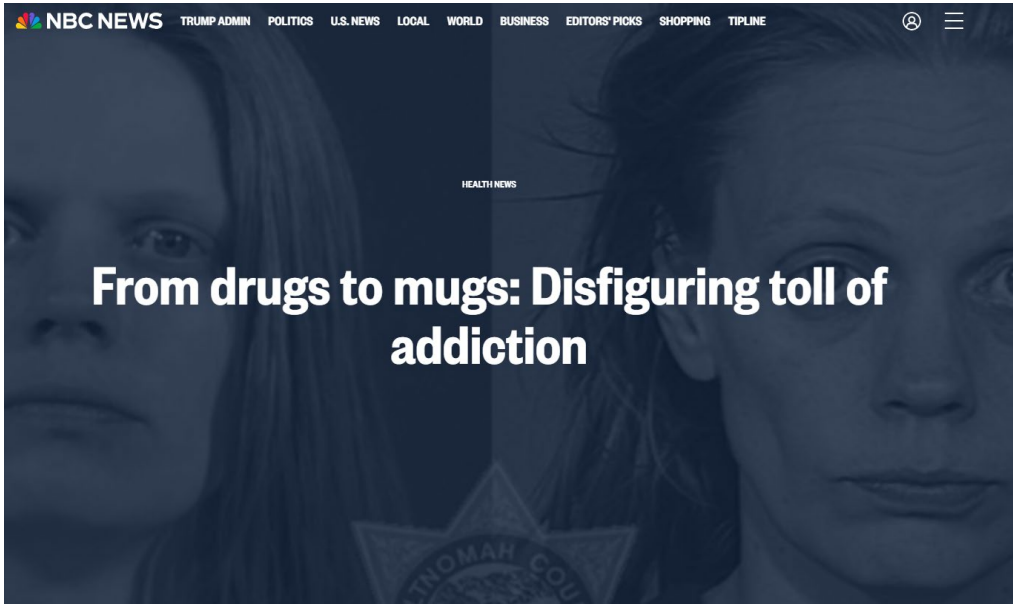
(Philbin et al., 2020)



re 1. Prevalence of medical and nonmedical prescription stimulant and illegal stimulant use: sexual identity and gender.

Stigma and Stimulants

Stigma



DON'T BE DOPEY

By BOB ROBERTS
Deputy Political Editor

CLAIMS that cannabis use leads to harder drugs were yesterday dismissed as nonsense.

A report to MPs said most scientists rejected the idea that smoking dope encouraged people to try out Class A drugs like heroin and cocaine.

It said: "The gateway theory that the use of drugs like cannabis leads on to the use of harder drugs has little evidence to support it despite copious research."

The report to the Commons Science Committee also questioned the whole system used to classify illegal drugs.

It said ministers' decisions to put drugs into Class A, B or C categories with different penalties were not based on scientific evidence.

The report said: "Drugs are not classified on the basis of a set of standards for the harm they cause. The criteria used have varied depending on the drug in question."

The report said magic mushrooms were classified as a Class A drug despite little evidence they did much harm.

It said ecstasy was also a Class A drug for "unclear" reasons and despite evidence it was "several thousand times less dangerous than heroin".

Committee chairman Phil Willis said there were real questions about whether the classification system worked.

He said: "We want to see whether the system as it stands has a sound basis of evidence.

"We want to see whether it is evidence rather than political expediency that is driving decisions."

The Home Office is also growing increasingly concerned the system does not work. In January Home Secretary Charles Clarke announced plans for a complete overhaul of the way drugs are categorised and prohibited.

Class A drugs which carry a seven-year penalty for possession include heroin, LSD, ecstasy, cocaine, crack and magic mushrooms.

Class B drugs are amphetamines and barbiturates carrying five years for possession.

Class C drugs include cannabis, steroids, and the tranquilliser ketamine which carry two years for possession.

The report comes after a UN drugs agency warned this week of the rise of dance and sex drug methamphetamine, or crystal meth.

It said it is more addictive than crack cocaine and is becoming a global problem.

The International Narcotics Control Board called on governments to introduce tougher restrictions on chemicals used in the manufacture of the drug, which allows users to stay awake for days and increases sexual arousal.

London-based INCB president Professor Hamid Ghodse said: "If I want to pick on one major drug problem pandemic today, it is methamphetamine."

Scientists say smoking cannabis DOESN'T lead to taking harder drugs

Voice of Mirror: Page 6

bob.roberts@mirror.co.uk

YOUR FACE IS A METH

BEFORE.. 1½ YEARS LATER

BEFORE.. 5 YEARS LATER

BEFORE.. 4 MONTHS LATER

BEFORE.. 2½ YEARS LATER

Shock pictures of what new danger drug can do to you

By EMILY MILLER

THESE horrifying pictures reveal the ravaging effects of the dance-sex drug poised to sweep Britain.

The police mugshots show how the appearance of a group of crystal meth addicts in Multnomah County, in Oregon USA, changed after they started snorting, smoking, injecting or eating the drug.

And the unseen effects are just as alarming. Crystal meth rots users' teeth down to blackened stumps and can make them claw at imaginary bugs they believe are crawling beneath their skin.

Side effects include severe weight loss, paranoia and heart and lung problems leading to death.

John Marsden, addiction expert at London's Kings College, said: "After a honeymoon period, the drug hijacks the user's memory and pleasure zones in the brain.

"It can create a psychotic disorder that's like paranoid schizophrenia. People hear and see things and have rages and mood swings."

Will Nutland, spokesman for HIV/Aids group the Terrence Higgins Trust, warned the drug is increasingly popular in gay clubs.

He said: "The user quickly gets hooked to get over the comedown, which involves dreadful headaches, nausea and paranoia."

Graduate Nick, 24, from London first took crystal meth a year ago. He said: "It's very addictive. The hit lasts for three or four hours."

The dreadful come-down forced Nick to quit his job. He said: "I feel depressed and lethargic. I smoke cannabis and get drunk to ward off the comedown. I've been told that if I keep taking it I will die."

(Ayres & Jewkes, 2012)

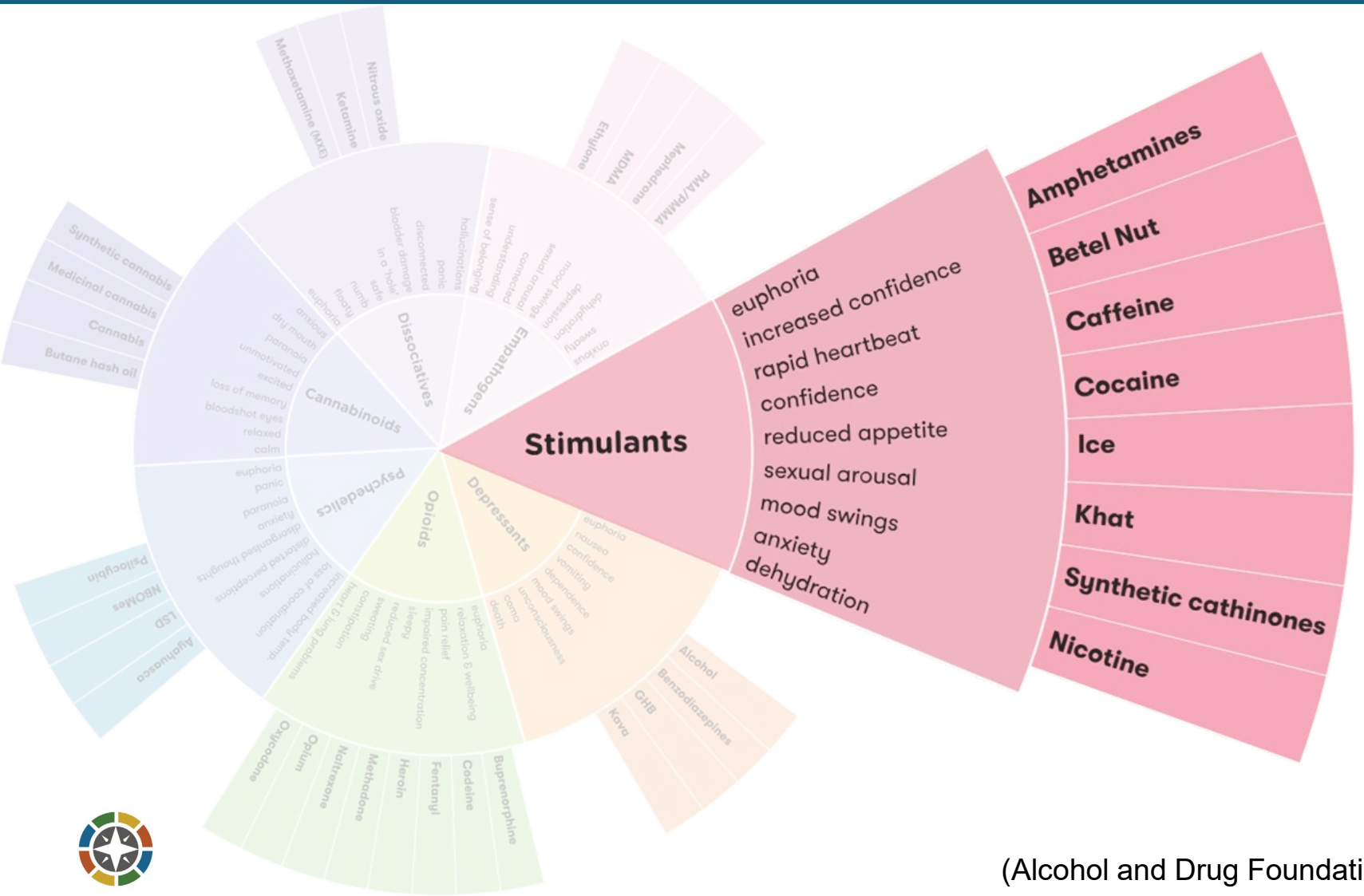
Words Matter

Say This	Not This
✧ Person with a stimulant use disorder	✧ Addict, crackhead, tweaker, junkie
✧ Negative or positive urine toxicology screens	✧ Dirty or clean urine
✧ Newborn with substance exposure	✧ Crack baby, addicted baby
✧ Altered perception of reality	✧ Crazy, nuts, tweaking
✧ Protective behaviors	✧ Violent, aggressive, monsters

(Alves et al., 2023)

The Basics

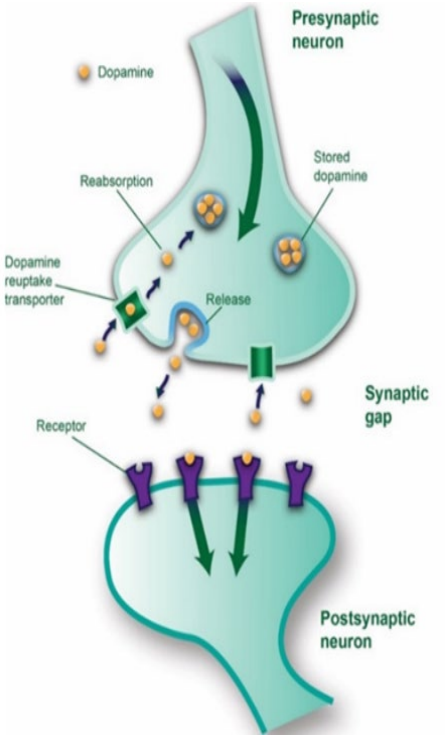
Types of Psychostimulants



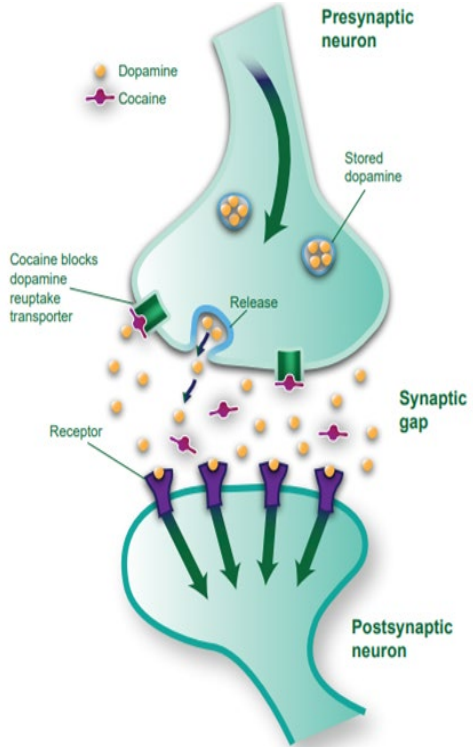
(Alcohol and Drug Foundation, 2025)

Dopamine transmission

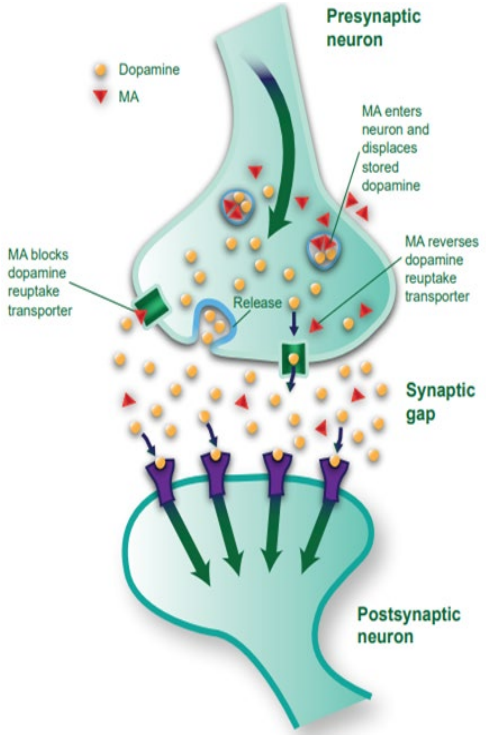
Normal Dopamine Transmission



Cocaine's Effect on Dopamine Transmission



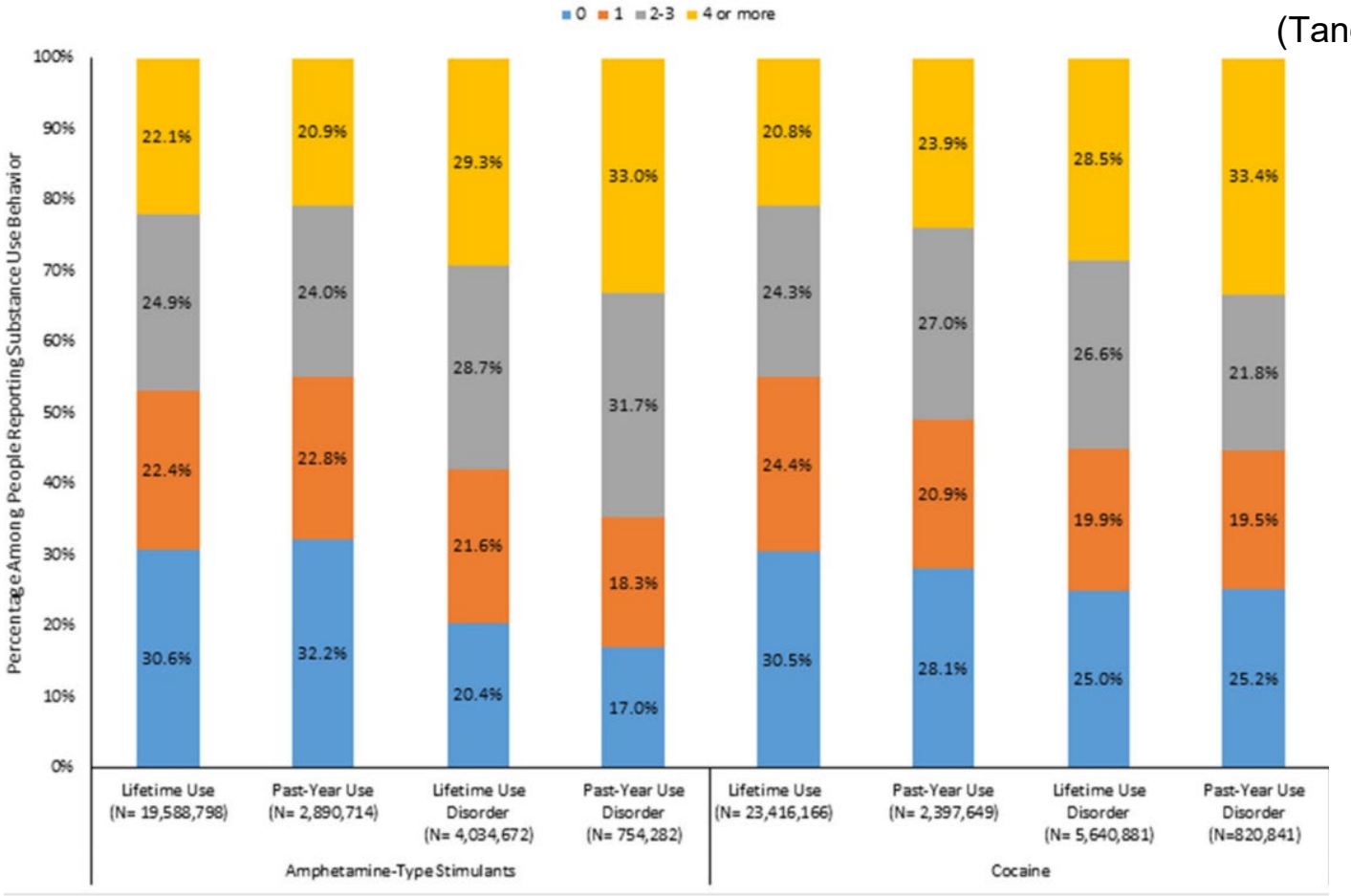
Methamphetamine's Effect on Dopamine Transmission



(Paulus & Stewart, 2020)

ACEs and Stimulant Use

(Tang et al., 2021)



People with stimulant use disorders are highly likely to have experienced multiple adverse childhood experiences.

Stimulant Use Disorder

(Diagnostic and Statistical Manual of Mental Disorders, 2013)

Impaired Control	Social Problems	Risky Use	Physical Dependence
Using more often or more than intended	Neglecting responsibilities and relationships	Use in setting with significant risk to health or well being.	Needing more of a substance to get the same effect.
Wanting to cut down or stop but being unable to	Giving up activities due to their substance use	Continued use despite known health consequences from use.	Experiencing withdrawal symptoms when the substance is not used.
Increased time spent acquiring the substance or recovering for its effects	Unable to complete tasks required for daily functioning at home, school, or work		
Craving, strong desire to use			

2-3= mild use disorder, 4-5=moderate use disorder, 6+=severe use disorder

Stimulant intoxication

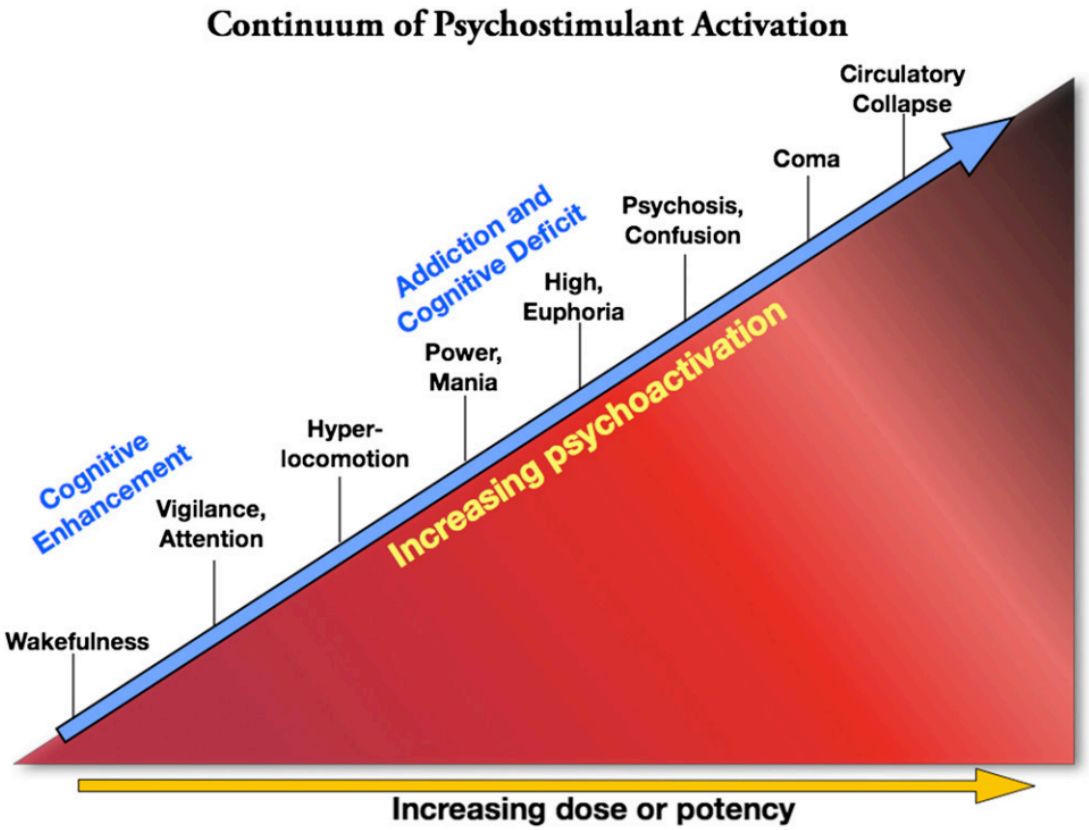
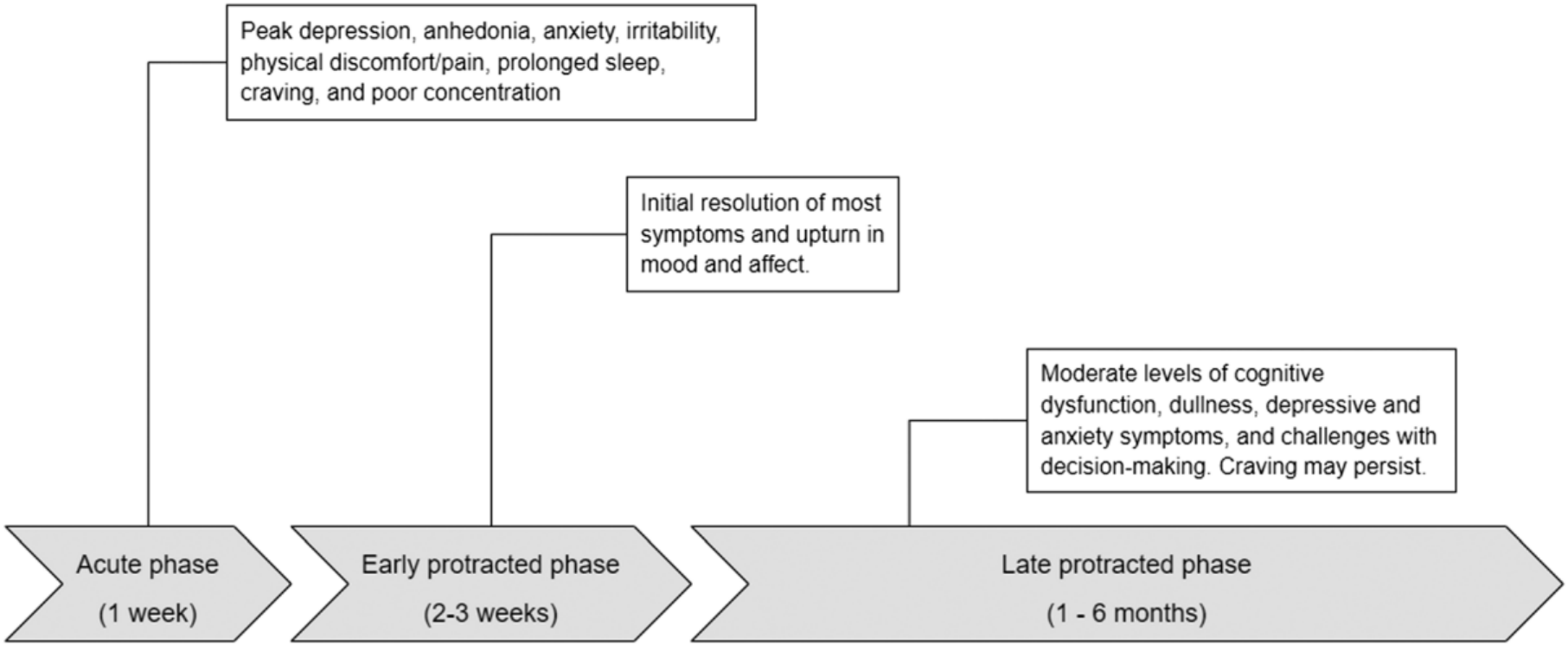


Fig. 10. Continuum of psychostimulant activation. Increasing cognitive activation as stimulant dose increases initially produces increased wakefulness and cognitive enhancement. These are the desired therapeutic effects. As dose increases, a sense of power and euphoria can ensue; these are the effects addicts seek and are accompanied by cognitive deficits. Higher doses can result in overdose, psychosis, coma, and eventual circulatory collapse.

(Wood et al., 2014)

Stimulant withdrawal



(Li & Shoptaw, 2023)

Assessing and managing active stimulant use

RECOGNIZING OVERAMPING

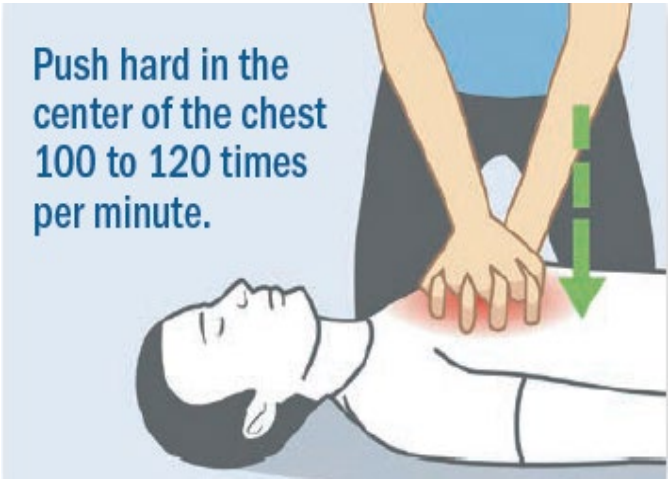
Overamping is the psychostimulant equivalent of an overdose.

- Characterized by both physiological and psychological symptoms.
- Emergency situation with potentially life-threatening complications.
- More unpredictable than an opioid overdose.
- Occurs along a spectrum and patients can experience varying levels of overamping.

(National Harm Reduction Coalition, 2020)

Community Response to Overamping

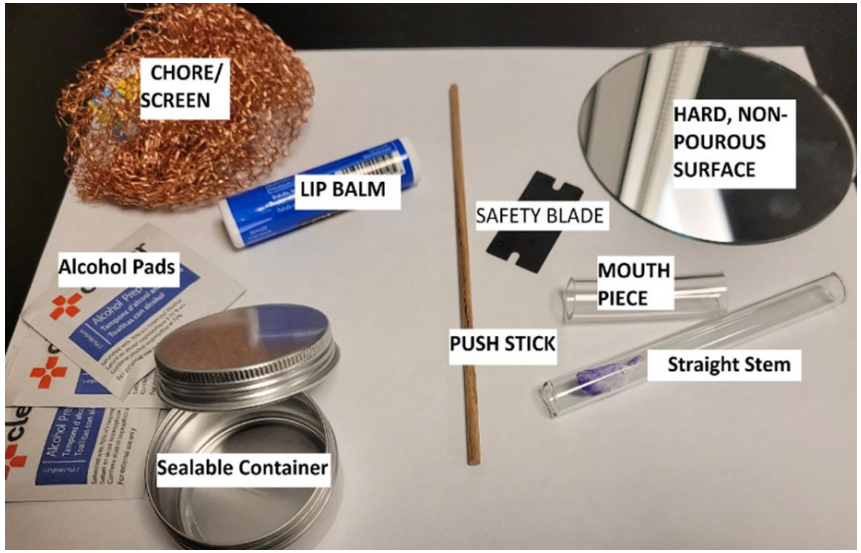
- Assess the scene
- Assess the person
- Call 911
- Attempt to de-escalate the patient
- Stay with the person until help arrives
- Should the person become unresponsive, start CPR!

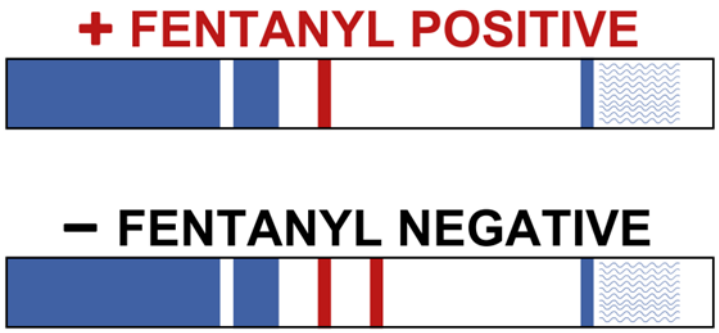


(Centers for Disease Control and Prevention, 2022; National Harm Reduction Coalition, 2020)

Addressing negative health sequellae

- Considerations to reduce the risk of skin and soft tissue infection.
- Prevention of communicable infections
- Prevention of accidental opioid overdose
- Prevention of overamping.





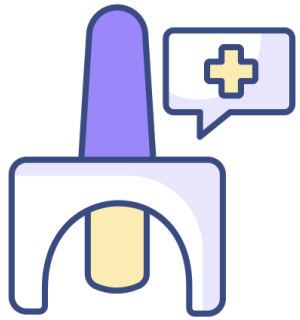
(National Harm Reduction Coalition, 2020)

Treatment for Stimulant Use Disorders

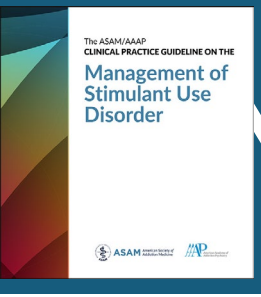
Universal Treatment Considerations

Consider universal needs of people using stimulant to promote wellness including:

- Overamping prevention
- Opioid overdose prevention/education
- Naloxone distribution
- “Chill packs”
- HIV treatment/prevention (PrEP, nPEP, TasP)



(Centers for Disease Control and Prevention, 2022; Coffin, 2024; National Harm Reduction Coalition, 2020; Substance Abuse and Mental Health Services Administration, 2021)

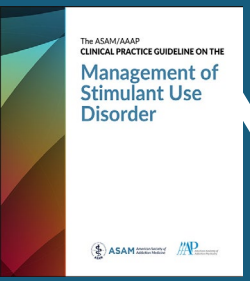


Medications to Treat CUD

- There are no FDA-approved medications to treat CUD, but there are several medications with trials with promising results including:
  - Topiramate +MAS-ER
  - Long-acting stimulants
  - Topiramate
  - Bupropion

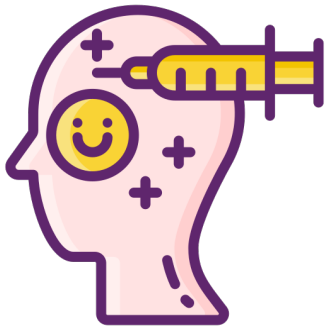
- The use of medications to treat CUD should be considered by clinicians with experience caring for individuals with addiction.

(Carpenter et al., 2024; Chan et al., 2019; Johnson et al., 2013; Levin et al., 2015, 2020; Pani et al., 2011; Prince & Bowling, 2018; Siniscalchi et al., 2015)



Medications to Treat MUD

- There are no FDA-approved medications to treat MUD, but there are several medications with trials with promising results including:
  - Bupropion + Naltrexone-ER
  - Mirtazapine
  - Long-acting injectable antipsychotics
  - Bupropion
  - Long-acting stimulants



- The use of medications to treat MUD should be considered by clinicians with experience caring for individuals with addiction.

(Bakouni et al., 2023; Chamakalayil et al., 2021; Coffin et al., 2020; Ezard et al., 2021; Heikkinen et al., 2023; Kidd et al., 2023; Naji et al., 2022; Noroozi et al., 2020; Sadegh et al., 2023; Tardelli et al., 2020; Trivedi et al., 2021; Wang et al., 2020)

Behavioral Health Interventions

- Strength-based behavioral health interventions have the strongest evidence for the treatment of stimulant use disorders.
- Contingency management (CM) with high-fidelity to standardized protocols is highly effective in treating StUD.
- CM is a therapeutic intervention that uses principles of behavioral analysis to promote neurological changes and improved recovery outcomes.

(Pfund et al., 2021; Rash, 2023; Rash et al., 2020)

Behavioral Health Interventions

- Additional therapeutic modalities with evidence for the treatment of StUD include:
  - Cognitive behavioral therapy (CBT)
  - Motivational interviewing (MI)
  - Community Reinforcement Approach (CRA)
  - Matrix model
  - Exercise-supported recovery

(AshaRani et al., 2020; Carroll & Kiluk, 2017; Marrero-Cristobal et al., 2022; Substance Abuse and Mental Health Services Administration, 2021)

Take Home Points

- The number of people using stimulants and experiencing stimulant use disorders is rising in the United States.
- There are available behavioral health treatment interventions that are highly effective to treat people with StUDs.
- There is a growing body of evidence to support the use of medications in treating StUD.
- People with stimulant use disorders can and do experience recovery.

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Medications for Stimulant Use Disorder

Ambulatory Medication Protocol

AMBULATORY MEDICATION PROTOCOL PSYCHOSTIMULANT OVERAMPING

	Drug	Dose	Route	Monitoring
First Line Benzodiazepines	Lorazepam	0.5mg-1mg, repeat in 30-60min	PO	Monitor vital signs and for decreased agitation. If sleeping check q60min.
Second Line Antipsychotics	Olanzapine	5-10mg repeat in 120min	PO or IM	Monitor for vital signs and for decreased agitation. Assess for extrapyramidal symptoms.

Stimulant-induced Psychosis Protocol

Mentimeter

Treatment of Acute Stimulant Psychosis

- **Benzodiazepines** are **1st line** treatment for psychosis.
- Antipsychotics are 2nd line treatment.

	Medication	Soft Max	Notes
1st Line	**Midazolam** 2-5 mg IV/IM/IN Q5-15min PRN	10 mg	· High doses may be needed
	Lorazepam 2-4mg IV/IM Q10-15min PRN	8 mg	
2nd Line	**Haloperidol** 5mg IV/IM (repeat in 10m)	10 mg	· ↑ seizure risk · ↑ QTc prolongation · ↑ temperature due to ↓ diaphoresis
	Olanzapine 5-10mg IM (repeat in 120m)	20mg	
3rd Line	**Ketamine** 0.5-2 mg/kg IV or 3-5 mg/kg IM	500 mg	· Appropriate if contraindications to 1st or 2nd line agents · Appropriate if inadequate response to appropriate doses or combinations of 1st and 2nd line agents

Stimulant Withdrawal

**Time course based on methamphetamine withdrawal, shorter duration for patients using cocaine/short-acting stimulan

Acute Withdrawal

0-10 Days

- Fatigue
- Depression
- Suicidal Ideation
- Irritability
- Hallucinations

Subacute Withdrawal

10-21 Days

- Fatigue/Exhaustion
- Depression
- Mood Swings
- Irritability
- Brain Fogginess
- Disturbed Sleep

Protracted Withdrawal

21 days – 12 months

- Anhedonia
- Depression
- Sexual Dysfunction
- Decreased Libido

(Substance Abuse and Mental Health Services Administration, 2021)

Withdrawal Management

- The Amphetamine Withdrawal Questionnaire (AWQ) may be used to quantify stimulant withdrawal.
- 10-item scale. Subjective in nature. Utilized very little.
- Another recent study examined the safety of providing stimulant-type medications to patients with stimulant withdrawal.

Mentimeter

Amphetamine Withdrawal Questionnaire (AWQ)

	Please circle (o) one response for each question regarding the past 24 hours	Question score
1.	**Have you been craving amphetamine (or methamphetamine)?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
2.	**Have you felt sad?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
3.	**Have you lost interest in things or no longer take pleasure in them?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
4.	**Have you felt anxious?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
5.	**Have you felt as if your movements were slow?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
6.	**Have you been tired?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
7.	**Have you been agitated?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
8.	**Has your appetite increased or are you eating too much?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
9.	**Have you had any vivid or unpleasant dreams?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
10.	**Have you been craving for sleep or sleeping too much?** 0 Not at all 1 A little 2 Moderately 3 Quite a bit 4 Extremely	
	Total Score	

(Srisurapanont et al., 1999)

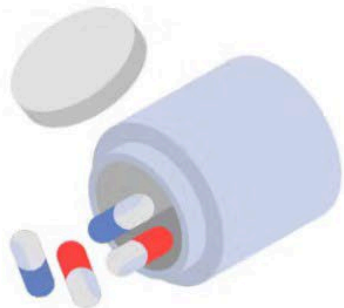
Medications to Treat Stimulant Use Disorder

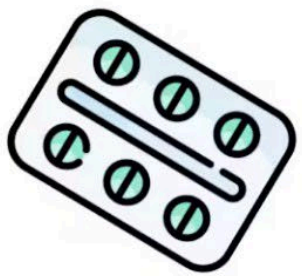
Mentimeter

There are currently no FDA-approved medications to treat StUD.

HOWEVER...

- Ample research to support the use of medications to treat StUD:
  - **Cocaine use:** Topiramate, Mixed amphetamine salts ER
  - **Methamphetamine use:** Mirtazapine, Naltrexone-Bupropion





(Batki et al., 2023)
(S3 Practice Guidelines, 2016)

CUD: Medication Trials

Mentimeter

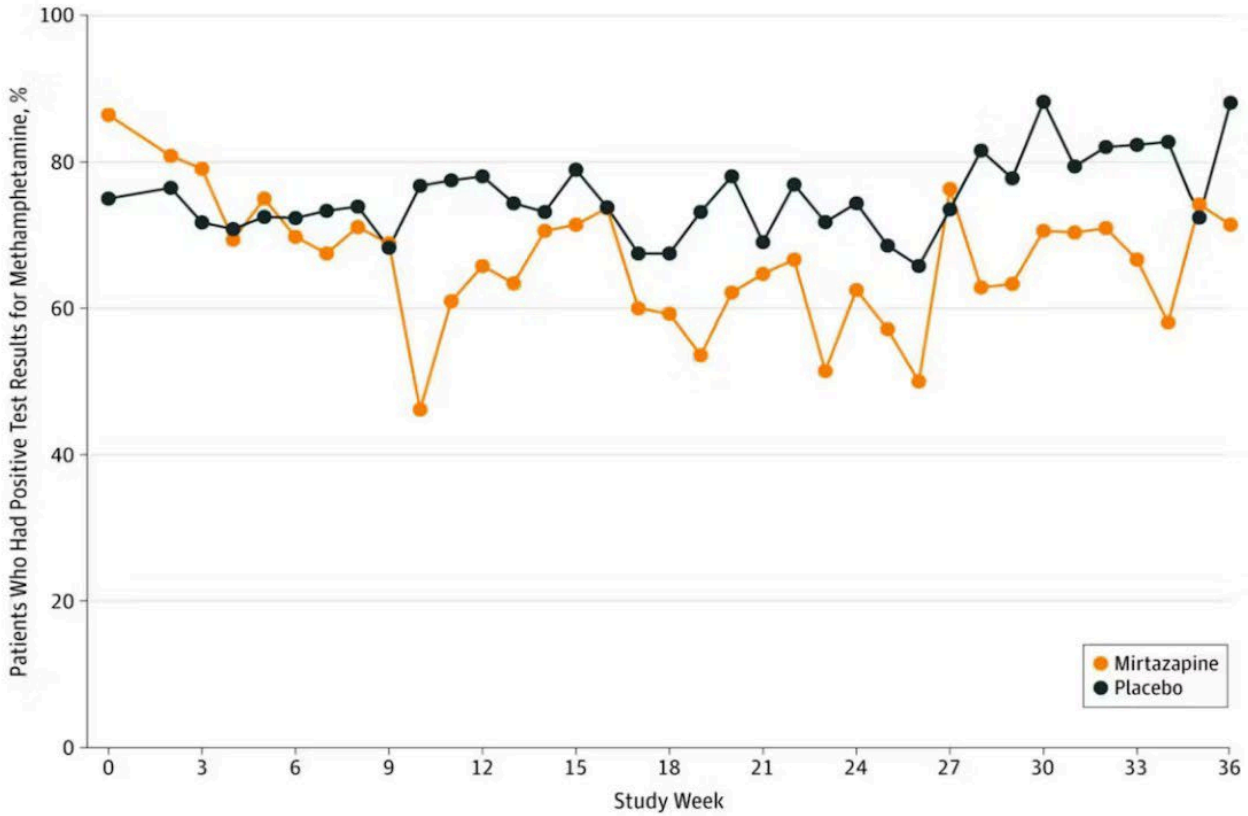
Research related to **Topiramate** for treatment of **cocaine** use disorder:

- Double-blind, placebo-controlled study examined the efficacy of topiramate for treatment of CUD over a 12-week period.
- **Topiramate** was found to be more efficacious than placebo at increasing the weekly proportion of cocaine non-use days and increasing the likelihood of urine specimens negative for **cocaine**.
- Additionally, more effective in decreasing cocaine cravings than placebo.

(Johnson et al, JAMA, 2013)

MUD: Medication Trials

Mentimeter

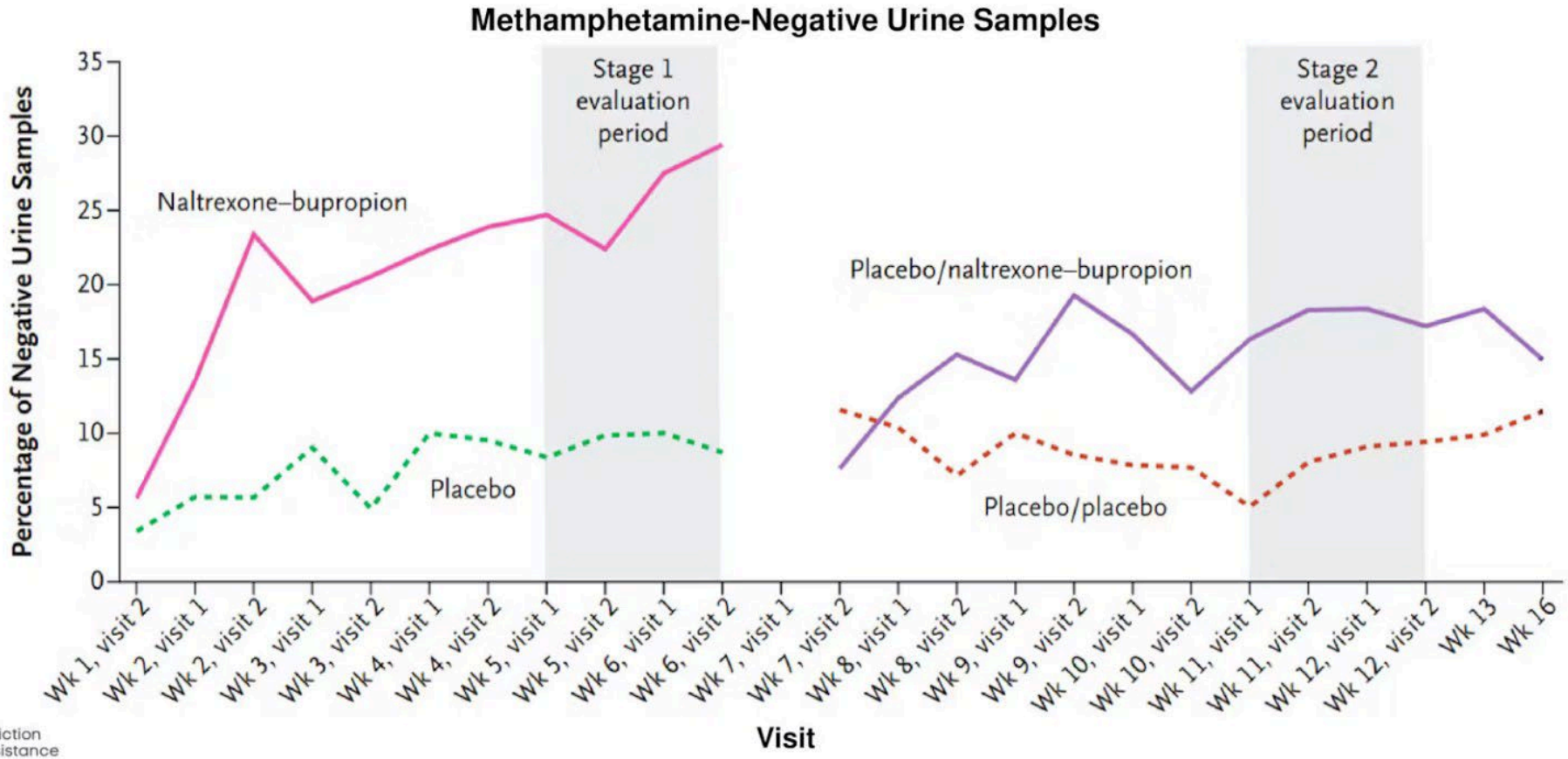


- **Mirtazapine** at 15 mg and 30mg reduced **methamphetamine**-positive urine specimens at 24 weeks and 36 weeks compared to placebo.
- Even in the setting of limited adherence, **mirtazapine** had some efficacy in reducing **methamphetamine use**.

(Coffin et al, 2020)

MUD: Medication Trials

Patients receiving **naltrexone IM ER** (380 mg every 3 weeks) and oral **extended-release bupropion** (450 mg QD) showed an increase in **methamphetamine** negative urine specimens.



(Trivedi et al, 2021)

MUD: Evidence-based Pharmacological Interventions

Mentimeter

Medication or Combination Medication Name	Indications for Use	Contraindications for use	Baseline Evaluation	Dosage/ Administration	Adverse Effects	Drug Interactions	Monitoring	Patient Education
Mirtazapine	• **Meth-amphetamine use disorder**	• Concurrent MAOI therapy • Renal failure • Severe hepatic impairment	• LFTs • BUN/Cr (CrCl > 40 mL)	• 15 mg for 1 week and increase to 30 mg PO daily	• Drowsiness • Weight gain • Dry mouth • Akathisia	• Risk for serotonin syndrome and QTc prolongation in combination with other agents	• QTc risk consider an EKG • Renal/ hepatic function if changes in metabolic status	• Do not stop the medication abruptly (taper)
Injectable Naltrexone+ Bupropion	• **Meth-amphetamine use disorder**	• Concurrent OUD • Severe hepatic impairment	• LFTs • Urine toxicology (opioid-free)	• 380 mg IM naltrexone q 3 weeks + 450 mg PO bupropion	• Injection site reaction • Increased depression • Weight loss • Serotonin syndrome	• Opioid antagonist	• Regular LFTs	• Risks for injection site reaction and pain management control.

Behavioral Health Treatment for Stimulant Use Disorder

Evidence-Based Treatment	Description	References
Contingency Management	Provides incentives ($, gift cards, motivational encouragement, etc.) for treatment adherence.	(Bach et al., 2020; Brown & DeFulio, 2020; Lake et al., 2020; Minozzi et al., 2016; Okafor et al., 2020)
Community Reinforcement Approach	Using therapeutic modalities, job training, education, behavioral skills training, social training, relapse prevention and relationship counseling.	(Meyers et al., 2011; Riccardo De Giorgi et al., 2018; Stitzer et al., 2011)
Matrix Model	An 8-16-week structured intensive outpatient group utilizing group therapy, connection to self-help, and exploration of underlying causes of disease. + Regular UDS screening.	(Huber et al., 1997; Rawson et al., 1995, 2002)
Exercise Supported Recovery	Varying exercise programs have been described, but those with a combination of daily aerobic and anaerobic exercise are associated with long term recovery.	(Huang et al., 2020; Killeen et al., 2020; Liu et al., 2021; Zhou et al., 2021)
Trauma-Informed Care Seeking Safety	A therapeutic model for the treatment of co-occurring PTSD and SUD that emphasizes the need to be safe in order to explore and cope with trauma.	(Lange-Altman et al., 2017; Lenz et al., 2016; Morley et al., 2016; Murphy et al., 2019; Najavits & Anderson, n.d.; Sperlich et al., 2021; Takahashi et al., 2020)

SAMHSA's TIP 33

This updated TIP reviews what is known about treating the medical, psychiatric, and SUD-related problems associated with the use of cocaine and methamphetamine, as well as the misuse of prescription stimulants. The TIP offers recommendations on treatment approaches and maximizing treatment engagement and retention, and strategies for initiating and maintaining abstinence.

Click here or scan the QR code to access SAMHSA's TIP 33: *Treatment for Stimulant Use Disorders*