



TBI-BH ECHO

Traumatic Brain Injury – Behavioral Health ECHO
UW Medicine | Psychiatry and Behavioral Sciences

TBI-BH ECHO 2026

How Can I Help People Stop Using Methamphetamine?

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University of Washington

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Speaker Disclosures

Lilly clinical trial funding for alcohol use disorder drug, starting 3/2026.

> **The following series planners have no conflicts of interest:**

- Jennifer Erickson, DO
- Jess Fann, MD
- Cherry Junn, MD
- Chuck Bombardier, PhD
- Cara Towle, MSN, RN, MA



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Objectives

- 1. Describe current trends of methamphetamine use in the state of Washington**
- 2. Highlight the clinical impact of methamphetamine use**
- 3. Increase knowledge on how to approach methamphetamine use disorder**



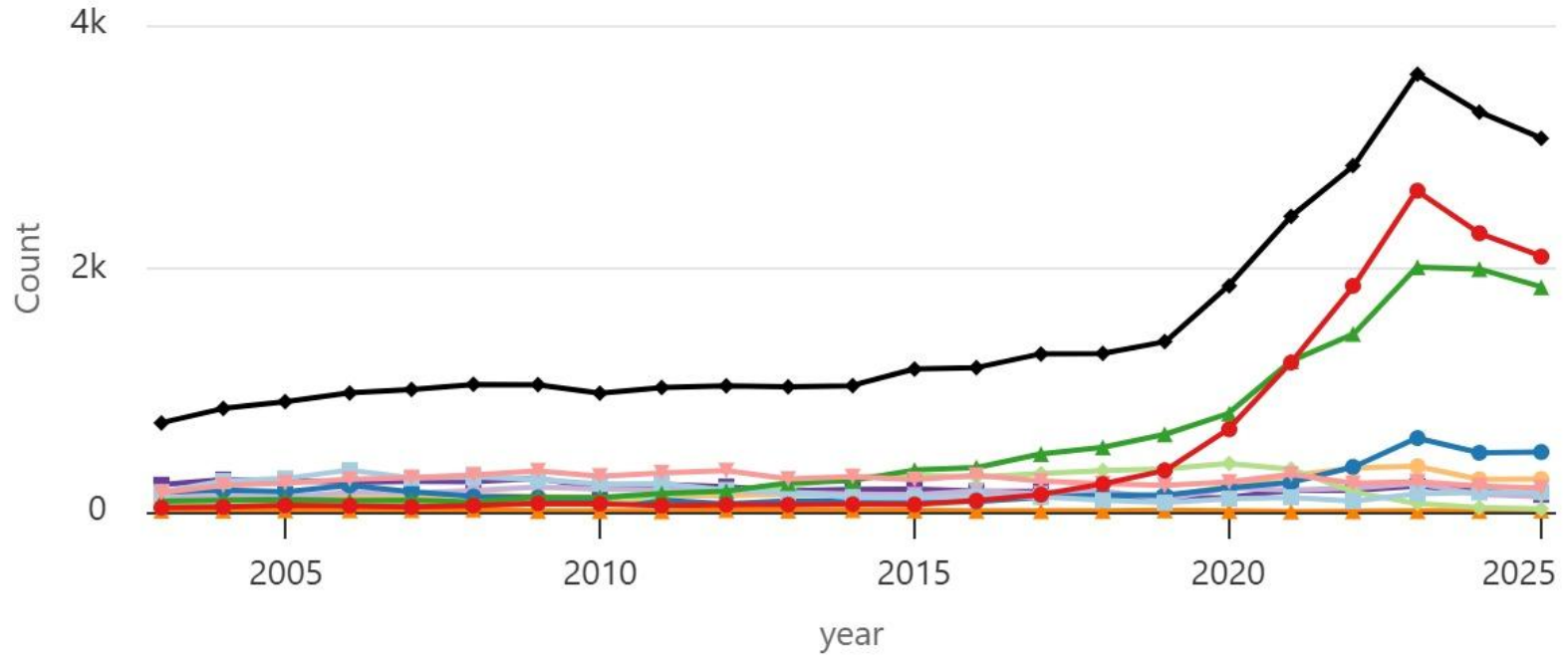
41yo F with OUD in sustained remission on 6mg of Buprenorphine for years. Daily morning methamphetamine use for years to help her get started in the morning. Works as a nanny/house manager for 2 separate families, full time. Psychiatric diagnosis of ADHD and OCD. Also on sertraline 100mg and aripiprazole 10 mg daily for years.

What would you do?

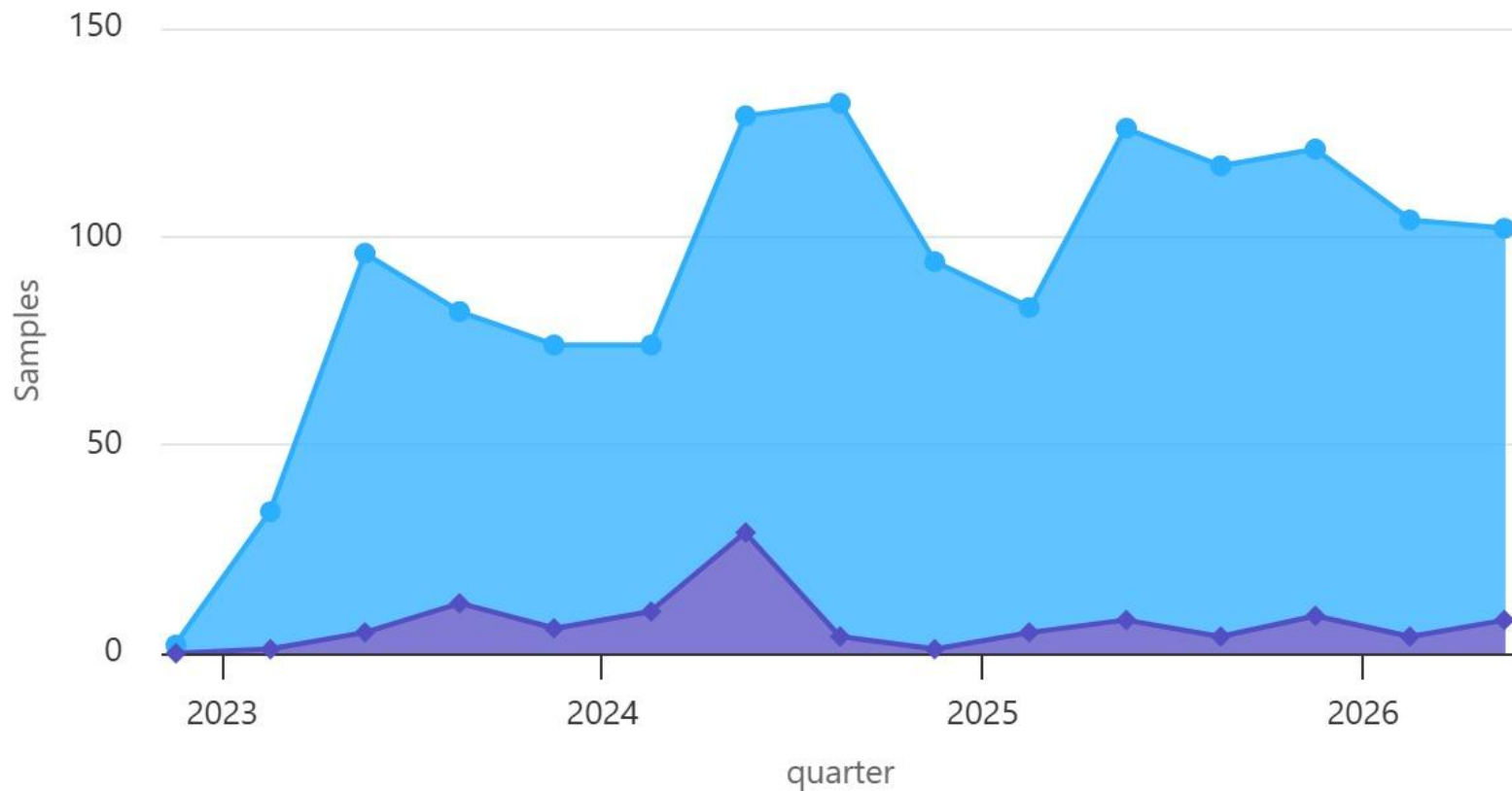
- A. Refer to a residential addiction treatment facility**
- B. Refer to an outpatient addiction treatment facility**
- C. Start a medication to treat his methamphetamine use disorder**
- D. Monitor use→not a use disorder**
- E. Other**



Major drug deaths (count), statewide

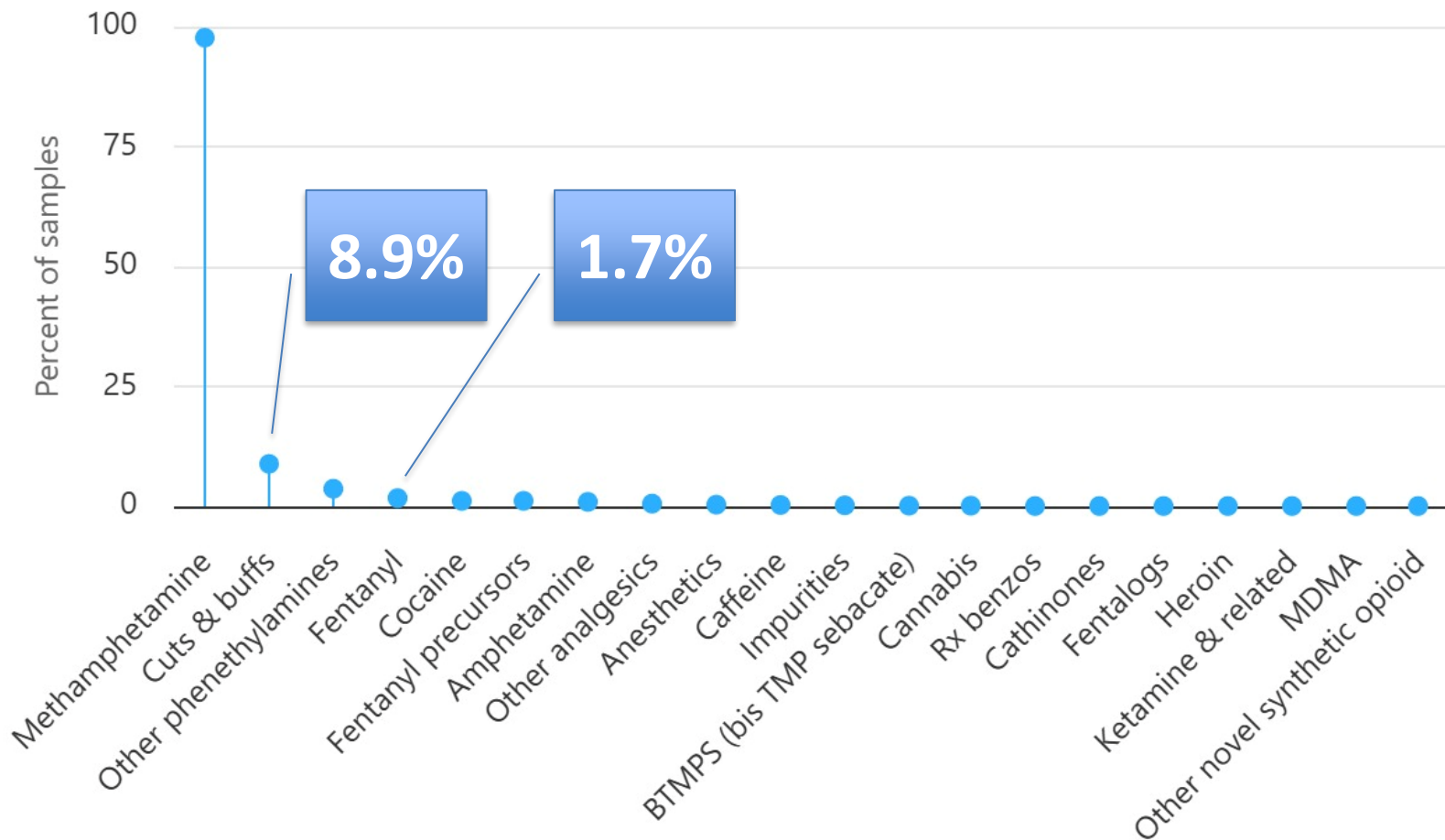


Expected drug only versus something else in samples sold as methamphetamine by quarter



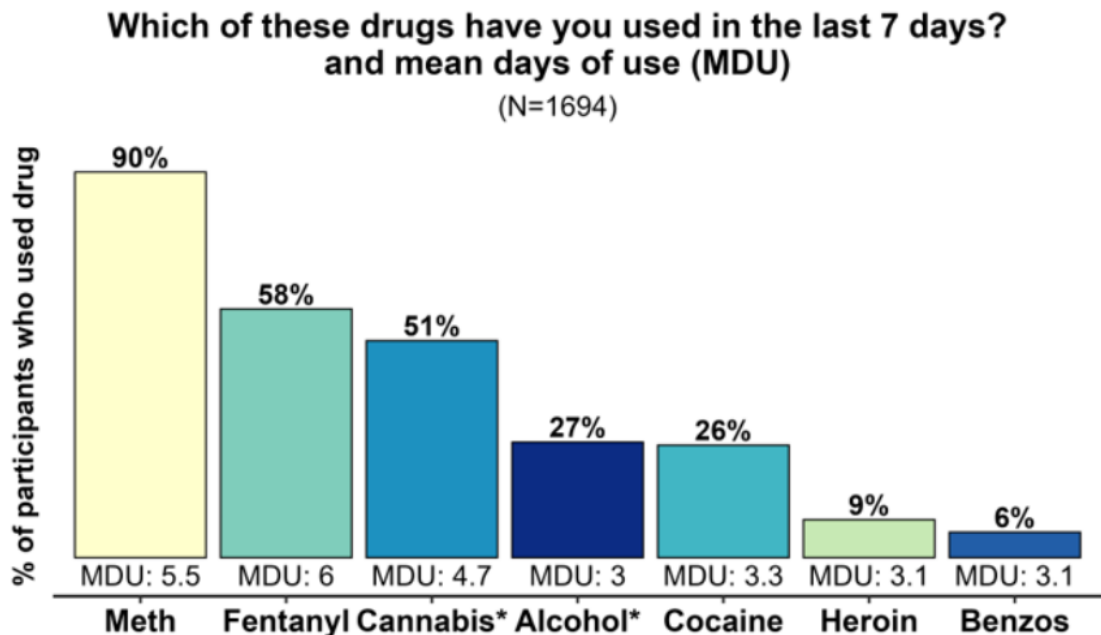
Got expected drug only Something else

Shares of samples sold as meth positive for key substances



2025 WA Syringe Survey Data

N=1694, 24 counties, 24 organizations



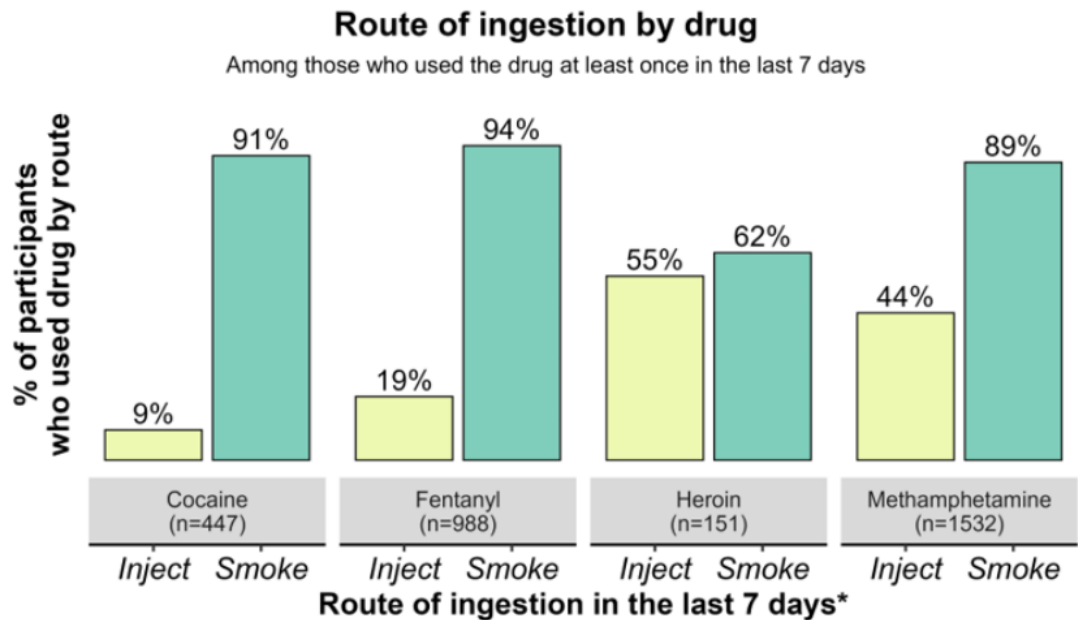
*1 Respondent was ineligible for these items (n=1693)



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2025 WA Syringe Survey Data

N=1694, 24 counties, 24 organizations



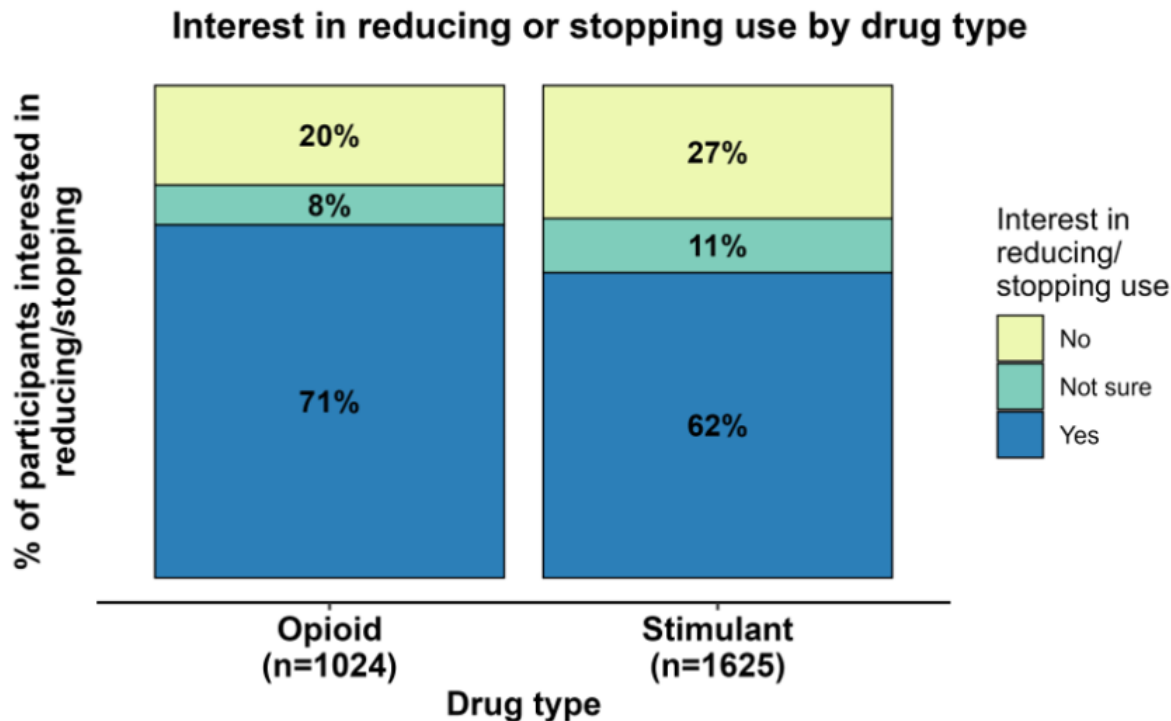
*Not mutually exclusive



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2025 WA Syringe Survey Data

N=1694, 24 counties, 24 organizations

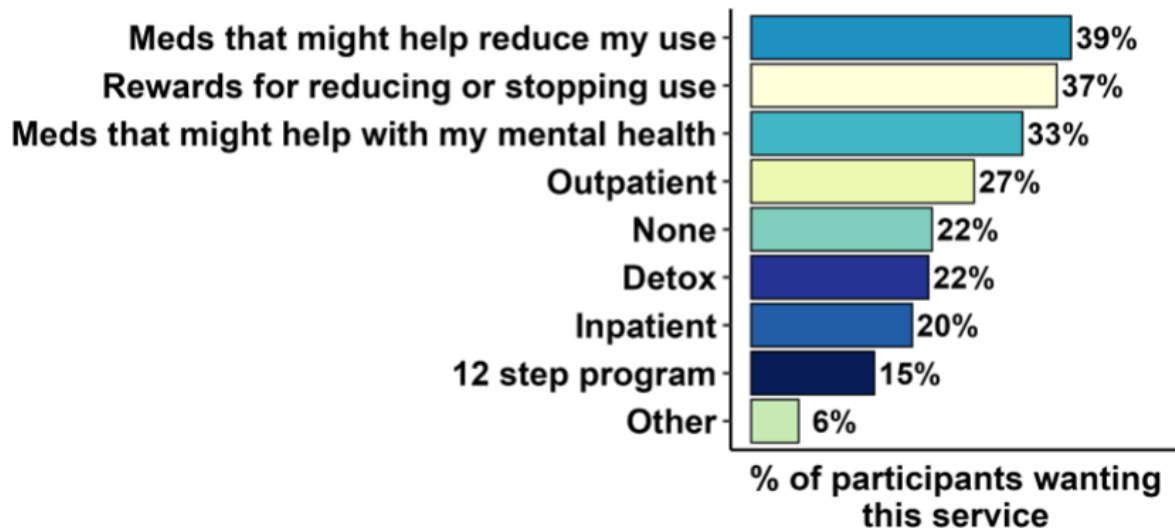


2025 WA Syringe Survey Data

N=1694, 24 counties, 24 organizations

What help for your stimulant use would you want
if it was free and easy to get?

(N=1613)

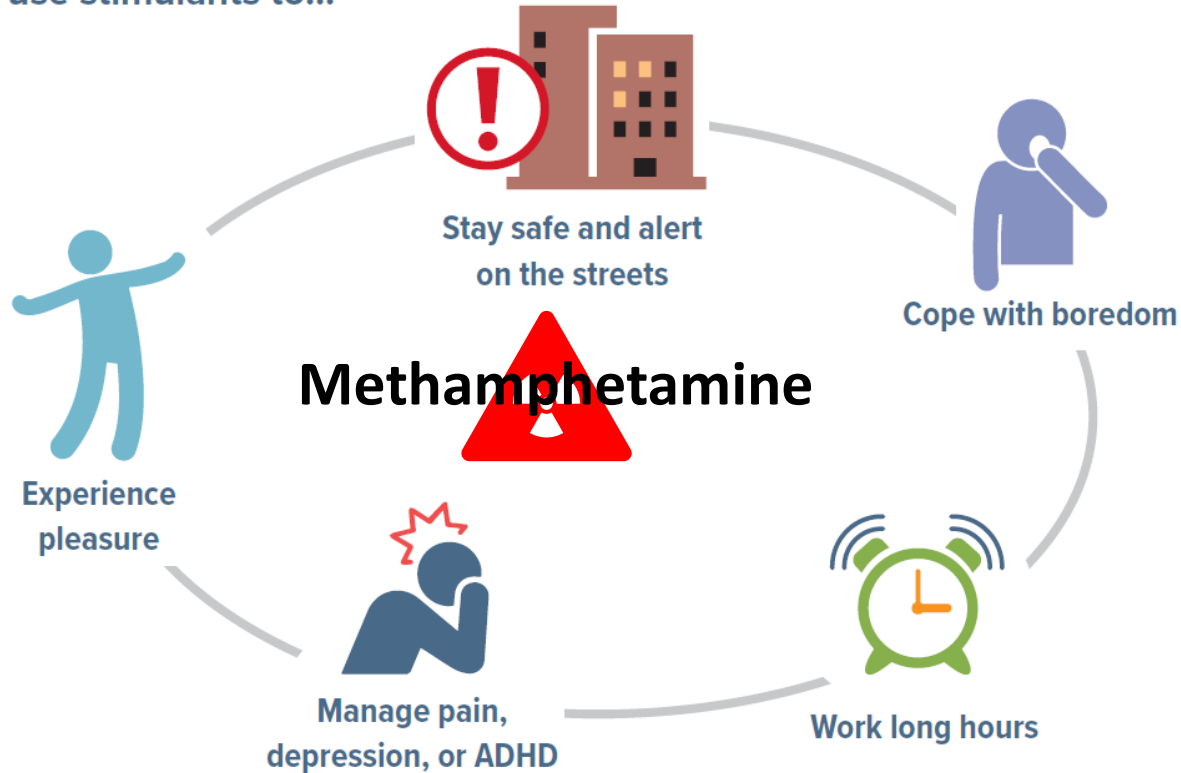


*Among those who used stimulants



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People use stimulants to...



Multiple Mechanisms for Neurotoxicity

- > **Dopaminergic Neurotoxicity**
 - > **Microglial activation and neuroinflammation**
 - > **Mitochondrial dysfunction**
 - > **Apoptosis induction**
 - > **Blood-brain barrier disruption**
 - > **Serotonergic system damage**
-
- > **Locations: orbitofrontal cortex and dorsolateral frontal striatum**

Amber, N., Edinoff, Sarah, E., Kaufman., Keionne, M, Green., Daniel, A., Provenzano., Jesse, Lawson., Elyse, M., Cornett., Kevin, S., Murnane., Adam, M., Kaye., Alan, D., Kaye. (2022). Methamphetamine Use: A Narrative Review of Adverse Effects and Related Toxicities.. Health Psychology Research, 10 3(3): 38161 - 38161 . doi: 10.52965/001c.38161



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Impact of Methamphetamine on the Brain

- > **27% of people who have heavy meth use experience at least one drug-related psychotic episode**
- > **Psychosis remains 3 times more likely to occur in those who use methamphetamine**
- > **Risk for Parkinson's increases 1.5 to 3-fold**
- > **Increase in risky and impulsive behavior**
 - **Acquisition and transmission of HIV**
 - **Higher risk of traumatic deaths (stand mortality rate: 12.2)**

Phillip, O., Coffin., Leslie, W., Suen. (2023). Methamphetamine Toxicities and Clinical Management.. NEJM evidence, 2(12):EVIDra2300160-EVIDra2300160. doi: 10.1056/evindra2300160



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Cognitive Recovery?

- > **Need sustained abstinence**
- > **Cognitive gains: 6 months**
 - Can continue for 1-2 years
 - Dopamine Transporter Recovery can take 9-17 months
- > **Functional normalization lags**

Volkow ND, Chang L, Wang GJ, Fowler JS, Franceschi D, Sedler M, Gatley SJ, Miller E, Hitzemann R, Ding YS, Logan J. Loss of dopamine transporters in methamphetamine abusers recovers with protracted abstinence. *J Neurosci*. 2001 Dec 1;21(23):9414-8. doi: 10.1523/JNEUROSCI.21-23-09414.2001. PMID: 11717374; PMCID: PMC6763886.

Iudicello JE, Woods SP, Vigil O, Scott JC, Cherner M, Heaton RK, Atkinson JH, Grant I; HIV Neurobehavioral Research Center (HNRC) Group. Longer term improvement in neurocognitive functioning and affective distress among methamphetamine users who achieve stable abstinence. *J Clin Exp Neuropsychol*. 2010 Aug;32(7):704-18. doi: 10.1080/13803390903512637. Epub 2010 Mar 2. PMID: 20198527; PMCID: PMC2911490.



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What Can Help with Neurocognitive Recovery?

> Exercise?

- General for Substance Use Disorders
- Most beneficial: Over 12 weeks, 40 sessions, +60min

> Cognitive Training?

- Working Memory Cognitive Training
- Improved impulsivity and self-regulation

Zheng Y, Zhao Y, Chen X, Li S. Effect of physical exercise on the emotional and cognitive levels of patients with substance use disorder: a meta-analysis. *Front Psychol*. 2024 Feb 9;15:1348224. doi: 10.3389/fpsyg.2024.1348224. PMID: 38406301; PMCID: PMC10884270.

Brooks SJ, Wiemerslage L, Burch KH, Maiorana SA, Cocolas E, Schiöth HB, Kamaloodien K, Stein DJ. The impact of cognitive training in substance use disorder: the effect of working memory training on impulse control in methamphetamine users. *Psychopharmacology (Berl)*. 2017 Jun;234(12):1911-1921. doi: 10.1007/s00213-017-4597-6. Epub 2017 Mar 21. PMID: 28324119; PMCID: PMC5486910.



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Treatment Options

> 1st Line-Psychosocial Support

- More consistent effect on
 - > Reducing stimulant use
 - > Longer periods of abstinence
 - > Effects may last longer or can be more durable

> 2nd Line-Pharmacotherapy

- Less consistent effects on
 - > Reducing use or supporting abstinence



Contingency Management

1st Line Treatment for Meth Use Disorder

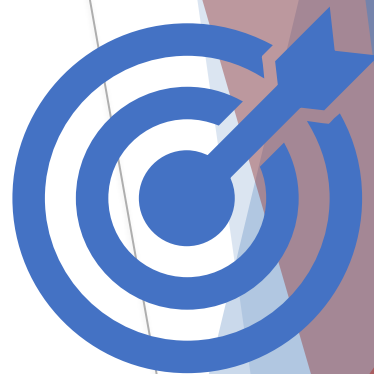
- > **Significant results: helps maintain abstinence risk ratio-0.82**
- > **NNT: 3-5**



Contingency Management

1st Line Treatment for Meth Use Disorder

- > Targets specific behaviors
 - Attendance
 - Taking medication
 - Substance use
- > Provides the person with an incentive for doing the target behavior.
- > Allows for a celebration when target behavior is complete.
- > App-based delivery?



Contingency Management Programs in WA State

Contingency management providers Substance use disorder treatment program

Contingency Management (CM) is an evidence-based behavioral intervention for stimulant use disorder, opioid use disorder, and alcohol use disorder. CM consists of a series of motivational incentives for meeting treatment goals. The motivational incentives may consist of cash equivalents (e.g., gift cards of low retail value) with restrictions placed on the incentives.

Under Washington State's Section 1115 Medicaid demonstration waiver (Medicaid Transformation Project 2.0), CM benefits will be made available to eligible Apple Health beneficiaries with a substance use disorder. The following providers are certified CM treatment sites.

Cohort 1

The following facilities launched CM treatment programs in March 2026.

Comprehensive Healthcare

402 South 4th Avenue
Yakima, WA 98902
Yakima County

Family Health Centers

716 1st Avenue South
Okanogan, WA 98840
Okanogan County

Ideal Option

500 SW 7th Street Suite A205
Renton, WA 98057
King County

Klickitat County Public Hospital District #1

310 S Roosevelt Avenue
Goldendale, WA 98620
Klickitat County

MultiCare Health System's Rockwood Healthy Behavior and Function Clinic

300 E 5th Avenue Suite 1N
Spokane, WA 99202
Spokane County

Providence Northeast Washington Medical Group

20 W 9th Avenue
Spokane, WA 99204
Stevens County

Cohort 2

The following facilities will launch CM treatment programs in June-July 2026.

Blue Mountain Heart to Heart

5 W Alder Street Suite 333
Walla Walla, WA 99362
Walla Walla County

Evergreen Treatment Center

6700 Martin Way East #117
Olympia, WA 98516
Thurston County

Jamestown S'Klallam Tribe: Jamestown Healing Clinic

526 South 9th Avenue
Sequim, WA 98382
Clallam County

New Family Traditions

9045 16th Avenue SW
Seattle, WA 98106
King County

Prosperity Wellness Center

5001 112th Street East
Tacoma, WA 98446
Pierce County

Quality Behavioral Health

900 7th Street
Clarkston, WA 99403
Asotin County

Cohort 2 continued

Sea Mar Community Health Center

1813 Sumner Avenue
Aberdeen, WA 98520
Grays Harbor County

Seattle Indian Health Board

611 12th Avenue South
Seattle, WA 98144
King County

Confederated Tribes of the Yakama Nation

20 Gunmyon Rd.
P.O. Box 367
Toppenish, WA 98948
Yakima County

<https://www.hca.wa.gov/about-hca/programs-and-initiatives/medicaid-transformation-project-mtp/behavioral-health#contingency-management>

Care Approach for People Using Stimulants

Assessment

- Be non-judgmental and trauma-informed.
- Learn why the patient uses stimulants and their perception of risks and benefits.
- Use the DSM-5 to diagnose use disorders.



Routine prevention

- Ensure the patient is up-to-date on vaccines and infection screening and has access to overdose prevention and safer drug use supplies.



Use reduction

- Offer evidence-based strategies to stop or reduce stimulant use.
- Consider both behavioral and pharmacologic interventions.



Toxicity prevention

- Consider strategies for reducing the cardiovascular and neuropsychiatric harms of continued stimulant use.





Safer-use Strategies: Uppers/Stimulants

Stimulants are “uppers” and include cocaine, crack, meth, MDMA (Molly) and bath salts, as well as prescribed drugs like Ritalin and Adderall. Here are some tips to help you stay safer and healthier no matter how you choose to change your use. Using more safely does not mean that you remove all risks, including death, but it can help you reduce your drug-related harm. You are worth it!



<https://depts.washington.edu/harrrlab/resources/>

For more information, contact the Harm Reduction Research and Treatment Center at 1 (855) 320-1004 or at harrrlab@uw.edu.



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[https://www.aaap.org/
education/management
-of-stimulant-use-
disorder-guideline/](https://www.aaap.org/education/management-of-stimulant-use-disorder-guideline/)

The ASAM/AAAP
CLINICAL PRACTICE GUIDELINE ON THE
**Management of
Stimulant Use
Disorder**



ASAM American Society of
Addiction Medicine



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Acute Methamphetamine Toxicities

What is the Primary Symptom?

- > **1st Step: De-escalation: calm and safe**
- > **Agitation**
 - **Benzodiazepines**
 - > Lorazepam
 - > Diazepam
 - **If refractory or severe → IV/IM Ketamine**
- > **Psychosis**
 - **Antipsychotics**
 - > Olanzapine
 - > Quetiapine
 - > Aripiprazole



Acute Methamphetamine Toxicities

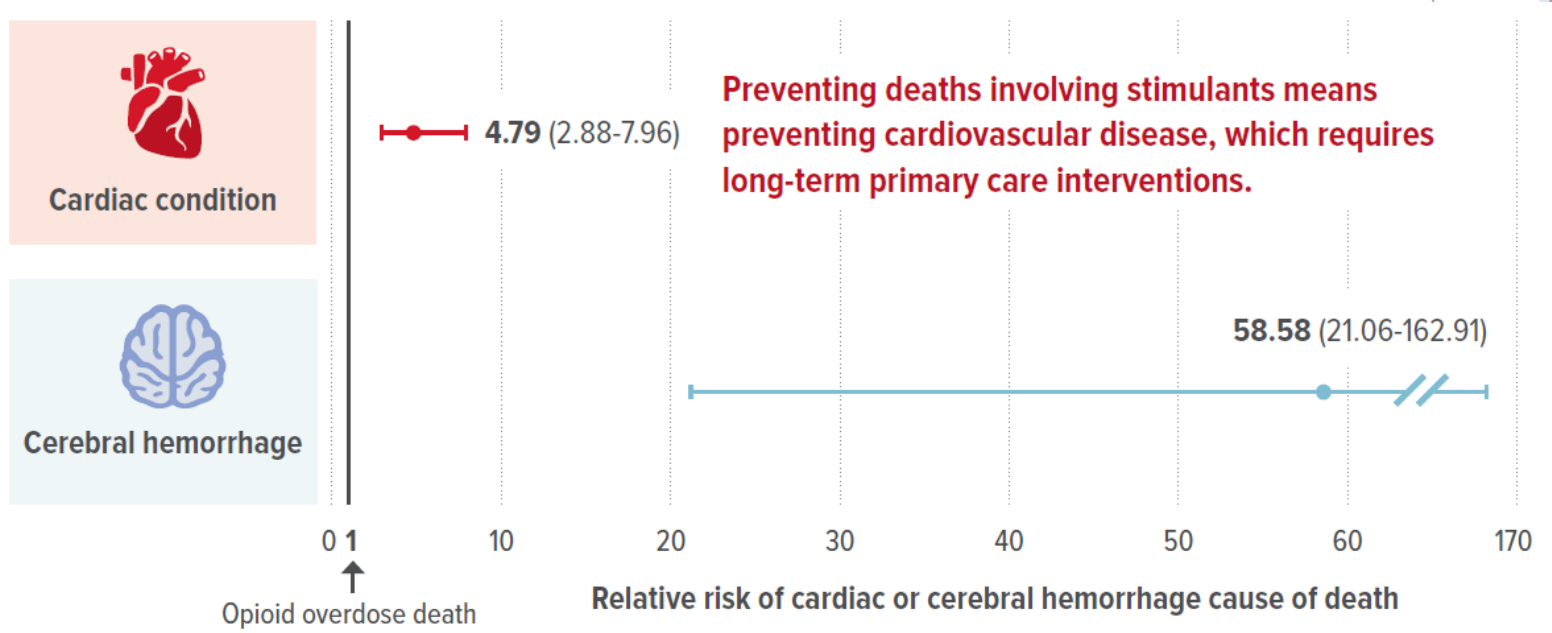
- > **Hyperadrenergic Symptoms**
- > **Hypertensive Crisis**
- > **Acidosis**
- > **Chest Pain**
- > **Dehydration**
- > **Hyperthermia**
- > **Neutropenia**
- > **QRS Widening**

Clinical Guideline Committee (CGC) Members; ASAM Team; AAP Team; IRETA Team. The ASAM/AAP Clinical Practice Guideline on the Management of Stimulant Use Disorder. J Addict Med. 2024 May-Jun 01;18(1S Suppl 1):1-56. doi: 10.1097/ADM.0000000000001299. PMID: 38669101; PMCID: PMC11105801.



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Deaths involving stimulants more likely to be from cardiovascular causes



Phillip, O., Coffin., Leslie, W., Suen. (2023). Methamphetamine Toxicities and Clinical Management.. NEJM evidence, 2(12):EVIDra2300160-EVIDra2300160. doi: 10.1056/evidra2300160



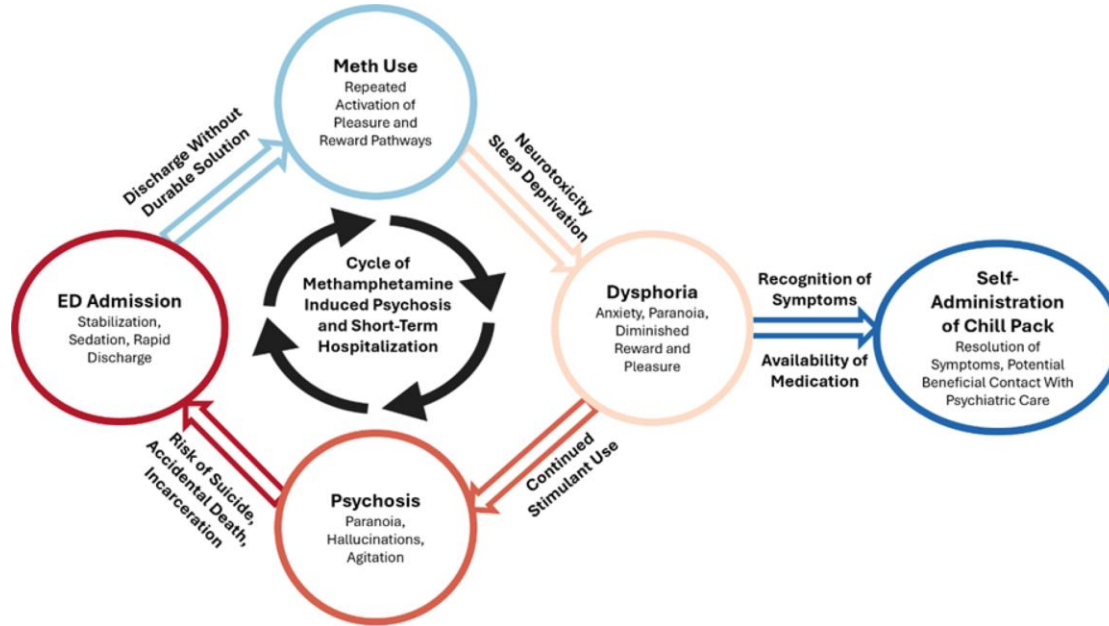
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Toxicity Prevention—Theoretical

	Preventive interventions	Treatments
 Cardiovascular toxicity	Smoking cessation Statins Low-dose aspirin if indicated	Standard hypertension treatment and guideline-directed medical therapy for heart failure
 Neuropsychiatric toxicity	Statins Improved sleep N-acetylcysteine (supplement with theoretical neuroprotective benefit)	Low-dose (5 mg) olanzapine packs for self-treatment of acute agitation Atypical antipsychotics for chronic psychiatric symptoms



Olanzapine “Chill Packs” Toxicity Harm Reduction?



Ruedisueli, I., Marienfeld, C., Tiefenthaler, C. *et al.* “Chill packs” self-administered olanzapine as psychiatric harm reduction for methamphetamine-induced psychosis: a narrative review of the existing evidence base. *Harm Reduct J* 23, 103 (2026). <https://doi.org/10.1186/s12954-026-01475-1>



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Why Olanzapine for “Chill Packs”?

- > Consistent treatment effect for psychosis
- > Broad receptor interaction profile
 - Dopamine 2 block
 - Serotonin 2A block
 - Histaminergic and alpha receptors
- > Neuroprotective?
 - Based on animal studies

Ruedisueli, I., Marienfeld, C., Tiefenthaler, C. *et al.* “Chill packs” self-administered olanzapine as psychiatric harm reduction for methamphetamine-induced psychosis: a narrative review of the existing evidence base. *Harm Reduct J* 23, 103 (2026). <https://doi.org/10.1186/s12954-026-01475-1>
He J, Xu H, Yang Y, Zhang X, Li XM. Neuroprotective effects of olanzapine on methamphetamine-induced neurotoxicity are associated with an inhibition of hyperthermia and prevention of Bcl-2 decrease in rats. *Brain Res.* 2004 Aug 27;1018(2):186-92. doi: 10.1016/j.brainres.2004.05.060. PMID: 15276877.



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PURPOSE

Meth Intoxication can cause you to feel **anxious, agitated, fearful** and sometimes, to **hear voices**.

These symptoms can be safely managed outside of a clinic or hospital when you take medication to “chill-out.”

Olanzapine can reduce common symptoms of methamphetamine when used **off-label*** as directed.

*You and your provider can discuss the risks and benefits of continuing these medications.



HOW TO TAKE OLANZAPINE

Olanzapine can help if you

- Feel **anxious** or **agitated**
- Feel **fearful** or **paranoid**
- Hear **voices**
- Cannot **fall sleep**

Place **Olanzapine ODT 5mg** (1 tablet) under your tongue until it fully dissolves. You may take olanzapine **twice a day** until your symptoms improve or you “chill-out” (feel relaxed.)

Side effects with the first dose may include sleepiness or dry mouth**

**For a full list of side effects see NAMI Mental Health Medication Information



A SAFE PLACE

If you struggle with the symptoms of meth, the staff at SoMa RISE can help you safely come down when you are high or anxious. They provide food, showers and a comfortable place to rest.

**SoMa RISE (open 24/7)
Drug Sobering Center
1076 Howard St.
San Francisco, CA**

If you experience a severe mental health crisis, then call 911 or go to the nearest clinic or hospital.



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Do Olanzapine Chill Packs Work?

- > **Chart Review of 92 patients who received Olanzapine 5mg tablets to take as needed**
- > **Results**
 - **2 months later: 32% lower rate of ED visits**
 - **6 months later: 13% lower rate of ED visits**
 - **12 months: no difference (expected)**

Coffin PO, Chang YG, McDaniel M, Leary M, Pating D, McMahan VM, Goldman ML. Evaluation of methamphetamine assist packs: As-needed antipsychotics for self-management of methamphetamine-associated psychiatric toxicity. Int J Drug Policy. 2024 Jul;129:104480. doi: 10.1016/j.drugpo.2024.104480. Epub 2024 Jun 10. PMID: 38861841; PMCID: PMC11305928.



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Treatment Options

- > **1st Line-Psychosocial Support**
 - More consistent effect on
 - > Reducing stimulant use
 - > Longer periods of abstinence
 - > Effects may last longer or can be more durable
- > **2nd Line-Pharmacotherapy**
 - No FDA Approved Medications
 - Less consistent effects on
 - > Reducing use or supporting abstinence



Summary of Meds for Methamphetamine Use Disorder

	Abstinence	Use	Retention	Harms
All Antidepressants	★ ★	∅	★ ★	★
Aminoketone: Bupropion	★	★	★ ★	∅
Atypical Antidepressant: Mirtazapine	NA	∅	∅	∅
SSRI: Sertraline	∅	NA	∅	NA
Atypical Antipsychotics: Aripiprazole	∅	★	∅	∅
Psychostimulants and Other Medications for ADHD				
All Psychostimulants: Modafinil, Dexamphetamine, Methylphenidate	★	∅	★	NA
Methylphenidate	NA	★	★	NA
Atomoxetine	NA	∅	∅	∅
All Anticonvulsant and Muscle Relaxants: Baclofen, Gabapentin, Topiramate	∅	∅	∅	∅
Topiramate	NA	★	★	★
Medications used for other substance use disorders				
Naltrexone	∅	★	★	★ ★
Varenicline	NA	∅	∅	∅

Shading represents the direction of effect:

(No color)	Unclear
Grey	No difference
Green	Evidence of benefit
Red	Favors placebo

Symbols represent the strength of the evidence:

NA	No evidence or not applicable
∅	Insufficient
★	Low
★ ★	Moderate
★ ★ ★	High



Treatment Options

- > **Bupropion (Wellbutrin, Zyban)-2008**
 - 12 weeks, 3 days in clinic (urine drug screens/assessments/90 min CBT group therapy)
 - Bupropion SR 150-300mg qday
 - Results: In MALE participants using 18 days/30days in the Bupropion arm about 70% had a week free of meth vs 40% in the placebo

Elkashef AM, Rawson RA, Anderson AL, Li SH, Holmes T, Smith EV, Chiang N, Kahn R, Vocci F, Ling W, Pearce VJ, McCann M, Campbell J, Gorodetzky C, Haning W, Carlton B, Mawhinney J, Weis D. Bupropion for the treatment of methamphetamine dependence. *Neuropsychopharmacology*. 2008 Apr;33(5):1162-70. doi: 10.1038/sj.npp.1301481. Epub 2007 Jun 20. PMID: 17581531.



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Treatment Options

Mirtazapine

- 24 weeks treatment and 12 weeks follow-up, interest in reducing or stopping meth use
 - Seen weekly for meth urine testing, 30min CBT/MI session
 - Cisgender men and transgender women who have sex with men
 - Mirtazapine 30mg qhs, delivered via wise pill dispenser
- > **Results: reduced high risk sex, reduced urine drug tests (RR 0.75)**

Coffin PO, Santos GM, Hern J, et al. Effects of mirtazapine for methamphetamine use disorder among cisgender men and transgender women who have sex with men: A placebo-controlled randomized clinical trial. JAMA Psychiatry. 2020;77(3):246-255. doi:10.1001/jamapsychiatry.2019.3655



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Treatment Options

Methylphenidate

- **Sample of 4 RCTs: Methylphenidate vs Placebo, max dose 54mg qday**
 - > **Reduced amphetamine positive urine samples in 2 or 4 studies**
 - > **Reduced cravings**
 - > **One study showed more positive effect in more severe use at baseline**



Treatment Options

Topiramate

- 2 RCTs, N=202, one study had a brief “compliance enhancement tx”
 - > Topiramate 200mg qday vs Placebo 10-12 weeks.
 - > Results from 2012-Elkashef-reduced weekly meth levels by > 25% (urine concentrations) and severity of dependence
 - > Results from 2016 Rezaei-less positive urines, reduced addiction severity and cravings



ER IM Naltrexone + Bupropion

- > **Population: Mod to Severe Meth Use Disorder**
- > **Excluded**
 - In current SUD tx
 - Expected need for opioid tx
- > **Intervention**
 - 12 weeks
 - Vivitrol + Bupropion XL 450mg qday
 - Clinic visits 2x's/week
 - > Urine samples
 - > Assessments
 - > Weekly clinician visits to monitor side effects, encourage abstinence
 - Smart phone app monitored Bupropion adherence



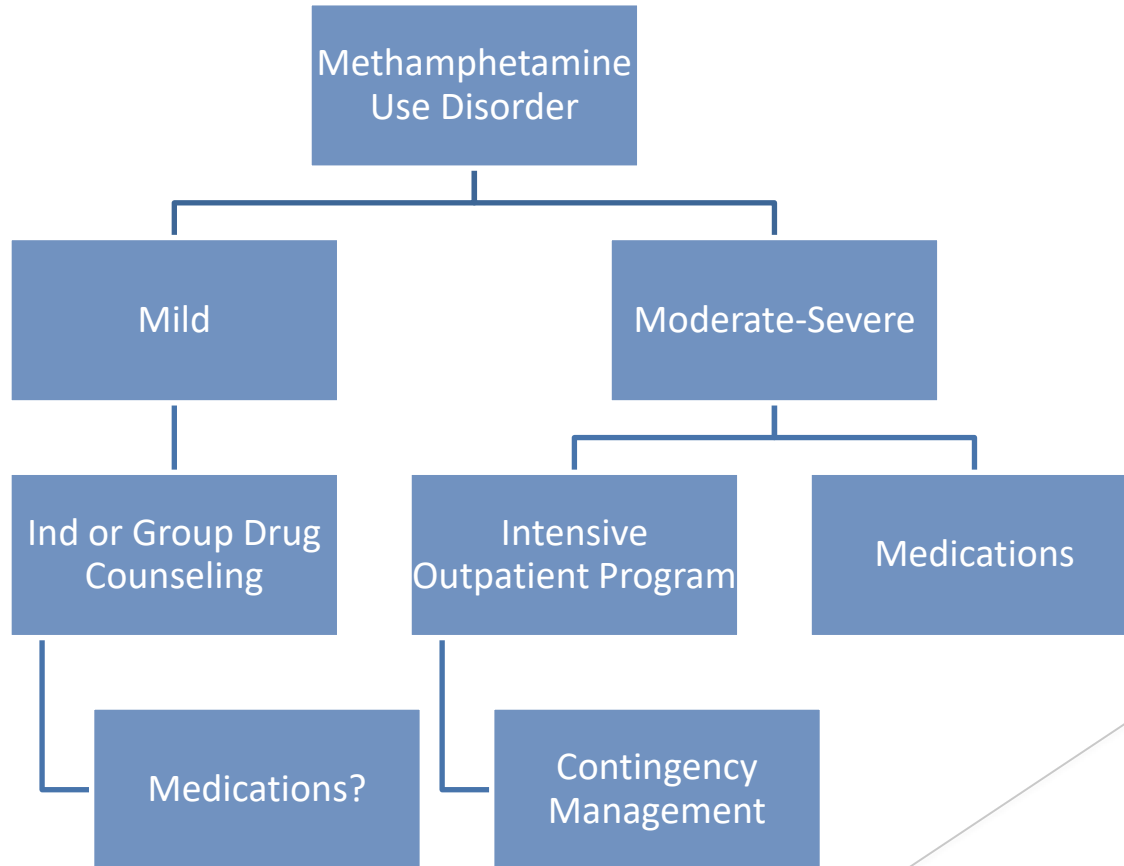
ER IM Naltrexone + Bupropion

> Results

- 16.5% of participants achieved negative drug screens by week 5 and 6
- 11.4% achieved meth negative urine drug screens by week 11 and 12.
- NNT-9
 - > (NNT for Naltrexone to prevent return to any drinking for AUD is 20)



Treatment Approach



Toxicity
Prevention?

Toxicity
Prevention?



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Summary

- > **Methamphetamine is toxic to the body and specifically the cardiovascular system and brain**
- > **People have a hard time stopping meth or may not want to stop meth**
- > **Addressing the toxicities of meth may be helpful**
- > **Reduction/cessation is the best and only way to completely address the toxicities related to meth**
- > **Contingency Management is the best treatment for stimulant use disorder**
- > **Medications are modestly helpful but should be offered**

