Stimulant Use Disorder:

Contingency Management and other treatments

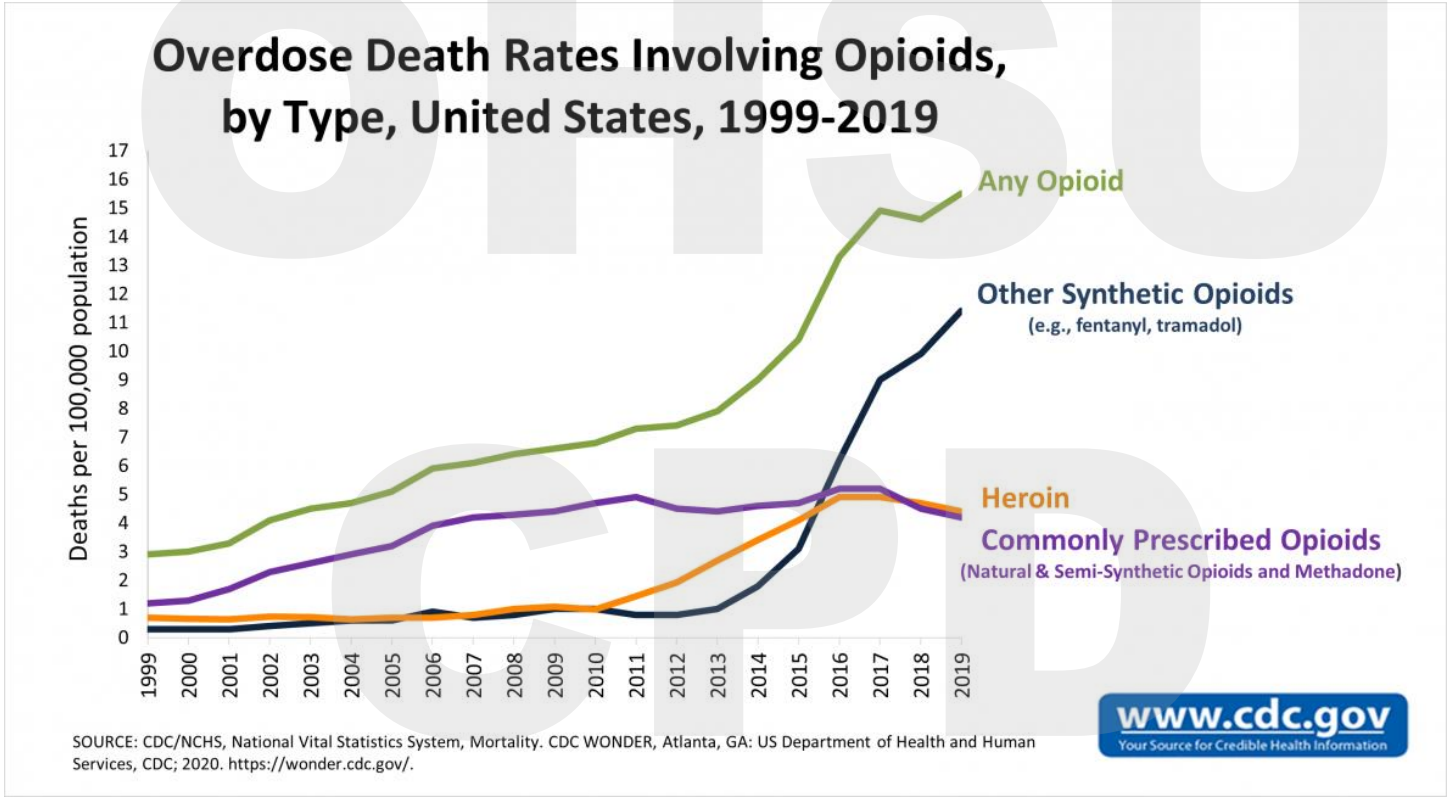
DATE: APRIL 4, 2023

PRESENTED BY: LINDA PENG, MD | ADDICTION MEDICINE PHYSICIAN

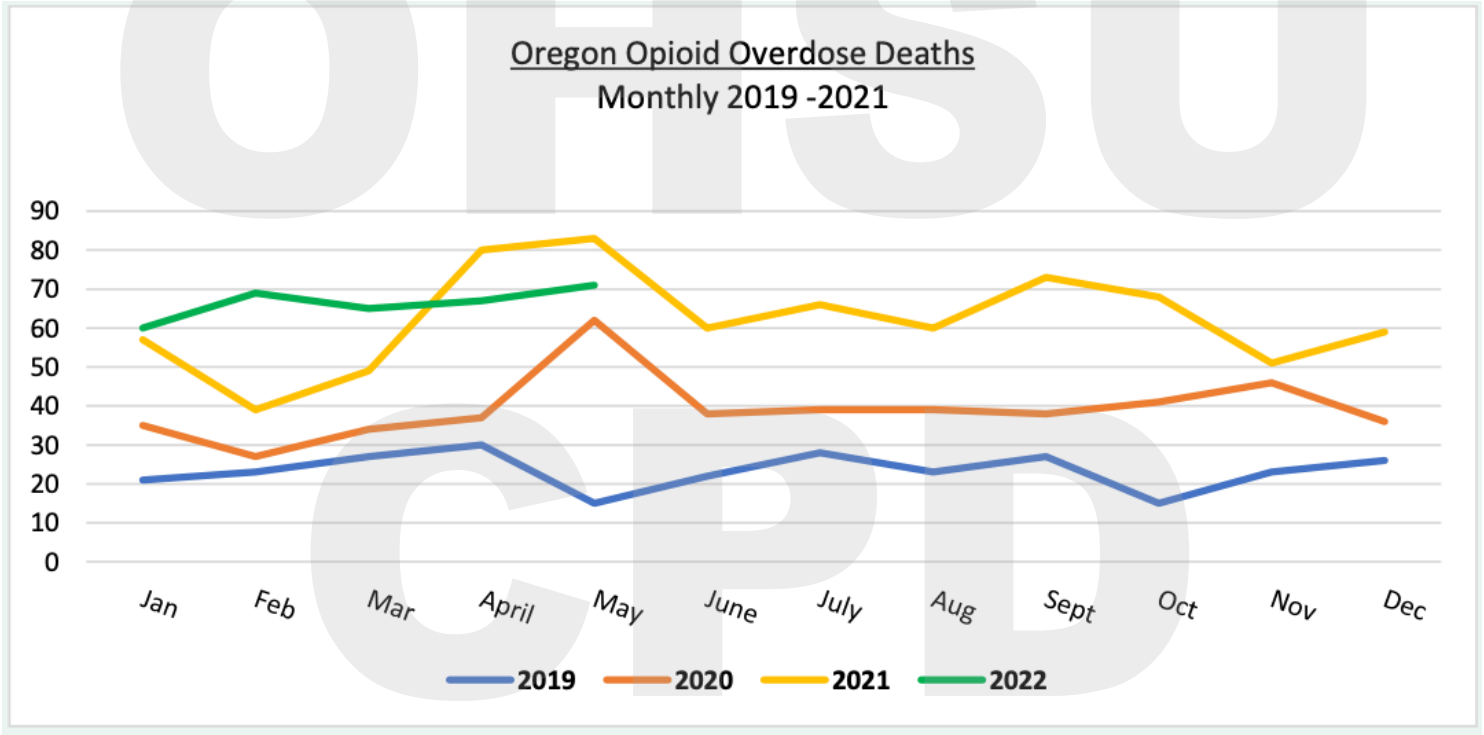
Outline

- Updates on epidemiology and the changing overdose epidemic
- Behavioral treatments for stimulant use disorder
- Medications for stimulant use disorder

Opioid-overdose deaths are increasing.



Opioid-overdose deaths in Oregon increased by 166% from 2019 to 2021.



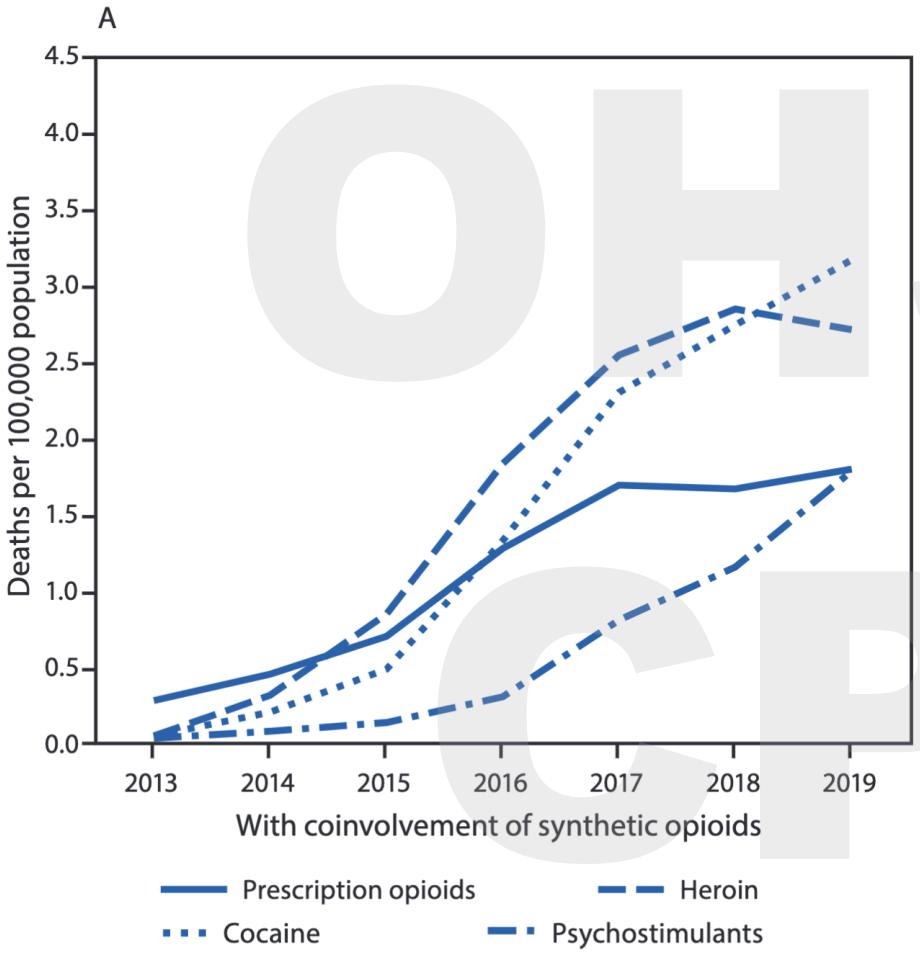
Oregon Health Authority

The “fourth wave” = high mortality involving stimulants

Across the U.S. from 2012- 2018:

- 3x increase for cocaine-related mortality
- 5x increase for psychostimulant-related mortality (methamphetamine)

Ciccarone et al. *Curr Opin Psychiatry*. 2021.



Stimulant-involved overdose deaths are also increasing.

- Rate of death involving stimulants increased 317% across the U.S.
- Stimulant overdose deaths in Oregon **doubled** between 2019 and 2021

Mattson et al. *MMWR Morb Mortal Wkly Rep*. 2021.

Why is this “fourth wave” happening?

More accessible & affordable

“Meth has become more readily available and cheaper.”

“Because most dealers sell both.”

“When the drugs people want are not readily available, they turn to drugs that are available.”

Ellis et al. *Drug Alcohol Depend*. 2018.

Why is this “fourth wave” happening?

Co-occurring use has doubled

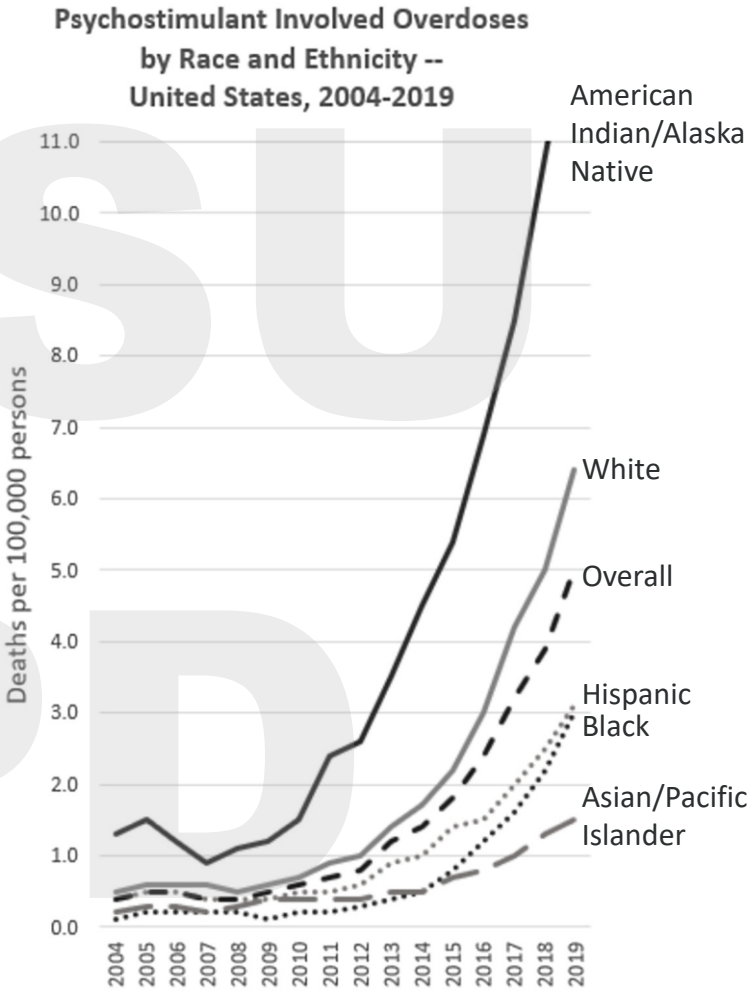
“Many people enjoy the effects of mixing opioids and meth.”

“Meth makes it easier to be a functioning addict.”

Ellis et al. *Drug Alcohol Depend*. 2018.

Stimulant-involved deaths are increasing across all racial groups

- Psychostimulant (methamphetamine) -involved deaths highest in American Indian/Alaska Native persons
- Cocaine-involved death rates highest for Black persons



Kariisa et al. *Drug Alcohol Depend*. 2021.

Racial disparities are prominent in SUD.

- Overdose deaths rising fast among Black Americans, American Indian/Alaskan Native, Hispanic populations
- BIPOC have inequitable access to treatment including:
  - Decreased likelihood of receiving medications
  - More likely to receive methadone than buprenorphine
  - Decreased retention in treatment
- Relates to disparities in health, human services, and criminal justice systems

Kariisa et al. *Drug Alcohol Depend*. 2021.
https://www.drugabuse.gov/about-nida/noras-blog/2019/07/access-to-addiction-services-differs-by-race-gender

The drug overdose epidemic is changing.

- An increase in synthetic drugs is making drug use more dangerous
- Stimulant use and polysubstance use are rising quickly, worsening the overdose epidemic
- Racial disparities in SUD and treatment are worsening

What do we do about this?

Treatments are effective, but under-utilized.

Evidence shows that MOUD:

Only 20% of patients with OUD receive medications

Ma et al. *Mol Psychiatry*. 2019; National Academies Press (US); 2019.

Behavioral treatments are the gold standard for stimulant use disorder.

- No FDA-approved medications
- Behavioral treatments:
  - Contingency management is the most effective (NNT = 3-5)
  - Cognitive behavioral therapy
  - 12-steps programs

De Crescenzo et al. *PLoS Med*. 2018.

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What is contingency management (CM)?

Contingency management is “a behavioral therapy, based on operant conditioning principles, that provides tangible reinforcers for evidence of behavior change.”

Operant conditioning - Administering of a reward for a particular behavior increases the likelihood of the behavior being repeated.

CM was first studied in the 1970s for alcohol use disorder.

Higgins et al. *Alcohol Res Health.* 1999; Petry. *Psychol Addict Behav*. 2017.

How does CM work?

- Treatment and/or counseling engagement
- Substance abstinence

- Attendance confirmed
- Drug test negative

- Prizes are given immediately
- Celebrate!

Why does CM work?

CM brings the rewards for SUD recovery (which are often distant) more immediate and tangible.

There is abundant evidence for CM.

	Total Studies During This Period		
	Lussier et al. 2006 Meta-analysis (1991- 2004)	Higgins et al. 2011 Narrative review (2004- 2009)	Davis et al. 2016 Systematic Review (2009- 2014)
CM + SUDS	7	4	0
CM in special populations	6	18	23
CM in Community Clinics	3	13	12
CM + pharmacotherapy	11	10	8
Longer-term outcomes	2	5	5
Other	11	18	13
TOTAL	**40**	**68**	**61**

ASAM Principles of Addiction Medicine. 2018.

A recent systematic review on CM for methamphetamine use disorder

- 27 studies included (15 RCTs)
- CM increase methamphetamine abstinence
- CM increased retention, attendance, and treatment engagement
- CM reduced risky sex and number of sexual partners

Brown et al. *Drug Alcohol Depend.* 2020.

National Implementation of CM at the VA

Attendance & substance use outcomes.

	$\bar{X}$	SD	MEDIAN	MIN	MAX
Patients treated[a]	21.9	20.7	16.5	1.0	136.0
Sessions attended per patient[a]	13.5	8.9	14.0	1.0	41.0
Proportion of sessions attended[b]	55.9%	19.1%	55.6%	8.3%	100%
Samples provided[a]	296.3	294.0	187.0	3.0	1684
Proportion of samples negative[a]	91.1%	11.2%	95.0%	40.3%	100%

Note.

[a] N = 2060 patients from 94 programs.

[b] N = 2039 patients from 94 programs.

71.3% of programs had percent-negative rates above 90%.

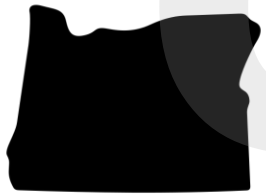
DePhilippis et al. *Drug Alcohol Depend*. 2018.

Cost is the main barrier to CM implementation.

- Substance use costs more than $740 billion annually related to crime, lost work productivity, and health care
- Increasing studies demonstrate cost effectiveness
- Washington State Institute for Public Policy:
  - For a single patient receiving $600 incentives→ taxpayer benefit of $3000

Murphy et al. *Drug Alcohol Depend*. 2015.
http://www.wsipp.wa.gov/BenefitCost?topicId=7

Increasing access to CM



Measure 110 and Oregon Health Authority are increasingly funding CM

California Medicaid has funded a $58 million CM pilot project

https://www.opb.org/article/2022/05/25/oregon-drugs-methamphetamine-meth-measure-110-addiction/
https://www.dhcs.ca.gov/Pages/DMC-ODS-Contingency-Management.aspx

CM is effective and under-utilized.

- CM is effective in supporting SUD recovery.
- CM is the most effective treatment for stimulant use disorder.
- Positive reinforcement works!

Photo courtesy of John Mahan MD

How about medications?

Medications for Methamphetamine Use Disorder

- No FDA-approved medications
- Low-strength evidence for methylphenidate

ADDICTION

SOCIETY FOR THE STUDY OF ADDICTION

REVIEW

doi:10.1111/add.14755

Pharmacotherapy for methamphetamine/amphetamine use disorder—a systematic review and meta-analysis

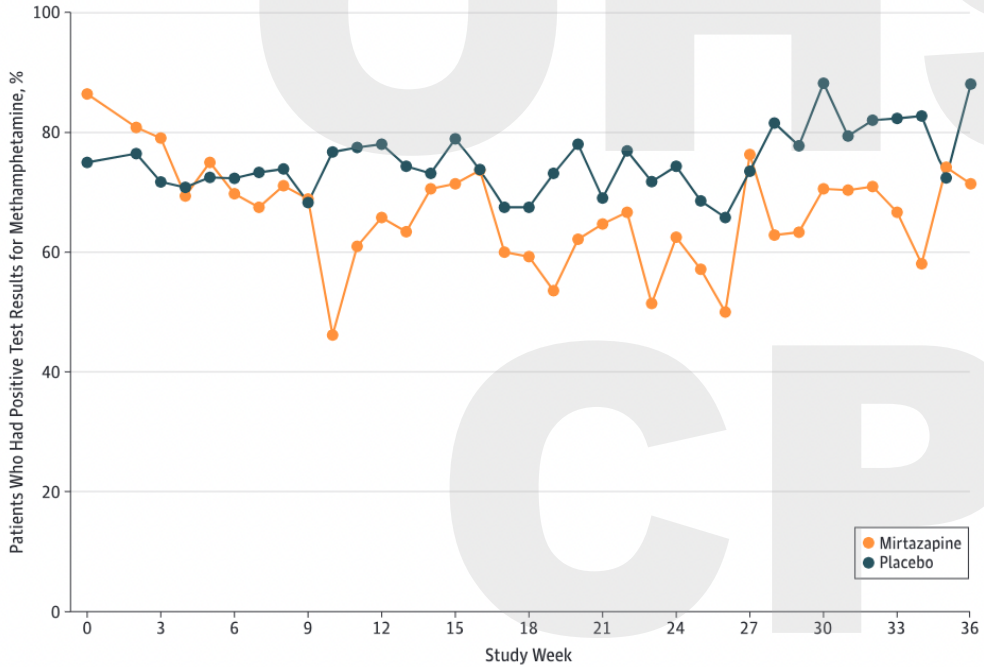
Brian Chan[1,2], Michele Freeman[3], Karli Kondo[3], Chelsea Ayers[3], Jessica Montgomery[3], Robin Paynter[3] & Devan Kansagara[1,3,4]

Division of General Internal Medicine and Geriatrics, Oregon Health and Science University, Portland, OR, USA,[1] Central City Concern, Portland, OR, USA,[2] Evidence-based Synthesis Program Center, VA Portland Health Care System, Portland, USA[3] and Department of Medicine, VA Portland Health Care System, Portland, OR, USA[4]

Chan, B. *Addiction*. 2019;114(12):2122-2136.

Mirtazapine reduces methamphetamine use in MSM

Figure 2. Proportion of Participants With Positive Urine Test Results for Methamphetamine During Follow-up, by Arm



Dosing

Week 1: Mirtazapine 15 mg daily

Weeks 2: Mirtazapine 30mg daily

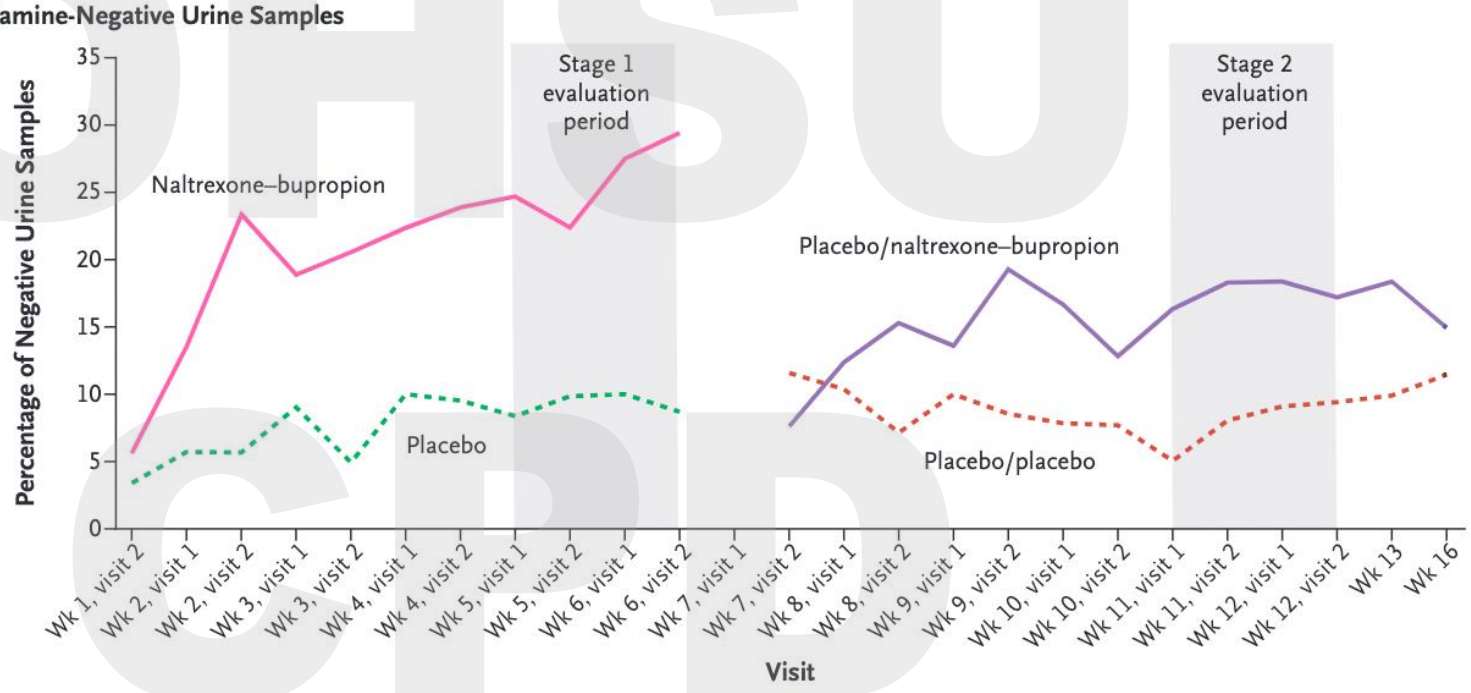
Continued for 24 weeks (6 months)

Coffin, PO. *JAMA Psychiatry*. 2020;77(3):246-255

Bupropion and extended-release (ER) Naltrexone combined decreased methamphetamine use

Dosing
ER Naltrexone 380 mg IM q3weeks
+
Bupropion 450 mg daily (up titrated from 150mg daily over 3 days)

Continued for 6 weeks



Trivedi, MH. *N Engl J Med*. 2021;384(2):140-153.

Consider medications based on symptoms

- MSM population → mirtazapine 30 mg daily for 6 months
- MUD + depression → mirtazapine or bupropion
- Insomnia → mirtazapine
- ADD/ADHD symptoms → bupropion
- Bupropion 450mg daily + extended-release naltrexone* monthly as an option

*Caution using naltrexone with elevated LFTs and decompensated cirrhosis

Treatment for Cocaine Use Disorder

No FDA-approved medications.

No demonstrated benefit

- Anti-depressants
- Serotonergic agents
- Dopamine agonists
- Antipsychotics

Possible benefit

- Psychostimulants
- Topiramate (250 mg daily for ~13 weeks)

Castells X. *Cochrane Database Syst Rev*. 2016;9:CD007380.
Singh M. *Addiction*. 2016;111(8):1337-1346.

Reduce the harms of substance use

- Counsel patients about fentanyl contamination
- Encourage safer use (route of use, safer injection use)

Learn more :

- Oregon ECHO Network
- The Curbsiders addiction medicine episodes
- harmreduction.org
- SAMHSA treatment locator:
  - https://findtreatment.samhsa.gov/
- Know where Syringe exchange programs are located
  - nasen.org

Take home points

- The drug overdose epidemic is changing with a rise in synthetic drugs and stimulant use.
- Medications can be helpful, but behavioral treatments are the gold standard.
- Effective behavioral treatments, especially contingency management, are underutilized and difficult for patients to access.
- Increased funding and expanding CM to new settings has the potential to increase treatment access.

Thank You
Questions?

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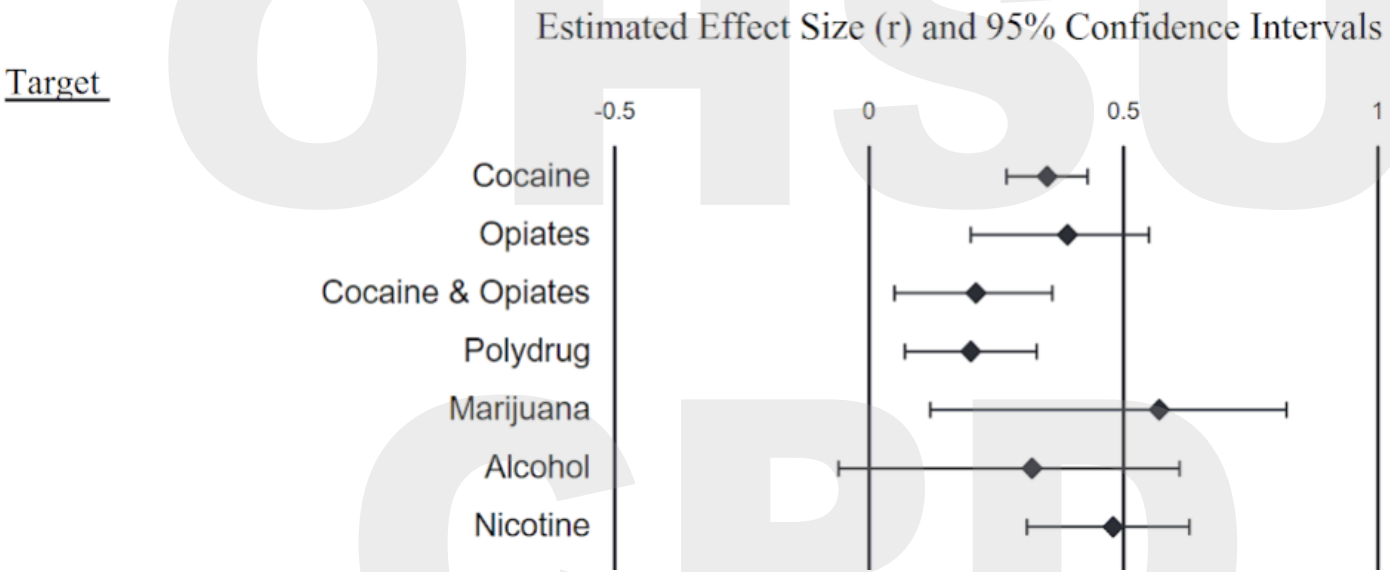
Extra Slides

A meta-analysis of CM for SUD.



CM had moderate positive using abstinence from substance as target.

Lussier et al. *Addiction*. 2006.