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Contingency Management: A Uniquely Effective Approach for the Treatment of Individuals with Stimulant Use Disorder

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Contingency Management Training Video for Health Care Providers

- **UVM CORA invites you to the view the Contingency Management Provider Training video.**
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Why should we be concerned about stimulant use (cocaine and methamphetamine)?

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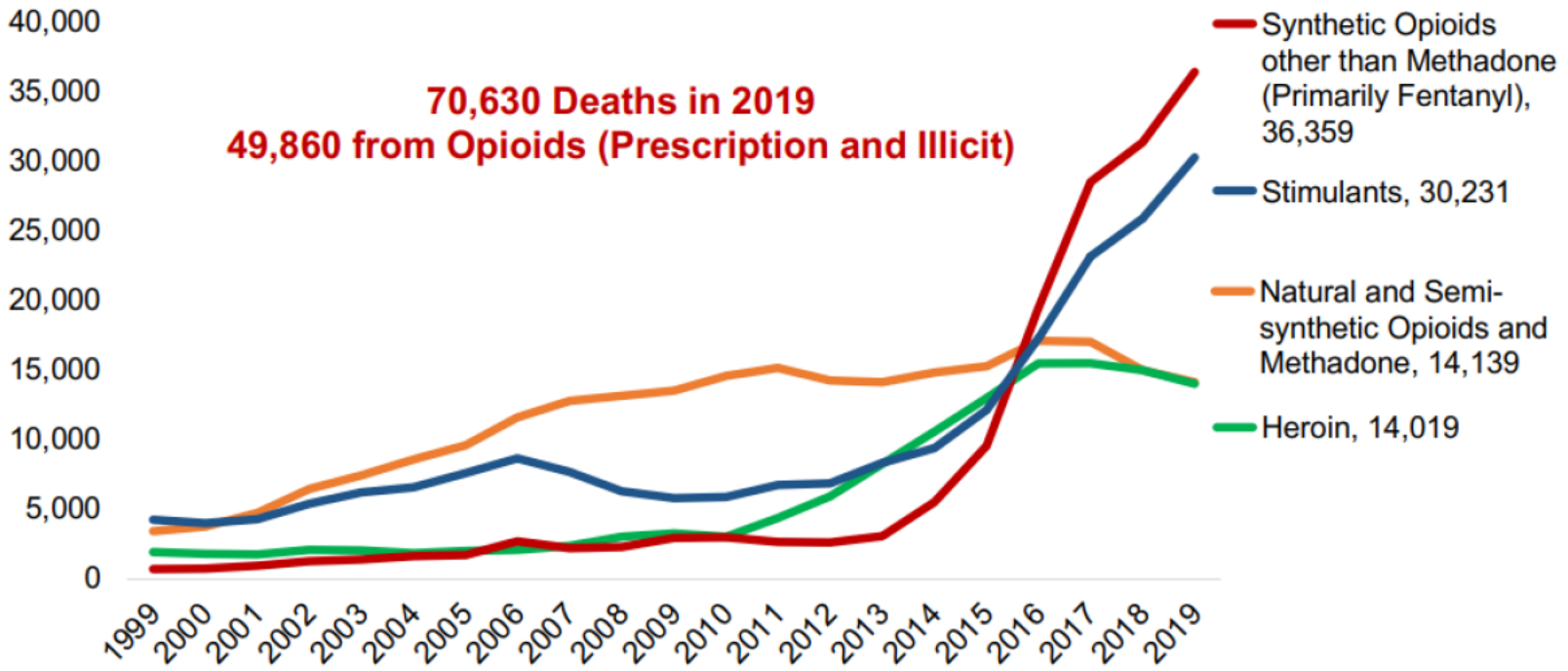
Evolution of Drivers of Overdose Deaths, All Ages

Analgesics → Heroin → Fentanyl → Stimulants



Source: The Multiple Cause of Death data are produced by the Division of Vital Statistics, National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), United States Department of Health and Human Services (US DHHS).

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Drug Overdose Deaths* Continue to Increase in 2021

	ALL DRUGS	HEROIN	NAT & SEMI SYNTHETIC	METHADONE	SYNTHETIC OPIOIDS (mainly illicit fentanyl)	COCAINE	OTHER PSYCHO-STIMULANTS (mainly meth)
11/2020*	92,366	13,698	13,667	3,593	56,595	19,953	23,894
5/2021	101,075	11,633	13,909	3,802	64,871	21,235	28,890
11/2021*	106,854	9,504	13,643	3,619	70,420	23,908	32,476
Percent Change 11/20-11/21	**15.7%**	**-30.6%**	-0.2%	**0.7%**	**24.4%**	**19.8%**	**36.0%**

*NCHS Provisional drug-involved overdose death counts are PREDICTED VALUES, 12 months ending in select months.

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Korthuis PT, Cook RR, Foot CA, Leichtling G, Tsui JI, Stopka TJ, Leahy J, Jenkins WD, Baker R, Chan B, Crane HM, Cooper HL, Feinberg J, Zule WA, Go VF, Estadt AT, Nance RM, Smith GS, Westergaard RP, Van Ham B, Brown R, Young AM. Association of Methamphetamine and Opioid Use With Nonfatal Overdose in Rural Communities. JAMA Netw Open. 2022 Aug 1;5(8):e2226544. doi: 10.1001/jamanetworkopen.2022.26544. PMID: 35969400.

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Methods

- A survey was done of people who use drugs in rural counties with high overdose rates.
- 10 states were included: Illinois, Kentucky, New Hampshire, North Carolina, Massachusetts, Vermont, Ohio, Oregon, West Virginia, and Wisconsin.
- Eligible participants reported past 30-day injection drug use or non-injection opioid use.
- Participants were categorized as using opioids without MA (opioids alone), MA without opioids (MA alone), or both substances.

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Results

- Of participants using opioids and MA, 22% reported an overdose in the past 180 days compared to 14% for opioids only and 6% for MA alone.
- For lifetime overdose, the frequencies were 55% for opioids and MA, 44% for opioids alone, and 31% for MA only.

- Use of opioids and MA more than tripled the odds of non-fatal overdose compared to use of MA alone, and for who used opioids increased the odds by 39%.

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Palis H, Xavier C, Dobrer S, Desai R, Sedgemore KO, Scow M, Lock K, Gan W, Slaunwhite A. Concurrent use of opioids and stimulants and risk of fatal overdose: A cohort study. BMC Public Health. 2022 Nov 15;22(1):2084. doi: 10.1186/s12889-022-14506-w. PMID: 36380298; PMCID: PMC9664696.

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Results

- The stimulant use only group were over-represented among the <30 age group.
- The opioid use only group were over-represented among the 50+ age group.
- During follow-up there were 272 fatal overdoses.
  - 40% were in the opioids and stimulant group.
  - 32% were in the stimulants only group.
  - 27% were in the opioids only group.
- People who used both opioids and stimulants had more than twice the hazard of fatal overdose compared to people who used opioids only.

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Rise in Stimulant/Opioid Mortality Rates An Equity Issue

- Combination of cocaine/opioid mortality from 2007-2019 increased 184% among White people but 575% among Black people

- Combination of methamphetamine/opioid mortality during this period rose 3200% among White people and an astounding 16,200% among Black people

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Overdose Deaths in Vermont 2022

- Data from the New England High Intensity Drug Trafficking (HIDTA) Program
  - From Jan-May 2022, there were 77 OD deaths in Vermont
  - 95% involved fentanyl
  - 61% involved cocaine or methamphetamine

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Association Between Methamphetamine Use and Retention Among Patients With Opioid Use Disorders Treated With Buprenorphine. Tsui, et al (2020)

- The study utilized data on adult patients receiving buprenorphine from Washington State Medication Assisted Treatment-Prescription Drug and Opioid Addiction program clinics between November 1, 2015, and April 31, 2018 (N=799). Past 30-day substance use data were collected at baseline, 6-months, and date of program discharge.

- 30% (n=237) of individuals reported meth use at admission. Baseline methamphetamine use was associated with more than twice the relative hazards for discharge in adjusted models (aHR=2.39; 95% CI: 1.94–2.93).

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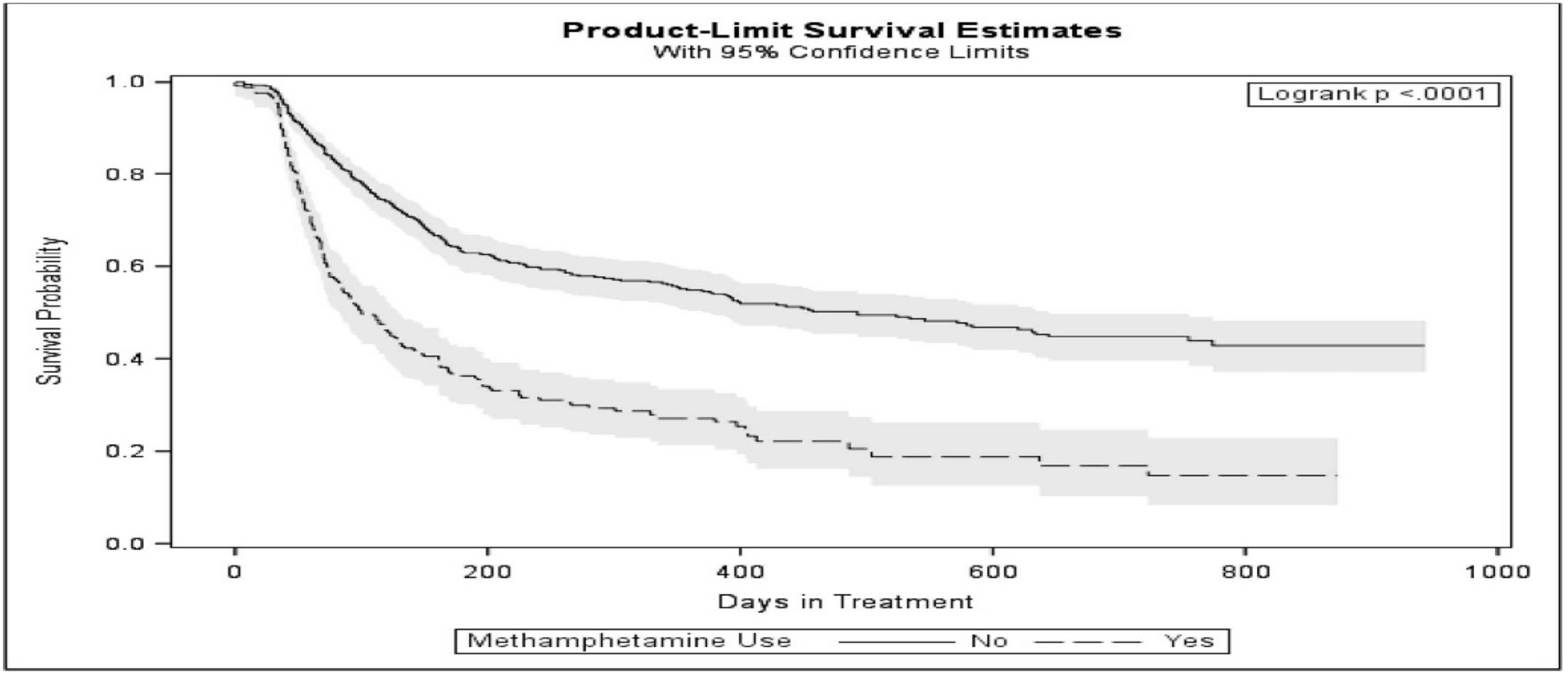
Association Between Methamphetamine Use and Retention Among Patients With Opioid Use Disorders Treated With Buprenorphine



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Interest in Reducing Methamphetamine and Opioid Use among Syringe Services Program Participants in Washington State McMahan et al, 2020 Drug and Alcohol Dependence

- In a sample of 583 participants at a Washington State syringe exchange program (443 opioids; 140 methamphetamine), survey data were collected on their attitudes about stopping drug use.
- 82% of the individuals who reported opioids as their main drugg expressed an interest in reducing/stopping opioid use
- 46% of individuals who reported methamphetamine as their main drug expressed an interest in reducing/stopping their meth use.

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Dropout rates of in-person psychosocial substance abuse treatment: a systematic review and meta-analysis (Lappan et al., Addiction, 2020)

- Meta-analysis of in-person psychosocial SUD treatment.
- Drop out rates in first 90 days of treatment
- 151 studies, with 26,243 participants.
- Results yielded overall average dropout rates, and predictors of dropout.

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Substance Targeted and Dropout

Treatment Target	Dropout Rate
Heroin	25.1
Tobacco	25.5%
Alcohol	26.1%
Cocaine	48.7%
Methamphetamine	53.5%

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Contingency Management (also known as Motivational Incentives)

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Contingency Management

A technique employing the systematic delivery of positive reinforcement for desired behaviors. In the treatment of stimulant use disorder, vouchers or giftcards can be “earned” for submission of cocaine/methamphetamine-free urine samples or for completion of other target behaviors.

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Everyday Examples of Positive Reinforcement

- **In the field of mental health and SUD treatment:**
  - Token economies - inpatient psychiatry, treatment for autism spectrum disorders
  - Parenting interventions - sticker charts with smiley faces
  - AA/NA - 30-day chip, social connection and encouragement at meetings
  - Validation by the clinician when a client engages in change talk during motivational interviewing
- **In everyday life:**
  - A positive comment from your boss when she notices the hard work you have done on a project that matters to you
  - Rewarding your team with an afternoon off for meeting their productivity goal

CM Uses Positive Reinforcement

- CM offers a **non-drug reinforcer** in exchange for evidence of **drug abstinence**
- **Small rewards** can be **effective,** but over time the reward must be large enough to **offset the rewarding effect of the substance**
- Methamphetamine triggers a release of dopamine that is over **1,000%** of our baseline dopamine levels – this is highly reinforcing, so we need a reinforcement paradigm that is powerful enough to compete with it

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Characteristics of Effective Reinforcement

- Clearly defined and achievable behavior
- Desirable and tangible incentive
- Timely pairing of behavior and recovery incentive
- Contingent (incentives provided only when behavior is demonstrated)
- Consistent (behavior is frequently observed and incentivized)

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The Four Essential "Ingredients" of CM

1. Clearly define target behavior
2. Frequently measure behavior
3. Provide tangible incentives soon after behavior is observed
4. Withhold incentive when behavior is not observed while ***maintaining supportive attitude***

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Incentive Programs that are NOT CM

- Coffee/donuts provided at meetings
- Certificate and party given at “graduation”
- Take home doses of medication (eg methadone and Suboxone)
- Incentive “programs” using small, low cost incentives
- Random drawing for all clients given monthly (no defined criteria for being entered in the drawing)

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Contingency Management Coordinator

- In each site where CM is conducted, one individual should have primary responsibility for all aspects of contingency management. This individual will have excellent skills in;
  - Understanding and giving close attention to all details of the CM protocol
  - Interacting with patients in a positive, respectful and constructive manner.
  - Performing all tasks involved with CM including;
    - Collecting urine samples
    - Recording results and discussing with patient
    - Entering results into incentive algorithm/incentive distribution system
    - Following all aspects of the fraud prevention protocol
    - Connecting patients with clinical issues to appropriate program staff (e.g.,counsellor, MD)

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Fraud Prevention Plan

A detailed set of policies and procedures for articulating:

- a clear evidence-based CM protocol;
- designation of who can access and distribute incentives;
- a secure recordkeeping system with access limited to specified individuals;
- a secure storage location if physical gift cards are used;
- a robust internal audit process to ensure incentive accountability.

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How much is enough with CM?

- $75 per patient is an inadequate amount for a CM protocol. There is no evidence to support a $75 per patient CM protocol.
- The science shows that more is better.
  - $200 - $300 per month and up to $1200 over a 12 – 16-week period
- Escalating schedule of incentive values are provided for consecutive stimulant-free urine samples or attendance.
  - Patients are rewarded for gaining longer stretches of continuous abstinence by increasing the value of the incentive.
  - The amount of the incentive is reset with stimulant use as evidenced by positive screen.

Systematic Reviews and Meta-analyses

PLOS | MEDICINE

RESEARCH ARTICLE

Comparative efficacy and acceptability of psychosocial interventions for individuals with cocaine and amphetamine addiction: A systematic review and network meta-analysis

Franco De Crescenzo[1,2,3], Marco Ciabattini[4], Gian Loreto D'Alò[4], Riccardo De Giorgi[1,2], Cinzia Del Giovane[5], Carolina Cassar[6], Luigi Janiri[3], Nicolas Clark[7], Michael Joshua Ostacher[8,9], Andrea Cipriani[1,2]*

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Meta-Analysis Findings

Network meta-analysis was used to analyze 50 clinical studies (6,943 participants) on 12 different psychosocial interventions for cocaine and/or amphetamine addiction.

The combination of contingency management and community reinforcement approach, was the most efficacious and most acceptable treatment both in the short and long term.

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Non-pharmacological interventions for methamphetamine use disorder: a systematic review Drug and Alcohol Dependence, AshaRani, PV, et al. 2020

- 44 Studies reviewed.
- Conclusions: While Contingency Management (CM) interventions showed the strongest evidence favoring the outcomes assessed, tailored CBT alone or with CM was also effective in the target population.

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Comparison of Treatments for Cocaine Use Disorder Among Adults: A Systematic Review and Meta-analysis. (Bentzly et al, 2021)

Results A total of 157 studies comprising 402 treatment groups and 15 842 participants were included.

Only contingency management programs were significantly associated with an increased likelihood of having a negative test result for the presence of cocaine (OR, 2.13; 95%)

Conclusions In this meta-analysis, contingency management programs were associated with reductions in cocaine use among adults.

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Contingency Management for Patients Receiving Medication for Opioid Use Disorder: A Systematic Review and Meta-analysis. JAMA (Bolivar, et al.2021)

These results provide evidence supporting the use of contingency management in addressing key clinical problems among patients receiving MOUD, including the ongoing epidemic of comorbid psychomotor stimulant misuse.

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Contingency Management for the Treatment of Methamphetamine Use Disorder: A Systematic Review (Brown and DeFulio, 2020)

- A review of 27 studies.
- All included a contingency management intervention for individuals who use methamphetamine.
- Outcomes:
  - Drug abstinence
  - Retention in treatment
  - Attendance/treatment engagement
  - Sexual risk behavior
  - Mood/affect
  - Treatment response predictors

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Results of CM Treatments

- Reduced methamphetamine use in 26 of 27 studies.
- Longer retention in treatment.
- More therapy sessions attended; higher use of medical and other services.
- Reductions in risky sexual behavior.
- Increases in positive affect and decreases in negative affect.

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The American Journal on Addictions, 23: 205–210, 2014

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Nationwide Dissemination of Contingency Management: The Veterans Administration Initiative

Nancy M. Petry, PhD,[1] Dominick DePhilippis, PhD,[2] Carla J. Rash, PhD,[1] Michelle Drapkin, PhD,[2] James R. McKay, PhD[2]

[1]University of Connecticut School of Medicine, Farmington, Connecticut
[2]Dept of Veterans Affairs and University of Pennsylvania, Philadelphia, Pennsylvania

Current Use of CM Outside the VA

Montana CM Pilot in 11 treatment centers

Washington State CM Pilot in 16 sites

California: Statewide Recovery Incentives Program to include over 200 treatment program funded via an 1115 Medicaid waiver. Estimated patients treated 10,000+

In Vermont

A pilot underway at the Vermonters for Criminal Justice Reform in Burlington.

A pilot to begin at Safe Recovery in March 2023

And likely others I don't know about

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Questions?

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