Contingency Management

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- Scope of the problem: Stimulant use and overdose
- Neurobiology of Addiction – Brief Review
- What is Contingency Management?
- Data to support use
- Stigma and concerns about gambling

Learning Objectives

1. Learn about the neurobiological and behavioral principles supporting the use of Contingency Management in the treatment of stimulant use disorder.
2. Review misconceptions in the use of Contingency Management and appreciate that these interventions do not cause or exacerbate gambling disorder.
3. Introduce how one clinic has implemented Contingency Management to reinforce pro-recovery behaviors including negative urine analysis results, group attendance, and engagement in community activities.

Disclosures

- No disclosures

12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class

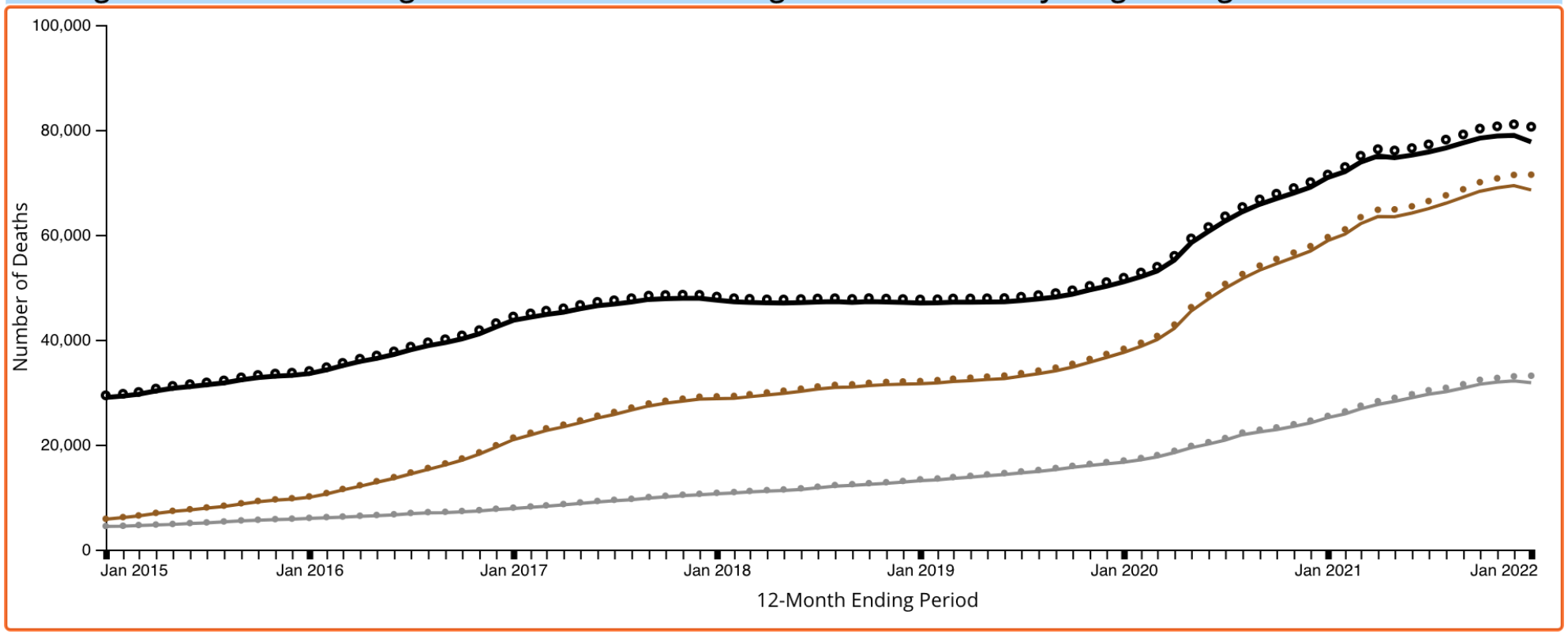
Based on data available for analysis on: June 05, 2022

*After opening the **drug class dropdown**, click the top of the dropdown menu again to make the checkboxes disappear.*

Select Jurisdiction: United States

Select specific drugs or drug classes: Select drug class

Figure 2. 12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: United States



Legend for Drug or Drug Class

- Opioids (T40.0-T40.4,T40.6)
- Psychostimulants with abuse potential (T43.6)
- Synthetic opioids, excl. methadone (T40.4)

---- Reported Value

O Predicted Value

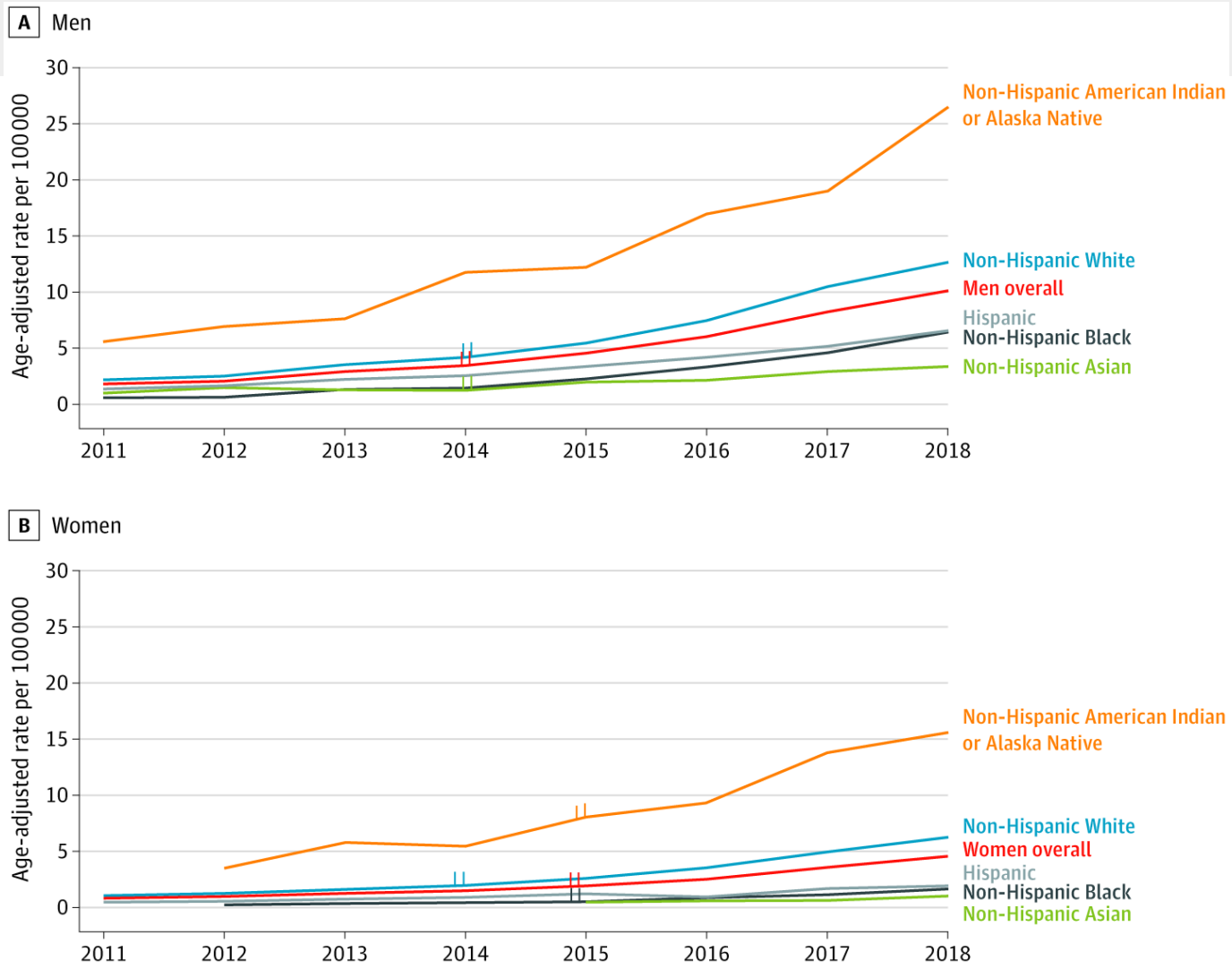
~33,000 deaths from psychostimulants in 2021

Ahmad FB, Cisewski JA, Rossen LM, Sutton P. Provisional drug overdose death counts. National Center for Health Statistics. 2022.

JAMA Network™

From: **Methamphetamine Overdose Deaths in the US by Sex and Race and Ethnicity**

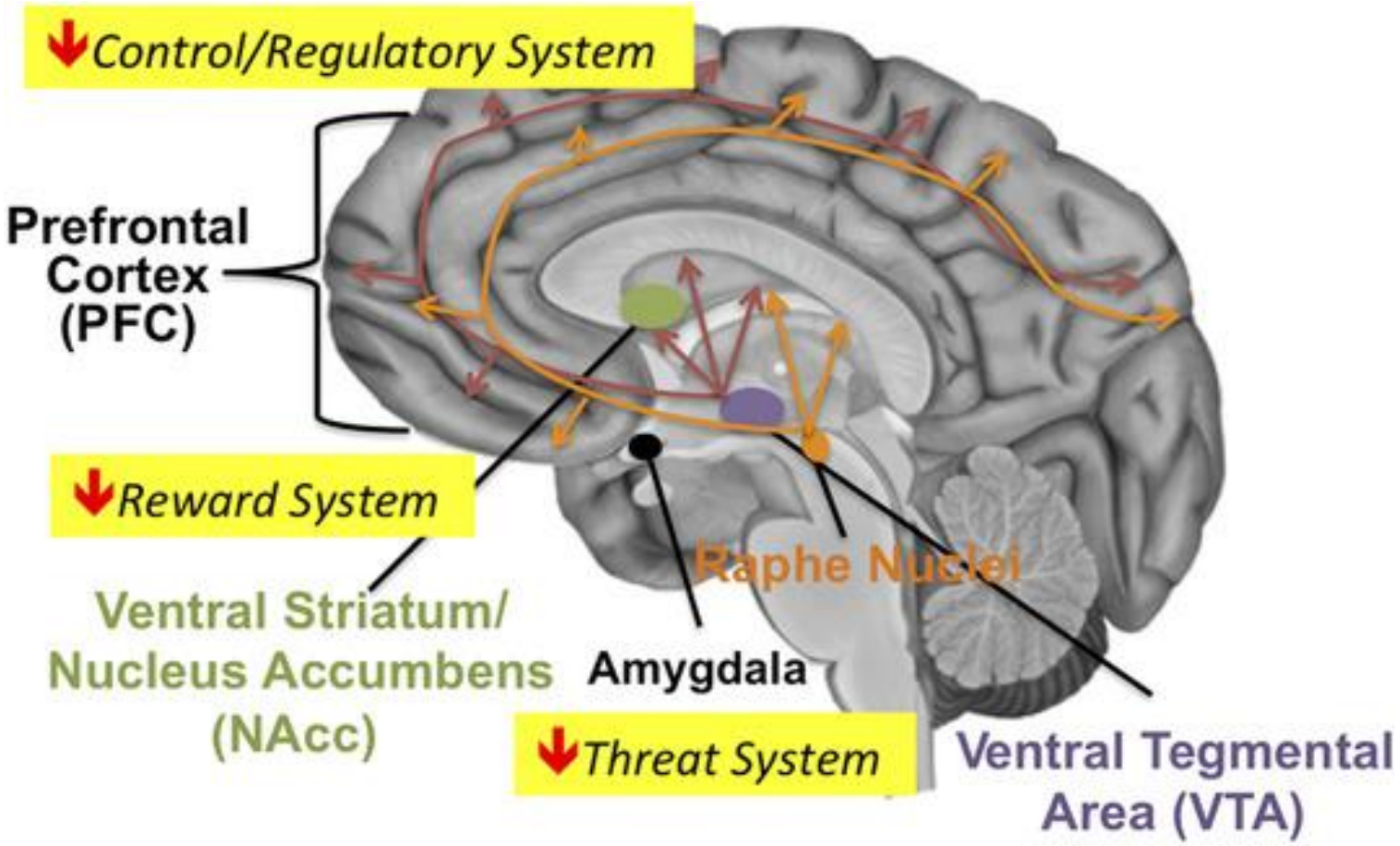
JAMA Psychiatry. 2021;78(5):564-567. doi:10.1001/jamapsychiatry.2020.4321



Neurobiology of Addiction

In developing addiction-

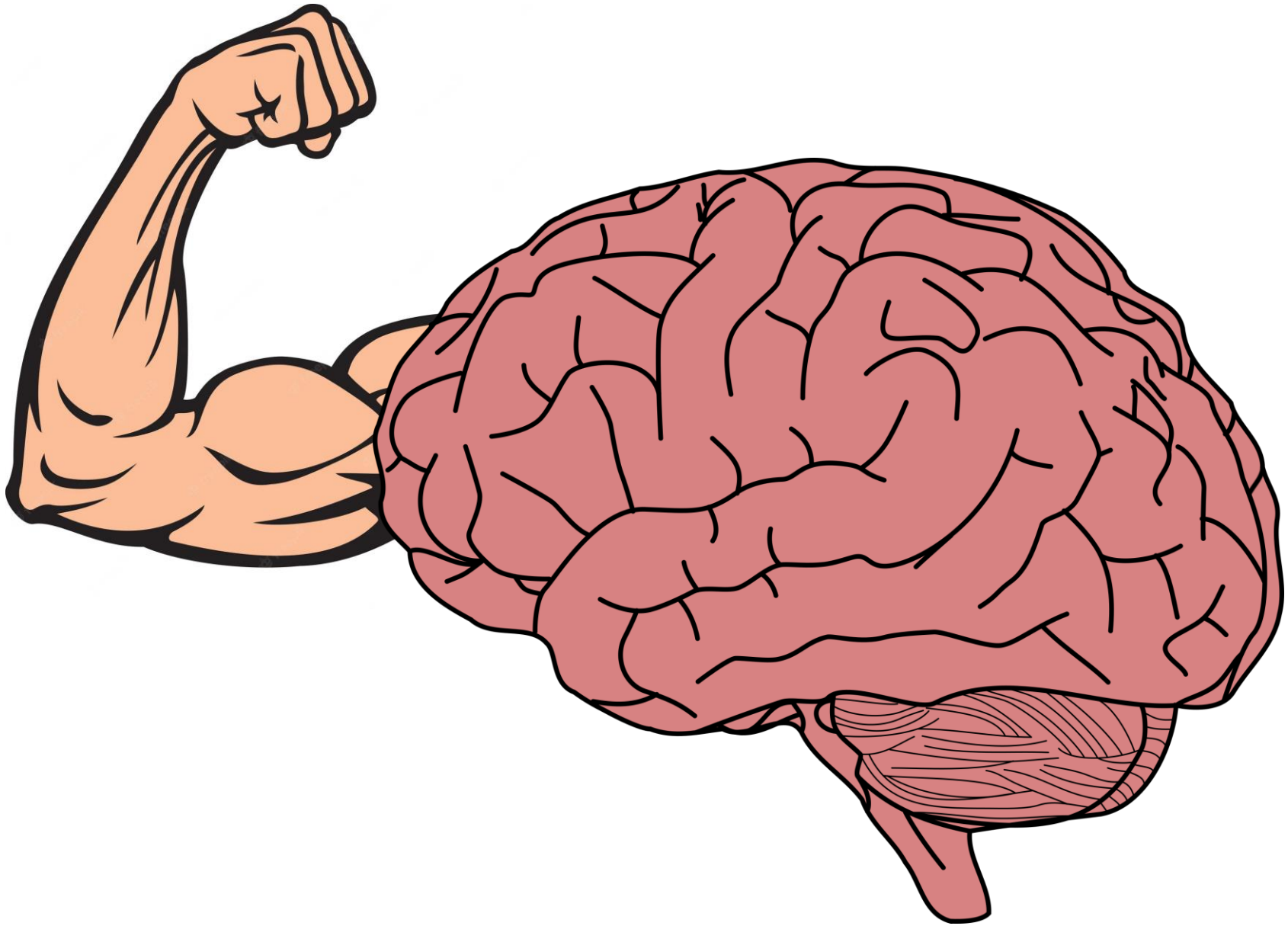
1) Drug use shifts from becoming impulsive to compulsive
2) Deceased top-down decision making from the pre-frontal cortex (PFC)
3) Increased sensitivity to drug cues
4) Desensitization to natural rewards



Kozac, Ann. N.Y. Acad. Sci., 2019;
Lewis NEJM, 2018

Treatment of Stimulant Use Disorder

- There are no FDA-approved medications to treat stimulant-use disorder.
- Behavioral treatments are the goal-standard:
  - **Contingency Management (CM)**
  - Cognitive behavioral therapy (CBT)
  - Internal Family Systems (IFS) therapy
  - 12-step programs



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.
- Participants in CM programs work to alter their decision making around substance use, shifting away from the immediate reward of using to delayed rewards for behavior change - **delay discounting.**

Petry. *Psychol Addict Behav*. 2017; Stanger, Psychol Addict Behav, **2013**

How does CM Work?

- Treatment and/or counseling engagement
- Substance abstinence

- Attendance confirmed
- Drug test negative

- Prizes are given immediately
- Celebrate!

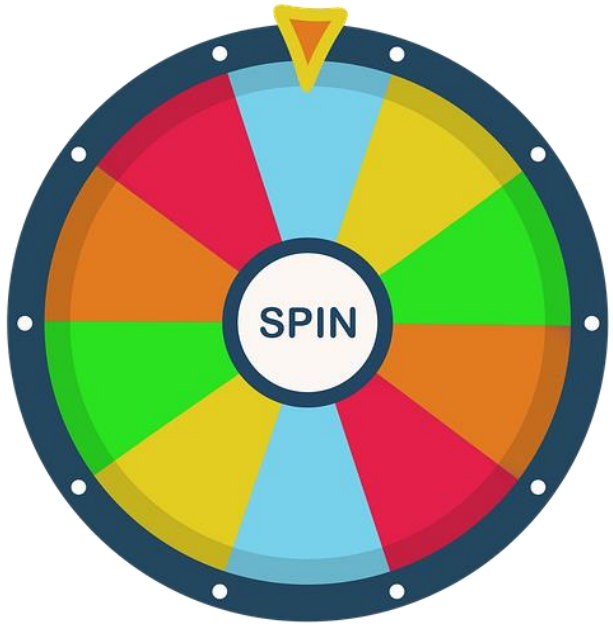
Slide adapted with permission from Linda Peng

Why does CM Work?

Slide adapted with permission from Linda Peng

Types of CM

1. **Voucher based reinforcement therapy (VBRT)**
   - Patients receive vouchers or other monetary-based incentives exchangeable for goods/services
2. **Variable magnitude of reinforcement procedure – a.k.a. "Prized-based"**
   - Patients receive draws (often from a container with slips of paper) or spin a wheel that have varying “prize” amounts



CM is Effective

A review of 27 studies on CM (including 15 RCTs) showed:

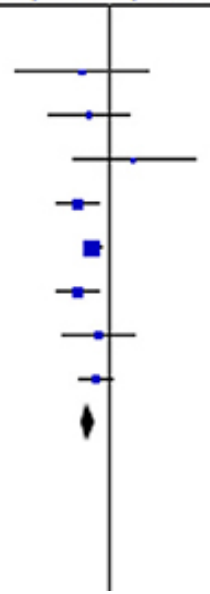
- Increased abstinence from methamphetamine
- Increased treatment retention, attendance, and engagement
- Reductions in risky sexual behavior and number of sexual partners

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

Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 Contigency management						
Hagedorn 2013	14	71	17	67	2.1%	0.78 [0.42, 1.45]
McDonell 2013	32	91	36	85	4.5%	0.83 [0.57, 1.21]
Menza 2010	20	55	13	45	1.7%	1.26 [0.71, 2.24]
Peirce 2006	90	198	116	190	14.4%	0.74 [0.62, 0.90]
Petry 2005	170	209	196	206	24.0%	0.85 [0.80, 0.92]
Petry 2006	90	198	116	190	14.4%	0.74 [0.62, 0.90]
Reback 2010	31	64	36	67	4.3%	0.90 [0.64, 1.26]
Roll 2006	42	51	58	62	6.4%	0.88 [0.76, 1.02]
Subtotal (95% CI)		**937**		**912**	**71.7%**	**0.82 [0.77, 0.88]**
Total events	489		588			

Heterogeneity: $Chi^2 = 6.56$, $df = 7$ ($P = 0.48$); $I^2 = 0\%$

Test for overall effect: $Z = 5.43$ ($P < 0.00001$)



Risk of bias legend

(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Patients treated with CM had significant reductions in stimulant use

Relative risk = 0.82

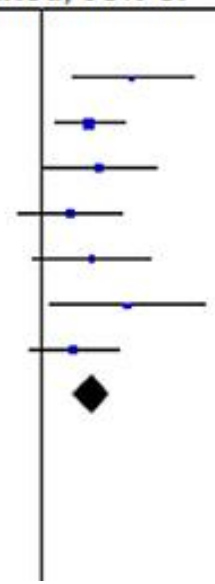
NNT = 8

Tran *et al*, *Front. Psychiatry*, 2021

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Fixed, 95% CI
3.3.1 CM compared to treat as usual						
Peck 2005	30	40	16	40	2.7%	1.88 [1.23, 2.85]
Petry 2005	102	209	72	206	12.3%	1.40 [1.11, 1.76]
Rawson 2006	35	59	23	58	3.9%	1.50 [1.02, 2.19]
Reback 2010	34	64	29	67	4.8%	1.23 [0.86, 1.76]
Roll 2006	28	51	24	62	3.7%	1.42 [0.95, 2.12]
Roll 2013	20	30	11	30	1.9%	1.82 [1.07, 3.10]
Shoptaw 2008	40	64	32	64	5.4%	1.25 [0.92, 1.70]
Subtotal (95% CI)		**517**		**527**	**34.8%**	**1.42 [1.25, 1.62]**
Total events	289		207			

Heterogeneity: $Chi^2 = 3.89$, $df = 6$ ($P = 0.69$); $I^2 = 0\%$

Test for overall effect: $Z = 5.31$ ($P < 0.00001$)



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Patients treated with CM were more likely to remain in treatment

Relative risk = 1.42

NNT = 6

Tran *et al*, *Front. Psychiatry*, 2021

Exposure to Prize-based CM Does Not Increase Gambling Behaviors

- A study of 803 patients with stimulant use were randomly assigned to 12 weeks standard of care treatment with or without prized-based CM.
- Patients were recruited from methadone and non-methadone clinics.
- 26% of patients from non-methadone clinics and 37% of patients from methadone clinics reported gambling during the study.
- There was no difference in gambling rates between patients who received standard treatment and those that received prize-based CM.
- Rates of gambling for both groups did not increase throughout treatment.

Petry et al, *Drug Alcohol Depend,* 2006

Barriers to Implementation

- Cost / Insurance coverage
- Stigma
- Administrative complexities
- Questions on durability of effects

SUDs cost > $740 billion annually in the U.S.

Washington State Institute for Public Policy:
For a single patient receiving $500 incentive, overall economic benefit to the state of $23,000

Recent meta-analysis showed patients treated with CM were 22% more likely to be abstinent 24 weeks after treatment ended compared with patients who received other behavioral interventions.

Murphy *et al*. *Drug Alcohol Depend.* 2015
https://www.wsipp.wa.gov/BenefitCost/Program/297
Scott *et al*. *Transl Issues Psychol Sci*. 2021
Ginley *et al. J Consult Clin Psychol.* 2021

CM and Trauma-Informed Care

- Rather than punishing people for using drugs, CM rewards people for engaging in recovery behaviors
- Promotes self-efficacy
- Celebrates positive change

CM as Harm Reduction

- Goal may not be complete abstinence from all substance use
- CM can be supportive for
  - Increasing attendance at appointments
  - Decreasing associated risky behaviors (i.e., high risk sexual behaviors)
  - Engagement in other health behaviors (like completing vaccine series or taking PEP)

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

8c's of Self

Compassion

Curiosity

Clarity

Connectedness

Courage

Confidence

Calmness

Creativity

ALL PARTS

ARE

WELCOME

Implementing a CM Program

Questions?