CROP+TR
Center for Rural Opioid Prevention, Treatment & Recovery

Elson S. Floyd College of Medicine
Washington State University

Contingency Management as a treatment for drug use disorders: A simple tool psychologists can use to address addiction

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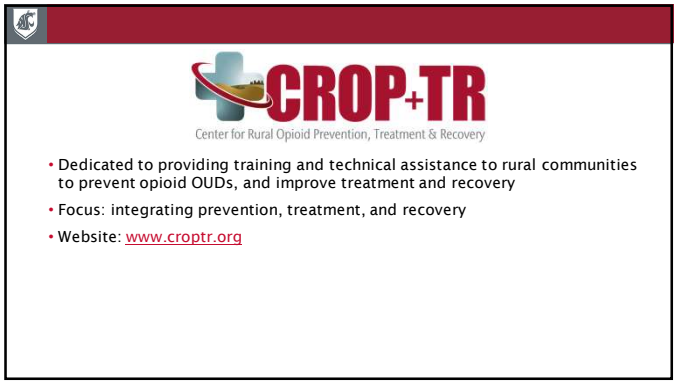
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Center for Rural Opioid Prevention, Treatment & Recovery
• Dedicated to providing training and technical assistance to rural communities to prevent opioid OUDs, and improve treatment and recovery
• Focus: integrating prevention, treatment, and recovery
• Website: www.croptr.org

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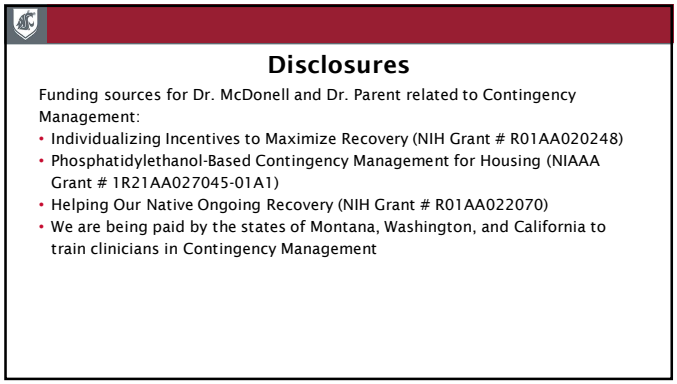
Disclosures
Funding sources for Dr. McDonell and Dr. Parent related to Contingency Management:
• Individualizing Incentives to Maximize Recovery (NIH Grant # R01AA020248)
• Phosphatidylethanol-Based Contingency Management for Housing (NIAAA Grant # 1R21AA027045-01A1)
• Helping Our Native Ongoing Recovery (NIH Grant # R01AA022070)
• We are being paid by the states of Montana, Washington, and California to train clinicians in Contingency Management

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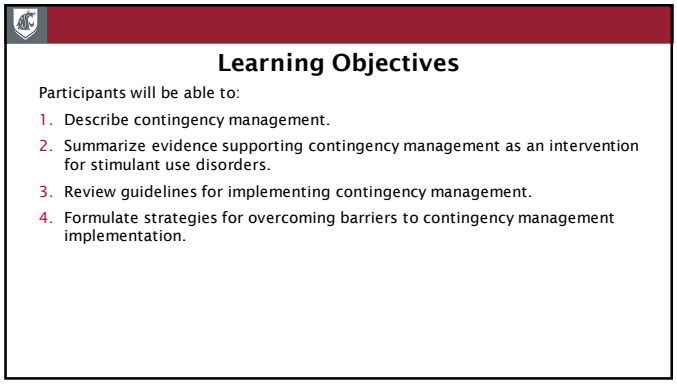
Learning Objectives
Participants will be able to:
1. Describe contingency management.
2. Summarize evidence supporting contingency management as an intervention for stimulant use disorders.
3. Review guidelines for implementing contingency management.
4. Formulate strategies for overcoming barriers to contingency management implementation.

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SESSION OUTLINE

- Background
- What is Contingency Management (CM)?
- CM for Substance Use Disorders
- Nuts and Bolts of CM
- - Break -
- Research supporting CM
- CM Implementation
- Navigating Regulatory Considerations
- Facilitated Discussion; Q&A Session

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Background

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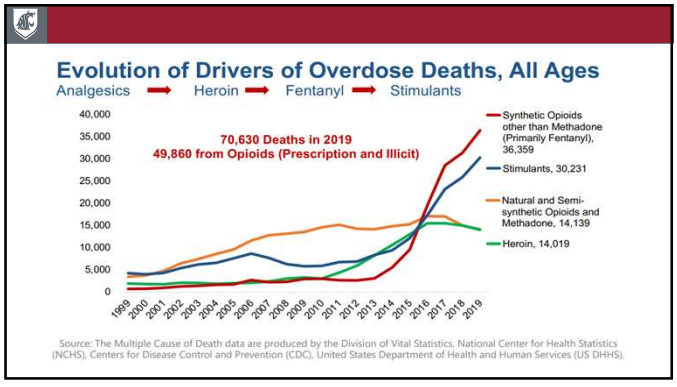

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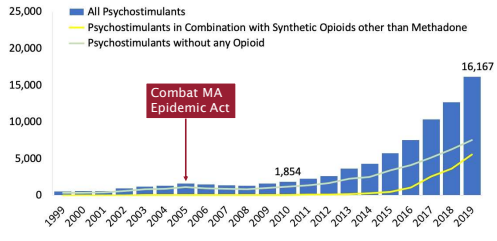
U.S. Overdose Deaths Involving Stimulants with Abuse Potential, 1999-2019



*Among deaths with drug overdose as the underlying cause, the psychostimulants with abuse potential (primarily methamphetamine) category was determined by the T43.6 ICD-10 multiple cause-of-death code. Abbreviated to *psychostimulants* in the bar chart above.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

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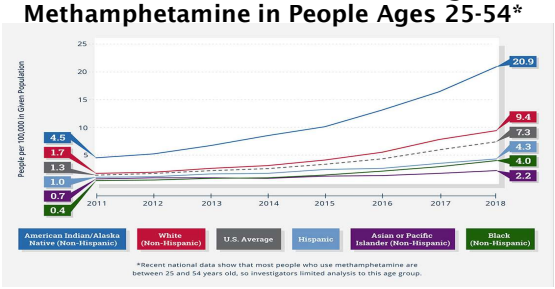
U.S. Overdose Deaths Involving Methamphetamine in People Ages 25-54*



*Recent national data show that most people who use methamphetamine are between 25 and 54 years old, so investigators limited analysis to this age group.

NIDA. 2021, January 20. Methamphetamine overdose deaths rise sharply nationwide. Retrieved from https://www.drugabuse.gov/news-events/news-releases/2021/01/methamphetamine-overdose-deaths-rise-sharply-nationwide on 2021, August 26

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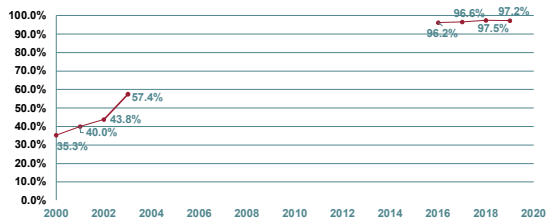
Methamphetamine Purity 2000-2003 and 2016-2019



Sources: The National Threat Assessment, 2005, National Drug Intelligence Center, U.S. Dept. of Justice DEA Methamphetamine Profiling Program.
National Drug Threat Assessment, 2020. DEA Methamphetamine profiling program.

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Increased Overdose Death Rates During COVID-19

12-months Ending June 2020 Compared to 12-months Ending June 2019

	ALL DRUGS	HEROIN	NAT & SEMI – SYNTHETIC	METHADONE	SYNTHETIC OPIOIDS	COCAINE	OTHER PSYCHO-STIMULANTS (mainly meth)
June-19	68,711	14,856	12,148	2,863	33,164	14,894	14,583
June-20	83,335	14,480	12,966	3,195	48,006	19,215	20,318
% Change	21.3%	-2.5%	6.7%	11.6%	**44.8%**	**29.0%**	**39.3%**

*Predicted Number of Deaths
Source: NCHS Provisional Drug Overdose Death Counts: https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm (Accessed on 1-18-2021)

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Current Status of Psychosocial Treatments for Stimulant Use Disorders

- **Contingency management**: strongest evidence
- **Psychotherapy**
  - **Computer-Based Training for CBT:** specifically designed for stimulants-some evidence of reduced use, some developed for LGBTQ* populations.
  - **Motivational enhancement therapy** (sustained motivation interviewing): some evidence for reductions in use.
  - Community reinforcement approach
  - **Exercise-based interventions (TRUST):** some evidence, approach is CBT plus exercise
- Less evidence or no evidence for brief interventions (MI/SBIRT), residential treatment, and case management interventions.

AshaRani PV, Hombali A, Seow E, Ong WJ, Tan JH, Subramaniam M. Non-pharmacological interventions for methamphetamine use disorder: a systematic review. *Drug Alcohol Depend.* 2020;212:108060. doi:10.1016/j.drugalcdep.2020.108060
Bentzley BS, Han SS, Neuner S, Humphreys K, Kampman KM, Halpern CH. Comparison of Treatments for Cocaine Use Disorder Among Adults: A Systematic Review and Meta-analysis. *JAMA Netw Open.* 2021;4(5):e218049. Published 2021 May 3. doi:10.1001/jamanetworkopen.2021.8049

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Dropout rates of in-person psychosocial substance abuse treatment

- 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.

Lappan SN, Brown AW, Hendricks PS. Dropout rates of in-person psychosocial substance use disorder treatments: a systematic review and meta-analysis. Addiction. 2020 Feb;115(2):201-217. doi: 10.1111/add.14793.

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Meta-Analysis of Substance Targeted and Dropout

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

Lappan SN, Brown AW, Hendricks PS. Dropout rates of in-person psychosocial substance use disorder treatments: a systematic review and meta-analysis. Addiction. 2020 Feb;115(2):201-217. doi: 10.1111/add.14793.

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Limitations of Existing Stimulant Use Disorder Treatment

- No FDA approved pharmaceutical medications for stimulant use disorders
- Moderate evidence for CBT as a treatment for stimulant use disorders
- Contingency management has strong evidence but it not widely available
  - Only evidence-based treatment for methamphetamine
- Standard outpatient addiction treatment does not typically include evidence-based intervention for stimulant use disorders

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Role of Psychologists in Treating SUD

- Psychologist blind spot: We often receive little training in SUD diagnosis or treatment
  - We "wing it" or ignore SUDs
- What we have to offer:
  - Training in behavior change interventions that are likely to be effective (e.g., cognitive and behavioral approaches)
  - Trained to use data and empiricism to drive treatment (e.g., scientist practitioner model)
  - Can support non-clinician or non-specialists in designing and delivering behavioral interventions
  - Treatment that is based on a strong therapeutic relationship

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What is Contingency Management?

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What is contingency management?

- The use of operant conditioning to increase, maintain or decrease a behavior.
- A tool use by psychologist in:
  - Parent training
  - Treatment of autism spectrum disorders
  - Cognitive behavioral therapy (e.g., rewarding homework completion)
  - Inpatient and residential settings
  - Psychodynamic psychotherapy (e.g., use of relationship as a reinforcer or punisher)

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Mechanism of Action: Operant Conditioning

	Reinforcement (Increase / maintain behavior)	**Punishment** (Decrease behavior)
Positive (add stimulus)	**Add** pleasant stimulus to **Increase / maintain** behavior	**Add** aversive stimulus to **Decrease** behavior
Negative (remove stimulus)	**Remove** aversive stimulus to **Increase / maintain** behavior	**Remove** pleasant stimulus to **Decrease** behavior

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Reinforcement vs Punishment

- Both can change behavior
- Most people prefer reinforcement
- Punishment does not teach a new behavior (only tells you what not to do)
- Most punishers lack the immediacy to be effective
- Punishment has unnecessary side effects
- Only positive reinforcement teaches new behaviors in a way that builds self esteem, and self-efficacy

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CM for Substance Use Disorders

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What is Contingency Management (CM)?

- The use of positive reinforcement to increase the probability of a patient attaining and sustaining drug or alcohol abstinence
- CM includes a schedule of reinforcement that has been found to maximize the acquisition and maintenance of abstinence
- CM is an intervention for specifically designed substance use disorders
- CM is based on a behavioral pharmacological research

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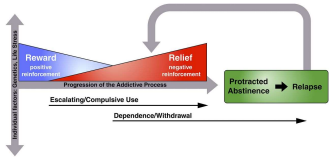
Pharmaco-Behavioral Theory of Substance Use

Psychoactive drugs:
- Feel good (positive reinforcement)
- Remove negative feelings (negative reinforcement)
- Drug use result in loss of many other reinforcers (job, family, friends)

Conclusion: drugs are highly reinforcing and hijack the reward pathway in our brain



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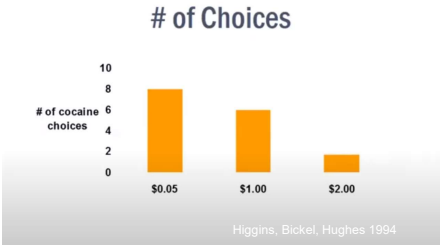
People will Choose Small Reinforcers over Drugs



Higgins ST, Bickel WK, Hughes JR. Influence of an alternative reinforcer on human cocaine self-administration. *Life Sci*. 1994;55(3):179-187. doi:10.1016/0024-3205(94)00878-7

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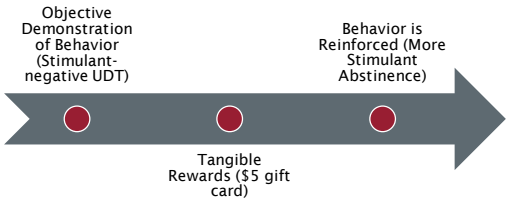
Basics of CM



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- Wait, you pay someone for a drug-free urine drug test??! That sounds kind of…. weird.

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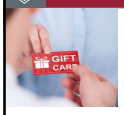

Key Elements of CM

Target Behavior:
- Objective
- Measurable
- Achievable
- Feasible
- Consistent

CM Rewards:
- Contingent
- Immediate
- Tangible
- Desirable
- Escalating

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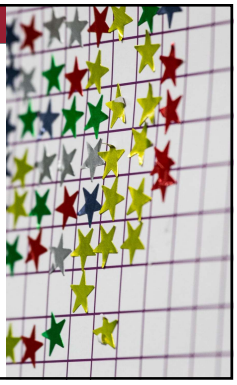
Basics of CM Design

- What behavior will you reinforce?
- How will you measure the behavior?
- What's the optimal schedule of reinforcement?
- How will you use as a reinforcer?



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What behavior will you reinforce?

Most researched:

- Stimulant Abstinence
- Smoking Cessation
- Alcohol abstinence
- Other substance abstinence (opioids, cannabis)
- Medication adherence
- Other treatment activities (e.g., homework)

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What behavior will you reinforce?

Tips:

- Focus on 1 behavior at a time
- Choose a behavior that can be monitored on an on-going basis, for frequent opportunities to reinforce (not 1 and done)
- Choose a behavior that can be achieved quickly (can achieve first success within a week, not within a month)
- **Example: Stimulant Drug Abstinence**

Key Word: Attainable

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How will you measure it?

All CM behaviors need to be objectively measured!

For SUD: Use Point of Care Urine Drug Tests

- Objective, Clear and Unambiguous
- Does not rely on self-report
- Immediate results
- Cost effective for frequent use
- Anyone can administer (no special training required)

Key Word: Objective

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What schedule optimizes reinforcement?

For substance abstinence, goal is to detect all/most use

- Create frequent opportunities for reinforcement
- Attendance expectations must be feasible for clients and staff
- **Optimal SUD CM is 2 x per week (on non-consecutive days)**

Key Words: Frequent, Feasible

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What duration optimizes reinforcement?

For reinforcement of abstinence

- 12 weeks
  - Enough to initiate abstinence and allow for natural reinforcers to take over
- More than 16 weeks results in diminishing returns

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How will you reinforce success?

So many possibilities!

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Characteristics of effective reinforcement

- Tangible
- Desirable
- Immediate
- Escalating
- Contingent

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Reward Choices

	Electronic Gift Cards	Prize Shelf
Tangible	~	+
Desirable (Customizable)	++	~
Immediate	+	~

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Escalation, Reset, Recovery

- **Escalation Bonus**: rewards get bigger with continuous abstinence
- **Reset**: positive or missed UDT results in
- No reward and a reset or cancelation of the escalation bonus
- **Recovery:** the escalation bonus can be recovered after 1 week of abstinence

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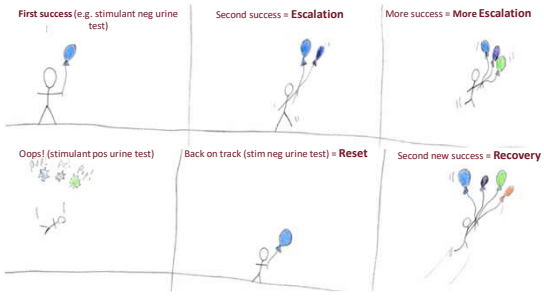
The Secret Sauce: Escalation, Reset, Recovery



Key Words: Accountability, Encouragement

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Escalation, Reset, Recovery
We do this for a reason!

Key concept: Investment

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Rewards: Delivery Methods

- Variable rewards (aka "prize draws")
- Vouchers

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Voucher CM

A pre-arranged voucher is provided for each stimulant negative UDT and voucher amounts escalate

- Example: $5 per neg UDT, escalation bonus $2/week
- Clients knows exactly what they will get for each negative UDT
- Vouchers can be banked and then exchanged for gift cards or tangible items

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Prize CM

A pre-arranged number of prize draws is provided for each stimulant negative UDT and the number of prize draws escalate

- Each prize draw you have a chance of
- No prize (48%), $1 prize (42%), $20 prize (8%) $100 prize (<1%)
- Client never knows exactly what they will get

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CM Session

https://www.youtube.com/watch?v=gD1dMBWCR4w

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Rewards: Magnitude and Budget

- Effective "dose" appears to be ~$500 (total possible earnings for full program)
- Average per client cost will be 50% of maximum amount available

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Behavior→

Key Words: Attainable, Focused

- Stimulant abstinence
- Other treatment goal

Measure→

Key Words: Objective, Immediate

- Point of Care Urine Test
- Other? homework?

Schedule→

Key Words: Frequent, Feasible

- For SUD: 2 x per week for 12 weeks
- No less than weekly, no less than 12 visits?

Reward→

Key Words: Tangible, Immediate, Reinforcing

- Vouchers or Prize Draws? Gift Cards or Prizes?
- Minimum $5 per success, escalating from there
- $300- $500 total possible rewards

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Break!

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Research Supporting CM

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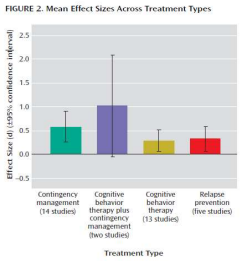
Dutra et al. 2008: Meta-analysis of psychosocial interventions



Treatments analyzed: Contingency Management (CM), Cognitive Behavioral Therapy (CBT), Relapse Prevention (RP)

Greatest Effect Size: CM+CBT, and CM

Best Treatment Retention: CM

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Treatment of Cocaine Dependence in a Drug-Free Clinic

Higgins et al., 1994

CM Vouchers Treatment	Control Treatment
Community Reinforcement	Community Reinforcement
Approach Therapy	Approach Therapy
Urine testing 2x/week	Urine testing 2x/week
Vouchers	No vouchers

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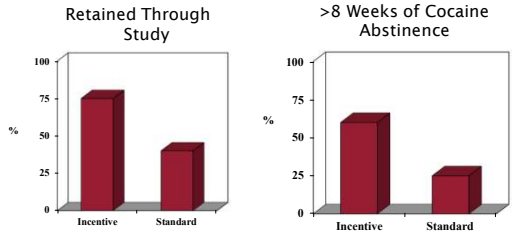
Treatment of Cocaine Dependence



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Contingency Management for Stimulant Use in Adults with Serious Mental Illness:

- McDonell et al 2013, American Journal of Psychiatry
- Primary Aim:
- Determine if a 3-month Contingency Management intervention is successful in decreasing illicit stimulant use in adults with severe mental illness.

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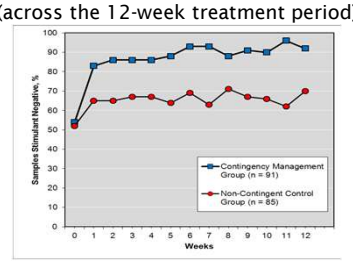
Percent of Participants with Stimulant Drug-Negative Urine Samples

(across the 12-week treatment period)



OR = 2.40, CI = 1.89-3.05 (McDonell et al., 2013, Am. J. Psychiatry)

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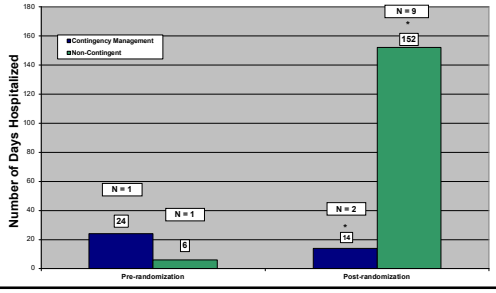
Number of Inpatient Days by Group Over Pre-Randomization (3 months) and Post-Randomization (6 months) Periods



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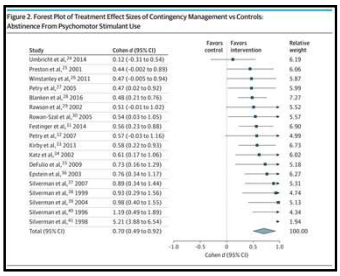
Contingency Management for MOUD Patients

- Meta-analysis of **60 studies** of CM for MOUD patients
- CM Targets:
  - **Stimulant use (Large Effect Size Cohen d=0.7)**



Bolivar HA, Klemperer EM, Coleman SRM, DeSarno M, Skelly JM, Higgins ST. Contingency Management for Patients Receiving Medication for Opioid Use Disorder: A Systematic Review and Meta-analysis [published online ahead of print, 2021 Aug 4]. *JAMA Psychiatry*. 2021;e211969. doi:10.1001/jamapsychiatry.2021.1969

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Long-Term Efficacy of CM

- Meta-analysis of 23 randomized trials of CM for stimulant, opioid, or polysubstance use disorders that reported outcomes up to 1 year after the incentive delivery had ended
- The overall likelihood of abstinence at the long-term follow-up among participants who received CM versus a comparison treatment (nearly half of which were community-based comprehensive therapies or protocol-based specific therapies) was OR 1.22, 95% confidence interval [1.01, 1.44]

Ginley MK, Pfund RA, Rash CJ, Zajac K. Long-term efficacy of contingency management treatment based on objective indicators of abstinence from illicit substance use up to 1 year following treatment: A meta-analysis. *J Consult Clin Psychol*. 2021;89(1):58-71. doi:10.1037/ccp0000552

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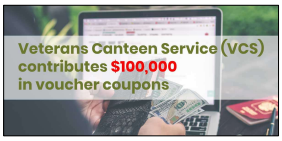
The VA CM Program: A real-world large-sale example

- 94 VAs have implemented CM
- >50% CM sessions attended
- 91% UDTs drug negative



https://www.sunshinebehavioralhealth.com/veterans/

DePhilippis D, Petry NM, Bonn-Miller MO, Rosenbach SB, McKay JR. The national implementation of Contingency Management (CM) in the Department of Veterans Affairs: Attendance at CM sessions and substance use outcomes. *Drug Alcohol Depend*. 2018;185:367-373. doi:10.1016/j.drugalcdep.2017.12.020

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What Client's Say about CM

"When I'm at home and see them [prizes] I think 'hey I got this for staying sober.' "

"Something to do besides thinking about everything wrong with the world, and being negative… it gave me a little peace of mind"

"I don't care about the prizes, seeing myself getting clean, it helped me"

"I still wanted to be clean, even though I knew it wouldn't be held against me and it wouldn't be shared. I was conscious of that."

"It gave me something to look forward to, a schedule."

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CM and Cultural Factors: Partnerships with American Indian and Alaska Native Communities

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CM as an Intervention for AI/AN Communities

Builds trust, respect, and connection between clinicians, clients, and their families

Aligns with honoring and encouraging individual through gifting

Gift cards can be shared with family

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CM among Rural AI/AN Communities

- CM might be a feasible, culturally acceptable and effective substance use disorder intervention in rural AI/AN communities.
- Conducted 2 studies:
  - The Rewarding Recovery Study (McDonell et al., 2020)
    - 1 Rural reservation in Northern Plains
    - Adults with alcohol use disorders who use drugs
    - CM focused on alcohol and other drugs (Cannabis/Methamphetamine)
  - Helping Our Native Ongoing Recovery (HONOR) Study (McDonell et al., 2021)
    - 3 Communities throughout the West
    - Adults with alcohol use disorders
    - CM focused on alcohol

McDonell et al., 2020

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The Rewarding Recovery Study: Goals

Overall Goal

- To see if CM leads to reductions in alcohol and drug use in American Indian adults living in a rural community

Specific Goals

- Adapt CM to maximize cultural acceptability for an AI community
- Determine if people who receive CM use less durgs and alcohol than those who don't receive CM

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The Rewarding Recovery Study: Research Methods

- Eligibility
  - 18 years or older
  - American Indian
  - Diagnosis of Alcohol Dependence (DSM-IV)
  - Used an illegal drug or opioids in the last month
- Study Design
  - 12 weeks
  - Urine tests and CM rewards 3 times a week
  - Compare 3 different versions of CM to a control group where people received rewards for submitting urine tests (don't have to be abstinent)
  - Outcomes: alcohol use, drug use- assessed by UDTs

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The Rewarding Recovery Study: Treatment Groups

CM Alcohol Only	CM Drugs Only	CM for Drugs & Alcohol	Non-CM Group
Incentives provided if participant demonstrated abstinence from alcohol	Incentives provided if participant demonstrated abstinence from drugs.	Incentives provided if participant demonstrated abstinence from drugs AND alcohol	Incentives provided for attendance and submitting a urine sample. They received reward even if they used.

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The Rewarding Recovery Study: Description of Participants

120 people

- 49.1% Male
- 50.9% Female
- Average Age 35.8 years
- 53.5% had high school degree or higher

Participant Substance Use

- 43.0% tested positive for alcohol
- 50.9% most-used drug was methamphetamine
- 36.8% reported using cannabis

McDonell et al., 2020

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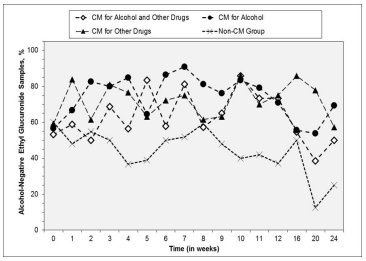
The Rewarding Recovery Study: Alcohol

Only the CM for Other Drugs and CM for Alcohol and Other Drugs had lower drug use than the Non-CM Group



McDonell et al., 2020

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The Rewarding Recovery Study: Drugs

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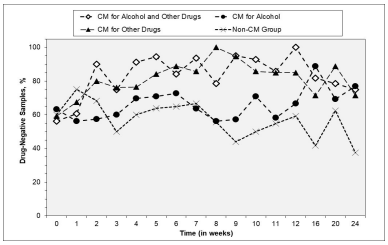

McDonell et al., 2020

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The Rewarding Recovery Study: Summary of Findings

- People liked CM, and it was also an opportunity to integrate language and culture into the lives of people seeking recovery.
- We don't know if people continued to do better after treatment stopped.
- CM for drugs only has the best outcomes:
  - This group reduced stimulant and alcohol use and had an acceptable attendance level.
  - CM for alcohol reduced alcohol use, but not drug use.

McDonell et al., 2020

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Helping our Native Ongoing Recovery (HONOR)

JAMA Psychiatry | Original Investigation

Effect of Incentives for Alcohol Abstinence in Partnership With 3 American Indian and Alaska Native Communities
A Randomized Clinical Trial

Michael G. McDonell, PhD; Katherine A. Hirchak, PhD; Jalene Herron, MS; Abram J. Lyons, MSW; Karl C. Alcover, PhD; Jennifer Shaw, PhD; Gordon Kordas, MS; Lisa G. Dirks, MSIS, MLIS; Kelley Jansen, MS; Jaedon Avey, PhD; Kate Lillie, PhD; Dennis Donovan, PhD; Sterling M. McPherson, PhD; Denise Dillard, PhD; Richard Ries, MD; John Roll, PhD; Dedra Buchwald, MD; for the HONOR Study Team

https://pubmed.ncbi.nlm.nih.gov/33656561/

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CM Implementation

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The Art of Contingency Management

It's all the in delivery!

Key concepts: Clear expectations, Positive approach

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Models of Therapeutic Relationships

- Paternalistic/authoritarian= Doctor as Expert
- Docere/Educational= Doctor as Teacher
- Motivational= Doctor as Teammate
- Contingency Management= Doctor as Cheerleader

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Set Clear Expectations

- Rewards are 100% based on observable measure (e.g. urine test result)
- Attendance policy
  - no show = missed opportunity
  - Can visits be rescheduled? (usually no)
  - Excused absences?
- Escalation, reset, and recovery
  - "You'll get bigger and bigger rewards each time you demonstrate a week of success. If you have a slip up, you'll reset back to the base amount, but get to recover all your bonuses as soon as you show another week of meeting the goals."
- Use a patient handout!

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Use a Positive Approach

When they hit the mark

- Remind them they will get even more next time if they keep up the good work.
- ***(Remember, the prize is doing the heavy lifting.)***

When they miss the mark

- Be non-judgement and matter of fact
- Praise effort for coming in for the visit
- Remind them their next opportunity is very soon
- Ask if there's anything you can do to support their next steps

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Challenges to Using CM

- Stakeholder resistance to the idea of incentives
- Tracking escalation bonus, reset, and recovery
- Where does the funding for incentives come from?
- Staffing and workflow

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Regulatory Considerations

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CM and Medicaid: Avoid violating anti-kickback rules

- Do not advertise use of rewards
- Document need for CM in treatment plan
- Use a research-based CM program
- Carefully document that rewards are linked to client outcomes
  - Must closely document each UDT result and the corresponding reward that was given for that UDT negative test
- Rewards cannot exceed > $500 annually
- Regularly evaluate the impact of CM on client outcomes
  - Do quality improvement to document CM effectiveness
- Do not document CM as part of a billable Medicaid/Medicare encounter

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CM Is Coming

- Montana
  - 14 sites funded by state opioid grants and state tax revenue
- Washington
  - 26 clinics funded by state opioid grants
- California
  - Pilot Medi-Cal program funding CM for all recipients till 2024
    - $53 million will be provided to Medi-Cal funded providers
- Other payers and systems of care are interested (Providence, Kaiser)

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CM Training

- Developed a comprehensive CM training and technical assistance product that includes
  - Didactic training,
  - CM manual,
  - Reinforcer tracking sheet,
  - Comprehensive fidelity and compliance monitoring tools
- If interested see our training request page:
  - https://www.prismcollab.org/cm-training

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CM in Private Practice or Similar Setting

- Twice per week visits are uncommon
- Can be administered by non-clinical staff
- Creates a positive tone for treatment, especially for most challenging clients
- Builds self-efficacy
- Increases client satisfaction
- Can be creatively implemented with non-Medicaid/Medicare Clients

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Muddiest Point

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Muddiest Point- How can we clear things up?

If you were to implement CM in your practice setting

- What would you target – drug abstinence? Another behavior?
- How would you fund reinforcers?
- What would be the biggest barrier to implementation?
- What would you need to overcome this barrier?

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