Contingency Management for Substance Use Disorders

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Maine Substance Use Disorders Learning Community

Best Practices for Improving SUD/OUD Treatment in the Fentanyl Era

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CARE Clinical Addiction Research and Education

Grayken Center for Addiction
Boston Medical Center

Disclosures

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MA Department of Public Health

BSAS

Prevent • Treat • Recover • For Life

www.mass.gov/dph/bsas

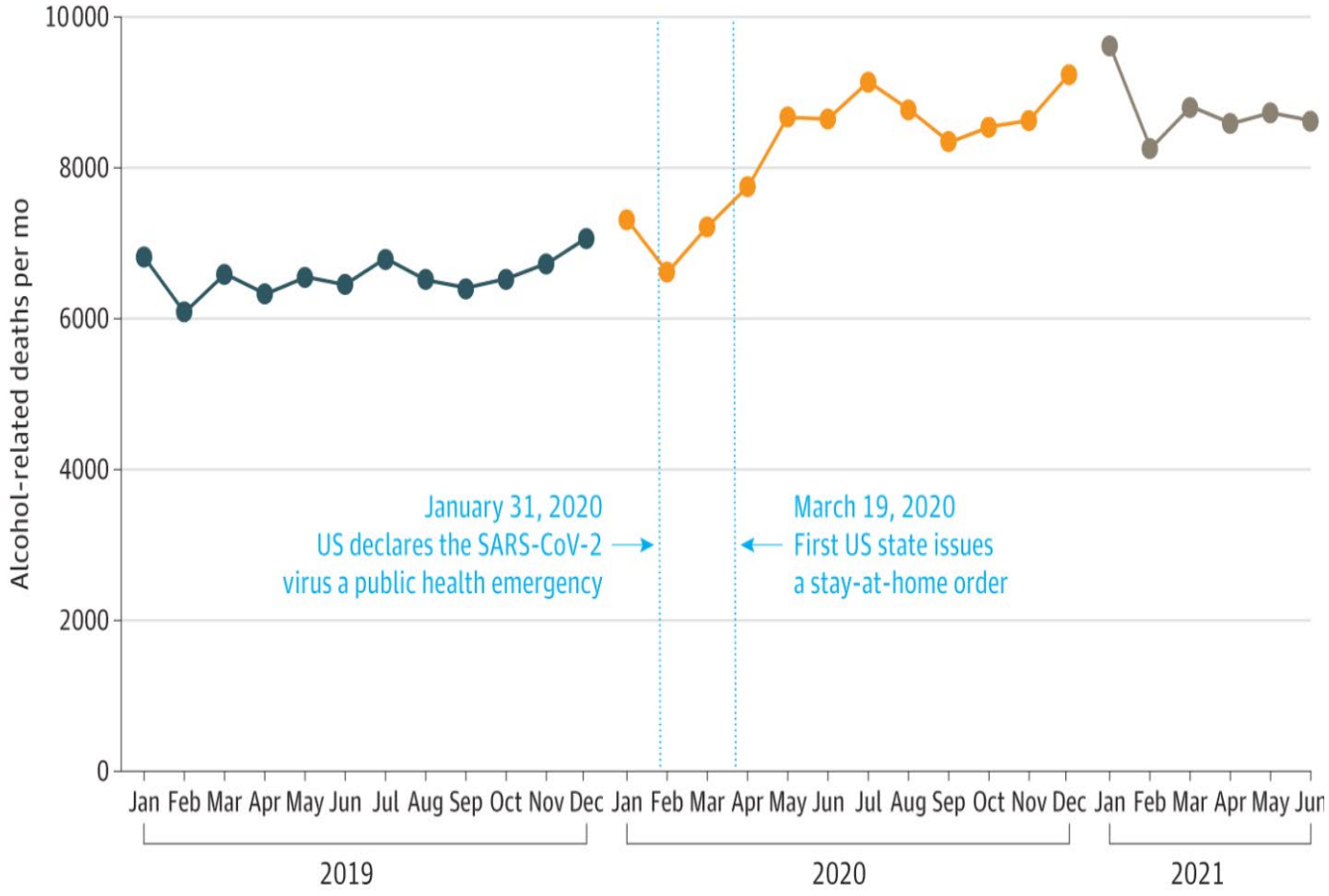
Learning Objectives

At the end of this session, participants will be able to:

- Recognize the key principles of contingency management (CM) as a treatment for substance use disorders.
- Name at least two (2) evidence-based methods of CM useful in the treatment of substance use disorders.
- Describe challenges with implementation of CM and an example of CM program initiation.

Epidemiology

Alcohol-Related Deaths

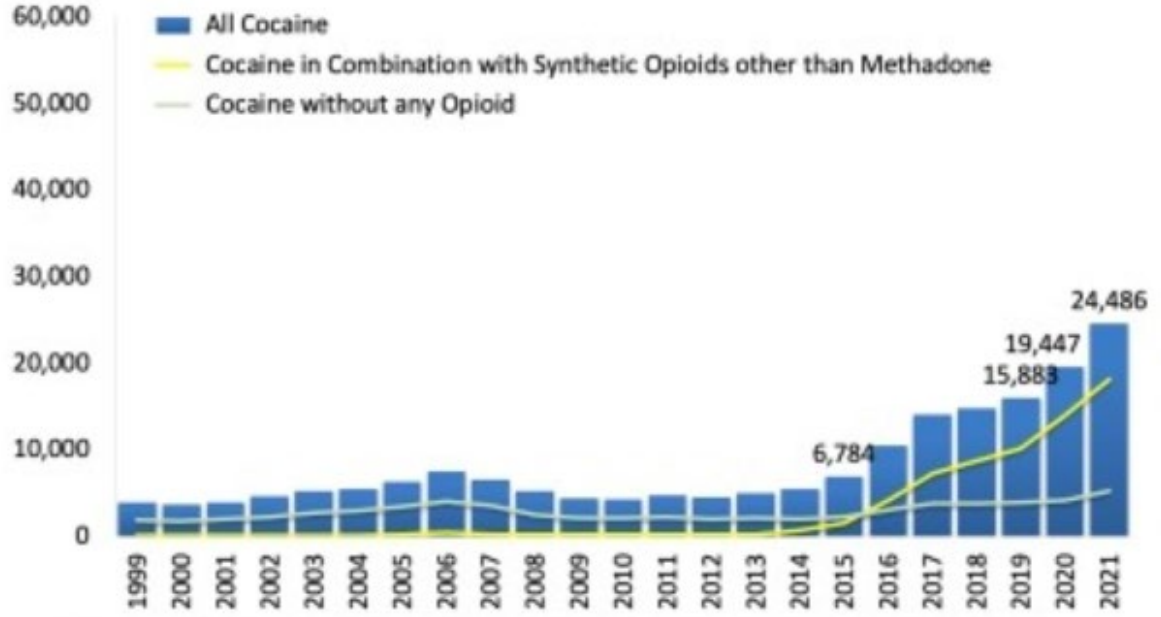


- Between **2019 and 2020**, rate of alcohol-related deaths increased by 25% (mean annual rate of rise: 2.8%, up from 2.2%)
- **In 2020**, the number AUD diagnoses doubled from 14.5 million to 28.3 million

White et al, *Alcohol-related deaths during COVID-19 Pandemic*, JAMA May 2022

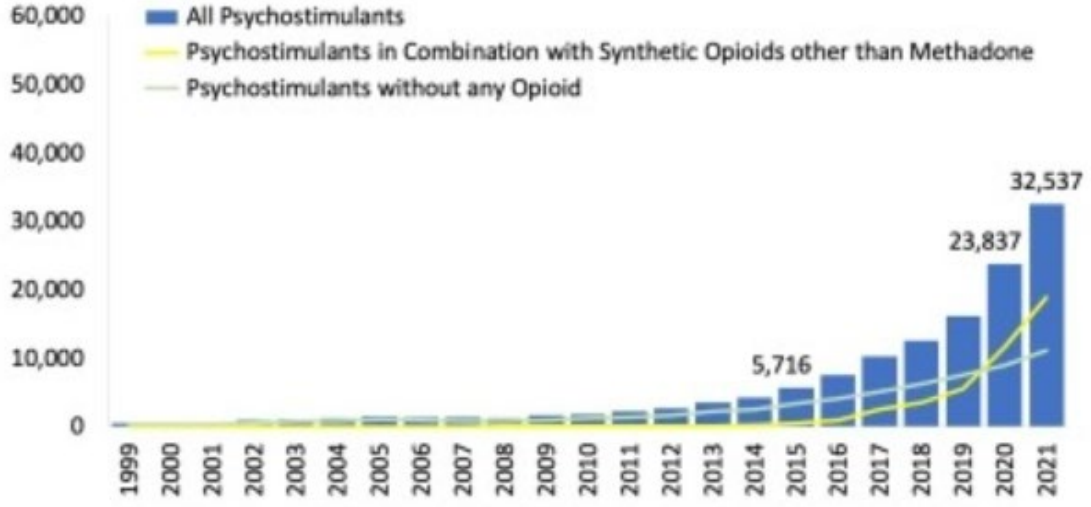
Stimulant-involved overdose deaths surging with opioids

Figure 8. National Drug Overdose Deaths Involving Cocaine*, by Opioid Involvement, Number Among All Ages, 1999-2021



*Among deaths with drug overdose as the underlying cause, the cocaine category was determined by the T40.5 ICD-10 multiple cause-of-death code. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2021 on CDC WONDER Online Database, released 1/2023.

Figure 7. National Overdose Deaths Involving Psychostimulants with Abuse Potential (Primarily Methamphetamine)*, by Opioid Involvement, Number Among All Ages, 1999-2021



*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 1999-2021 on CDC WONDER Online Database, released 1/2023.

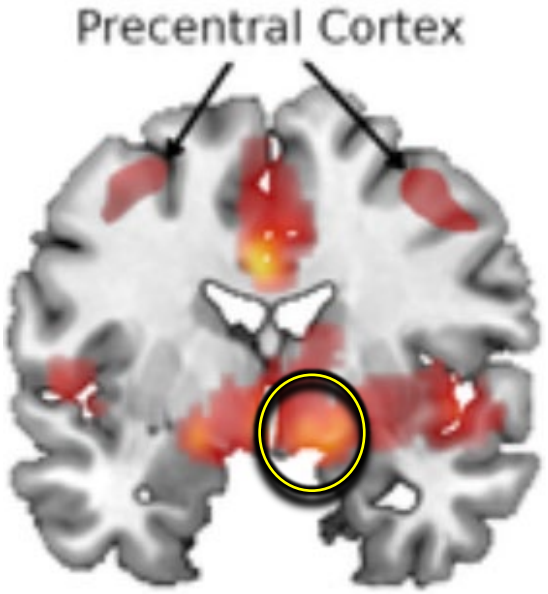
Principles of Contingency Management

Basics of Contingency Management

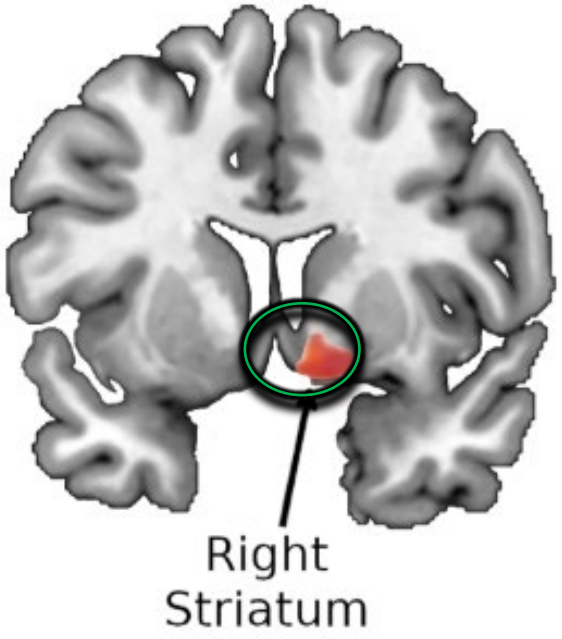
- CM is a behavioral health intervention based in operant conditioning principles that provides tangible reinforcers for evidence of behavior change
- Essential theory behind CM: “A behavior that is reinforced in close temporal proximity to its occurrence will increase in frequency” (ex. engagement in care is reinforced with voucher or prize given to patient at the visit/point of engagement)
- In CM programs that focus on abstinence, the magnitude of reinforcement provided should increase with sustained periods of abstinence

Petry et al, 2011

Neuroscience of Reward



Monetary Reward **Anticipation**



Monetary Reward **Delivery**

Jauhar et al., PLOS 2021

CM Evidence for Substance Use Disorders

- Improved treatment outcomes for variety of SUDs (stimulants, cannabis, opioids, nicotine, benzodiazepines, alcohol).
- CM efficacy is independent of comorbid medical or psychiatric conditions (including psychotic disorders) and demographic factors, including race/ethnicity, sex, age, or income.
- Can be applied in different settings, including virtually and as an adjunct to standard care
- Most literature is focused on abstinence

Petry et al, Psychol Addict Behavior, 2017

CM Evidence, Cont'd

- **Alcohol**
  - 2017 RCT: CM participants 3x more likely to have neg EtG UDS in 12 wk + 1.5 wks additional abstinence compared to controls
  - Lower EtG levels, fewer heavy drinking days, less drinking overall maintained at 3 mo f/up

- **Cannabis**:
  - 2022 CUD + SMI: Increased abstinence, improvement mood symptoms with reduced cannabis use (in setting of CM)

- **Nicotine:**
  - CM + CBT highly effective at sustaining 1 year quit rates
  - Highly cost-effective

McDonell et al, Am J Psychiatry 2017
Rodas et al, *Brain Sciences* 2022
Gonzalez-Roz et al, Nicotine & Tobacco Research, 2021

Evidence-Based Behavioral Interventions for Stimulant Use Disorder

- **Contingency management (CM)**
  - Provides reinforcers (vouchers, prizes) for selected goal behaviors in recovery
- **Community reinforcement approach (CRA)**
  - Uses functional analysis to reorganize social environment (job training, education, behavioral/life skills training, training, relationship counseling)
- **Matrix model**
  - 8-16-week structured intensive outpatient group therapy, connection to self-help, and exploration of underlying causes of disease. Includes Regular UDS screening.
- **Exercise supported recovery**:
  - Combination of daily aerobic and anaerobic exercise are associated with long term recovery for patients with methamphetamine use disorder

Methods of Contingency Management

Types of Contingency Management

Fish Bowl Method:

- Provides chances at winning prizes for completing activities in recovery
- Each activity may be associated with an increased number of chances to “win”
- Prizes in the fish bowl vary in size, from low level prizes to high level prizes
- May be effective in group settings because group can see what others “win”

Voucher Based Reinforcement:

- Provide reinforcers w/monetary value for completing positive activities
- Each activity should be verifiable
- Rewards should be provided as close to the completion of the recovery activity as possible
- Increasing magnitude of reinforcement for longer duration of treatment → prolonged recovery

Forster et al, Contemporary Clinical Trials, 2021

Voucher-Based Reinforcement

SCHEDULE OF INCENTIVES

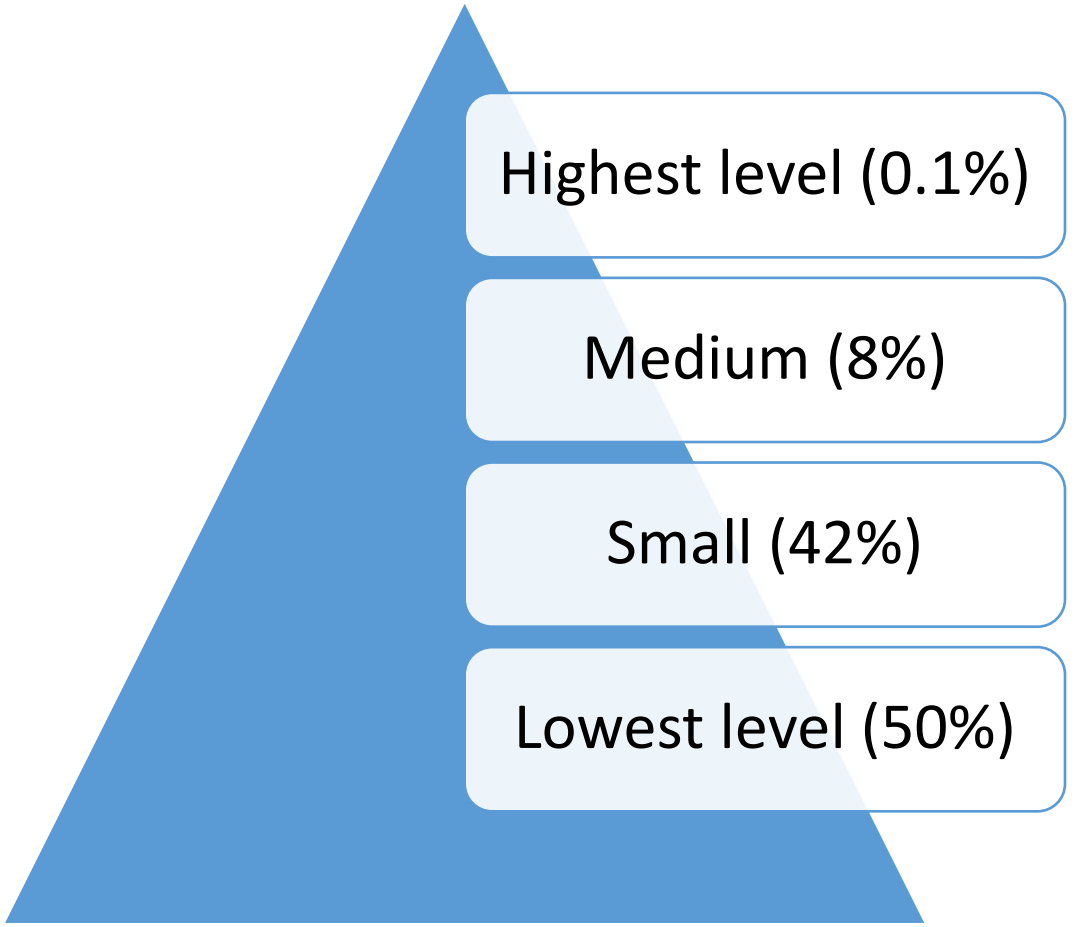
	Monday	Wednesday	Friday	*Weekly Bonus	Weekly Totals
Week 1	$2.00	$2.25	$2.50	$8.50	$15.25
Week 2	$2.75	$3.00	$3.25	$8.50	$17.50
Week 3	$3.50	$3.75	$4.00	$8.50	$19.75
Week 4	$4.25	$4.50	$4.75	$8.50	$22.00
Week 5	$5.00	$5.25	$5.50	$8.50	$24.25
Week 6	$5.75	$6.00	$6.25	$8.50	$26.50
Week 7	$6.50	$6.75	$7.00	$8.50	$28.75
Week 8	$7.25	$7.50	$7.75	$8.50	$31.00
Week 9	$8.00	$8.25	$8.50	$8.50	$33.25
Week 10	$8.75	$9.00	$9.25	$8.50	$35.50
Week 11	$9.50	$9.75	$10.00	$8.50	$37.75
Week 12	$10.00	$10.00	$10.00	$8.50	$38.50
Grand Total					$330.00

A Weekly Bonus is earned only after submitting 3 consecutive non-reactive urine samples.

- Abstinence-oriented CM can involve urine toxicology results
- Reinforcements should increase with duration of abstinence
- Always consider re-enrollment if a patient has recurrent use episodes.

Fish-Bowl CM

- Abstinence-oriented prize drawing CM should have varying levels of prizes
- Increased number of chances to win based on negative urine drug sample for substance of interest
- Evidence for abstinence: $300-$500 in prize drawing CM during a 12-16 week period



Petry, et al, 2005

Challenges & Implementation

Concerns about CM

- **Philosophical**: “doesn’t address underlying cause of addiction”
  - Many treatment programs in the US encourage 12-step participation
  - CM + 12-step improves outcomes (retention, duration of abstinence)

- **Motivational**: “external reinforcement may reduce intrinsic motivation”
  - Most evidence suggests that CM does not have adverse effects on reducing motivation to change substance use behaviors
  - Need to change narrative to retraining the brain

- **Durability**: “external reinforcers will undermine long-term behavior change”

- **Economic:** no reimbursement to the medical system

- **Legal**: fraud and abuse (anti-kickback)

Challenges

- CM for abstinence has the most efficacy with high magnitude, high frequency reinforcers
- Research indicates that $300-$500/person/12-16 week period is most efficacious in supporting abstinence or reduced use, but current issues at the federal and state level limit CM rewards to $75/person/year
- Lower intensity CM, often referred to as motivational incentives, still has utility at promoting engagement and recovery activities, but has not demonstrated improved abstinence rates specifically

OIG, 2021

Implementation

Work with formal consultant to develop CM system that aligns with legal and structure guardrails

- **Decide which behavior is being modified / reinforced**
  - Engagement & retention
  - Drug use
    - Choose single drug on which rewards are contingent
    - Detect all days of abstinence (2-3 times weekly UDS)
  - Goal-related behaviors (specific, actionable)
  - Behaviors should be objectively verifiable and occur frequently

- **Choose reinforcer**
  - Large enough to compete with behavior targeted for change

- **Monitoring, documentation, evaluation**

Petry, BH Recovery Management Project, 2020

CM Implementation Tips

- Have a tracking system for prizes and reinforcers that is transparent for patients
- A CM monitor should be someone outside of the clinical team to avoid role confusion
- Have reinforcers readily available to provide them to patients in real time as close to verification of the activity as possible
- Tailor reinforcers to the patient population/community you are serving

(SAMHSA TIP 33)

CM Implementation Tips

- Have a way to store and monitor available prizes in the clinic settings (lock it up and track it) to avoid waste/fraud/abuse
- Remember CM is meant to positively reinforce heathy behaviors; be as excited about small prizes as you are about big ones!
- If doing CM in a group setting, consider announcing achievements at the end of group to promote social support in goal achievement.

(SAMHSA TIP 33)

Model of Contingency Management

Program Design: Stimulant Treatment & Recovery Team

LOW-BARRIER TREATMENT MODEL: Adapted Nurse-Care Manager Model with Multidisciplinary Team Approach

CONTINGENCY MANAGEMENT: Recovery Rewards Program

EXERCISE-SUPPORTED RECOVERY: Exercise Curriculum & Sober Gym Partnership

DE-ESCALATION AND ACUTE INTOXICATION TREATMENT: Cool-Down Space

Low Barrier

EXIT

clever HEALTH
Alcohol Prep Pads
Tampons d'alcool antiseptique
Toallitas con alcohol
For external use only
prepare your crack pipe:
Fit mouthpiece onto stem.
Add crack (rock). Apply heat.
Inhale slowly, then exhale immediately
Take care of yourself. Try to eat something before you smoke. Stay hydrated with water or juice.
Be kind to yourself and your skin. Wash your hands after smoking.
Take a break. Get some sleep, drink water or juice and eat something.
Use your own stem and mouthpiece to prevent hepatitis C.
Hepatitis C can be passed through
Smoking crack can lead to skin
MOUTHPIECE
LIGHTER
propel
ZERO SUGAR ELECTROLYTES
ELECTROLYTE WATER BEVERAGE MIX
RASPBERRY LEMONADE
FROM THE MAKERS OF

Contingency Management

Stimulant-Free Urine

Completing a urine toxicology screen (UTS) with negative results for pscyhostimulant substances.

Engagement.

Meeting with START providers and/or attending groups.

Exercise

Engaging in physical activity group Saturday @ 2pm at the Phoenix Gym. Or exercising outside of group!

Phase 1

Patients have opportunity to receive up to $75

Week	Reward
1	Up to 15
2	Up to 15
3	Up to 15
4	Up to 15

Phase 2

Bonus increases 5 points each week the bonus is met.

Week	Bonus
1	5
2	10
3	15
4…	20…

Exercise-Supported Recovery

The following activities are worth 5 points each and are awarded on a weekly basis.

Engagement.
Meeting with START providers and/or attending groups.

Exercise
Engaging in physical activity groups at the Phoenix Gym or exercising outside of the gym! Modified exercise plans can be created.

Stimulant-Free
Completing a urine toxicology screen (UTS) free of stimulant substances. Being stimulant-free is not a requirement at START, but is rewarded!

How will I be rewarded?

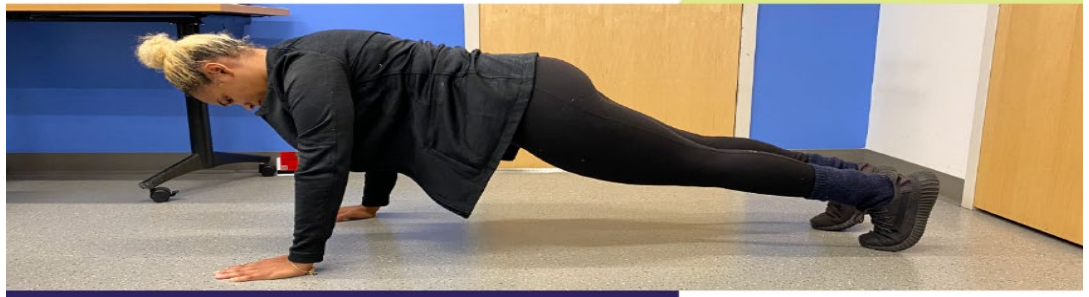
PHASE 1 *(Weeks 1 -4)*
One point = one dollar in your pocket! You will be given a ClinCard, which is a prepaid debit card. Money will be added to the ClinCard within 48 hours.

PHASE 2 *(Weeks 5 -12)*
For every 25 points you earn, you will be automatically entered into a raffle to win patient supplies. Supplies vary on weekly basis.

EXERCISE PLAN

Low-intensity

Weeks 1 - 4



Seated hip abudction step out
Reps: 10 | Sets: 2 | Rest period: 30 s

Seated cross body reaching
Reps: 10 | Sets: 2 | Rest period: 30 s

Sit to Stand
Reps: 10 | Sets: 2 | Rest period: 30 s

Wall push-up
Reps: 10 | Sets: 2 | Rest period: 30 s

Seated hip flexion, alternating
Reps: 10 | Sets: 2 | Rest period: 30 s

Seated plantar flexion
Reps: 15 each side | Sets: 2 | Rest period: 30 s

Seated trunk rotation
Reps: 10 | Sets: 2 | Rest period: 30 s

Boston Medical Center | Stimulant Treatment and Recovery Team

TERMINOLOGY

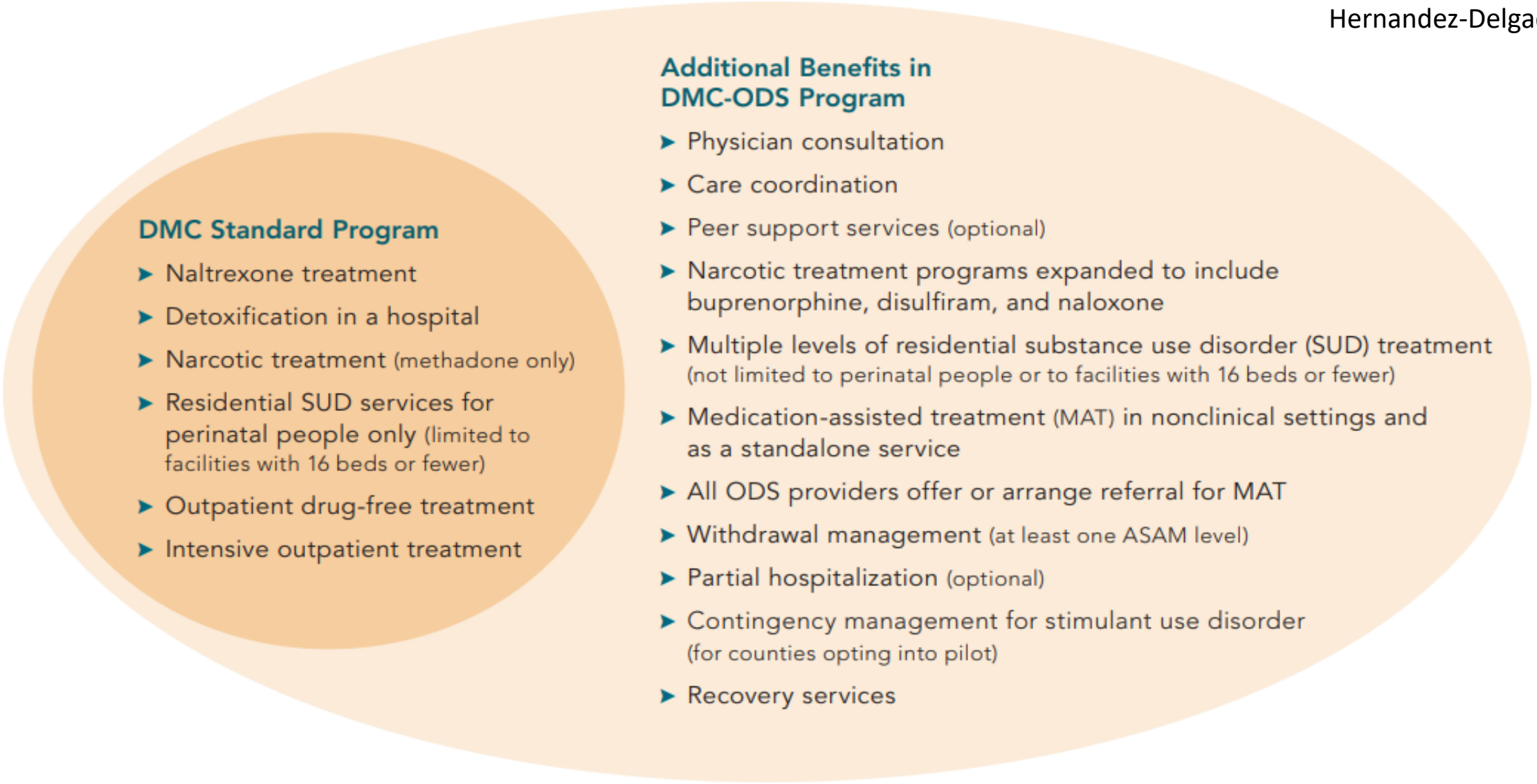
Reps: The amount of times you repeat the exercise move

Sets: The amount of times you complete the number of reps. For example, if there is 10 reps and 2 sets, you will ultimately complete 20 reps.

Rest period: The amount of time you rest between each set. In the previous example, you would rest once you completed one set (10 reps) and then complete the last set (10 reps).

CalAIM Implementation

Hernandez-Delgado, 2022



FDA-Approved CM Devices

- FDA-approved contingency management-based prescription digital-based therapeutic (DTx) product. Went backrupt earlier this year.
- DTx are designed to administer cognitive behavioral therapy in conjunction with CM for treatment of SUD
- DTx are prescriptions to be administered under the supervision of a clinician and have a bidirectional communication between the company, provider, and patient.

(Marsch, et al, 2020)

Digital Therapeutics

- Consider the literacy level and tech level of patients
- Clinical staff who are technology savvy and who can spend time troubleshooting issues with patients may be helpful
- Group sessions for communal progression through CBT modules coupled with UDS collection is one way to maximize CM potential of DTx

(Marsch, et al, 2020)

Resources

Grayken Center for Addiction Training & Technical Assistance

Boston Medical Center

bmcobat.org

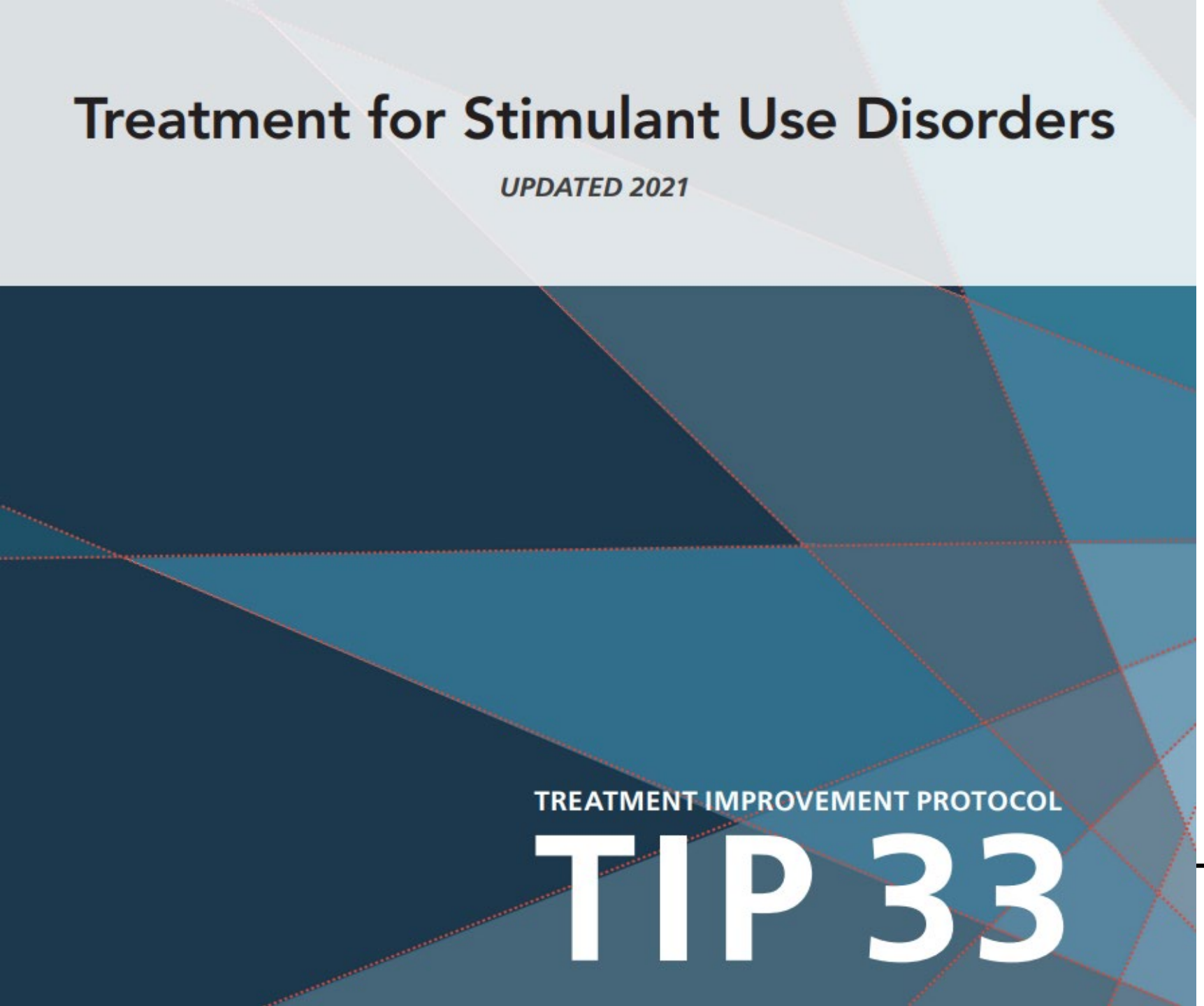
Request training and technical assistance:
bmcobat.org/training/request

Questions? Email info@bmcobat.org

Opioid Response Network

Request formal consultation re: contingency management implementation

https://opioidresponsenetwork.org



TIP 33

TIP 33- SAMHSA

CARE
Clinical Addiction Research and Education

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