Methamphetamine and Cocaine 2025: Health Impacts and Effective Treatments (Part 2)

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Acknowledgement

Much of the material for this presentation comes from Larissa Mooney, Brian Hurley and Kevin Severino's presentations. With permission.

Learning Objectives

I. Apply the key clinical takeaways for the treatment of StUD based upon the ASAM/AAAP Clinical Practice Guideline on the Management of Stimulant Use Disorder
II. Recognize barriers and facilitators in the implementation of contingency management for stimulant use disorder
III. Identify the importance of close monitoring and ongoing assessment of risks and benefits when prescribing off-label medications for stimulant use disorder

- **ASAM/AAAP Stimulant Use Disorder Guidelines**

The ASAM/AAAP

CLINICAL PRACTICE GUIDELINE ON THE

Management of Stimulant Use Disorder

ASAM American Society of Addiction Medicine

AAP American Academy of Addiction Psychiatry

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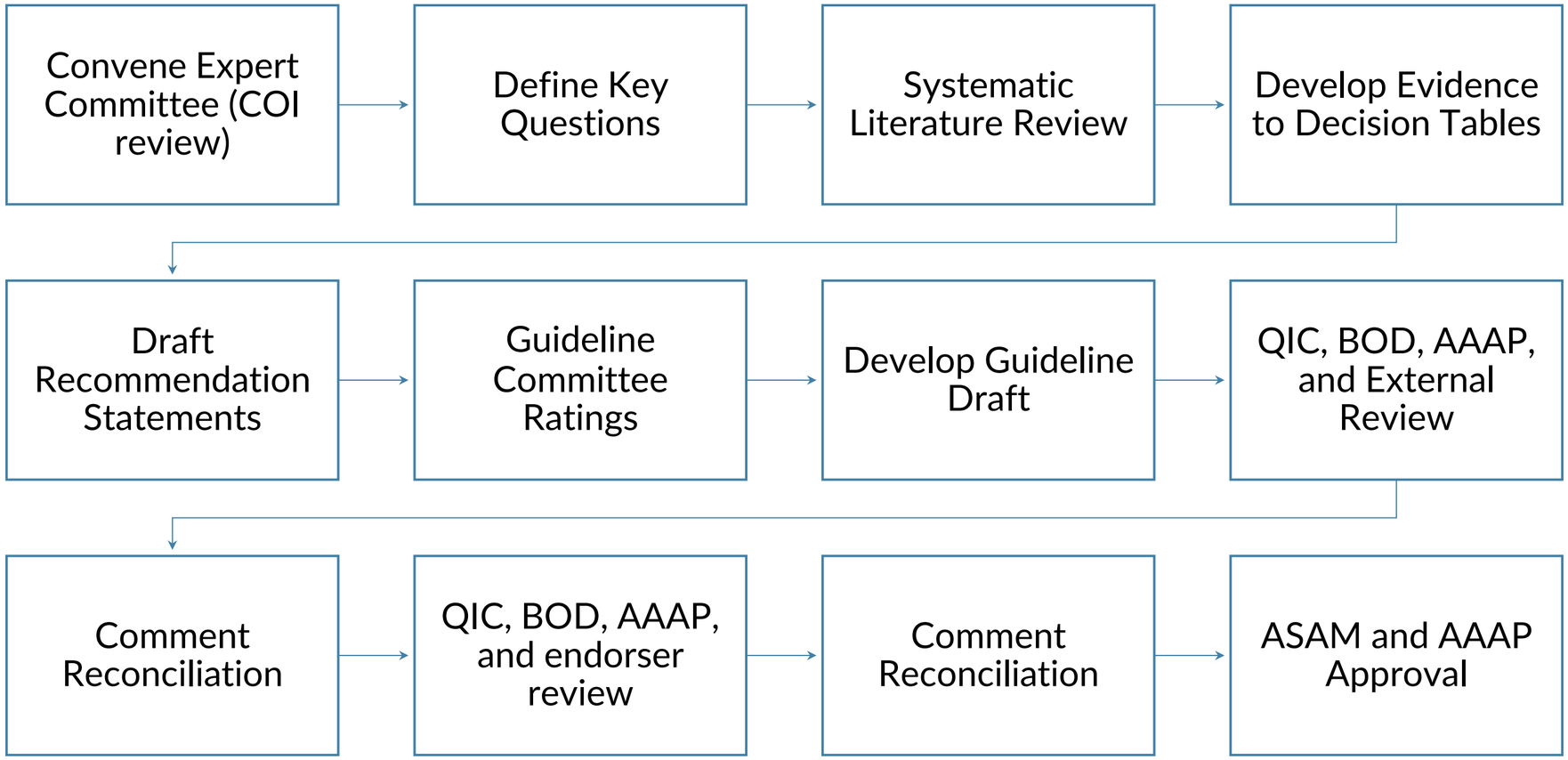
Methodology – CPG Development Process



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GRADE Approach

Considerations

- Balance of benefits and harms of the intervention in question
- Certainty of evidence about the benefits and harms
- Values and preferences of the populations affected by the guideline
- Acceptability and feasibility of implementing the recommendation

Process

- Literature review
- Rating outcomes
- Rating quality of evidence
- Developing evidence to decision tables
- Developing recommendation statements
- Approving the recommendations
- Rating the strength of recommendations
- Developing the guideline document
- Engaging stakeholders

Screening and Assessment

Screening

- Stimulant misuse screening - When general healthcare providers screen adolescents or adults for risky substance use per USPSTF guidelines, [2] they should include screening for stimulant misuse (i.e., nonmedical or nonprescribed use; *Very low certainty, Strong Recommendation*).
- Frequent checks - Clinicians should consider more frequent screening for stimulant misuse in patients who take prescribed psychostimulant medications (*Very low certainty, Strong Recommendation*).
- Review PDMP - Clinicians should check their state's PDMP prior to prescribing psychostimulant medications (*Moderate certainty, Strong Recommendation*).

Screening → Assessment

For patients who screen positive for stimulant misuse, clinicians should:

- Consider asking patients about:
  - the context of their stimulant use (e.g., chemsex, weight loss, academic or work performance, staying awake; *Clinical consensus, Strong Recommendation);*
  - trauma (*Clinical consensus, Strong Recommendation)*, and
  - intimate partner violence (IPV; *Clinical consensus, Strong Recommendation).*

- Evaluate complications using patient history and clinical exam and treat or refer as needed (*Very low certainty, Strong Recommendation);*

- Conduct baseline laboratory testing based on clinical assessment of risk factors (see Assessment; *Clinical consensus, Strong Recommendation*).

Assessment – Initial Prioritization

When assessing patients for StUD, the first clinical priority should be to identify any urgent or emergent biomedical or psychiatric signs or symptoms, including acute intoxication or overdose, and provide appropriate treatment or referrals (*Clinical consensus, Strong Recommendation*).

Assessment: Comprehensive Assessment-1

- After first addressing any urgent biomedical or psychiatric signs or symptoms, patients should undergo a comprehensive assessment that includes:
- A StUD-focused history and physical examination (*Clinical consensus, Strong Recommendation*
- A mental status exam to identify co-occurring psychiatric conditions, such as signs and symptoms of psychoses, ADHD, mood disorders, cognitive impairment, and risk of harm to self or others (*Clinical consensus, Strong Recommendation*);

Assessment: Comprehensive Assessment-2

- A StUD-focused history and physical examination (*Clinical consensus, Strong Recommendation*
- Clinicians treating StUD should conduct routine baseline laboratory testing (*Clinical consensus, Strong Recommendation*);
- Clinicians should conduct other clinical tests as necessary based on each patient's clinical assessment findings (*Clinical consensus, Conditional Recommendation*).

Assessment – Comprehensive Assessment

When evaluating patients with long-term or heavy stimulant use, clinicians should exercise:

- An elevated degree of suspicion for cardiac disorders (*Clinical consensus, Conditional Recommendation);*
- A lower threshold for considering ECG testing based on findings of the history and physical exam (*Clinical consensus, Conditional Recommendation*);
- A lower threshold for considering creatine kinase (CK) testing for rhabdomyolysis based on findings of the history and physical exam (*Clinical consensus, Strong Recommendation*);
- An elevated degree of suspicion for renal disorders (*Clinical consensus, Conditional Recommendation).*

Setting Determination

- No studies were identified that addressed level of care determination when managing the risks associated with stimulant intoxication and withdrawal specific to Stimulant Use Disorder.

- Nonetheless, the Clinical Guideline Committee recommended the use of a multidimensional assessment—such as that described in The ASAM Criteria—to determine the appropriate clinical setting for the patient's treatment.

Treatment Recommendations

Behavioral Treatments

- Contingency Management (CM) should be a primary component of the treatment plan in conjunction with other psychosocial treatments for StUD (*High certainty, Strong Recommendation*).
- Three additional behavioral interventions have the most supportive evidence & are preferred *alongside* CM:
  - Community Reinforcement Approach (CRA) (*Low certainty, Conditional Recommendation);*
  - Cognitive Behavioral Therapy (CBT) (*Moderate certainty, Strong Recommendation*), and;
  - Matrix Model (*Moderate certainty, Conditional Recommendation).*

Behavioral Treatments

- Clinicians can consider offering evidence-based behavioral interventions delivered via digital therapeutics or web-based platforms as add-on components to treatment for StUD, but they should not be used as standalone treatment (*Low certainty, Strong Recommendation*).
- Clinicians should consider using telemedicine to deliver behavioral treatment for StUD to patients who may face challenges accessing in-person care (*Moderate certainty, Strong Recommendation*).

Contingency Management for Individuals with Stimulant Use Disorder

Contingency Management employs the systematic delivery of positive reinforcement for desired behaviors incompatible with drug use. In the treatment of stimulant use disorder, giftcards (plastic or e-giftcards) or deposits on electronic debit cards can be “earned” for submission of cocaine/methamphetamine-free urine samples or for completion of other target behaviors.

Summary of Evidence for Contingency Management for Stimulant Use Disorder

Contingency management (CM) has demonstrated the best effectiveness in the treatment of stimulant use disorders (StUDs) compared to any other intervention studied and represents the current standard of care.

Essential Elements of CM

- Clearly define a single, measurable goal behavior
- Frequently measure the target behavior (2-3 times per week)
- Provide tangible, desired reinforcers immediately after target behavior is observed
- Ensure the reinforcer amount is adequate and supported by published research
- Withhold incentive when behavior is not observed while maintaining a supportive attitude
- Comply with fraud prevention guardrails per SAMHSA guidelines

CM Uses Positive Reinforcement

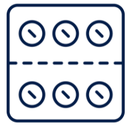
- CM offers a **non-drug reinforcer** in exchange for evidence of **drug abstinence**
- **Small rewards** can be **effective,** but over time the reward must be large enough to **offset the rewarding effect of the substance**
- CM should be delivered within a larger **context of positive reinforcement** and support. Use of **motivational interviewing** style and skills is recommended.

Contingency Management (CM)

Options for Behavioral Contingencies


Counseling attendance


Toxicology Verified Substance Use


Medication Adherence


Behavioral Plan Participation

Key: must be **objectively** measured

Reinforcers


Money / Gift Cards / Vouchers

- Can be an individualized menu of choices


Setting / Milieu Privileges


Take-home doses

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Challenges to the Use of CM

Despite its effectiveness, CM is not widely implemented; less than 10% of addiction treatment programs utilize CM.

Barriers to implementing CM include:

- Regulatory obstacles,
- **Financing**
- Stakeholder buy-in
- Failure to use CM protocols supported by research
- Absence of Evidence-based Training and Implementation Strategies

Financing CM

Currently CM is not a service that can be routinely billed to Medicaid or the the Federal Block Grant. However CM can be financed via the SAMHSA SOR and TOR Grants (maximum per patient, per year incentive total is $750.

In many of the published research studies with individuals being treatment for StimUD, protocols were 12-16 weeks in duration with max possible earnings of $500-$1200.

In the current California project pilot funded via an 1115 waiver, the incentive program is $599 max per patient per 6-month protocol. $599 is used as the max to avoid issuing 1099 tax forms since as present the IRS position on whether CM “earnings” are taxable income is not clear..

Financing CM

Strategies for Financing CM

- Use of SOR and TOR funds ($750 per patient limit)
- **Use of Opioid Settlement Funds**
- Use of State Funds
- 1115 waiver to CMS to allow use of Medicaid funds.
- Foundation Funds

Use of a CM Protocol Based on Sound Empirical Principles

- A protocol should include:
  - An adequate level of reinforcement
  - An adequate duration
  - Fraud prevention “guardrails”
  - An evidence-based training and implementation plan
  - Adaptations for specific populations and settings
  - Fidelity monitoring and feedback

Some CM Protocol Questions

- Type of CM model used (Voucher or Prize CM)
- Duration of the CM treatment
- Target behavior (e.g., negative urinalysis, attendance)
- Urinalysis target (stimulants only, polysubstance)
- Frequency of visits
- Incentive magnitude
- Use of escalation, reset, and recovery to promote extended periods of abstinence
- Use of CM in combination with other behavioral treatments

Implementation CM with the Science to Service Lab

- Didactic workshop
- Performance feedback
- External facilitation
- Augmentations
  - A Readiness Assessment component
  - A Fidelity Monitoring and Feedback

Becker et at, 2019, 2023

Contingency Management (CM) for Stimulant Use Disorder

- Contingency management reduces stimulant use.
- Longer inter-test intervals can allow use to go undetected → compromising the contingent reinforcement of abstinence.
- Longer interventions (studies up to 4 months) produced better outcomes; study protocols over four weeks are effective.

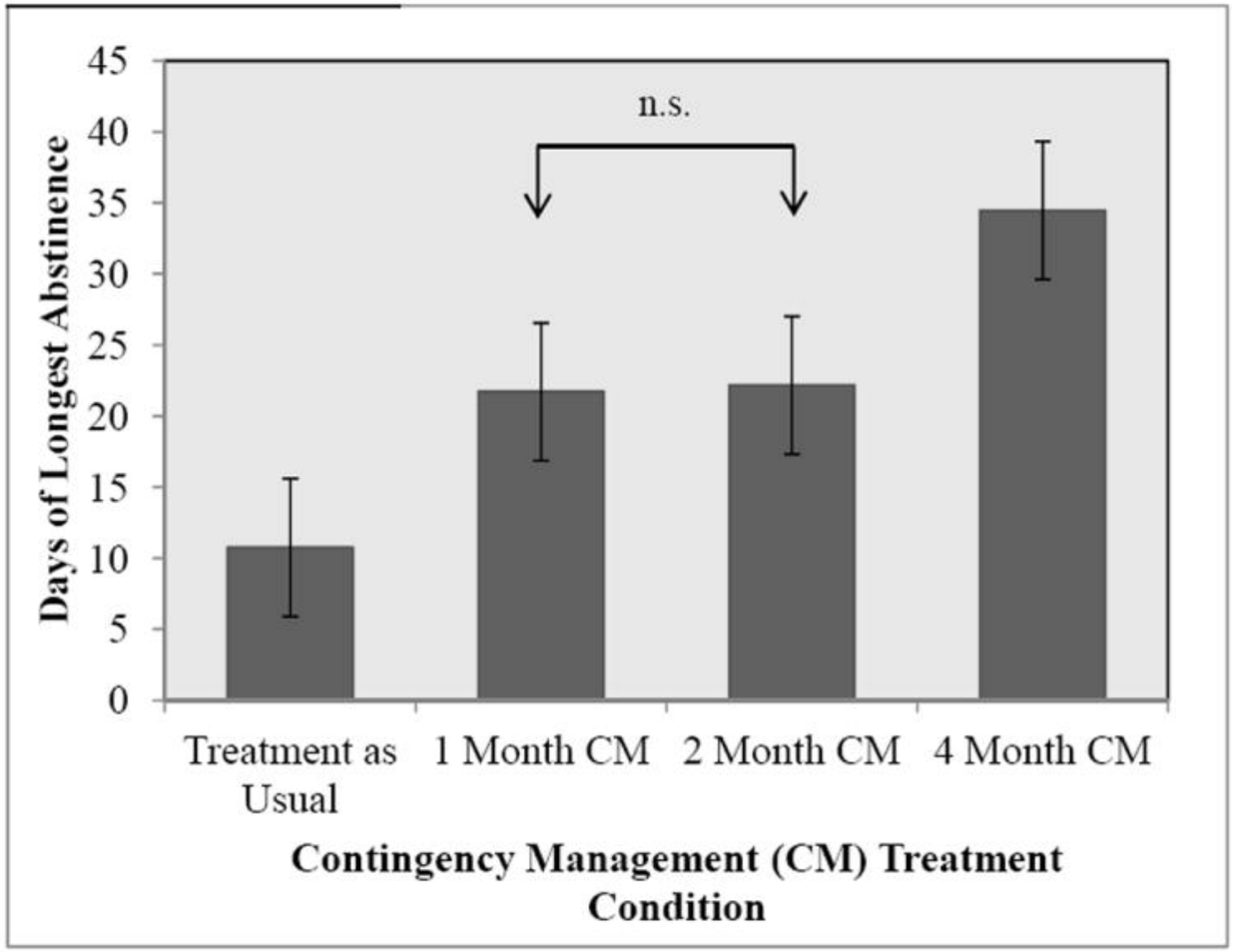
Brown HD, DeFulio A. Contingency management for the treatment of methamphetamine use disorder: A systematic review. Drug Alcohol Depend. 2020 Nov 1;216:108307. doi: 10.1016/j.drugalcdep.2020.108307. Epub 2020 Sep 21. PMID: 33007699. http://pubmed.ncbi.nlm.nih.gov/33007699

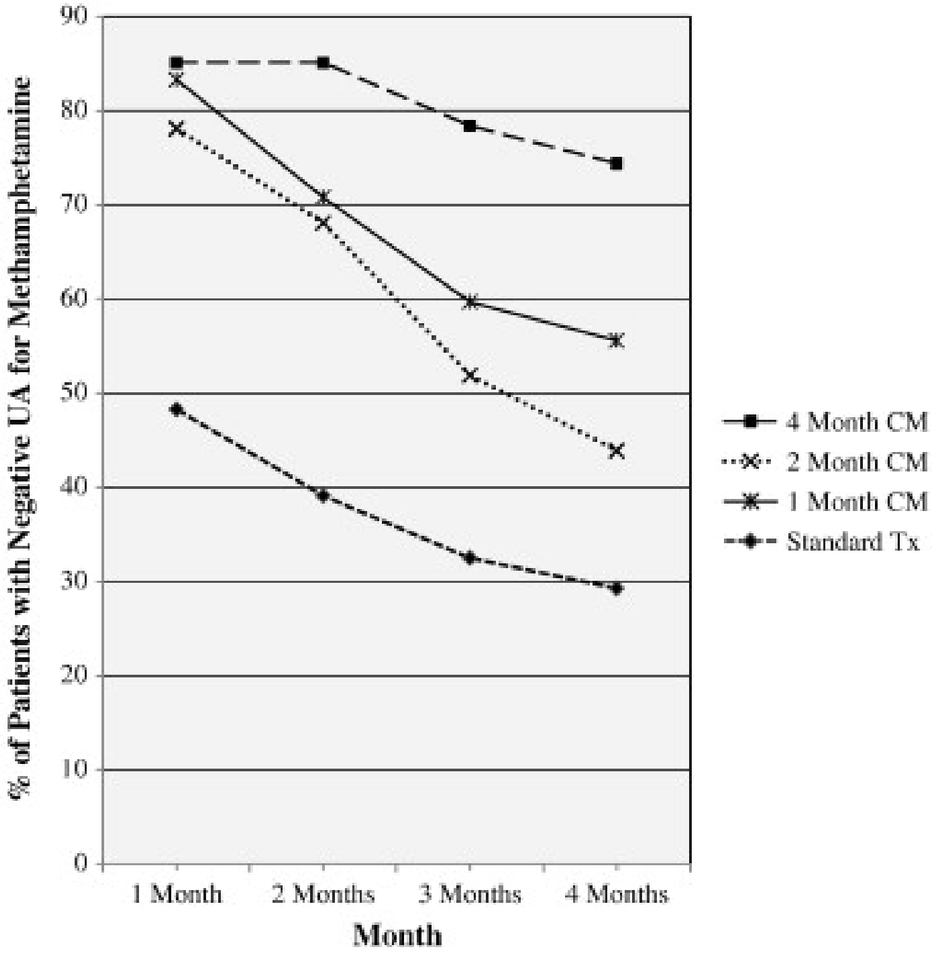
Contingency Management for Stimulant Use Disorder

- 22% greater likelihood of abstinence (studied over 24 weeks on average) after reinforcement ended vs comparison treatments
- Longer reinforcement duration → Longer duration of abstinence after reinforcement ends
- CM equally efficacious in the long-term regardless of participant age, race, or gender

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 Jan;89(1):58-71. doi: 10.1037/ccp0000552. PMID: 33507776; PMCID: PMC8034391. http://www.ncbi.nlm.nih.gov/pmc/articles/pmid/33507776

Duration of Contingency Management (CM) for Stimulant Use Disorder





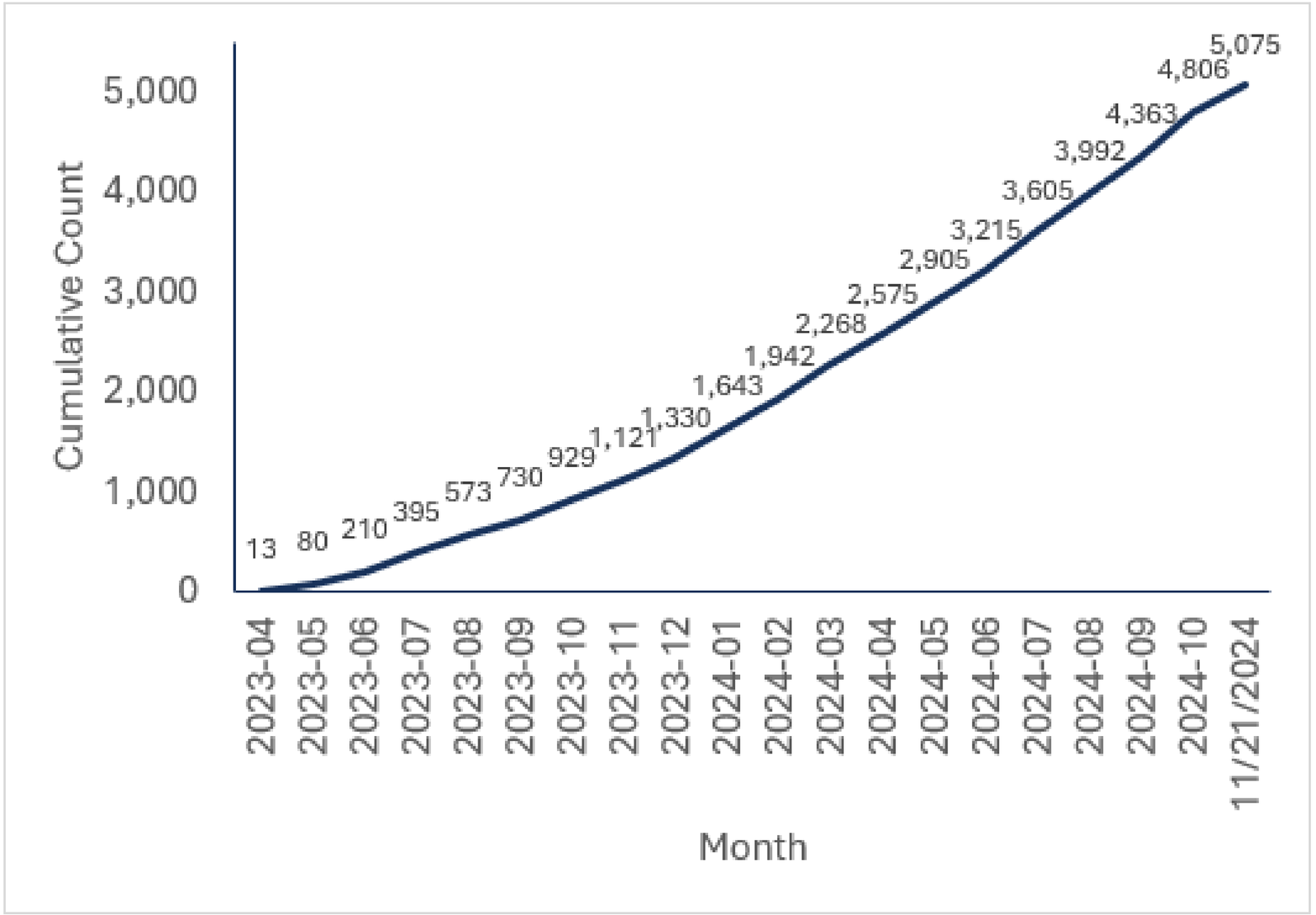
Roll JM, Chudzynski J, Cameron JM, Howell DN, McPherson S. Duration effects in contingency management treatment of methamphetamine disorders. Addict Behav. 2013 Sep;38(9):2455-62. doi: 10.1016/j.addbeh.2013.03.018. Epub 2013 Apr 3. PMID: 23708468; PMCID: PMC3696502.
http://www.ncbi.nlm.nih.gov/pmc/articles/pmid/23708468

Initial Findings from the Evaluation of the Recovery Incentives Program: California's Contingency Management Medicaid Benefit

Darren Urada, Ph.D., Howard Padwa, Ph.D., Valerie Antonini, M.P.H., Celine Tsoi, B.A., Dhruv Khurana, Ph.D., Liliana Gregorio, M.A., Madelyn Cooper, B.A., Avery Nork, M.S., Richard Rawson, Ph.D., Edward Zakher, M.S., Brittany Bass, Ph.D., Anne Lee, M.S.W., L.C.S.W., Carissa Loya, B.A., and Marylou Gilbert, M.A., J.D.

Funding provided by the California Department of Health Care Services
All views expressed are the presenter's who does not represent DHCS or UCLA
No conflicts to disclose

Participant recruitment during first 20 months of California Recovery Incentives Program.



Recovery Incentives: Results to Date

Retention (Data Cut as of Feb 28, 2024)

As of the time of the data cut, **647 people** had the opportunity to complete 24 weeks of the Recovery Incentive Program. Participant Response:

- **EXCELLENT** RESPONSE: COMPLETED 24 WEEKS: 150 / 647 = **23.2%**
- **POSITIVE** RESPONSE: COMPLETED 12; LESS THAN 24 WEEKS: 262/647 = **40.5%**
- **PARTIAL** RESPONSE: 30 DAYS BUT LESS THAN 12 WEEKS: 181/647 = **28.0%**
- **NONRESPONDERS**: ONE SESSION BUT LESS THAN 30 DAYS: 54/647 = **8.3%**

Community Reinforcement Approach (CRA) A Definition

- Community reinforcement approach (CRA) is a comprehensive behavioral therapy based on operant conditioning theory. Clinicians work closely with patients to adjust aspects of their lives that interfere with a healthy lifestyle, seeking to build a new way of living without substances that is more rewarding than their life with substance use.

Research support for CRA

Moderate evidence exists that suggests CRA is effective for achieving and sustaining abstinence in patients with cocaine use disorders. Compared to other behavioral treatments, CRA achieves somewhat better outcomes of abstinence duration, abstinence rates, and treatment retention among patients with cocaine use disorder, particularly with longer duration of treatment.

CRA Implementation

- CRA has not been widely implemented outside of research settings. Substantial barriers have limited implementation of CRA;
  - it requires a great deal of resources and patient commitment relative to other behavioral interventions.
  - Few settings have workforces that are appropriately trained to deliver CRA, and few experts are available to train clinicians in its delivery.
  - CRA is costly and labor intensive; funding and staff levels would have to be increased for adequate implementation.

Cogntive Behavioral Therapy (CBT): A Definition

CBT is a type of psychotherapy—delivered by clinicians trained in its use—in which negative patterns of thought about the self and the world are challenged and skills to cope with high-risk situations are developed to alter unwanted behavior patterns and treat SUDs and psychiatric disorders.

What does CBT try to accomplish?

- CBT is a form of “talk therapy” that is used to teach, encourage, and support individuals about how to reduce / stop their harmful drug use.
- CBT provides skills that are valuable in assisting people in gaining initial abstinence from drugs (or in reducing their drug use).
- CBT also provides skills to help people sustain abstinence (relapse prevention)

Research Support for CBT

- Some evidence supports CBT as superior to usual treatment options, such as individual and group counseling, on stimulant use and abstinence outcomes during treatment and at follow-up, as well as for treatment retention.
- CBT has not been found to be superior to usual treatment options for longest duration of continuous stimulant abstinence or stimulant use at study endpoint.

CBT Implementation

- CBT is a widely utilized and accepted treatment modality. CBT does require resources—namely, the availability of highly trained clinicians for proper delivery. On the other hand, CBT can be delivered in group sessions, which makes it more feasible for many programs compared to other behavioral interventions

The Matrix Model: A Definition

- The Matrix Model of addiction treatment is a structured, multicomponent behavioral therapy that delivers individual counseling; CBT, family education, and social support groups; and encouragement for mutual support group participation over 16 weeks.

Research Support for Matrix Model

- Moderate evidence supports use of the Matrix Model for treatment of StUD. Studies have demonstrated that the Matrix Model produced greater reductions in methamphetamine use compared to standard treatment or a wait-list control group. The Matrix Model also reduced craving and risky behavior compared to a wait-list control.

Matrix Model Implementation

The Matrix Model has been translated into 6 (possibly more) languages and is used extensively in the US and other parts of the world.

The Matrix Model is compatible with the structure and staffing at many SUD treatment programs.

As with any new intervention, staff training is an important consideration

Technology-Based Interventions: CBT

A number of CBT-focused web applications have been developed to deliver SUD treatment, such as Computer Based Training for CBT (CBT4CBT) for SUD and the Therapeutic Education System (TES), an interactive web-based program based on CRA, also contains a CBT component.

CBT4CBT and TES appear to improve stimulant use outcomes when added to other behavioral interventions; however, these effects are not always durable.

Technology Based Interventions: CM

One model to digitally implement CM is through smartphone–smartcard platforms, where a smartphone application allows for remote salivary and breathalyzer drug testing at individualized random schedules. Incentives are delivered via an anonymous credit card that cannot be used to withdraw cash and has additional purchasing protections. Studies show preliminary effectiveness of this model in patients with OUD, including one with patients who have concurrent StUD.

However, the validity and reliability of saliva testing have not been established.

One More Consideration: Physical Exercise

There is extensive data reviewed in recent systematic reviews supporting the usefulness of physical exercise as a component in the treatment of SUD. In the treatment of stimulant use disorder (methamphetamine, Trevidi et al, found no main effect comparing exercise to an education control. However, there was poor adherence to the prescribed exercise regimen. When analyzed to control for adherence, a statistically significant benefit was detected.

Physical Exercise Results Summary

For individuals in the first 100 days of meth recovery, exercise:

- Improves physical conditioning 2
- Improves cardiovascular functioning (increases heart rate variability)3
- Reduces symptoms of anxiety and depression 4
- Reduces craving for methamphetamine 5
- Enhances recovery of dopamine system 6
- Reduces relapse to methamphetamine post discharge (except in very heavy users) 7

Exercise References

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Behavioral Treatment Recommendations

Contingency Management (CM) should be a primary component of the treatment plan in conjunction with other psychosocial treatments for StUD.

The following three interventions have the most supportive evidence and are preferred alongside CM:

- A. Community Reinforcement Approach (CRA)
- B. Cognitive Behavioral Therapy (CBT)
- C. The Matrix Model

All of these interventions should be delivered using Motivational Interviewing style and skills.

Physical Exercise has support when there is adequate adherence to a prescribed exercise regime

Medication Treatments

- Pharmacotherapies, including psychostimulant medications, may be utilized off-label to treat StUD
- When prescribing controlled medications, clinicians should closely monitor patients and perform regular ongoing assessments of risks and benefits for each patient
- Psychostimulant medications should only be prescribed to treat StUD by:
  - *Physician specialists who are board certified in addiction medicine or addiction psychiatry; and*
  - *Physicians with commensurate training, competencies, and capacity for close patient monitoring.*

ASAM/AAAP (2023). Clinical Practice Guideline on the Management of Stimulant Use Disorder. http://www.asam.org/quality-care/clinical-guidelines/stimulant-use-disorders

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Methamphetamine Use Disorder Pharmacotherapy

UCLA Integrated Substance Abuse Programs

Medications for Methamphetamine Use Disorder (MUD)

- **Bupropion (signal for lower frequency MA use)**
  - Additional consideration for tobacco use d/o, depression
- **XR-Naltrexone injection + high dose bupropion XL**
- **Mirtazapine (two small studies)**
  - Additional consideration for depression
- **Topiramate (low-level MA use)**
  - Additional consideration for AUD
- **MethylphenidateER (higher frequency MA use)**
  - Additional consideration for ADHD

XR-Naltrexone Injection Plus Bupropion XL

- Medications: XR-NTX 380mg via intramuscular injection every three weeks in combination with bupropion XL titrated to 450mg daily
- 12-week, 2 stage trial (N= 403 Stage 1, N= 225 Stage 2)
- Response defined as at least three MA-negative urine samples out of four during the final two weeks; urine collected twice weekly
- Weighted avg response 13.6% with XR-NTX–bupropion vs 2.5% with placebo
- Treatment effect: between-group difference in overall weighted response (11.1%)

Trivedi et al., 2021, *Addiction*

Sustained-Release Methylphenidate for MUD

- Sustained-release methylphenidate (MPH) titrated to 54mg/day (N=110)
- 10 weeks active med (MPH vs. PLB), then 4 weeks single-blind PLB
- CBT platform with motivational incentives (MA-neg UDS)
- MPH was associated with significantly fewer self-reported days of MA use and reduced cravings over the active treatment period than PLB in participants with >10 days of use in the past 30 days at baseline (no difference for 1° outcome)
- MPH group reduced MA use > PLB from baseline to end of active phase (6.5 vs. 3.5 days)
- No difference in the proportion of +UDS across active med period

Cocaine Use Disorder Pharmacotherapy

UCLA Integrated Substance Abuse Programs

Medications for Cocaine Use Disorder (CUD)

- Modafinil (without co-occurring AUD)
- Topiramate (lower frequency cocaine use)
  - Additional consideration for AUD
- Mixed Amphetamine Salts-ER + Topiramate
  - Additional consideration for AUD, ADHD
- Mixed Amphetamine Salts-ER
- Bupropion (best when combined with CM)

Population Specific Applications

- Co-occurring Disorders (Medical and Psychiatric)
- Adolescent/Young Adult
- Pregnant/Post Partum Patients
- Sexual Orientation and Gender Identity
- Patients involved in the Criminal Justice System
- Patients experiencing Homelessness or Unstable Housing

Insufficient Evidence For…

Intervention Type	Intervention
Technology-based interventions	Text messaging interventions for StUD
Technology-based interventions	Noninvasive brain stimulation for StUD
Alternative interventions	Exercise as standalone or add-on treatment for StUD
Alternative interventions	Auricular acupuncture for ATS use disorder
Pharmacotherapy	Topiramate and mixed amphetamine salts for ATS use disorder
Pharmacotherapy	Bupropion and naltrexone for cocaine use disorder
Pharmacotherapy	Modafinil for ATS use disorder
Pharmacotherapy	Mirtazapine for cocaine use disorder
Pharmacotherapy	Disulfiram
Pharmacotherapy	Naltrexone
Pharmacotherapy	Naltrexone and N-acetylcysteine

ATS, amphetamine-type stimulants; StUD, stimulant use disorder

ASAM/AAAP (2023). Clinical Practice Guideline on the Management of Stimulant Use Disorder.
http://www.asam.org/quality-care/clinical-guidelines/stimulant-use-disorders

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Questions?