



UW PACC

Psychiatry and Addictions Case Conference

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PSYCHOTHERAPEUTIC OPTIONS FOR METHAMPHETAMINE USE

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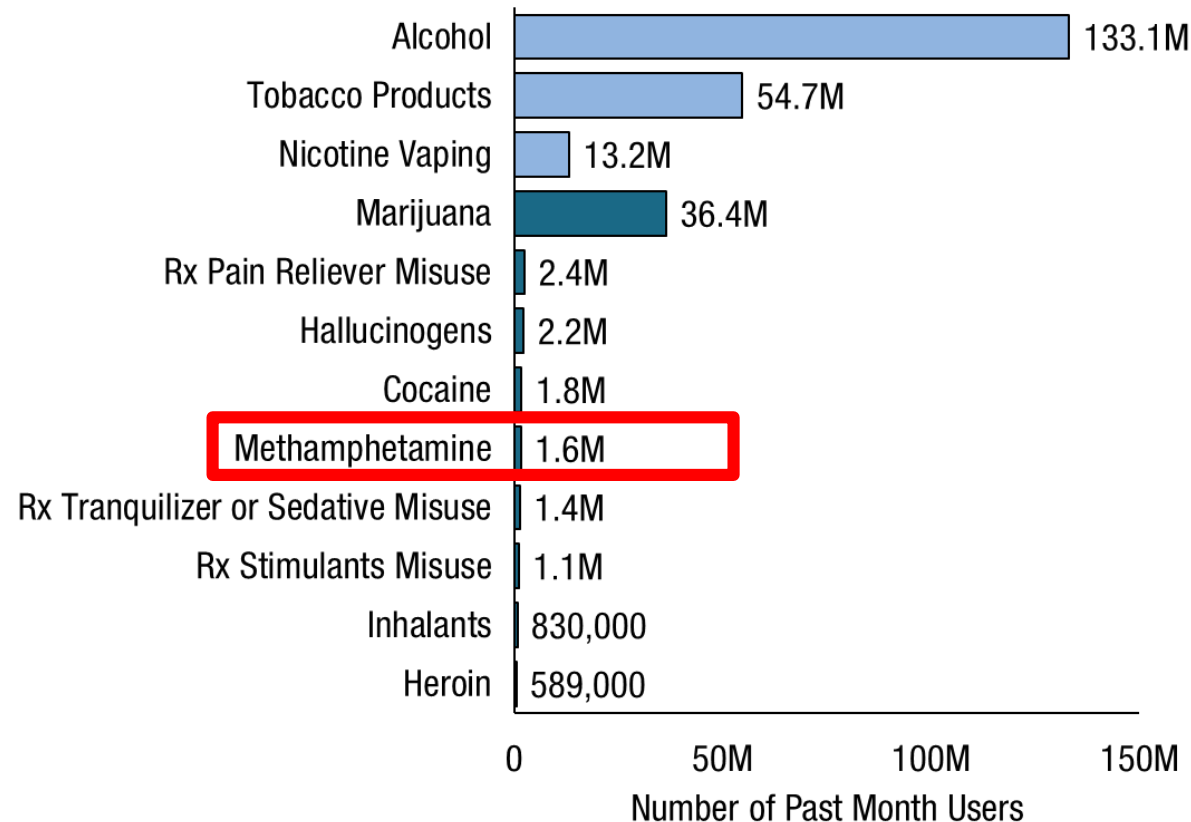
DISCLOSURE

- I have no conflict of interests

OBJECTIVES

- Overview of most recent(2021) National survey of Drug Use and Health(NSDUH) survey on Substance use disorder(SUD) and Stimulant use disorder including Methamphetamine use disorder(MUD)
- Develop understanding of social burden stimulant use disorder
- Identify Non-pharmacological treatment options for patient with stimulant use disorder

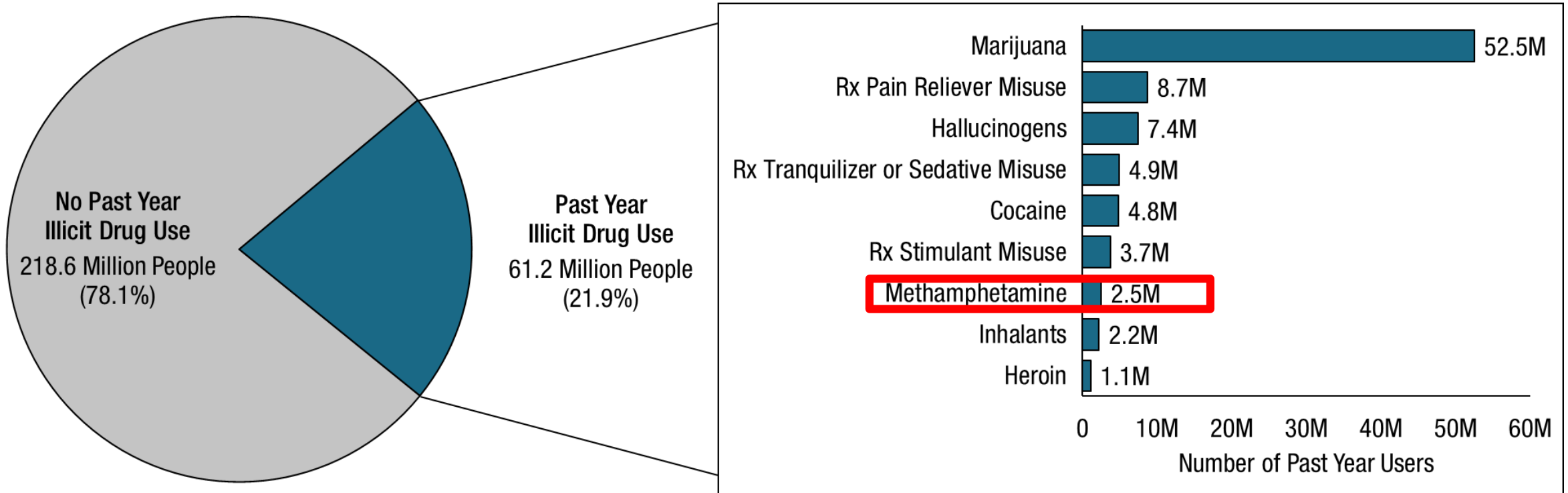
PAST MONTH SUBSTANCE USE: AMONG PEOPLE AGED 12 OR OLDER; 2021



Rx = prescription.

Note: The estimated numbers of current users of different substances are not mutually exclusive because people could have used more than one type of substance in the past month.

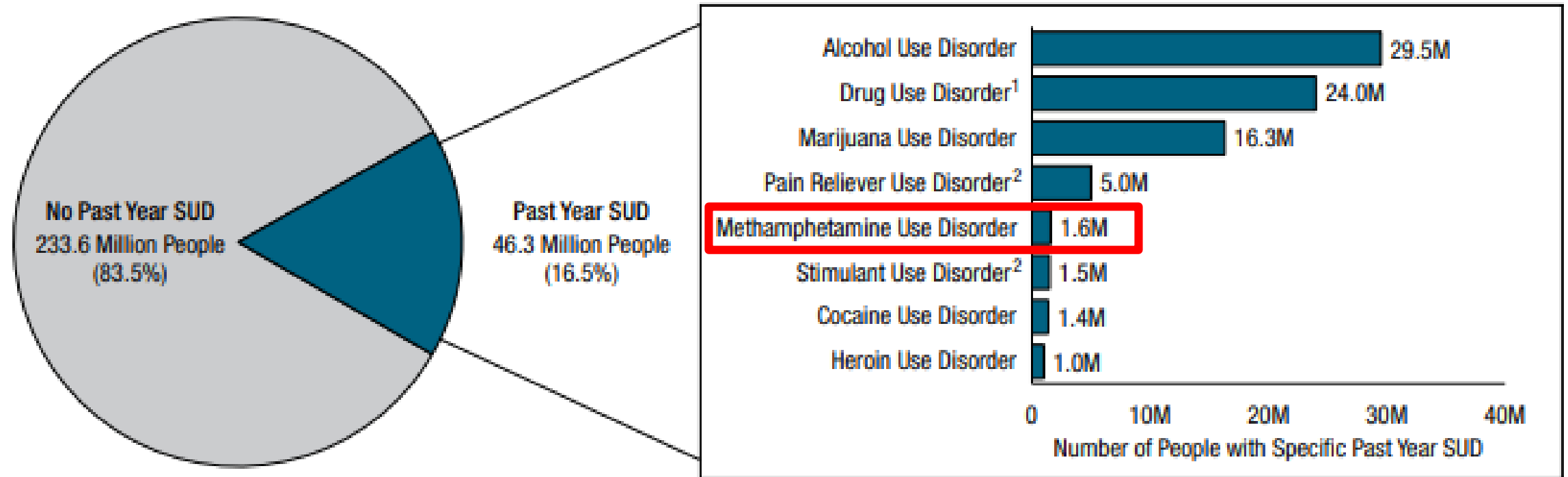
PAST YEAR ILLICIT DRUG USE: AMONG PEOPLE AGED 12 OR OLDER; 2021



Rx = prescription.

Note: The estimated numbers of past year users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past year.

Figure 31. Past Year Substance Use Disorder (SUD): Among People Aged 12 or Older; 2021



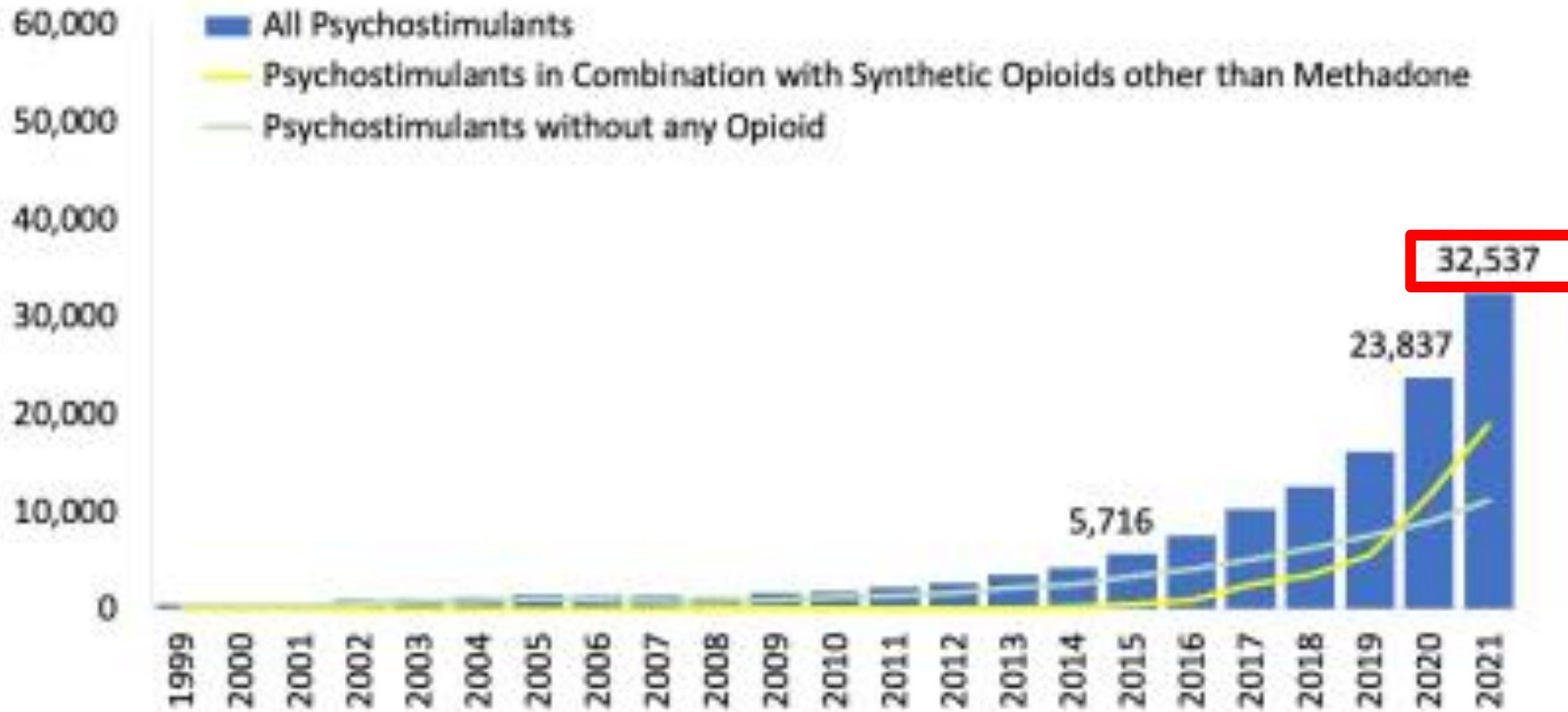
Note: The estimated numbers of people with substance use disorders are not mutually exclusive because people could have use disorders for more than one substance.

¹ Includes data from all past year users of marijuana, cocaine, heroin, hallucinogens, inhalants, methamphetamine, and prescription psychotherapeutic drugs (i.e., pain relievers, tranquilizers, stimulants, or sedatives).

² Includes data from all past year users of the specific prescription drug.

- Overdose deaths from stimulants other than cocaine almost **tripled** from 2015 to 2019 (from 5526 to 15489; *P* for trend <.001)
- Number of people using methamphetamine and cocaine together **increased by 60%**(from 402,000 to 645,000; *P* for trend = .001)
- Number with **MUD increased by 62%**

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

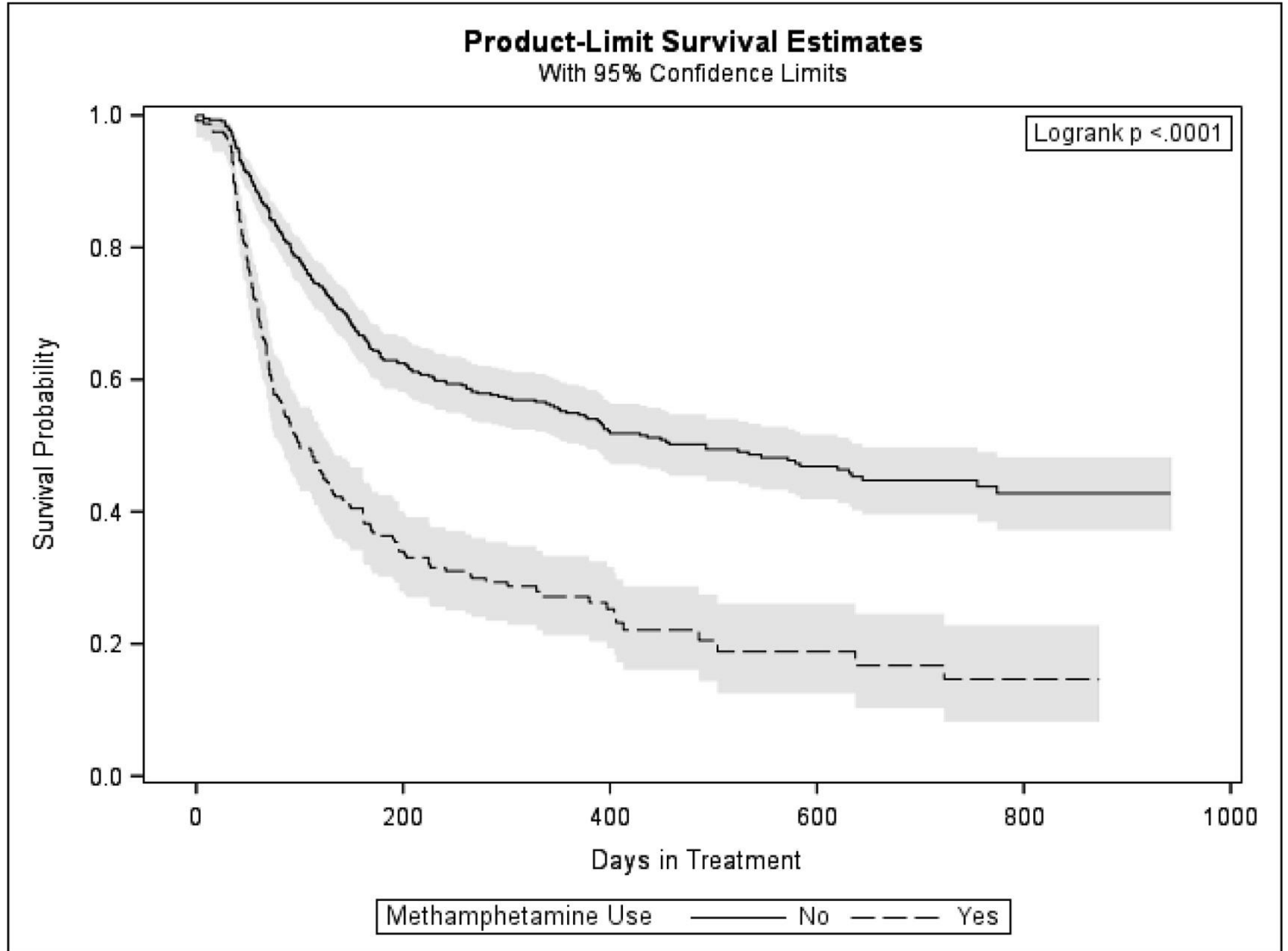


*Among deaths with drug overdose as the underlying cause, the psychostimulants with abuse potential (primarily methamphetamine) category was determined by the T43.6 ICD-10 multiple cause-of-death code. Abbreviated to psychostimulants in the bar chart above. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death, 1999-2021 on CDC WONDER Online Database, released 1/2023.

- People who use methamphetamine have become more **diverse**
 - Historically, prevalent among middle-aged white people
 - **Ten-fold increase** without injection **among Black people**
 - **Quadrupled** among people **aged 18-23 years**, much larger than the growth among older age groups.

CONSEQUENCES OF MA USE IN PATIENTS WITH OUD TREATED WITH BUPRENORPHINE

- More than twice risk of being discharged from treatment
 - Less likely to be retained in treatment compared to non-users
- lost for f/u, higher level of care, known-incarceration, death and other



Tsui et al, 2020

WHY PEOPLE WITH OUD USE METH?

- Qualitative data in patients seeking treatment for OUD
 - Main reasons to use together
 - Looking for higher effects
 - To diminish side effects of the other drugs
 - Function better socially
 - Meth with heroin : Enhance the effect
 - Meth with Methadone : Decrease sedation

Ellis et al, 2018

Rhed et al, 2022

- There are no FDA-approved pharmacological interventions
- Gold standard treatment is Behavioral Therapy
 - **Contingency Management(CM)**
 - Cognitive Behavioral Therapy/Relapse Prevention
 - Motivational interviewing
 - Community Reinforcement Approach

CONTINGENCY MANAGEMENT

- Contingency management best evidence-based treatment supported by systematic reviews and meta-analyses.

Lussier et al., 2006 & Higgins, 2008

DOES CM WORK FOR METH? **YES**

- Systemic review(2020)
 - Systematic review by Brown and Defulio
 - Systemic review of 27 studies of CM
 - Outcomes
 - ↑ Abstinence
 - ↑ Utilization of medical services
 - ↓Risky sexual behavior

- Meta Analysis

- Comparison of Treatments for Cocaine Use Disorder Among Adults(2021) by Bentzley et al

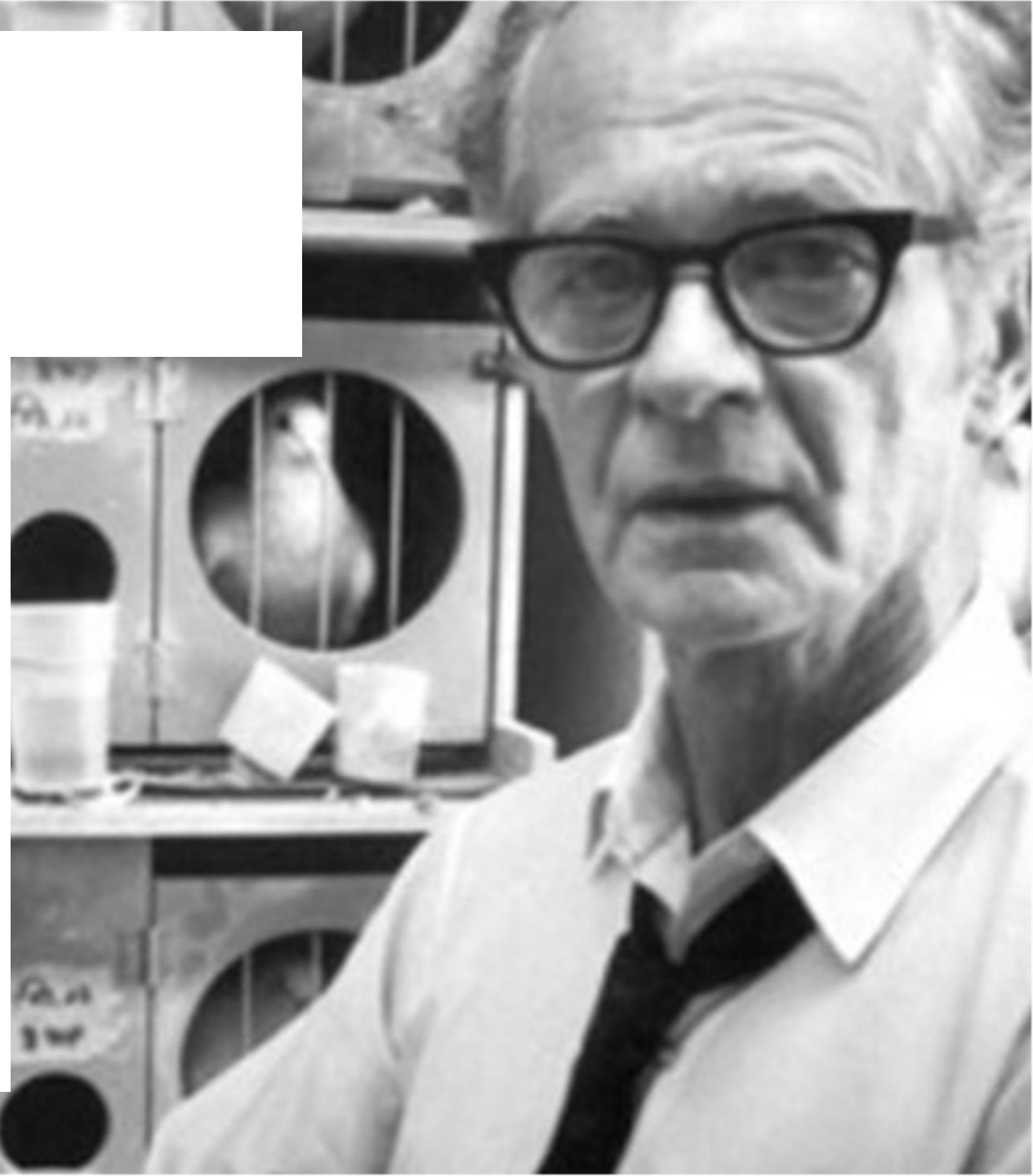
- Total of 157 studies, comprising 402 treatment groups and 15,842 participants
- ↑ **likelihood of having a negative test results**

- Contingency management for treatment of substance use disorders(2006) by Prendergast et al

- 47 Studies between 1970-2002
- Mean effect size 0.42, cocaine 0.66(22% improvement in success rate)

CONTINGENCY MANAGEMENT(CM)

- Based upon theory of **Operant Conditioning**
 - Organisms work to gain rewards and avoid punishments
 - Rewards work better than punishments
- CM approach sees alcohol or drug misuse as a form of learned, operant behavior



OVERVIEW OF CONTINGENCY MANAGEMENT

Identifying Target Behavior	Drug Abstinence Session Attendance Medication compliance
Assessing Target Behavior	Self-Report Visual Confirmation Immunoassay Test strips
Choosing an appropriate Reinforcer	Money Vouchers Access to privileges
Delivering Reinforcers	Escalating schedule Resets Prize Bowl

IDENTIFYING THE TARGET BEHAVIOR

- The most common Target Behavior
 - Abstinence
 - Session attendance
 - Medication compliance
- Specificity
 - Should provide reinforcement to primary goal
 - Target abstinence from a single substance, not several

VERIFYING THE TARGET BEHAVIOR

- Session attendance
- Abstinence
 - Self report
 - On site testing(costly) vs Outside testing(delayed result)
 - Immunoassay test
 - Biochemical test measuring the presence or concentration of drug metabolite in urine, saliva or blood
 - Qualitative(abstinent or not abstinent), quantitative, or semi-quantitative info
 - Relatively fast result : within a few minutes
 - Portable
 - How often?

CHOOSING REINFORCERS

- Reinforcers : Driving force behind CM's efficacy
 - Money
 - Readily procure wide variety of goods and services
 - Potentially lead to purchasing of drugs and relapse
 - Vouchers
 - Access to certain privileges
 - Opportunity to win the prize

STRUCTURES

- The Fish Bowl method
 - : incentive draw for chance to win a prize of various value
- Voucher-Based Reinforcement
 - : level of vouchers increasing according to an escalating schedule of reinforcement



CONTINGENCY MANAGEMENT VISIT

- [Contingency Management Visit - YouTube](#)

- Lowering Barriers to Care

- Can be delivered by any member of the treatment team
- Combined with any treatment
- Brief and Fun intervention
- Broad eligibility
- Typically no observed testing

- Remaining Barriers

- Point of care testing approval and training
- Staff time
- In-person attendance
 - Distance
 - Transportation
 - Limited options for online purchasing

CONTINGENCY MANAGEMENT(CM)

- In 2011, The US Veteran Administration hospital system also adapted the action within its system of care.
 - Patient attended more than half of their scheduled session
 - Negative urine test was 91.1%

OBSTACLES

- Moral objection to the idea of rewarding someone for staying off drugs
 - Publicly funded programs like Medicaid, which provides health coverage for the poor, do not cover the treatment
- Patients could sell or trade for drugs
- Less success staying abstinent after the treatment ends

COMMUNITY REINFORCEMENT APPROACH(CRA)



- Originally developed for alcohol use
- Often used in conjunction with CM
- Goal of CRA
 - Identify behaviors reinforcing stimulant use
 - Make a substance-free lifestyle more rewarding
- 24 –week treatment program, 1-2times/week counseling

OUTCOMES ASSOCIATED WITH THE COMMUNITY REINFORCEMENT APPROACH

Studies included in this evidence review demonstrated that use of CRA for people with stimulant use disorders was associated with reductions in:

- Cocaine abstinence
- Addiction severity
- Drug use (e.g., number of weeks of usage, frequency per week, amount spent per week)

All outcomes were measured using either urine toxicology, participant self-report, or the Addiction Severity Index Scale. The time between treatment and follow-up varied from zero months (immediately post-treatment) to nine months.

COMMUNITY REINFORCEMENT APPROACH

- A-CRA(Adolescent Community Reinforcement Approach)
 - National study, 600 participants
 - Equally effective as MET, CBT
 - But most cost effective
- CRAFT(Community Reinforcement and Family Training)
 - 2–3 times more successful at engaging
 - Engaged approximately 2/3 of the treatment-refusing individuals into treatment

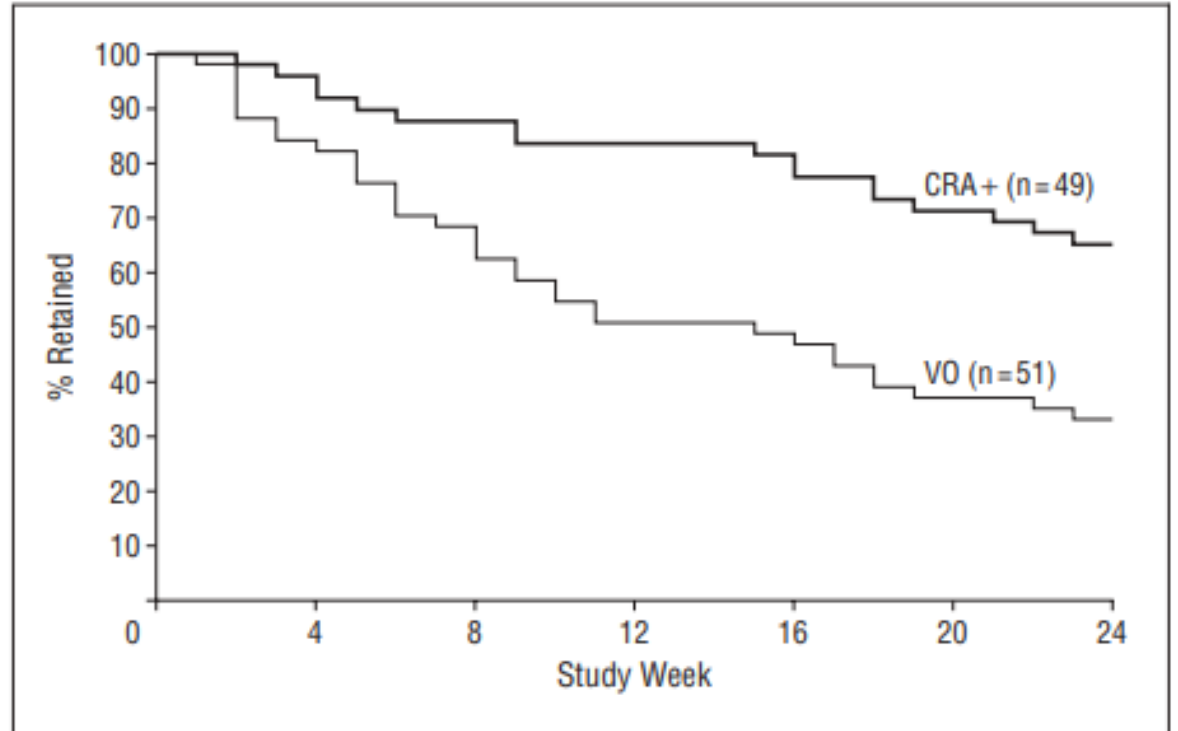


Figure 1. Survival curves representing retention in the community reinforcement approach plus vouchers (CRA+) and vouchers-only (VO) treatment conditions during the recommended 24 weeks of treatment.

COGNITIVE BEHAVIORAL THERAPY(CBT)

- CBT
 - : Short-term, Goal-oriented psychotherapy
 - : Enables individuals to understand current problems, challenges, and experiences in order to change their behaviors and patterns of thinking
- Evaluate faulty patterns of thinking, actions, and negative feelings associated with their drug use
- Tailored to the needs of the individual

- Systemic review
 - NK Lee et al(2008)
 - Outcome
 - CBT associated with Reduction in use
 - Groups that included CM(CM, CBT-CM) showed ↓missing urine screening
 - CBT-CM
 - : Earned more than CM
 - : Attended more than CBT

OUTCOMES ASSOCIATED WITH TRADITIONAL AND COMPUTER-BASED COGNITIVE BEHAVIORAL THERAPY

Studies included in this review demonstrated that CBT or computer-based CBT for people with stimulant use disorders were associated with reductions in:

- Quantity of stimulants consumed per week
- Frequency of stimulant use per week
- Risky sexual behaviors

All outcomes were measured using either urine toxicology, participant self-report, or the Addiction Severity Index Scale. The time between treatment and follow-up varied between zero months (immediately post-treatment) to 12 months.

MOTIVATIONAL INTERVIEWING

- A treatment approach that helps individuals overcome ambivalent feelings and insecurities.
- In the process, individuals become motivated to change their behavior and reduce or stop their stimulant use
- **Pilot study**
 - CP Calloway(2007)
 - Compared IMI with standard MI
 - ↓co-occurring psychiatric problem /alcohol use in IMI
- **RCT**
 - DL Polcine et al(2014)
 - Compared IMI with standard MI
 - Both ↓Meth use during Tx

	Overall Risk	Direction of Evidence	Outcome	Conclusion
Cognitive Behavioural Therapy (CBT)	Shoptaw <i>et al</i> , 2005	+	Longer abstinence (CBT+CM)	CBT either alone or with CM appeared effective. The risk of bias for individual domains scores mainly low to moderate with an overall score of 'High' for majority.
	Peck <i>et al</i> , 2005	+	Reduction in METH use (CBT, CM, GCBT)	
	Jaffe <i>et al</i> , 2007	+	Reduction in METH use in GCBT than in CM, CBT+CM or CBT alone	
	Smout <i>et al</i> , 2010	-	No change in outcomes between ACT and CBT	
	Reback & Shoptaw, 2014	?	Reduction in METH use and prolonged abstinence (GCBT)	
	Ling Murtaugh <i>et al</i> , 2013	-	Reduction in METH use in CM conditions than in CBT	
	Lea <i>et al</i> , 2017	+	Reduction in METH use and severity (CBT+ACT+MI)	
	Abdoli <i>et al</i> , 2019	+	Reduction in relapse and craving (MCBT)	
	Mimiaga <i>et al</i> , 2019	?	Reduction in use (CBT)	
Contingency Management	Roll <i>et al</i> , 2006	+	Prolonged abstinence in all 5 schedules; reset contingency outperformed the rest	CM interventions consistently gave beneficial outcomes with better quality evidence with ROB falling at either 'low' or 'moderate' for majority of the domains with an overall 'moderate' score for majority.
	Roll <i>et al</i> , 2006b	+	Prolonged abstinence reset contingency	
	Reback <i>et al</i> , 2010	?	Reduction in METH use (CM)	
	Landavitz <i>et al</i> , 2012	+	Reduction in METH use at follow up	
	Roll <i>et al</i> , 2013	+	Prolonged abstinence in all CM conditions	
	Chudzynski <i>et al</i> , 2015	+	Prolonged abstinence in all CM than TAU	
	Okafor <i>et al</i> , 2017	+	Prolonged abstinence in CM at follow up.	
Motivational Enhancement Therapy	Gallaway <i>et al</i> , 2007	+	Reduction in METH use	Motivational therapies lack sufficient evidence
	Polcin <i>et al</i> , 2014	+	Reduction in METH use and severity	
	Korcha <i>et al</i> , 2015	-	No reduction in METH use	
Matrix model	Rawson <i>et al</i> , 2004	+	Reduction in METH use in Matrix model and TAU with former being a superior option	Matrix model is promising, however the overall ROB score is 'High' for all included studies
	Rawson <i>et al</i> , 2008	+	Reduction in METH use in Matrix model +TAU at follow up	
	Marinelli- Casey <i>et al</i> , 2008	+	Higher abstinence in drug court supervision + matrix model treatment than matrix model	
	Amiri <i>et al</i> , 2016	+	Reduction in craving	

- Systemic review

- PV Asharandi et al(2022)

- 44 studies(1995-2020)

- Outcome

- CM showed the strongest evidence

NONPHARMACOLOGICAL TREATMENTS

- TMS

- : Noninvasive method of stimulating the brain using magnetic

Makani R et al, 2017

Su et al 2017

Liu et at 2019

- Neurofeedback

- : Also called neurotherapy or neurobiofeedback

- : Uses real-time displays of brain activity to teach how to regulate their own brain function

Rostami R et al, 2015

- Vaccines and antibodies

- : Recruit the body's immune system to keep the drug from entering the brain

- : Monoclonal antibody binds to methamphetamine and neutralizes it before it can exert its effects.

Collins KC, 2016

HARM REDUCTION

- Connect to needle and syringe exchange programs
- Describing safer injection practices
- Distributing and educating on naloxone
- Encouraging the use of fentanyl test strips
- Don't use alone hotline
- Teaching patients HIV risk-reduction techniques

THANK YOU

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