

Treatment of Methamphetamine Dependence: A brief overview

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Medical and Psychiatric Treatment Issues





METH Use Leads to Severe Tooth Decay



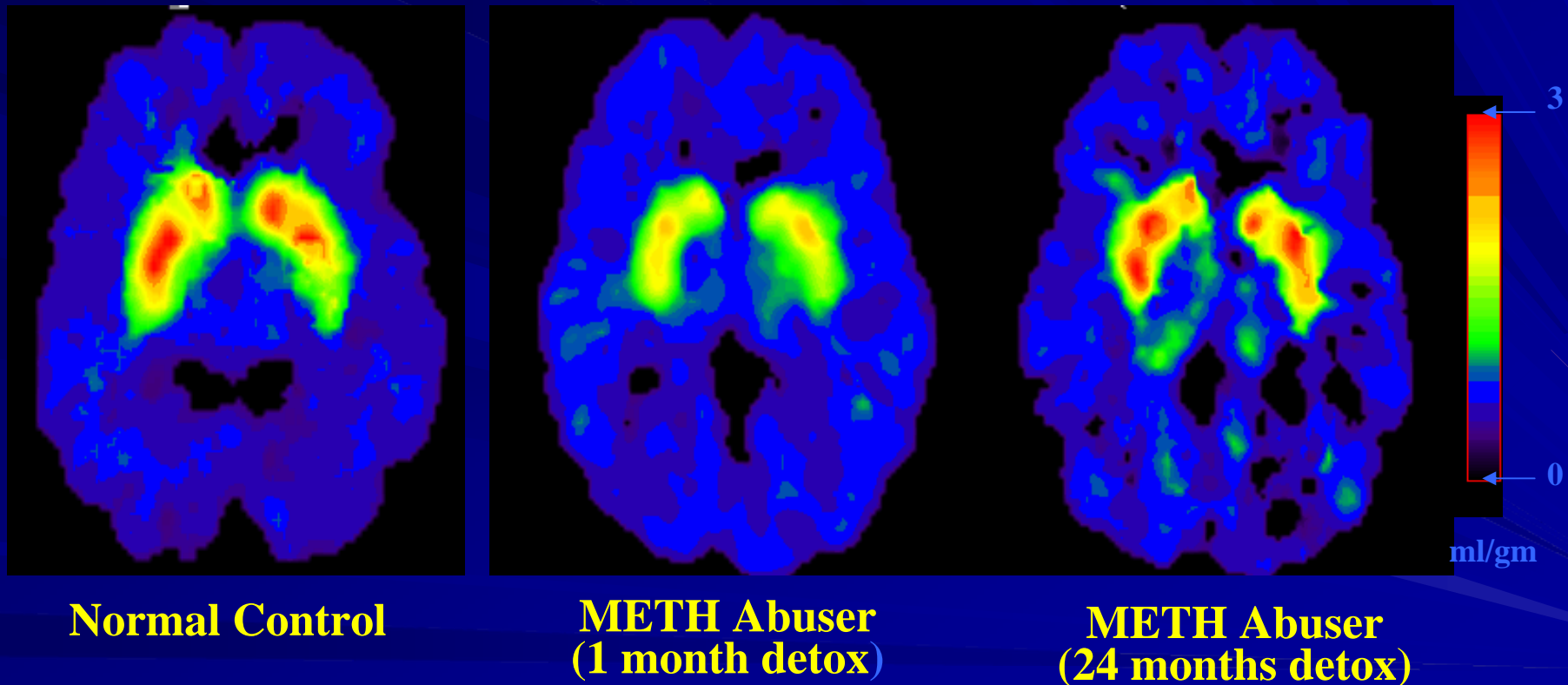
“METH Mouth”

Source: *The New York Times*, June 11, 2011



3 years, 5 months later

Partial Recovery of Brain Dopamine Transporters in Methamphetamine (METH) Abuser After Protracted Abstinence



Source: Volkow, ND et al., *Journal of Neuroscience* 21, 9414-9418, 2001.

Methamphetamine

Psychiatric Consequences

- Paranoid reactions
- Protracted memory impairment
- Depressive/Dysthymic reactions
- Hallucinations
- Psychotic reactions
- Panic disorders
- Rapid addiction

MA Treatment Issues

- Acute MA Overdose
- Acute MA Psychosis
- MA “Withdrawal”
- Initiating MA Abstinence
- MA Relapse Prevention
- Protracted Cognitive Impairment and Symptoms of Paranoia

MA “Withdrawal”

- Depression
- Fatigue
- Anxiety
- Anergia
- Paranoia
- Cognitive Impairment
- Agitation
- Confusion

■ Duration: 2 days – 10 days

Clinical Challenges

- Poor treatment engagement rates
- High drop out rates
- Severe paranoia
- High relapse rates
- Ongoing episodes of psychosis
- Severe craving
- Protracted dysphoria
- Anhedonia

Special treatment consideration should be made for the following groups of individuals:

- Female MA users (higher rates of depression; very high rates of previous and present sexual and physical abuse; responsibilities for children).
- Injection MA users (very high rates of psychiatric symptoms; severe withdrawal syndromes; high rates of hepatitis).
- MA users who take MA daily or in very high doses.
- Homeless, chronically mentally ill and/or individuals with high levels of psychiatric symptoms at admission.
- Individuals under the age of 21.
- Gay men (at very high risk for HIV and hepatitis).

Low Threshold Treatment for Services MSM Methamphetamine Users

- Street outreach and field workers in clubs and bath houses
- Needle exchange
- Drop in centers for food, medical services
- “Safe House” Housing for homeless methamphetamine users
- HIV risk reduction groups employing peer and professional counseling.
- No empirical evidence at this point

Meth Treatment Effectiveness?

A pervasive rumor has surfaced in many geographic areas with elevated MA problems:

- ✓ MA users are virtually untreatable with negligible recovery rates.
- ✓ Rates from 5% to less than 1% have been quoted in newspaper articles and reported in conferences.

Meth Treatment Statistics

During the 2002-2003 fiscal year:

- 35,947 individuals were admitted to treatment in California under the Substance Abuse and Crime Prevention Act funding.
- Of this group, 53% reported MA as their primary drug problem

Statistics

A comparison of treatment outcomes between individuals diagnosed with methamphetamine dependence and all other diagnostic groups indicated no between group significant differences in any treatment outcome measures including:

- Retention in treatment rates
- Urinalysis data during treatment
- Rates of treatment program completion.

All these measures indicate that MA users respond in an equivalent manner as individuals admitted for other drug abuse problems.

Comparability of Treatment Outcome: Cocaine vs Methamphetamine

- Huber, Ling and Rawson (Jnl of Addictive Diseases, 1997).
- Cohorts of methamphetamine dependent patients (N=500) and cocaine dependent patients (N=224) treated with a standardized, outpatient treatment protocol (Matrix Model) at the same clinic site, by the same staff over the same time period, demonstrated very similar treatment response on virtually all treatment participation and outcome measures

Table 3. Treatment Experience to Methamphetamine and Cocaine Users

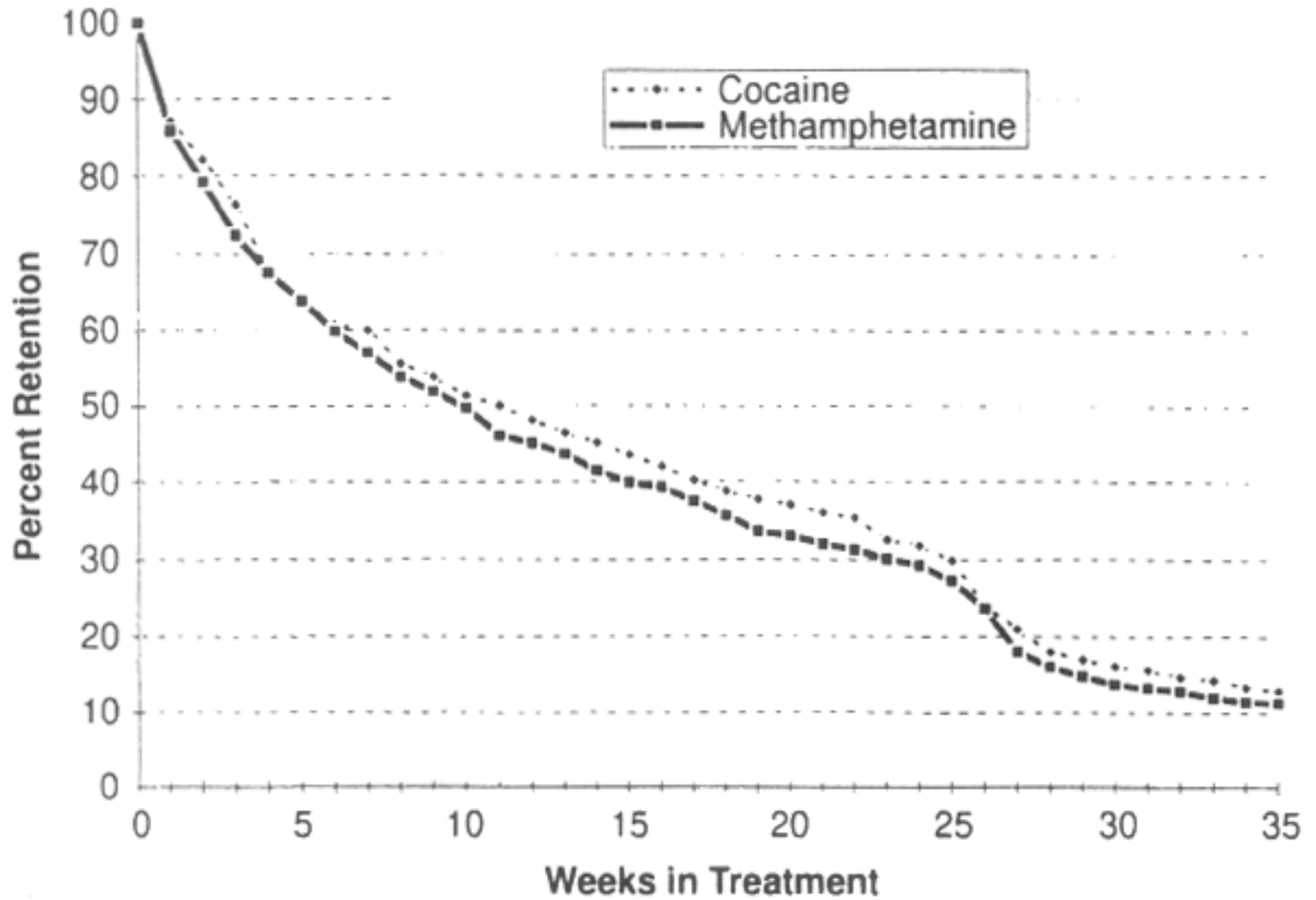
	MA Users (n = 500)	Cocaine Users (n = 224)
Early Recovery Group ⁺	3.4(4.4)	3.7(3.3)
Relapse Prevention Group ⁺	23.7(29.0)	21.0(26.8)
Family Education Group ⁺	11.6(14.0)	12.2(12.8)
Social Support Group ⁺	4.4(14.9)	4.3(18.2)
Total of Treatment Hours Received ⁺	52.9(51.4)	54.5(49.3)
Weeks in Treatment ⁺	17.1(22.3)	18.0(21.3)
Urine Sample Collected ⁺	8.3(8.0)	8.1(7.6)
Percentage of Samples Positive for Primary Drug ⁺⁺	19.3%	13.3%

{Treatment Received in
Number of Hours}

+ Numbers presented are means and (standard deviations)

++ Numbers presented are percentages

FIGURE 1



Medications

- Currently, there are no medications that can quickly and safely reverse life threatening MA overdose.
- There are no medications that can reliably reduce paranoia and psychotic symptoms, that contribute to episodes of dangerous and violent behavior associated with MA use.

Medications considered for treatment of methamphetamine dependence

Negative Results

- Imipramine
- Desipramine
- Tyrosine
- Ondansetron
- Fluoxetine

Under Consideration

Gabapentin
Modafinil
Topiramate
Disulfiram
Lobeline
Aripiprazole

Promising Evidence: Bupropion; Methylphenidate SR

Promising Pharmacotherapies?

- Newton, T. et al (Biological Psychiatry, Dec, 2005) **Bupropion** reduces craving and reinforcing effects of methamphetamine in a laboratory self-administration study.
- Elkashef, A. et al (recently completed; reported at the ACNP methamphetamine satellite meeting in Kona, Hawaii) **Bupropion** reduces meth use in an outpatient trial, with particularly strong effect with less severe users.
- Tiihonen, J. et al (recently completed; reported at the ACNP methamphetamine satellite meeting in Kona, Hawaii) **Methylphenidate SR** (sustained release) has shown promise in a recent Finnish study with very heavy amphetamine injectors.

Treatments for Stimulant-use Disorders with Empirical Support

- Cognitive-Behavioral Therapy (CBT)
- Community Reinforcement Approach
- Contingency Management
- 12 Step Facilitation

All have demonstrated efficacy for the treatment of cocaine dependence

Methamphetamine Treatment: Controlled Clinical Trials

Brief Cognitive Behavioral Therapy
Extended Cognitive Behavioral Therapy
Contingency Management
Matrix Model

Brief cognitive behavioural interventions for regular amphetamine users: a step in the right direction

- **Design: RTC**
- **Intervention: 2 session vs 4 session CBT**
- **Findings** The main finding of this study was that there was a significant increase in the likelihood of abstinence from amphetamines among those receiving two or more treatment sessions. In addition, the number of treatment sessions attended had a significant short-term beneficial effect on level of depression. There was a marked reduction in amphetamine use among this sample over time and, apart from abstinence rates and short-term effects on depression level, this was not differential by treatment group. Reduction in amphetamine use was accompanied by significant improvements in stage of change, benzodiazepine use, tobacco smoking, polydrug use, injecting risk-taking behaviour, criminal activity level, and psychiatric distress and depression level.
- **Baker, et al; Addiction: Vol 100, March 2005**

Cognitive Behavioral Therapy and Contingency Management for Stimulant Dependence

- **Design** Randomized clinical trial.
- **Participants** Stimulant-dependent individuals ($n = 171$).
- **Intervention** CM, CBT, or combined CM and CBT, 16-week treatment conditions. CM condition participants received vouchers for stimulant-free urine samples. CBT condition participants attended three 90-minute group sessions each week. CM procedures produced better retention and lower rates of stimulant use during the study period.
- **Results** Self-reported stimulant use was reduced from baseline levels at all follow-up points for all groups and urinalysis data did not differ between groups at follow-up. While CM produced robust evidence of efficacy during treatment application, CBT produced comparable longer-term outcomes. There was no evidence of an additive effect when the two treatments were combined. The response of cocaine and methamphetamine users appeared comparable.
- **Conclusions:** This study suggests that CM is an efficacious treatment for reducing stimulant use and is superior during treatment to a CBT approach. CM is useful in engaging substance abusers, retaining them in treatment, and helping them achieve abstinence from stimulant use. CBT also reduces drug use from baseline levels and produces comparable outcomes on all measures at follow-up.

- Rawson, RA et al. *Addiction*, Jan 2006

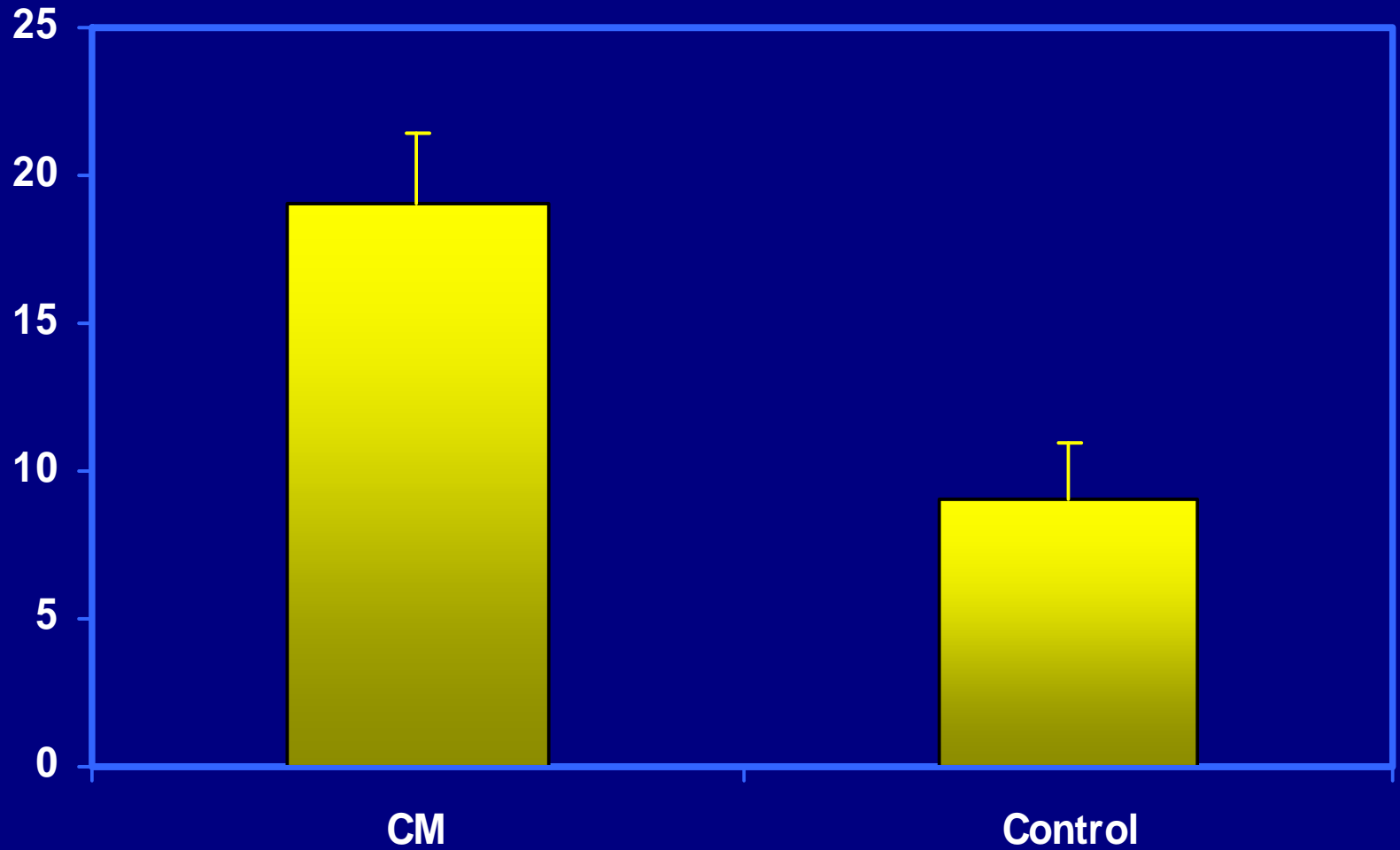
Contingency Management for treatment of methamphetamine dependence

- Design: RTC
- Method: 113 patients diagnosed with methamphetamine abuse or dependence were randomly assigned to receive either treatment as usual (TAU) or TAU plus contingency management.
- Results indicate that both groups were retained in treatment for equivalent times but those in the combined group accrued more abstinence and were abstinent for a longer period of time. These results suggest that contingency management has promise as a component in methamphetamine use disorder treatment strategies.
- Contingency Management for the Treatment of Methamphetamine Use Disorders. Roll, JM et al, Archives of General Psychiatry, (In Press)

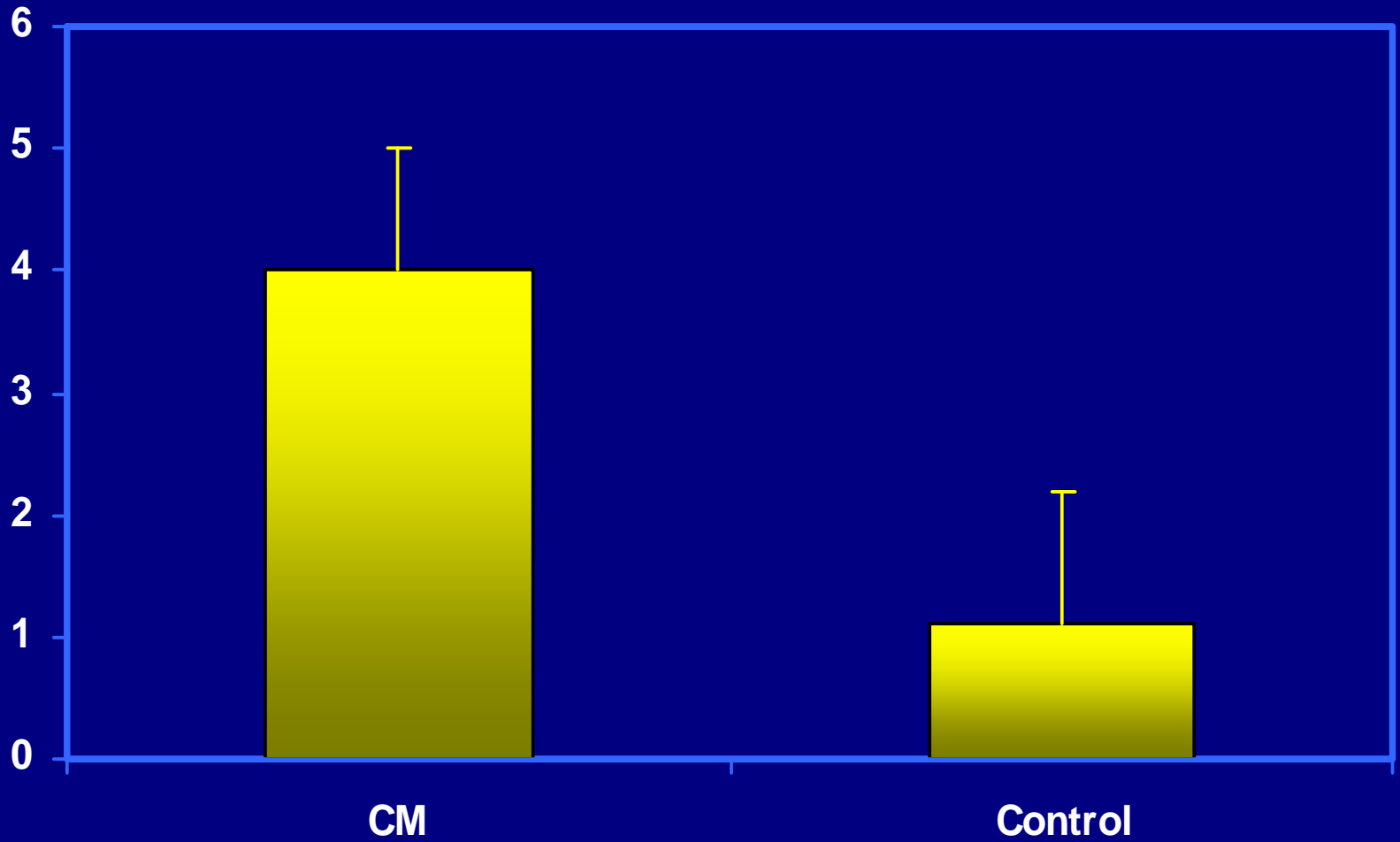
Contingency Management

- A technique employing the systematic delivery of positive reinforcement for desired behaviors. In the treatment of methamphetamine dependence, vouchers or prizes can be “earned” for submission of methamphetamine-free urine samples.

Mean number of abstinences



Mean weeks of consecutive abstinence



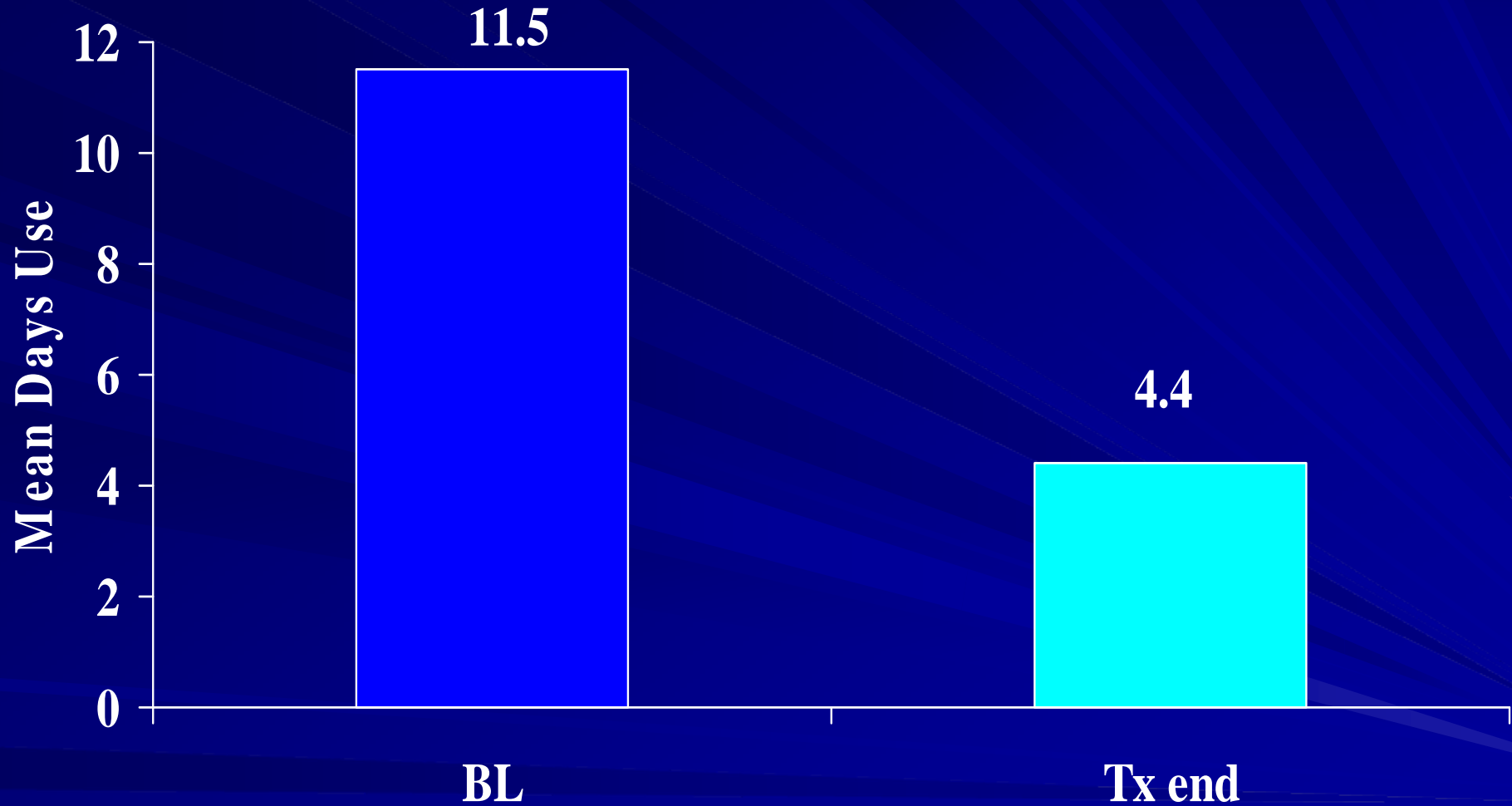
Matrix Model in Treatment of Methamphetamine Dependence

- *Design:* The study was conducted as an eight-site randomized clinical trial.
- *Method:* 978 treatment-seeking, MA-dependent persons were randomly assigned to receive either TAU at each site, or a manualized 16-week treatment (Matrix Model) for their MA dependence.
- *Results:* Analyses of study data indicate that in the overall sample, and in the majority of sites, those who were assigned to Matrix treatment attended more clinical sessions, stayed in treatment longer, provided more MA-free urine samples during the treatment period, and had longer periods of MA abstinence than those assigned to receive TAU. Measures of drug use and functioning collected at treatment discharge and 6 months post-admission indicate significant improvement by participants in all sites and conditions when compared to baseline levels, but the superiority of the Matrix approach did not persist at these two time points.
- *Conclusions:* Study results demonstrate a significant initial step in documenting the efficacy of the Matrix approach. Although the superiority of the Matrix approach over TAU was not maintained at the posttreatment time points, the in-treatment benefit is an important demonstration of empirical support for this psychosocial treatment approach.
- Rawson, R et al *Addiction* vol 99, 2004

Matrix Model

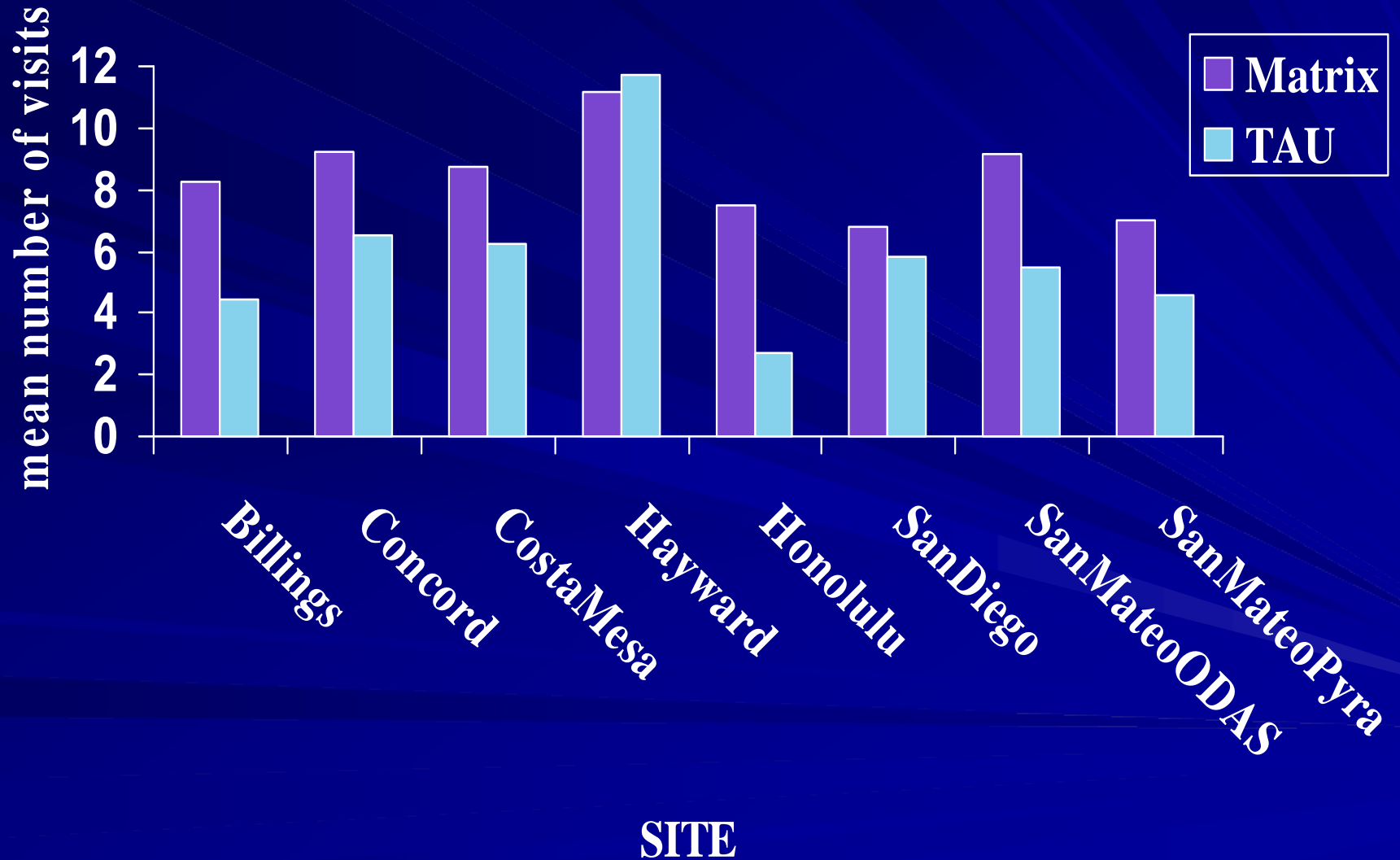
- Is a manualized, 16-week, non-residential, psychosocial approach used for the treatment of drug dependence.
- Designed to integrate several interventions into a comprehensive approach. Elements include:
 - Individual counseling
 - Cognitive behavioral therapy
 - Motivational interviewing
 - Family education groups
 - Urine testing
 - Participation in 12-step programs

Days of Methamphetamine Use in Past 30 (ASI)

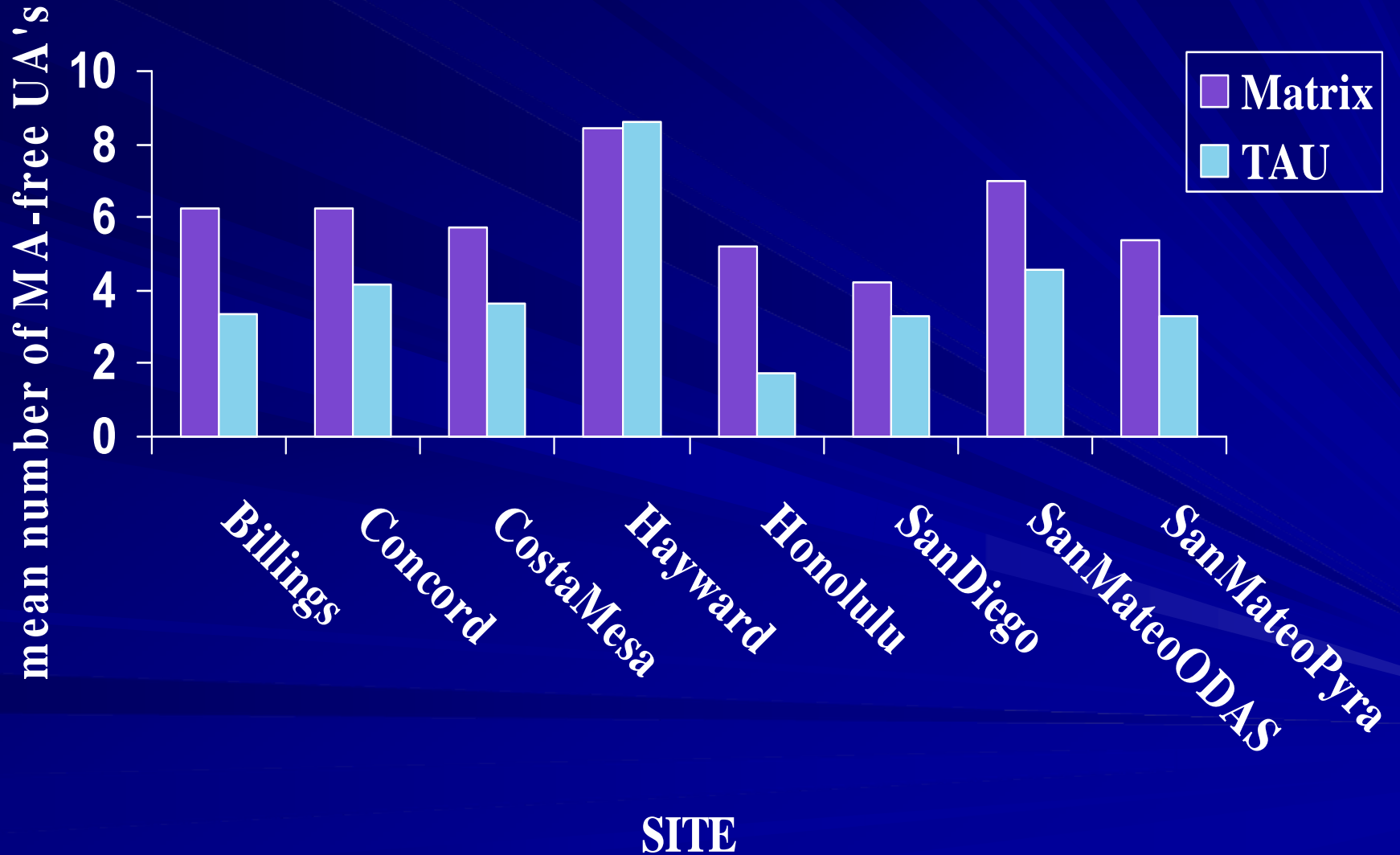


Possible is 0-30; $t_{\text{paired}}=20.90$; $p\text{-value}<0.000$ (highly sig.)

Mean Number of Weeks in Treatment



Mean Number of UA's that were MA-free during treatment



Urinalysis Results

■ Results of Ua Tests at Discharge, 6 months and 12 Months post admission **

■ Matrix Group

TAU Group

D/C: 66% MA-free

65% MA-free

6 Ms: 69% MA-free

67% MA-free

12 Ms: 59% MA-free

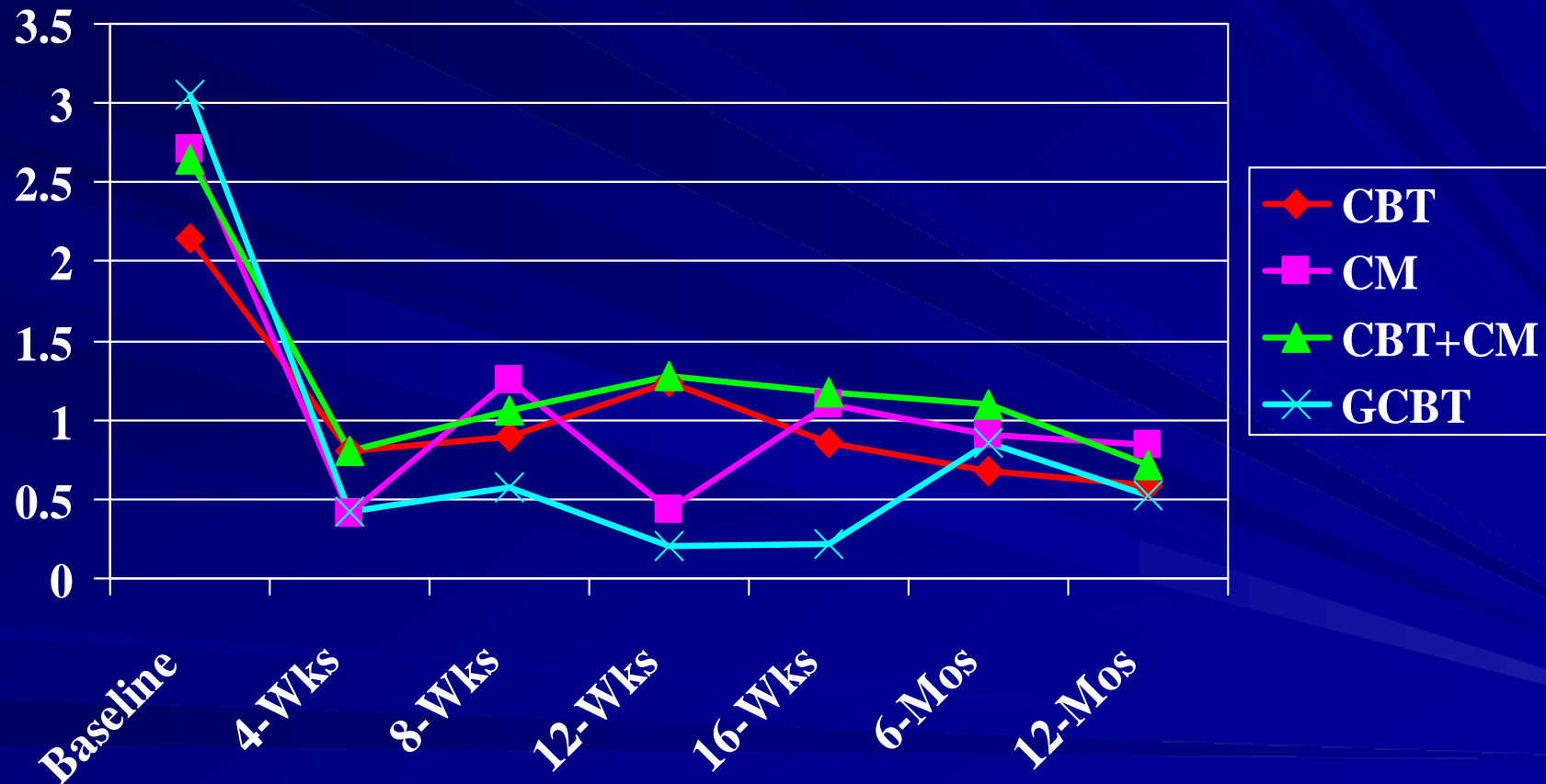
55% MA-free

**Over 80% follow up rate in both groups at all points

MSM-specific cognitive behavioral therapy, and contingency management for the treatment of methamphetamine dependent MSMs

- Design: Randomized clinical trial
 - Methods: 162 MSM randomly assigned to one of 4 conditions; CM, CBT, CBT plus CM, MSM-specific CBT.
 - Results: All conditions showed significant reductions in meth use by self-report and urinalysis, with CM and CM plus CBT showing significantly better reductions. Gay specific intervention also showed promise.
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- Shoptaw et al Drug and Alcohol Dependence, 79, 2005

Sex Risks Reduced with Treatment: UARI Past 30 Days



$\chi^2_{(3)}=6.75, p<.01$

Summary

- Methamphetamine is a significant public health problem in the US and in the world
- It produces significant damage to the body and the brain
- Recovery from methamphetamine dependence is possible and most brain changes are reversible.
- There are effective treatments for methamphetamine dependence.