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# Behavioral treatment approaches for methamphetamine dependence and HIV-related sexual risk behaviors among urban gay and bisexual men

Steven Shoptaw[a,b,d,*], Cathy J. Reback[a,b,c,d], James A. Peck[b], Xiaowei Yang[a,b], Erin Rotheram-Fuller[a,b,d], Sherry Larkins[a,b,d], Rosemary C. Veniegas[b,d], Thomas E. Freese[b], Christopher Hucks-Ortiz[a,b,d]

[a] *Friends Research Institute, Los Angeles, CA 90025, USA*
[b] *David Geffen School of Medicine at UCLA, Department of Psychiatry and Biobehavioral Sciences, Integrated Substance Abuse Programs, Los Angeles, CA 90025, USA*
[c] *Van Ness Recovery House Prevention Division, Los Angeles, CA 90038, USA*
[d] *University of California, Los Angeles, Center for HIV Identification, Prevention, and Treatment Services, Los Angeles, CA 90024, USA*

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**Abstract**

*Background:* Methamphetamine-dependent gay and bisexual men (GBM) are at high risk for HIV transmission, largely due to drug-associated sexual risk behaviors. This project evaluated the efficacy of four behavioral drug abuse treatments for reducing methamphetamine use and sexual risk behaviors among this population.
*Methods:* In this randomized controlled trial, 162 methamphetamine-dependent (SCID-verified) GBM in Los Angeles County were randomly assigned to one of four treatment conditions for 16 weeks: standard cognitive behavioral therapy (CBT, $n = 40$), contingency management (CM, $n = 42$), combined cognitive behavioral therapy and contingency management (CBT + CM, $n = 40$), and a culturally tailored cognitive behavioral therapy (GCBT, $n = 40$). Stimulant use was assessed thrice-weekly during treatment using urine drug screens (48 measures). Sexual risk behaviors were monitored monthly (four measures). Follow-up assessments were conducted at 6 (80.0%) and 12 months (79.9%).
*Results:* Statistically significant differences in retention ($F(3,158) = 3.78$, $p < .02$), in longest period of consecutive urine samples negative for methamphetamine metabolites ($F(3,158) = 11.80$, $p < .001$), and in the Treatment Effectiveness Score were observed by condition during treatment ($F(3,158) = 7.35$, $p < .001$) with post hoc analyses showing the CM and CBT + CM conditions to perform better than standard CBT. GEE modeling results showed GCBT significantly reduced unprotected receptive anal intercourse (URAI) during the first 4 weeks of treatment ($X^2 = 6.75$, $p < .01$). During treatment between-group differences disappeared at follow-up with overall reductions in outcomes sustained to 1-year.
*Conclusions:* Among high-risk methamphetamine-dependent GBM, drug abuse treatments produced significant reductions in methamphetamine use and sexual risk behaviors. Drug abuse treatments merit consideration as a primary HIV prevention strategy for this population.


*Keywords:* Methamphetamine; HIV; Sexual risk behaviors; Contingency management; Cognitive behavioral therapy; Gay and bisexual men

## 1. Introduction

Methamphetamine is a growing public health problem, globally (Farrell et al., 2002; Matsumoto et al., 2002) and in the United States (Rawson et al., 2002a,b). In the United States, methamphetamine use is endemic to urban gay and bisexual men (GBM; Halkitis et al., 2001; Mansergh et al., 2001; Mattison et al., 2001; Woody et al., 2001). In Los Angeles County, approximately 11% of GBM (Stall et al., 2001) report using methamphetamine in the previous 6 months reflecting a prevalence 20 times that in the general population (SAMHSA, 2001). Self-reports of methamphetamine use in population-based (Deren et al., 1998; Molitor et al., 1998)

* Corresponding author. Present address: 11075 Santa Monica Blvd., Suite 200, Los Angeles, CA 90025-7510, USA. Tel.: +1 310 312 0500x351; fax: +1 310 312 0552.
*E-mail address:* Sshoptaw@mednet.ucla.edu (S. Shoptaw).

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and clinical studies of GBM (Shoptaw et al., 2002) have consistently associated it with HIV infection, likely due to high-risk sexual behaviors facilitated by the drug (Reback, 1997; Reback and Grella, 1999). Co-occurrence of these factors, i.e., methamphetamine use, associated sexual risk behaviors, and high rates of HIV infection, in a subgroup of GBM provide compelling support for local intervention with this group. This study evaluated the differential efficacy of conceptually distinct behavioral drug abuse treatments for reducing methamphetamine use and associated sexual risk behaviors in methamphetamine-dependent GBM. It also assessed whether integrating gay male cultural references and HIV-risk reduction material with standard behavioral drug abuse treatment differentially reduced sexual risk behaviors.

Methamphetamine-dependent GBM who engage in concurrent drug-associated HIV-related sexual risk behaviors present challenges to intervention development. One challenge is that efficacious behavioral treatments for methamphetamine dependence are in early stages of evaluation (Rawson et al., 2004). Cocaine and methamphetamine differ in their neurobiological and pharmacokinetic effects; yet share many subjective properties when used illicitly as psychostimulants. Short-term, low-to-moderate doses of both stimulants generally provide a feeling of euphoria, increase energy and psychomotor agitation, decrease appetite, and for many, initiate a sense of heightened sexuality and interest in pursuing sexual activities (Hoffman and Lefkowitz, 1993; NIDA, 2003). Likely due to the similar presentation of both cocaine- and methamphetamine-dependent individuals at treatment entry, behavioral therapies for methamphetamine dependence generally reflect extensions of those used to treat cocaine dependence. A more complicated challenge involves targeting simultaneous reductions in drug use and sexual risk behaviors using behavioral drug treatment (Stall and Purcell, 2000). Despite recognition of the central role of male-to-male sexual risk behaviors in HIV transmission among injection and non-injection drug users (Bluthenthal et al., 2001; Maslow et al., 2002), empirically validated treatments addressing sexual risks are lacking (Shoptaw and Frosch, 2000).

This study uses two distinctly different behavioral therapy models for cocaine dependence that have sufficient efficacy to warrant consideration for the treatment of methamphetamine dependence: cognitive behavioral therapy (CBT; Carroll, 1996, 2000) and contingency management (CM; Higgins et al., 1993, 2000). Cognitive behavioral therapy is a broad set of psychological and educational techniques that provide substance-dependent individuals with critical knowledge about stimulant dependence and trains them with skills to initiate abstinence and to return to abstinence should relapse occur (Marlatt and Gordon, 1985). Principles of CBT are integrated into most interventions for substance dependence (even Alcoholics Anonymous) in the United States (McKay et al., 1997), which provides a rationale for using the CBT condition as a standard comparison. Models of CBT have shown efficacy for reducing cocaine use in cocaine-dependent individuals (Carroll, 1996; Rawson et al., 2002a,b; Carroll et al., 1991; Shoptaw et al., 1994) and therefore provide sufficient rationale for extending them to the treatment of methamphetamine dependence.

Contingency management contrasts with CBT in that it is a behavioral therapy that manipulates available reinforcers in the environment to shape the behaviors of substance-dependent individuals to avoid drug use. Voucher-based reinforcement therapy shows efficacy for reducing cocaine use among primary cocaine-dependent (Higgins et al., 1991, 1993, 2000) and methadone-maintained, cocaine-dependent individuals (Silverman et al., 1996, 1998; Jones et al., 2001). In this study, the CM therapy uses an operant reinforcement schedule that provides increasingly valuable incentives delivered in the form of vouchers for consecutive urine samples that document abstinence from methamphetamine (Higgins et al., 1993). Vouchers are then exchanged for goods or services that promote an addiction-free lifestyle. Thus, three potentially efficacious behavioral treatment conditions are adopted to reduce methamphetamine use in this study: standard cognitive behavioral therapy, contingency management, and their combination (CBT + CM).

The fourth condition is a culturally tailored intervention that integrates the standard cognitive behavioral therapy with referents to cultural norms and values of urban GBM and provides emphasis on reduction of HIV-related sexual behaviors. Professional and academic experts on the target community advised intervention development at all stages to ensure a culturally relevant final intervention. Drug abuse treatment experts informed the tailoring process to ensure the intervention retained critical concepts of CBT to provide an ethically appropriate drug abuse treatment condition. This tailored gay-specific cognitive behavioral therapy (GCBT) condition allows evaluation of outcomes when targeting both drug use and sexual risk behaviors during treatment for methamphetamine dependence.

The report that follows details findings from a randomized controlled trial that tested the efficacy of these four behavioral treatments (CBT, CM, CBT + CM, and GCBT) over 1 year among treatment-seeking, methamphetamine-dependent GBM in Los Angeles. Based on earlier work with cocaine abusers that showed no additive effect of combining CBT with CM (Rawson et al., 2002a,b), we hypothesized that reductions in drug use would be greater among the CM group compared to the CBT comparison condition. Because the GCBT condition directly targeted reductions in drug use and associated sexual risk behaviors, we predicted that this condition would yield greater reductions in sexual risk behaviors as compared to the standard CBT condition.

## 2. Methods

### 2.1. Study participants

From 1998 to 2000, a community-wide recruitment effort targeted GBM in multiple venues (bathhouses, sex clubs,