

The Acceptability and Feasibility of the Positive Reinforcement Opportunity Project, a Community-Based Contingency Management Methamphetamine Treatment Program for Gay and Bisexual Men in San Francisco†

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Abstract—The Positive Reinforcement Opportunity Project (PROP) was a pilot program developed to build on the efficacy of contingency management (CM) using positive reinforcement to address the treatment needs of gay and bisexual men currently using crystal methamphetamines (meth). It was hypothesized that a version of CM could be implemented in San Francisco that was less costly than traditional treatment methods and reached gay and other MSM using meth who also engaged in high-risk sexual activity. Of the 178 men who participated in PROP from December 2003 to December 2005, many self-reported behaviors for acquiring and spreading sexually transmitted diseases including HIV infection. During the initial intake, 73% reported high-risk sexual behavior in the prior three months, with 60% reporting anal receptive and/or insertive sex without condoms. This report describes the implementation of PROP and suggest both its limitations and potential strengths. Initial findings suggest that PROP was a useful and low cost substance use treatment option that resulted in a 35% 90-day completion rate, which is similar to graduation rates from traditional, more costly treatment options. Further evaluation of the limited data from three- and six-month follow-up of those who completed PROP is currently ongoing.

Keywords—contingency management, gay and bisexual men, HIV, methamphetamine

Crystal methamphetamine (meth) use is a substantial public health problem among gay and bisexual men in San

†The authors would like to thank patients and staff at UCSF-San Francisco General Hospital Ward 86; San Francisco City Clinic and Continuum, the staff of the STD Prevention and Control Services and the PROP support teams; Charlotte Kent, Pennan Barry, Nate Birjukow, Brandon Ivory, Chris DeShazer, Israel Diosdado, David Pasol, Walter Recinos, Jeff Meyer, John Stansell, MD, Brad Hare, MD, Jim Kahn, MD, Steve Gibson, Bob Cabaj, MD, Michael Pendo (in memoriam), Supervisor Bevan Dufty and Cathy Reback, PhD. The findings and conclusions in this article are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry.

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Francisco. Meth is a potent chemical stimulant in a crystalline form. It can be injected, snorted, ingested, and smoked.

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Research has shown a link between meth use and high-risk sexual behavior, leading to HIV infection and other sexually transmitted diseases (STDs) (Buchacz et al. 2005; Wong et al. 2005). Gay and bisexual men who use meth are three times more likely to become infected with HIV than those who do not use (Buchacz et al. 2005) and meth users are more than three times more likely to have syphilis than nonusers (Wong et al. 2005). Thus, meth use poses a serious public health challenge for HIV/STD prevention. New, innovative and more accessible substance use treatment methods are needed. Collaborators in San Francisco are exploring contingency management (CM) and positive reinforcement in a substance use treatment program to modify meth use behavior among gay and bisexual men.

BACKGROUND

Meth use in the United States has reached epidemic proportions (NIDA 2005; Shernoff 2005; StopDrugs.org 2005; Urbina & Jones 2004); some areas report that more than 10% of gay and bisexual men with STDs have recently used meth (Wong et al. 2005). Due to the accompanying and potentially devastating health and social effects, promising treatment approaches need to continue to be developed and evaluated among different populations. Current research suggests that contingency management, the use of positive reinforcement to encourage abstinence, is a promising method for treating meth use (Shoptaw et al. 2005). CM has been studied and shown to be effective in the treatment of a variety of substance use disorders including tobacco, heroin, and cocaine abuse (Reback, Larkins & Shoptaw 2004; Petry & Simicic 2002; Petry 2000; Higgins & Petry 1999) and further research has indicated that participation in CM can assist in the reduction of sexual risk behaviors (Reback, Larkins & Shoptaw 2004).

In August of 2004, a community leadership group in San Francisco was formed to examine new methods that could be developed to address meth use and related sexual risk behaviors in gay and bisexual men. The leadership group was a collaboration among the San Francisco Department of Public Health (STD Prevention and Control Services, HIV Prevention Section, and Behavioral Health), the University of California San Francisco HIV care program (Positive Health Program), a gay men's health center (Magnet), an HIV/AIDS day services center (Continuum), and the UCLA Integrated Substance Abuse Programs. Since time was of the essence and resources limited, the prevention response needed to be easy to implement, low cost, accessible, and culturally appropriate as well as address the lack of residential drug treatment spaces available on demand. During the early meetings, various existing interventions were reviewed for efficacy, as were the current city-wide substance use treatment services available for gay and bisexual men. CM had been used by researchers in Los Angeles to offer low

cost, effective treatment for smoking cessation, methadone adherence and meth use (Shoptaw et al. 2005). The task force selected CM because it provided treatment services in the community outside of traditional treatment settings, was innovative, and did not require counseling or cognitive behavioral therapy. That it could be developed and quickly implemented with a relatively modest financial investment and limited staffing was an added attraction.

Within a few weeks, the leadership group designed a CM model treatment program for meth users in San Francisco. This model was named the Positive Reinforcement Opportunity Project (PROP) and \$210,000 was made available to fund PROP from existing budgets within the San Francisco Department of Public Health. Staffing and implementation were coordinated by the STD Prevention and Control Services Section. A full-time project coordinator and a half-time staff person salary were budgeted at \$65,000 per year. The urine radio-immune methamphetamine assay test kits Medtox Verdict II (Medtox Diagnostics, Inc, Burlington, NC) were ordered in bulk and cost \$103.68 per box of 25. This assay detects methamphetamine in urine in 80% of users up to 72 hours after use. Miscellaneous supplies including latex gloves, reproduction costs for signage, protocol agreements, etc, would run less than \$10,000.

THEORETICAL APPROACHES

CM is based on the use of positive reinforcement and the theory that a person will choose to change behaviors voluntarily when encouraged with positive incentives supporting that behavior change. Framed around the theory of operant conditioning, CM uses consistent positive reinforcement to encourage a targeted behavioral change (Higgins & Petry 1999). In the case of PROP, reinforcement was offered through a financial incentive. No additional counseling, therapy, or social services were offered with the exception of a project-specific, community-wide resource guide provided at intake. At a participant's request, PROP staff assisted with medical and psychiatric referrals.

PROP was aimed at participants who preferred treatment options that did not require them to live out of the home, attend meetings, participate in any formalized cognitive behavioral treatment program, or take time off from work.

PROCEDURES

In order to be eligible for enrollment, participants had to meet criteria for meth dependency and report using meth in the last seven days, could not be enrolled or active in a current drug treatment program, needed to participate in a 15-minute intake session, and had to agree to provide an observed urine collection three times a week for 12 weeks. At each collection the urine was tested for meth while the

participant waited. It was further explained that the use of drugs other than meth did not disqualify participants and staff did not test urine for any other drugs. However, the exception to this was the use of cocaine and certain over-the-counter medications (e.g., pseudoephedrine-containing cold medicines), which could cause a false positive result on the meth assay. If the tested urine indicated a positive result for methamphetamine use, PROP staff was scripted to reply: "Today's test is positive for methamphetamines. You do not earn an incentive today. Please come back on your next scheduled session." No additional comments were allowed. The staff were trained to address the participant in a way that would not make them feel guilty. No participant was asked to withdraw from PROP for a positive urine sample.

When the test indicated a meth-free urine, PROP staff were scripted to say: "Today's test is negative for methamphetamines. You earned an incentive today. Please come back on your next scheduled session." The participant earned the fiscal incentives on an incremental basis, starting at \$2.50 for the first meth-free sample; each successive meth-free urine specimen provided increased the incentive by \$1.25. A maximum of \$10.00 per meth-free sample was earned if the participant was able to reach three weeks of meth-free urine specimens. For every three consecutive meth-free urine samples, an additional \$10.00 incentive was offered. If a participant completed 12 weeks of PROP they received up to \$453.00 in incentives (see Appendix A). If a participant provided a specimen that tested positive for meth, no incentive was offered and the incentive returned back (was reset) to the initial \$2.50 incentive rate for the next meth-free specimen. To encourage continued participation, three consecutive meth-free urine samples returned the participant to the highest incentive level prior to the last positive urine test. Due to the fact that PROP was funded as an intervention for gay men, male staff who would be comfortable observing urine collection were hired. Since many health workers in San Francisco have experience in harm reduction and counseling, it also required staff be retrained not to offer counseling or unsolicited support.

To meet the initial goal of 200 participants, it was determined that three sites would be needed to reach a diverse cross-section of gay men who use meth. One location was in the gay men's health clinic in the Castro, a neighborhood that is closely identified with the gay men's community. The second location was in an HIV/AIDS day services center in a neighborhood which attracts gay male sex workers, and gay men who have lower income, higher substance use experience and are marginally housed. The last location was housed within the county hospital to focus on HIV-infected men in the San Francisco Department of Public Health's care system.

In order to operate out of locations managed by other programs, an extensive memorandum of understanding and set of procedures to train and sensitize staff to the PROP

model were developed. After six months, the third site at the county hospital was discontinued; participants felt that it was not easily accessible. Detailed procedures, protocols and sample forms are available at www.propsf.org.

RESULTS

As of December 31, 2005, 247 gay and bisexual men were screened during the initial intake process for PROP. Of those, 178 (72%) initiated PROP treatment. The 10-week completion rate was 40% and the 12-week completion rate was 35%. Participants active in PROP were expected to participate in three sessions per week for a total of 12 weeks. Participants in PROP on average attended 41% of sessions and received on average \$142 in financial incentives.

At enrollment, 91% of participants indicated that they had used meth with sex, 46% of participants indicated having three or more sex partners in the past month and 60% of participants indicated they engaged in either insertive (53%) or receptive (46%) anal sex without a condom during that period. Further, 68% were HIV-infected and 42% reported an STD in the recent past: 19% reported a syphilis infection in the past year, 32% reported a gonococcal infection in the last three months, and 13% reported a chlamydial infection in the past three months.

When comparing the baseline characteristics of those who completed PROP ($n = 54$) to those enrolled for at least three months who did not complete PROP ($n = 100$) only two significant differences were discovered. Among participants who completed PROP, 63% self-reported a recent STD at baseline compared to 33% of the noncompleters ($p < .05$). Completers were also significantly ($p < .05$) more likely to have reported use of meth with sex at enrollment compared to noncompleters (98% versus 85%).

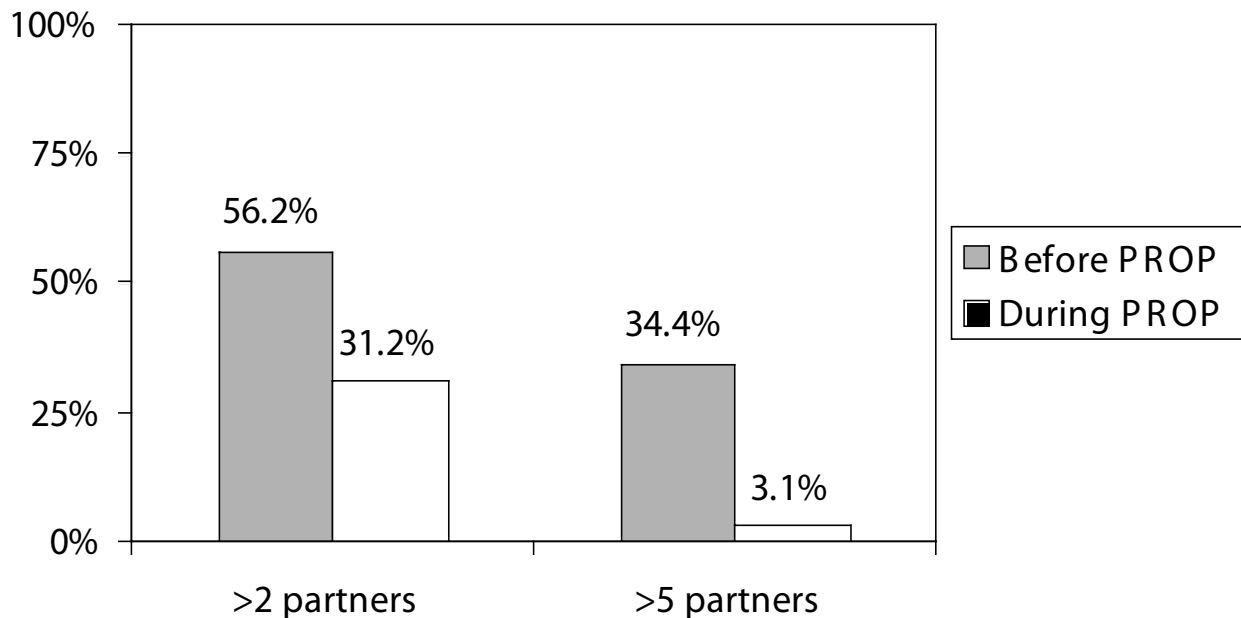
Of the urine samples collected from PROP participants, 96% were negative for meth, suggesting that participants who chose to use meth while in PROP were less likely to provide specimens after recent use. This complemented the CM-influenced structure of PROP, which allowed for participants to decide for themselves when then they came in for screening (versus mandatory attendance to continue participation). Missing a session was not a criterion for removal from PROP.

Of the 32 persons who completed PROP and had all four interviews during the program, 41% reported having had gonorrhea, 25% chlamydia and 25% syphilis shortly before enrolling in PROP. None (0 of 32) of these men reported having an STD during the period they were enrolled in PROP. In addition, these men reported a significant ($p < .05$) reduction in the number of sex partners while enrolled in PROP (Figure 1).

The average program cost for a participant to complete ninety days of PROP was about \$1,000, including incentives, supplies and staff time.

FIGURE 1

Proportion of Men Completing PROP Reporting More Than Two and More Than Five Sex Partners in the Three Months Prior to PROP Enrollment Compared with the Three Months during PROP (n = 32)



Note: McNemar p value .0209 for >2 partners before versus during PROP); McNemar p value .0016 for >5 partners before versus during PROP.

DISCUSSION

PROP was feasible and acceptable to a large number of meth-using men not seeking traditional substance use treatment. The completion rate at 90 days of 35% was comparable to 90-day graduation rates (40%) in traditional, more costly treatment programs as reported by the Substance Abuse and Mental Health Services Administration (SAMHSA) in the Drug and Alcohol Services Information System, Treatment Episode Data Set (TEDS). In addition, our data are comparable to reports from data collected in research programs utilizing forms of CM (Shoptaw et al. 2005). Furthermore, the average cost of \$1,000 per PROP participant was substantially less than the average cost per participant of more traditional treatment options, which ranged between \$1,800 to \$6,800 (McVay, Schiraldi & Ziedenberg 2004).

Prior to enrollment, participants were at high risk for acquiring or spreading STDs, including HIV infection, and persons completing PROP were among the men with greatest sexual risk behaviors at enrollment. Our data also suggests that a significant proportion of men who completed PROP

reduced their sexual risk behaviors while enrolled in PROP by reducing their number of recent sex partners.

Since PROP was designed as a programmatic public health response to increases in methamphetamine-associated sexually transmitted infections (such as syphilis and HIV infection) in San Francisco, data collected at intake were minimal and only included a basic sexual risk behavior and drug use assessment (see Appendix B). Medical history regarding STDs and HIV, methods of drug use, the use of meth with sex and condom use with specific sexual acts were included. However, there was very limited collection of demographic information. Proof of name, address, phone number, race, and ethnicity were not requested at intake. The lack of more extensive data collection at baseline and subsequent visits has been a major obstacle to making follow up contact with participants and evaluating longer term program effectiveness. Additionally, it is not known how many participants at any given time may have been participating in other treatment programs. Since the incentive was financial, it also was conceivable that some participants misrepresented their lack of enrollment in residential treatment while also enrolled in PROP.

CRITICAL ANALYSIS

Drug use cessation is a difficult process; “getting clean and staying clean” requires a sustainable personal and emotional commitment. It also requires a person to address other emotional, social and medical issues that exist along with drug use. PROP, through the use of CM, addressed these challenges by attempting to reach men who were not interested in traditional psychotherapeutic models of treatment but who were motivated by the positive reinforcement of regular financial rewards.

One of the common criticisms of CM is that it does not address the emotional or mental health needs of the participant, nor does it attempt to engage participants in any active “next steps” at the completion of treatment. However, PROP was able to offer a setting in which a supportive community could develop and referrals for additional resources were always made available. As participants progressed within PROP, they began to form loose social groups among themselves while waiting to submit their urine specimens. In some cases, participants continued to return to PROP locations even after they completed the 12-week program. Others who withdrew or ceased attending due to relapse also tended to drop by the sites in order to engage with both PROP staff and current participants.

PROP findings are encouraging given ability of CM to help men reach periods of meth abstinence coupled with reduced sexual risk behaviors (Reback, Larkins & Shoptaw 2004). The longer meth users are able to stay off meth, the greater the chance that they will make healthier decisions for themselves in the future. For gay men, healthier decisions would include avoidance of meth use and reduction of

drug-associated sexual risk behaviors that might otherwise increase the acquisition and spread of HIV infection and other STDs. Future evaluations will include measuring changes in sexual risk behaviors and meth use at three and six months after completion of PROP.

CM is sufficiently effective on its own to help a substantial number of nontreatment-seeking, gay and bisexual men to successfully reduce or eliminate their methamphetamine use. Yet there may be additional ways to optimize CM by integrating the technique with other interventions proven to reduce methamphetamine use. These would include integrating some components of cognitive behavioral therapy for a subset of participants within the current CM structure and and/or addressing other concomitant mental health issues such as depression. Thus, PROP models could be integrated within a variety of treatment programs with minor adaptations to fit the fiscal, structural and theoretical models of the hosting program. It is the potency and portability of PROP and CM that represent an important advance in creating innovative and effective drug treatment for gay men. Substance use treatment professionals and advocates agree that no one treatment will work for everyone. The San Francisco Department of Public Health will continue to implement and evaluate projects that may help address the crisis of meth use among gay and bisexual men.

In summary, initial findings suggest that PROP was a useful and low cost treatment (approximately \$1,000 per enrollee) that may result in at least a 35% completion rate. PROP is a treatment method that can appeal to meth users who value the immediate positive reinforcement or who are unable or unwilling to participate in other traditional treatment programs.

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APPENDIX A
Excerpt from the PROP Protocol Manual for Participants

Your urine sample will be tested immediately to see that the sample is free of methamphetamine, amphetamine and cocaine. You will receive a voucher for each sample that is free of those drugs. Vouchers increase over time as you keep giving clean urine samples. You will earn a \$10.00 bonus voucher for every three clean urine samples in a row. The schedule of vouchers shows how rapidly the amount grows for giving clean urine samples.

	SCHEDULE OF INCENTIVES				
	Monday	Wednesday	Friday	Bonus	Weekly Totals
Week 1	\$2.50	\$3.75	\$5.00	\$10.00	\$21.25
Week 2	\$6.25	\$7.50	\$8.75	\$10.00	\$32.50
Week 3	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 4	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 5	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 6	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 7	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 8	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 9	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 10	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 11	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Week 12	\$10.00	\$10.00	\$10.00	\$10.00	\$40.00
Grand Total					\$453.75

The urine test results are final. If the test results detect methamphetamine and/or cocaine, no voucher will be earned for the day. The next urine sample that you provide that tests methamphetamine-free will be worth \$2.50 and the increases in value will begin again from this value. In order to increase your motivation to avoid future methamphetamine use, three consecutive clean urine samples will return you in your original place in the incentive schedule. This is called a "Rapid Reset." For example, if you have a sample that tests positive for methamphetamine use on Monday of Week 7, you would receive no voucher for the day. Methamphetamine-free samples that follow on Wednesday, Friday and Monday would be worth \$2.50, \$3.75, and \$5.00 respectively, with a \$10.00 bonus for the three consecutive "clean" samples. The next sample (Wednesday) would be worth a \$10.00 voucher if it were free of methamphetamine.

APPENDIX B
PROP Intake Form for New Patients



Complete by Health Worker

Patient Name (Last, First): _____ Visit Date: _____ Patient ID: _____

1. Site: Magnet TLC - Continuum

2. Who referred you (site/clinician)? _____

Referrals (circle all that apply)

- | | | | |
|-------------------------|------------------------------|-----------------------|---------------------------|
| City clinic | Community Consortium Clinic | Other | Self-referred - newspaper |
| Substance abuse program | Community-based organization | Private physician | Self-referred - other |
| Ward 86 | Magnet | Self-referred - flyer | |

3. Current drug use within the last month (please fill in the grid):

Yes / No	Drug	Frequency	Duration
	Alcohol		
	Cocaine		
	Crack		
	Ecstasy		
	GHB		
	Heroin		
	Ketamine		
	Marijuana		
Yes	Methamphetamine		
	Poppers		

Frequency	Duration
<i>(Choose One)</i>	<i>(Choose One)</i>
Daily	< 1 year
Weekly	1 - 2 years
Monthly	3 - 5 years
Other	6 - 10 years
	> 10 years

4. Route(s) of methamphetamine (check all that apply): Smoke Snort Swallow Inject Rectum ("Booty Bump")

5. Any use of methamphetamine with sex? (circle) Yes / No / No Answer

6. Number of different sex partners past month? (circle one) 0 / 1-2 / 3-5 / 6-10 / 11-20 / >20

Condom usage (Choose One)

- Always
- Frequently
- Never
- No Answer
- Sometimes

7. Type of sex :

- | | |
|---------|--|
| Oral: | (Give - Condom use: _____ (Receive - Condom: _____ |
| Anal: | (Top - Condom use: _____ (Bottom - Condom: _____ |
| Vaginal | Yes / No / No Answer |

8. Past STDs (check all that apply):

Syphilis (past year) Gonorrhea (past 3 months) Chlamydia (past 3 months)

9. HIV status (check): Negative Positive Unknown

10. A. If positive, how long (in years)? (circle one) <1 / 1-2 / 3-4 / >4

B. If negative, how many months since your last test? (Circle one) 0-3 / 4-6 / 7-12 / >