



Published in final edited form as:

Addiction. 2010 September ; 105(9): 1507–1509. doi:10.1111/j.1360-0443.2009.02879.x.

Contingency management treatments: Controversies and challenges

Abstract

While ideology, politics, and economics will impact the eventual expansion or failure to implement contingency management in countries around the world, the scientific data clearly indicate that this is an intervention worthy of continued investment.

Keywords

contingency management; treatment; substance abuse

Contingency management (CM) refers to a behavioral therapy in which tangible positive reinforcers are provided to individuals who misuse substances contingent upon objective evidence of abstinence. Usually, reinforcers are chances to win prizes of varying magnitudes or vouchers, exchangeable for retail goods and services. CM interventions have substantial evidence of efficacy in reducing drug use across a range of populations and settings, and these treatments have been implemented throughout the United States and in countries around the world (1–3). In meta-analyses and reviews (4–6), CM treatments are associated with amongst the largest effect sizes, and they have consistently engendered positive outcomes in treating substance use disorders.

Despite the efficacy of CM, researchers, clinicians and society have voiced concerns about CM interventions. These have included emotionally-based criticisms such as likening CM to “bribery” to calling it “unethical to pay people for what they should be doing anyway.” Others scrutinize external reinforcers because they may not engender benefits beyond the period in which they are in effect, may decrease internal motivation to change, and may be sold, which in turn could potentially stimulate relapse or an increase in other drug use. Opponents raise practical concerns as well, including that CM takes too much time to administer and that it costs too much. Each of these issues is addressed, along with challenges for the field as a whole.

Many of the emotional objections to CM appear accentuated when basic behavioral principles are applied to individuals who misuse drugs or alcohol. Money and the chance to win prizes, for example, are frequently provided to reinforce good job performance and participation in surveys, and are rarely-- if ever-- met with opposition in these contexts. Individuals with mental retardation and autism are provided reinforcers contingent upon positive behavioral change, and no concerns arise about utilizing long-term positive reinforcement strategies in these populations (e.g., 7). However, when substance users receive reinforcement for behavior change, public outcry can occur (8). This contradiction seems to suggest that it is something about individuals who misuse drugs or alcohol, and

Address correspondence to: Nancy M. Petry, Calhoun Cardiology Center, MC-3944, University of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030-3944, USA. petry@psychiatry.uhc.edu.

Declaration of interests: none

society's and even treatment providers' perceptions about individuals with problematic substance use, that renders these procedures unpalatable with these populations.

Beyond emotional perceptions, others have raised concerns about CM that relate to its efficacy or mechanisms of action. One consistently mentioned issue is that the behavior will revert to baseline once reinforcers are no longer offered. In some laboratory-based CM demonstration projects and clinical trials, drug use returns to pre-intervention rates when reinforcers are no longer provided (e.g., 9). However, in a number of studies, individuals who earlier received CM continue to benefit even after tangible reinforcers are no longer available (e.g., 10). The longest duration of abstinence achieved during treatment is a robust and consistent predictor of long-term abstinence (11–12). Although many CM studies are not adequately powered to detect post-treatment between-group rates in drug use, some long-term benefits do emerge (10). Moreover, this criticism, which is often directed toward CM interventions, also ought to apply equally to other treatments. McLellan et al. (13) compare substance use disorders to other lifelong behaviorally-based disorders such as hypertension and diabetes. Many treatments for these disorders are not expected to exert benefits beyond the period in which they are in effect, and it is unclear why CM should be held to higher standards.

Nevertheless, research is ongoing to address persisting benefits of CM and methods to extend its effects, including evaluations of longer duration CM or reductions in frequency or magnitude of reinforcers once sustained abstinence is achieved. Other approaches include offering CM as an adjunct to other psychotherapies or pharmacotherapies to boost initial response and thereby possibly extend benefits.

Two other concerns about CM are that provision of external reinforcers may reduce internal motivation to change and reinforcers could be sold or exchanged for drugs. Data indicate that CM has no adverse effects on internal motivation (14), and effective CM interventions are designed to reduce the probability of drug lapses. Reinforcers are typically arranged so that each subsequent reinforcer has a higher value than the preceding reinforcer, which promotes sustained abstinence (15). When relapse occurs, reinforcer values reset, specifically discouraging relapse (2,3,9,10,12,15,17). This procedure decreases the likelihood of selling the reinforcer to purchase drugs, because if the drugs are consumed subsequent reinforcer value is decreased. In terms of ancillary drug use (which does not impact reinforcement), studies have not found increases in other drug use during or following CM interventions (16–17).

Practical concerns about CM are perhaps the most challenging to address. CM interventions that reinforce abstinence require collection and testing of urine samples 2–3 times weekly, which involves personnel time. As reinforcers are monetary-based and substantive data indicate that magnitude of reinforcement impacts efficacy (5–6), costs of these interventions are a significant barrier to their adoption in practice settings (2–3). In universal health care settings, these costs may be borne by society, which ultimately may realize cost savings in terms of reduced re-admissions, emergency room visits and contraction of HIV and other infectious diseases (18). However, in the United States, most treatment programs that implement CM are expected to pay for the intervention. In outpatient settings in which CM has ancillary benefits of increasing retention and reimbursement to providers, CM may be cost-effective, but in capitated systems, greater attendance results in lower per-patient reimbursements, making CM cost-ineffective to the provider. Large-scale studies are needed to investigate thoroughly the cost-effectiveness and cost-benefits of CM and to identify the settings and subgroups who are most positively impacted by it (19), including adolescent, criminal justice and workplace settings.

Ideology, politics, and economics will impact the eventual expansion or failure to implement CM in countries around the world. Nevertheless, the scientific data clearly indicate that this is an intervention worthy of continued investment.

Acknowledgments

I thank Dr. John Roll for helpful comments on an earlier version of this editorial. Preparation of this report is based in part on National Institutes of Health Grants P30-DA023918, R01-DA13444, R01-DA18883, R01-DA016855, R01-DA14618, R01-DA022739, R01-DA024667, R01-027615, P50-DA09241, P60-AA03510, and General Clinical Research Center Grant M01-RR06192.

References

1. Garcia-Rodriguez O, Secades-Villa R, Higgins ST, Fernandez-Hermida JR, Carballo JL, Errasti Perez JM, et al. Effects of voucher-based intervention on abstinence and retention in an outpatient treatment for cocaine addiction: a randomized controlled trial. *Exp Clin Psychopharmacol* 2009;17:131–8. [PubMed: 19586227]
2. Peirce JM, Petry NM, Stitzer ML, Blaine J, Kellogg S, Satterfield F, et al. Effects of lower-cost incentives on stimulant abstinence in methadone maintenance treatment: a National Drug Abuse Treatment Clinical Trials Network study. *Arch Gen Psychiatry* 2006;63:201–8. [PubMed: 16461864]
3. Petry NM, Peirce JM, Stitzer ML, Blaine J, Roll JM, Cohen A, et al. Effect of prize-based incentives on outcomes in stimulant abusers in outpatient psychosocial treatment programs: a national drug abuse treatment clinical trials network study. *Arch Gen Psychiatry* 2005;62:1148–56. [PubMed: 16203960]
4. Dutra L, Stathopoulou G, Basden SL, Leyro TM, Powers MB, Otto MW. A meta-analytic review of psychosocial interventions for substance use disorders. *Am J Psychiatry* 2008;165:179–87. [PubMed: 18198270]
5. Lussier JP, Heil SH, Mongeon JA, Badger GJ, Higgins ST. A meta-analysis of voucher-based reinforcement therapy for substance use disorders. *Addiction* 2006;101:192–203. [PubMed: 16445548]
6. Prendergast M, Podus D, Finney J, Greenwell L, Roll J. Contingency management for treatment of substance use disorders: a meta-analysis. *Addiction* 2006;101:1546–60. [PubMed: 17034434]
7. Bijou SW, Orlando R. Rapid development of multiple-schedule control performances with retarded children. *J Exper Analysis Behavior* 1961;4:7–16.
8. Evans, J. NHS plans free iPods for addicts: Controversy greets plan to reward drug addicts for staying clean. 2007 [Accessed September 23, 2009]. Available at <http://www.macworld.co.uk/news/index.cfm?RSS&NewsID=18612>.
9. Rawson R, Huber A, McCann M, Shoptaw S, Farabee D, Reiber C, et al. Comparison of contingency management and cognitive-behavioral approaches during methadone treatment for cocaine dependence. *Arch Gen Psychiatry* 2002;59:817–24. [PubMed: 12215081]
10. Petry NM, Martin B. Low-cost contingency management for treating cocaine and opioid-abusing methadone patients. *J Consult Clin Psychology* 2002;70:398–405.
11. Higgins ST, Badger GJ, Budney AJ. Initial abstinence and success in achieving longer term cocaine abstinence. *Exp Clin Psychopharmacol* 2000;8:377–86. [PubMed: 10975629]
12. Petry NM, Alessi SM, Tedford J, Austin M, Tardif M. Vouchers versus prizes: Contingency management treatment of substance abusers in community settings. *J Consult Clin Psychol* 2005;73:1005–14. [PubMed: 16392974]
13. McLellan AT, O'Brien CP, Lewis D, Kleber HD. Drug addiction as a chronic medical illness: Implications for treatment, insurance, and evaluation. *JAMA* 2000;284:1689–95. [PubMed: 11015800]
14. Ledgerwood DM, Petry NM. Does contingency management affect motivation to change substance use? *Drug Alcohol Depend* 2006;83:65–72. [PubMed: 16310974]

15. Roll JM, Higgins ST, Badger GJ. An experimental comparison of three different schedules of reinforcement of drug abstinence using cigarette smoking as an exemplar. *J Applied Behavioral Analysis* 1996;29:495–504.
16. Kadden RM, Litt MD, Kabela-Cormier E, Petry NM. Increased drinking in a trial of treatments for marijuana dependence: substance substitution? *Drug Alcohol Depend* 2009;105:168–71. [PubMed: 19608353]
17. Petry NM, Martin B, Cooney J, Kranzler HR. Give them prizes and they will come: contingency management for the treatment of alcohol dependence. *J Consult Clin Psychol* 2000;68:250–57. [PubMed: 10780125]
18. Hanson T, Alessi SM, Petry NM. Contingency management reduces drug-related human immunodeficiency virus risk behaviors in cocaine-abusing methadone patients. *Addiction* 2008;103:1187–97. [PubMed: 18494842]
19. Olmstead TA, Sindelar JL, Petry NM. Clinic variation in the cost-effectiveness of contingency management. *Am J Addictions* 2007;16:457–60.