

Contingency Management in Addiction Treatment

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Contingency management rewards good behaviors, thereby modifying behaviors of substance abusers in a positive and supportive manner.

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Contingency management (CM) treatments are based upon a simple behavioral principle -- if a behavior is reinforced or rewarded, it is more likely to occur in the future. These behavioral principles are used in everyday life. For example, parents use allowances or dessert to encourage their children to make their beds or eat their dinners. Employers use salaries and bonuses to reward good job performance. In the case of substance abuse treatment, drug abstinence, as well as other behaviors consistent with a drug-free lifestyle, can be reinforced using these principles.

[Substance abuse treatment](#), however, is often aversive in nature. Because many drugs are illegal, society considers substance users to engage in illegal behaviors, and the courts and legal systems may mandate or coerce them into treatment. Thus, rather than reinforcing substance abusers for their progress and attempts at remaining abstinent, some clinics utilize confrontation techniques when patients are suspected of "using" or discharge patients when they are not adhering to program rules. While these negative reinforcement techniques may be effective in altering some behaviors, they also result in an unpleasant environment and context for recovery. Importantly, not all aspects of substance abuse treatment are aversive. Many treatment programs routinely use some forms of reinforcement, such as take-home methadone privileges for patients who maintain long periods of abstinence or pins and leadership status in [Alcoholics Anonymous](#) meetings.

The premise behind CM is to utilize these and other reinforcement procedures systematically to modify behaviors of substance abusers in a positive and supportive manner (Petry, 2000). For example, in many CM treatments, patients leave urine specimens multiple times each week and receive explicit rewards for each specimen that tests negative for drugs. These rewards often consist of vouchers that have a monetary basis and can be exchanged for retail goods and services such as restaurant gift certificates, clothing, sports equipment, movie theater tickets and electronics.

A series of studies demonstrated that CM is efficacious in retaining patients in [treatment](#) and reducing substance use. Higgins et al. (1993) randomly assigned cocaine-dependent outpatients to [12-step-oriented treatment](#) or a CM treatment in which they received individual behavioral therapy in conjunction with vouchers every time they provided a drug-free urine specimen. Patients assigned to the CM group remained in treatment significantly longer and reduced cocaine use relative to patients in the 12-step group. A subsequent trial evaluated whether it was the provision of the contingent vouchers, as opposed to the behavioral therapy, that engendered the improved outcomes (Higgins et al., 1994). This study provided intensive [behavioral therapy](#) to another sample of cocaine-dependent outpatients, but one group received vouchers contingent upon drug abstinence while the other group did not. Three-quarters of the patients in the voucher condition completed treatment, compared with 40% of patients who received the same behavioral therapy without the vouchers. Over half the patients who received vouchers achieved at least 10 weeks of continuous [cocaine](#) abstinence versus 15% in the non-voucher condition.

To further isolate the effects of the vouchers, Higgins et al. (2000) compared a group of [cocaine-dependent outpatients](#) who received vouchers contingent upon negative urinalysis results to another group who received the same amount of vouchers regardless of their urinalysis results.

Significantly more of the patients in the contingent condition were able to achieve long periods of cocaine abstinence throughout the study, and the beneficial effects of the contingent condition persisted throughout a one-year follow-up period.

These beneficial effects of CM treatments extend beyond cocaine-dependent outpatients. Studies have shown improved outcomes when CM techniques are applied to clients dependent on marijuana (Budney et al., 2000), cigarettes (Roll et al., 1996), alcohol (Petry et al., 2000), opioids (Bickel et al., 1997), benzodiazepines (Stitzer et al., 1992) and multiple drugs (Petry and Martin, in press; Piotrowski et al., 1999).

Not only can abstinence be reinforced using these CM techniques, but variations of these procedures are effective in modifying other behavior patterns of substance abusers. Reinforcement can be provided for attendance at therapy sessions (Carey and Carey, 1990), for prosocial behaviors within the clinic (Petry et al., 1998) or for compliance with goal-related activities (Bickel et al., 1997; Iguchi et al., 1997; Petry et al., 2000). In terms of this latter category, clients may decide upon three discrete activities each week that are related to their treatment goals. These may be attending a medical appointment if the goal is to improve health, going to the library with their child if the goal is to improve parenting or filling out a job application if the goal is to obtain employment. If clients successfully accomplished these activities and provided objective verification of their completion via receipts (Petry et al., 2001b), they received rewards. In one study at an HIV drop-in center, we found that providing reinforcement increased attendance at groups from an average of less than one patient per week to over seven per week and that reinforcing compliance with goal-related activities increased compliance rates from less than 30% to over 65% (Petry et al., 2001a). Similarly, Silverman et al. (2001) described a vocational training program in which substance abusers receive paid training opportunities contingent upon drug abstinence, and Milby et al. (2000) have a program that provides housing to homeless cocaine abusers that is contingent upon abstinence. Focusing on behaviors that can derive reinforcement from the natural environment, such as is apparent with housing and employment, may result in persistence of the behavior pattern even after participation in the research study is completed.

These techniques can also be used to encourage adherence to medication in substance abusers. Preston et al. (1999) found that providing vouchers significantly enhanced adherence to naltrexone (ReVia) in recently detoxified heroin-dependent patients, and Rigsby et al. (2000) reported similar beneficial effects of CM techniques with adherence to anti-retrovirals among HIV-positive patients. Despite the efficacy of CM in enhancing drug abstinence and improving other psychosocial problems, some logistical concerns have hindered its dissemination, the primary of which is cost. The voucher amounts escalate as the number of consecutive negative urine samples increases, such that the first negative sample earns \$2.50, the second \$3.75, the third \$5 and so on. Typically, successful voucher programs (Higgins et al., 2000; 1994; 1993; Silverman et al., 1996) have allowed for earnings exceeding \$1,000 during a 12-week treatment period, and average earnings are about \$600 per patient.

A way to reduce the costs of CM is to provide only a proportion of the behaviors with a tangible reinforcer. In one outpatient treatment program, alcohol-dependent patients earned the chance to draw from a bowl and win prizes of varying magnitudes for submitting negative breath-alcohol samples and completing steps toward their treatment goals (Petry et al., 2000). The prizes available ranged from \$1 prizes (choice of a bus token or fast-food coupon), \$20 prizes (choice of a personal tape player, watch or phone card) and \$100 prizes (choice of television or stereo). Chances of winning were inversely related to prize costs, such that chances of winning a \$1 prize were approximately 1 in 2, while chances of winning a \$100 prize were 1 in 250. This intermittent schedule of reinforcement may be an inexpensive expansion of vouchers, as average cost per client was under \$200. The beneficial effects of this technique were replicated in cocaine-abusing methadone patients (Petry and Martin, in press).

The time or money associated with obtaining prizes, however, may still exceed the resources available to many treatment providers. To further reduce costs, clinics may consider having both monetary and non-monetary prizes available (e.g., lunches and special parking spots for a week or take-home doses or rapid dosing lines in methadone clinics). Clinics may solicit donations of some prizes or write for small grants (\$5,000) that may cover the costs of prizes for a year. Nevertheless, if the magnitude of the rewards becomes too low, or if the prizes available are not desired by the patients, the procedure is unlikely to produce its desired effects (Petry, 2000).

Contingency management procedures that provide any form of monetary-based incentives are clearly going to be more costly than standard treatment. However, the costs of the CM approach,

which can be accompanied by dramatic reductions in substance use, may be small in contrast to those associated with continued drug use, including emergency department visits, inpatient stays or medical care for an individual who contracts HIV (Holder and Blose, 1991). Thus, CM interventions may ultimately save money through reduced hospitalizations, medical care, criminal justice system costs and public assistance payments and through increased productivity. These treatments may also have direct beneficial effects to the treatment programs, i.e., if clients are retained in treatment longer, the reimbursements provided to the clinic may increase. The potential cost-savings effects of CM from both programmatic as well as societal perspectives have yet to be studied. If found to be cost-effective, General Assistance programs and managed care companies may find the upfront costs of CM programs to be modest with respect to their long-term cost offsets. Creative adaptation of these techniques by community providers may assist in disseminating CM techniques for improving the treatment of substance abusers.

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