



## What is Contingency Management (CM) and how is it used with adolescents?

### What is Contingency Management?

Contingency Management (CM) draws on behavioral learning theories, particularly those dealing with rewards and punishments. According to operant conditioning, people continue to use substances because both biological and environmental factors reinforce it.<sup>1</sup> For example, substances may have biochemical effects that the user enjoys as well as other benefits such as peer involvement or monetary rewards.<sup>1</sup> CM weakens this reinforcing power.<sup>2</sup> At the same time, CM strengthens the reinforcing power of healthier activities and behaviors.<sup>2</sup> The central concepts of CM are:

1. A clinician organizes the environment so substance use is easily detected.<sup>2</sup>
2. The client receives a tangible reinforcer when he or she is abstinent.<sup>2</sup>
3. If the clinician discovers substance use, the incentive is withheld.<sup>2</sup>
4. Rewards from positive sources increases to counteract the reinforcing power of substance use.<sup>2</sup>

There are several different strategies, frequencies, and intervals to use with reinforcements and punishments.<sup>2</sup> Reinforcement and punishment can be both negative and positive. Typical CM programs use both. For example, a client receives a voucher for a negative drug screen and does not if he or she has a positive drug screen. Other strategies include positive and negative punishment for undesirable behavior.<sup>2</sup> Positive punishment is adding something undesirable and negative punishment is taking away something enjoyable.<sup>2</sup> For example, if an adolescent engages in substance use, he or she may do extra chores (positive punishment) or she or he may not go out with friends on Saturday (negative punishment).

Intervals of reinforcement can be fixed or variable and given in intervals or by ratios. A fixed interval means that a client receives a reward each time a behavior occurs, such as providing a negative drug screen.<sup>2</sup> In contrast, in a variable interval, a client receives a reward after a certain number of these behaviors, on a more unpredictable schedule.<sup>2</sup> A fixed ratio means that a client gets rewards on a predictable ratio such as 1:3 or every third positive behavior.<sup>2</sup> This type of reinforcement leads to less compliance because the person knows he or she will not receive a reward for the first two instances.<sup>2</sup> A variable ratio means that an average number of behaviors results in rewards. If the ratio is still 1:3 then the reward might occur on the first, the second, or the third as long as it averages out to 1:3.<sup>2</sup> Random schedules are possible as well where rewards for positive behavior may occur at any time.<sup>2</sup>

### What are different options for CM?

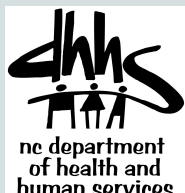
There are several different options for using CM with any program. One type of CM is Voucher-Based Reinforcement Therapy (VBRT).<sup>3</sup> Clients receive vouchers for negative urine or breath samples.<sup>3</sup> Vouchers represent monetary awards and the money may be used to purchase whatever the client would like.<sup>4</sup> Vouchers can be in the form of gift cards or points that add up over time that have monetary values.<sup>4</sup> Bonus systems are usually built-in to these voucher programs to award clients for continuous abstinence.<sup>4</sup>

Another type of CM is the “Fishbowl” technique, which uses reinforcers of varying magnitudes.<sup>3</sup> Clients get to “draw” out of a fishbowl for each substance free sample. Most of the slips say “Good Job” but some of them indicate that the client has won a prize.<sup>3</sup> There are several small prizes, a few large prizes, and one jumbo prize.<sup>4,5</sup> This is a less expensive way of conducting CM.<sup>5</sup> To tailor these interventions to adolescents, they can receive rewards such as access to sports games or social activities.<sup>4</sup> Adolescents can also receive rewards for non-drug activities such as seeking employment.<sup>4</sup>

It is important to make a choice when considering what behavior to reinforce. The most straight forward way to use CM is to reinforce drug abstinence through rewarding clients for having negative urine or breath samples.<sup>6</sup> However, this has some drawbacks such as costs to the agency depending on the number of drug screens and the number of drugs to detect.<sup>6</sup> In addition, it is often difficult to differentiate between licit and illicit drug use if the client is taking prescribed medications.<sup>6</sup> There may also be a lag time between abstinence and negative samples.<sup>6</sup> The reinforcer may be too small to compete with all the reinforcers that are already associated with drug use.<sup>6</sup>

Another option for reinforcement is to reward behaviors incompatible with drug use.<sup>6</sup> Clients receive rewards for making small progress toward their treatment goals.<sup>6</sup> Petry<sup>6</sup> reports that engagement in positive activities such as job seeking or health improving activities is related to less drug use. However, it may be hard to verify self-reports of some activities (i.e. taking a walk, getting enough sleep, etc.).<sup>6</sup> A third option is to reinforce attendance, homework compliance, or using appropriate language.<sup>6</sup>

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Says who?

1. Higgins, S.T. & Petry, N.M. (1999). Contingency management: Incentives for sobriety. *Alcohol Research & Health*, 23, 122-127.
2. NFATTC. Contingency management part 1: Basics of behavior reinforcement. *Addiction Messenger*, 7, 1-3. Retrieved March 4, 2008 from [http://www.attcnetwork.org/userfiles/file/NorthwestFrontier/AM\\_v7\\_Series\\_1.pdf](http://www.attcnetwork.org/userfiles/file/NorthwestFrontier/AM_v7_Series_1.pdf)
3. Roll, J.M. & Watson, D. (2006). Behavioral management approaches for adolescent substance abuse. In A. Liddle & C. Rowe (Eds.), *Adolescent substance abuse: Research and clinical advances* (375-395). Cambridge, UK: Cambridge University Press.
4. Higgins, S.T., Alessi, S.M., & Dantona, R.L. (2002). Voucher-based incentives: A substance abuse treatment innovation. *Addictive Behaviors*, 27, 887-910.
5. Petry, N.M., Martin, B., Cooney, J.L., & Kranzler, H.R.

## What is the evidence for using CM?

Studies have found several positive outcomes of using CM.<sup>6,7,8,9,10</sup> Most of the established research on CM examines adults. The few studies that look at adolescents use cigarette smokers as their primary population.<sup>8,9</sup> CM increases treatment retention more so than counseling alone for clients who abuse all types of substances.<sup>6</sup> These procedures are also effective at reducing overall drug use.<sup>6</sup> Adults in a study using the “Fishbowl” technique had longer periods of abstinence from cocaine and opioids than the adults in the standard treatment condition.<sup>7</sup> These effects carried over into the follow-up period with those adults that were in the CM condition maintaining higher rates of abstinence.<sup>7</sup>

Corby et al.<sup>8</sup> conducted a three-week study using immediate cash rewards for adolescents smokers. During the first week and third week, clients received rewards for each sample given.<sup>8</sup> During the second week, participants received a reward only if their CO levels were less than eight parts per million (ppm).<sup>8</sup> The total number of eligible samples and the number of consecutive abstinent samples were significantly higher when clinicians rewarded abstinence.<sup>8</sup> The mean CO level across the sample was significantly lower during the intervention condition; it went back to near baseline levels at follow-up.<sup>8</sup>

A second study with adolescent smokers further expanded on the use of CM with this population by looking at three different reinforcement schedules. Participants in all conditions received no money for positive samples and could receive \$147.00 if they were continuously abstinent.<sup>9</sup> In the first condition, the rewards increased in magnitude for each consecutive negative sample and were reset back to the initial reward of \$3.00 when there was a positive sample.<sup>9</sup> The second reinforcement schedule was the same as the first except the reward levels were not reset when there was a positive sample.<sup>9</sup> The final condition offered a fixed amount of \$9.80 per each negative sample with no bonuses or penalties.<sup>9</sup> Roll and Higgins found that each type of CM was related to a lower mean CO level throughout as compared to the baseline.<sup>9</sup> All three conditions were also comparable in the mean number of abstinent samples that were provided in each.<sup>9</sup> The first condition was the most effective in promoting an initial period of abstinence (three consecutive negative samples) that was sustained throughout the study.<sup>9</sup>

Another study looked at the feasibility of using a voucher system to encourage abstinence in adolescents who smoked marijuana. Adolescents in this study could receive up to \$590.00 in vouchers that they could use for goods and services that were pro-social and non-drug related.<sup>10</sup> Adolescents participated in the voucher program in conjunction with MET/CBT12 therapy.<sup>10</sup> At the end of the 14-week study, significantly more of the adolescents provided a marijuana-negative urine sample when compared to their intake samples.<sup>10</sup> At the one-month follow up, 71% of the total sample was still abstinent.<sup>10</sup> The effect of the voucher system on alcohol use was not significant.<sup>10</sup>

## What are special considerations and future directions for CM?

Important things to consider when implementing a CM program include the consistency of the program, the frequency of the behavior, and the magnitude and immediacy of the reward.<sup>6</sup> The client and clinician need to collaborate on a behavioral contract that describes what behaviors are being monitored, the schedule, and the contingencies.<sup>7</sup> It is important that behaviors are measurable and verifiable beyond self-report (i.e. drug screening, requiring a signature from a group therapy leader, etc.).<sup>6</sup> Another consideration is to reinforce successive approximations early on in the process. This means that the client receives a reinforcer for a smaller step toward a goal.<sup>6</sup> For example, if a client’s goal is to participate in a support group, he or she might receive a reward for collecting pamphlets or calling for information.

Overall, CM has demonstrated positive effects with both adults and adolescents.<sup>6,7,8,9,10</sup> One major focus of research on CM right now is adolescents who smoke.<sup>9</sup> There are several other studies available on this topic. The University of Arkansas is currently recruiting participants for a study on a family based contingency management program for adolescents who abuse alcohol.<sup>11</sup> Some of the established evidenced based treatment programs include a contingency management component. These include Multidimensional Family Therapy and the Adolescent Community Reinforcement Approach. It’s possible to use CM in conjunction with most treatment programs.

## ADOLESCENT SUBSTANCE ABUSE FACT SHEETS

(2000). Give them prizes, and they will come: Contingency management for treatment of alcohol dependence. *Journal of Counseling and Clinical Psychology*, 68, 250-257.

6. Petry, N.M. (2000). A comprehensive guide to the application of contingency management procedures in clinical settings. *Drug and Alcohol Dependence*, 58, 9-25.

7. Petry, N.M. & Martin, B. (2002). Low-cost contingency management for treating cocaine- and opioid-abusing methadone patients. *Journal of Consulting and Clinical Psychology*, 70, 398-405.

8. Corby, E.A., Roll, J.M., Ledgerwood, D.M., Schuster, C.R. (2000). Contingency management interventions for treating the substance abuse of adolescents: A feasibility study. *Experimental and Clinical Psychopharmacology*, 8, 371-376.

9. Roll, J.M. & Higgins, S.T. (2000). A within-subjects comparison of three different schedules of reinforcement of drug abstinence using cigarette smoking as an exemplar. *Drug and Alcohol Dependence*, 58, 103-109.

10. Kamon, J., Budney, A., & Stanger, C. (2005). A contingency management intervention for adolescent marijuana abuse and conduct problems. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44, 513-521.

11. Family based contingency management for adolescent alcohol abuse. (2008). Retrieved April 2, 2008 from <http://clinicaltrials.gov/ct2/show/term=family+based+contingency+management&rank=1>

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