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# **Contingency Management: Using Motivational Incentives to Improve Drug Abuse Treatment**

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## FORWARD

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Contingency management interventions are perhaps the most exciting development in drug abuse treatment research in the past 10 years, as this group of treatments has been shown to be consistently effective for many types of substance users and in many applications. This group of interventions provides tangible rewards to patients for reaching concrete target behaviors, and thus is based firmly in sound principles of behavioral pharmacology. Following the landmark studies by Steve Higgins and colleagues at the University of Vermont (Higgins, Budney, Bickel, & Hughes, 1993; Higgins et al., 1991; Higgins & Silverman, 1999) the efficacy of a variety of contingency management procedures (including vouchers, direct payments, and free housing) have been replicated in other settings and samples, including cocaine-dependent individuals within methadone maintenance (Silverman et al., 1996; Silverman et al., 1998), homeless addicts (Milby et al., 1996), and freebase cocaine users (Kirby, Marlowe, Festinger, Lamb, & Platt, 1998).

These findings are of great importance because contingency management procedures are potentially applicable to a wide range of target behaviors and problems, including treatment retention and compliance with pharmacotherapy (such as retroviral therapies for individuals with HIV). Nevertheless, despite the very compelling evidence of the effectiveness of these procedures in promoting retention in treatment and reducing cocaine use, the procedures have not yet been widely used in community-based treatment programs. One major impediment to broader use of contingency management in clinical practice has been the expense and complexity associated with the voucher program.

This manual highlights the work of Dr. Nancy Petry and her colleagues on developing lower-cost contingency management interventions and adapting this strategy for use in a number of settings. Dr. Petry's work is highly important, as it provides a novel and effective means for bringing this treatment approach into broader clinical use. This manual is intended to be used by researchers and clinicians to help them implement low-cost clinical management strategies in a range of treatment settings. This manual, much of which is drawn from Dr. Petry's published work (Petry, 2000; Petry et al., 2001a), as well as from the unpublished NIDA manual, "Motivational Incentives for Enhanced Drug Abuse Recovery" (Stitzer & Petry, unpublished), focuses on the use of contingency management to target abstinence and treatment attendance. A follow-up manual will focus on the use of this approach to foster attainment of other treatment goals.

### NOTE

This manual, like any others, should not be used without appropriate training and ongoing supervision. It may not be applicable to all patient types, nor compatible with all clinical programs or treatment approaches. This manual may supplement, but does not replace the need for adequate assessment of each patient, careful case formulation, ongoing monitoring of patient's clinical status, or clinical judgment.

Kathleen M. Carroll, Ph.D.  
Scientific Director

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# Contents

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<b>Chapter 1. Introduction</b>	1
Consequences	2
Rewards and Punishers	2
Importance of Contingency	2
Advantages and Disadvantages of Punishments	3
Rewards Can Teach New Behaviors and Promote Growth	3
General Reinforcement Procedures are Sustainable	3
Rewards Emphasize Accomplishments	4
<b>Chapter 2. Background, Rationale, and Research of Contingency Management</b>	5
Research Demonstrating the Efficacy of CM Programs	6
Study Example 1	6
Study Example 2	7
Incentive Studies with Other Drugs of Abuse	8
Study Example 3	8
Effects of CM on Untargeted Drugs	9
<b>Chapter 3. Behavioral Principles Related to Contingency Management</b>	10
Behaviors to Modify	10
Drug Use Target	10
Urine Testing Methods that Provide <i>Immediate</i> Feedback to Patients	10
On-site Testing	11
Limitations of On-site Urine Testing Methods	11
Technical Issues	11
Selecting A Urine Test Schedule	12
Controversy between Single <i>vs</i> Multiple Drug Targets	12
Summary	12
Treatment Attendance Target	13
Considerations for Selecting A Behavior Target	13
Reinforcers to Use	14
Vouchers or Cash	14
On-site Prizes	15
Clinic Privileges	15
Informing	16
Refunds and Rebates	16
Public Assistance and Financial Management	16
Summary	17
Designing Monitoring and Reward Schedules	17
Features of the Reinforcer	17
Frequency	17
Immediacy	18
Magnitude	18
Selection of Prizes	18

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Consistency	19
Schedules of Reinforcement	19
Escalating Reinforcers and Bonuses	19
Intermittent Schedules of Reinforcement	19
Special Considerations for Effective Use of Reinforcers	20
Successive Approximations	20
Priming	20
Summary	20
<b>Chapter 4. Case Example: Designing an Intermittent Schedule of</b>	
Reinforcement Contingency Management (CM) Protocol	22
Reinforcing Cocaine Abstinence in an Outpatient Setting	22
Assessing Baseline Performance to Determine Incentive	
Program Goals	23
Urine Testing Schedule	23
Reinforcement Schedule	23
Draw Schedule	24
Prize Magnitude Probabilities	24
Principles of Intermittent Reward Programs	25
Stocking the Prize Cabinet	25
Summary	26
<b>Chapter 5. Guidelines for Implementing CM</b>	27
Role of CM Clinician	27
Procedures to Identify Eligible Patients	28
Identifying Participants for CM Projects	28
Inclusion/Exclusion Questions	29
The Issue of Gambling	29
When to Introduce CM Procedures	30
Implementing CM Procedures	30
Introduction of CM Program	31
Review Tox Screen Results	31
Tracking Escalation of Draws	31
Maintaining a Prize Cabinet and Delivering Prizes	32
Incentive Items	32
Jumbo Incentive Items	32
Large Incentive Items	33
Medium Incentive Items	33
Small Incentive Items	33
Prize Cabinet	33
Reserving Prizes	34
Save-ups	34
Gift Certificates	35
Prize Stickers	35
Keeping an Incentive Inventory	36
Cheating	36
Escalating Value of Draws: Relationship to Absences	
and Missed Samples	37
Reset Draws	37
Handling Excused Clinic Absences in Relation to Draws	37
Documentation for Excused Absence	38

Urine Sample Collection and Testing	38
Urine Sample Test Scheduling	39
Sample Collection and Validation	40
Coordination with Clinic Urine Sample Testing	42
Dealing with Contested Urine Sample Results	42
Time Needed after Drug Use to Test Negative	44
Handling Positive Urine Samples Due to Medication	44
Handling Uncontested Positive Urine Sample Results	44
When Patients Are Unable to Urinate	45
Urine Sample Testing Summary	46
Addressing the Discontinuation of CM Procedures	46
<b>Chapter 6. Selection, Training, and Supervision of Contingency</b>	
Management Clinicians	48
CM Clinician Selection	48
CM Clinician Training	48
CM Clinician Supervision	49
Summary	50
References	53
Appendix	57



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# 1. Introduction

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The goal of substance abuse treatment is patient change. Change can be accomplished by decreasing undesired behaviors or increasing desired behaviors. Treatment plans often outline therapeutic goals in this way. Goals for therapy may be to decrease drug-seeking and drug-taking behavior and to increase time spent in activities with non-drug-using social supports. For treatment to be successful, patients should not only stop using drugs but also participate actively in treatment by coming to sessions and working towards positive lifestyle changes, such as getting a job, moving to a safe environment and socializing with non-drug using people. An important question is, what motivates patients to come to treatment and to make these positive lifestyle changes?

Ideally, patients should seek substance abuse treatment when they know they are experiencing a problem with drug use and want help to cease using drugs. Often, however, patients wait until the negative consequences of drug use become severe before they come for treatment. Some of these adverse effects are external, or related to pressures from family, employers or the legal system. Other times, more personal negative consequences act as motivators. Substance abusers may become sick, get tired of the hustle, or run out of money to buy drugs. On some level, they may want to change, but drugs act as a magnet to pull patients back to their old habits. This conflict between wanting to stop using, but still desiring some of the positive effects associated with drug use, creates ambivalence.

Ambivalence plays out in at least two common ways. First, patients, even those who seem initially motivated, may drop out of treatment soon after they arrive. Second, patients may be very motivated to become abstinent from drugs and alcohol, but they have difficulty staying away from situations or people associated with their drug use and relapse during treatment. A major challenge faced by drug abuse treatment providers is how to help patients resolve their ambivalence by enhancing their motivation to stay in treatment and remain committed to abstinence.

Contingency management techniques, sometimes called motivational incentives, are an effective way to enhance behavioral change. Before reviewing the background and rationale for these treatment approaches and the research supporting their efficacy, we will review some basic concepts about how behavior is influenced in everyday life.

## Consequences

Consequences have a very important impact on people's behavior. People often behave as they do:

1. To gain something positive (e.g., financial rewards, recognition, social praise, vacations, peace and harmony, etc.), and
2. To avoid something negative (e.g., fines, social displeasure, societal sanctions, interpersonal conflict, etc.).

## Rewards and Punishers

Use of rewards and punishments is widespread in everyday life. A variety of things are used to reward desired behavior. Some things are purely symbolic (e.g., grades), others involve money (e.g., salaries or bonuses), and some involve praise or displeasure from other people. Positive incentives are sometimes termed "rewards" or "reinforcers". These are generally things that people like and want to have. For example, payment or recognition for a job well done are reinforcers. Reinforcers that are given right after a behavior occurs will increase the probability that the behavior will occur again in the future.

"Punishers" can be considered the opposite of reinforcers. They are consequences that people generally do not like or do not want to happen to them. Punishers that are delivered right after a behavior occurs decrease the probability that that behavior will occur again. For example, getting a ticket for driving above the speed limit is a punisher. If you were given a speeding ticket every time you drove above the speed limit, you would likely stop speeding.

## Importance of Contingency

For rewards or punishments to be able to influence behavior, a specific relationship must occur between the behavior and its consequence. For example, parents may want to encourage their child to clean his room by giving him an allowance. For the allowance to influence the child's behavior in any effective way, it would have to be given to him only after the desired behavior occurs, and ideally, immediately after the desired behavior occurs.

If parents give their child an allowance every Saturday, the allowance is not likely to influence the child's behavior of cleaning his room. The child will want his allowance every Saturday, and may even demand his allowance, promising to clean the room right after he is done playing with his friends. However, if the allowance is given even when the room is not clean, the parents are unlikely to be teaching their child to clean his room.

The specific relationship between a behavior and its consequence is called a *contingency*. Applying reinforcers to modify behavior has the most impact when the reward is given contingently. In other words, incentives should be awarded as soon after as possible to the accomplishment of the desired behavior, and only when the desired behavior has occurred. It is the contingency between the behavior and the receipt of the reward that changes the behavior, not the delivery of the reward alone. Using the above example, the parents should give

the child a small amount of money *each time* that he cleans the room. If the room gets messy multiple times within the course of a week, the child could be given portions of the weekly allowance every time that he cleans his room.

## Advantages and Disadvantages of Punishments

Punishments can be used to change behaviors, and at times they may be preferable to rewards. For example, using time-outs may be necessary with children to stop certain types of behavior, such as disruptive classroom behavior. For the time-out to be most effective, it should educate the child about consequences in a non-threatening way. The child can be reminded that the punishment is time-limited and that it is a result of a specific behavior (e.g., talking to other children when the teacher is speaking), rather than due to a flaw in the child as a person.

Although punishments may be effective under some circumstances, they do not teach people what to do; instead, they teach people what not to do. Delivering contingent punishment will stop behaviors in very specific contexts, but this method of shaping behavior does not foster new behaviors. For example, when a child runs into the street, her safety is in jeopardy. A parent's use of punishment in this situation (holding her on the arm to stop her from running or shouting at her to stop) may be necessary to cease the behavior immediately. But, when the punishment stops, the behavior often resumes. Once the child wants to cross the street again, she may do so again without thinking.

Furthermore, punishment does not generalize very well to other behaviors or settings. For example, raising your voice to your child in order to stop her from running into the street will not teach her to look before crossing, or to be less impulsive. Yelling will only stop her in that particular instance.

## Rewards Can Teach New Behaviors and Promote Growth

In contrast to punishers, rewards can be used to teach a person what to do, and these behaviors can generalize across settings and situations. For example, praising your child for looking in both directions before crossing the road may produce cautious behavior in other settings, not just in crossing roads, but also in acting cautiously. Similarly, praising a child for being polite in one situation may generalize to politeness in other situations as well.

## General Reinforcement Procedures are Sustainable

What an individual views as an incentive may change over time. For example, an ice cream sundae given after the whole meal has been eaten may be a good incentive for a child to reinforce his finishing his dinner, but sundaes may lose their appeal if they are available every day. Allowing for choices in the incentives that are available will ensure that what is being used to shape behavior will actually be viewed as a reinforcer. Letting the child pick between food (ice cream, candy or other desserts) and non-food rewards (e.g., watching television after eating dinner) may be the best option to encourage him to eat his dinner regularly.

Further, the success with one reward can be transferred to new incentives and to new behaviors. Even though particular incentives (e.g., an ice cream sundae) may lose their effectiveness over time, an incentive program can be effective on a long-term basis for influencing behavior if it employs a variety of reinforcers. Once a five-year old child learns that he can earn rewards for cleaning his room, these reward procedures can be used to shape other habits, such as encouraging him to keep the family room clean and to help with the dishes. As long as the incentives chosen are considered to be valuable by the person trying to earn them, they can be effective in motivating behavior change across a range of conditions.

## **Rewards Emphasize Accomplishments**

Both rewards and punishers can change behavior, but rewarding good behavior may be easier to institute than punishing inappropriate behaviors.

If delivered contingently and after each instance of the behavior being modified, both rewards and punishers can be equally effective in changing behavior. However, punishments set a negative tone, implying failure, and they foster a sense of poor self-esteem. Rewards, in contrast, encourage positive expectations and emphasize accomplishments. Once you get used to delivering rewards consistently, both you and the recipient will be more likely to feel good about what you are doing, why you are doing it, and how you are doing it.

The above examples provide some illustrations of how behavioral techniques are used in everyday life to shape behavior. These procedures, when applied within the context of substance abuse treatment, have been termed contingency management. The next section elaborates the background and rationale for contingency management, as well as some of the research demonstrating its efficacy among substance abusing populations. The remainder of this manual addresses issues specific to designing and administering CM programs to change drug use behaviors.

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## 2. Background, Rationale, and Research of Contingency Management

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Contingency management (CM) procedures, also sometimes called motivational incentives, are based upon principles of behavioral modification. These procedures stem from token economy approaches that were developed over forty years ago and are still in place today. The behavioral principles are centered around three basic tenets. First, you identify a target behavior that you want to increase in frequency (e.g., drug abstinence). Second, arrange for a convenient and reliable way to measure the behavior; this aspect includes frequent monitoring, such as conducting urinalysis testing three times a week. Third, you provide tangible reinforcers whenever the target behavior occurs. In other words, you can give a patient a token, a clinic privilege, or a gift certificate whenever he or she tests negative for drugs. Finally, when the target behavior does not occur, you systematically withhold these rewards.

CM procedures can be understood in terms of operant conditioning principles that explain how people learn. A broad literature demonstrates that laboratory animals will work to obtain the same substances that many humans abuse (e.g., cocaine, opioids, and alcohol), because they find the effects pleasurable or reinforcing. Substance use can also be seen as a behavior that is reinforced, or strengthened, by its consequences. Some individuals may use drugs because of the positive consequences of drug use. For example, cocaine may be used because it changes the way a person feels (e.g., powerful, energetic, euphoric, stimulated, less depressed), the way a person thinks (“I can do anything”, “I can only get through this if I am high”), and the way a person behaves (less inhibited, more confident). The positive consequences of drug use vary widely from individual to individual. People with particular vulnerabilities (e.g., family histories of substance use, high need for sensation seeking, or concurrent psychiatric disorder) may find drugs particularly reinforcing. Thus, people may use drugs for any number of reasons, but all drug use is maintained by its consequences (e.g., psychoactive effects of the drug).

Drug use is also sustained by the negative consequences of ceasing use. Once someone becomes dependent on a drug, the absence of that substance may result in an unpleasant, or even very painful, condition known as withdrawal. A person dependent on heroin will experience withdrawal symptoms after even 4–6 hours of not taking the drug. Thus, in many cases, drug use occurs not just for the positive effects of the drug (to get high or to feel confident), but also to avoid the negative effects of not using (to alleviate the withdrawal).

The basic premise of CM is to reinforce or reward alternative behaviors other than drug use, so that not using drugs becomes a more positive experience, and that using drugs becomes a less positive one. Because drugs can be such positive reinforcers on their own, CM programs must ensure that the rewards

delivered for abstinence are of sufficient value to the individual that she will find abstinence more reinforcing than using drugs.

## Research Demonstrating the Efficacy of CM Programs

In most of the research with incentives done to date, patients have been able to earn vouchers for drug-free urines. These vouchers are worth money, and patients can accumulate their voucher earnings in a clinic-managed account as they remain drug-free. Rather than handing money directly to patients, the staff purchases items requested by patients once they have earned the necessary amount in vouchers. They can spend their vouchers on virtually anything they choose, so long as the desired item is reasonable and consistent with positive life-style change (no weapons, cigarettes, etc). Typically, patients purchase clothing, electronic equipment, sporting or hobby items, and recreational items with their vouchers.

The principles used in incentive programs are quite simple. First, a target behavior is identified. In the studies being reviewed here, the target behavior is “drug abstinence” as detected by negative urine samples. A reward is provided, such as voucher points, whenever the target behavior occurs. That is, whenever patients deliver a drug-negative urine sample, they receive a voucher. *An important principle of the voucher system is that the longer patients remain drug-free, the more vouchers each negative urine sample is worth. This system of escalating value of rewards motivates patients to remain abstinent for long periods of time, not just sporadically.* Further, a penalty is usually built in to the incentive plan such that patients experience a temporary penalty (reset of voucher amount to its initial low value) if they submit a drug positive urine.

Overall, research has shown that these incentive programs work very well to improve treatment outcomes. Specifically, they increase treatment retention and decrease drug use, two of the most important outcomes of substance abuse treatment. The next three studies represent some research that used incentive systems. These studies demonstrate that incentives work with a wide variety of substance abusing patients—cocaine abusers being treated in drug-free clinics, cocaine abusers being treated in methadone clinics, and alcoholics being treated in an outpatient program.

### Study Example 1

#### HIGGIN’S COCAINE ABSTINENCE TREATMENT

The first studies of voucher reinforcement systems were conducted by Dr. Stephen Higgins in a cocaine treatment clinic in Vermont (Higgins et al., 1991, 1993, 1994, 2000a, 2000b). These studies all had similar designs. To illustrate, let’s review the 1994 study. Patients in this study all received an intensive behavior therapy called Community Reinforcement Approach therapy that tried to improve their life-styles by reconnecting with positive forces in the community (drug-free friends and relatives, Narcotics Anonymous, recreational activities, etc.). Patients also had regular urine sample testing twice per week. The difference is that half of the patients were randomly assigned to a group in

which they could earn voucher incentives, while the other half did not have vouchers available. Patients in the incentive condition could earn as much as \$1000 in vouchers over a 3-month period if they remained cocaine-free for that entire time. This large amount was selected to ensure the incentive would be valuable enough that patients would find it rewarding and would work for it.

The study showed that patients who could earn incentives stayed in treatment longer. Seventy-five percent of patients assigned to the incentive condition stayed in treatment for 6 months compared to 40% of patients assigned to the standard care condition. The study also showed that about 60% of the patients who could earn incentives were abstinent from cocaine for at least 8 weeks compared to about 25% of standard care patients.

## Study Example 2

### SILVERMAN'S COCAINE TREATMENT IN METHADONE PATIENTS

Another study was conducted by Dr. Kenneth Silverman at a methadone treatment research clinic in Baltimore (Silverman et al., 1996). Only patients with cocaine-positive urine sample results were enrolled in the study, and all of them received standard drug abuse counseling and urine sample testing three times per week. Half of the patients were randomly assigned to a condition in which they had to earn vouchers by providing a cocaine-free urine sample, and the other half to a condition in which they would receive vouchers without working for them—that is, non-contingently or independent of their urine sample test results. Again, patients could receive up to about \$1000 during the 3-month intervention, and patients in both conditions ended up receiving the same overall amount of vouchers.

The retention rates were not very different for the two groups in this study. Retention was expected to be high in both groups, because the study occurred in a methadone treatment facility. Methadone itself can be considered a reinforcer for attendance, because methadone abates opioid withdrawal. The main result of the study was that those who could earn vouchers contingently for providing cocaine-free urine samples were much more likely to stop using cocaine than those who received vouchers non-contingently. About 40% of the patients who could earn vouchers contingently were abstinent for 8 weeks or longer compared to none of the patients in the standard care group. *So, simply receiving vouchers did not help anyone to stop cocaine, but having to work for vouchers by providing cocaine negative urine samples motivated patients to reduce their cocaine use.*

These patients were also asked how helpful the treatment had been to them. Those in the contingent voucher group reported that their treatment was more helpful than those in the standard group. Specifically, they believed that the incentives helped them to increase their motivation to remain abstinent. Thus, these patients attributed their success to their own internal motivation rather than to the external rewards offered by the program. This is an important thing for clinicians to understand. Even if their motivation was influenced by

external incentives (the contingent vouchers), the addition of these external incentives was useful in reducing drug use.

## **Incentive Studies with Other Drugs of Abuse**

Most of the studies using incentives have focused on cocaine use. However, cocaine is not the only drug that can be influenced by incentives. Incentives have worked to help people stop using heroin (Bickel et al., 1997; Stitzer et al., 1986), benzodiazepines (Stitzer et al., 1992), marijuana (Budney et al., 2000) and even cigarettes (Roll et al., 1996).

In summary, research has shown that incentive programs can be effective in reducing drug use. Nevertheless, incentive programs pose some challenges if they are going to be helpful to community treatment providers. Cost is certainly one of the issues that needs to be addressed to make incentive programs practical.

## **Study Example 3**

### **PETRY'S INTERMITTENT SCHEDULE OF REINFORCEMENT REDUCES COST (FISHBOWL PROCEDURE)**

To address the issue of cost, we developed an intermittent schedule of reinforcement, in which tangible incentives were not earned for every drug-free sample submitted. Reducing the number of tangible incentives that are delivered to the patients is one way costs of incentive programs can be decreased. In this study, an incentive program was tested with alcoholics who came to treatment at an intensive outpatient day program in the Veterans Administration system (Petry et al., 2000). For the purposes of the study, patients were monitored throughout an 8-week period. Patients randomly assigned to the standard treatment condition received typical care that included group treatment and daily breath alcohol testing. Later on, breath alcohol monitoring was conducted at least weekly. Patients assigned to the incentive condition received the same group treatment and breath monitoring, but those assigned to this condition could also draw slips from a fishbowl each time they submitted a negative breath alcohol sample. They got to draw one slip for each negative breath alcohol sample and five bonus draws after a week of consecutive negative tests. The draws gave them the chance to win prizes such as food items, videos, radios, sports equipment, etc. However, only half the draws resulted in any prize, and only a few of the draws resulted in the larger prizes.

Treatment retention was much better for patients who could earn incentives than for patients who could not. By the end of 8 weeks, only about 20% of standard care patients remained in treatment. In contrast, over 80% of incentive patients were still coming to treatment. The incentive also improved drinking outcomes. Only about 40% of standard care patients were still abstinent at the end of 8 weeks compared to about 70% of incentive patients who remained abstinent. The differences were statistically significant.

## Effects of CM on Untargeted Drugs

In the above study, over half of the alcohol-dependent patients were also using other drugs, especially cocaine. About 20% were positive for an illicit drug at the time of entering the outpatient program. The reason the rates were low initially was because many patients transferred from an inpatient detoxification program immediately prior to beginning the outpatient program and the study. As the weeks progressed, many standard care patients dropped out of treatment and reverted back to other drug use. However, those in the incentive group maintained abstinence from illicit drugs.

This study illustrates one of the very useful features of incentive programs. When incentives are targeted on a single drug, they may have the beneficial effect of reducing other drug use. Remember, no negative consequences were provided by the CM system in this study if patients used other drugs—only alcohol abstinence was reinforced. Most other studies of CM treatments also show that when drug abusers abstain from one drug, they either reduce, or simply maintain pre-treatment levels, of other drug use (Higgins et al., 1994; Petry & Martin, 2002). By retaining patients in substance abuse treatment programs, CM procedures may have the added benefit of enhancing motivation or teaching skills needed for abstinence from other substances.

The next chapter reviews important issues to consider in developing a CM protocol. It explains the basic “how to’s” in a generic sense. Individual CM systems must be tailored to fit the specific needs of each unique program. In other words, the drug(s) to be targeted, the types of reinforcers to be used, the treatment modality in which the program is implemented, and the scheduling of monitoring and rewarding abstinence can vary across clinical settings. Nevertheless, the CM procedures should be designed incorporating the behavioral principles discussed in the next section.

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## 3. Behavioral Principles Related to Contingency Management\*

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### Behaviors to Modify

The first principle to be considered in designing a CM procedure is deciding upon the specific behavior to be changed. Behaviors that are modified using CM approaches must be quantified objectively. In other words, to reinforce drug abstinence, you must use drug screening procedures and not patients' self-reports of abstinence, which are not objective. No matter whether the patient vehemently denies use or not, the incentives can only be provided if the objective methods indicate that the desired behavior (abstinence) has occurred. This manual focuses on using CM techniques to modify drug use and retention in treatment and is adapted from Petry (2000).

### Drug Use Target

In designing CM interventions that reinforce drug abstinence, the goal is to detect *all instances* of use of the target drug. Thus, CM studies typically monitor drug use 2–3 times per week, because most urine sample testing systems can detect drug use over this period. When patients submit specimens negative for the targeted drug, they receive the reinforcer (draws for prizes from a fishbowl, a voucher, or take-home dose of methadone). Submission of a positive sample results in no reinforcer and sometimes a punisher (reset draws to 1 or voucher amount to a low value).

### Urine Testing Methods that Provide *Immediate* Feedback to Patients

Reinforcing drug abstinence is a seemingly straightforward procedure that can be introduced into clinics. Most clinics screen urine specimens as part of standard treatment. However, urine samples often are sent to outside laboratories or hospitals for screening. This practice can hinder application of CM procedures because the results are often not obtained until several days later. If the patient has to wait to get their urine sample test result back prior to receiving reinforcement, 3–5 days may have elapsed. By the time the previous results are known and the clinician is ready to provide the reinforcement for abstinence that occurred 5–7 days earlier, the patient may have relapsed. In such a case, the clinician would then be providing rewards to a non-abstinent patient.

Remember the earlier example of rewarding a child to clean his room. If he cleans it on Tuesday, but you don't reward him until Saturday's allowance, this practice may be acceptable so long as the room remained clean between Tuesday and Saturday. But, if the room became messy during the interim,

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\* Adapted in part from: Drug and Alcohol Dependence, Vol. 58, Petry, Nancy M., A Comprehensive Guide to the Application of Contingency Management Procedures in Clinical Settings, pp. 9–25, (2000), with permission from Elsevier Science.

providing a reward on Saturday when the room is messy is not shaping the appropriate contingency between the behavior and the outcome. For learning to occur best, the reward should be provided immediately upon demonstration of the behavior. In the case of drug testing, a reward should be provided without delay each time the patient provides a negative sample.

### **On-site Testing**

On-site test kits are available (EZScreens from Medtox, Burlington, NC and Ontrack from Roache, Branchburg, NJ) that provide immediate results at relatively low cost. These test kits are almost as sensitive and specific as the outside laboratory testing, but they have the advantage of providing immediate results, within 2–5 minutes. Separate tests can be purchased and can screen specifically for many common drugs of abuse, including cocaine, methamphetamine, heroin, and marijuana.

### **Limitations of On-site Urine Testing Methods**

While these onsite tests are ideal in some senses for CM purposes, reinforcing urine specimen results can present some practical difficulties. On-site testing systems cost about \$2 per testing reagent, and using multiple screens (opioids, cocaine and marijuana) increases cost. Submission of urine specimens must be observed by a staff member to ensure validity, but even when submission is observed directly, occasionally patients may still try to leave bogus samples. Checking temperature, dilution, and pH can assist in ensuring the validity of samples. Validity test sticks are also available, at a cost of about \$1 each.

### **Technical Issues**

Other problems with urine screening are technical in nature. For example, many different types of benzodiazepines exist, complicating the detection of all forms of sedative use. Some drugs, such as methadone and benzodiazepines, are frequently prescribed as well as taken illicitly, and differentiating licit from illicit use is difficult. Nevertheless, methadone is detected separately from other opioids such as heroin, so that onsite test kits are useful for detecting non-methadone opioid use in methadone populations.

Liver disease may result in increased lag time between abstinence and negative readings, and many substance abusing patients have hepatitis and other liver diseases. For patients with chronic marijuana use, up to four weeks of abstinence must be achieved prior to urine specimens reading negative. Therefore, marijuana abusing patients cannot be reinforced for their efforts at abstinence until a two to three week drug-free period has been attained.

Detection of alcohol and nicotine use suffers from the opposite problem. Breath alcohol readings can assess alcohol use only over short intervals (e.g., 1–12 hours). Thus, breathalyzer readings should be taken several times a day to detect any use of alcohol, but clearly such a testing schedule is impractical in outpatient settings. Although urine and blood alcohol tests are available, they do not measure much further back than breath tests. Carbon monoxide

readings must also be taken several times daily to detect smoking abstinence. When designing CM interventions, the manufacturers' specifications regarding the test's sensitivity should be reviewed with the goal that *all* instances of drug use should be detected.

### **Selecting a Urine Test Schedule**

The testing schedule that you design needs to coincide directly with the test's ability to detect use. For CM programs targeting use of drugs that can only be detected over short intervals (e.g., nicotine or alcohol), testing two to three times per day will be necessary to best change the drug use behavior. For opioids, cocaine, and other stimulants, usually testing three times weekly is optimal because these tests can detect use over 48–72 hour periods. For chronic marijuana users, again thrice weekly testing is recommended, with the caveat that during the first 2–3 weeks onsite testing systems may be unable to detect abstinence. To reinforce initial abstinence in these situations, quantitative analyses of reductions in metabolites can be conducted (Preston et al. 2001). Alternatively, the patient can be reinforced for attendance during the first three weeks. Results should begin reading negative within 3–4 weeks, and at that time, reinforcement should be made contingent upon negative readings.

### **Controversy between Single vs Multiple Drug Targets**

Another potential problem with reinforcing drug abstinence in substance abuse treatment programs is philosophical in nature. Because most clinical programs strongly endorse abstinence from all drugs of abuse, clinicians' initial instincts are to reward patients only when they demonstrate complete abstinence from all drugs of abuse. A review of CM studies (Griffiths et al., 2000), however, finds that beneficial effects of the interventions are less likely when patients are required to be abstinent from multiple substances to earn rewards. Patients may not be motivated, or able, to achieve complete abstinence early in treatment. Targeting just a single drug at a time is a better strategy because patients may achieve initial success, which in turn may promote further motivation to abstain from the primary as well as the secondary drug(s). Most CM studies that target abstinence from just one drug find no change or reductions in other drug use as well. Once patients have learned to be abstinent from one drug, they may be more ready and able to focus on reducing other drug use as well.

### **Summary**

In summary, to design a CM procedure to reinforce drug abstinence, identify a single drug on which the rewards will be contingent. Drug use or abstinence should be monitored in such a manner as to detect all instances of use, and all days of abstinence. For most illicit drugs, this will require a minimum of twice weekly urine sample monitoring, and in the initial stages of treatment thrice weekly testing is recommended, with even more frequent testing for alcohol and nicotine. For each negative sample submitted, the patient should be provided the designated reward immediately. When a sample is missed or a positive sample is provided, the reward should be withdrawn. If escalating

reinforcement systems are in place, the next sample that is submitted would result in a reset to the original amount of reward (\$2 voucher, 1 token etc.). A full description of escalating voucher reinforcement systems can be found in a publication by Budney and Higgins (1998). If these guidelines are followed, abstinence rates are likely to be enhanced among your patients.

## Treatment Attendance Target

As previously mentioned, providing tangible incentives for attendance enhances retention in treatment programs. Many community-based programs that work with voluntary patients have significant problems with retention and attrition, especially in the early phases of treatment. Some programs already have procedures in place for managing early attrition. For example, at 12-Step meetings and many community-based programs, patients are provided with free coffee and donuts when they come. Social support and praise from clinicians and other group members may also reinforce attendance at sessions. By systematically applying CM principles, you may be able to better garner beneficial effects of these rewards to positively impact your patients. By systematically arranging the contingencies for attendance, patients may become more engaged in treatment. A report of the use of the fishbowl procedure found that it could increase attendance at substance abuse treatment groups from an average of less than two patients per session to over 12 patients per session (Petry, Martin, & Finocche, 2001).

## Considerations for Selecting a Behavior Target

Both drug abstinence and attendance in treatment are objectively quantifiable behaviors that can be modified using CM procedures. As suggested earlier, either behavior alone can be targeted for change, they can be reinforced sequentially, or they can be reinforced independently. While a variety of permutations are possible, you need to determine what it is you are trying to change. If the goal is to get more patients with a variety of drug use and polydrug use disorders to attend groups, reinforcing attendance alone should be the focus. If a program wishes to decrease cocaine use among methadone patients, then cocaine abstinence should be the target behavior upon which the CM program is designed. An example of sequential reinforcement is reinforcing attendance initially and then abstinence from marijuana, a case that was described earlier. If the goal is to both enhance attendance and reduce cocaine use, then two independent CM procedures can be put in place. In this case, the contingencies can be kept very separate—patients earn vouchers simply for attendance at groups (whether or not they are abstinent from cocaine) and they earn vouchers for abstinence from cocaine (whether or not they go to groups). A concurrent schedule could also be designed in which patients have to both attend group and be abstinent from cocaine to earn the rewards. Caution is extended in this latter design because asking too much from patients may result in the reinforcement system not working. If multiple behaviors must occur prior to a reward being delivered (coming to group *and* being abstinent for the past 3 days), the rewards may not be of sufficient magnitude to modify the behavior patterns. Furthermore, patients may be less likely to come in contact with the rewards. Behavior is unlikely to be modified by rewards that are never

experienced. *So don't ask for too much change at once!*

Once a specific target behavior to be altered is selected, the next step in designing a CM program is to determine which reinforcers to use.

## Reinforcers to Use

A variety of reinforcers can be used in CM approaches, some of which are commonly used in, or readily adaptable to, standard clinic settings. Reinforcer selection should be based on availability and practicality at a particular site, and with the patient population in mind.

## Vouchers or Cash

Many of the controlled clinical trials of CM approaches have used vouchers as the rewards. Patients earn vouchers that accumulate in a type of clinic-managed bank account. They can request their vouchers be redeemed for a variety of retail goods and services. Each negative urine specimen, for example, earns a voucher, and the vouchers escalate in amount as the number of consecutive negative urine samples increases. For example, the first negative sample earns \$2.50, the second \$3.75, the third \$5, and so on.

One advantage of vouchers is that it allows for individual preferences, and patients can spend their vouchers on virtually any item. They typically request restaurant gift certificates, clothing, haircuts, sports equipment, movie theatre tickets, and electronics. Because cash is not provided, the likelihood of patients using vouchers to purchase drugs is reduced.

While voucher procedures are efficacious, they are expensive to employ and manage. For example, in many voucher studies, each patient can earn up to \$1,000 worth of goods during treatment, and average earnings are about \$600. In addition to the cost of the vouchers themselves, the cost of staff time to purchase items, and transportation costs to obtain specific requested items, must be considered.

Providing cash may be less expensive than vouchers because staff time is not needed to purchase items. Because most people prefer \$10 cash to \$10 in vouchers, changes in the target behavior may be obtained with lower overall costs. Some people have expressed concern that cash may be used to buy drugs, but repeated monitoring of drug use, and removal of incentives when drug use is detected, mitigates against this concern. Cash reinforcers, nevertheless, suffer from similar concerns as vouchers, such as how clinics can raise necessary funds.

Some studies have shown that lower amounts of vouchers or cash can be useful in changing some behaviors. For example, Stevens-Simon et al. (1997) found that providing "a dollar a day" can enhance therapy attendance in teenage mothers. However, other studies have demonstrated that the CM procedures lose their effectiveness when the magnitude of the reinforcement gets too low (Dallery et al., 2001; Jones et al., 2000; Stitzer & Bigelow, 1984). Decreasing the

magnitude of the vouchers available seems to be particularly problematic when drug abstinence is being reinforced. For example, patients may be willing to attend a therapy session for a small voucher because therapy attendance may be a relatively easy behavior to modify. However, that same small voucher may be ineffective at altering drug use behavior, because it is such an ingrained pattern with strong positive effects of its own. If cash or vouchers are used as the rewards and the CM procedure is not producing its desired effects, the reason may be because the amounts are too low.

## On-site Prizes

A way to reduce the costs of the CM procedures without providing large amounts of cash or vouchers is to provide on-site prizes, and reinforce only a proportion of the target behaviors with a tangible reward. This is the approach that was first used in the study of alcohol-dependent patients described earlier (Petry et al., 2000). This intermittent schedule of reinforcement system is a relatively inexpensive expansion of vouchers, as not all behaviors are reinforced with a prize, and average cost per patient was less than \$200. This system may be well suited to treatment settings because at least some of the prizes can be obtained through donations. Cost of on-site prizes can be reduced further by having staff bring unused or gently used items to add to the prize cabinet. These things can vary from toiletries to food items to cell phones and CD's. When on-site prizes are used, it is important to have a large selection available and to include prizes that patients have specifically said they would like to work for. Purchasing the prizes can be done less frequently than fulfilling individualized voucher requests, thereby reducing staff time.

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., special parking spots for a week, or rapid dosing line in methadone clinics). Nevertheless, if the magnitude of the rewards available become too low, or if the prizes available are not desired by the patients, the procedure is unlikely to modify drug use or attendance behavior.

## Clinic Privileges

Methadone and other agonist pharmacotherapies are strong reinforcers, and some CM procedures have used properties of the medication to induce behavioral change. For example, changes in methadone dose, take-home privileges, early morning dosing hours, and continued treatment as opposed to administrative discharge have been used as reinforcers in methadone programs. Although these reinforcers are not costly, they are only applicable within the context of opioid agonist treatment. Additionally, reductions in methadone doses may lead to opioid use, and revocation of take-home dosing privileges may result in attrition.

While many methadone programs use these clinic privileges to encourage abstinence, the procedures are often not as successful as they would desire, primarily because appropriate behavioral principles are not applied. For

example, in many clinics, patients can earn take-home doses once they are able to maintain 3 months of continuous abstinence from illicit drugs. But, only a minority of patients gain these take-home privileges. The relatively disappointing results of standard take-home procedures occur because drug use is not monitored frequently. Usually only one urine sample is collected per month, thereby allowing many episodes of undetected use, and periods of abstinence that are never reinforced. Moreover, the time between the desired behavior (abstinence) and the reward (receipt of the take-home) is long delayed (e.g., three months). However, in controlled studies when behavioral principles are applied, take-home doses can be a very powerful reinforcer for methadone maintained patients (Stitzer et al., 1992).

## **Informing**

Another CM approach is to specify an aversive consequence, such as informing an employer, legal authority or licensing board, if drug use is detected. This option may be applicable only among patients who are employed or under legal supervision, and some patients may be unwilling to commit to such a system voluntarily. For patients under such supervision, the procedure can be made more positive. Instead of informing an outside board when drug use is detected, a system could be implemented in which every *negative* sample (or positive behavior) is reported to the outside agency. Twice weekly telephone calls to a parole officer could be arranged in which results from all samples are discussed, and negative samples are congratulated, rather than only positive samples being punished.

## **Refunds and Rebates**

Another procedure is to have patients pay a fee upon treatment entry, which is refunded if they complete treatment and remain abstinent. This technique, however, may be unlikely to entice substance abusers into treatment and may be impractical in underprivileged populations. Another strategy that has been proposed is to reduce fees for service or provide a rebate of the treatment cost to the patient when abstinence is achieved and maintained. The criminal justice system, which sometimes mandates upfront pay-for-service treatment programs, may be able to offset the costs of reinforcement procedures by providing a proportion of these fees back to patients who successfully demonstrate the desired behavior change (attending sessions or abstinence).

## **Public Assistance and Financial Management**

Other strategies that have been proposed are to provide public assistance or establish a representative payee and allow greater latitude in management of one's own finances when abstinence is maintained. These techniques may alleviate problems associated with increased drug use and emergency room visits following first-of-the-month public assistance payments. They also may help to ensure stable housing and teach substance abusers to manage their own finances. However, they require substantial involvement with each state's individual public welfare system, and they may be applicable for only a subset of substance abusing patients—dual diagnosis patients on public assistance.

Some individualized approaches have been established. For example, we have a case report of a schizophrenic substance abusing veteran, who received portions of his disability check contingent upon specified drug-free behaviors (Petry, Petrakis, et al., 2001b).

## Summary

In summary, a variety of reinforcers can be used in CM interventions. What may be more important than the specific reinforcer is the application of behavioral principles in the contingent delivery of the reinforcers. These issues are described below.

## Designing Monitoring and Reward Schedules

Once the behaviors to change are identified and the rewards to be used are decided upon, behavioral principles should be adapted in the application of the reward contingencies. Important variables are the frequency of occurrence of the target behavior, the monitoring schedule, and the delivery of the reinforcement.

## Features of the Reinforcer

### Frequency

Both the target behavior and reinforcement delivery should occur frequently for CM procedures to be effective. For example, if a patient uses cocaine only once or twice a year, reinforcing cocaine abstinence may be unlikely to change behavior substantially.

The target behavior should be monitored on a regular basis, such that appropriate behaviors can be reinforced often. As described earlier, urine sample testing systems should be designed to screen frequently for drug use, at least 2–3 times per week. Waiting several weeks to assess drug abstinence may increase the probability that the patient fails to understand the expectations or fails to recognize the association between the behavior and reinforcer. If attendance at the clinic is the behavior being targeted, it too should occur frequently (daily or at least weekly), for the procedures to be effective. Three-times per year check-in attendance would be less likely to be influenced by these CM approaches.

Frequent monitoring is useful so behaviors can be reinforced often. Patients should receive reinforcers early in treatment (see priming section) to learn the association between behavior and reinforcement. If patients must achieve several weeks or even months of abstinence or attendance prior to obtaining a reinforcer, they may never see the value of it, and hence behavior is unlikely to change.

## **Immediacy**

Another important variable to consider is the immediacy of the reinforcer. Learning occurs best when each occurrence of the target behavior is followed by its consequence without delay. If the reinforcer is presented far in time from the incident of drug abstinence (or whatever behavior is being reinforced), the reinforcer is less likely to alter behavior. Voucher programs use this behavioral principle by providing vouchers immediately upon submission of a negative specimen. Moreover, samples are screened within minutes of collection (on-site testing), and exchange of vouchers for retail items should occur with minimal delay (e.g., 2–3 days from request). In our fishbowl studies that reinforce attendance, patients draw from the fishbowl immediately upon entering the group room.

## **Magnitude**

As mentioned earlier, the magnitude of the reinforcer must be sufficiently large to change behavior. Some studies have examined whether the magnitude of the reinforcer affects outcomes, and most concur that large magnitude reinforcers are more likely to change behaviors and improve outcomes than small reinforcers (Stitzer & Bigelow, 1984; Silverman et al., 1999).

Nevertheless, in some circumstances, studies employing relatively low magnitude, or no cost, reinforcers have demonstrated positive effects. When principles associated with learning are applied, positive outcomes may be achieved with lower magnitudes. The key to designing these programs is to find desired reinforcers that are not associated with high programmatic costs.

Furthermore, the magnitude of external reinforcers may be reduced once a new behavior pattern has been established. In other words, after a patient has achieved 2–3 months of continuous abstinence or clinic attendance, you may be able to reduce the frequency or magnitude of reinforcement. Abstinence may persist because a new behavior (drug abstinence or attendance) has been learned, and the behavior eventually may have reinforcing effects of its own.

Clearly, higher magnitude reinforcers may be needed to change behaviors that themselves induce strong positive effects such as drug use (Higgins et al., 1994) compared with behaviors that induce smaller beneficial effects such as inappropriate verbal behaviors in the clinic (Petry et al., 1998). In other words, you may be able to give out small pieces of candy as reinforcers for patients who behave well in groups or that get to the group on time, but candy is unlikely to change drug use. A general rule is to choose a reinforcer that can compete with reinforcement derived from the behavior targeted for change.

## **Selection of Prizes**

Another related issue is that you need to accommodate individual preferences with the reinforcers provided. Not every patient will want restaurant gift certificates or specific clothing items. Having a wide selection of prizes or voucher request items available will increase the chances that the reinforcers will be desired, and therefore influence patients' behaviors.

## Consistency

Implementing CM programs can be problematic because clinicians tend to decrease the frequency with which they apply contingencies over time. For example, while urine samples may be monitored frequently during initial stages of treatment, testing schedules may become progressively less rigorous as time goes on. Not only may monitoring decrease over time, but consequences, too, may be applied less rigorously. By providing negative specimens during the first weeks of treatment, for instance, patients may ward off suspicions and frequent testing; if they submit a positive sample two months later, clinicians may dismiss it as an aberration and fail to inform parole officers.

To promote continuous application of CM procedures, staff can be reinforced for appropriate implementation. Weekly progress reports describing the staff's monitoring and reinforcement can be incorporated into clinical meetings (Andrzejewski et al., 2001). Checklists can be made to remind clinicians which patients are to be monitored and reinforced each day. Social encouragement and a chart in the staff room, with examples and reminders, can be used to implement the CM procedures appropriately.

## Schedules of Reinforcement

### Escalating Reinforcers and Bonuses

In most CM studies, the amounts of the vouchers or the number of prize drawings increase as patients achieve longer periods of abstinence. By the end of the 12-week treatment period in many voucher studies, for example, patients can earn over \$30 for each drug-free urine specimen, plus a \$10 bonus for every third consecutive negative specimen. Similarly, the number of draws increases for each successive negative sample submitted in our prize CM studies, thereby increasing the chances of winning prizes. Eliminating the escalation and bonus elements and delivering a constant rate of reinforcement may make CM systems less expensive and less complex. However, studies have shown that an escalating system may be necessary for inducing significant periods of continuous abstinence (Roll et al., 1996). Once the change has occurred and the patient has achieved long periods of abstinence or attendance, the value of the reinforcer may be reduced in magnitude, yet the behavior may be maintained (Higgins et al., 1994).

### Intermittent Schedules of Reinforcement

In the intermittent schedules of reinforcement studies (Petry et al., 2000; Petry & Martin, 2002), patients earned the chance to draw from a fishbowl and win prizes of varying magnitudes for submitting negative breath-alcohol samples and completing steps toward their treatment goals. Prizes available ranged from \$1 prizes (choice of a bus token or McDonald's coupon) to \$20 prizes (choice of a walkman, gift certificate, watch, or phone card), and \$100 prizes (choice of TV 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 only one slip of paper resulted in the jumbo prize. This system allows for high magnitude reinforcers to be included without unduly escalating cost of the program.

Nevertheless, even in CM projects that use this intermittent schedule of reinforcement, *the number of draws earned should escalate over time* so long as the desired behavior occurs. The number of draws earned can cap at 5 or 10 draws once a patient has achieved a long duration of abstinence or attendance.

## Special Considerations for Effective Use of Reinforcers

### Successive Approximations

One principle central to establishing new behavioral patterns is to reinforce successive approximations. For example, in teaching a young child to speak, small utterances are initially rewarded with smiles and praise by parents. Once words are spoken, more verbal praise is provided. After the child has learned a variety of words, sentence phrases and finally full sentences are praised. In other words, each small step along the way is reinforced. If you did not praise a child until he or she spoke a complete sentence, speech would occur much less rapidly, if at all.

Similarly, in establishing a pattern of drug abstinence, you can reinforce approximations toward abstinence. As described earlier, rather than necessitating abstinence from all substances, start with one drug at a time. Reductions in use of one drug may result in decreases in other drug use as well.

Some CM studies that reinforce drug abstinence suggest that up to 50% of patients never earn a reward. In other words, they do not provide a single negative sample, and therefore have no contact with the reinforcer. Recent studies have begun to use qualitative urinalysis testing to reinforce reductions in benzoylecgonine metabolites to encourage initial attempts at cocaine abstinence (Preston et al., 2001). Once initial abstinence is achieved and reinforced, patients may be more likely to maintain abstinence.

### Priming

Another method of providing early access to reinforcers is to “prime” patients. For example, when using a voucher CM procedure, provide patients with their choice of a movie theater or restaurant gift certificate during the first session. In this manner, patients learn that they can receive desired items by participating in treatment. In intermittent schedule of reinforcement studies, all patients are allowed to draw for a prize on the first day of treatment. If a patient is legally mandated to treatment, a meeting or phone call between the CM clinician and parole officer may be used to demonstrate an understanding of the contract among all parties.

## Summary

We have described behaviors that can be modified, the types of rewards that can be used, and some behavioral principles that should be considered in

designing CM interventions. The remainder of this manual provides a resource for clinicians and researchers in the implementation of CM protocols and interactions with patients in “real world” settings.

The next chapter describes a sample case depicting a clinical problem and how a CM procedure was designed to address this issue. Specific guidelines are provided for implementing a CM protocol within this context. Although many CM protocols will differ based on the goals and specifics of each treatment program and patient population, many of the aspects and general principles of CM are fairly standard.

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## 4. Case Example: Designing an Intermittent Schedule of Reinforcement Contingency Management (CM) Protocol

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CM programs can be developed and then tested using experimental procedures, such that patients are randomly assigned to a CM condition or a non-CM condition. Reversal designs can also be employed wherein the CM procedures are implemented for a period of time, and then withdrawn; changes in the target behaviors are then compared across the different conditions. These two types of designs are most frequently used when research studies of CM have been conducted.

CM programs can also be designed for use in a particular clinical setting, to address an important clinical issue. For example, methadone clinics may consider restructuring their clinic regulations such that all patients who submitted opioid-negative urine samples or who attend group sessions could become eligible for take-home methadone doses or increased clinic privileges, such as a rapid dosing line or early dosing window. CM procedures can be developed for individual patients, such as reinforcing negative cocaine samples in a small sample of very chronic users, or reinforcing attendance among revolving door patients who have repeated histories of dropping out of treatment quickly.

In all these cases, the CM programs are usually provided as an adjunct to standard care at a treatment program. CM is seen as something in addition to typical treatment, and the content of the group sessions and other treatment services is not affected.

### Reinforcing Cocaine Abstinence in an Outpatient Setting

Below, we consider an example of a clinic that wishes to reinforce cocaine abstinence in an outpatient treatment setting. We will describe the design of a sample CM protocol and how to implement it for that situation.

Consider a clinic that wishes to enhance long-term abstinence rates from cocaine among its patient population. The clinicians notice that these patients frequently drop out of treatment early, and few achieve long-term abstinence. They often re-present for treatment several months later, complaining of the same problems they had earlier. The clinicians at this site want to implement a CM procedure in which patients who present for treatment with a diagnosis of cocaine dependence can earn rewards for submission of negative urine samples.

The clinic received a \$5000 community grant to pay for the incentives. They decided to use the prize system, and distribute rewards according to an

intermittent schedule of reinforcement. Thus, the population of interest is cocaine-dependent patients starting treatment, and the behavior to be reinforced is submitting cocaine-negative urine samples. The rewards are tangible items.

## **Assessing Baseline Performance to Determine Incentive Program Goals**

Now, the clinic must decide upon the frequency of testing, the frequency of rewards, and the use of other behavioral principles to maximize the potential effectiveness of the CM program. By reviewing records of the past 50 patients treated at the clinic, the clinicians discover that, on average, cocaine-dependent patients stayed in treatment for 6 weeks, and they came to treatment twice per week. As the clinic wishes to increase long-term abstinence, they may decide to extend the CM intervention beyond the duration of the average length of stay. Therefore, they may decide to make incentives available for up to a 3-month period for each cocaine-dependent patient.

## **Urine Testing Schedule**

The schedule of the urine sample monitoring should coincide with the ability of the test to detect drug use. In the case of cocaine, most on-site tests can detect use over about a 72-hour window. Ideally, one would want to test urine samples every three days, but this schedule is not practical, because the clinic is not operative during the weekends. Instead, a compromise is made—to collect and screen urine samples twice per week, once during the early days (Monday or Tuesday), and once during the later days (Thursday or Friday). Thus, 24 urine samples will be collected and screened from each patient over the 3-month period.

## **Reinforcement Schedule**

Now, the reinforcement schedule must be decided upon. A minimum of one draw per negative sample submitted would be necessary, but including escalating schedules of reinforcement is also important. One may not want to increase by one draw for each successive negative sample throughout the 12-week period, however, because this would result in patients earning 24 draws in a single session at the end of the CM treatment period. One alternative would be to increase the number of draws by one per negative sample until a maximum of 10 draws is achieved. In this scenario, patients could earn up to 20 draws per week from weeks 6–12, so long as they continued providing all negative samples. The draw schedule follows (Table 4.1). The total number of draws possible is 195 over the 12-week period.

## Draw Schedule

Week in Treatment	Consecutive Samples Submitted	Total Draws Per Day (if negative)
1	1	1
	2	2
2	3	3
	4	4
3	5	5
	6	6
4	7	7
	8	8
5	9	9
	10	10
6	11	10
	12	10
7	13	10
	14	10
8	15	10
	16	10
9	17	10
	18	10
10	19	10
	20	10
11	21	10
	22	10
12	23	10
	24	10

**Table 4.1** Draw Schedule

## Prize Magnitude Probabilities

Now, the clinic needs to decide upon the probabilities and types of prizes available in the fishbowl. Because there are budgetary concerns and only \$5000 is available for prizes, a way of estimating price per draw is needed, given the number of patients that will be exposed to this reinforcement system. Let's assume that 50 patients are expected to be enrolled in the CM program. That allows for an average of \$100 per patient.

Note that if the clinic used a straightforward voucher system, this amount would be very unlikely to change drug use behavior. Magnitude of vouchers appears to be associated with success of the voucher CM procedures, and most of the research studies that have found beneficial effects of vouchers have arranged for about \$1000 per patient. In contrast, the fishbowl system can reduce the costs substantially, and the studies thus far usually allowed for an average maximum rate of reinforcement of \$240 per patient. Because patients typically earn about half of the rewards possible (due to early attrition and

positive as well as missed samples), the \$100 per patient this clinic has available is not far off from the ideal schedule.

## Principles of Intermittent Reward Programs

The exact probabilities of winnings in the fishbowl have varied slightly across studies (Petry et al., 2000; Petry & Martin, 2002; Petry et al., under review; Petry, Martin & Finnoche, 2001), but some concepts are probably important to achieving successful outcomes with this approach. First, *a highly valued prize item should be available*, e.g., the jumbo worth up to \$100. Second, *at least two other prize categories should also be available*, and one of them should be associated with desirable items (e.g., the large prizes like watches, walkmans and nice sweatshirts). While you don't want to have too many prize categories available because then prize types can get confusing, you want to have some flexibility such that patients are winning different things so they don't get bored with the procedure. Third, *the probabilities of winning better prizes are lower* than the probabilities of winning smaller prizes. This keeps costs down.

The fourth important feature is that you want to arrange the probabilities of winning (in relation to the number of draws available) such that *patients will win something "good" or valuable at least once per week*. If patients can earn 20 draws per week, then the probability of winning a good prize should be about one in 20. Finally, about half of the draws typically result in "non wins". Again, this feature is included to contain the costs, but you can't have too many non-winning slips or the procedure is unlikely to influence patient behavior. If patients win nothing most of the time, they would find little benefit in returning to the clinic or maintaining their abstinence.

For further details associated with calculating costs and probabilities of winnings, please consult Appendix 4.1 (Calculating Costs Associated with Prize Reinforcement). This appendix demonstrates how costs of the reinforcement schedule are determined.

To accommodate the above principles, the clinic decides to have a fishbowl with 750 slips of paper in it, with four prize categories available: jumbos, larges, mediums and smalls. The number of jumbo slips in the fishbowl is 1, number of large slips in the fishbowl is 30, number of medium slips is 75, and number of small slips in the fishbowl is 269. In total, 375 of the slips are winners, and another 375 state, "Good job, try again."

## Stocking the Prize Cabinet

The next step in the development of the CM procedure is to purchase the prizes and to stock the prize cabinet. It is advisable to not spend all of the prize budget at once, but at the same time, one must buy enough items such that a sufficient variety of prizes is available in each category. The clinicians at this clinic decided to solicit the patients' suggestions for popular small, medium, large and jumbo prizes. The most popular items were purchased, such that 20 choices of small prizes were available, 15 choices of medium prizes, 10 larges, and 3 jumbos (See section on prize cabinets for further details and suggestions).

In addition to the purchased prizes, each clinician brought 1–2 new items from home that they never planned to use, or gently used items that they thought patients might want. At a staff meeting, the clinicians voted on categorizing each item as a small, medium, large or jumbo. These items were added to the prize cabinet, in addition to the purchased prizes.

## Summary

Note that the CM program that these clinicians decided upon contains many of the principles described earlier that are associated with modifying behavior. The target behavior (cocaine abstinence) is measured frequently (twice per week). Each instance of abstinence is associated with a reward (a draw from a fishbowl with a chance of winning a prize). The rewards earned escalate with increasing abstinence. The probabilities of winning prizes were carefully chosen to coincide with the number of expected draws earned per week, such that patients should not have to go too long without winning a prize of at least moderate subjective value. The clinicians also took great care to provide many options in each prize category so that men and women, as well as older and younger patients, would have desired items in each category.

The next step is to review general guidelines and specific methods of implementing this CM procedure. Not all of the exact details described below will be applicable to all settings and all CM designs, but the general style should be incorporated.

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## 5. Guidelines for Implementing CM

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### Role of CM Clinician

Now that the CM program is designed (Chapter 4), a decision needs to be made with respect to who is going to manage this system. A single clinician could be designated the CM clinician, and this person could administer the CM treatment to all the eligible patients in the clinic. Alternatively, the primary clinician of each eligible patient could administer the procedures to their patients only.

When the CM clinician is not the primary clinician of the patient, particular boundaries between CM and non-CM treatment should be respected. That is, a “dedicated” CM clinician should only administer the CM, and not engage in other therapeutic interactions with patients who are being treated by other therapists. They should be aware of who the patient’s primary therapist is in the event that a clinical intervention has to be made which is beyond the scope of the CM. For example, a patient may disclose personal difficulties to the CM clinician. In these cases, the CM clinician should encourage the patient to speak directly with his or her primary therapist after s/he gives a urine sample and is finished with the CM procedures. Boundaries between what is therapy, and what is CM, should be maintained. Under these conditions, the CM procedures themselves take only a few minutes a day to implement.

Sharp distinctions between CM and other more traditional treatment also are important even when the primary therapist delivers the CM to his patients, in addition to individual or group treatment. Consider a situation in which a clinician provides vouchers to his patients contingent upon cocaine negative samples, and these contingencies are provided three times weekly, with one individual session per week scheduled. The clinician must make clear to the patient the difference between CM only and CM plus individual therapy days. While the CM only sessions should only take about 5 minutes, the patient may wish to talk about other issues in detail three times per week. This frequency and intensity of meetings may make it impossible for the clinician to finish his other responsibilities, and the clinician will need to inform the patient that individual sessions are on Wednesdays, while on Mondays and Fridays, he only collects and screens urine samples, and provides rewards as appropriate. The clinician must also be able to manage the individual sessions, such that the entire hour does not revolve around discussions or complaints about the CM system. For example, the patient may want to complain or make excuses if s/he does not earn any vouchers that day. The clinician should encourage the patient to stop using so that s/he will be eligible for vouchers if the next urine screen is negative. Then the clinician can shift from CM to individual therapy issues. It is important that the frequency and focus of the therapy are not diminished by the inclusion of the CM protocol. Typically, it is recommended that the CM component be conducted in the initial 5 minutes of the session, and once the rewards are delivered (or not) therapy can proceed.

Regardless of whether a primary or non-primary clinician is delivering the CM, clinicians implementing CM procedures should maintain a positive attitude, be encouraging, and always remain non-confrontational. The CM clinician should give the patients praise for coming to treatment and for keeping their appointments (even if they are drug positive, or even if they are late for the appointment). Tell them they are doing a great job remaining abstinent (if applicable) and for any other positive accomplishments they report (e.g., getting a job, developing better relationships with family members or other staff at the clinic). Some substance abuse patients have poor impulse control and can be easily offended or angered. Patients may become argumentative or demanding if things do not go their way. Clinicians should be supportive and non-confrontational, and as you will see below, always focus on the positive.

Throughout this manual, examples will be provided of potentially troublesome patient interactions that have actually occurred in CM projects, with guidelines given on ways CM clinicians can handle these situations. Please refer back to this manual for pointers after you encounter difficult issues with patients. Although you may have to “act on the spot” when interacting with the patient, you may be able to think of new ways to handle similar difficult situations in the future by reviewing this manual and by discussing the interaction with the clinical supervisor or other CM clinicians.

After you have decided who will administer the CM treatment, other aspects of project management must be considered. The steps to implementing a CM program generally include: identifying eligible patients, tracking patient progress, collecting and testing urine samples, and delivering rewards whenever the target behavior occurs. These issues are described below, using the sample protocol developed in Chapter 4.

## Procedures to Identify Eligible Patients

### Identifying Participants for CM Projects

In most clinics, not all patients will be eligible for the CM programs. In the example protocol developed in Chapter 4, the clinic is only selecting cocaine-dependent patients for participation. Thus, a procedure needs to be implemented to identify CM-eligible patients among all patients initiating treatment at that site. Incoming applicants can be screened in the waiting room by a CM clinician or identified by clinic intake personnel during the clinic’s routine intake process.

If not all patients at the clinic will be eligible for the CM program (as is the case in our test scenario), then the clinic will need to strictly define the patient subgroups that are eligible. Objective confirmations of these criteria may also be necessary. Once patients find out that some patients are getting incentives while others are not, patients may misrepresent their drug use problems to gain access to the CM program. For example, the clinic may experience a rush of new patients claiming to be cocaine-dependent, when, in fact, some are not.

Therefore, inclusion criteria should be objectively confirmed whenever possible.

## **Inclusion/Exclusion Questions**

As described above, potential participants may need to be screened to determine if they are eligible for the CM program. Therefore, questions regarding inclusion and exclusion criteria may need to be asked, and ideally confirmed by objective sources (e.g., from prior treatment records). In our sample situation, the clinic decided to offer CM procedures to patients who are cocaine dependent and who have previously failed at one or more prior treatment attempts in the past 2 years. Thus, this clinic will have records of prior treatments at their center, and they could easily access other centers' records to confirm prior treatment histories if a release of information is obtained.

To introduce the screening questions to determine CM program eligibility, one can say:

*"We have a new program at our clinic, but only about 20% of our patients are eligible for it. I just need to ask a couple of questions to find out if the program is right for you."*

Questions are developed to gain information about the inclusion/exclusion criteria specific to the study or CM project, without giving away directly what these criteria are. Here are examples of prior treatment and drug use assessment questions:

*"Have you ever been treated for drug abuse before?"*

If the response is yes..., *"Can you tell me when and where you were treated? What drug(s) were you using at that time? Would you be willing to sign a release of information so that we can confirm your attendance at that center?"*

*"Tell me a little about your drug use in the past two weeks."*

If cocaine use is mentioned, you can then ask, *"How many days in the past 2 weeks have you used cocaine?"*

## **The Issue of Gambling**

Some have argued that the fishbowl procedure is similar to gambling, because patients get chances to win prizes a system that seems somewhat like a lottery. Further, data suggests that gambling problems are prevalent in substance abusers (Shaffer et al., 1999), and therefore, this reinforcement system may not be appropriate for people with a gambling problem.

We recognize this concern about the fishbowl procedure. An argument against this proposition is that patients do not put up anything of value of their own to draw. That is, patients do not stand to lose anything when they draw from the fishbowl, and this chance of losing is what differentiates the prize system from a lottery. Despite the fact that the fishbowl system is not a lottery, we take seriously the concern that it may be troublesome for patients who are in

recovery from a gambling problem and are trying not to gamble anymore. Thus, we exclude patients from participating in the fishbowl programs if they are in recovery from a gambling problem. In most all of the studies of this fishbowl technique, we have also monitored patients' gambling behavior before, during and after study participation. To date, we have found no evidence that participating in these study procedures increase patients' gambling behaviors (Petry & Martin, 2002).

An example of an exclusion criterion question is:

“Have you ever felt that you gambled too much and are you in recovery from a gambling problem?”

If a patient reports that they have felt that they gambled too much but are not in recovery for a gambling problem, you will want to determine clinically whether or not it is in this patient's best interest to be in a CM program that provides chances to win prizes. For these patients, you should monitor their gambling behaviors over time, and discontinue CM participation if clinically indicated.

## When to Introduce CM Procedures

*At drug-free clinics*, the CM procedure usually begins right as the patients start treatment. The need to initiate the CM project soon after treatment initiation is related to the high early attrition rates seen in drug-free clinics. Often, 30% or more of patients never even come back to treatment after the first day. One of the major benefits of CM is to enhance retention in treatment, and this beneficial effect can occur even if drug use continues for a while. If only patients who have been attending drug-free treatment for some time period (e.g., 1–2 months) are included in a CM project, this group will be very different from new admissions and the incentive program may be expected to have different benefits other than promoting early retention.

*In methadone maintenance clinics*, retention rates are generally higher relative to drug-free programs because methadone itself is a reinforcer. Therefore, attracting patients quickly into CM programs (before they drop out of treatment) is usually less critical to the design of the CM project in a methadone clinic. Often, patients are stabilized on a dose of methadone prior to enrolling them in a CM program, especially one that reinforces abstinence. Some projects have offered participation in CM interventions to methadone patients after one month of dose stabilization, while others recruited long-term patients who continued using drugs, or not attending groups, after months or even years of prior methadone treatment. The choice of the patient population depends on the issue being addressed.

## Implementing CM Procedures

We use the CM protocol described in Chapter 4 to illustrate implementation of the specific aspects of this treatment.

## Introduction of CM Program

First, explain to all patients who will be receiving incentives that they will be able to win prizes displayed in the cabinet for coming into the clinic and testing drug-free. Open the prize cabinet (Fig. 5.1) and show them the prizes contained in it. Let them look at and handle any of the prizes that they see in it. Explain that there are small, medium, large and jumbo prizes. Inform them that they will get to win the prizes by providing drug-free urine samples (or coming to treatment, if attendance is the target behavior). Ask them what they see in the cabinet right now that they would like. Tell the patient that you will explain to them how they can earn that prize.

Then, introduce breath alcohol and urine sample testing methods. Show them the test cups and explain what the cup can tell about their recent drug abstinence. You can show them their own intake urine sample test results as a demonstration.

## Review Tox Screen Results

Review their urine sample results with them, and tell them that they need to be negative from (drugs or alcohol specified by protocol, in this case, *cocaine*) to draw for prizes. If they test negative for (*cocaine*) the first day of the procedure, they will get one draw from the fishbowl that day. Let them draw from the fishbowl and select a prize from the appropriate category if they draw a winning slip. Ask them what prize they see that they would like to work for next. Anticipating future prizes helps motivate the patient to maintain his/her abstinence.

## Tracking Escalation of Draws

CM clinicians need to keep track of the number of draws based on patients' weeks in treatment and their urine sample test results. A sample of the tracking sheet we use in CM protocols is included in Appendix 5.1 (Daily Tracking Form) and it can be adapted to coincide with unique features of different CM treatment designs.

Because the number of draws earned increases for every consecutive negative sample submitted in our sample program, the CM clinician must thoroughly understand the procedures related to draws, so they can explain them to the patients. At the end of the incentive procedure on the first day (as well as every day), congratulate patients for being drug-free (if applicable) and remind them when they will be coming for their next scheduled sample. Also remind them of the number of draws they can have at that time. A special reminder form can be provided for patients to take home. A sample flow sheet is provided in Appendix 5.2 (CM Flowchart).

*Patients in incentive conditions who test drug positive* for one or more target drugs should be congratulated for coming in to treatment. They should be encouraged to stop using so they can earn draws as soon as possible. Remind them when they will be coming for their next CM visit and the number of draws they can have at that time if their urine sample is drug free. The number of draws is determined by the reinforcement schedule set up for any particular

CM project, but it usually starts at one draw for the first drug-free urine sample provided.

## **Maintaining a Prize Cabinet and Delivering Prizes**

The prize cabinet is a very important part of any CM project. Every patient in the incentive program should identify several prizes in the cabinet that s/he wants. If there were not desired prizes in the cabinet, winning prizes would not be fun or rewarding to the patients, and they may not want to continue in the treatment. Therefore, ask patients every week or so what they are trying to earn in the cabinet. If they state they don't like any of the large or small prizes you have, ask them what they would like to see in the cabinet. Whenever possible, purchase this item within the next week and show the patient the next time he comes in that you got what he requested. Encourage him to work toward winning it. As he keeps coming into treatment and remaining drug free, he will increase his chances of winning that prize.

Re-stock the cabinet at least every two weeks, and more frequently if desired items are going quickly. If several related clinics are participating in an incentives project, you can rotate some items between sites—e.g., exchange your DVD player for another site's microwave for a couple of weeks, to keep patients attuned to different items from which they may select. Similarly, if you have a lot of small and large items that don't seem too popular in your clinic, you can trade off with another clinic.

## **Incentive Items**

As mentioned above, the tangible incentives represent part of the active component of this intervention. Items in the cabinet should be things that patients want. With help from other clinicians and even patients at your clinic, you can often get ideas for incentive items. Incentive items should be stored in a durable, lockable cabinet or closet which should be open when incentive patients are present and closed and locked at all other times. Guidelines are given below as to the value and content of small, medium, large and jumbo incentive categories. Each category should be stored on one shelf of the cabinet to the extent possible, or obviously labeled in its appropriate category.

### **Jumbo Incentive Items (maximum of \$100 value, average price of \$70)**

Jumbo items generally consist of electronic goods, such as VCRs and DVDs (which can be purchased for \$69 on sale), small televisions, boom boxes, Sony playstations (on sale), and small appliances, such as microwaves. A \$75 gift certificate to a retail store, such as a sneaker store, is also appropriate. *Three jumbo prizes should be on display at all times.* To start a prize cabinet, we recommend displaying a DVD player, a boom box, and one other item.

**Large Incentive Items**  
(maximum of \$20 value,  
average price of \$14)

Large items generally consist of watches (men's and women's styles), walkmans, \$15–20 gift certificates to a variety of local restaurants and retail stores (e.g., a book store, a music store), clothing items (sweatshirts, designer t-shirts), an AA Big Book, a back-pack, a curling iron, make-up set, coffee pot, pot and pan sets, dishes, pre-paid calling cards, etc. *At least 15 different types of large items should be on display at all times.* Solicit a lot of advice from your patients on these items.

**Medium Incentive Items**  
(maximum of \$5 value,  
average price of \$3.50)

Some incentives worth about \$3–5 value can be stocked and patients who receive several small prizes in a day be allowed to take a larger prize in exchange (five smalls for a medium). These prizes may consist of make-up, costume jewelry, t-shirts, underwear, wall clocks, nice coffee mugs, small daily planners, gloves, scarves, hats in winter, laundry detergent, etc. *About 20 different items should be available at any given time,* and even more if many patients are participating in the program as these items go quickly.

**Small Incentive Items**  
(maximum of \$1 value,  
average price of \$0.70)

Small prizes generally consist of bus tokens, candy bars, food items, sodas, toiletries (soap, shampoo, toothbrushes, toothpaste), makeup, costume jewelry, and gift certificates to food outlets (Dunkin Donuts, McDonalds, Subway). Socks are often an extremely popular item. Often, you can find a 12-pack set of tube socks in Kmart, for \$8 or so. Break the pack into 8 individual small items. *75 items should be available at all times, representing at least 15 different categories.* You will quickly discover what the "hot" items are in your clinic.

**Prize Cabinet**



**Figure 5.1** Prize Cabinet

Some clinics may not look favorably on patients consuming food and drink items in the clinic. One way to handle this situation is to only provide selected food items to patients at the end of their day at the clinic (right before they leave for home), to ensure they don't consume the food in the clinic.

If not all patients in a clinic are participating in a CM program, encourage patients who win larger sized items to pick up their prizes at the end of the day so that other patients don't get jealous. After patients win their first large prize, you may want to remind them that not all patients in this clinic are in the incentive program and can win prizes. Usually, just a simple reminder not to show-off the prizes to other patients is all that is needed. Another way of handling this, especially when jumbo prizes are won, is to state:

"That's great! You won a jumbo! What do you want? ...Yeah, the TV is great! How about I keep it locked up for you until you are ready to go home for the day? That way, no one will get jealous, and I'll be sure to keep it safe for you."

## Reserving Prizes

We recommend against "reserving" prizes for patients, except in rare circumstances. Some patients will ask you for a particular item (e.g., a blue sweatshirt in size L from Old Navy) and ask you to keep it for them until they draw a large. In these cases, we recommend that you buy the requested item, but fully display it in the cabinet, such that other patients can also select it. The patient who requested the item should be encouraged to keep coming to treatment and staying abstinent so that she can win it, and that if someone selects the sweatshirt before she wins it, you'll buy another. If that patient does draw a large prize but the sweatshirt was taken by another patient that same morning), tell the patient you'll buy another that afternoon and have it for her by her next CM visit.

You need to maintain some level of flexibility in terms of reserving, but you don't want to get into the situation in which you have two prize cabinets: the standard one, and another one of reserved items waiting to be won. Only "save" items on rare occasions, and only after the appropriate prize slip has been drawn. Generally, if your prize cabinet is well stocked to begin with, you should not encounter a lot of difficulties in patients being able to choose desired items from the stock that is already available.

## Save-ups

Sometimes patients want to "save up" draws and winnings to get a bigger prize. For example, some patients will want to save up all their draws for a week, and do them all at one time, rather than twice a week. Although this adds another complication for the CM clinician to track, allowing some flexibility may be useful, so long as you remember to clearly track the number of draws earned. Generally, we also allow patients to "trade up" prizes that they have won. For example, if they win five \$1 prizes, they can exchange it for a medium, or they can wait until they win four mediums (or two mediums and ten smalls) for a large. In some cases, patients have even chosen to wait until

they win 5 larges (or three larges and four mediums) and once they win this level of prizes, they take a jumbo home. However, do not allow trading of already-selected prizes. The decision to trade up must be made prior to the patient taking home any of the prizes.

## Gift Certificates

Gift certificates can work well as incentive prizes. However, do *not* purchase general gift certificates to malls, grocery stores, restaurants or Walmart-type stores, *unless* you can be certain that the gift certificate will not result in the purchase of alcohol, tobacco, drug-related products, or weapons. If asked, some stores and restaurants will place a statement such as: "Not redeemable for alcohol (or tobacco) products" on the certificate. Walmart and Kmart-type stores may have a sporting section that sells guns and ammunition. In this case, you may also need to have a phrase like "Not redeemable for weapons or ammunition." General mall certificates are not recommended because many have a store in them that sells tobacco products and may carry other drug-related paraphernalia.

If you feel that gift certificates are being misused in some way, you may want to reconsider providing that type of gift certificates, especially to certain stores. For example, some stores have very liberal policies on redeeming certificates such that a patient may purchase a \$0.50 pack of gum at Kmart, and then take the remaining \$74.50 of the certificate and spend it on cigarettes. You may be able to negotiate with the store that they provide you only with certificates that have a maximal amount of cash returned, or that only provide merchandise, without cash back (or less than \$10 cash returned). Of course, some patients may return prizes to stores for cash after purchasing them with gift certificates. If situations like this arise, you will need to troubleshoot with other clinicians about ways to handle misuse of prizes. Also, don't buy too many gift certificates that may expire before they are selected by patients.

\$1 gift certificates to Dunkin Donuts, Starbucks, McDonalds and other fast food chains have been very popular items in our prize CM studies. We usually buy them from restaurants in close proximity to the clinic. Sometimes, you will have to negotiate with the store manager or call the central distribution offices to purchase these gift certificates in small \$1 increments. But, it is well worth the time if the items are popular in your clinic (and you may even get some donated to you).

## Price Stickers

All price stickers should be removed from purchased products after they have been logged in an inventory. With price stickers on, patients may try to bargain with you, or just select the most expensive items and complain when the less expensive items are available. For example, they'll want to combine a \$15 large with five \$1 prizes, or they'll say, "It isn't fair that Sally got an \$18 walkman, and this one is only \$12.99. So, I should get 7 smalls, too." With the price sticker attached, they also may be able to return the item to the store and

exchange it for prohibited items like cigarettes. To avoid these problems, it is simply easier to remove the tags.

## Keeping an Incentive Inventory

The CM clinician is usually responsible for keeping the cabinet full, keeping inventory of the cabinet's contents, tracking expenditures and incentive awards to individual patients and soliciting suggestions from patients and other clinicians on cabinet contents. Each clinician should keep an inventory of incentive items bought and distributed.

Remember that inventory (prizes purchased and awarded) and overall number of draws earned should occasionally be checked by a designated Quality Assurance person(s). *Always* keep the prize cabinet locked because some of the items will be desired by patients and staff alike. The prize cabinet should be secured in a lockable office (e.g., CM clinician's office) in which only a few other personnel have access. Moreover, the CM clinician should always lock their office door whenever they leave the room, if even for a minute or two to check the waiting room.

## Cheating

### CHEATING PREVENTION

Occasionally, patients will try to cheat the prize drawing procedure. Prevention of cheating requires that the CM clinician always be vigilant in observing and controlling the drawing procedure. The following guidelines are suggested:

1. Allow only one patient in the room at a time; be alert to any attempts at distraction.
2. Have the patient remove outer clothing with long sleeves and/or roll up long shirt sleeves on the arm they will use to draw.
3. Have patient turn palms of their hands toward you before drawing.
4. Have patient place all slips on the table immediately after drawing.
5. Place selected slips in a box that you can see and control while entering results of the draws on the tracking forms.
6. Return all slips to the fishbowl after all the tracking procedures are completed.
7. Inventory the slips at least once per month and more often as needed (e.g., once per week). Make sure you have the proper number of slips

## Escalating Value of Draws: Relationship to Absences and Missed Samples

Patients in the incentive programs will earn at least one draw for each urine sample submitted that tests negative for the target drug, in this case cocaine. Because research shows that escalating rewards for increasing periods of abstinence are important in terms of encouraging long periods of abstinence, the number of draws should escalate with each consecutive sample or week that the patient tests negative. In our sample case, an additional draw is added for each consecutive negative sample submitted by the patient, up to a maximum of 10 draws per sample.

The escalating schedule is designed to sustain long periods of abstinence, and as such, the highest rates of reinforcement are scheduled late in the protocol for continuously abstinent participants. CM clinicians should remind patients how many draws they will have in their final weeks of the program if they are negative for the target drugs throughout. That way, they should win on average about 1 large prize a week (plus about 7 small and 2 medium prizes in our sample case) once they achieve about a month of continuous cocaine abstinence.

## Reset Draws

When a patient submits a urine sample that is positive for the target drug, the draws reset back to 1. *Missing samples* and *unexcused absences* also result in a reset to 1 draw for the next sample submitted that is negative for the target drug. Remember to maintain some flexibility for absences, but at the same time, be conservative when faced with these situations, as described below.

## Handling Excused Clinic Absences in Relation to Draws

At times patients have legitimate reasons for not coming to the clinic. If the patient was negative prior to the absence, urine samples during the excused absence may be counted as drug negative and will not reset the patient to the original low number of draws. Thus, when the patient returns from the excused absence, he will essentially pick up where he left off with no penalty. The best example of an excused absence is when the patient ends up in a controlled environment such as a jail or hospital. Sometimes, patients must travel out of town for a legitimate reason (e.g., a funeral), and other times they will have an important appointment on their scheduled urine sample testing day. The first priority is to try to reschedule the testing for the next day, but this will not always be possible, especially in drug-free clinics when patients are not expected to attend daily. The principle in dealing with excused absences is to remain flexible and supportive. You do not want to do things that will upset patients that will drive them out of the program. Rather, retention is the goal.

Impress upon your patients that if they cannot be there for a scheduled appointment, they need to let the CM clinician know. A telephone call to the clinician will do. Usually, as long as the patient calls, he may be excused for appointments, court dates, or even child care problems. Similarly, when there is a holiday on a scheduled urine sample testing day, and patients have no other reason for coming into the clinic that week, they may only provide one sample that week, without penalties for the escalating draws.

## Documentation for Excused Absence

If the absence involves some sort of appointment, patients should be encouraged to bring in documentation that the appointment was kept. Use good clinical judgment and consult with the patient's primary therapist (if applicable), and/or the project supervisor or clinical team about individual instances of excused absences. When in doubt, it is better to be lenient thereby increasing the probability that the patient will stay in treatment and the program. If an individual patient has too many excused absences, one can start becoming more stringent with them later on. But, keeping them in the program, and in treatment, is the primary aim. Thus, we usually recommend allowing patients the benefit of the doubt *one* time for an absence with no documentation of their whereabouts (e.g., one sick day without a doctor's note). However, the CM clinician must make it explicitly clear that any future absence without documentation will not be accepted and their draws will be reset to 1. For example the CM clinician might say:

"Because this is the first time you have been absent without documentation, I will not reset your draws to 1 today. However, if in the future you are absent for a legitimate reason, like you were this time because you were sick, and you do not bring documentation, I will have to reset yours draws to 1."

*For clearly illegitimate excuses (e.g., "I overslept", "I didn't feel like coming in on Monday"), the patient's draws are reset to 1.*

In the event that a patient must be away from the program for a prolonged time (e.g., because they go into a hospital or prison), specify how many days they will have of excused absence before they are terminated from the program. Thus, they can come back and re-enter the incentive program where they left off in the draws. This rule gives an advantage to someone who was negative at the time they left and was away for a prolonged time, because their urine samples would be counted as negative during the absence and they would re-enter at the level they were when they left. This should help to encourage these individuals to remain drug-free after leaving the controlled environment. Of course, if they give a drug-positive urine sample at any time, they will reset to one draw for the next negative sample submitted.

## Urine Sample Collection and Testing

This section provides information on scheduling urine sample tests, conducting the testing procedure and interacting with the patients over contested results.

Many of the protocol procedures can be managed from the CM clinician's office without involving any other clinic staff. However, the CM clinician will need to be aware whenever a CM patient is scheduled to attend the clinic and whenever such a patient arrives. Set up a system so that you are reliably informed whenever CM patients come to the clinic. Often, this communication system can be arranged with the clinic receptionist. Check the waiting rooms and group sessions frequently to see when CM patients come in so that urine samples can be obtained.

## Urine Sample Test Scheduling

Because previous studies have demonstrated that frequent urine screens are essential for detecting short-acting drugs like cocaine (Griffith et al., 2000), CM participants should be expected to give urine samples for on-site testing at least twice weekly throughout the program, and up to three times per week if possible. If thrice weekly sample testing is feasible, it should be scheduled for Mondays, Wednesdays and Fridays.

However, especially in non-methadone programs, testing more than twice weekly is often not possible because patients are not required to attend the clinic daily. If the patient begins the program on Monday, Tuesday or Wednesday, the patient should be scheduled for a second urine sample that same week. If the intake is on Thursday or Friday, the next scheduled visit possible will usually be on Monday. (In clinics that are open on Saturday, patients with a Thursday intake can be scheduled for their second urine sample on Saturday, if possible). The CM clinician gives patients a notice at each CM visit reminding them of when their next CM visit is scheduled. In programs where patients are expected to attend daily, a Monday-Thursday or Tuesday-Friday urine sample collection schedule should be attempted, as this schedule provides the ideal spacing between samples. In drug-free programs that require less than daily attendance, the testing schedule should be coordinated with the days the patients are expected to come to the clinic for group or individual sessions. In other words, patients should not ordinarily be expected to come to the clinic just for urine sample testing. Collection days should always be separated by at least 1 day in order to qualify for drawings. Therefore, depending on days patients are scheduled to come to the clinic for groups or individual sessions, they should be put on one of the following regular testing schedules:

- Monday-Friday
- Monday-Thursday
- Tuesday-Friday

Less desirable, but still acceptable, schedules are:

- Monday-Wednesday
- Wednesday-Friday
- Tuesday-Thursday

Patients who are absent on the day of scheduled urine sample collection can give a sample the next time they come to the clinic. They may also be able to arrange to come to the clinic at a special time (e.g., very early, late in the day or on a weekend) depending on staff availability. In general, the first incentive draw of the week should be given on Monday or Tuesday and the second on Thursday or Friday, so long as the two samples that are used for incentive draws are delivered on non-consecutive days. If there are two clinicians involved with the patient (CM clinician and primary therapist), these individuals must maintain close communication so that the CM clinician is informed of any changes in the therapy schedule and so that patients are referred to both the CM clinician and primary therapist, as needed.

## Sample Collection and Validation

All sample collections should be observed by a same-sex observer. For observed samples, ask the patient to remove any bulky outer clothing so that the urine stream can be visualized leaving the body (e.g., don't just stand in the bathroom with the patient). There will be reasons for substance abusing patients in general, but especially patients in the incentive programs, to try to leave bogus samples. Therefore, the CM clinician should attempt to ensure valid collection of urine samples. If patients see staff being observant, they will be less likely to try to leave bogus samples.

Sometimes, a same-sex observer may not always be possible due to staff shortages, busy clinics, etc. Test cups can be used that have temperature strips included. Temperature criteria for a valid sample will be a reading between 92 and 99 degrees Fahrenheit. A further validity check can be provided. For example, Adultacheck, a commercially available test strip, can detect some common methods of urine adulteration. The strip indicates whether the urine sample shows normal ranges for creatinine, pH, gluteraldehyde and nitrates. If the test indicates that the urine sample is outside the normal range on any of these features, it is counted as invalid. Participants whose urine sample does not pass validity checks will be encouraged to drink a cup of water and wait to give a second sample in 15 minutes or so. If they decline, the sample will be counted as missing and therefore positive for purposes of incentive procedures. In other words, they would earn no draws that day, and the number of draws they earn for their next negative sample would reset to one.

Patients may be upset and argumentative if their test is interpreted as invalid, and this reaction can happen whether or not they actually tried to give a bogus sample. Here's an example of how an invalid contested urine sample can be handled with the patient.

Jody, a patient involved in the incentive procedure, leaves a urine sample, and it reads invalid according to the adulteration test because the pH is off. You ask her to leave a second sample. She becomes irate, and tells you she's only leaving one sample, and if you mess it up it's your fault. You tell her that sometimes the tests indicate that a sample reads invalid, and it happens to just about everyone at least once during the program. Jody becomes even angrier, wanting to know what you are accusing her of. You assure her that you aren't accusing her of anything, and that just last week someone left a sample that read invalid. You tell her that patient left a second sample a few hours later, and everything was fine with it.

Jody says she can't go again. You say, "Ok, that is fine then." You see she is still angry with you, so you let her go to her group session. After her session, you ask Jody if she might be able to go again. She says that she already told you that she went once today. You say, "Yes, I know, and I am sorry about that. But, if you think you can go again, and if the test is negative, then you can get your draws. You're due for 6 draws today if your sample reads negative. I want you to get all the draws you can."

She says, "Of course it's negative", still in a hostile tone. You say, "Well,

you're here still for 2 more hours right? Why don't you stop by when you have to go to the bathroom, and we'll see if we can get you those draws then. If you really don't want to go again today, I'd still like for you to come back on Friday."

When you ask her if she'd like to try again before she leaves at the end of the day, Jody again refuses. On Friday, Jody leaves a sample that passed the Adultcheck, but that tests positive for cocaine.

Often, but not always, when patients refuse to give a second sample, it is because they used. Note that in this case, the CM clinician was not at all accusatory toward the patient. She was given several chances to leave a second sample, while reminding her of all she had to gain by trying to leave another sample. On Friday, the CM clinician might say something to the effect of:

"Jody, I know you were angry about what happened on Tuesday, and I'm really glad you came in again today. Your urine sample doesn't read negative today, but coming in shows that you are really trying hard to stay clean. Maybe you can discuss in group how you're feeling, and I bet the other group members can probably help you out. I hope you'll come back again next Tuesday."

#### URINE SAMPLE TESTING METHODS

Below are some guidelines and directions for conducting the tests.

- Wear protective gloves when collecting, testing and handling urine specimens.
- Urine samples should be collected only in areas that are approved by the clinic.
- CM clinician should ask patients to remove any bulky outer clothing and should be able to visualize the urine stream leaving the patient's body
- Urine samples are to be collected directly into a test cup. (Several brands are available commercially that differ in the number and type of drugs detected.)
- Perform validity checks (e.g., temperature between 92 and 99; negative on Adultcheck panels).
- Once urine sample is validated, it is analyzed for results for target drugs (procedures will vary depending on particular testcup brand used).
- Cups should be discarded in approved biohazard bags or using procedures in place at the clinic.

## Coordination with Clinic Urine Sample Testing

Some clinics will want to conduct additional urine sample testing procedures, in which they send the samples to an outside lab for testing. Often, this testing must be conducted by a certified laboratory for insurance, legal, or employment reasons. The onsite CM procedures should not interfere with these standard clinic procedures in any way. If the clinic tests urine samples once a month using an outside lab, they may continue to do so. You may split a urine sample in half and give half to the clinic for its own testing, or pass the entire cup to the clinic staff after you have finished your testing. That way, patients won't have to give two samples on the same day.

Sometimes, the outside lab tests will read differently than the test results used for incentive purposes. This discrepancy may be related to different cut off values for assigning a sample positive vs. negative. In other words, some tests are simply more or less sensitive. Different tests may also screen for different metabolites of drugs. A discrepancy may also occur if samples are collected on different days, and patients used on the intervening day, or didn't use and their sample became negative over an additional 24-hour period.

Because different testing procedures may produce different results, it is important that the patient (and the clinical staff) understand that *for the purposes of CM, only the onsite analysis results are used*. For clinical purposes, such as informing courts or employers, results of the outside lab testing will generally be used. However, these outside test results should *not* be considered for CM purposes.

## Dealing with Contested Urine Sample Results

In general, when dealing with contested samples, you will do best for yourself and the patient if you can keep calm and use your best clinical judgment. You can sympathize and say that the patient may very well be correct about not using drugs. Unfortunately, right now, you have to go with what the test cup says, so the patient will not be able to draw that day.

One thing that usually works well is to *never* say that a patient is "positive". When a test cup indicates use that a patient did not admit to, you can say:

"Sharon, your sample does not test negative for cocaine [or the target drug] today. Maybe you can discuss what happened in group. You can start drawing again as soon as Thursday, if your sample reads negative then."

*Note that the term, "does not test negative today", sounds much less harsh than, "is positive".*

Sometimes patients may use their clinic (or outside testing) results as grounds to contest a CM sample result. Here's an example of a contested CM sample when clinic samples have tested negative:

Chuck leaves a urine sample for the CM clinician that passes the temperature and Adulthoodcheck, but that reads positive for (target drug).

You say to him, “Chuck, I’m sorry that you can’t draw today because your sample doesn’t read negative for cocaine. Although you can’t draw today, I’m glad you came in, and if your sample reads negative on Thursday, you can start drawing again then.”

Chuck says, “This is bullshit! I’ve been clean for 4 weeks! All my clinic urines are clean. I’ve never been dirty.”

You say, “I know you’ve always left negative samples with us before, and that’s great. You’re doing really well in treatment. I want you to keep doing well. And if you tell me you didn’t use, I’ll believe you. Really, I do believe you. But, you have to understand that I have to go by the results of this testing cup for the draws. If you really didn’t use, then your urine sample should be clean on Thursday, right? If it’s clean on Thursday, you can begin drawing again then.”

Chuck says, “All my clinic urines are always clean. I’m going to have the clinic director check it because you’re wrong.”

You say, “You can certainly ask the clinic to get a second urine sample test, if you want to. But, remember that for the purposes of this program, we have to go by our test cups. Sometimes the labs test for different drugs than we do, and sometimes they have different cut-off values. That means that our tests might be more sensitive than theirs. We can detect just a tiny bit of drug, while they may set their test only to detect lots of a drug. You can certainly have the clinic order another test, if that’s what you want. But, my hands are tied here. I have to go by the result I got on our Testcup. Why don’t we just focus on your having a clean test for Thursday?”

In this case, Chuck may have been chipping a little, and he may have been coming out negative on both the CM on-site testing system and the clinic’s outside lab tests. He may have gotten “caught” on this particular test, and he may be angry because he had gotten away with just minimal use previously but didn’t this time.

Note that the CM clinician did not get accusatory or defensive. The clinician encouraged the patient’s choice to complain to the clinic personnel and order another test. But, at the same time, the CM clinician was firm in her stance that the draws go by the onsite testing results. The CM clinician in this situation could also pour the urine into a second cup to reassure both themselves and the patient that the result was not due to anything wrong with the particular cup employed. Hopefully, had Chuck gone to complain to clinic personnel, they would have reiterated the CM clinician’s decision and confirmed that the decisions about drawings are made based on the onsite testing cups. The clinic personnel may or may not have ordered another test, but they would emphasize that this test is for clinical purposes only and not for draws. This is an example about why a good relationship is necessary between the CM and other clinical staff.

If a clinical test was ordered and came back negative, the discussion of different cut-off values may have taken place again, with a continued discussion of how the draws have to go by the onsite testing system. Note that most off-site testing will take 1–3 days to get the result. During this time, the patient may have time to calm down. Reaffirming belief in the patient, the CM clinician may say something like:

“Sometimes, mistakes do happen, but we have to go by the results of the onsite test system. Just think about how crazy this place would be if we had to get two tests every day on every patient! Everybody would be wanting multiple tests, and then what would we do? I think it’s much more important for you to stay clean no matter what the results of this test say. I also think that your being able to calmly discuss this with me when I know you think I’m totally wrong is a really positive thing.”

### **Time Needed after Drug Use to Test Negative**

Different people have different metabolisms, and some people may become negative within 2 days of non-use while other may take 3–5 days. This can be a difficult concept for patients to understand, i.e., why their friend uses with them and is already negative, but they are positive. Reassure patients that if they aren’t using, they *will* become negative. The most difficult cases are related to marijuana, which is retained in fat stores for prolonged periods of time (up to 3–4 weeks in heavy, chronic marijuana users). In addition, drugs may take an especially long time to clear in people with liver problems (e.g., hepatitis, cirrhosis). CM clinicians should remain encouraging for these patients, reminding them that they will test negative so long as they refrain from further use.

### **Handling Positive Urine Samples Due to Medication**

Patients may have a legitimate, approved prescription for opioids (e.g., Percocet, Darvocet, codeine) or may be using over the counter medications for cold and flu that contain stimulants picked up on a screen. Some amphetamine-based hallucinogens (e.g., MDA, MDMA) may also be picked up as positive. If the patient tests positive and vehemently denies using opiates or stimulants, question them about any other drugs or medications that they might be using. Often, the manufacturers of the testing system will have a list of medications that may read positive. CM patients should be informed in advance that they should not use these medications and reminded again in cases where use of other medications may be causing urine sample to test positive.

### **Handling Uncontested Positive Urine Sample Results**

Most patients who use during treatment will admit it to you, even before they leave the urine sample. CM clinicians should remain supportive of their continued efforts to keep coming to treatment. When a patient admits to use, you can say:

“Thank you for telling me. Being honest about your use is a very

important part of treatment. Perhaps you'll want to discuss what happened more in group today. I'm really glad you came in today. If you can stay clean between now and Friday, it's likely that you might be able to start drawing again then. See you on Friday, at about 2:00 then, right?"

*On rare occasions, a patient will admit to use, but the test may still come up negative. In this case, they are still eligible for draws. You would say something like this:*

"Thank you for telling me that you used. Being honest about your use is a very important part of treatment. Perhaps you'll want to discuss what happened more in group this afternoon. Sometimes when people just use a little bit, the urine sample still comes up negative, and yours was negative today. Because your sample is negative this time, you can still draw today. But, please remember that this is really unusual. It's likely that if you use again, you will test positive and then you won't be able to draw that day. Also, remember that when you test positive, your draws will reset back to 1 the next time you give a clean sample. So, if you end up using again and test positive, you'll lose these 5 draws per clean sample that you're currently at, and you'll go back down to 1 draw. Do you think you can stay clean through next Tuesday, so that you can get up to 6 draws per clean sample?"

## **When Patients Are Unable to Urinate**

You want to encourage patients to provide a urine sample on all scheduled testing days even if you know they're positive. Yet, you want to retain as much flexibility as possible so that patients don't get angry and leave the program. In cases in which a patient admits to using and does not want to provide a sample, you can encourage him to do so, but do not force the issue. Remind him that the draws will have to reset and encourage him to regain abstinence so he can draw again on the next scheduled testing day.

Other times patients will not admit to using yet state that they absolutely *cannot* leave a sample that day. You may say:

"Sometimes, we all have problems going. The policy is that you need to give a sample whenever you are here on a scheduled day. But, if you really cannot go today, what I can do is schedule an additional test for you tomorrow. If you're clean when you come in for group tomorrow, I'll count that as today's sample and you won't have to reset your draw schedule. You'll still have to give a urine sample on Friday this week too, though. Does that sound fair?"

The next day, you may say, "I really made an exception for you yesterday, and I don't mind doing it once in a while. But, you know, I really can't do that again. I know you really couldn't leave a sample then, but if we do this regularly, some other people will just try to scam the system. In the future, I really need you to give samples on the scheduled days for you to keeping getting the increased draws, ok?"

## Urine Sample Testing Summary

The technical aspects of urine sample testing can be readily learned. What is clearly more important is that sample testing represents one of the most sensitive areas of interaction between CM clinicians and patients. Testing provides the opportunity to be supportive and encourage the patient to maintain abstinence. It is also fertile ground for contested results and argumentative interactions. In general, when dealing with contested results, you will do best for yourself and the patient if you can keep calm and use your best clinical judgment. Sympathize and say that the patient may very well be correct about not using drugs. Unfortunately, right now, you have to go with what the screen says, so the patient will not be able to draw that day. A positive sample can be especially discouraging after a long string of negative samples. In this case, you may want to remind the patient that any draws are better than no draws and that they can return quickly to receiving prizes (at the next scheduled visit) by coming in with a drug-free sample. You know they can do it because they have already shown that they can stay drug-free!

## Addressing the Discontinuation of CM Procedures

Most CM protocols have a limited duration of time during which patients may earn incentives. In our example above, patients are eligible to win prizes for cocaine-negative samples during the first 12 weeks of treatment. In some clinical settings, the durations may be shorter or longer. For example, in many research programs, incentives have lasted as long as 6 months. However, providing incentives indefinitely can get quite expensive, and the beneficial effects of CM may diminish over time. That is, once patients are able to achieve a long period of abstinence, continuing to reinforce every negative urine specimen with a draw (or even 10 draws) from the prize fishbowl may no longer improve their outcomes.

Although research has yet to systematically address issues related to optimal duration of CM treatment, most CM programs offer incentives for at least a 3-month period. Following the end of the CM treatment, patients either need to be tapered off the reinforcement schedule, or it can be eliminated altogether. Again, we have little data available to inform these decisions. But, what typically happens is that patients are informed at the beginning of the program about how long the CM procedures will last. The final 1–2 weeks during which the CM is in place, the CM clinician should be speaking with the patient about how she feels about remaining abstinent after the incentives end. Reminding the patient of all the progress she has made during the course of treatment, and encouraging continued attendance at the program is appropriate. One approach we have used that is quite popular with patients is to provide a certificate for program completion at the end of their time in the study or program.

“Bob, you have done really well throughout treatment here. Next week will be the last time you can draw for prizes, and I will give you a special certificate for finishing the program on Thursday. That is a real accomplishment. I also hope you will keep coming to treatment. The other patients here can learn a lot from you about how you stayed clean and sober. What do you think the most important things are you’ve

learned in treatment here? How do you think staying in treatment a little longer may help you maintain your abstinence?"

In this manner, patients feel a real sense of accomplishment for completing the CM program. Many mention the importance of the prizes early on, but they also frequently endorse other aspects of treatment (group processes, skills building, positive relationship with peers and clinicians) as reasons for their abstinence. In fact, the success of CM procedures seems to be related to enhancing early motivation to achieving and remaining clean and sober. The external incentives may decrease some of the ambivalence that substance abusers often experience in the initial stages of treatment. By systematically reinforcing every day of abstinence, or even every day that they attend treatment, we may be able to improve outcomes in our patients.

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## 6. Selection, Training, and Supervision of Contingency Management Clinicians

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Little systematic research has addressed issues related to who should administer CM therapy to substance abusers, how clinicians should best be trained, and how performance can be monitored (Andrzejewski et al., 2001). A lack of information on clinician training procedures is not limited to CM treatments, but is germane to substance abuse treatment in general. Nevertheless, some general guidelines can be suggested, based upon our experiences in training and monitoring adherence to CM protocols within the context of clinical research trials.

### CM Clinician Selection

In the published research studies, CM usually has been delivered by research assistants. The research assistants typically have bachelor's degrees in psychology. Not always, but often, they have little prior experience with substance abusing populations. In many cases, they are recent college graduates. Research assistants, unlike clinicians, are trained within the context of strict study protocols. They are supervised regarding data collection and management, as well as with respect to patient interactions. CM treatment, because of the need for consistent and specific procedures (see Chapter 2), can probably be delivered by anyone, as long as they have good clinical judgment, are detail oriented, and have been trained in general behavioral principles and the CM techniques specific to the particular project.

While personal characteristics of CM clinicians have not been the focus of CM research to date, we assume the attributes identified by Luborsky and colleagues (1985) as associated with better patient outcome would apply in CM as well, including personal adjustment, interest in helping the patient, ability to foster a positive working alliance, and high empathy and warmth. The role of the CM clinician is elaborated further below.

### CM Clinician Training

Training clinicians to administer CM usually involves several steps. First, clinicians complete a didactic seminar. In the seminar, the rationale for CM, based on behavioral principles, is reviewed and illustrated by reviewing prior studies. In addition, this manual and the videotaped examples of clinicians implementing the treatment serve to explain and demonstrate the rationale for CM interventions.

Next, the specifics of the CM protocol to be implemented in the unique clinical setting should be described. For each project, an addendum to this manual may be needed to cover the specifics of the project (e.g., behaviors to modify,

reinforcers to use, reinforcement schedule, etc.). The protocol should be sufficiently detailed to address potential problems, concerns and unique situations that may arise.

Clinicians can then participate in several role-plays and practice exercises. These should include examples of how to explain the CM procedure to new patients, how to correctly deliver the treatment (e.g., escalation of draws, delivery of reinforcements, managing the prize cabinet), as well as how to handle common problems that arise in CM (e.g., missed samples, positive samples, unexcused absences). Examples should be tailored to the specifics of the CM protocol that will be implemented.

After completing the training seminar, reviewing the protocol-specific CM manual, and practicing the role-play training, clinicians fill out the Knowledge of Basic CM Principles questionnaire (Appendix 6.1). Once they pass this test of knowledge, clinicians are given sample test Scenarios (Appendix 6.2), similar to those used in the role-play exercises. There are appropriate ways to address the questions posed by each scenario, not simply the correct answer. What is important is that there is a consensus between the CM clinician and the trainer as to how to handle a situation. Their responses are then rated on a CM Clinician Adherence/Competence Rating Form (Appendix 6.3). The checklist rates adherence to the CM techniques that are delivered in a CM session and how skillfully they are delivered. This checklist has not yet been validated, but it is useful for training purposes. For items that have been validated for use in adherence and competence measures, refer to the Yale Adherence and Competence Scale (YACS) Guidelines (Corvino et al., unpublished).

## CM Clinician Supervision

Ongoing monitoring of clinicians is a key feature of psychotherapy training and research. Monitoring ensures the implementation of the treatment according to specific guidelines, and facilitates consistency of treatment quality and delivery across clinicians.

Prior to initiating a CM project, specific paperwork and tracking forms should be developed to monitor delivery of the CM protocol. These forms should include CM Flowchart (Appendix 5.2), and Daily Tracking Form (Appendix 5.1) to record the target behavior, the number of drawings earned, and prizes won. While such forms need to be developed specifically for unique protocols, they can serve as a useful reminder that CM clinicians cover all the necessary bases in each session. Clinicians will need some guidance in learning to complete these forms appropriately.

In CM projects, the CM clinicians initially meet weekly as a group with the project coordinator or supervisor. This meeting covers administrative issues (e.g., urine sample screening, management of prizes, audit of prizes in the prize cabinet), and clinical issues (e.g., discussion of unusual or difficult situations). It also provides the opportunity to evaluate whether the clinicians are implementing the treatment as specified by the manual and to discuss unusual cases or concerns. Depending on the range and skillfulness of the clinicians,

individual meetings may be needed to address problem areas in delivering the treatment. In more sophisticated approaches, CM clinician interactions with patients can be audiotaped and reviewed for adherence and competence by the supervisor and/or an independent rater. These tapes can serve as objective indicators of adherence.

Remember that one of the central features of behavioral treatments is to monitor the target behaviors frequently and to reinforce appropriate behaviors often. Consistency is the key to appropriate implementation of these techniques. The techniques applied to the patients should also be considered in training and monitoring the clinicians' behaviors in delivering the treatments. Thus, care should be taken to review the tracking forms regularly with CM clinicians. The supervisor should look for appropriate documentation of attendance records, urine sample testing, and prize delivery, including calculations of the appropriate numbers of draws etc. Any mistakes noted should be addressed and corrected immediately. The daily CM checklists may also provide the basis for ongoing supervision, as the CM clinician can more readily note and explore with the supervisor the interventions s/he has trouble implementing in general, or with a particular patient. As with the patients, CM clinicians may best deliver the treatments when they are given frequent, positive reinforcements for a job well done.

## Summary

This manual has provided rationale for the administration of CM interventions and a brief description of studies that have examined the efficacy of these techniques. It reviewed basic guidelines for designing CM treatments and provided a sample case of how CM interventions are modified to coincide with standard care in a clinical setting. Suggestions for implementing CM and managing difficult patient situations were provided. In addition, general strategies for training and monitoring therapist adherence to CM were described.

Throughout the manual, examples were provided of potentially troublesome patient interactions that have actually occurred during CM projects, and ways for CM clinicians to handle them. Please refer back to this manual for pointers after you encounter difficult situations with patients, or if the CM procedure you designed does not seem to be working. Although you may have to "act on the spot" when you are with the patient, you may be able to think of new ways to handle similar difficult situations in the future by reviewing this manual and by discussing the interaction with the clinical supervisor or other CM clinicians.

As a final pointer, it is helpful to remember that when developing a CM program to address a clinical need, pilot testing is usually a good idea. That is, you should think through the program as carefully as possible in terms of what you are trying to accomplish, but then try it out on a small scale if possible before moving ahead full force with a large-scale or clinic-wide program. If something doesn't work initially, try to re-examine the program elements such as the schedule of monitoring or the type or amount of reinforcement being offered and consider whether other options may work better. It is especially

important to make sure that the procedure is really being implemented consistently, or if there is someone or something about the system that is sabotaging the program. You can often learn from mistakes in the development or implementation of the techniques. Maintain written records of what works and what doesn't, and share ideas among staff and patients.

The process of designing and implementing a contingency management system can be challenging and fun and can be used to build team spirit in the clinic. Furthermore, a successful program that improves outcomes can be very rewarding for staff and patients alike. Most importantly, these procedures can alter the culture of drug abuse treatment by shifting clinician focus away from punishment of undesirable behaviors and toward recognition and celebration of the hard-won achievements of patients who are succeeding in treatment by foregoing drug use and building a life-style necessary for sustaining a drug-free recovery.



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# Appendix

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## Calculating Costs Associated with Prize Reinforcement

The costs associated with the intermittent reinforcement system can be estimated by knowing the probabilities of winning, the average costs of prizes in each category, and the total number of draws available to each patient under the draw schedule selected. Let's return to our example protocol from Chapter 4, in which a clinic expects to treat 50 patients and has a \$5000 grant to provide the incentives. Because this clinic has a slightly lower amount of funds available and the number of draws per patient they want to use results in a relatively large maximum possible number of draws per patient (195), they increase the number of slips in the fishbowl from the typical 500 to 750.

With 750 slips in the fishbowl, each draw would result in a  $1/750$  chance of winning the jumbo. The maximal price of the jumbo is \$100, and by buying items on sale and in bulk, costs of each prize category can be decreased by about 30%. The average cost to the program of a jumbo prize can then be estimated at \$70 (a television on sale, for example). Similarly, the average cost of a large prize can be estimated at \$14, and for smalls it would be about \$0.70.

Few patients ever win the jumbo, and in reality, they add little cost to the CM program ( $1/750$  times \$70, or 9 cents per draw). But, large items (watches, walkmans, coffee pots) are also highly valued prizes. We want patients to earn about one large prize per week. The probability of winning them should be about  $1/20$  as patient can earn up to 20 draws per week given the schedule described. Because there are 750 slips in the fishbowl, let's say 30 of them will be larges, which results in a probability of 0.04, or 1 of 25 draws on average will result in a large prize. The cost per draw is  $30/750$  times \$14, or 56 cents.

Usually, half the slips are non winners, and these slips add nothing to the costs of the CM program. If we allocate one slip to the jumbo, 30 to the larges, the remaining 344 slips ( $750 - 31 = 344$ ) could go to another category of small prizes. The cost of smalls would be  $344/750$  times \$0.70, or \$0.32 per draw. In total then, the jumbos would add 9 cents, the larges 56 cents, and the smalls 32 cents per draw. Each draw costs an estimated \$1.07.

It may be tempting to increase the probabilities of non-winners to decrease program costs. But, by having lots of non-winning slips, patients in the early stages of abstinence would have to provide more than two negative urine samples on average to win even a single prize, which is very likely to be a small \$1 item. This low level of tangible rewards is unlikely to be powerful enough to alter drug use behavior. Thus, we recommend that half of the slips result in some sort of a prize.

Now, let's consider the logistics of the escalating draw schedule. During week 1, patients will earn up to 3 draws (1 for the first negative urine sample; 2 for the second negative sample), then 7 draws in week 2 (3 for the third negative urine and 4 draws for the fourth consecutive negative urine; see Table 4.1 in Chapter 4, pg 24). In week 1, they are expected to win about 1.5 prizes, most likely translating into \$1 prizes. In week 2, they can earn up to 7 draws, or a cumulative total of 10 draws (or on average, 5 small prizes). In week 3, if all goes well, they will earn another 11 draws, for a cumulative total of 21 draws. Thus, it is likely that most patients will have to achieve and maintain abstinence for 3 or more consecutive weeks before they win an item of value. Therefore, there is a danger that this particular schedule may not be sufficiently reinforcing to maintain participants' interest.

The clinicians at this program considered other ways to enhance the probabilities of winning better prizes earlier in treatment and to further decrease the costs of the system within the confines of the \$5,000 for 50 patients. One idea was to solicit donations for at least some of the prizes, and another was to add another prize category of medium prizes, worth up to a maximum of \$5, so that patients would not have to wait to earn an average of 25 draws to win something of at least moderate value.

Let's say we add a medium prize category to the fishbowl with the probability of winning a medium prizes being 1 in 10 (or 75 of 750) so that most patients should earn a medium prize within the first two weeks of abstinence. We can then reduce the number of small prize slips from 344 to 344 minus 75, or

269. Our fishbowl would then look like this:

	Number of Slips	Probabilities of Winning	Average Price/Prize	Cost per Draw
Non-winners	375	0.500		
Smalls	269	0.359	\$ 0.70	\$0.25
Mediums	75	0.100	3.50	0.35
Larges	30	0.040	14.00	0.56
Jumbo	1	0.001	70.00	0.09
TOTAL	750			\$1.25

With the total number of draws possible being 195, coupled with the expectation that patients in CM programs usually earn half the maximum rewards, this schedule approximates what is possible with the \$5,000 grant. If patients earn an average of 100 draws, the cost per patient is \$125. This totals about \$6,250 for the 50 patients.

To further decrease the costs and to ensure they didn't go over budget, the clinicians decided to include as prize choices some items from their own homes that they were planning on throwing away (used children's clothing and toys as some of the medium prizes, unwanted Christmas gifts, and older electronic equipment as choices for the larges). One of the clinicians at the program had a brother who worked for a large department store. She asked her brother if his store could donate some slightly damaged or past seasons items to also be included in the various prize categories.

Thus, costs of an incentive program can be adjusted by changing the total number of draws available, by changing the probabilities of prize draws, and/or by decreasing the cost of prizes. The principle to keep in mind is that the draw schedule should ensure patients are winning prizes with sufficient frequency to keep their interest in the program and that prizes are things that they consider sufficiently valuable that they want to work for them.

# Daily Tracking Form

## Week 1

Date:	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Day:	Yes No						
Due for treatment	Yes Exc Unexc						
Attended tx if due?	Yes No						
Due for Utox?	Yes No Refused						
Utox taken?							
Temp. reading?							
Utox results	+ - ___ draws						
Draws due (range 0-10)							
Draw outcomes small (S), large (L), jumbo (J), or goose egg (G)							
Prizes selected/ Client initials							

## Week 2

Date:	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Day:	Yes No						
Due for treatment	Yes Exc Unexc						
Attended tx if due?	Yes No						
Due for Utox?	Yes No Refused						
Utox taken?							
Temp. reading?							
Utox results	+ - ___ draws						
Draws due (range 0-10)							
Draw outcomes small (S), large (L), jumbo (J), or goose egg (G)							
Prizes selected/ Client initials							



## CM Flowchart

ID #: \_\_\_\_\_

TIME IN: \_\_\_\_\_

DATE: \_\_\_ \_\_\_ / \_\_\_ \_\_\_ / \_\_\_ \_\_\_

TIME OUT: \_\_\_\_\_

---

- Record UTOX results on tracking form
- Tell patient how many draws were earned today (\_\_\_\_\_ draw(s))

If patient earned one or more draws:

- Have patient draw (roll up sleeves, show palms of hands)
  - Code all drawing outcomes on tracking form
  - Give patient prizes
  - Check out selected prizes from prize list
  - Have patient sign for prizes on tracking form
  - Remind patient when to see me next (date \_\_\_\_\_)
  - Tell patient how many draws due if negative next time (\_\_\_\_\_ draw(s))
- 

Comments:

### Patient Daily Handout

Date: \_\_\_\_\_

This form certifies that I earned \_\_\_ draws today.

My next scheduled testing session is: \_\_\_\_\_

I will be eligible for \_\_\_ draws that day if I am negative for cocaine!



## Knowledge of Basic CM Principles

Circle the **best** response to each question.

1. A positive reinforcer or reward delivered immediately after a behavior occurs would:
  - a. increase the probability that the behavior will occur again.
  - b. decrease the probability that the behavior will occur again.
  - c. not change the probability that the behavior will occur again.
  - d. either increase or decrease the probability that a behavior will occur again, depending on whether the behavior is a positive or negative one.
2. A punisher delivered immediately after a behavior occurs would:
  - a. usually have no effect on whether or not a behavior will occur again.
  - b. increase the probability that the behavior will occur again.
  - c. decrease the probability that the behavior will occur again.
  - d. either increase or decrease the probability that a behavior will occur again, depending on whether the behavior is a positive or negative one.
3. Which of the following statements is true?
  - a. Both rewards and punishers can be used to change behaviors.
  - b. In most cases, only rewards can change behaviors.
  - c. In most cases, only punishers can change behaviors.
  - d. In most cases, neither rewards nor punishers can change behaviors effectively.
4. Which one of the following should NOT be considered a reward to enhance attendance at treatment and/or abstinence from drugs?
  - a. Providing free food and coffee when people go to AA meetings.
  - b. Increasing the frequency of urine testing when drug use is suspected.
  - c. Giving a certificate of completion to patients who complete a program.
  - d. Allowing take-home doses to patients who have achieved 3 months of abstinence.
5. Which one of the following is NOT a basic principle of contingency management?
  - a. Choose a target behavior that can be objectively verified.
  - b. Frequently monitor the target behavior.
  - c. Frequently reward the person whenever the target behavior occurs.
  - d. Punish the person whenever the target behavior occurs.
6. Contingency management studies have shown that:
  - a. rewarding patients for providing positive urine specimens increases attendance at treatment.
  - b. punishing patients for providing positive urine specimens improves outcomes.
  - c. punishing patients for providing negative urine specimens increases abstinence.
  - d. rewarding patients for providing negative urine specimens increases abstinence.
7. Contingency management studies show that:
  - a. these techniques work best when patients have to be abstinent from one drug to earn rewards.
  - b. these techniques work best for reducing cocaine use.
  - c. these techniques work best in reducing drug use when patients have to be abstinent from all drugs of abuse to earn rewards.
  - d. these techniques work best in reducing drug use of methadone maintenance patients.
8. Which of the behaviors below would NOT be possible to alter directly using contingency management techniques?
  - a. Attendance at treatment.
  - b. Non-compliance with treatment plans.
  - c. Illegal behaviors.
  - d. Drug use.

9. Using contingency management principles, what is the best monitoring schedule if you are reinforcing cocaine abstinence in a chronic cocaine user?
  - a. Daily urine sample monitoring.
  - b. Every other day urine sample monitoring.
  - c. Once per week urine sample monitoring.
  - d. Twice per month urine sample monitoring.
10. Which of the following should you NOT do to ensure validity of a urine sample?
  - a. Get a sample two days later if you suspect the first one was not valid.
  - b. Get a second sample the same day if you suspect the first one was not valid.
  - c. Observe the submission of the sample.
  - d. Use a temperature strip.
11. Why were vouchers chosen as a reinforcer for use in contingency management studies?
  - a. Because many patients consider vouchers more valuable than cash.
  - b. Because vouchers are less valuable to patients than cash.
  - c. Vouchers were used so that cash was not given directly to patients, yet vouchers could allow for a large selection of items.
  - d. Vouchers were used because some considered it unethical to alter methadone doses for patients in contingency management studies.
12. Why is the fishbowl/prize system being used rather than vouchers in some contingency management studies?
  - a. Because the fishbowl system reduces drug use better than the voucher system.
  - b. Because most patients prefer the fishbowl system.
  - c. Because the fishbowl system is less expensive.
  - d. Because not all patients improve when the voucher system is used.
13. Which of the following would make contingency management systems *less* effective?
  - a. Monitoring urine samples frequently.
  - b. Allowing patients to earn a reward every time they submitted a negative sample.
  - c. Having increasing rewards for longer periods of abstinence.
  - d. Only providing rewards when patients are abstinent from all drugs of abuse.
14. For contingency management procedures to work best:
  - a. the reward should be given delayed in time so patients learn to delay gratification.
  - b. the reward should be given as soon as possible after the behavior occurs.
  - c. the magnitude of the reward should decrease over time so long as the patient remains abstinent.
  - d. the type of reward provided should be kept consistent over time.
15. Which of the following is important in deciding upon which rewards to use?
  - a. The magnitude of the reward should vary over time as the patient remains abstinent.
  - b. The magnitude of the reward should decrease over time as the patient remains abstinent.
  - c. The magnitude of the reward should be of at least equal value to the rewards derived from the behavior that is being changed.
  - d. The magnitude of the reward should be of lesser value than the rewards derived from the behavior that is being changed.
16. Why are escalating draws provided when patients achieve longer periods of abstinence?
  - a. Because the longer that patients are in treatment, the more likely it is that they may have already earned all the good prizes so escalating draws keeps them interested.
  - b. Because patients have less to lose if they use early in treatment.
  - c. Because escalating draws ensure that patients can consistently earn prizes.
  - d. Because escalating draws result in longer periods of consecutive abstinence.

17. A patient is in a program where he earns draws for submitting negative cocaine and alcohol samples. He has achieved over one month of continuous cocaine abstinence and is now earning 10 draws for each negative sample. You notice that in his most recent urine toxicology screen that was sent for outside laboratory testing that he came up positive for heroin. In terms of contingency management, how should you manage this positive result?
- In a non-confrontational manner, discuss with the patient the positive test result, and encourage him to regain abstinence. Also discuss that he will not be eligible for any drawings that day, but he can earn drawing again once he regains abstinence.
  - In a non-confrontational manner, discuss with the patient the positive test result, and encourage him to regain abstinence. Also discuss that he will only earn one draw that day, because he was negative for cocaine, but not for heroin.
  - In a non-confrontational manner, discuss with the patient the positive test result, and encourage him to regain abstinence. Also discuss that he will continue to earn his 10 draws because the on-site test system did not pick up the heroin use. Remind him that in the future, he will likely come up positive on that system as well and then he will lose his drawings.
  - In a non-confrontational manner, discuss with the patient the positive test result, and encourage him to regain abstinence. Also discuss that he will get his 10 draws that day. Remind him that if he continues to use heroin he is likely to use cocaine again as well, and his drawings will reset to 1 if he comes up cocaine positive on the on-site testing system.

For questions 18–20, assume that you have designed a contingency management reinforcement schedule that provides increasing draws from a fishbowl for every consecutive sample that is negative for cocaine and alcohol.

18. If a patient had achieved 5 draws and was again negative, under which circumstance would you allow the patient's draws to escalate?
- If she couldn't provide a sample the previous testing day.
  - If she had an excused absence the previous testing day.
  - If she was positive on the previous testing day.
  - If she was at risk of withdrawing from treatment and you wanted to keep her motivated to stay involved in treatment.
19. If a patient is negative for cocaine but provides a positive breath alcohol sample, how many draws would he get that day?
- The same number he got the previous time.
  - One more than he got the previous time.
  - One less than he got the previous time.
  - None.
20. A patient has earned 8 draws for providing 4 weeks of consecutive negative samples. He then has an unexcused absence on a scheduled testing day. When he returns to the clinic today for a scheduled urine sample test, he is again negative. How many draws does he get today?
- None.
  - One.
  - Eight.
  - Nine.

## Knowledge of Basic CM Principles

### *Answers*

1. a	6. d	11. c	16. d
2. c	7. a	12. c	17. d
3. a	8. c	13. d	18. b
4. b	9. b	14. b	19. d
5. d	10. a	15. c	20. b

## Scenarios

### INTAKE OR INITIATION OF CM PROJECTS

#### *General*

1. Mary is a new patient at the clinic and is appropriate for the CM project. Explain the project to her in detail and what project participation involves.

#### *Specific*

2. Jennifer is a 36-year old woman. According to her records, she has been using cocaine for about 15 years, and has been in and out of treatment centers for drug problems. She has also had several, relatively brief, incarcerations for drug charges. You decide she is appropriate for a contingency management program at your center and you approach her. While reviewing the consent she appears bored, and states that she is somewhat offended that you want to use bribery to keep her in treatment. She doesn't need these stupid gift certificates and just wants to do what she needs to do to finish her court mandates and get on with her life. How would you respond?
3. Mike, a new patient, is convinced that you play favorites when you randomize and will give him the control group. He states that he has heard from various "sources" that you decide who gets in which group and that the procedure is fixed. How do you handle this?

#### *Missing or Positive Samples*

1. John, a 24-year old man, who is not on your caseload, has been in the program for 12 weeks. He is easily agitated and impulsive. Nevertheless, you know from clinical meetings that he has been doing very well in the program. His attendance is good and his urines are negative.

On his way out of the clinic one day you overhear him tell someone that he is going to a rock concert for his birthday tomorrow. However, you know he is due to come in for treatment on Thursday, because he is in your colleague Carol's groups. He does not come in on Thursday for groups.

But, on Friday, John comes in to attend one of your groups. When you ask him why he's coming to your group, he says Carol gave him permission to switch days this week because he wasn't feeling well yesterday. His urine sample came back negative. How do you respond to John and do you give him his draws from the fishbowl that day?

2. Martin has attended all treatment sessions and provided all his scheduled urine tests for 6 weeks. Then suddenly, he does not show up for urine sample testing one day. Martin comes in the next day and says that he was in LA for a job interview, and his car broke down on the way back. He states he could not get in touch with the treatment facility because he didn't have enough change to call. How do you handle this situation as far as draws are concerned and why?
3. Michelle has been leaving study urine samples that have been clean for four weeks. However, one of her urine samples from last week, that was sent out for additional confirmatory testing at an outside lab, comes back positive for cocaine. When you confront her about the positive sample, Michelle gets very angry, denying any use. She states that she has been clean since she started treatment, and that's what all her onsite tests have read. How do you respond to Michelle and what, if anything, do you do about the prize draw amounts?

4. Janice leaves a urine sample that is negative for drugs, but the temperature reading is below the acceptable level. The technician asked her to leave another sample, but she stated she cannot. You tell her she is not eligible for draws that day, unless she leaves another sample. She says, "Forget this crap! I don't care about your prizes." How do you respond to her and why?
5. Roberto is in the 5th week of the program but has missed his previous urinalysis testing appointment. He has no excuse for his absence, nor did he make an attempt to call. He is negative today, but you inform him that he will have drop back to the beginning of the prize draw schedule because of his absence at the end of the last week. He becomes depressed and dejected. What do you say to Roberto and why?
6. Although Cheryl has always been clean for drugs, she reported occasional opioid use prior to her arrest. In week 5 she tests positive for opioids. When you tell her she can't get her draws that day, she says she had a tooth pulled last week and was given percocet. She shows you her prescription for percocet, and even tells you to call her dentist. You do, and he confirms the prescription. Does Cheryl get her draws and what do you say to her?
7. You suspect that Maria has been leaving fake urine samples. She has been very oppositional in group, and other group members have confronted her about coming to treatment high. Although her samples have always read negative, you suspect she might be passing bogus samples. What are some options you have available to ensure that she is not passing you bogus samples? What can you do today?
8. Alan has been clean for 3 weeks, but his sample today produced an ambiguous result. It seemed to read between positive and negative. The CM clinician asked him to provide a second sample, and he did. That one also read ambiguous. The CM clinician is not sure if something is wrong with the testcup or his urine, or if he's positive. Alan is getting upset with you and the whole project. He states he already left 2 samples today. He tells you he hasn't used and if he did, he'd tell you. Do you give him his draws today or not, and why? What do you do when he comes in for his next test?
9. Amy has just left a urine sample that reads positive. She demands that you retest the urine with a fresh testcup because she claims the one you used looked like it was damaged. She insists that she is clean and that she hasn't used. What do you do?
10. After 3 weeks of all clean samples, Jose admits to you that he used cocaine last night and seems very upset about it. When his results come back, his sample turns out to be negative. What do you say to him, and do you give him any prize draws today?

#### *Reinforcement Issues*

1. Ken won two smalls and a large prize today, but he states he doesn't really want any of the stuff in the cabinet. What are some options to keep Ken interested in the reinforcers?
2. Carol is in your office, and she is acting irritable. She is getting prize draws for negative samples, and earlier this week she earned 5 draws. She just came from the urine testing lab, and her clinic sample result came back negative. You give her more draws. However, a week later, confirmatory analysis of the sample (a random procedure done about once a month, which is sent for outside additional testing) states that her urine from last week was positive for cocaine. How do you respond to Carol? What, if anything, do you do about the why the onsite system and the offsite system disagreed? What do you do about the draws you already gave her?

### *Scheduling Issues and Draws*

- 1a. George's treatment at the clinic is cut down to one day a week in week 6 of the contingency management program. The judge is allowing him just one visit a week due to his good performance and because he is now working about 70 hours a week. You ask him to come in three times a week to leave samples and draw, but he states he has to work and doesn't have time to come in that often. He also states that the judge told him he only had to come in once a week, and therefore that is all he is coming. In weeks 7, 8, and 9, he comes in just once a week to go to group and leave samples. His samples have all been clean, including all those in weeks 7–9. How many draws do you give him on each of those weeks, and what do you do about his refusal to come in more than once a week?
- 1b. In week 10, there is a state holiday on his scheduled group day. He doesn't come to the clinic that day, and tells you he has to work overtime so there is no way he can come in just to leave a sample on another day that week. In week 11, he comes in again and is clean. How many draws does he get in week 11?
2. Kate is in week 16 of the protocol, so she is coming in only once a week for urine testing. She calls in on Thursday, the day of her scheduled testing, and says she is feeling very sick. You ask her to come in on Friday instead, and she states she has a doctor's appointment in LA, and probably won't have time to come to the clinic. What do you say to her, and how many draws will she get at her next appointment if she is clean?





5. To what extent did the CM clinician **express enthusiasm for the patient's preference for prizes?**

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

6. To what extent did the CM clinician discuss the patient's **self-report of substance use?**

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

7. If the patient self-reported substance use, to what extent did the CM clinician **relate self-report of substance use to objective indicators of substance use?**

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- N/A  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- N/A  
Poor                      Adequate                      Good                      Excellent

8. If the patient self-reported substance use, to what extent did the CM clinician **relate self-report of substance use to consequences of positive samples?**

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- N/A  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7 ----- N/A  
Poor                      Adequate                      Good                      Excellent

9. To what extent did the CM clinician **compliment or praise** patient's efforts toward abstinence?

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

10. To what extent did the CM clinician **communicate confidence** that patient's efforts will yield success in the future?

QUANTITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Not at all                      Somewhat                      Considerably                      Extensively

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

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### General Skillfulness

11. **General skillfulness/effectiveness** (demonstrates expertise, competence, and commitment; engages all patients in discussion; interventions made at appropriate times—not missed or made too early).

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

12. **Maintaining session structure** (maintains session focus, sets appropriate tone and structure, appropriate level of CM clinician activity / directness, appropriate duration).

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent

13. **Empathy** (conveys warmth and sensitivity, demonstrates genuine concern and a non-judgmental stance, understands and expresses patients' feelings and concerns).

QUALITY:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7  
Poor                      Adequate                      Good                      Excellent