Facilitating the Adoption of Contingency Management for the Treatment of Substance Use Disorders

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ABSTRACT

Contingency management (CM) is an effective treatment strategy for addressing many types of substance abuse disorders and associated problems. Nonetheless, CM protocols have not been widely embraced by community-based treatment providers. Exploration of the viability of CM outside of a research context remains largely an academic pursuit. In this paper, we outline several areas that may hinder the transfer of CM technology into community-based practice settings, review the literature that may address these barriers, and offer suggestions to researchers for overcoming them.

Descriptors: Contingency management, substance abuse, technology transfer

Contingency management (CM) is the systematic application of behavioral principles, discovered by laboratory researchers working in the field of the experimental analysis of behavior, to treat the problem behavior of individuals. Primary emphasis is placed on the use of reinforcement contingencies to alter an individual's day-to-day behavior. Over the past several decades, researchers have refined and applied CM for the purpose of decreasing drug use and related problems in individuals diagnosed with a substance use disorder (e.g., Higgins & Silverman, 1999). Research has repeatedly shown that CM is effective for reducing drug use and associated maladaptive behavior (Higgins, Silverman, & Heil, 2007; Petry, 2000) and for increasing appropriate behavior that competes with drug taking (Iguchi, Belding, Morral, Lamb, & Husband, 1997). Controlled trials indicate that CM is one of the most efficacious treatment modalities available for the treatment of substance use disorders (e.g., Higgins & Silverman, 1999; Higgins et al., 2007). Several recent meta-analytic reviews also have confirmed that CM outperforms control conditions (Lussier, Heil, Mongeon,

Badger, & Higgins, 2006; Prendergast, Podus, Finney, Greenwell & Roll, 2006) and, in some cases, is superior to relapse prevention and cognitive behavioral treatment protocols (Dutra et al., 2008). Independent reviews of the drug abuse treatment literature have qualified CM as either "efficacious" or "probably efficacious" according to the standards set by the Division 12 American Psychological Association Task Force on the Promotion and Dissemination of Psychological Procedures (1995) for the treatment of alcohol, marijuana, cocaine, and opiate dependence (Chambless & Ollendick, 2001; McGovern & Carroll, 2003). The impressive body of published results supporting the efficacy of CM argues for wide spread utilization of the CM techniques (e.g., Silverman, Roll, & Higgins, 2008).

Despite the success, clinicians in community-based substance abuse treatment settings do not widely use CM and, in many cases, have adopted demonstrably less effective treatment protocols. This suggests that there is a disconnect between empirical research findings and the practices of community-based treatment providers (Sorensen, Rawson, Guydish, & Zweben, 2003). The adoption of less effective treatments over CM raises the question of why community-based treatment providers are not using the "better mousetrap."

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The purpose of the present article is to discuss some of the reasons why CM procedures have not been widely adopted by community providers. This paper is not intended to serve as a review of the CM literature; there are already several excellent sources for such reviews (see Higgins, Alessi, & Dantona, 2002; Petry, 2000; Silverman, 2004). Instead, this paper explores several putative barriers to the transfer of CM techniques into

community-based settings and provides recommendations and future research directions aimed at overcoming those hindrances. Although the focus of this paper is on CM, many of the same issues likely are applicable to the adoption (or lack of adoption) of other evidence-based treatments.

Barriers to the Dissemination of Contingency Management: Preaching to the Choir

One reason that community-based substance-abuse treatment providers might be hesitant to adopt CM practices is a lack of familiarity with CM and the empirical support for its use. A recent survey found that 48% of clinicians practicing in state-funded substance abuse treatment facilities in New Hampshire had no familiarity with CM for substance abuse, and only 9% reported any practical experience with CM techniques (McGovern, Fox, Xie, & Drake, 2004; see also Herbeck, Hser, & Teruya, 2008). Not surprisingly, the clinicians rated CM low on a list of procedures that they would be motivated to adopt (below twelve-step facilitation, cognitive behavioral therapy, motivational interviewing, and relapse prevention therapy; McGovern et al.). Thus, one strategy for increasing the use of CM in community settings is to get the word out to the target audience.

However, most of the information on CM is published in academic journals or in edited books written for academic readers. Community-based treatment providers may have limited or no access to these articles. Likewise, the expense of scholarly books on CM may be an impediment to getting CM information into the hands of community treatment providers. Even if they had access to these sources of information, treatment providers may find it difficult to decode the technical language that is often used in scholarly journals. Perhaps the prime example of this is the term *contingency management*, which may be off-putting because “contingency” is not a word with which most therapists have much experience. In addition, treatment

providers may object to describing their therapeutic activities as “management,” as this implies a paternalistic relationship with the consumer. Academic researchers also typically write for audiences that already understand basic behavioral principles (e.g., reinforcement, contingency, stimulus control) and thus expect the reader to fill in the gaps with the functional details (i.e., how the treatment protocol is based on behavioral principles). Non-specialist readers may not readily discern these principles. As such, they may be more likely to read an article as one reads a recipe when preparing a meal where leaving out or substituting for one ingredient may ruin the dish. If the community-based treatment provider detects an ingredient that is impractical in their setting, they may be likely to reject the entire recipe.

Consider a study conducted by Robles et al. (2000), which demonstrated that very large reinforcers (e.g., \$100 for 48 hours of abstinence) proved effective in controlling highly resistant substance use. Hypothetically, a community-based treatment provider might be opposed to providing clients with \$100 for achieving 48 hours of cocaine abstinence. However, these providers would likely be open to the more important message that highly resistant substance abuse can be reduced if one can identify a reinforcer(s) of sufficient salience and value (not necessarily monetary value) to compete with reinforcers maintaining drug use.

A related problem is that academicians may use terminology that is not optimal when discussing the transfer of CM technology into private sector clinics. For example, we once conducted a training session for a group of community-based treatment providers who were planning to conduct a CM intervention within a criminal justice setting. We unwittingly used the term “control group,” which was interpreted rather negatively by some of the treatment providers. In addition, the next day, a superior court judge informed our colleagues that a treatment program that practiced “... random discrimination...” (the judge’s

interpretation of random assignment to a control condition that did not receive CM) would be unacceptable. Thus, an academic term like “control group” was misconstrued as discrimination by providing less than optimal treatment. Had we instead used the term “treatment as usual” we may have avoided the ensuing fracas. In our collective experience, other terms that have posed problems when communicating with non-academics include reinforcement, punishment, and random assignment.

So why are the advocates of CM not communicating to community treatment providers through accessible outlets and in an easy to understand language? Perhaps the answer can be found by analyzing the contingencies of reinforcement that control the behavior of academic researchers who conduct CM research. Important reinforcers such as tenure, merit-based pay increases, and the respect of students and colleagues are provided contingent upon publishing peer-reviewed articles, making professional conference presentations, and training students to do the same. In some cases, transferring technologies into community-based settings may also be reinforced by those in the academy (e.g., Baer, Wolf, & Risley, 1968), but more often this is not the case. For example, assistant professors are unlikely to be tenured if they spend too much time giving workshops to community-based treatment providers and writing treatment protocols designed to be used by clinicians. Even after tenure is obtained, further promotions and annual merit based pay increases are awarded for scholarly research output and extramural research support, not for proselytizing to the community about the merits of CM.

One partial solution to this contingency problem is to call for scholarly research on effective means of communicating with, and disseminating CM to, substance abuse treatment providers. Some of this research has already begun. For example, Kirby, Benishek, Dugosh, and Kerwin (2006) recently surveyed community-based substance

abuse treatment providers to assess their objections to using CM in their therapeutic practice. Such research will provide valuable insights into how to better communicate with community providers and disseminate CM. Another important research direction already underway is exploring ways that community treatment providers can adapt CM to accommodate the economic and social constraints under which community providers are working (e.g., Kellogg et al., 2005). Journals such as *Behavior Analysis in Practice* that simultaneously target academic and provider audiences may be an ideal outlet for this research and may facilitate the adoption of empirically supported treatments by non-academic community-based treatment providers. Additionally, material prepared by the Substance Abuse and Mental Health Services Administration (SAMHSA; e.g., various Treatment Improvement Protocols) and the dissemination activities of the National Institute on Drug Abuse's Clinical Trials Network will continue to serve useful functions in disseminating CM to community-based providers.

When conversing with providers or stakeholders who are not trained in behavior analysis, academicians should avoid words that are commonly accepted in the academic setting yet have the potential to be misconstrued and to create consternation in clinical settings. If these terms are used, they should be clearly operationalized so that any misconceptions about their meaning can be ameliorated. Worth noting is that even the term "technology transfer" may pose an obstacle to communication between academicians and providers. Technology transfer connotes a one-way process in which the academicians are giving their knowledge to providers. Not surprisingly, this uni-directionality could be perceived as offensive to providers who may rightfully take pride in their current clinical practices, training, and expertise without academics "transferring" their "superior" knowledge to them.

Thus, another solution is for researchers to use a bi-directional dissemination

approach by working closely with treatment providers when designing applications of CM. Community-based treatment providers frequently have an acute awareness of the details of patients' lives and the provider's unique environment, and this information can be essential for the creation of clinical strategies that resonate with the interests and values of the patients and providers. In the case of CM, the knowledge of the treatment providers may be extremely useful in expanding the range of behaviors that can be targeted for change and in enriching the array of potential reinforcers needed to affect this change (e.g., Roll, Chudzynski, & Richardson, 2005). Furthermore, it is probable that the incorporation of provider input in the design and application of CM techniques will increase the provider's stake in the outcome of the intervention, thereby enhancing treatment integrity and the efficacy of patient abstinence as a reinforcer maintaining CM-related activities. In addition, a true bi-directional dissemination approach will likely inform researchers and lead them down new research avenues that will ultimately improve and enhance CM.

Beyond Dissemination: Identifying and Addressing Substantive Provider Concerns

A lack of awareness of the empirical support for CM is probably not the only reason it has not been more widely adopted. Treatment techniques developed by academicians that fail to take into consideration the treatment providers' environment are unlikely to become part of treatment as usual in the community. Pennypacker (1986) suggested the behavior analyst be aware of cultural contingencies and that "...cultures gravitate toward practices that maximize the density of reinforcement for the individual members." (p.149). A decade later, Pennypacker and Hench (1997) argued persuasively that behavioral interventions will be more likely to be adopted if they can reliably produce quantifiable outcomes that meet agreed upon goals of the treatment community

(e.g., continuous drug abstinence verified by urinalysis). They further argued that technology transfer is more likely if specific details of the intervention are provided so that treatment providers will know how to effectively implement the technologies in order to achieve positive, quantifiable outcomes. CM for substance abuse treatment has seemingly satisfied these latter criteria (e.g., Higgins, Heil, & Lussier, 2004; Prendergast et al., 2006), yet it remains infrequently used in community treatment settings. Behavior analysts have built a better mousetrap but few are buying it.

An important question is whether CM has maximized reinforcement parameters at the level of the individuals who make decisions about the adoption of CM (Pennypacker, 1986). After clinicians and directors of substance abuse treatment programs learn about CM, they often raise concerns about the costs and burden associated with managing a CM system and the seemingly complex contingencies of reinforcement that have proven most effective in reducing drug use. In the following sections, we consider some of these additional sources of control that might be hindering widespread adoption of CM. More importantly, we suggest strategies for addressing these substantive concerns of community-based treatment providers.

Relative Costs and Benefits Over the Status Quo

It is likely that the decision to adopt a new technology or treatment is affected by economic costs and benefits. If substantial start-up and maintenance costs are expected, then the anticipated benefits of adopting the new technology would need to be immediate and substantial. Retooling a community substance abuse clinic to implement CM may require new equipment and training. For example, arranging consequences contingent upon verified drug abstinence requires biochemical verification of abstinence (e.g., urine, breath, blood, saliva, hair, etc.). The outcome of the urinalysis test offers an objective measure of patient drug-taking activities

(which is necessary for CM) and may be helpful in tailoring counseling sessions to the drug use status of the client(s). Therefore, counselors or staff members must learn to collect the sample, test it for drug content, and record the results of the test. In community treatment settings, the combined material and wage costs of administering urinalysis and breath testing averages \$7.53 per test (Sindelar, Elbel, & Petry, 2007). Over 70% of the 383 community-based treatment providers sampled by Kirby et al. (2006) believed that once-weekly urinalysis testing could practically be implemented in their setting. However, the most effective CM protocols conduct at least twice weekly abstinence assessments (see meta-analysis by Griffith, Rowan-Szal, Roark, & Simpson, 2000).

Another cost associated with CM is providing the reinforcers earned by clients who objectively demonstrate drug abstinence. In most of the initial studies of CM, vouchers with a monetary value were used because of their broad appeal as generalized conditioned reinforcers and for the ease of magnitude scaling. Many studies have revealed that larger magnitude reinforcers are more effective for reducing drug use (e.g., Dallery, Silverman, Chutuape, Bigelow, & Stitzer, 2001; Higgins et al., 2007; Lussier, et al., 2006; Roll, Reilly, & Johanson, 2000; Stitzer & Bigelow, 1984), a lawful extrapolation of laboratory-based research findings (e.g., Higgins, Roll, & Bickel, 1996; Nader & Woolverton, 1991; Roll & Newton, 2007). Although researchers celebrate this orderly behavioral relation, substance abuse counselors practicing outside of a research setting may have concerns. In the Kirby et al. (2006) survey of 383 community-based substance-abuse treatment providers, the majority indicated that spending \$50 or more per client per month on tangible incentives would be impractical in the setting in which they work (see also Stitzer & Kellogg, 2007). Unfortunately, the average monetary value of vouchers employed in successful

CM trials has been \$50 per *week* (Petry & Alessi, 2007). Thus, academic researchers and community treatment providers are challenged with the task of identifying high-salience, low-cost reinforcers that can, for an individual client, effectively compete with drug reinforcers.

Results of research on ways to reduce the costs associated with tangible reinforcers suggest that solutions to this barrier are now available. One direction has been to identify inexpensive items that might effectively reinforce abstinence (e.g., Chutuape, Silverman, & Stitzer, 1998; Roll et al., 2005). For example, Amass, Bickel, Crean, Higgins, and Badger (1996) asked opioid-dependent outpatients to rank order a list of tangible items (e.g., restaurant gift certificates, movie rentals), social activities (e.g.,

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barbecues, hiking trips), and privileges (e.g., take-home opioid-replacement medication or increased/decreased counseling sessions). Although they found that vouchers with a monetary value were most preferred, other items such as take-home medication privileges (which have proven useful in promoting drug abstinence; Stitzer, Iguchi, & Felch, 1992) frequently ranked high on the list. Perhaps the utility of this approach is not in identifying *the* reinforcer that will effectively reduce drug taking, but in identifying a large menu of low- or no-cost items and privileges that can effectively compete with drugs as a reinforcer.

A second strategy for decreasing the cost of CM has been to reinforce drug abstinence under a variable magnitude of reinforcement schedule (e.g. Petry, Alessi, Marx, Austin, & Tardif, 2005) or under a periodic schedule (Kirby, Marlowe, Festinger, Lamb, & Platt, 1998). For example, Petry and her colleagues have obtained good treatment outcomes

when drug abstinence was reinforced with a chance of winning a variety of tangible prizes (e.g., Petry, 2000; Petry et al., 2004; Petry et al., 2005; Petry & Alessi, 2007; Petry & Martin, 2002). Upon confirmation of drug abstinence, clients in these studies were allowed one or more draws from a “fishbowl” containing either statements of praise (no monetary value) or a description of a tangible prize ranging in value from \$1 to \$100. In studies designed to compare the efficacy of prize-based CM with approximately equivalent earnings obtained in a continuous-reinforcement CM treatment protocol (e.g., a median of \$61 per month), rates of drug abstinence were indistinguishable across groups (e.g., Petry, Alessi, Hanson, & Sierra, 2007). Unfortunately, an attempt to reduce the cost of prizes by one third proved to be no more effective in promoting drug abstinence than usual care (Petry et al., 2004). Clearly, more research is needed to explore ways in which the probability of earning reinforcers may be faded, either gradually or throughout treatment, while maintaining the benefits of CM for treatment completion and drug abstinence.

Future research aside, a recent study suggests that existing CM technologies, as they are currently employed in research settings, are sufficiently cost effective to warrant their adoption by community-based treatment providers. Sindelar et al. (2007) surveyed 16 substance abuse clinics that were using prize-based CM. Clinics were asked to report costs associated with drug testing and reinforcers. In both of these expense categories, the numbers included material costs and wages (including fringe benefits) required to cover the time spent administering and keeping records of these tests and outcomes. Using this information, Sindelar et al. estimated the cost of increasing treatment efficacy by adding prize-based CM to treatment as usual during a 12-week treatment period. If a clinic was already conducting

regular drug testing as part of outpatient therapy, each additional week of continuous abstinence would cost \$75.40 per patient (\$25.13 per month) under prize-based CM. If the clinic was not already conducting drug testing, the expense would be \$103.30 per patient (\$34.43 per month). Sindelar et al. also estimated the cost of a 10% increase in the percentage of patients completing a 12-week course of treatment to be \$137 per patient (\$40.67 per month). (CM has been shown to be associated with high treatment completion [e.g., Petry et al., 2005]). Treatment retention is an important outcome for community-based treatment providers. Early withdrawal from treatment amounts either to a treatment failure (drug relapse) or a missed opportunity because remaining in treatment is associated with better long-term outcomes. For clinics reimbursed on a per-visit basis, early withdrawal is not only discouraging, it is fiscally untenable.

It is important to note that the cost effectiveness analyses conducted by Sindelar et al. (2007) estimated the costs of incremental improvements in a single treatment outcome at a time. Thus, if prize-based CM was introduced at an expense of \$40.67 per month per patient, the clinic might expect not only an additional 10% of patients completing treatment, but also longer periods of continuous drug abstinence when compared with current treatment practices. This estimate is well below the \$50 per month allocated exclusively to reinforcers that community treatment providers might view as fiscally impractical (Kirby et al., 2006). There are probably additional benefits of CM beyond those included in the Sindelar et al. cost efficacy analysis. One estimate of these additional benefits was provided by Hartz et al. (1999), who found that for every \$1 spent by adding CM to a methadone detoxification treatment program, one could expect a \$5 reduction in health care costs.

Treatment providers may be more willing to adopt CM procedures if they are provided with information on the

costs and benefits of these treatments and cost-effective ways to implement them. However, if CM is associated with additional costs during treatment, this treatment will be cost effective in the long run only if it produces better post-treatment outcomes. Although some CM studies have reported better post-treatment outcomes when compared to usual-care controls (e.g., Higgins et al., 1995, Higgins, Badger, & Budney, 2000), others have not (e.g., Petry et al., 2005; Rawson et al., 2006; Schumacher, Mennemeyer, Milby, Wallace, & Nolan, 2002). A number of researchers have noted that post-CM relapse can be predicted from periods of continuous abstinence achieved during treatment (e.g., Higgins et al., 2000; Petry et al., 2005). Building on this finding, Higgins et al. (2007) demonstrated that increasing the magnitude of reinforcers used in CM produced longer periods of sustained abstinence during treatment and at 18-month follow-up. Armed with the Sindelar et al. (2007) cost-efficacy analysis, community-based treatment providers should be able to estimate the costs of implementing a CM intervention that will not only produce sustained periods of drug abstinence during treatment but will lower rates of post-treatment relapse. Although this may increase the immediate costs of implementing CM, it will lower the long-term costs of providing repeated bouts of treatment.

From an economic perspective, the decision to change course and adopt a new treatment strategy should be affected by the price of that change. Price is commonly defined as a cost-benefit ratio, and we have attempted to outline some of the anticipated costs and benefits of CM above. Choice is affected by relative prices, and we have attempted to make a case that the price of CM, as it is currently used, is more cost effective than the status quo. But is the price sufficiently low to motivate action? It is not likely that providers view change as a necessity because the price of maintaining the status quo is not drastically higher than adopting CM. The community treatment provider may believe

that the more money spent on CM, the less worthwhile is the outcome (Kirby et al., 2006) – exactly the opposite of the findings of the Sindelar et al. (2007) cost efficacy analysis which demonstrated the economic benefit of adopting CM.

In addressing this relative price problem, CM proponents might learn from those advocating for behavioral treatments for children with autism. Behavioral interventions for this disorder have become more widely used, despite their relatively high cost, largely because of strong parent advocacy (Jacobson, 2000; Maurice, Green, & Luce, 1996). Said another way, the parents of children with autism increased the price of the status quo. In several cases, if the schools, the state, etc. provided the usual services instead of empirically supported interventions (e.g., Applied Behavior Analysis, ABA), then parents protested, lobbied for better insurance coverage to ameliorate costs, and in some cases filed lawsuits. Because empirical support for early behavioral interventions has been well established, ABA has, arguably, become the status quo.

Before marshaling for advocates, it is necessary to conduct additional studies to estimate the societal cost for maintaining the status quo (current levels of crime and incarceration, emergency medical services use, disability payments, child abuse and neglect, etc.) and compare this with the price (costs/benefits) of CM. If the price differential is demonstrated to be sizable, then one task might be to increase advocacy for the use of CM for substance use disorders. If the differential is found to be non-significant, then additional research advances in cost-cutting and post-treatment outcome improvements will be critical.

Complexity of CM Versus the Status Quo

Another factor cited as important in the adoption of new medical and psychological technologies is the complexity of the new technology. Less complex technologies increase the probability of adoption (Mesters & Meertens, 1999; Miller, 2001; Parcel et al., 1995; Rogers,

1995; Squires, Gumbley, & Storti, 2008; Svenkerud & Singhal, 1998). The most effective versions of CM arrange escalating reinforcer amounts to encourage patients to achieve sustained abstinence. Treatment providers with little or no background in behavior analysis frequently perceive these techniques as overly complex (e.g., Crowley, 1999; Kirby, Amass, & McLellan, 1999; Kirby et al., 2006). Instead of seeing how escalating reinforcer magnitudes are tied to basic principles (e.g., establishing operations, quantitative models of choice, or the substitute-to-complement continuum), they may view CM techniques as an arbitrarily complex jumble of rules that must either be memorized or consulted regularly.

One potential strategy for reducing this barrier is for researchers to work collaboratively with treatment providers in community settings. For example, recent research conducted as part of the National Drug Abuse Treatment Clinical Trials Network (CTN) was designed to integrate CM procedures with those already being used in community treatment settings. In the one of these studies (Petry et al., 2005), treatment-seeking stimulant users were randomly assigned to either a variable magnitude of reinforcement (prize-based) CM group or a treatment-as-usual group. Patients in both groups achieved high levels of drug abstinence during treatment, but CM patients maintained significantly longer periods of sustained abstinences than patients receiving treatment-as-usual (4.4 vs. 2.6 weeks), were four times as likely to abstain throughout treatment (18.7% vs. 4.9%), and were significantly more likely than controls to complete the 12-week treatment program (49% vs. 35%). Given the relation between sustained drug abstinence and post-treatment outcomes, these findings provide encouraging evidence that community-based drug-abuse treatment providers can produce meaningful improvements

in treatment efficacy by adopting CM procedures.

Compatibility Between CM and Community Clinics

Another factor that may impede the adoption of new technologies is an incompatibility between the technology and the social system in which it will be used (Mesters & Meertens, 1999; Miller, 2001; Parcel et al., 1995; Rogers, 1995; Squires et al., 2008; Svenkerud & Singhal, 1998). We have already discussed the perceived financial incompatibility between CM and community treatment provision (and how that perception changes when one considers the extended benefits of CM), so here we will

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discuss non-financial incompatibilities.

As previously discussed, Kirby et al. (2006) surveyed 383 substance abuse counselors, supervisors, and their medical/clinical support staff working in five diverse states. Over three-quarters of those surveyed indicated they would like to add *social* incentives to their current treatment program (e.g., praise from the counselor or recognition of abstinence by the therapy group), but significantly fewer providers were interested in adding *tangible* incentives (54%). As noted by Kirby et al., a portion of this lower endorsement of tangibles was related to costs, but their survey results revealed other objections. For example, about one third of those surveyed felt that tangible incentives were bribes that could hurt the treatment process. An even larger proportion (52%) felt that tangible incentives do not address the underlying issues of addiction. Although fewer treatment providers objected to potential social reinforcers on these grounds, 47% still felt that potential

social reinforcers do not address issues underlying addiction.

One interpretation of these findings is that treatment providers believe the patient must possess or acquire self-efficacy or intrinsic motivation to achieve sustained drug abstinence. From this perspective, extrinsic reinforcement arranged in CM does nothing to teach these skills and may actually undermine the development of intrinsic motivation. Rather than arguing philosophically about the utility of hypothetical constructs such as self-efficacy and intrinsic motivation, an effective strategy might be to describe the anticipated outcomes of CM as likely to strengthen self-efficacy, self-esteem, and intrinsic motivation.

For example, Wong et al., (2004) reported that although cocaine-dependent patients' early self-efficacy scores were correlated with later self-efficacy, they were not predictive of drug abstinence. Instead, achieving drug abstinence early in treatment was predictive of later abstinence *and* self-efficacy. Because early sustained drug abstinence can be specifically targeted for improvement and achieved through CM (Higgins et al., 2007), treatment providers concerned with constructs they believe underlie addiction may be more willing to add CM to their usual treatment protocol if they can see how it is likely to improve the self-efficacy of their patients.

Qualitative data relevant to this issue was provided by Kellogg et al. (2005), who described the reactions of patients receiving tangible reinforcers for attending therapy sessions and abstaining from drugs. First, and not unexpectedly, the patients were enthusiastic about the possibility of earning simple items such as gift certificates, t-shirts, and social recognition for making small steps toward their long-term therapeutic goals. Clinic staff involved in this large-scale CM program noted that patients increased their attendance and participation in group therapy, which

is an outcome necessary for the benefits of these sessions to be enjoyed. After receiving tangible reinforcers for therapy attendance and abstinence, clinical staff reported that patients often became emotional and expressed disbelief that anyone would give them anything for their working on their recovery. Other unanticipated benefits were noted when patients gave their tangible items as gifts to their treatment peers or to their children and family members as a first step in the reconciliation process. As one patient who received tangible incentives for attending therapy put it, "I used to think the drug dealer cared for me, but this is really caring." (Kellogg et al., p. 62). Clinical staff, many of whom were initially skeptical about using incentives, summarized these changes by describing their patients as more empowered and possessing higher self-esteem following the implementation of CM.

General incompatibilities between CM techniques and the social system operating in community clinics might be effectively addressed if practitioners working in community-based clinics knew that providers like themselves had positive experiences adopting and utilizing CM to treat substance use. To our knowledge, no formal surveys have been conducted of community treatment providers following their adoption and implementations of CM. Kirby et al. (2006) reported that community treatment providers, directors, and staff had more positive opinions of tangible and social incentives if they had prior experience using both. However, these findings may simply reflect that those who began with a higher opinion of these incentives were more likely to use them in their treatment practices. Less formal, but probably more salient positive counselor reactions to CM were summarized by Kellogg et al. (2005) following the widespread adoption, adaptation, and implementation of CM in chemical dependency treatment clinics within the New York Health and Hospitals Corporation. Kellogg et al. described counselors as initially resistant

but eventually becoming enthusiastic supporters who described the program as exciting, energizing, and morale boosting. These changes were attributed to concrete improvements in patient behavior, such as better attendance and participation in therapy, and higher rates of drug abstinence. Stated simply, the counselors saw that they were being more effective and this boosted their sense of self-efficacy. Counselors also noted a culture change where emphasis was placed on recognition of successes instead of chiding patients for their failings. Following CM, one counselor reported feeling less like a "jailer". The impact of CM appeared also to improve morale among clinic employees as one director described greater cohesion and less territoriality between counseling, vocational, and nursing staff.

Regulatory Concerns

A final issue that will undoubtedly influence CM dissemination efforts is a need to ensure that federal dollars are not used as incentives for attendance in such a fashion that it constitutes fraud (e.g., appearing to pay individuals to attend the clinic). A recent opinion on this matter from the Department of Health and Human Service's office of the Inspector General seem to be supportive of the use of CM as an appropriate therapeutic intervention. The regulatory issues are fluid, however. Although we anticipate generally favorable outcomes over time, this issue deserves diligent attention from researchers and community practitioners.

Conclusions

The adoption of CM procedures will be based on the decisions made by those providing the treatment and those paying their bills, not by researchers. CM can be effective in establishing periods of abstinence and has proven effective for a number of populations and a variety of substance abuse disorders (e.g., Higgins & Silverman, 1999; Higgins et al., 2007). Nevertheless, this proven approach for promoting abstinence is

not widely used by community-based treatment providers. To promote the acceptance and incorporation of CM techniques, academicians must distill their research findings into concise arguments that will prove persuasive to providers. One important step in this direction will be altering the academic environment so that reinforcement (i.e., recognition, career advancement, financial gain) is available to the academician for engaging in technology transfer behaviors (e.g., providing workshops to community providers, conducting community trainings and supervision, etc). A complementary step will be to enlist the participation of the providers in the design and application of CM techniques via a bi-directional process. The latter is most likely to succeed if CM advocates are prepared to address the very real concerns of community-based treatment providers about adopting CM in their treatment setting.

As we move towards ever increasing accountability for the expenditure of treatment and research dollars in pursuit of evidence-based practices (e.g., DeAngelis, 2005), it may be worthwhile to expand our consideration of the benefits of CM beyond reductions in drug use. To the extent CM produces tangible benefits, it will be "selected for" by society (e.g., Lamal, 1991). In the final analysis, this societal audience may prove most important in marshaling advocates for the adoption of CM and other evidence-based treatment practices.

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