Advances in Research on Contingency Management for Adolescent Substance Use

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KEYWORDS

• Contingency management • Adolescent • Substance use • Treatment • Review

KEY POINTS

- The literature on the use of contingency management (CM) for reducing adolescent substance use continues to grow and generally shows positive effects for enhancing outcomes during treatment.
- As with other models of treatment, obtaining enduring effects post-treatment remains a challenge, and tests of innovative CM programs targeting maintenance are lacking.
- Implementation research indicates strong interest in adoption of CM, and initial findings suggest that structured workshops can provide effective training for some types of programs.
- Parameters of CM programs, such as the frequency and magnitude of contingent incentives, context of the contingency (home vs clinic), target behavior, and selected population, should be clearly specified when evaluating and discussing the efficacy of CM interventions.

In 2010, the research base for CM applications in adolescent substance use disorder treatment settings was only just emerging; however, the overwhelming positive evidence base from the adult treatment literature provided reason for high expectations.[1] The adolescent literature in this area continues to progress at a moderate pace, with many indicators of budding interest in its application and in finding cost-effective models to enhance dissemination and implementation. Mixed findings have been reported, which are not unexpected given the struggle to find inexpensive, effective treatment models that could readily be adopted by the current health care system. Outcomes from other psychosocial interventions for adolescent substance

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use disorders clearly indicate that these problems are not easy to treat and that success rates have much room for improvement.[2] As discussed in the prior review of the adolescent CM literature,[1] the schedule of reinforcement (magnitude, timing, and frequency) of a CM program is likely the most important determinant of its success in changing the target behavior. For example, greater magnitude and more frequent delivery of contingent reinforcement (incentives) as soon as possible after the target behavior occurs usually engender better outcomes than lesser magnitude, delayed, and lower-frequency delivery, yet enlisting higher-magnitude and more frequent incentives has greater cost and requires more time and effort. Unfortunately, those seeking to use CM to enhance treatment outcome may err toward keeping costs down in this way, at the peril of reducing efficacy. Details are highlighted of newly reviewed CM programs to alert readers to the parameters (eg, target and schedule of reinforcement) under study to facilitate more nuanced interpretations of the findings.

This article first provides a review of recent controlled trials focused on adolescent substance use for teens referred to outpatient treatment. Second, a brief summary of the continued innovative applications of CM to tobacco cessation among youth is presented. Investigations of predictors and mechanisms of the CM outcomes from treatment studies are summarized to highlight recent efforts to better understand mechanisms and predictors of CM approaches and how these may be used to effectively guide future research endeavors. Emerging literature on dissemination and implementation of CM and the use of CM as platform or backbone treatment in experimental studies of novel interventions is discussed, which indicate growing recognition and acceptance of CM as a viable model for community treatment. A brief review is provided of a few studies that illustrate the influence of CM research occurring in the area of adolescent substance use treatment and how it is extended to or paralleled by new applications targeting other health behaviors or disorders.

CLINICAL TRIALS TESTING CONTINGENCY MANAGEMENT FOR SUBSTANCE USE DISORDERS

Six new controlled trials of adolescent CM have been published since 2010. Outcomes from each are reviewed, focusing on the intervention characteristics across the domains of inclusion/exclusion criteria, the platform intervention to which CM was added, whether the control condition included any contingent incentives, and whether parents of adolescents participated in the delivery of contingent incentives was or was not part of CM. In addition, the CM interventions are characterized along the dimensions recommended by Stanger and colleagues[1]: target of the intervention (eg, abstinence), monitoring strategy, and the incentive schedule, magnitude, and type (**Table 1**).

First, there have been 2 negative trials, reporting no significant differences for youth receiving CM versus a comparison condition. The smaller trial randomized 31 youth over 2.5 years into outpatient substance use treatment as usual versus a CM intervention.[3] Youth met *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) diagnostic criteria for a cannabis use disorder, and parents were not involved in the intervention. The usual care youth did receive attendance incentives using a fishbowl, with a maximum value of approximately $200. In the CM condition, the target behavior was abstinence from all tested substances (no attendance incentives), monitored by urine tests conducted twice a week for 10 weeks. The incentive schedule was escalating, with a reset contingency if use occurred; however, incentives were not reinstated if abstinence recurred and draws could be lost. A fishbowl