Effective, but underused: lessons learned implementing contingency management in real-world practice settings in the United States

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ABSTRACT

Despite being one of the most effective adjunctive behavioral interventions in combination with medication for opioid use disorder, contingency management (CM) is one of the least available interventions in opioid treatment programs. This paradoxical state of affairs is perhaps the greatest example of the research-to-practice gap in the behavioral health field. Implementation science, a discipline that aims to identify replicable methods that can be used across settings and populations to bridge the gap between research and practice, can potentially help. Based on our team's experience implementing CM in opioid treatment programs, we detail five key lessons for researchers, clinicians, policy makers, and others seeking to implement and sustain CM in real-world settings. First, multiple barriers to CM implementation exist at both the counselor- and organization-levels, requiring multi-level solutions. Second, one-shot CM training alone is not sufficient for successful implementation: ongoing support is essential to achieve levels of intervention fidelity that will benefit patients. Third, assessing an organization's capacity for implementation prior to support provision can prevent costly mistakes. Fourth, implementors should plan for high staff turnover rates and expect the unexpected by developing detailed contingency plans. Finally, implementors should remember that the goal is to implement evidence-based CM and not simply incentives. We encourage colleagues to consider these lessons to increase the likelihood that CM can be implemented and sustained in a manner that improves the quality of care in opioid treatment programs.

Contingency management (CM) is one of the most effective adjunctive behavioral interventions in combination with medication for opioid use disorder (Downey et al., 2000; Griffith et al., 2000; Lussier et al., 2006; Rawson et al., 2002; Sindelar et al., 2007; Bolívar et al., 2021). Yet CM is one of the *least* available interventions in programs that address substance use in general and in opioid treatment programs (OTPs), in particular. Surveys of front-line counselors in specialty addiction treatment settings have estimated as few as 10% use CM (McGovern et al., 2004). This paradoxical state of affairs, in which CM is one of the *most effective* interventions yet one of the *least available*, is perhaps the greatest example of the research-to-practice gap in the behavioral health field. Indeed, the New York Times wrote an article about the CM research-to-practice gap in Fall 2021 titled, "This addiction treatment works. Why is it so underutilized?" (Goodnough, 2020)

One potential reason for the lack of CM implementation has been an emphasis on discovery with limited attention to translation. A plethora of randomized trials demonstrate the efficacy of CM across different settings, populations, and contexts (Prendergast et al., 2006). Moreover, a growing number of studies demonstrate CM's effectiveness when delivered by front-line clinicians (Walker et al., 2010; Kellogg et al., 2005; DePhilippis et al., 2018; Kropp et al., 2017). By contrast, only a handful of studies have examined which strategies are required to successfully implement and sustain CM in clinical or community settings (Becker et al., 2016; Hartzler et al., 2022; Hartzler et al., 2014; Hartzler et al., 2023; Scott et al., 2021; McDonell et al., 2013). Until roughly the past decade, the prevailing approach to CM implementation has been the approach used throughout academia: the field of dreams approach, otherwise known as, "If you build it, they will come." A relatively

passive approach to translation, in which researchers study efficacy and disseminate their findings via scientific conferences, peer-reviewed publications, and resources designed for front-line clinicians (for an example see (Addiction Technology Transfer Center Network (ATTC), 2011)), has created a slow and leaky pipeline from research to practice. An oft-cited statistic suggests it takes 17 years for 14% of research to benefit patients (Morris et al., 2011; Balas and Boren, 2000; Grant et al., 2003; Wratschko, 2009). Considering the efficacy of CM for stimulants was well-documented in the 1990s and CM is only now being considered as a reimbursable intervention to address stimulant use, a 17-year lag seems enviable. Implementation science, a discipline that aims to identify replicable methods that can be used across settings and populations to bridge the gap between research and practice, can potentially help (Bauer et al., 2015).

Efforts to apply implementation science methods to promote CM uptake in real-world settings have been few and far between, as have been examples of sustainable CM implementation. To date, the most effective large-scale CM implementation effort was conducted through the US Department of Veterans Affairs (VA); years after implementation, over 90% of the initial agencies continue to deliver CM (Rash and DePhilippis, 2019). Initiatives beyond the VA have been less encouraging. For example, one study of a group-based CM program implemented by methadone counselors found the clinic discontinued CM after 12 months (Kropp et al., 2017). Our team has been partnering with 28 OTPs to help them to implement CM (Becker et al., 2021a) and found similar results over the 6–12 months following training. Based on our first two cohorts of 18 OTPs, we anticipate that about two-thirds of the OTPs will meaningfully sustain the delivery of *any* incentives, with far fewer sustaining delivery of CM consistent with evidence-based guidelines (e.g., consistent reinforcement of sufficient magnitude with escalation) (Becker et al., 2021b; Becker et al., 2021c).

The difference between the VA experience and our experience with community OTPs raises two key questions. First, what can we learn from the success of the VA implementation? Second, what can we learn from the scant efforts to implement CM outside of the VA? In this article, we highlight five key lessons for researchers, clinicians, policy makers, and other key partners seeking to implement CM.

1. Lesson #1: Multi-level barriers to cm implementation require multi-level solutions (and funding)

We believe the limited implementation of CM in community settings reflects at least three barriers at both the counselor- and the organization-level. First, counselors are often unfamiliar with CM. In 2018, our team interviewed 43 OTP counselors across Rhode Island and asked them to define CM in their own words (Becker et al., 2019a). Less than half ($n = 18$, 42%) defined CM correctly. The same number of counselors responded, "I don't know" or "preferred not to answer." Remaining counselors offered incorrect or non-specific definitions that referenced "motivating patients," giving "incentives," or offering "reinforcements," but did not specify that incentives were linked to treatment goals. This finding indicates an alarmingly low level of recognition of one of the most effective addiction treatments in our arsenal. Further, casual understanding of CM as merely "incentives" is consistent with findings from Rash and colleagues (Rash et al., 2020) which suggests that use of incentives in clinical settings rarely adheres to high quality CM protocols.

Second, some counselors object philosophically to the idea of providing patients with incentives for meeting treatment goals. An early survey by Kirby and colleagues (Kirby et al., 2006) found that over 50% of community counselors objected to incentivizing patients for attaining abstinence if they failed to meet other treatment goals. In our team's ongoing work with 28 OTPs (Becker et al., 2021a), we are similarly finding that a subset of counselors philosophically object to CM. We administered a CM attitudes scale (Rash et al., 2012) to 201 OTP counselors prior to receipt of training: our results thus far indicate that

38% disagreed with the statement "it is okay for patients to have the opportunity to earn prizes worth as much as $100 for reaching their treatment goals" and that 19% disagreed with the statement "incentives can have a positive effect on the patient/counselor relationship." (Yap et al., 2022) Perhaps most concerning, 16% disagreed with the idea that CM is an acceptable intervention and 20% disagreed that CM is effective for patients.

Third, and most critically, organization-level barriers such as funding for incentives, time for training, and an integrated system for documenting and tracking CM progress are major barriers for OTPs implementing CM (Walker et al., 2010; Hartzler and Rabun, 2013; Carroll, 2014; Ruan et al., 2017). In a study of 60 OTP counselors followed for 1 year, we found that counselors who did not implement CM reported organizational-level barriers far more often than counselor- or patient-level barriers (Becker et al., 2019b). Arguably, a critical success factor in the VA rollout of CM – and one of the reasons organizations outside of the VA have faltered - was the VA's "top-down" commitment from leadership to endorse and fund CM implementation. In other words, CM implementation (with high fidelity) was a requirement, not an option. Of central importance, VA leadership allocated implementation support funding by providing vouchers for the VA's canteen. Efforts to implement CM in OTPs face a host of additional contextual barriers including, but not limited to, lack of leadership commitment, insufficient funding and time for training and lack of an integrated medical record (Becker et al., 2021b; Becker et al., 2021d). For these reasons, multi-level strategies are needed to promote CM implementation, to simultaneously address both counselor-level (e.g., knowledge, philosophical views/attitudes) and organizational-level (e.g., time for training, adequate staffing) barriers. Given the central importance of funding as an organization-level success factor in the VA (Petry et al., 2014), multi-level strategies should be augmented by advocacy efforts to ensure that CM delivery is reimbursable and funded in a sustainable manner. Notably, this special issue details the multi-level implementation strategies being used in the state of California, which were carefully selected to address barriers to CM implementation and which are occurring after years of advocacy to deliver CM as a Medicaid-reimbursable service.

2. Lesson #2: training is not sufficient

Perhaps the most important lesson we have learned in our work is that training front-line counselors in CM via a low-touch webinar, workshop, or seminar series is not sufficient to sustain CM implementation. Even if training uses state-of-the-art approaches in active learning and behavioral rehearsal, a "one-shot" engagement with CM delivery is unlikely to produce meaningful and lasting change. This critical lesson is worth repeating: one-shot training is not sufficient!

Our confidence in this assertion comes from our longstanding partnership with the New England Addiction Technology Transfer Center (ATTC), a regional training and technical assistance center designed to help the addiction workforce learn effective practices. Almost a decade ago, the New England ATTC compared the effectiveness of a didactic workshop versus a multi-component implementation strategy across 18 OTPs (Becker et al., 2016; Helseth et al., 2018). The didactic workshop was led by Dr. Nancy Petry, lead developer of the prize-based CM strategy (Petry et al., 2004), and used an approach that has been shown to increase provider knowledge and positive attitudes towards CM (Rash et al., 2013; Benishek et al., 2010). The comparison was a multi-level implementation strategy called the Science to Service Laboratory (SSL) (Squires et al., 2008), which augmented the didactic workshop with two elements designed to address counselor- and organization-level barriers to change: (a) performance feedback on CM delivery; and (b) external facilitation from a "technology transfer specialist" who advised staff (e.g., nurses, counselors, front-desk personnel) on how to integrate CM into their workflow. Using a quasi-experimental design, seven OTPs in New England received the SSL and 11 OTPs outside the

region received the didactic workshop only. OTP counselors were followed for 52 weeks and asked to self-report on their adoption of CM biweekly.

Results of this quasi-experimental design were exceptionally clear (Becker et al., 2016; Helseth et al., 2018). Relative to counselors who received didactic workshop only, those who received the SSL had comparable likelihood of adopting CM over the first 20 weeks but exhibited significantly higher likelihood of adoption (odds ratios =2.4–13.5) from weeks 21–52. Additionally, counselors who received the SSL adopted CM more quickly; for any given adoption benchmark (e.g., 30% of counselors adopting CM), those in the SSL reached the benchmark 2–10 weeks faster than those receiving didactic workshop only. Finally, across the 52-weeks, counselors who received the SSL used CM approximately 70% more often than those who received didactic workshop only.

Based on these compelling findings, our team has partnered with the New England ATTC and used the SSL model to help OTPs implement CM over the past decade. Notably, we perceive the SSL as a "minimally sufficient" level of support for OTPs seeking to employ CM; OTPs may need more support than the SSL, but we believe they will need at least the three core elements. In our recent work, we have tested enhanced versions of the SSL to see if we could accelerate the uptake and promote longer sustainment of CM. Project MIMIC (Becker et al., 2021a) (Maximizing Implementation of Motivational Incentives in Clinics), our ongoing cluster randomized hybrid trial with 28 OTPs tests the ATTC strategy versus an enhanced version that layers in a staff-focused pay-for-performance strategy designed to accelerate CM uptake with a team-focused Implementation and Sustainment Facilitation (ISF) strategy (Garner et al., 2017) designed to enhance CM sustainment. In both conditions (ATTC vs. enhanced ATTC), all participating OTPs are provided with a fully stocked prize cabinet prior to study participation and maintenance of rewards is left to each site to self-fund after receipt of the implementation strategy. Results of this study will reveal whether the enhanced ATTC strategy is cost effective and associated with greater sustainability of CM delivery, which will inform the strategies used by the New England ATTC to promote CM implementation moving forward.

3. Lesson #3: if an organization cannot meet basic needs, it is not an ideal time to implement CM (or anything new)

In a recent viewpoint article, Stewart and colleagues (Stewart et al., 2021) encourage researchers to invoke Maslow's hierarchy of needs when thinking about organizational capacity to implement evidence-based practices. Specifically, the authors assert that financial solvency, staffing, and meeting state/federal regulations are basic needs that organizations must meet to remain afloat, while implementing evidence-based practices is arguably a higher-level need. This viewpoint aptly captures our experience working with OTPs. We have found that it is not worth the time and effort to train an OTP in CM if the OTP is struggling with basic needs such as keeping staff employed, hitting productivity targets, and meeting state requirements for dosing and counseling. As one example, we planned to train an OTP in CM, and a few weeks prior to training, the entire senior management team turned over, compounding multiple vacancies for entry and mid-level staff. OTP staff were still interested in CM training, but this was clearly not an ideal time to undertake a major implementation initiative. This OTP, quite understandably, needed to focus first on the basics of filling vacant positions and adhering to state requirements.

We recommend assessing an organization's implementation capacity *before* undertaking efforts to implement CM, or any new evidence-based practice. Several validated tools can be applied to assess readiness for implementation. In the addiction field, one of the most widely used and comprehensive tools is the Texas Christian University Organizational Readiness for Change (ORC) developed by Lehman and colleagues (Lehman et al., 2002). The ORC has 115 items across 18 dimensions and

assesses constructs such as perceptions of organizational motivation for change, institutional resources of the program, personality attributes of the staff, and organizational climate of the program. In more recent years, additional measures have been developed to assess organizational readiness to change (Helfrich et al., 2009; Holt et al., 2007), including a brief 11-item measure that specifically assesses staff perceptions of an organization's readiness for implementing a new innovation (Shea et al., 2014).

In our experience, organizational readiness tools are useful for assessing the extent to which staff perceive their organization as ready and willing to implement a new innovation; however, they do not succinctly capture the extent to which the organization has the capacity to focus on higher-level needs. Historically, we have used a basic Organizational Background Form and the Organizational Readiness for Implementing Change scale (Shea et al., 2014) prior to the start of our implementation efforts to gather information about an organization's age, number of personnel, funding, patient mix, and willingness to implement. More recently, we have layered in specific questions such as: What is the average tenure of staff at your organization? What was your turnover rate the past 6–12 months? What proportion of your counseling positions are currently vacant? Do any of your senior leaders or supervisors have planned leaves over the next 6–12 months? These questions have helped us to quickly identify programs that would benefit from more time focusing on the basics before attempting to implement CM.

4. Lesson #4: expect the unexpected

Of course, even when an organization appears to have sufficient capacity to implement CM, unexpected challenges (e.g., leadership resignations, policy changes) will arise. We could fill a manuscript with examples of unanticipated challenges faced by our partners since 2018. Of course, the most disruptive example was the COVID-19 pandemic, which introduced a host of changes to OTP policies and regulations that our partners had to address in real time (for discussion of pandemic-related barriers to CM implementation see (Becker et al., 2021b)). Other salient examples include: an OTP experiencing a slew of rapid staff resignations after their CEO was let go; an OTP having an active shooter on premises and halting all in-person services to allow counselors time to grieve; and an OTP having their lead medical doctor fall ill, requiring an extended pause on patient admissions and inductions.

Given the inevitability of unanticipated challenges arising when working with community OTPs, contingency plans are essential. To prepare for implementation, we ask OTP partners to fill out a CM Design Worksheet (Rash, 2018) in which they think through basic issues such as who will monitor incentive distribution, who will be trained in CM, who will administer draws/vouchers, and who will conduct periodic audits of the process. We use this worksheet to think through a number of contingencies such as the identification of replacement staff and staff coverage plans/policies.

We also work with OTP leadership to craft a detailed plan to account for staff turnover. Staff turnover research conducted by a member of our investigative team (Garner et al., 2012; Garner and Hunter, 2013) estimated an annual turnover rate of 30% among substance use disorder front-line counselors and 20% among OTP leaders. Our more recent experiences with OTPs recorded comparable rates: 32% of counselors turned over within our 9-month active implementation phase. With such high turnover, it is essential that implementation plans nimbly anticipate and adjust to ongoing staffing changes. At a minimum, we recommend that staff turnover plans meet the following criteria: (a) identification of at least two "CM coordinators" to oversee and advocate for ongoing CM implementation (two is essential in case one leaves); (b) creation of detailed protocols to train new staff in CM delivery either via regularly recurring training sessions or asynchronous training materials; and (c) specification of clear policies/metrics for organizations to determine when a new counselor is ready to deliver CM. In Project MIMIC, OTP leaders chose whether to have the CM coordinators deliver

CM or train additional staff: we found both approaches to be effective with strong oversight. We also recorded all of our live training sessions to ensure that new staff could access the videos asynchronously and we required that staff demonstrated adequate CM knowledge (75% on a knowledge test) and fidelity (an average score of 4.0 on a role play rated with the CM Competence Scale (Petry et al., 2010; Ledgerwood and Petry, 2010)) before delivering CM (Becker et al., 2021a). Such detailed contingency plans did not replace the need for an upfront, thoughtful assessment of an organization's capacity to implement CM, but they certainly helped to mitigate the stress of inevitable challenges throughout the implementation process.

5. Lesson #5: the goal is to implement evidence-based CM, not any CM

A final lesson and word of caution is that it is essential to remember that the goal is to implement *evidence-based* CM and not simply incentives. Meta-analyses and early trials have consistently shown the magnitude of reinforcement matters and below a certain threshold, the effects are no better than treatment as usual (Lussier et al., 2006; Businelle et al., 2009). In a study of prize-based CM, Petry and colleagues (Petry et al., 2004) found that CM in which patients earned a maximum expected value of about $240 was significantly more effective than treatment as usual, whereas a low-cost prize-based CM model in which patients earned a maximum value of about $80 did not have any effect on patient outcomes. A retrospective analysis of three voucher-based CM programs implemented within a continuing care program found similar results: the low-cost model in which patients earned up to $60 was not significantly better than treatment as usual, whereas two higher-cost models in which patients earned $90–210 dollars were both superior to treatment as usual (Lussier et al., 2006; Businelle et al., 2009). Notably, a recent quasi-experimental study that compared OTP patients receiving $75 in incentives to historical controls presented a slightly more optimistic view (Hartzler et al., 2023), but the investigators acknowledged that the results may have been attributable to the increased monitoring and scrutiny of patient encounters during the implementation efforts and not the CM itself.

In a survey of 214 front-line counselors, Rash and colleagues (Rash et al., 2020) found that a host of evidence-based CM design features including the magnitude, frequency, escalation, and immediacy of incentives are often neglected in reward-based programs in the community. Such programs run the risk of being costly for OTPs but neither effective for patients nor cost-effective. Caution is especially warranted when using funding from the Substance Abuse and Mental Health Services Administration (SAMHSA), which limits the use of incentives to $75 per patient, given extensive evidence that CM magnitude predicts patient outcomes (Griffith et al., 2000; Lussier et al., 2006; Roll et al., 1996). As succinctly noted by Rawson and colleagues (Rawson et al., 2023) in a recent commentary, "a $75 CM intervention most certainly will be ineffective and use of 'ineffective CM' will discourage the future use of CM." A common misconception is that the $75 limit is a cap on the total incentives that can be earned per patient, when in reality, the limit is the cap on incentives that can be supported via SAMHSA funding. Our team has recently partnered with Departments of Health to help them braid together sources of funding prior to CM training, to ensure that OTPs have the resources required to implement CM at reinforcement levels concordant with the evidence.

6. Concluding thoughts

Our team has learned a set of fundamental lessons in our efforts to implement CM in OTPs over the past decade, which we hope will be informative to researchers, clinicians, policy makers, and funders. In summary, CM implementation requires strategies that address barriers at multiple levels and provide ongoing support beyond a simple didactic workshop. Funding is consistently identified as a central organization-

level barrier to CM delivery, highlighting the critical importance of helping OTPs to obtain sustainable CM funding, either via advocacy to Medicaid and/or state Departments of Health as well as help securing grant/contract funding. CM implementation also requires thoughtful assessment of whether the OTP has the capacity to focus on the integration of new skills and the development of detailed contingency plans to cope with staff turnover and other inevitable challenges. We also caution that the goal of CM implementation should not be to simply help OTPs use incentives, but rather should be to implement CM protocols that are high quality in design and in delivery that will be both effective for the patients and cost-effective for the organization. Moreover, if an OTP does not have the capacity to implement evidence-based CM, any training or support provided should not be called CM, but rather called "use of incentives," "reward-based programs," or something similar so as not to discourage CM's future use. As elaborated in this special issue, we have a rare opportunity to advocate for the widespread rollout of CM across California and other states as a Medicaid reimbursable product. This opportunity will be squandered, however, if ineffective incentive programs are incorrectly branded as CM. We encourage colleagues to consider these lessons learned to ensure evidence-based CM can be implemented and sustained in a manner that helps improve the quality of care in OTPs and ultimately improves patient quality of life.

Disclosure of ethical compliance

This manuscript is a thought piece designed to capture reflections learned over a decade of work. This manuscript is not human subjects research subject to ethical compliance.

Author contributions

Sara Becker, PhD, was the Principal Investigator of two NIDA grants (R01DA046941 and P50DA054072) and a SAMHSA grant (UR1TI080209) that inspired this article. Dr. Becker led the conceptualization of this article and wrote a complete first original draft. Bryan Garner is Multiple Principal Investigator on R01DA046941 and Co-Investigator on P50DA054072, and Drs. DiClemente-Bosco and Rash are Co-Investigators on both grants. All co-authors engaged in multiple brainstorming and debriefing sessions over the past several years that directly led to the lessons in this manuscript, and all co-authors provided critical review of the manuscript, made multiple rounds of revisions, and approved the final version.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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