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Community treatment adoption of contingency management: A conceptual profile of U.S. clinics based on innovativeness of executive staff

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Abstract

Background—Community adoption of contingency management (CM) varies considerably, and executive innovativeness may help explain variance due to its presumed influence on clinic decision-making.

Methods—Sixteen U.S. opioid treatment programs (OTPs) were visited, with ethnographic interviewing used in casual contacts with executives to inform their eventual classification by study investigators into one of Rogers' (2003) five adopter categories. Audio-recorded interviews were also conducted individually with the executive and three staff members (N=64) wherein they reported reactions to clinic CM implementation during the prior year, from which study investigators later identified salient excerpts during interview transcript reviews.

Results—The executive sample was progressive, with 56% classified as innovators or early adopters. Implementation reports and corresponding staff reactions were generally consistent with what might be expected according to diffusion theory. Clinics led by innovators had durably implemented multiple CM applications, for which staff voiced support. Clinics led by early adopters reported CM exposure via research trial participation, with mixed reporting of sustained and discontinued applications and similarly mixed staff views. Clinics led by early majority adopters employed CM selectively for administrative purposes, with staff reticence about its expansion to therapeutic uses. Clinics led by late majority adopters had either deferred or discontinued CM adoption, with typically disenchanted staff views. Clinics led by a laggard executive evidenced no CM exposure and strongly dogmatic staff views against its use.

Conclusion—Study findings are consistent with diffusion theory precepts, and illustrate pervasive influences of executive innovativeness on clinic practices and staff impressions of implementation experiences.

Keywords

contingency management; innovation adoption; community treatment

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Introduction

Contingency management (CM) is an empirically-supported behavior therapy in which operant conditioning principles promote behavior change. Specifically, this involves objective measurement of a target behavior (e.g., drug abstinence via urinalysis), and provision of an incentive soon after its detection (Petry, 2000). Meta-analytic reviews of CM note its robust, reliable therapeutic effects when implemented in addiction treatment settings (Griffith et al., 2000; Lussier et al., 2006; Prendergast et al., 2006). Several empirically-supported applications are available to community treatment settings, including opioid treatment programs (OTPs) wherein agonist medication is paired with counseling and other services in maintenance therapy for opiate dependence. Available CM applications include: 1) privilege-based (Stitzer et al., 1977), where conveniences like take-home medication doses or preferred dosing times earned, 2) stepped-care (Brooner et al., 2004), where reduced clinic requirements are gained, 3) voucher-based (Higgins et al., 1993), with vouchers for goods/services awarded, 4) prize-based (Petry et al., 2000), with draws for prize items given, 5) socially-based (Lash et al., 2007), where status tokens or public recognition reinforce identified milestones, and 6) employment-based, with job prospects at a ‘therapeutic workplace’ (Silverman et al., 2002) reinforcing abstinence. Despite such options, CM implementation remains limited, even among clinics affiliated with NIDA’s Clinical Trials Network [CTN; (Roman et al., 2010)].

A recent review suggests guidance by implementation science theories may facilitate more effective CM dissemination (Hartzler et al., 2012). A hallmark theory is Rogers’ (2003) Diffusion Theory, a widely-cited and comprehensive theoretical framework based on decades of cross-disciplinary study of innovation adoption. Diffusion theory outlines processes whereby innovations are adopted by members of a social system and personal characteristics that affect innovation receptivity. As for prior applications to addiction treatment, diffusion theory has identified clinic characteristics predicting naltrexone adoption (Oser & Roman, 2008). It also is commonly referenced in several reviews (Damschroder & Hildegorn, 2011; Glasner-Edwards et al., 2010; Manuel et al., 2011) and interpretation of empirical findings concerning innovation adoption (Amodeo et al., 2010; Baer et al., 2009; Hartzler et al., 2012; Roman et al., 2010).

In diffusion theory, Rogers (2003) differentiates two processes whereby a social system arrives at a decision about whether or not to adopt a new practice. In a *collective innovation decision*, individuals accept or reject an innovation en route to a consensus-based decision. In contrast, an *authority innovation decision* involves acceptance or rejection of an innovation by a person (or subset of persons) with greater status or power. The latter process more accurately portrays the pragmatism inherent in innovation adoption decisions at most OTPs, highlighting an influential role of executive leadership that merits scientific attention. According to diffusion theory, executives may be categorized into five mutually-exclusive categories of innovativeness: innovators, early adopters, early majority, late majority, and laggards. Table 1 outlines personal characteristics associated with each category, as outlined by Rogers (2003).

Efforts to categorize executive innovativeness according to such personal characteristics is well-suited to qualitative research methods, which are under-represented in addiction literature (Rhodes et al., 2010). Such methods reflect a range of elicitation methods, of which two examples are the ethnographic interview and the semi-structured interview. An ethnographic interview elicits greater depth of information from a key informant, and is most useful for observing and eliciting personal data that may be more evident or comfortable via informal interviewer contact. Ethnographic interviewing is a fluid and unstructured process, appearing as casual conversation and reliant on a ‘funnel method of

inquiry' with responses to broad initial questions prompting more specific, subsequent exploration (Bernard & Ryan, 2010). In contrast, semi-structured interviews for the most part elicit similar data from a set of informant, via use of a standardized set and sequence of questions within a structured timeframe. Consequently, they are better-suited to gathering of pre-determined target information, about which additional open-ended probes may allow conceptual elaboration (Bernard & Ryan, 2010)

In the current study, ethnographic interviewing was employed in discussions with an executive director over the course of a full-day site visit to 16 U.S.-based OTPs. Interviewer notes and impressions regarding relevant personal characteristics were later used to sort these executives into one of the five noted adopter categories. Each executive, as well as a subset of clinical staff (a clinical supervisor and two front-line clinicians) also participated in individual semi-structured interviews focused on perceptions of clinic implementation experiences with CM during the prior year. The primary aim of this report is to profile executive innovativeness as an influence on clinic implementation and corresponding staff perspectives.

Methods

Study design and sampling approach

To promote diversity in the clinic sample, eight U.S. regions (Pacific Northwest, Rocky Mountain, Southwest, Midwest, South, Northeast, Mid-Atlantic, Southeast) were specified *a priori* from which 16 OTPs were evenly drawn. As CTN-affiliate OTPs have greater exposure to CM than do others in the treatment community (Ducharme et al., 2010), the sample included a CTN and non-CTN clinic in each region. Regional clinics located in proximity were sought to account for local population density (assessed by census statistics), with some effort to promote inter-regional heterogeneity in population density. Clinic recruitment was initiated via an investigator letter that broadly described study aims and procedures, and directed interested clinics to contact the research team. Study investigators then outlined a practical template for site visit procedures, confirmed clinic interest in study participation, requested letter of clinic cooperation, and negotiated a site visit date. Collectively, 19 clinics were contacted, of which two did not respond and another was deemed inappropriate due to discontinued OTP services.

Each site visit included ethnographic interviewing of the executive director, and a set of four individual semi-structured interviews with the executive and three staff members focused on perspectives about a range of empirically-supported practices. Extant literature suggests clinic role influences such attitudes (McCarty et al., 2007), particularly for CM (Kirby et al., 2006), and that clinical supervisors are pivotal in implementing new practices (Amodeo et al., 2010; Heaven et al., 2006). Thus, semi-structured interview informants at each clinic were the executive, a clinical supervisor, and two front-line clinicians. Executives were provided a copy of a study consent form in advance, and asked to review it with their clinical staff so all were apprised of the opportunity to participate in semi-structured interviews. Aside from the noted stratification by clinic role, interest in the study and availability during the site visit were the lone selection criteria outlined by the research team for staff interviewees. The design of this study involved: 1) stratification of the clinic sample by CTN affiliation and geographic region, 2) targeted ethnographic interviewing of clinics' executive directors, and 3) stratification of the sample of semi-structured interview participants by personnel tier. This best reflects a stratified purposive nonprobability sampling approach (Sandelowski, 2000).

Participants and procedures

All study procedures were approved by the local university Institutional Review Board. The lead investigator visited sixteen clinics between October, 2010 and June, 2011, with site visits in the same region typically completed during the same week. Ethnographic interviewing was initiated with the clinic executive at the outset of each site visit, aimed at identification of broad personal characteristics associated with one of Rogers' (2003) five adopter categories. Discussions encompassed topics of professional background and networking, management style, treatment philosophy, and regard for empirically-supported practices. The interviewing approach was fluid, typically occurring amidst casual conversation in the executive's office as well as during executive-led interactive activities such as a facilities tour and introduction to other staff members. The investigator kept private notes during the visit, and logged corresponding overall impressions upon leaving the clinic at day's end.

Each site visit included conduct of four semi-structured individual interviews focused on topics related to a range of empirically-supported practices. Interviews were 50–60 minutes in length, and audio-recorded in a private clinic room. Interviewees provided informed consent prior to audio-recording, and were asked to avoid identifying references to the clinic, self, other staff, or clientele. Executives were specifically asked about clinic implementation of CM during the prior year, and this executive report was later referenced in subsequent staff interviews. All interviews included inquiry about prior CM training/exposure, and a prompting for elaboration about impressions of utilized CM methods. Interviewees received \$50 for their time. Clinics received \$500 at the conclusion of their site visit to account for loss of bill-able personnel hours and clinic space utilized for study procedures. After each site visit, study materials were secured and transported back to the home university where audio-files were transcribed in their entirety.

Measurement processes and dimensions

Assignment of executives to adopter categories occurred only after all site visits had been completed, completed conjointly by study investigators who had completed graduate coursework and university-based workshops in qualitative methods. The process involved initial review of Rogers' (2003) *Diffusion of Innovations* text, followed by extraction of behavioral descriptions and personal characteristics earlier outlined in Table 1. Interviewer notes from individual site visits were then reviewed and discussed until consensus was reached about executive assignment to one of five adopter categories (innovator, early adopter, early majority, late majority, laggard).

Past year report of clinics' CM implementation was based on executives' semi-structured interview responses. Notably, aspects of CM are inherent in U.S. federal and state regulations governing access to opiate agonist medication doses, and all clinics in the sample evidenced adherence to these regulations. Consequently, the interview focused on other uses of CM, specifically involving: 1) privilege-based incentives, 2) a stepped-care model, 3) voucher-based incentives, 4) prize-based incentives, 5) social incentives, and 6) employment-based incentives. For each affirmed CM usage, the target population (universal vs. select), funding source (internal vs. external), and durability (sustained vs. discontinued) was recorded and open-ended probes were used to elicit additional reflection about the utility of the CM practice. Unexpected report of CM targeting staff work performance at initial clinics prompted inquiry and notation about use of staff-targeted CM during the prior year (with target population, funding source, durability, and perceived utility similarly noted). Semi-structured interviews with staff included confirmation of CM usages by the clinic, and elicitation of the staff member's perspective about their utility.

Investigators accessed census bureau statistics prior to each site visit to ascertain county-level population density, which was simplified to a three-level scale (small <750,000; medium 750,001 – 1,500,000; large >1,500,000). This categorical notation, the geographic region, and CTN-affiliation status were documented by on a clinic data form prior to the site visit. Prior CM training/exposure was based on self-report, and rated on a five-point scale (none, apprenticeship, brief training, multi-day workshop, workshop + individual supervision). Interviewee data forms noted clinic ID#, demographics (age, gender, ethnicity, race), professional role (executive, clinical supervisor, front-line clinician) and clinic tenure, and prior CM training/exposure.

Data analysis

Study investigators assigned executives to adopter categories only after all site visits had occurred, via the aforementioned process. This assignment process took place over three days, during which investigators periodically reviewed prior executive assignments to diminish conceptual drift. Clinic attributes and staff-level background characteristics were analyzed via simple descriptive statistics. Executives' interview data forms noted their report of past year clinic CM usage, and these were cross-referenced with clinic CM usage noted by corresponding staff members during their semi-structured interviews. Staff members' semi-structured interview transcripts were also conjointly reviewed (in blocked sets, per clinic) by study investigators to identify select excerpts for presentation. For each clinic, study investigators: 1) discussed the adopter categorization of its executive, reported clinic CM usage, and general clinic impressions documented in interviewer notes, 2) reviewed each interview transcript in its entirety, identifying excerpts that reflected salient themes about the clinic's CM usage, and 3) selected two excerpts from among those identified that best represented staff perspectives on CM usage at their clinic.

Results

Sample Description

Distribution of geographic location and CTN affiliation status follows the noted clinic sample stratification. Six clinics were seated in large population density counties, six in medium density counties, and the remaining four in small density counties. Interviewee stratification by personnel tier prompted inclusion of 16 executives, 16 clinical supervisors, and 32 front-line clinicians. Front-line clinicians were substance abuse counselors (91%) or medical providers (9%). Interviewees were 69% female, with mean age of 46.97 years ($SD=12.43$). Seven persons (11%) identified as Hispanic ethnicity. Racial distribution was 69% Caucasian, 19% African-American, 11% Latino, and 2% Iranian. Clinic tenure ranged from 2 months to 38 years ($M=8.30$ yrs; $SD=8.43$). Over half (56%) of executives were female and most (75%) were Caucasian, with mean age of 50.00 years ($SD=11.82$), and clinic tenure of 13.28 years ($SD=11.35$). Two interviewees reported no prior CM exposure, 39 apprenticeship only, 15 attended a brief training, four attended a multi-day workshop, and four had workshop training + CM-focused supervision.

Adopter Categorization

Executive categorization was as four innovators (25%), five early adopters (31%), two early majority (13%), three late majority (19%), and two laggards (13%). This distribution is progressive relative to that proposed by Rogers (2003) and noted previously in Table 1. Broad characteristics of the clinic sample are described by executive adopter category in Table 2. Notable among these were that eight of nine clinics with an executive deemed an innovator or early adopter were CTN-affiliate whereas the other adopter categories were associated entirely with non-CTN clinics. Population density was balanced across the sample, and bore little relation to executive innovativeness. At clinics with an executive

deemed an innovator or early adopter, 44–56% of interviewees reported CM exposure via a formal training event whereas fewer interviewees (17–25%) did so at the remaining clinics. With respect to CM implementation in the prior year, all four clinics with executive deemed an innovator evidenced multiple CM applications whereas the same was true of just one of the twelve remaining clinics. Three of those twelve clinics indicated durable use of a single CM application, albeit with administrative rather than therapeutic aims. The following subsections profile clinics' CM implementation during the prior year and provide a sampling of corresponding interviewee perspectives.

Clinic Executive as Innovator

At one clinic, two voucher-based applications targeting therapy attendance had been durably implemented. Both focused on select patient populations and were maintained without extramural funding. For each, earned vouchers provided basic needs of great value to patients. Fiscal durability was addressed by targeting patients for whom contracted reimbursement for therapy attendance was high. Staff noted that implementation experience had strengthened staff attitudes and spurred their use of social reinforcement:

“We’ve seen, I think, more acceptance of CM in the past six months when using [voucher incentives] because staff can see that clients who got them came back.”

“When somebody walks down the hall with [voucher incentives] and staff see ‘em, they say ‘Hey, good job! Good work!’ There’s also a praise aspect.”

At a 2nd clinic, three privilege-based applications had been durably implemented. Each focused on select patients, and maintained without extramural funding. Newly-enrolled patients could earn a take-home dose for completing a more extensive intake, group therapy attendees were treated to special meals, and employed patients could maintain a select time for expedited dosing. The clinic also applied staff-targeted CM, offering professional development stipends to those meeting performance standards. Staff noted logistical advantages and therapeutic impacts:

“It’s no real extra work. In the long run, it’s less work because that’s less people in the building and less time spent seeing them. They’re not struggling, so you see them once a month instead of bi-weekly.”

“We make it a big deal, you know, when someone gets their very 1st clean UA.... we act as huge cheerleaders for them to continue to do the right things.”

A 3rd clinic had durably implemented a mix of privilege-, voucher-, and prize-based applications focused on select patients. With initial funds from a state grant (and creatively maintained thereafter), newly-enrolled patients were reinforced with monetary vouchers for completing intake, and outpatient group attendees earned prize draws. Employed patients were also reinforced for abstinence with an expedited dosing time. Staff interviewees were even-handed about CM, voicing some practical and philosophical concerns about monetary incentives:

“A lot of money goes into be able to give [prizes]. The purchasing of them involves staff time, too, but none of that makes it less feasible as just not having the money.”

“[Staff] are comfortable with CM to an extent, but sometimes feel patients....only do things in order to get the incentives and aren’t really doing the things in treatment that they should be doing. Or that patients are then selling the prizes to buy more drugs.”

A 4th clinic had durably implemented privilege- and prize-based applications, and was embarking on a stepped-care application at the time of the site visit. Both ongoing applications targeted specific groups, with employed patients reinforced by expedited dosing

and self-funded patients offered prize draws for reduced treatment fees for making on-time payments. Stepped-care was to be universally-applied at the clinic, with systematic reduction of required treatment provisions as a reward for adherence. None of the CM applications required extramural funding. Staff interviewees noted simplicity and cost-effectiveness as aids to sustain their implementation:

“It doesn’t require a lot of time, you know, on the counselor’s behalf. Staff feel as though it’s appropriate and patient-based. They can do almost anything for a short period of time...but if it takes too long or is cumbersome or complicated, it’s not gonna last.”

“If you do this over a long period of time, you have to be realistic as far as the cost is concerned. Everything else about CM is doable, but you do need to be realistic about the costs.”

Clinic Executive as Early Adopter

One clinic had durably implemented privilege- and voucher-based CM. Employed patients earned an expedited dosing time for documented abstinence, whereas extramural grant funding enabled a select patient population to earn vouchers for therapy attendance. The voucher-based application was akin to a token economy in that vouchers were exchanged on-site at a clinic ‘store’ regularly stocked with personal items of known salience to the patient population. Notably, the clinic had successfully augmented their incentive supplies via local donations. Both CM applications drew much support among staff, though views about the utility of their more universal application among clinic patients were less enthusiastic:

“For those who work, the convenience of coming into the special dosing line in the morning, you know, just those sort of conveniences, carry a lot of weight.”

“[The voucher-based application] is very feasible because there’s staff dedicated strictly to that group of patients. To do it on a larger scale (sigh)...I’m just thinking of the sheer volume...the amount of time it takes, paperwork, you know. There’s a process, and sometimes that process can get cumbersome.”

A 2nd clinic had employed several voucher- and prize-based applications in past years amidst clinic participation in formal research projects. However, all but one were discontinued upon conclusion of the research trials and removal of external funding. The remaining prize-based application universally targeted patient therapy attendance with attendees given chances to win small-magnitude gift cards. Staff had mixed views of this remaining application, focusing on how fiscal and logistical limitations prevented clinic continuance of the prior, larger-scale CM applications tested in research trials:

“Cost is a major issue...we’re in economic crisis and had to cut down, and you could hear the chatter, ‘Oh, well we USED to do this.’ On the flip side, it does retain clients. But... revenue rules the day.”

“It’s still feasible here, but only because the incentives we give are like \$5 gift certificate. But most of us think it’s a great idea....even if it is a pain for somebody to have to get the fishbowl and go around to every group.”

At a 3rd clinic, a prize-based application had been previously implemented targeting therapy attendance in a select outpatient group, but since discontinued due to fiscal constraints. Prospective plans to adopt a stepped-care application were also described, with hope that it would be universally and comprehensively target patient treatment adherence (e.g., UA results, counseling/dosing attendance). While those aspects of the stepped-care application were clear, the implementation timeline was not. Staff focused on logistical issues when

discussing the two applications, with more positive views toward the prospective stepped-care application:

“The program has the money to do [prize-based CM], it wasn’t a tremendous expense. But we’re not doing it anymore... I assume that’s because whoever was put in charge of it couldn’t keep up with it.”

“[Stepped-care CM] will be a reward for them and us. If you’re doing what you’re supposed to do, I go from seeing you 4,5,6 times a month to once a month. You get to live your life and get all your take-homes and don’t have to come in here as often. It’s just easier for everyone.”

A 4th clinic had previously implemented voucher-based CM during clinic participation in a research trial, but had not persisted beyond the study. According to staff, use of external research assistants (rather than clinic staff) to implement CM during the trial was a salient reason for the clinic’s lack of current CM use. Staff views were guardedly optimistic about CM, noting fiscal and philosophical concerns that needed to be addressed:

“Staff could easily incorporate [voucher-based CM] if we had financial resources to do it. Since we are a large program, it would be difficult to offer financial incentives to everyone. But for a target group, especially people very difficult to treat, staff would be very open to it.”

“With this population, you want to really be clear about boundaries. When you’re getting into the area of financial awards for things, it can complicate the relationship. So that’s one reason why [voucher-based incentives] may be less comfortable.”

At a 5th clinic, no CM applications had been implemented nor were adoption decisions pending. Despite a positive executive view of empirically-supported practices, staff attitudes toward CM varied considerably. Some rationales offered for absence of CM from clinic practices noted fiscal and logistical concerns, whereas others cited philosophical objections:

“I don’t know if financially we could afford to give incentives without somebody stepping in to give us funding. And we have restriction on privileges like take-home doses...we do what the state mandates. I mean, we can’t just make up our own rules.”

“People will do anything for a little money....especially the people we have here. If the incentive was money and people were doing things just cuz they wanted money, I’m not sure that would be effective. I would be very uncomfortable because.....the trigger for drug use is money for a lot of people.”

Clinic Executive as Early Majority

One clinic had durably implemented a universal, voucher-based application, though this served administrative rather than therapeutic aims insofar as advance fee payment and clinic referrals were reinforced with vouchers for reduced future fees. This use of CM required no extramural funding. The clinic previously employed a universal but time-limited (coordinated around an annual clinic event) prize-based application for therapy attendance, but discontinued this due to lack of perceived patient interest or effectiveness. Staff views were mostly reluctant about use of CM for therapeutic purposes, citing philosophical concerns and social justice issues:

“It’s comfortable to reward someone who’s earned it. Where it’s uncomfortable is the people who are pushing and haven’t earned it, you know, they may be really struggling financially. And usually the people who are high risk are the ones most in need. That’s my personal struggle with it.”

“In my opinion, for patients who are learning to change their whole lifestyle and work on decreasing substance abuse...if the gain isn't intrinsic, that's a problem down the line. It's gonna be a problem.”

The lone current application at a 2nd clinic was staff-targeted CM, with the prospect of stipends reinforcing work-rate criteria. Notably, these criteria were dictated by state mandate and widely perceived as unreachable. Despite positive executive view of operant conditioning principles, systemic stressors seemed to preclude much consideration of new clinical practices. Prospects of client-focused CM were often discussed by staff as practical impossibilities:

“Because we're state-funded, there are no extra funds to do anything like [CM]. We haven't implemented anything here, or even talked about it really. [State officials] are so focused on 'are you making money to support your unit?' It's really that ridiculous.”

“I understand the concept of it, but don't know how therapeutic it is. How am I going to keep up with items like gas cards or vouchers or whatever....it could be a slippery slope. If something like that was implemented here, there would ambivalence towards it.”

Clinic Executive as Late Majority

One clinic had previously implemented prize-based CM targeting therapy attendance by select patients wherein they earned chances to win low-cost gift cards. This had been supported entirely by the clinic, which was cited as a primary reason for its eventual discontinuance. Staff also voiced philosophical objections about the use of financial incentives in CM:

“It just gets tricky...some people become motivated, whereas maybe they weren't at all before, but it's not for the right reasons....just knowing some of the behaviors that go on with this population.”

“Treatment is treatment....it's not the department of welfare or child/family services. We're not a soup kitchen.....I've only had one client who benefitted from those [gift cards]... I don't know that it necessarily helped clinically...but it certainly helped him to be able to have gas to get here.”

A 2nd clinic reported no implementation or pending adoption decisions. Years earlier, the clinic participated in a voucher-based research trial, and its decidedly negative experience was a strong disincentive to consider future use of CM. Primary deterrents were rather strong feelings of staff resentment about their exclusion from trial implementation procedures, and absence of post-trial training to enable the clinic staff to employ CM on its own. Staff perspectives about prospective use of CM were clearly influenced by this trial experience:

“I don't think [voucher-based CM] is effective. We had a study in here at one point....they used incentives. We really didn't see change in the clients in terms of urine screening, getting take-home privileges, or anything like that. [Patients] came and saw the [research assistants] they had to see to get the vouchers....but in terms of changing their behavior, nothing really changed.”

“I can hear [staff] saying 'why do we have to give them something tangible to encourage them to do something they should want to do?' And they may feel it's not the right thing to do to try and motivate somebody to change with giving vouchers and things like that.”

A 3rd clinic similarly reported no implementation or imminent adoption decisions. The executive perspective at this clinic was fairly removed from day-to-day clinic practices, and discussion of the value of CM and other empirically-supported practices was minimized in favor of larger, fiscally-driven issues. Staff often acknowledged perception of the noted corporate focus at the clinic, and cited fiscal or logistical concerns about CM:

“We were bought by a major holding company, and I get the perception they are money-driven, even though a lot of staff here are not. We try to find balance between good care for patients and satisfying the bottom line at the same time, but cost might be an obstacle for CM here.”

“It seems like a patient could abuse the [CM] system if they figured out how to.... and some of the counselors might be concerned that it would create competition amongst the patients.”

Clinic Executive as Laggard

At one clinic, no implementation or pending adoption decisions was reported. The clinic primarily served immigrants of a specific ethnic group, with strong executive commitment to providing culturally-competent care to this population. A byproduct of this focus seemed to be limited familiarity of treatment practices like CM for which broader patient populations are typically involved in empirical validation. Upon recognizing that following federal and state regulations concerning access to take-home medications represent a *de facto* CM application, staff voiced support for familiar practices but reticence toward more novel uses of CM:

“It’s like that saying... ‘give a man a fish he’s only gonna eat once. But if you teach him to fish he can eat for a lifetime.’ The financial incentives seem like ‘I’m just gonna give you a fish.’ But getting take-home doses is like ‘I’m gonna teach you how to fish’.”

“I think that would be one of the worst things a person could ever do, mixing financial incentives in with drug addiction. Personally, I’d stick with the traditional way we do things because if I’m just giving you material stuff for clean UAs, it’s like I’m rewarding you instead of you rewarding yourself.”

At a last clinic, no CM implementation or imminent adoption decisions were reported. The executive was quite integrated into its daily practices, but often highlighted fiscal concerns over issues concerning quality of care. Consequently, empirically-validated practices like CM appeared under-valued. Staff saw little utility in the use of CM, even as applied to state and federal guidelines governing access to take-home medication doses. A rather strong reluctance toward positive reinforcement of clients of any kind was a consistent theme:

“I don’t think it’s a motivator of any sort with our clientele, to give a voucher is not a motivator at all. And [take-home doses] are of pretty minimal value also....I mean, the drug dealer will give you those.”

“Any kind of financial incentive, they’re gonna find a way to sell that. So I believe any rewards are probably just enabling. Instead of all that, I’d push to see what they value...you know, push for personal responsibility and how much do they value that.”

Discussion

As means of investigating influences of executive innovativeness on CM implementation by community OTPs, sixteen geographically-diverse U.S. clinics were visited. At each visit, an ethnographic interviewing approach was employed with its executive director from which

impressions were later used for classification into one of five adopter categories noted in Rogers' (2003) diffusion theory. The executive, as well as a clinical supervisor and two clinicians, also participated in individual semi-structured interviews wherein they described training/exposure to CM and commented on clinic attempts to implement it in the prior year. Categorical distribution of sample executives was progressive relative to that proposed by Rogers (2003), with over half classified as innovators or early adopters. This appears unrelated to the geographic region or population density of the clinic locales, and instead influenced by sample stratification where half were CTN-affiliate clinics. Even so, the sample distribution of executives included multiple clinics in each adopter category, thereby allowing common themes and challenges of technology transfer to emerge in brief clinic profiles of CM implementation.

Consistent with diffusion theory (Rogers, 2003), clinics with an executive characterized as an innovator had clearly embraced CM into treatment practices, with durable implementation of multiple applications indicated in the prior year. In several ways, this reflects a venturesome spirit ascribed to innovators. Appetitive curiosity was reliably apparent, as these executives learned about and then pushed their clinics' to apply novel therapeutic practices not yet in prevalent use (Roman et al., 2010). The consistency of durable implementation may also be evidence of these executives' shared capacity to cope with inherent fiscal and procedural uncertainties. Most CM applications were creatively contextualized to idiosyncratic needs of the respective clinic and its served population (while still adhering to core CM tenets), evidencing an adaptive capacity and advanced understanding of CM as a clinical method. Unsurprisingly, staff interviewees tended to be quite open to new practices in general, with more than half reporting prior attendance of a formal CM training event. Staff interviewees typically mirrored the spirit of their executive, voicing optimism about continued CM implementation.

Most clinics with an executive characterized as an early adopter had prior CM exposure, albeit typically in the context of their participation in formal research trials. Discontinued access to extramural funding was a common attribution for these clinics' lack of sustained, post-trial CM implementation. This set of executives are salient not only in representing the sample mode but also in how widely-cited 'science-to-practice gaps' (IOM, 1998) deter sustained use of CM when durable implementation might otherwise be expected. Assent to allow time-limited clinic participation in CM trials suggests initial executive perception of an innovation-setting match. However, the common practice in such trials of using externally-trained and supervised study assistants for procedural implementation of CM negates opportunity for collaborating clinics to use trial experiences to build internal capacity to sustain its use. This was evident at two clinics associated with this subset of judicious early adopter executives. Corresponding staff views about innovation adoption were consistent with those of their executives in that most voiced openness to new practices. With respect to CM, nearly half reported prior attendance of a formal training event and the overall tenor of staff perspectives was one of guarded optimism.

At both clinics where executives were characterized as early majority adopters, the lone sustained uses of CM targeted fiscal or administrative aims rather than therapeutic ones. Prior attempts at implementing client-focused CM applications were brief, and quickly discontinued out of sense of a lack of interest or impact. These executives' choice to continue use of CM in selective ways to increase patient census, timelines of fee payments, or staff work performance may reflect a sense of creative ingenuity. From a broader perspective, however, it seemed to signify a deliberate, 'wait-and-see' approach about applying CM for therapeutic purposes. A recent review describes CM dissemination as under-developed, with many of its key dimensions still reflecting moving targets (Hartzler et al., 2012). Given economic challenges facing many community treatment organizations, the

cautious and calculated approach of these executives may be quite reasonable. Few corresponding staff interviewees reported formal CM training, with collective perspectives often reflecting similar caution and attention to fiscal concerns and philosophical incongruence for CM methods involving monetary vouchers or material prizes. Notably, these are concerns commonly cited in extant research with community treatment personnel in the U.S. (Ducharme et al., 2010; Kirby et al., 2006) as well as abroad (Ritter & Cameron, 2007; Sinclair et al., 2011).

No sustained use of CM was reported for clinics with an executive characterized as a late majority adopter, although two of the three clinics had direct or vicarious past CM exposure via research participation. Unlike the cautious optimism about and selective continuance of CM observed at clinics led by early adopter or early majority executives, these clinics' prior CM experiences were cast in decidedly negative terms. Rogers' (2003) writing on dissonance reactions after innovation adoption illuminates these clinics' perspectives. Dissonance is an uncomfortable state that persons seek to reduce (Festinger, 1957). Its occurrence only *after* innovation adoption suggests experience-based concerns prompting what Rogers (2003) coined *disenchantment discontinuance* wherein the performance of an innovation breeds dissatisfaction and a lack of perceived advantage over prior practices (Rogers, 2003). Given these clinics' subsequent return to prior treatment-as-usual practices (rather than adoption of another newly-emerging innovation), theirs are examples of disenchantment discontinuance. This is a common reaction among late majority adopters to innovations that are incongruent with core personal beliefs or philosophy (Rogers, 2003), as was apparent in the frequent citing of philosophical misgivings about CM and rarity of reported CM training by the corresponding staff interviewees.

Neither of the executives characterized as a laggard reported any prior clinic exposure to CM. Notably, CM principles inherent in federal and state regulations governing provision of take-home medication doses were either unrecognized as a form of operant conditioning, or de-valued as merely unhelpful 'regs' to which clinic adherence was forced. As work environments, both clinics were tight-knit with authoritarian leadership that prided itself in separation from other local clinics and the treatment community in general. Strong traditionalism was evident, whether tied by reference to customs of another culture, the past, or both. Thus, these clinics' culture was in many ways consistent with Rogers' (2003) description of this adopter category. None of the staff interviewees reported prior CM training, and they commonly espoused strongly dogmatic view about how CM methods were at odds with their prevailing treatment philosophy. While optimism or suggestions offered by CM advocates may improve prospects of adoption at many clinics (Roll et al., 2009; Stitzer et al., 2010), settings marked by this level of reluctance present a serious challenge to broad dissemination of CM.

This work bears several caveats. Most broadly, its intent was to describe an influence of systemic innovation adoption rather than to promote pro-innovation bias. Any suggestion that all innovative clinical practices are preferable or that their dissemination necessarily be universal is unintended. To that end, we followed Rogers' (2003) suggestions for overcoming such biases by assessing active CM diffusion in the field, considering it relative to that for other empirically-validated practices, and recognizing choices to reject or discontinue CM as reasonable for some settings. With respect to generalizability, U.S.-based OTP clinics were sought and consequently this set of executives, their accounts of CM implementation, and the staff perspectives may have less applicability in other countries or treatment settings differing in structure and function. Clinic recruitment balanced desire for geographic diversity and equal representation of CTN and non-CTN clinics, given their differential CM exposure (Ducharme et al., 2010). While sample stratification achieved those aims, clinics were not selected or matched on other potentially influential

organizational attributes such as openness to research or staff size. Participating clinics did allow an investigator to visit their busy facility and interview staff during a routine day of clinical activity, and thereby may differ from others less comfortable with such intrusion. Staff size varied between clinics, and may influence capacity for CM implementation. Potential for interviewee selection bias and impression management is also acknowledged. Interviewee stratification by personnel tier may mitigate some of these concerns, as might a sample size consistent with that suggested for this qualitative study (Sandelowski, 1995). Still, executive involvement in coordinating a sequence of staff interviews and absence of additional selection criteria allows for the possibility that interviewees did not represent collective clinic personnel. Another caveat is the brevity of the one-year reporting interval for CM implementation, though this was chosen to maximize accuracy of executive reporting given perpetual changes in OTP funding, treatment administration, and staffing. Finally, key constructs (i.e., executive adopter category, interviewee treatment philosophy) were assessed via qualitative impressions rather than the quantitative methods described in some prior work (Oser & Roman, 2008).

Caveats notwithstanding, this qualitative study profiles the influence of executive innovativeness on CM implementation and corresponding staff perspectives at a set of 16 U.S.-based OTPs. Broadly, the number and durability of reported CM implementations is consistent with what might be expected, given the respective clinic executives' suggested comfort with innovation adoption. Context-specific CM applications were diverse, furthering support for the notion that a one-size-fits-all dissemination strategy offers limited utility (Hartzler et al., 2012). It is hoped that the experiential accounts presented herein may spur others to further consider whether CM adoption is appropriate to their setting, and if so to adapt or replicate described CM methods for their own use. Given the empirical support amassed for efficacy of CM with substance users (Griffith et al., 2000; Lussier et al., 2006; Prendergast et al., 2006), there appears much to be gained from finding practical and effective ways for clinics to utilize operant conditioning principles. Executive innovativeness appears an influential cog in process of adopting and implementing such principles within routine clinical practice.

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Table 1**Characteristics of Adopter Categories**

Category	Broad Personal Description	Socioeconomic Characteristics
	<u>Interpersonal Characteristics</u>	
Innovators	Venturesome persons whose zeal for new ideas High empathy, abstraction leads to external networking and cosmopolite High openness to change professional relations. They understand complex High social participation Often affiliated with large settings	High educational attainment High social status High upward mobility information, and cope well with uncertainties. Limited dogma, fatalism
Early Adopters	Respected persons who are opinion leaders, or Fairly high empathy, abstraction the 'person to check with' in their local setting. Fairly high openness to change They are judicious about decisions when it Fairly high social participation comes to adoption of new technologies. Fairly low dogma, fatalism	Fairly high educational attainment Fairly high social status Fairly high upward mobility Affiliated with a range of settings
Early Majority	Deliberate persons who seldom take a leadership Moderate empathy, abstraction stance, but reflect an important link between more Moderate openness to change and less innovative persons in a setting. Adoption Moderate social participation of new technology requires lengthy deliberation. Moderate dogma, fatalism	Moderate educational attainment Moderate social status Moderate upward mobility Affiliated with a range of settings
Late Majority attainment	Skeptical persons who seldom take a leadership Fairly limited empathy, abstraction stance, and who tend to adopt new technology only Fairly limited openness to change after peer or systemic pressures necessitate it. They Fairly limited social participation approach new technology with much caution. Fairly high dogma, fatalism	Fairly limited educational Fairly limited social status Fairly limited upward mobility Affiliated with a range of settings
Laggards	Traditional persons whose reference point is the past. Limited empathy, abstraction A tendency to affiliate only with like-minded peers Limited openness to change may lead to a localized, limited professional network. Limited social participation New technologies draw suspicion, and are resisted.	Limited educational attainment Limited social status Limited upward mobility Often affiliated with small settings

<u>Category</u>	<u>Broad Personal Description</u>	<u>Socioeconomic Characteristics</u>
	<u>Interpersonal Characteristics</u>	
	High dogma, fatalism	

Table Notes. Above descriptions adapted from Rogers (2003), who suggests the following proximal partitioning of a normal distribution of adopters: 1) innovators – 2.5%, 2) early adopters – 13.5%, 3) early majority – 34%, 4) late majority – 34%, and 5) laggards – 16%.

Table 2

Clinic Characteristics by Adopter Category

Laggard	Total (%)	Innovator	Early Adopters	Early Majority	Late Majority
Number of Clinics		4	5	2	3
2	16				
Clinic Affiliation					
CTN		3	5	0	0
0	8 (50.0%)				
Non-CTN		1	0	2	3
2	8 (50.0%)				
County Population Density					
> 1.5M		0	3	1	1
1	6 (37.5%)				
.75M – 1.5M		3	1	0	2
0	6 (37.5%)				
< .75M		1	1	1	0
1	4 (25.0%)				
Staff Interviewee CM Training/Exposure					
Workshop + Supervision		4	0	0	0
0	4 (6.3%)				
Multi-Day Workshop				1	3
0	0 (6.3%)	0	4		
Brief Training		4	6	3	2
0	15 (23.4%)				
Apprenticeship		7	11	5	10
6	39 (60.9%)				
None		0	0	0	0
2	2 (3.1%)				
CM Implementation					
Multiple Durable Applications		4	1	0	0
0	5 (31.2%)				
Single Durable Application				0	1
2	0 (18.8%)	0	3		

Laggard	Total (%)	Innovator	Early Adopters	Early Majority	Late Majority
None		0	3	0	3
2	4 (50.0%)				
Discontinued Application(s)		0	2	1	2
0	5 (31.2%)				

Table Notes. Adopter categorization based on qualitative impressions from ethnographic interviewing; Population density based on 2010 census statistics; CM Training/Exposure reflects self-report of study interviewees; CM Implementation represents executive report of clinic practices sustained in the prior year