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Voucher incentives increase treatment participation in telephone-based continuing care for cocaine dependence

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Abstract

Background—Telephone-based monitoring is a promising approach to continuing care of substance use disorders, but patients often do not engage or participate enough to benefit. Voucher incentives can increase retention in outpatient treatment and continuing care, but may be less effective when reinforcement is delayed, as in telephone-based care. We compared treatment utilization rates among cocaine-dependent patients enrolled in telephone continuing care with and without voucher incentives to determine whether incentives increase participation in telephone-based care.

Method—Participants were 195 cocaine-dependent patients who completed two weeks of community-based intensive outpatient treatment for substance use disorders and were randomly assigned to receive telephone continuing care with or without voucher incentives for participation as part of a larger clinical trial. The 12-month intervention included 2 in-person orientation sessions followed by up to 30 telephone sessions. Incentivized patients could receive up to \$400 worth of gift cards.

Results—Patients who received incentives were not more likely to complete their initial orientation to continuing care. Incentivized patients who completed orientation completed 67% of possible continuing care sessions, as compared to 39% among non-incentivized patients who completed orientation. Among all patients randomized to receive incentives, the average number of completed sessions was 15.5, versus 7.2 for patients who did not receive incentives, and average voucher earnings were \$200.

Conclusions—Voucher incentives can have a large effect on telephone continuing care participation, even when reinforcement is delayed. Further research will determine whether increased participation leads to better outcome among patients who received incentives.

Keywords

cocaine dependence; continuing care; voucher incentives; treatment retention

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1. Introduction

Long-term, low-intensity continuing care is a promising means to address the often chronic course of substance use disorders (Dennis and Scott, 2007; Humphreys and Tucker, 2002; McKay, 2009a). Telephone-based monitoring, in particular, may achieve significant results while posing relatively little burden for patients (McKay, 2009b). However, treatment utilization rates are often disappointing. For example, in our recently completed study of telephone continuing care for patients who completed three weeks of intensive outpatient treatment (IOP) for alcohol dependence, participants completed an average of only 10 of 36 possible sessions over 18 months (McKay et al., in press). Similarly, in an evaluation of telephone continuing care for patients who completed private residential treatment for substance use disorders, participants completed an average of 5.5 of 14 available sessions over 12 months (Cacciola et al., 2008). Therefore, investigators continue to seek ways to increase participation in telephone continuing care.

Voucher incentives hold promise for increasing participation in telephone continuing care, having increased participation in outpatient treatment and continuing care for substance dependence (Bride and Humble, 2008; Businelle et al., 2009; Helmus et al., 2003; Rhodes et al., 2003; Sinha et al., 2003; Svikis et al., 1997). However, voucher incentives may be less potent in telephone-based care because patients are not at the clinic to receive incentives when they complete their sessions, delaying reinforcement (Petry, 2000). In this article, we compare treatment utilization rates among cocaine-dependent patients enrolled in telephone continuing care with and without voucher incentives to determine whether incentives increase participation in telephone continuing care.

2. Methods

2.1 Participants

We present data on 195 participants assigned to receive study treatment during the first two years of a larger randomized clinical trial of the effectiveness of telephone continuing care for cocaine dependence (clinicaltrials.gov NCT00685659). An additional 101 participants assigned to an assessment-only condition are excluded from the present analyses.

The study was approved by the institutional review board of the University of Pennsylvania. Cocaine dependent patients ages 18–75 enrolled in community-based drug-free IOP for 2–4 weeks were eligible for participation. Additional inclusion criteria were access to a phone, willingness to participate in research and be randomized to treatment, fourth-grade reading level, a minimal level of housing stability, and identification of two contact people who could help locate the participant for research follow-up. Exclusion criteria included psychotic symptoms or dementia precluding outpatient treatment, medical problems needing immediate hospitalization, and regular opiate use. Participant demographic and clinical characteristics are outlined in Table 1.

2.2 Procedures

Participants were screened at three IOP sites and completed the rest of the procedures at the offsite research office. After providing consent and undergoing baseline assessment, participants were randomly assigned to treatment as usual, telephone monitoring and adaptive counseling (TMAC), or telephone monitoring and adaptive counseling plus incentives (TMAC+). TMAC and TMAC+ were provided by counselors affiliated with and located at the research office. Participants continued to attend IOP and/or receive other treatment services as desired throughout the study. All participants had quarterly follow-up interviews at the research office.

TMAC and TMAC+ participants were eligible to receive study treatment for two years from randomization. TMAC and TMAC+ began with two in-person orientation sessions to build rapport and review procedures, followed by brief telephone contacts on the following schedule: weekly for eight weeks, biweekly for 44 weeks, monthly for six months, and bimonthly for the remaining six months. The goals of continuing care were to promote retention in IOP and prevent relapse. Each continuing care contact included a structured progress assessment; feedback regarding risk for relapse and progress toward a substance-free lifestyle; brief cognitive-behavioral relapse prevention counseling and goal-setting; and, if appropriate, referral to community resources to address specific needs (e.g., housing, psychiatric co-morbidity). Adaptations included tailoring the content of each session to the results of the progress assessment, as well as “step-up” to in-person or more frequent sessions if the participant relapsed or if the progress assessment indicated increased relapse risk. Although the focus of the study was on the effectiveness of telephone-based treatment, participants could complete sessions in person because some participants lacked reliable access to a phone or preferred brief office visits to phone contacts.

TMAC+ included voucher incentives for participation during the first year of treatment eligibility. Participants received a \$10 gift card to a local store for completion of each session after orientation and a \$10 bonus for completion of 3 consecutive sessions. Participants who completed all scheduled sessions could earn a total of \$400 in vouchers, \$300 for session completion and \$100 in bonuses. Participants who required “step-up” care could receive additional vouchers beyond the planned maximum. The university required research participants to sign for any incentives or payments in person, so vouchers were held at the research office for pickup during regular office hours.

Demographic and clinical data were collected during the baseline interview using the Addiction Severity Index (ASI; McLellan, Luborsky, Woody, and O'Brien, 1980). Study counselors recorded treatment process data, including date, modality, duration, and stepped care recommendations, after each contact. In this paper, we report on study treatment received in TMAC and TMAC+ from August 1, 2007 through July 31, 2009. The present analysis includes only data collected during each participant's first year of study participation; that is, the period in which TMAC+ participants were eligible to receive incentives.

2.3 Data Analysis

Pearson's chi-square was used to test the association between treatment condition and categorical variables. One-way analysis of variance was used to test treatment group differences in continuous variables. Significance tests were two-tailed and results at $p < .05$ were considered significant. Data were analyzed using SPSS 16.0 for Windows.

3. Results

3.1 Voucher Earnings

TMAC+ participants earned 1996 vouchers of 3238 available during the data collection period. On average, TMAC+ participants earned 57.32% (S.D. = 41.27) of the number they could earn if they participated in the protocol exactly as planned; that is, had they completed orientation within a week of randomization and then completed all continuing care sessions on schedule throughout the data collection period. The 56 participants who were eligible to earn the maximum reward earned an average of 23.75 (S.D. = 15.96) of 40 available vouchers. Nine participants who were eligible to earn the maximum reward earned no vouchers, one earned 40 vouchers, and six earned more than the planned maximum due to

attendance at “step-up” sessions. Five earned between 1 and 9 additional vouchers and one earned 22 additional vouchers.

3.2 Treatment Utilization

We examined treatment utilization in terms of sessions completed relative to the number of sessions available to each participant had he or she participated in the protocol exactly as planned. The percent of sessions each participant completed was capped at 100 for analysis; however, 3 TMAC and 11 TMAC+ participants completed more than the planned number of sessions due to “step-up” adaptations.

Rates of treatment participation are summarized in Table 2. Orientation completion did not differ by treatment condition, but TMAC+ participants were more likely to complete at least one continuing care session, and completed a greater percentage of expected sessions. The voucher cost of each additional completed session in TMAC+ versus TMAC was \$22.84.

4. Discussion

We examined the effect of voucher incentives on participation in telephone continuing care for cocaine dependence. Our primary finding was that providing patients with incentives for completing continuing care sessions dramatically increased the number of sessions attended in the first year of the protocol. Among all patients randomized to the non-incentive condition, the average number of completed sessions was 7.2. Among all patients randomized to receive incentives, the average number of completed sessions was 15.5. Incentivized patients who completed the continuing care orientation completed 67% of possible continuing care sessions, as compared to 39% of non-incentivized patients who completed orientation. An attendance rate approaching 70% of possible continuing care sessions over a 12 month continuing care protocol is very unusual (McKay, 2009a).

It is also unusual to achieve such a large effect of voucher incentives on attendance. Prior randomized clinical trials of voucher incentives for attendance have yielded, in general, small effect sizes (Lussier et al., 2006), and it was possible that the delay in reinforcement necessitated by telephone contact would attenuate vouchers' reinforcing effect. Perhaps the relatively low threshold for treatment engagement allowed the incentives to exert a greater influence than they might have in the context of more intensive or less flexible outpatient continuing care.

Among all participants assigned to receive incentives, the average voucher earnings were about \$200, and the voucher cost of each additional session in TMAC+ relative to TMAC was about \$23.00. Previous voucher protocols for treatment attendance have varied widely in reward magnitude, and none have extended past 12 weeks, hindering direct comparison. A cost-effectiveness analysis planned upon completion of the study will place the cost of the protocol in context of the benefits, if any, achieved by additional treatment participation.

Despite the large effect of incentives on treatment utilization, the difference in treatment entry rates between TMAC and TMAC+ did not reach significance, and 18% of those who were eligible for incentives declined to enter study treatment, despite substantial outreach efforts by clinical staff. Perhaps providing an incentive for completing orientation would have further increased TMAC+ treatment entry.

In both conditions, most participants made some of their “calls” in person. At a minimum, many participants may have occasionally combined their treatment contacts with their quarterly research evaluations or, for TMAC+ participants, their trips to the office to pick up their rewards. Some TMAC+ participants completed all their sessions by phone, even when

their counselors were available to see them in person, so it is clear that telephone contact is a preferred treatment modality for some individuals. It is not clear the extent to which offering participants a choice of modality may have boosted participation relative to offering the program by telephone only.

About 10% of patients earned more than the planned maximum number of vouchers through participation in step-up care. This suggests that the adaptive protocol successfully provided additional sessions to patients at higher risk. However, it also raises the concern that patients had an incentive to do poorly or to stay in TMAC+ rather than accept referrals to a higher level of care. This suggests a need to monitor incentive protocols closely and to consider a firm limit on rewards.

As an effectiveness study, the clinical trial from which these data are drawn was designed to test a “real-world” application of efficacious treatment. Therefore, our participants are broadly representative of those entering publicly-funded IOP for cocaine dependence in a northeastern US city, and our results can be expected to generalize to similar patients and settings. However, there are some limitations to the generalizability of our findings. Most of our participants were unemployed at study entry, and fewer than half reported having worked regularly over the prior three years. It is possible that employed patients may not respond as well to comparable incentives, or that they, as well as those residing in a larger geographical area, may balk at picking up incentives in person during business hours.

An additional limitation of the present analysis is that it examines only participants’ first year of treatment participation, during which TMAC+ participants were eligible to receive incentives. It is not yet known whether TMAC+ participants’ high rate of participation continued in the absence of incentives. Finally, it remains to be seen whether increased treatment participation among TMAC+ participants yields improved treatment outcome.

5. Implications for Treatment

Due to the chronic nature of drug dependence, flexible interventions are needed that can provide treatment and recovery support over time without requiring ongoing participation in clinic-based care (McKay, 2009b). Continuing care can be provided effectively via the telephone to individuals who are either unable or unwilling to come to a clinic for extended treatment (McKay et al., in press). These results indicate that rates of sustained participation in telephone continuing care can be substantially increased via incentives, even when they were not provided to participants at the time they completed their sessions.

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Table 1

Participant Characteristics

Variable	M (SD)	Percent
Age	43.6 (7.0)	
Gender (male)		75
Ethnicity		
African-American		89
Caucasian		7
Hispanic		4
Years Regular Cocaine Use	15.3 (7.7)	
Prior Drug Treatments	4.4 (5.1)	
Cocaine Usual Route of Administration		
Smoking		87
Nasal		8
Intravenous		5
ASI "Major Substance Use Problem"		
Cocaine		53
Cocaine+Alcohol/Other Drugs		47

Note. ASI = Addiction Severity Index

Treatment utilization among cocaine-dependent patients receiving telephone continuing care with and without voucher incentives for participation.

Table 2

Variable	TMAC (N = 95)		TMAC+ (N = 100)		F or Chi-Sq
	M (SD)	N	M (SD)	N	
Completed orientation		69		82	2.45
Completed any continuing care sessions		57		79	8.33*
Percent available sessions completed (orientation completers only)	38.8 (31.9)		67.1 (30.7)		30.8**
Percent sessions by phone	64.8 (37.0)		60.5 (33.8)		.48
Session duration (minutes)	19.7 (9.7)		19.1 (8.1)		.15
Total sessions completed		667		1551	
Stepped care recommendations		53		126	2.30

* p<.01

** p<.001

Note. TMAC = Telephone Monitoring and Adaptive Counseling; TMAC+ = Telephone Monitoring and Adaptive Counseling plus incentives.