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Dropout from interim methadone and subsequent comprehensive methadone maintenance

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Abstract

Background—Methadone maintenance in the U.S. is delivered primarily through specialized clinics that provide psychosocial services together with medication. Interim methadone (IM) is an evidence-based approach to increase access by providing methadone without counseling for individuals waiting for admission to comprehensive treatment. Little is known about the role of patient characteristics in predicting outcomes in the IM service pathway (IM with comprehensive methadone treatment following IM).

Methods—This study examined the relationship between patient motivation and dropout among patients in the IM service pathway ($n=183$). Participants were assessed with the Addiction Severity Index, the Texas Christian University Motivation Scales, and study-specific instruments at baseline, 4 month follow-up or admission to comprehensive treatment (whichever occurred first), and 6 months thereafter. Multinomial logistic regression was used for the analysis, controlling for demographics, route of administration, cocaine use, criminal justice history, and treatment history.

Results—Of the total sample, 62% were retained throughout the IM service pathway, 20% left IM, and 18% left subsequent comprehensive treatment. Motivation did not predict dropout from either IM or comprehensive treatment following IM. Unexpectedly, neither did any of the other explanatory variables included in the model.

Conclusions—Most patients remained in the IM service pathway. The patient characteristics examined are not associated with discontinuation of IM or subsequent comprehensive methadone treatment.

Scientific Significance—The findings that most patients were retained in the IM service pathway, and that no subgroup experienced higher probability of dropout, bolster the public health potential of IM as a service strategy.

Keywords

methadone; interim methadone (IM); dropout; motivation; treatment access

INTRODUCTION

Methadone maintenance is an effective treatment for opiate dependence (1,2) that has been thoroughly studied over the past 40 years. Methadone maintenance in the U.S. is delivered almost exclusively through Opioid Treatment Programs (OTPs), which typically integrate a

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range of psychosocial services into treatment. OTPs in many communities have limited capacity, resulting in waiting lists for admission (3-5). Interim methadone (IM) is an approach in which individuals waiting for an available treatment slot are administered methadone without corresponding psychosocial services (6). Under federal regulations, interim methadone can be administered for up to 120 days, after which patients must be transitioned to comprehensive treatment. As many of the time and cost burdens to OTPs stem from non-medical services offered as part of comprehensive treatment, IM may represent a viable solution to capacity shortfalls. A randomized trial of IM vs. standard waiting list found that individuals in the IM condition had superior outcomes in entry to comprehensive treatment, heroin use, money spent on drugs, and illegal income (7), with IM continuing to outperform standard waiting list control at 10 month follow-up (8).

The experiences of patients entering methadone maintenance via the IM service route differ in potentially important ways from those of patients entering through a traditional pathway. Patients in IM are introduced to a low threshold of services (i.e., medication only). IM patients have no requirements for participating in (and do not receive) other services as part of their initial treatment, although they will be expected to attend counseling and other services upon admission to comprehensive treatment. The IM-to-comprehensive treatment pathway is sufficiently different from the typical OTP service trajectory to warrant separate empirical investigation. To date, there have been only a small collection of studies on IM. An early study found that retention was not different for patients who accessed comprehensive treatment via IM and those admitted to comprehensive treatment directly (9). A more recent analysis (8) found that IM did not reduce, and on some measures even improved, the efficacy of subsequent comprehensive treatment relative to comprehensive treatment accessed through the standard waiting list pathway. These findings are encouraging, and further research could help to optimize IM as a service delivery strategy. There is a wealth of research on patient-level predictors of various outcomes in standard methadone maintenance, but little of the same is known for IM. The present study seeks to fill part of this gap by investigating the relationship between treatment dropout and patient characteristics, focusing specifically on motivation for treatment as some studies have found it to be associated with retention in methadone maintenance (10-12). Finding baseline characteristics that are predictive of outcomes may assist in the early identification of patient subgroups at disproportionately high risk of treatment failure that may require additional intervention.

METHODS

Research Design

This retrospective study draws from the parent clinical trial of IM (7,8) in which heroin-addicted individuals seeking treatment at an urban OTP were randomly assigned to either IM or to remain on the standard waiting list on a 3:2 ratio. Individuals randomized to the IM condition received IM for up to 120 days prior to transfer to comprehensive treatment. Nearly all of the participants entering comprehensive treatment did so at the clinic that provided IM. Consistent with other local publicly-funded OTPs, the program is a not-for-profit organization that provides weekly individual and/or group counseling as part of comprehensive methadone treatment. The current study utilizes the IM sample to examine motivation for treatment as a predictor of dropout from IM and comprehensive methadone maintenance following IM (henceforth, the 'IM service pathway'). The analysis sample was restricted to participants for whom entry to comprehensive treatment following IM was known ($n=183$), excluding 11 individuals (6%) from the original sample that received IM (1 deceased, 1 incarcerated, 9 unable to be located). In addition, five individuals who were randomized to IM but never received the intervention were excluded from the analysis.

We hypothesized that for participants in the IM service pathway, baseline motivation would not be associated with dropout from IM, but would be negatively associated with dropout from subsequent comprehensive treatment (relative to staying in treatment). The rationale for this hypothesis is that lower motivation would not be expected to affect adherence to a low-threshold intervention (IM), but that some participants with lower motivation might be less tolerant to the elevated expectations placed upon them in comprehensive treatment (e.g., attendance at counseling sessions, negative drug testing results, paying fees).

Assessment

Participants were interviewed at baseline, 4 month follow-up or entry into comprehensive treatment (whichever occurred first), and 6 months thereafter. The anchoring of the time 3 follow-up to the second ‘floating’ assessment point permits a unique snapshot of the IM-to-comprehensive service pathway. Measures included a study-specific questionnaire, the Addiction Severity Index (13), and the Texas Christian University (TCU) Motivation Scales (14-16).

Dependent variable

Treatment enrollment status was determined at each time point by response to a questionnaire item. A categorical dependent variable was constructed from the data to account for three possible outcomes: dropout from IM (within 120 days after enrollment, after which patients were automatically transferred to comprehensive treatment); dropout from comprehensive treatment after IM (within 6 months after the first follow-up interview); and retention throughout the IM-to-comprehensive service continuum. Hence, patients could discontinue IM, discontinue comprehensive treatment accessed via IM, or remain in treatment during the course of the study. As described previously, eleven individuals lost-to-follow-up at time 2 were excluded from the analysis, whereas 10 individuals known to have entered comprehensive treatment via IM but lost-to-follow-up at time 3 were classified as having dropped out of comprehensive treatment.

Individual-level variables

Motivation was measured by the TCU instrument which consists of three psychometrically-tested scales measuring patient motivation for substance abuse treatment. The scales correspond to the key constructs of problem recognition, desire for help, and treatment readiness (14-16). A number of explanatory variables were included in the model (demographics, route of drug administration, cocaine use, criminal justice history, and treatment history), all of which were determined by self-report. Their inclusion was based on either a conceptual rationale or findings from previous research on predictors of outcomes in substance abuse treatment. Demographic variables included gender and age. Race was not included as an explanatory variable because the sample was predominantly African American (93%). Route of administration was coded as a dummy variable (intravenous v. intranasal), as was cocaine use (participants were classified as cocaine users if they reported any past 30 day use or produced a cocaine-positive urinalysis at baseline). Criminal justice history was measured by the number of months that the participant reported being incarcerated in their lifetime. Previous treatment experience was measured as the number of reported previous treatment episodes for drug use.

Statistical Analysis

Multinomial logistic regression was used to examine the relationship between the explanatory variables and dropout from the IM service pathway. Staying in treatment throughout the IM-to-comprehensive continuum was selected as the base category, with the

other categories being dropout from IM and dropout from comprehensive treatment accessed through IM.

RESULTS

Participant characteristics are shown in Table 1. At baseline, participants reported using heroin an average of 29.5 days ($SD=2.2$) in the last 30 days. The analysis sample was 58% male, with a mean age of 40.7 ($SD=5.6$). Most participants used heroin nasally, with 34% using intravenously. The majority of participants stayed in treatment through the course of the study ($n=113$; 61.8%). Thirty-seven (20.2%) participants discontinued IM prior to entering comprehensive treatment, and 33 (18%) discontinued comprehensive treatment following IM.

None of the motivation measures were associated with dropout from either IM or subsequent comprehensive treatment (Table 2). Additionally, none of the other explanatory variables included in the model were associated with either category of dropout. The model was disappointing in its predictive ability. Two tests of the Independence of Irrelevant Alternatives (IIA) assumption were pursued to investigate the possibility that the outcome categories did not represent substantively different choices for participants. A Hausman IIA test indicated that the assumption was satisfied, but a Small-Hsiao test did not. However, tests of the IIA assumption often conflict in practice, and have come under criticism as unreliable (17). A Wald test failed to reject the null hypothesis that coefficients other than intercepts associated with a pair of alternatives were zero (i.e., that alternatives could be combined). However, logistic regression models examining each dropout category separately yielded similar results, as did a discrete-time survival analysis (not shown).

DISCUSSION

We hypothesized that, relative to remaining in treatment, baseline motivation would be unrelated to dropout from IM, but would be negatively associated with dropout from subsequent comprehensive treatment. The hypothesis was not supported, as none of the motivation measures were associated with dropout at any point in the IM service pathway. We were unable to identify *any* participant characteristics associated with dropout. Some previous research has found that such characteristics can predict retention and other outcomes in drug abuse treatment (10-12,18-23).

These findings have implications for IM as a public health strategy. The majority of patients who initiated IM successfully transitioned to comprehensive methadone maintenance and remained in treatment six months thereafter. The observed dropout rates are in line with those seen in traditional methadone maintenance (e.g., 8,12). Patient subgroups that may be more vulnerable – such as intravenous users, patients with concomitant cocaine problems, or those with lengthier incarceration experiences – were not found to be disproportionately likely to discontinue IM or comprehensive treatment following IM. These findings add to a growing body of literature suggesting that IM works well for a broad array of patients. For example, a previous study found that IM was effective for both intravenous and intranasal users (relative to a waiting list with no services) (24). The current study found that motivation and other oft-examined patient characteristics were unable to predict premature dropout from treatment among those in the IM service pathway.

IM presents an innovative solution to the challenge of limited capacity in community OTPs. An analysis of the waiting list control sample in the parent study revealed that only 21% of individuals seeking methadone treatment were admitted within four months of waiting list placement (3). The provision of IM substantially increases rates of entry to comprehensive

treatment compared to a standard waiting list (7). Communities are now beginning to adopt the approach, as has been done in the Baltimore City treatment system where this study was conducted.

One possibility is that dropout from IM, dropout from subsequent comprehensive treatment, and continuation of treatment represent choices that differ in only trivial ways, and some of the model diagnostics pointed to that possibility. However, this argument is not particularly compelling given the differences in the scope of services and requirements of patients in IM and comprehensive treatment, which would create fundamentally different subjective treatment experiences. Moreover, alternative modeling approaches yielded the same conclusions regarding the predictors.

This study has several limitations. First, the findings are not necessarily generalizable to other populations or treatment systems. Reliance on the baseline measure of motivation obscures its potential to fluctuate over time. Other variables not examined here, both individual characteristics and in-treatment processes, may influence dropout. However, it is important to keep in mind that methadone is intrinsically potent in retaining opioid-addicted patients in treatment. Uniformly classifying those lost-to-followup as dropouts slightly increases the IM dropout rate, but does not alter the conclusions. It would have been useful to contrast predictors of dropout in IM directly with those accessing OTPs through the traditional waiting list mechanism. However, in the study from which this analysis draws, too few individuals in the waiting list control sample actually entered comprehensive methadone treatment to permit an in-depth examination of that condition. Previous analyses have found that those who entered comprehensive treatment through IM generally had superior outcomes to the small number who entered via the standard waiting list (8). Future research should examine predictors of outcome in IM in more detail and examine reasons for dropout, which may include incarceration, patients leaving against medical advice, or administrative discharge by the program (25). As more communities adopt IM, additional research will be needed to optimize the use of this evidence-based intervention.

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Table 1 Descriptive Characteristics of Participants ($n=183$).

<i>Individual Characteristics</i>	
Male (%)	57.9
Age (<i>mean, SD, range</i>)	40.7, 5.6, 26-55
Intravenous Drug User (%)	33.9
Cocaine User (%)	69.4
Previous Treatment Episodes (<i>mean, SD, range</i>)	1.7, 1.7, 0-12
Months Incarcerated in Lifetime (<i>mean, SD, range</i>)	20.1, 32.6, 0-168
<i>Motivation</i>	
Problem Recognition (<i>mean, SD, range</i>)	46.0, 4.3, 20-49
Desire for Help (<i>mean, SD, range</i>)	55.0, 7.3, 28-63
Treatment Readiness (<i>mean, SD, range</i>)	50.5, 6.0, 26-56
<i>Outcome</i>	
Dropped out of IM (%)	20.2
Dropped out of comprehensive treatment following IM (%)	18.0
Stayed in treatment for the course of the study (%)	61.8

Table 2

Multinomial logistic regression predicting dropout from the IM service pathway.

	Dropout 1 (n=37)		Dropout 2 (n=33)	
	Relative Risk Ratio	95% CI	Relative Risk Ratio	95% CI
Male	1.100	.484-2.501	1.552	.642-3.753
Age	.982	.915-1.053	1.020	.949-1.096
Intravenous Drug User	.779	.326-1.865	.818	.338-1.980
Cocaine User	1.360	.583-3.172	2.521	.911-6.976
Previous Treatment Episodes	.897	.689-1.167	1.000	.793-1.262
Months Incarcerated in Lifetime	1.002	.990-1.014	1.003	.990-1.016
Problem Recognition	.986	.926-1.049	.961	.899-1.026
Desire for Help	1.000	.887-1.128	.997	.881-1.128
Treatment Readiness	1.037	.961-1.119	1.038	.955-1.127

Base category is staying in treatment (n=113); Dropout 1= Dropout from IM; Dropout 2= Dropout from comprehensive treatment after IM. N=183; McFadden Pseudo R²= .03; Model χ^2 = .92.