



Published in final edited form as:

J Offender Rehabil. 2012 May 1; 51(4): 222–238. doi:10.1080/10509674.2011.641075.

A Randomized Clinical Trial of Methadone Maintenance for Prisoners: Prediction of Treatment Entry and Completion in Prison

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Abstract

The present report is an intent-to-treat analysis involving secondary data drawn from the first randomized clinical trial of prison-initiated methadone in the United States. This study examined predictors of treatment entry and completion in prison. A sample of 211 adult male prerelease inmates with preincarceration heroin dependence were randomly assigned to one of three treatment conditions: counseling only (counseling in prison; $n=70$); counseling plus transfer (counseling in prison with transfer to methadone maintenance treatment upon release; $n=70$); and counseling plus methadone (methadone maintenance in prison, continued in a community-based methadone maintenance program upon release; $n=71$). Entered prison treatment ($p < .01$), and completed prison treatment ($p < .001$) were significantly predicted by the set of 10 explanatory variables and favored the treatment conditions receiving methadone. The present results indicate that individuals who are older in age and have longer prison sentences may have better outcomes than younger individuals with shorter sentences, meaning they are more likely to enter and complete prison-based treatment. Furthermore, implications for the treatment of prisoners with prior heroin dependence and for conducting clinical trials may indicate the importance of examining individual characteristics and the possibility of the examination of patient preference.

Keywords

criminal justice; drug treatment; heroin; methadone maintenance; prisoners

INTRODUCTION

Relapse to opioid addiction among incarcerated individuals typically occurs within 1 month of release from incarceration (Kinlock, Battjes, & Schwartz, 2005). Unfortunately, most individuals with opioid addiction histories do not receive drug abuse treatment while incarcerated or upon release (Dolan, Khoei, Brentari, & Stevens, 2007; Kastelic, Pont, & Stover, 2008; Taxman, Perdoni, & Harrison, 2007), further contributing to the vicious cycle of relapse, recidivism, and reincarceration. Therefore, the development, implementation, and evaluation of additional new treatments for opioid-dependent inmates spanning incarceration and the community are urgently needed (Chandler, Fletcher, & Volkow, 2009; Dolan et al., 2007; Kinlock & Gordon, 2006).

Moreover, individual inmate differences in response to various drug treatment interventions that begin during incarceration and continue in the community have been infrequently reported (Kinlock, Gordon, & Schwartz, 2011). Studies that examine the effectiveness of novel drug treatment interventions need to determine what individual inmate characteristics are associated with progress (that is, whether an individual enters, drops out, or completes treatment) at both the incarceration and community phases of treatment to help determine what types of treatment work best for what types of individuals (Inciardi, 2008). In addition, examining what individual client characteristics are associated with declining, entering, dropping out, and completing treatment in prison and in the community are also important because inmates who successfully complete both the prison- and community-based phases of treatment typically have the best outcomes in terms of drug use and criminal activity (Dolan et al., 2007; Inciardi, 2008; Inciardi, Martin, & Butzin, 2004; Prendergast & Wexler, 2004).

Opioid Agonist Maintenance Treatment in American Jails and Prisons

Despite substantial evidence of effectiveness in community-based settings (Kleber, 2008; Mattick, Kimber, Breen, & Davoli, 2008), and widespread implementation in correctional facilities in other countries (Jurgens, 2004; Kinlock et al., 2011; Magura et al., 2009), opioid agonist maintenance has infrequently been implemented in jails and prisons in the United States, because many American prison and jail administrators tend to prefer abstinence-based approaches (Nunn et al., 2009; Rich et al., 2005) and because correctional staff are not aware of the benefits of opioid agonist treatment (Springer & Bruce, 2008). Four evaluations of corrections-based opioid agonist treatment in the United States have involved jail-based programs in New York City. In the first such study (Dole et al., 1969), 12 inmates who began methadone maintenance approximately 10 days before release and referred to postrelease aftercare had lower readdiction and reincarceration rates at 7–10 months postrelease than 16 untreated controls. Three subsequent studies involved a methadone maintenance program that began in 1987 for newly arrived, opioid-dependent New York City jail inmates, the Key Extended Entry Program (KEEP). Magura, Rosenblum, Lewis,

and Joseph (1993) reported that KEEP participants were more likely than untreated inmates to be enrolled in community-based treatment at follow-up, on average at 6.5 months postrelease. An 11-year evaluation of KEEP suggested that jail-based methadone maintenance facilitated entry into community-based treatment and reduced reincarceration (Tomasino, Swanson, Nolan, & Shuman, 2001). Finally, in a randomized clinical trial of KEEP participants, Magura et al. (2009) found that postrelease treatment entry was significantly higher for buprenorphine-treated inmates than for methadone-treated inmates.

Prison-Based Opioid Agonist Maintenance Treatment Outside the United States

In contrast to the mainland United States, most European countries, Australia, New Zealand, Canada, Puerto Rico, and some central Asian countries routinely offer opioid-substitution treatment with methadone or buprenorphine to prison inmates (Stallwitz & Stover, 2007). Prison-based opioid maintenance treatment has been found to be effective in other countries where injection drug use in prison has been estimated between 11% and 53% (Cravioto et al., 2003; Dolan, Hall, & Wodak, 1996; Dolan et al. 2003, 2005; Heimer et al., 2006). One of the most rigorously evaluated of these prison-based programs is the one established in 1986 by the New South Wales Department of Corrections (Gorta, 1992). A randomized controlled trial of this program found that heroin use in prison was lower among program participants than wait-list controls (Dolan et al., 2003). At 4-year follow-up, retention in treatment was associated with lower rates of mortality, reincarceration, and hepatitis C infection (Dolan et al., 2005).

The Present Study

The present report is an intent-to-treat analysis involving secondary data drawn from the first randomized clinical trial of prison-initiated methadone in the United States (Kinlock, Schwartz, & Gordon, 2005)- The original study examined the degree to which prison-initiated methadone maintenance, continued in the community, would be more effective than beginning methadone maintenance in the community or providing a passive referral to community treatment at release. Short-term findings at 1 and 3 months after release (Kinlock et al., 2007; Kinlock, Gordon, Schwartz, & O'Grady, 2008) and longer-term results at 6- and 12-months postrelease, respectively (Gordon, Kinlock, Schwartz, & O'Grady, 2008; Kinlock, Gordon, Schwartz, Fitzgerald, & O'Grady 2009) found that prison-initiated methadone participants had the best outcomes, and counseling only participants the worst outcomes in terms of community treatment entry, community treatment retention, and heroin use. The present report extends the previously reported findings by examining not only treatment condition but also individual inmate characteristics, namely age of respondent, age at onset of first criminal activity, days used cocaine before incarceration, length of index incarceration, lifetime drug treatment episodes, and the four Texas Christian University (TCU) motivation scales and their interaction, which are hypothesized to be associated with two important outcomes prior to prison release: (a) entering prison treatment and (b) completing prison treatment. As indicated previously in the 3-month postrelease outcome article (Kinlock et al., 2008), the three study groups were compared with regard to percent of participants entering and completing prison treatment, but no multivariate analyses were performed.

Such findings have been reported for continuity of care models for other modalities of corrections-based drug treatment, mainly therapeutic communities (Hiller, Knight, & Simpson, 1999; Inciardi et al., 2004; Wexler & Prendergast, 2010), but infrequently for corrections-based methadone maintenance.

While Dolan et al. (2003) reported that prison-based methadone maintenance reduced heroin use for treated participants compared to controls, no other studies cited the aforementioned report in detail on prison-related outcomes. Although completion of prison treatment is important because it is a major predictor of community-based treatment completion in both studies of therapeutic community treatment (Inciardi et al., 2004; Inciardi, 2008; Prendergast & Wexler, 2004) and in our previous 6-month (Gordon et al., 2008) and 12-month (Kinlock et al., 2009) postrelease analyses of prison-initiated methadone treatment, we are not aware of any prior multivariate analyses of the predictors of entry and completion of methadone maintenance treatment in prison. What also is important is the interaction of program and inmate characteristics, meaning that certain types of inmates might respond better to certain types of treatment.

Rationale for the Choice of the Inmate Characteristics

Among drug-involved offenders, the earlier the age of onset of criminal activity, the greater the variety, frequency and severity of crime they commit (Chaiken & Chaiken, 1990; Hser, Huang, Teruya, & Anglin, 2004; Inciardi, 2008; Kinlock, O'Grady, & Hanlon, 2003). Unlike most heroin-dependent individuals, whose crime rates decline substantially during periods of nonaddiction to heroin, other heroin-dependent persons, particularly those with early onsets of criminal activity that precede their initiation to heroin addiction, tend to be involved in frequent, serious crime regardless of addiction status (Hanlon, Nurco, Bateman, & O'Grady, 1998; Kinlock, Battjes, & Schwartz, 2005). Early onset of crime has been associated with failure to enter (Johnson et al., 1985; Kinlock et al., 2005) or complete (Hanlon et al., 1998; Hiller et al., 1999; Hser et al., 2004) drug-abuse treatment. While most of the literature on opioid agonist treatment outcome has focused on the effects of during-treatment cocaine use, there is evidence that pretreatment cocaine use also has a negative effect on treatment retention and outcomes (Inciardi, 2008; Kidorf, Brooner, King, Stoller, & Wertz, 1998; Magura, Nwakese, & Demsky, 1998; Rowan-Szal, Chatham, Joe, & Simpson, 2000) and can be useful in treatment planning. Finally, many studies have found significant positive relationships between client motivation and retention in treatment, including treatment completion, among community-based therapeutic community, drug-free and methadone maintenance programs, as well as correctional therapeutic community treatment interventions (Hiller et al., 2009; Joe, Simpson, & Broome, 1998, 1999). These studies also report that greater levels of motivation tend to be significantly associated with reduced crime and drug use.

METHODS

The parent study's methods are described elsewhere in detail (Gordon et al., 2008; Kinlock et al., 2007, 2008, 2009). In summary, males incarcerated in a Baltimore, MD prerelease prison who met study eligibility criteria (see next) and consented to participate were

randomly assigned to one of three treatment conditions: (a) counseling only (counseling in prison with passive referral to community treatment upon release); (b) counseling plus transfer (counseling in prison and access to methadone maintenance in the community); and (c) counseling plus methadone (counseling and methadone maintenance in prison with access to continued treatment in the community). All participants received a counseling intake in prison and were scheduled to attend 12 weekly sessions of group drug education. In-prison methadone treatment (including counseling) as well as community-based methadone treatment for participants, provided for free for up to 12 months in the latter two treatment conditions, was provided by the staff of a community-based methadone maintenance treatment clinic. This study was approved by the Friends Research Institute's Institutional Review Board and the Office for Human Research Protections.

Eligibility/Exclusion Criteria

Participants were required to have 3 to 6 months remaining in prison, a history meeting Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for opioid dependence in the year prior to incarceration (American Psychiatric Association, 1994), no unadjudicated charges or pending parole hearings (only offenders approved for parole were eligible), and to be medically cleared for methadone maintenance treatment by the study physician.

Participant Screening and Recruitment

A total of 316 male prerelease prisoners between September 2003 and June 2006 were assessed for study eligibility; 105 were excluded for the following reasons: not meeting inclusion criteria ($n=43$), refusing to participate ($n=20$) or other administrative reasons ($n = 42$). A total of 211 were randomly assigned to one of the three treatment conditions: counseling only ($n= 70$), counseling plus transfer ($n = 70$), and counseling plus methadone ($n = 71$; see Kinlock et al., 2007 for more details on the consort diagram).

Treatment Conditions

Counseling only participants were passively referred to treatment upon release. Counseling plus transfer participants were guaranteed admission if they reported to the community-based methadone treatment program within 10 days of release to begin methadone at 5 mg, with dose increases at 5 mg every eighth day to a target minimum dose of 60 mg. Participants randomized to the counseling plus methadone condition began at 5 mg of methadone in prison and increased 5 mg every eighth day during incarceration to a target dose of 60 mg. Upon release, they were guaranteed admission if they reported within 10 days after release to the program's community-based facility for continuing care. Once a participant arrived at the program, doses could be increased or decreased based on clinical need.

Assessments

Participants were assessed at baseline (study entry in prison). Assessments included demographic information and histories of drug abuse, drug abuse treatment, criminal activity, criminal justice system involvement, and motivation for treatment. Measures

included the Addiction Severity Index (ASI; McLellan et al., 1992) and more detailed historical information about criminality, criminal justice system sanctions, drug abuse, and drug abuse treatment from the Friends Research Institute's supplemental self-report questionnaire (Nurco, 1998). Reasons why participants did not enter or discontinued treatment in prison were also obtained by the supplemental self-report questionnaire. Furthermore, to obtain participants' motivation towards treatment, the TCU Treatment Motivation Scales (Simpson & Joe, 1993) were also administered. A number of studies have focused on the utility of the TCU motivation scale with criminal justice populations (Hiller et al., 2002, 2009).

Outcome Measures

There were two dependent variables:

1. Entered prison treatment (yes vs. no) was recorded if the participant either began methadone maintenance (received at least one dose) treatment (for those participants randomized to counseling plus methadone) or completed the intake session with the study counselor (for those participants randomized to counseling only and counseling plus transfer)
2. Completed prison treatment (yes vs. no) was recorded as continuing on methadone until release from prison (for those participants randomized to counseling plus methadone) or completed 12 weekly drug education sessions or continued in weekly counseling sessions until release from prison (for those participants randomized to counseling only and counseling plus transfer).

Explanatory Variables

The first nine out of 10 predictor variables in the analyses were based on the substance abuse and criminal justice literature, and included the following:

1. Age at onset of criminal activity, which was determined by the youngest age each respondent reported committing any of the crimes included in the supplemental questionnaire: A total of 17 different crimes that were inquired about at baseline: (a) homicide; (b) attempted homicide; (c) using a weapon to harm someone; (d) robbery; (e) assault; (f) rape; (g) carjacking; (h) hurt/torture animals; (i) vandalism; (j) forgery; (k) prostitution; (l) theft; (m) larceny; (n) burglary; (o) arson; (p) sell drugs; and (q) drug distribution (recorded from the ASI and supplemental questionnaire).
2. Self-reported number of days reported using cocaine in the 30 days prior to the most current incarceration (recorded from the ASI).
3. Age of respondent at baseline interview (recorded from the ASI).
4. Length of index incarceration (calculated from when the index incarceration began until the baseline intake).
5. Number of previous lifetime drug treatment episodes (recorded from the ASI).

The four TCU Treatment Motivation Scales:

- 6 Problem Recognition.
- 7 Desire for Help.
- 8 Treatment Readiness.
- 9 External Pressure.
- 10 Treatment Condition (randomized treatment condition described previously).

Statistical Analysis

An intent-to-treat analysis was performed. Two separate analyses were conducted using binary logistic regression (Agresti 1990; Hosmer & Lemeshow 1989), with the outcome variables: (a) entered prison treatment and (b) completed prison treatment. The participants were compared with regard to each outcome variable using logistic regression for the analyses of dichotomous outcome variables (16 of the 211 participants were excluded because of missing data on one or more of the explanatory variables resulting in a sample of 195 used in the multivariate analyses). The 10 explanatory variables were entered simultaneously in the logistic regression analysis for each of the dependent variables. A Wald chi-square test of the overall model fit was conducted, comparing the full model (the model with all predictors) to the model with an intercept only.

Participant Characteristics

Selected characteristics of study participants are reported by treatment condition in Table 1. As reported elsewhere (Kinlock et al., 2008), most participants in each of the three study conditions were African American and, on average, were 40 years of age, had only completed the 10th grade, and had at least six prior incarcerations. Participants in each condition, on average, began heroin use at age 18, approximately 5 years after the onset of their first criminal activity. In the 30 days prior to their current incarceration, participants in each condition reported, on average, using heroin 27 days and committing crime nearly every day. Overall, 70% of the respondents reported some type of drug abuse treatment, with approximately 23% reporting prior methadone maintenance treatment. There were no statistically significant differences between the three treatment conditions on the variables listed in Table 1.

RESULTS

Presented in Table 2 are 95% confidence intervals and odds ratios for each of the independent variables in the logistic regression analyses. Possible multicollinearity among the predictor variables was investigated through examination of the Tolerance and Variance Inflation factors associated with each predictor. Tolerance varied between .53 and .95, while Variance Inflation varied between 1.0 and 1.9. None of these values suggest any problems with multicollinearity.

Entered treatment in prison

Entered prison treatment was significantly predicted by the set of 10 explanatory variables ($p = .009$). Treatment condition was the only significant explanatory variable, $\chi^2(2) = 11.426$,

with simple pairwise comparisons among the conditions indicating counseling plus methadone participants more likely than both counseling only ($p = .001$) and counseling plus transfer ($p = .009$) participants to enter prison-based treatment. The numbers and proportions of members of each condition who entered prison treatment were as follows: counseling only = 50 (71.43%); counseling plus transfer = 59 (84.29%), and counseling plus methadone = 67 (94.37%). The reasons participants did not enter prison treatment were reported elsewhere (Kinlock et al., 2008). In the counseling only condition, the overwhelming majority who never entered prison treatment (18 of 20, or 90%) did so because they wanted to receive methadone maintenance. Within the counseling plus transfer condition, 10 of the 11 participants who did not initiate prison treatment (91%) did so because they wanted assignment to receive methadone in prison or for administrative reasons (transferred to other correctional facilities or placed in punitive segregation). In the counseling plus methadone condition, four participants did not begin prison treatment because they did not want to start methadone in prison or because they were afraid that receiving methadone maintenance would interfere with their being placed on home detention.

Completed prison treatment

Completed prison treatment was significantly predicted by the set of 10 explanatory variables ($p = .0001$). Treatment condition was a significant predictor variable, $\chi^2(2) = 11.832$, with simple pairwise comparisons among the conditions indicating with counseling plus methadone participants more likely than counseling only ($p = .005$) participants to complete prison-based treatment. Counseling plus transfer participants were also more likely than counseling only ($p = .004$) participants to complete prison treatment. Age, $\chi^2(1) = 6.204$, $p = .021$, and length of baseline incarceration, $\chi^2(1) = 5.333$, $p = .016$, were also significant predictors of prison treatment completion, with those participants who were older and had longer baseline incarcerations more likely to complete prison-based treatment (see Table 2). The number and proportion of participants in each treatment condition who completed prison treatment were as follows: counseling only = 37 (52.86%); counseling plus transfer = 53 (75.71%); and counseling plus methadone = 50 (70.42%). The External Pressure Scale was also a significant predictor ($p = .042$); however, not in the expected direction, with those participants who had completed treatment successfully tended to have lower scores compared to those that did not complete treatment.

As reported elsewhere, there were a number of reasons why participants did not begin treatment or dropped out of prison treatment. In the counseling only condition, 33 participants did not enter or dropped out of prison treatment for the following reasons: did not want counseling ($n=12$), wanted methadone ($n=12$), transferred to other prison for disciplinary reasons ($n=3$), had unadjudicated charges ($n=1$), went to home detention ($n=1$), and other reasons not specified ($n=4$). In the counseling plus transfer condition, 17 participants did not begin or dropped out of treatment for the following reasons: transferred to other prison for disciplinary reasons ($n=5$), did not want counseling ($n=4$), wanted methadone ($n=2$), had unadjudicated charges ($n=2$), released before treatment began ($n=2$), and other reasons, not specified ($n=2$). In the counseling and methadone condition, 21 participants did not begin or dropped out of treatment for the following reasons: decided to undergo detoxification from methadone because they did not like the effects of methadone

($n=12$), changed mind about medication ($n=4$), sent to home detention ($n=2$), had unadjudicated charges ($n=1$), transferred for disciplinary reasons ($n=1$), and other reason not specified ($n=1$).

DISCUSSION

Consistent with previously reported study findings (Kinlock et al., 2009), the present report found that treatment condition stands out as the most prominent predictor of the prison treatment entry and completion outcomes assessed herein. With regard to entering prison treatment, the present series of analyses suggest that, at least for male inmates who report initial interest in, and eligibility for, methadone maintenance treatment, such an intervention appeared to be viewed by many participants as an attractive treatment option immediately following randomization. Specifically, 94% of the 71 participants who were randomly assigned to the prison methadone condition entered prison treatment. Of the 20 counseling only participants who did not begin prison treatment, the vast majority (90%) declined because they wanted to receive methadone maintenance in prison, and of the 10 counseling plus transfer participants who did not enter prison treatment, half did not do so because they wanted to receive methadone in prison.

Regarding the entry and completion of prison treatment, both prison-initiated methadone and community-initiated methadone were superior to counseling only. Only slightly over half of the participants assigned to the counseling only condition completed treatment in the prison phase of the study, compared to approximately 75% of the counseling plus transfer and about 70% of the counseling plus methadone groups, respectively. A considerable proportion of the counseling only participants dropped out because they reported that they did not want counseling. Furthermore, while a significantly higher percentage of counseling plus methadone than counseling plus transfer participants had entered treatment, there were no significant differences between these two treatment conditions in terms of completing prison treatment. Within the counseling plus methadone condition, the main reason for in-prison treatment dropout was attributed to discomfort with the effects of the medication.

Concerning the interaction of the explanatory variables, the present results indicate that individuals who are older in age and have longer prison sentences may have better outcomes than younger individuals with shorter sentences, meaning they are more likely to enter and complete prison-based treatment. The results of the present study regarding better outcomes for older participants are consistent with those of other corrections-based evaluations of substance abuse treatment using a therapeutic community or residential treatment modality. In an evaluation of a three-stage treatment model found to be effective in reducing relapse and recidivism, Inciardi, Martin, and Butzin (2004) found that older age was significantly associated with lower likelihood of both relapse to drug use and criminal recidivism at 5-year follow-up. Furthermore, Zanis, Coviello, Lloyd, and Nazar (2009) found that parole violators who successfully completed residential treatment were significantly older than those who did not. Extensive reviewed of the literature on criminal careers over the life course (Farrington, 2005; Piquero, Farrington, & Blumstein, 2003) indicated that most adult offenders tend to commit less crime with age, with a small proportion, particularly those with early onsets of criminality, continuing to offend. Moreover, in a study of pretreatment

and in-treatment predictors of retention in community-based methadone treatment, Magura et al. (1998) found that older patients were more likely to stay in treatment when compared to younger patients.

It is not entirely clear why decreased external pressure scores were significantly related to greater likelihood of completing prison treatment. Perhaps because there were no sanctions for dropping out of treatment (that is, the treatment was not mandatory and/or delivered by correctional personnel), participants reported generally fewer external pressures for staying in treatment. In addition, external pressure was measured at the start of prison treatment, and not thereafter, so we do not know if external pressure changed upon completion of prison treatment or at the time participants dropped out of treatment. Future studies of the relationship between external pressures with regard to treatment compliance and treatment completion among inmates receiving prison-initiated methadone are needed.

While the use of methadone maintenance in jail and prison settings has been endorsed by the Office of National Drug Policy (2001), the American Association for the Treatment of Opioid Dependence (2004), the World Health Organization, the United Nations Office on Drugs and Crime and the Joint United Nations Programme on HIV/AIDS, much remains to be learned about how to strengthen this treatment in the prison context and how to determine for whom this treatment might work best.

Finally, the finding that a considerable proportion of participants who were randomly assigned to the counseling only condition did not want that treatment because they wanted to receive methadone is consistent with the result of the Lobmaier, Kunoe, and Waal (2009) study whereby participants preferred methadone as opposed to naltrexone implants. There are implications for clinical trials, as Lobmaier et al. (2009) indicated that when one treatment intervention is preferred over another, self-selection might jeopardize the randomization and outcomes. Such problems could often be remedied by blinding; however, this was not feasible in the current study. Furthermore, this may indicate the need for patient preference trials as others have suggested (Lobmaier et al., 2009; Murphy et al., 2007; Taxman, Perdoni, & Harrison, 2007; Tucker & Roth, 2006).

LIMITATIONS

The sample involved only male prisoners from Baltimore, MD. Therefore, the findings cannot be generalized to female prisoners or to prison inmates from other geographic locations. However, it is noted that methadone treatment is effective for both men and women (Greenfield et al., 2007; Peles & Adelson, 2006; Platt, Widman, Lidz, & Marlowe, 1998) and has been shown to be effective in studies throughout the world (Gossop, 2006; Michels, Stover, & Gerlach, 2007; Pang et al., 2007; Peles & Adelson, 2006; Platt et al., 1998). In addition, although the sample size was relatively small for the number of predictor variables in the statistical model, the fact that the standard errors for all predictors were quite small in all cases suggests that the estimates were lacking precision. In terms of power considerations, power calculations suggest that the analyses had the ability to detect a “medium” (Cohen, 1988) effect size approximately 80% of the time.

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TABLE 1

Selected Background Characteristics by Treatment Condition (N= 211)

Categorical variables	Counseling only (n=70)		Counseling plus transfer (n=70)		Counseling plus methadone (n=71)	
	M	SD	M	SD	M	SD
Race						
African American			51 (72.9)		39.70	6.76
Caucasian	46 (65.7)	7.54	14 (20.0)	1.61	10.93	1.66
Other	2 (2.9)	2.04	5 (7.1)	4.78	17.94	4.79
Prior drug treatment	49 (70.0)	5.28	49 (70.0)	4.87	13.50	3.97
Prior methadone treatment	16 (22.9)	4.94	16 (22.9)	4.54	7.27	5.17
Continuous variables	M	SD	M	SD	M	SD
Age	40.34	7.54	40.31	7.54	39.70	6.76
Education	10.88	2.04	11.17	1.61	10.93	1.66
Age first heroin use	18.80	5.28	18.56	4.78	17.94	4.79
Age first crime	13.67	4.94	13.57	4.87	13.50	3.97
Lifetime incarcerations	7.41	5.11	6.27	4.54	7.27	5.17
Heroin-use days ^a	27.31	7.51	27.84	6.12	26.68	8.85
Cocaine-use days ^a	19.91	12.92	17.48	12.99	17.16	13.92
Crime days ^a	23.36	11.54	26.59	8.59	25.20	10.06

^aPast 30 days in the community prior to the current incarceration.

TABLE 2

Results of Logistic Regression Analyses

Variables	Entered prison Tx ^a		Completed prison Tx ^b	
	OR	95% CI	OR	95% CI
Condition				
CO (referent group)				
C+T	2.19	.86–5.58	3.59**	1.54–8.37
C+M	10.61 ^{c,***}	2.63–42.80	3.53**	1.51–8.27
Age	1.05	.99–1.12	1.07*	1.01–1.12
Age at first crime	1.02	.92–1.13	1.04	.96–1.13
Cocaine 30	1.01	.98–1.04	1.00	.97–1.02
Incarceration length	1.00	.99–1.00	1.00*	1.00–1.00
Drug treatment episodes	1.00	.89–1.13	.97	.87–1.09
Motivation scales				
Problem Recognition	.93	.81–1.08	.97	.87–1.08
Desire for Help	.96	.76–1.22	1.08	.89–1.29
Treatment Readiness	.94	.81–1.08	.93	.83–1.04
External Pressure	.92	.79–1.07	.88*	.78–.99

Note. OR=odds ratio; CO=counseling only; C+T=counseling plus transfer; C+M=counseling plus methadone.

^a $\chi^2=24.25$; $df=11$; $p=.009$.

^b $\chi^2=26.30$; $df=11$; $p=.0001$.

^c Entered prison treatment: **C+M vs. C+T.

* $p<.05$.

** $p<.01$.

*** $p<.001$.