

Published in final edited form as:

Am J Addict. 2013 January ; 22(1): 18–22. doi:10.1111/j.1521-0391.2013.00317.x.

Predictors of Dropout from Psychosocial Treatment in Opioid-Dependent Outpatients

R. Kathryn McHugh, PhD^{1,2}, Heather W. Murray, PhD³, Bridget A. Hearon, MA³, Elizabeth M. Pratt, PhD³, Mark H. Pollack, MD⁴, Steven A. Safren, PhD^{2,5}, and Michael W. Otto, PhD³

¹Division of Alcohol and Drug Abuse, McLean Hospital, Belmont, Massachusetts

²Department of Psychiatry, Harvard Medical School, Boston, Massachusetts

³Department of Psychology, Boston University, Boston, Massachusetts

⁴Department of Psychiatry, Rush University Medical Center, Chicago, Illinois

⁵Department of Psychiatry, Massachusetts General Hospital, Boston, Massachusetts

Abstract

Background and Objectives—Early dropout is common in substance abuse treatment settings and may lead to poorer outcomes relative to those completing a full course of treatment. Attempts to identify predictors of dropout have yielded mixed results, highlighting the need for additional research in this area to clarify risk and protective factors to guide intervention and retention efforts. This study evaluated predictors of dropout from psychosocial treatment among opioid-dependent patients on methadone maintenance therapy.

Methods—Participants included 78 patients who had failed to respond to at least 4 months of methadone maintenance plus group counseling with clinic substance abuse counselors, and were enrolled in a study of randomized psychosocial treatment in addition to treatment-as-usual. Several factors that have been implicated in previous studies as well as two affective variables (distress intolerance and coping motives for drug use) were examined.

Results—Results indicated that when controlling for various risk factors, age was the only significant predictor of dropout, with younger patients more likely to discontinue treatment early.

Conclusions—This study replicates previous findings in opioid-dependent samples that younger patients are at an increased risk of early treatment dropout.

Conclusions and Significance—Targeted intervention may be needed to retain young patients in drug abuse treatment.

Copyright © American Academy of Addiction Psychiatry

Address correspondence to: Dr. McHugh, McLean Hospital, Proctor House 3, MS 222, Belmont, MA 02478.
kmchugh@mclean.harvard.edu.

Declaration of Interest

The authors are aware of no conflicts with the content of this manuscript, nonetheless Dr. Otto would like to report past (3 years) consultant and research support from Organon (Merck), and royalties received for use of the SIGH-A from Lilly. Dr. Pollack would like to report past year advisory board and/or consultation from Brain Cells, Eli Lilly, Johnson and Johnson, Medavante, Labopharm, Mindsite, Sepracor, Targia Pharmaceuticals, Pfizer, research grants from Bristol Myers Squibb, Euthymics, Forest Laboratories, GlaxoSmithKline, Eli Lilly, NCCAM, NIDA, NIMH, and Sepracor, CME supported activities from Astra-Zeneca, Sepracor, and Pfizer, equity in Medavante, Mensante Corporation, Mindsite, and Targia Pharmaceuticals, and royalty and/or patent with the SIGH-A and SAFER interviews. Dr. McHugh would like to report consultant support in the past year from WebEBP and receipt of royalties from Oxford University Press. The other authors have no relevant conflicts to report. The authors alone are responsible for the content and writing of this paper.

INTRODUCTION

Early dropout is a particular problem in substance abuse treatment settings, with many studies reporting dropout rates of 50% or higher.¹ Not surprisingly, dropout (ie, termination of treatment prior to completion of a full dose or against clinician advice) has been associated with poorer treatment outcomes across a range of substances of abuse,^{2–5} highlighting the importance of preventative efforts to maximize retention. Among the pre-treatment risk factors for dropout, demographic, social, psychological, and clinical variables have all received consideration. However, results have been mixed across investigations with different predictors emerging, and certain predictors serving as both risk and protective factors depending on the study. For example, factors such as psychiatric symptom severity and younger age have been positively associated with both dropout^{6,7} and retention.^{8,9} Although many of these studies include patients using various substance of abuse, this pattern of mixed findings is also seen in studies focused on dropout from pharmacological and psychological therapies for opioid-dependent patients.^{10–13} Given the mixed findings in the literature, examination of less studied variables may better account for early treatment dropout.¹⁴

Recent research has examined affective individual difference variables that may confer increased risk of dropout. One such variable that has been implicated in treatment dropout is distress intolerance (DI). DI is the perceived inability to tolerate distressing states and has been associated with a wide range of outcomes related to substance use and abuse, such as levels of use,¹⁵ early relapse,^{16,17} and substance dependence diagnosis.¹⁸ Two studies have found links between DI and treatment retention, using both behavioral¹⁹ and self-report measures.¹⁴ Patients with high intolerance of distress may have difficulty persisting toward goal-driven behavior (in this case, treatment completion) and thus may discontinue treatment when they perceive they cannot handle the distress associated with treatment engagement.

Affective variables, such as DI, may be of particular importance to treatments in which affect is targeted, such as psychosocial treatments that offer alternative responses to stressors. Another variable that may be relevant to dropout from such treatments is motives for use. Using substances to cope with negative affective and somatic states is commonly reported and may lead to relapse to use.²⁰ Among individuals who often use drugs to cope with negative affect, treatments that offer alternative responses may be particularly appealing as they offer alternative strategies for managing distressing states.

The aim of the current study was to evaluate predictors of treatment attrition in a treatment-resistant, opioid-dependent sample. Research on treatment dropout in this particularly vulnerable group is limited, and better understanding of those with the highest risk of dropout can aid providers in identifying patients who may benefit from additional monitoring and intervention to maintain treatment engagement. The sample consisted of patients who were enrolled in a study of the addition of psychosocial treatment to treatment-as-usual for non-responders to methadone maintenance therapy. We evaluated whether anxiety sensitivity—a type of DI referring to the intolerance of anxiety symptoms and sensations—and coping motives for use, would be associated with dropout, independent of several other predictors implicated in previous studies. We selected the following variables based on those with the strongest support in the literature in opioid-dependent samples: concomitant cocaine use,^{1,21} psychiatric symptom severity,^{1,22} severity of substance use,²³ number of prior treatment episodes,²⁴ and injection drug use.²⁵ We hypothesized that anxiety sensitivity would be positively associated with attrition from treatment, even when controlling for other predictors of treatment dropout. We hypothesized that individuals with more coping motives for use would be *less* likely to dropout from psychosocial treatment.

We focused on baseline (ie, pre-treatment) indicators that would be of use to providers in identifying patients who may require additional support beginning at the treatment initiation stage.

METHODS

Participants

Treatment-resistant opioid-dependent participants were recruited from two urban methadone maintenance treatment facilities. Patients who had failed to respond to treatment-as-usual (TAU) (methadone maintenance plus group counseling provided by clinic substance abuse counselors) after at least 4 months of treatment as judged by continued provision of positive drug screens were offered the opportunity to participate in a study of the addition of one of two psychosocial treatments to TAU. Potential participants self-referred from study advertisements or were referred to study staff by their treating clinician. In addition to current diagnosis of opioid dependence and current substance use, participants were included in the study if they had been on a stable dose of methadone for at least 2 weeks, endorsed presence of a current chronic stressor, defined as non- or limited-employment (defined as less than 20 hours per week of employment), or a current affective disorder. Participants were excluded from the study if any of the following criteria were identified: significant unstable medical illness, uncontrolled bipolar disorder, psychotic disorder, use of medication affecting methadone metabolism, and inability to complete informed consent procedures. Eligible study participants were randomized to receive one of two psychosocial treatments. Both treatment conditions entailed 12 individual weekly 1-hour sessions plus three booster sessions and focused on enhancing utilization of adaptive coping strategies. Participants enrolled in the study received study-related treatment in addition to TAU and were compensated for the provision of oral toxicology swabs and study assessments. All study procedures were approved by the Institutional Review Boards at Boston University and Massachusetts General Hospital.

The sample included 78 adults (35 women) with a mean age of 42.3 years ($SD = 9.9$). Patients self-reported race and ethnicity; 68% reported race as Caucasian, the remaining 32% reported race as Black/African American, and 90% identified as non-Hispanic/Latino(a).

Procedures

Interested patients who met eligibility criteria based on a preliminary screen completed a baseline assessment after providing informed consent. If eligible, patients were then randomly assigned to one of two psychosocial treatments. Session attendance was tracked throughout the study and participants completed weekly drug use screens at each session and assessment point. Participants were compensated for the provision of an oral toxicology swab and completion of each assessment meeting. In this study, baseline variables were examined as predictors of treatment dropout.

Measures

The Structured Clinical Interview for DSM-IV (SCID),²⁶ a widely used semi-structured clinical interview assessing Axis I disorders according to the DSM-IV diagnostic criteria, was administered to participants to determine diagnostic eligibility.

The Addiction Severity Index (ASI)²⁷ is a semi-structured clinical assessment evaluating the degree of functioning in seven domains associated with substance use including medical status, employment/support, drug use, alcohol use, legal status, family/social relationships, and psychiatric status. Calculated composite scores indicate the severity for each problem

area in the past 30 days. The psychometric properties of the ASI are well established with strong retest reliability and concurrent, predictive, and discriminate validities.²⁸

The Drug Use Motives Questionnaire (DUMQ) (as utilized by Mueser et al.²⁹) is a modified version of the Drinking Motives Questionnaire (DMQ).³⁰ The DUMQ is a 15-item self-report measure designed to assess the frequency of coping, social and enhancement motives for illicit substance use. Adequate reliability and validity of the DMQ have been established.³⁰

Anxiety Sensitivity Index (AnxSI).³¹ The AnxSI is a 16-item self-report questionnaire measuring the degree of fear associated with experiencing sensations as they relate to anxiety. Evaluation of the psychometric properties of the AnxSI yield good test/retest reliability and construct validity.³²

Data Analysis

Data were first screened for normality and univariate outliers. Differences between treatment completers and noncompleters on demographic variables were tested to determine covariates for analysis. Treatment completion was defined as completing at least 12 of a possible 15 sessions of treatment, consistent with an adequate dose of the therapy (the treatment consisted of 12 weekly sessions and 3 booster sessions). A hierarchical logistic regression was employed to examine predictors of dropout. In the first step, several predictors associated with treatment dropout in the literature were entered, including number of past treatment episodes, cocaine use (days of use in the previous 30 days), psychiatric symptom severity, and substance use severity (as assessed by the ASI). Anxiety sensitivity and coping motives for use were entered in a second step to evaluate incremental validity of these variables. Finally, any covariates identified in tests of group differences were added in a third step to control for these variables.

RESULTS

Of the sample included in analysis, 18 were defined as noncompleters based on a failure to complete at least 12 of 15 sessions. Completers and noncompleters were not significantly different with respect to sex ($\chi^2[1] = 1.08, p = .30$), race ($\chi^2[1] = 2.54, p = .11$), ethnicity ($\chi^2[1] = 1.05, p = .31$), or total years of education ($t[73] = .17, p = .87$). Noncompleters were significantly younger than completers (mean difference = -6.0 years, $t[76] = -2.33, p < .05$). Mean values of predictor variables by completer status and univariate tests of group differences are presented in Table 1. Due to very high rates of injection drug use in this sample ($>75\%$), this was not examined as an independent variable in the analysis.

The logistic regression results are presented in Table 2. The first step was not significant and none of the tested variables were significantly associated with completer status ($\chi^2[4] = 5.85, p = .21$). The strength of the model was improved with the addition of the second step, but still did not reach statistical significance ($\chi^2[6] = 10.67, p = .10$). Anxiety sensitivity was not associated with dropout; however, coping motives were significantly associated with dropout such that those with more coping motives were less likely to dropout ($B = -.24, SE_B = .12, Wald = 3.93, p < .05$). When age was controlled for in the analysis in a third step, the overall model became significant ($\chi^2[7] = 16.09, p < .05$) and only age was a significant non-redundant predictor ($B = .13, SE_B = .06, Wald = 4.10, p < .05$). Drug use severity approached significance in this model ($B = 5.41, SE_B = 3.12, Wald = 3.50, p = .06$); however, this was likely due to a suppressor effect of age, given that age was correlated with drug use severity ($r = -.24, p < .05$) and drug use severity was not associated with dropout in a univariate analysis (see Table 1). This final model predicted between 28% and 44% of the variance in dropout.

DISCUSSION

In this study of dropout from psychosocial treatment among opioid-dependent patients receiving methadone maintenance, younger age emerged as the only significant predictor. Younger age has been associated with attrition from methadone maintenance programs in prior studies of opioid-dependent patients.^{23,33} The results of this study suggest that younger age may also be a risk factor for dropout from psychosocial treatment for opioid dependence. Although age was highly correlated with other purported predictor variables (eg, substance use severity, coping motives for use), it remained significant even when controlling for these and other risk factors identified in the literature.

The variability in results in the literature with respect to predictors of treatment dropout may be due to substantive differences in dropout predictors across populations. For example, the sample used in this study included severe, opioid-dependent patients who had failed to respond to at least 4 months of methadone maintenance treatment. The majority of participants were (or had been) injection drug users and reported numerous previous treatment episodes (mean = 17.75, SD = 20.5). Moreover, retention may vary across types of treatment,¹ which raises the possibility that predictors of retention may be treatment-specific. Further examination of such contextual factors will be critical to identifying risk factors to target in the early stages of treatment. In addition, research on treatment dropout has focused on provider definitions of treatment completion, and often does not consider patient perspectives on the appropriate treatment dose. It is possible that treatment dropout—at times—reflects patient “self-dosing” of treatment. Research on this perspective and its association with treatment outcome is needed.

The hypothesis that elevated distress intolerance would confer an increased risk for dropout was not supported, contrary to two previous studies.^{14,19} It is of note that the previous studies were conducted in residential drug treatment facilities and thus the role of this factor may differ between residential and outpatient levels of care. Although there was evidence at the univariate level for an association between coping motives and dropout (with more coping motives associated with less dropout), this association was non-significant when controlling for other purported risk factors. However, further research examining the relationship between distress intolerance and coping motives with treatment entry, retention, and outcome is indicated given that the literature has been mixed to date with respect to these associations.

There are several limitations to the current study. First, the treatment-resistant opioid-dependent sample included in this study was particularly severe, therefore the generalizability of the current findings to less severe populations is unclear. However, given evidence that predictors of dropout may vary by treatment modality, understanding predictors of dropout in this particular population is important. Moreover, this sample represents a cohort that is particularly severe for which engagement in services is especially important. These results may provide important information to providers working with methadone maintenance treatment non-responders to identify those who may need support to facilitate engagement in additional services. Second, the data reported here were collected as part of a randomized controlled trial in which participants received compensation for attending assessment visits and providing oral toxicology screens; however, patients were not compensated for attending treatment sessions (the main outcome of this analysis). Nonetheless, the incentive to maintain participation in the study was likely greater than outside of the context of a clinical trial that included compensation. Finally, given that participants were selected based on both treatment non-response and the presence of chronic stress, the incremental effect of affective variables on dropout may have been smaller than in a sample with a broader range of affective disturbance. Although there was an adequate

range of scores on affective measures for the current analysis, these effects may differ at lower levels of overall affective dysfunction and thus the examination of these variables in other substance-dependent populations is needed.

Controlling for several demographic, social, substance use, and psychiatric variables, younger age was a robust predictor of dropout from psychosocial treatment among treatment-resistant opioid-dependent patients. This finding highlights the importance of preventative efforts to retain younger patients in treatment to facilitate retention and to ultimately improve treatment outcomes, particularly in this severe, treatment-resistant group. Future research examining the efficacy of interventions to improve retention as well as differences in predictors across levels of care and types of treatment is needed to better understand risk and protective factors for treatment dropout in substance abusing patients.

Acknowledgments

This work was supported by grant DA017904 from the National Institute on Drug Abuse, Bethesda, MD (Dr. Otto).

References

1. Salamina G, Diecidue R, Vigna-Taglianti F, et al. Effectiveness of therapies for heroin addiction in retaining patients in treatment: Results from the VEdeTTE study. *Subst Use Misuse*. 2010; 45:2076–2092. [PubMed: 20438317]
2. Nosyk B, Geller J, Guh DP, et al. The effect of motivational status on treatment outcome in the North American Opiate Medication Initiative (NAOMI) study. *Drug Alcohol Depend*. 2010; 111:161–165. [PubMed: 20510549]
3. Simpson DD, Joe GW, Broome KM. A national 5-year follow-up of treatment outcomes for cocaine dependence. *Arch Gen Psychiatry*. 2002; 59:538–544. [PubMed: 12044196]
4. Simpson DD, Joe GW, Fletcher BW, et al. A national evaluation of treatment outcomes for cocaine dependence. *Arch Gen Psychiatry*. 1999; 56:507–514. [PubMed: 10359464]
5. Zhang Z, Friedmann PD, Gerstein DR. Does retention matter? Treatment duration and improvement in drug use. *Addiction*. 2003; 98:673–684. [PubMed: 12751985]
6. Graff FS, Morgan TJ, Epstein EE, et al. Engagement and retention in outpatient alcoholism treatment for women. *Am J Addict*. 2009; 18:277–288. [PubMed: 19444731]
7. Mulder RT, Frampton CM, Peka H, et al. Predictors of 3-month retention in a drug treatment therapeutic community. *Drug Alcohol Rev*. 2009; 28:366–371. [PubMed: 19594790]
8. Curran GM, Stecker T, Han X, et al. Individual and program predictors of attrition from VA substance use treatment. *J Behav Health Serv Res*. 2009; 36:25–34. [PubMed: 18188705]
9. Pagnin D, de Queiroz V, Saggese EG. Predictors of attrition from day treatment of adolescents with substance-related disorders. *Addict Behav*. 2005; 30:1065–1069. [PubMed: 15893106]
10. Che Y, Assanangkornchai S, McNeil E, et al. Patterns of attendance in methadone maintenance treatment program in Yunnan Province, China. *Am J Drug Alcohol Abuse*. 2011; 37:148–154. [PubMed: 21413914]
11. Peles E, Schreiber S, Adelson M. Factors predicting retention in treatment: 10-Year experience of a methadone maintenance treatment (MMT) clinic in Israel. *Drug Alcohol Depend*. 2006; 82:211–217. [PubMed: 16219428]
12. Rothenberg JL, Sullivan MA, Church SH, et al. Behavioral naltrexone therapy: An integrated treatment for opiate dependence. *J Subst Abuse Treat*. 2002; 23:351–360. [PubMed: 12495797]
13. Sullivan MA, Rothenberg JL, Vosburg SK, et al. Predictors of retention in naltrexone maintenance for opioid dependence: Analysis of a stage I trial. *Am J Addict*. 2006; 15:150–159. [PubMed: 16595353]
14. Lejuez CW, Zvolensky MJ, Daughters SB, et al. Anxiety sensitivity: A unique predictor of dropout among inner-city heroin and crack/cocaine users in residential substance use treatment. *Behav Res Ther*. 2008; 46:811–818. [PubMed: 18466878]

15. O'Cleirigh C, Ironson G, Smits JA. Does distress tolerance moderate the impact of major life events on psychosocial variables and behaviors important in the management of HIV? *Behav Ther.* 2007; 38:314–323. [PubMed: 17697855]
16. Brandon TH, Herzog TA, Juliano LM, et al. Pretreatment task persistence predicts smoking cessation outcome. *J Abnorm Psychol.* 2003; 112:448–456. [PubMed: 12943023]
17. Daughters SB, Lejuez CW, Kahler CW, et al. Psychological distress tolerance and duration of most recent abstinence attempt among residential treatment-seeking substance abusers. *Psychol Addict Behav.* 2005; 19:208–211. [PubMed: 16011392]
18. McHugh RK, Hearon BA, Halperin DM, et al. A novel method for assessing distress intolerance: Adaptation of a measure of willingness to pay. *J Behav Ther Exp Psychiatry.* 2011; 42:440–446. [PubMed: 21570933]
19. Daughters SB, Lejuez CW, Bornovalova MA, et al. Distress tolerance as a predictor of early treatment dropout in a residential substance abuse treatment facility. *J Abnorm Psychol.* 2005; 114:729–734. [PubMed: 16351393]
20. Epstein DH, Willner-Reid J, Vahabzadeh M, et al. Real-time electronic diary reports of cue exposure and mood in the hours before cocaine and heroin craving and use. *Arch Gen Psychiatry.* 2009; 66:88–94. [PubMed: 19124692]
21. Brands B, Blake J, Marsh DC, et al. The impact of benzodiazepine use on methadone maintenance treatment outcomes. *J Addict Dis.* 2008; 27:37–48. [PubMed: 18956528]
22. Schaub M, Stevens A, Haug S, et al. Predictors of retention in the 'voluntary' and 'quasi-compulsory' treatment of substance dependence in Europe. *Eur Addict Res.* 2011; 17:97–105. [PubMed: 21228594]
23. Davstad I, Stenbacka M, Leifman A, et al. Patterns of illicit drug use and retention in a methadone program: A longitudinal study. *J Opioid Manag.* 2007; 3:27–34. [PubMed: 17367092]
24. Kissin WB, Svikis DS, Moylan P, et al. Identifying pregnant women at risk for early attrition from substance abuse treatment. *J Subst Abuse Treat.* 2004; 27:31–38. [PubMed: 15223091]
25. Kenne DR, Boros AP, Fischbein RL. Characteristics of opiate users leaving detoxification treatment against medical advice. *J Addict Dis.* 2010; 29:383–394. [PubMed: 20635287]
26. First, MB.; Spitzer, RL.; Gibbon, M., et al. *Structured Clinical Interview for DSM-IV Axis I Disorders: Patient Edition.* New York, NY: New York State Psychiatric Institute; 1996.
27. McLellan AT, Kushner H, Metzger D, et al. The fifth edition of the Addiction Severity Index. *J Subst Abuse Treat.* 1992; 9:199–213. [PubMed: 1334156]
28. McLellan AT, Cacciola JC, Alterman AI, et al. The Addiction Severity Index at 25: Origins, contributions and transitions. *Am J Addict.* 2006; 15:113–124. [PubMed: 16595348]
29. Mueser KT, Nishith P, Tracy JI, et al. Expectations and motives for substance use in schizophrenia. *Schizophr Bull.* 1995; 21:367–378. [PubMed: 7481568]
30. Cooper M, Russell M, Skinner J, et al. Development and validation of a three-dimensional measure of drinking motives. *Psychol Assess.* 1992; 4:123–132.
31. Peterson, RA.; Reiss, S. *Anxiety Sensitivity Index Revised Manual.* Worthington, OH: International Diagnostic Systems Publishing Corporation; 1992.
32. Reiss S, Peterson RA, Gursky DM, et al. Anxiety sensitivity, anxiety frequency and the predictions of fearfulness. *Behav Res Ther.* 1986; 24:1–8. [PubMed: 3947307]
33. Mancino M, Curran G, Han X, et al. Predictors of attrition from a national sample of methadone maintenance patients. *Am J Drug Alcohol Abuse.* 2010; 36:155–160. [PubMed: 20465373]

TABLE 1

Descriptive statistics and tests of group differences

	Noncompleters	Completers	<i>t</i>	<i>p</i> -Value
Age	37.7 (11.5)	43.7 (9.0)	−2.33	<.05
Treatment episodes	10.9 (8.9)	19.9 (22.6)	1.63	.11
Cocaine use	9.3 (11.7)	7.1 (9.0)	−.87	.39
ASI psychiatric	.49 (.22)	.47 (.17)	−.03	.74
ASI drug use	.22 (.11)	.22 (.10)	.16	.87
Anxiety sensitivity	29.6 (11.4)	28.0 (12.4)	−.44	.66
Coping motives	17.8 (3.4)	14.3 (4.4)	−2.5	<.05

ASI = Addiction Severity Index.

TABLE 2

Logistic regression examining predictors of dropout

	B	SEB	Wald	p-Value
Step 1				
Treatment episodes	.04	.03	1.51	.22
Cocaine use	-.04	.04	1.13	.29
Psychiatric symptoms	-3.11	2.72	1.31	.25
Substance use severity	-2.17	4.58	.22	.64
Step 2				
Treatment episodes	.04	.04	1.17	.28
Cocaine use	-.06	.04	1.64	.20
Psychiatric symptoms	-2.70	2.70	1.00	.32
Substance use severity	.38	5.30	.10	.94
Anxiety sensitivity	.00	.04	.00	.99
Coping motives	-.24	.12	3.93	<.05
Step 3				
Treatment episodes	.04	.04	1.25	.26
Cocaine use	-.10	.05	3.45	.06
Psychiatric symptoms	-2.79	3.12	.80	.37
Substance use severity	5.41	6.40	.72	.40
Anxiety sensitivity	-.03	.04	.38	.54
Coping motives	-.13	.13	.92	.34
Age	.13	.06	4.10	<.05