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Brief v. Extended Buprenorphine Detoxification in a Community Treatment Program: Engagement and Short-Term Outcomes

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Author Disclosures

None

Contributors

Elizabeth Katz, Barry Brown, Robert Schwartz, and Kevin O'Grady designed the studies and wrote the protocol; Devang Gandhi, Eric Weintraub, David Glovinsky, and Wardell Barksdale assisted with the design and implementation of the buprenorphine detoxification protocols; Stuart King oversaw the data collection and assisted with compiling the data for analysis; Kevin O'Grady assisted with the statistical analysis; and Timothy Billings and David Highfield assisted with preparation of the manuscript.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

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Abstract

Background—Despite evidence supporting the efficacy of buprenorphine relative to established detoxification agents such as clonidine, little research has examined: (1) how best to implement buprenorphine detoxification in outpatient settings; and (2) whether extending the length of buprenorphine detoxification improves treatment engagement and outcomes.

Objectives—The current study examined the impact on (1) successful detoxification completion; (2) transition to longer-term treatment; and (3) treatment engagement of two different length opioid detoxifications using buprenorphine.

Method—The study compared data obtained from two consecutive studies of early treatment engagement strategies. In one study (n = 364), opioid-addicted participants entered treatment through a Brief (5-day) buprenorphine detoxification. In the other study (n = 146), participants entered treatment through an Extended (i.e., 30-day) buprenorphine detoxification.

Results—Results indicated a greater likelihood of successful completion and of transition among participants who received the Extended as compared to the Brief detoxification. Extended detoxification participants attended more counseling sessions and submitted fewer drug-positive urine specimens during the first 30 days of treatment, inclusive of detoxification, than did Brief detoxification participants.

Conclusions—Results demonstrate that longer periods of detoxification improve participant engagement in treatment and early treatment outcomes.

Scientific Significance—Current findings demonstrate the feasibility of implementing an extended buprenorphine detoxification within a community-based treatment clinic.

Recent data suggests that the detoxification population continues to be a substantial proportion of heroin users seeking treatment. Findings from the national Treatment Episode Data Set for 2006 treatment admissions show that 39.8% of all heroin admissions were for detoxification (N=245,984), with 5.4% in ambulatory and 34.4% in inpatient detoxification (1). Buprenorphine has been recommended as an aid to opioid detoxification because it is well-tolerated and can be safely administered in office-based practice (2, 3). The most commonly used formulation, Suboxone®, combines buprenorphine and naloxone, which may reduce the likelihood of its intravenous misuse (4).

Studies of the efficacy of buprenorphine in opioid detoxification have examined three outcome measures: (1) completion of detoxification; (2) negative drug testing results at the completion of detoxification; and/or, (3) transfer to long-term treatment following detoxification. Results show that completion rates decrease as the length of the detoxification increases. While 85–97% of patients completed a 3-day detoxification (5, 6), 58–83% of patients were found to complete 5–14 day protocols (7, 8, 9, 10, 11, 12, and 13).

While completion rates may diminish as the length of the detoxification increases, the number of patients who submit negative urine specimens increases. Among studies that collected urine specimens, results indicated that 12% (14) and 22% (9) of patients were negative for opiates after 5-day detoxification. Ling et al. (10) found that 29% of patients had opioid-negative drug tests at the completion of 14-day detoxification, whereas 78% of youth completing a 28-day detoxification were found to be opiate-negative (15).

The failure of detoxification alone to lead to positive treatment outcomes (16, 17, 18) has stimulated interest in developing strategies for facilitating transition of detoxified patients into long-term treatment (19). Typically, fewer than 25% of detoxified patients have been found to make such a transition (20, 21), although transition rates of 40% and higher have been infrequently reported (22).

Despite evidence supporting the efficacy of buprenorphine as compared to clonidine (10) as a detoxification agent, little research has addressed the question of how best to implement buprenorphine detoxification in outpatient settings in order to maximize completion rates, reduce drug use, and facilitate transition into long-term treatment. A related question is whether extending buprenorphine administration may yield higher treatment engagement rates (i.e., retention in long-term treatment). Thus, research regarding the relative efficacy of different lengths of buprenorphine detoxification is needed.

During the course of two consecutive NIDA-funded studies of early engagement strategies in outpatient treatment, data were collected on heroin-addicted patients enrolling in ambulatory buprenorphine detoxification of different lengths [Brief (5 Days) or Extended (30 days)]. The current analysis, combining the intent-to-treat samples from these two studies, compared Brief to Extended detoxification on: (1) successful completion of detoxification, defined as attending a counseling session and submitting a drug negative urine specimen during the last detoxification week; and, (2) transition to longer-term treatment following detoxification. We hypothesized that the Extended detoxification condition would have superior outcomes compared to the Brief detoxification group. Secondary analyses examined whether extending buprenorphine administration would enhance engagement in treatment during the first 30 days of treatment, inclusive of the detoxification. We hypothesized that participants would attend more counseling sessions and submit fewer drug-positive urine specimens during the first 30 days of treatment for the Extended compared to the Brief Detoxification condition.

Method

Overview

Data were extracted from two random assignment studies of early engagement strategies that were conducted sequentially at the same outpatient, community-based clinic in Baltimore, MD. In both studies, participants received buprenorphine detoxification, combined with once-weekly individual and daily group counseling, followed by weekly individual and/or group counseling for up to six months.

Participants

Participants providing data for the current analyses were 510 opioid-dependent patients entering buprenorphine detoxification. Participants who received the Brief detoxification entered the clinic between May 2000 and April 2003, inclusive; participants who received the Extended Detoxification entered the clinic between April 2005 and February 2007, inclusive. All participants were at least 18 years of age and reported symptoms of opioid withdrawal. Prior to detoxification, patients completed a medical examination to confirm opioid dependence and to rule out contraindications to taking buprenorphine (e.g., pregnancy; alcohol withdrawal). Patients who were suffering from severe psychological or medical illness, significant cognitive impairment, or suicidal ideation were ineligible to participate; no participants had to be excluded based on these criteria. Both studies were approved by the Friends Research Institute and the University of Maryland School of Medicine IRBs.

Procedures

Individuals initially found appropriate for detoxification after telephone screening were invited to attend a group orientation session at the clinic, usually within one to three weeks following screening. After completing the orientation, research staff described the study and obtained written informed consent. Participants who consented and completed the baseline research intake assessment were randomly assigned to one of three counseling conditions (described in 23) prior to beginning detoxification.

Brief (5-day) detoxification—Detoxification began for all participants on either Monday or Tuesday. Patients received one 2 mg tablet of buprenorphine sublingually each day for up to 5 days; dosing was observed by the clinic nurse. When the study began, buprenorphine was being used off label for a three day detoxification. This was extended to five days when buprenorphine was approved by the FDA for the treatment of opioid dependence on October 2002.

Extended (30-day) detoxification—Patients were inducted on sublingual Suboxone® (which contains buprenorphine: naloxone in a 4:1 ratio) over a period of one week. On Day 1, participants received 4 mg of Suboxone®, were briefly monitored for adverse reactions, and permitted to leave. Dose induction continued over the next 3 to 7 days until patients achieved a blocking dose or a maximum dose of 16 mg (mean maintenance dose: 14.6 mg, *SD* = 2.13). Participants remained on the maintenance dose through day 22 with the dose taper initiated on day 23 and completed by day 30. Participants were administered their dose five times per week for the first two weeks; take-home doses were given on Fridays for weekends. During the remainder of the detoxification, participants were administered Suboxone® at the clinic once per week and were given sufficient take-home medication for 6 days.

Measures

Addiction Severity Index (ASI)—The ASI (24) is a 45-to-60 minute structured interview that assesses recent and prior medical, employment, drug, alcohol, legal, family/social, and psychiatric problems. The ASI was administered by a trained research assistant on the day of study intake. Its primary use in this study was to assess baseline differences in demographic characteristics between participants in the two studies.

Detoxification completion—Participants were coded as having successfully completed detoxification if they attended a counseling session and submitted a drug-negative urine specimen during the final week of the detoxification.

Measure of transition to ongoing treatment—Participants were coded as having transferred to ongoing treatment if they attended at least one individual counseling session within 30 days after completing the detoxification.

Buprenorphine as an engagement strategy—The extent to which Suboxone® served to engage participants in treatment during the first 30 days, inclusive of the detoxification, was assessed in the following ways: (1) the number of individual counseling sessions attended (range = 0 to 5) and (2) the number of drug-positive urine specimens submitted (range = 0 to 5). Attendance was assessed using a participant record form developed for use in the two studies. Counselors recorded whether an individual counseling session had been scheduled and whether the participant attended that session. Urine specimens were collected weekly and tested for opioids, cocaine, benzodiazepines, PCP, and barbiturates. In order to yield a conservative estimate, any missing urine specimen was counted as drug-positive.

Results

Participant Characteristics and Baseline Differences

Differences in baseline characteristics between participants in the two studies were examined using independent-samples t tests for continuous variables and χ^2 goodness-of-fit tests for dichotomous variables. As shown in Table 1, Extended, as compared to Brief, detoxification participants were significantly older, reported more arrests, more days of heroin and cocaine out of the 30 prior to intake, more years of regular heroin and cocaine use, and more prior treatment episodes. There was no difference in the amount of money spent on drugs between the Extended ($M = \$643.07$, $SD = \$526.44$) and the Brief ($M = \675.25, $SD = \$775.26$) detoxification groups, unequal-variances $t(389.6) = .54$, $p > .05$.

Analyses

Hypotheses were tested using logistic regression analyses for dichotomous dependent variables and analysis of covariance for continuous dependent variables. The effects of age, number of arrests, number of prior treatment episodes, number of days of heroin and cocaine use in the 30 days prior to treatment entry, years of regular heroin and cocaine use, and treatment condition (i.e., whether exposed to an innovative or to routine orientation prior to beginning detoxification in the Brief condition and during the five weeks of detoxification in the Extended condition – see 23) to which participants were assigned at study intake, were statistically controlled in all analyses. The effect of primary interest in the statistical model was Detoxification Condition (Brief *v.* Extended). Bonferroni adjustment was used to minimize Type I error due to the analysis of multiple outcome measures. Therefore, α for all tests of significance was .01.

Analyses of primary hypotheses revealed statistically significant differences between the two groups on measures of successful detoxification completion and transition to long-term treatment. As shown in Table 2, Extended, compared to Brief, detoxification was associated with a greater likelihood of successfully completing detoxification (16% *v.* 4%, respectively) and a greater likelihood of transition into long term treatment (41% *v.* 26%, respectively).

Secondary analyses supported our hypothesis that extending the length of buprenorphine administration would lead to improved engagement in treatment during the first 30 days, inclusive of the detoxification. Participants who received the Extended, as compared to those participants who received the Brief Detoxification, attended more counseling sessions and submitted fewer drug-positive urine specimens during the first 30 days of treatment (see Table 2).

Discussion

The current study found higher rates of successful detoxification completion and a greater likelihood of transition to longer-term treatment following detoxification associated with Extended than with Brief detoxification. Secondary analyses supported the hypotheses that extending the length of time that buprenorphine is available increases participants' involvement in treatment. Participants attended more counseling sessions and submitted fewer drug-positive urine specimens when buprenorphine was made available for 30 days as compared to when it was discontinued after 5 days.

While prior research has shown that detoxification alone is not sufficient to produce long-term behavior change (25), the present research suggests that extending the detoxification improves short-term patient outcomes. These superior outcomes occurred independently of the early engagement treatment components under investigation in the two studies as the effects of those approaches were statistically controlled. Thus, extending the length of the

detoxification may itself promote behavior change by providing longer periods of effective pharmacotherapy, thereby allowing for the possibility of greater patient involvement in counseling.

This study is limited by the fact that participants were not randomly assigned to the different lengths of detoxification and the fact that the two treatment-engagement studies did not occur at the same time. Thus, although baseline differences were statistically controlled, findings may result from some uncontrolled variable rather than the difference in detoxification lengths. In addition to the duration, the two detoxifications also differed in other important ways. The Extended detoxification participants were tapered off of a higher dose of buprenorphine (i.e., mean = 14.6 mg) following a brief (approximately 3 week) maintenance period whereas the Brief detoxification participants received a stable (i.e., 2 mg dose) dose for the entire detoxification. Thus, the better outcomes observed among Extended detoxification patients may be due to the use of a maintenance period and/or the use of a higher dose of buprenorphine rather than to the duration of the detoxification. Nonetheless, this study is instructive for several reasons. First, it is one of the first studies to directly compare the efficacy of different length buprenorphine detoxification programs. In addition, it is one of the few studies available (26, 27) that demonstrate the feasibility of implementing an extended buprenorphine detoxification within a community-based treatment clinic. The finding that Extended detoxification participants achieved better engagement and outcomes than participants who received the Brief detoxification suggests that longer periods of detoxification provide significantly greater potential for fulfilling the goals of drug treatment. However, a substantial number of participants failed to achieve abstinence even in the Extended condition; thus, it seems important to explore the feasibility and efficacy of extending buprenorphine availability further still, that is, as a maintenance regimen, in formerly drug-free outpatient treatment settings.

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Table 1

Participant Demographic and Baseline Information for the Total Sample and by Detoxification Condition

	Total Sample (N = 510)	Brief Detox (n = 364)	Extended Detox (n = 146)	p
<u>M</u> Age (<i>SD</i>)	40.8 (7.0)	40.3 (7.0)	42.2 (6.8)	.005
Male <i>n</i> (%)	293 (57.6%)	214 (59.0%)	79 (54.1%)	.32
African American <i>n</i> (%)	492 (96.5%)	351 (96.4%)	141 (96.6%)	.09
Never Married <i>n</i> (%)	293 (57.5%)	209 (57.4%)	84 (57.5%)	.70
On Parole or Probation <i>n</i> (%)	156 (31.0%)	106 (29.6%)	50 (34.2%)	.34
<u>M</u> Education, Years (<i>SD</i>)	11.7 (1.8)	11.7 (1.7)	11.6 (1.8)	.69
<u>M</u> Arrests (<i>SD</i>)	4.3 (5.3)	3.4 (4.1)	6.7 (7.1)	< .001
<u>M</u> Days Heroin use, past 30 (<i>SD</i>)	27.5 (6.7)	27.0 (7.6)	29.0 (3.2)	< .001
<u>M</u> Years Regular Heroin Use, lifetime (<i>SD</i>)	13.0 (8.2)	11.6 (8.0)	16.3 (7.5)	< .001
<u>M</u> Days Cocaine use, past 30 (<i>SD</i>)	7.4 (10.8)	6.5 (10.3)	9.6 (11.8)	.006
<u>M</u> Years Regular Cocaine Use, lifetime (<i>SD</i>)	6.0 (7.7)	4.9 (7.0)	8.9 (8.7)	< .001
<u>M</u> Number of Treatment Episodes (<i>SD</i>)	2.3 (1.8)	2.5 (1.8)	1.8 (1.7)	< .001

Note: χ^2 goodness-of-fit tests were used for dichotomous variables and independent-samples t-tests were used for continuous variables.

Table 2

Outcomes and Engagement by Detoxification Condition

	Brief Detox (<i>n</i> = 364)	Extended Detox (<i>n</i> = 146)	Odds Ratio (95% CI)	<i>p</i>
Detoxification Outcomes				
Successfully completed detoxification ¹	4.4%	15.8%	4.3 (1.8 – 9.9)	.001
Attended at least 1 post-detoxification individual counseling session ¹	25.8%	41.1%	1.9 (1.2 – 3.1)	.009
Buprenorphine as an Engagement Strategy				
	<i>M</i> (SE)	<i>M</i> (SE)		
Number of Individual Counseling Sessions Attended, (range: 0 – 5) ²	1.7 (.07)	2.9 (.12)		< .001
Number of Drug Positive Urine Specimens, (range: 0 – 5) ²	4.8 (.05)	4.3 (.08)		< .001

Note:

¹ Reference category: Brief detoxification.² Adjusted marginal means.