

# A randomized controlled trial of intensive referral to 12-step self-help groups: One-year outcomes

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## Abstract

**Objective:** This study implemented and evaluated procedures to help clinicians make effective referrals to 12-step self-help groups (SHGs).

**Methods:** In this randomized controlled trial, individuals with substance use disorders (SUDs) entering a new outpatient treatment episode ( $N=345$ ; 96% had previous SUD treatment) were randomly assigned to a standard referral or an intensive referral-to-self-help condition and provided self-reports of 12-step group attendance and involvement and substance use at baseline and at six-month and one-year follow-ups (93%). In standard referral, patients received a schedule for local 12-step SHG meetings and were encouraged to attend. Intensive referral had the key elements of counselors linking patients to 12-step volunteers and using 12-step journals to check on meeting attendance.

**Results:** Compared with patients who received standard referral, patients who received intensive referral were more likely to attend and be involved with 12-step groups during both the first and second six-month follow-up periods, and improved more on alcohol and drug use outcomes over the year. Specifically, during both follow-up periods, patients in intensive referral were more likely to attend at least one meeting per week (70% versus 61%,  $p=.049$ ) and had higher SHG involvement (mean = 4.9 versus 3.7,  $p=.021$ ) and abstinence rates (51% versus 41%,  $p=.048$ ). Twelve-step involvement mediated the association between referral condition and alcohol and drug outcomes, and was associated with better outcomes above and beyond group attendance.

**Conclusions:** The intensive referral intervention was associated with improved 12-step group attendance and involvement and substance use outcomes. To most benefit patients, SUD treatment providers should focus 12-step referral procedures on encouraging broad 12-step group involvement, such as reading 12-step literature, doing service at meetings, and gaining self-identity as a SHG member.

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**Keywords:** Substance use disorder; Randomized controlled trial; 12-Step self-help

## 1. Introduction

Twelve-step self-help groups (SHGs) are recognized as important to the system of care for substance use disorder (SUD) patients. By providing continuing support and structure, SHGs serve to reduce rates of post-treatment relapse and subsequent treatment utilization (O'Brien and McClellan, 1996). The American Psychiatric Association (1995) recommends referrals to SHGs for patients with SUDs, and large proportions

of active 12-step group members first initiated meeting attendance because of a referral from a SUD treatment program (Thomassen, 2002).

This study implemented and evaluated procedures to help clinicians make more effective referrals to 12-step SHGs. SUD outpatients were randomly assigned to a standard referral or an intensive referral-to-self-help condition. We examined whether intensive referral, compared to standard referral, increased patients' SHG attendance and involvement (e.g., having a sponsor) over two consecutive six-month follow-up periods. We also determined whether patients who received intensive referral had better substance use outcomes over the year. Further, we determined the extent to which more 12-step SHG attendance and involvement were related to better substance use outcomes.

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### 1.1. Intensive referral and 12-step SHG attendance and involvement

Although most formally treated SUD patients are referred to SHGs (Humphreys, 1997), under usual referral, patients often do not attend or drop out of these groups quickly (Chappel, 1991; Humphreys et al., 1999; Littrell, 1991). An early study of individuals with alcohol use disorders (AUDs) and spouses of such individuals found that all 10 clients in an intensive referral condition attended SHGs (Alcoholics Anonymous [AA] or Al-Anon) over four weeks, compared to none of 10 clients in the standard referral condition (Sisson and Mallams, 1981). In intensive referral, the client called a SHG member during a counseling session to arrange to go to a meeting together. In standard referral, the counselor provided a description of self-help, a meeting schedule, and encouragement to attend SHG meetings.

Project MATCH found that outpatients in a 12-week Twelve Step Facilitation (TSF) treatment condition, which encouraged AA attendance, had more AA attendance and involvement during treatment, and at one- and three-year follow-ups, than did clients in a Cognitive Behavioral (CB) Therapy or Motivational Enhancement Therapy condition (Carroll et al., 1998; Project MATCH Research Group, 1998; Tonigan et al., 2002). Consistent with Project MATCH, the VA Multisite Evaluation of Substance Abuse Treatment found that, at a one-year follow-up, SUD patients in TSF or combined TSF/CB programs were more likely than patients in CB programs to have attended SHG meetings, and were more involved in self-help (e.g., were more likely to talk with a sponsor, and to read AA and/or Narcotics Anonymous [NA] literature) (Humphreys et al., 1999). In contrast to Sisson and Mallams' (1981) intensive referral condition, TSF was much more than a referral to AA (Project MATCH Research Group, 1997), but the intensive referral and TSF were broadly comparable in that both encouraged participation in SHGs. Based on these and preliminary findings from the sample of SUD patients studied here (Timko et al., 2006), we expected that intensive referral to self-help, compared to standard referral, would result in more 12-step SHG meeting attendance and involvement at both six months post-referral and six months after that.

### 1.2. Intensive referral and substance use outcomes

Preliminary findings on this sample also indicated that, compared to patients who received standard referral, those who received intensive referral had better alcohol and drug use outcomes at six months. In this paper, we extend this work by examining the effects of referral condition on SHG attendance and involvement and SUD outcomes at one year, and considering the extent to which involvement mediated the association between referral condition and one-year outcomes. With regard to mediation, among cocaine-dependent patients, higher scores on an index assessing both 12-step group involvement and endorsement of 12-step philosophy partially mediated the positive relationship between receiving outpatient counseling that encouraged participation in 12-step groups and more improve-

ment on drug use outcomes during a six-month follow-up period (Crits-Christoph et al., 2003). Another study of cocaine-dependent patients found that 12-step SHG attendance did not predict subsequent drug use, but more 12-step SHG involvement in a given month predicted less cocaine use in the next month (Weiss et al., 2005). These results underscore the distinction between attendance and involvement and the need to consider the role of involvement in improved SUD outcomes over time.

To summarize, this project used a randomized design in which patients entering outpatient SUD treatment were assigned to either standard or intensive referral to 12-step SHGs. Patients were followed at six months and one year to determine whether intensive referral resulted in more 12-step SHG attendance and involvement and in better substance use outcomes. We also examined the extent to which 12-step involvement predicted better substance use outcomes above and beyond SHG meeting attendance, and mediated between referral condition and substance use outcomes.

## 2. Methods

### 2.1. Sample

Patients were included on the basis of the following criteria: (1) entering SUD outpatient treatment at a Department of Veterans Affairs (VA) program, and (2) clinically judged by program staff to be cognitively able to understand the study's questionnaire and interview procedures. The 28-day treatment program had a combined CB/TSF orientation that explored the interpersonal consequences of substance misuse. Treatment was abstinence-based with patient activities (e.g., therapy oriented toward relapse prevention, psychoeducation) scheduled each weekday. After receiving an introduction to the study, participants signed an informed consent form. All study procedures, including those used to protect the confidentiality of protected health information, were approved by Stanford University's Institutional Review Board for Human Subjects in Medical Research.

### 2.2. Procedure

**2.2.1. Counselor training.** Because of the importance of establishing and maintaining the distinctiveness of the referral conditions, 12 counselors were randomly assigned to deliver either the standard or intensive referral condition (Dennis, 1990, 1994). The counselor characteristics of gender and training were balanced between groups. To ensure counselors' readiness to deliver the intervention to which they were assigned, we included a start-up practice phase; counselors were certified after successful completion of training cases (for details, see Timko et al., 2006).

**2.2.2. Conditions.** Standard referral procedures were designed to reflect current practices in VA SUD outpatient clinics, whereas intensive procedures were designed to be quite distinct from standard referral and feasible to implement routinely. Both the standard and intensive referral conditions included patients' attendance at a minimum of three individual sessions within one month; beyond these sessions, counselors determined how much outpatient care patients received. Patients were randomly assigned to condition using permuted blocking, whereby ID numbers to be given sequentially to participants were randomly preselected within different sized blocks to be assigned to each condition.

**2.2.3. Standard referral.** During the first session, the counselor gave the patient a schedule of AA and NA meetings in the local area and encouraged the patient to attend 12-step SHG meetings based on a standardized script. Counselors in the standard condition were asked not to provide the components of intensive referral for the remainder of patients' outpatient treatment. During the stan-

standard referral sessions, counselors and patients reviewed relapse prevention and psychoeducation treatment foci.

**2.2.4. Intensive referral.** During the first session, the counselor gave the patient a schedule of local 12-step SHG meetings (as in standard referral) and a list of local meetings favored by other patients who had been in the outpatient program, with the times and locations of, and directions to, those meetings. In addition, the counselor and patient reviewed a handout on 12-step SHGs for alcohol and drug misuse (McCrary et al., 1996, 1999) that provided an introduction to 12-step philosophy, structure, and terminology, addressed common concerns about participation, and encouraged patients to set goals (attend self-help, work the first steps, join a home group, and obtain a sponsor). The counselor arranged a meeting between the patient and a participating member of an AA or NA group; specifically, the counselor and patient called a SHG volunteer during the session and the volunteer arranged to meet the patient before an AA or NA meeting so they could attend the meeting together. (Project staff members served as liaisons between counselors and SHGs to coordinate the availability of volunteers.) The patient and the counselor agreed on the 12-step SHG meetings to be attended before the next session, and this agreement was written into a journal the counselor provided to the patient. Patients in the intensive referral condition were asked to keep this journal to record SHG meetings attended (dates, times, places) and their thoughts about the meetings (or their reasons for not attending).

At the second session, the counselor asked if the patient had read and had any questions about the handout. If the patient had not attended a SHG meeting, the counselor repeated the procedure of contacting a volunteer. The counselor reviewed the journal so that any doubts the patient may have had about self-help participation could be addressed. (The project provided counselors with a list of patients' common concerns about attending SHGs and responses to them.) The patient was asked to show the counselor that the SHG's secretary had "signed off" on each meeting attended. The patient and counselor agreed on 12-step SHG meetings to be attended before the next session, and this agreement was written into the journal.

For patients who had attended a 12-step SHG meeting, the counselor provided a list (coordinated by project staff) of currently available sponsors who were active in that group. The counselor recommended, in writing in the journal, that the patient obtain a temporary sponsor from this list and reviewed how to do so. The counselor addressed any concerns the patient may have had about asking for and working with a sponsor (using project-provided responses).

At the third session, the procedure for contacting the SHG volunteer was repeated if the patient had not yet attended a meeting, the counselor reviewed the journal, and the patient wrote in the agreement for next week's 12-step meeting attendance. Counselors checked with patients who had already attended a meeting and had received a list of potential sponsors as to whether they had contacted an individual about sponsorship.

SHG volunteers were recruited by project staff attending local 12-step group meetings and meetings of treatment program alumni, and by working with AA and NA "Bridging the Gap" volunteers (who introduce 12-step SHGs to newcomers in treatment). Volunteers interacted with an average of seven patients. They were not reimbursed and viewed their interactions with patients as part of working the 12th step of SHG programs: carrying the message to others.

**2.2.5. Monitoring fidelity.** The fidelity of the standard and intensive referral procedures was monitored (Timko et al., 2006). Each time participants met with treatment counselors for the three outpatient sessions, both the patient and the counselor completed checklists rating the session; in addition, a research assistant blind to the patient's random assignment rated a sample of audiotaped sessions (52% of all sessions). Each of these three raters (research assistants, counselors, and patients themselves) rated the majority of patients assigned to the intensive condition as having received each of the three key elements of that condition: being linked to a volunteer, completing a 12-step journal, and being asked about 12-step meeting attendance.

### 2.3. Measures

**2.3.1. Baseline.** Self-report data were collected from study participants at intake to SUD outpatient treatment. These data included demographics (gen-

der, age, race and ethnicity, education, employment, and marital status), lifetime and recent substance use, and previous self-help for SUDs.

**2.3.2. Substance use.** The Addiction Severity Index (ASI) (McLellan et al., 1980, 1985a,b) was used to collect information on patients' substance use. The ASI is a structured, 40-min clinical research interview that assesses seven problem areas, two of which are alcohol use and drug use. In each area, questions are asked that measure the number, extent, and duration of symptoms in the patient's lifetime and in the past 30 days. ASI composites are used as outcome criteria that are compared between baseline and follow-ups. The composite scores are produced from sets of objective items that are standardized and summed; they provide internally consistent evaluations of patient status in the problem areas (McKay et al., 1994). The ASI composites range from zero to one, with higher scores indicating more severe problems.

**2.3.3. 12-Step self-help.** To measure 12-step SHG attendance and involvement, we used the AA Affiliation Scale (AAAS) (Humphreys et al., 1998). Regarding 12-step group attendance, at baseline, participants were asked if they had ever attended a 12-step SHG meeting (no or yes), and if so, the total number of meetings attended. Regarding 12-step group involvement, participants were asked if they had ever: read 12-step group literature, done service at a meeting (e.g., helped newcomers, set up chairs, made coffee, cleaned up afterwards), had a 12-step group sponsor, been a 12-step group sponsor, had a spiritual awakening or conversion experience since being involved in a 12-step group, considered themselves a 12-step group member, gone to 90 meetings in 90 days, celebrated a 12-step birthday, and called a 12-step group member for help; participants were also asked if they currently had a 12-step sponsor. Overall Involvement is the sum of "yes" responses to these 10 items.

**2.3.4. Follow-ups.** Patients were followed at six months and one year after intake to outpatient treatment. Follow-up assessments covered substance use outcomes and 12-step group attendance and involvement. The interviews were conducted by telephone by a project research assistant who was blind to patients' condition assignment.

The ASI was used to obtain information on patients' alcohol and drug use. To measure self-help attendance and involvement, the time frame used at baseline on the AAAS (i.e., "ever") was changed to refer to the last six months. Thus, the extent of attendance and involvement was measured for the intervals from baseline to the six-month follow-up and from the six-month to the one-year follow-up. Because previous studies have noted the importance of differentiating between 12-step SHG exposure and regular attendance (Thomassen, 2002), patients were classified as to whether or not they had attended at least one meeting (i.e., were exposed to SHGs), and attended at least one meeting per week (i.e., regular attendance as measured by Fiorentine, 1999; Gossop et al., 2003; Toumbourou et al., 2002; Witbrodt and Kaskutas, 2005). There is support for the reliability and validity of self-reports regarding participation in 12-step groups (Morgenstern et al., 1997; Tonigan et al., 2002).

### 2.4. Power and data analyses

Regarding power, based on previous findings, we expected to find a small to medium effect size between the standard and intensive referral groups on self-help participation and substance use outcomes (Humphreys and Moos, 1996; Project MATCH Research Group, 1998; Sisson and Mallams, 1981). To allow an 80% likelihood of detecting a small effect size at the 5% level of significance, a sample size of 134 in each referral condition was required (Kraemer and Thiemann, 1987).

Regarding data analysis, we compared patients assigned to the standard or intensive referral condition on baseline characteristics and follow-up outcomes using chi-square tests for dichotomous variables and *t*-tests for continuous variables. We also compared patients who regularly attended 12-step SHGs to those who did not on ASI composite change (baseline minus one year) scores (using *t*-tests) and abstinence at both six months and one year (using chi-square tests). Specifically, we compared patients who: (a) attended at least one meeting during both follow-up periods to those who did not (i.e., attended no meetings during one or both intervals); and (b) attended meetings at least once a week during both follow-up periods to those who did not. We used similar procedures to compare

patients who reported different types of involvement in 12-step SHGs to those who did not on the substance use outcomes. Finally, we conducted multiple regression analyses to determine the extent to which 12-step SHG involvement predicted improvement on alcohol and drug use when 12-step meeting attendance was considered. Specifically, in the first block of predictors, we entered referral condition and one indicator of attendance: attended at least one meeting in each six-month period; or, attended at least one meeting per week during each six-month period. In the second block, we entered the Overall Involvement score. We also used multiple regression to find out whether 12-step group involvement was a mediator between referral condition and alcohol and drug outcomes at the one-year follow up. To examine mediation (Kenny et al., 1998), first, referral condition was entered as the independent variable in a regression to predict the ASI alcohol or drug composite change score. Secondly, referral condition was entered as the independent variable in a regression to predict Overall Involvement. Thirdly, referral condition and involvement were entered together in a regression to predict the ASI alcohol or drug composite change score. Analyses were conducted using SPSS.

### 3. Results

#### 3.1. Patients

Fig. 1 summarizes the flow of patients through the trial. Of the 384 patients who were assessed for eligibility, 345 were randomly assigned. Excluded were 39 patients because of refusal ( $n=37$ ) or cognitive impairment ( $n=2$ ). In all, 164 patients were randomly assigned to the standard referral group (146 [89%] were followed at one year) and 181 to the intensive referral group (161 [89%] were followed at one year). (For patients' attendance at outpatient sessions and its association with SHG attendance and involvement and substance use outcomes at six months, see Timko et al., 2006.) The 18 stan-

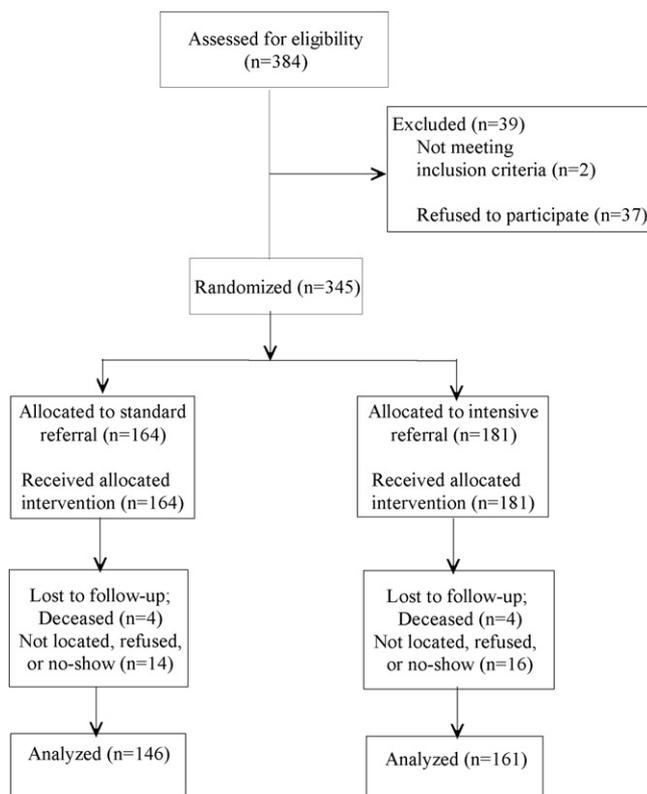


Fig. 1. Flow of patients through the trial.

Table 1  
Baseline characteristics of standard and intensive referral patients

	Standard	Intensive	$X^2/t$	$p$
Percent male	97.6	97.8	.00	1.00
Percent Caucasian	39.0	47.0	1.89	.17
Percent married	15.0	12.1	.38	.53
Age	50.7	50.2	.68	.49
Years of education	13.1	13.3	-1.09	.27
Days employed in past month	1.7	1.7	.02	.98
ASI alcohol composite	.279	.289	-.69	.41
ASI drug composite	.115	.135	-1.43	.15
Number of previous SUD treatment episodes	8.8	8.5	.26	.80
Percent ever attended a SHG meeting	98.2	95.6	1.13	.29
Number of SHG meetings ever attended	481.4	476.8	.05	.96

Note: SUD refers to substance use disorder; SHG refers to self-help group.

dard referral patients lost to follow-up were deceased ( $n=4$ ) or unable to be located, located but refused, or located and agreed to be interviewed but nonetheless an interview was not completed ( $n=14$ ). The 20 intensive referral patients lost to follow-up were deceased ( $n=4$ ) or not located, refused, or no-shows ( $n=16$ ). Recruitment took place from January 2003 to February 2004; collection of follow-up data was completed in March 2005.

#### 3.2. Baseline comparisons of standard and intensive patients

In comparisons of patients assigned to the standard or intensive referral condition on baseline sociodemographic characteristics, ASI alcohol and drug composite scores, previous SUD treatment, and 12-step meeting attendance, no differences were found between groups (Table 1). Of the sample, 98% were male, 43% were Caucasian, and 13% were married. On average, participants were 50 years old, had 13 years of education, had worked only 1.7 days in the past month, and had 8.8 previous episodes of professional treatment. Only 4.4% of patients had never received SUD treatment. Most (96.8%) of the sample had previously attended a 12-step meeting (median = 150 meetings). At intake, patients' substances of choice were: alcohol (45.9% of the sample); cocaine (36.0%); amphetamines (8.1%); cannabis (21.9%); heroin (7.2%); methadone (7.5%); other opiates or analgesics (7.2%); sedatives, hypnotics, or tranquilizers (4.5%); and barbiturates (.6%). Fully 41.6% of patients were using more than one substance.

#### 3.3. Baseline comparisons of patients followed or not followed at one year

Among the 337 patients not known to have died by the one-year follow-up, we compared patients followed ( $n=307$ ; 93%) or not followed ( $n=30$ , 7%) at one year. The two groups did not differ on baseline sociodemographics, the ASI alcohol composite, or 12-step group attendance and involvement. Those followed had more severe drug problems assessed on the ASI

Table 2  
12-Step group attendance and involvement for standard ( $n = 146$ ) and intensive ( $n = 161$ ) referral patients

	Standard			Intensive			OR	95% CI	$X^2$	d.f.	$p$
	$N$	%	S.D.	$N$	%	S.D.					
12-Step group attendance											
At least one meeting	101	69.1	45.5	125	77.8	42.8	1.63	0.99–2.68	2.76	1	.048
At least one meeting per week	89	61.0	48.3	113	70.0	46.9	1.38	1.35–1.40	2.71	1	.049
12-Step group involvement											
Read 12-step group literature	76	52.0	50.0	113	70.2	47.0	2.61	1.60–4.25	10.81	1	.000
Provided service at a meeting	42	29.1	46.6	65	40.6	48.9	1.79	1.73–1.85	3.93	1	.024
Been a 12-step group sponsor	11	7.3	26.7	11	6.6	24.5	0.93	0.87–0.99	0.04	1	.425
Had a spiritual awakening	35	23.8	43.9	71	44.4	49.7	2.75	2.65–2.85	12.71	1	.000
Considered self a 12-step member	72	49.1	50.2	98	60.6	49.5	1.72	1.66–1.78	3.84	1	.025
Gone to 90 meetings in 90 days	50	34.5	48.3	63	38.9	48.5	1.24	1.20–1.28	0.55	1	.230
Celebrated a 12-step birthday	83	57.2	49.3	118	73.6	45.1	2.23	2.15–2.31	8.32	1	.002
Had a sponsor	85	58.4	49.0	105	65.5	48.3	1.41	1.37–1.46	1.53	1	.217
Called a 12-step member for help	66	45.3	50.1	87	53.2	50.2	1.43	1.38–1.47	1.70	1	.097
Have a sponsor now	35	24.2	44.2	57	35.4	47.4	1.87	1.81–1.95	4.07	1	.022
	$N$	$M$	S.D.	$N$	$M$	S.D.	$M$ difference	95% CI	$t$	d.f.	$p$
Overall Involvement	146	3.7	2.9	161	4.9	3.0	–1.20	–1.71 to –.594	–2.04	305	.021

Note: Numbers designate patients who met each attendance and involvement criterion at both the first six-month and the second six-month follow-ups.

composite at baseline than did patients who were not followed ( $p < .05$ ).

### 3.4. Follow-up comparisons of standard to intensive patients on attendance and involvement

We compared patients assigned to the standard or intensive referral condition on indices of 12-step group attendance combining information obtained at the six-month follow-up (covering the interval from baseline) and at the one-year follow-up (covering the interval between the six-month and one-year follow-up). To “get credit,” patients had to have said yes to an item at both follow-ups (e.g., did you attend a 12-step SHG meeting). Results are presented in Table 2. Intensive-referral patients were more likely to attend at least one meeting and to attend at least one meeting per week during both the first six months and the second six months of follow-up. In addition, intensive referral patients attended a greater number of meetings during the interval between the six-month and one-year follow-ups than did standard referral patients (not tabled; means = 45.8 versus 37.2, S.D.s = 46.8 and 42.8,  $t = 2.96$ ,  $p = .043$ ); for the parallel

comparison for the interval between baseline and six months, see Timko et al. (2006).

On involvement, patients in the intensive condition were more likely than patients in the standard condition to engage in each of the following 12-step group practices during both the first and second six-month follow-up periods: read 12-step literature, provided service during a SHG meeting, had a spiritual awakening due to 12-step participation, considered self to be a 12-step group member, celebrated a 12-step birthday, and currently had a sponsor (Table 2). Overall Involvement scores were higher on average for intensive-referral patients (Table 2).

### 3.5. Comparing standard- to intensive-referral patients on substance use outcomes

Comparisons of patients assigned to the standard or intensive referral condition on ASI composite change scores (baseline minus one year) showed that, on average, patients in the intensive condition improved more on alcohol use and drug use than did patients in the standard condition (Table 3). In addition, patients in the intensive condition were more likely to be abstinent from

Table 3  
ASI composite change scores and abstinence for standard ( $n = 146$ ) and intensive ( $n = 161$ ) referral patients

ASI composite change score	Standard			Intensive			$M$ difference	95% CI	$t$	d.f.	$p$
	$N$	$M$	S.D.	$N$	$M$	S.D.					
Alcohol <sup>a</sup>	146	.133	.292	161	.218	.300	–.085	–.143 to –.027	–2.22	305	.008
Drugs <sup>a</sup>	146	.067	.119	161	.098	.118	–.031	–.055 to –.008	–2.02	305	.013
	$N$	%	S.D.	$N$	%	S.D.	OR	95% CI	$X^2$	d.f.	$p$
Abstinent <sup>b</sup>	59	40.6	49.9	83	51.4	50.2	1.60	1.00–2.55	2.75	1	.048

<sup>a</sup> Change scores were calculated as baseline minus one year.

<sup>b</sup> At both the six-month and one-year follow-ups.

Table 4  
SHG meeting attendance and substance use outcomes

ASI composite change score	Attended at least one meeting						<i>M</i> difference	95% CI	<i>t</i>	d.f.	<i>p</i>
	No			Yes							
	<i>N</i>	<i>M</i>	S.D.	<i>N</i>	<i>M</i>	S.D.					
Alcohol <sup>a</sup>	80	.146	.302	227	.214	.303	−.067	−.140 to −.005	−1.52	305	.131
Drugs <sup>a</sup>	80	.069	.099	227	.087	.125	−.018	−.043 to −.007	−1.15	305	.254
	<i>N</i>	%	S.D.	<i>N</i>	%	S.D.	OR	95% CI	<i>X</i> <sup>2</sup>	d.f.	<i>p</i>
Abstinent <sup>b</sup>	49	33.8	47.7	79	49.2	50.1	1.90	1.83–1.96	4.90	1	.027

ASI composite change score	Attended at least one meeting per week						<i>M</i> difference	95% CI	<i>t</i>	d.f.	<i>p</i>
	No			Yes							
	<i>N</i>	<i>M</i>	S.D.	<i>N</i>	<i>M</i>	S.D.					
Alcohol <sup>a</sup>	105	.144	.261	202	.223	.321	.078	.015–.141	−2.05	305	.020
Drugs <sup>a</sup>	105	.087	.116	202	.081	.121	−.007	−.033 to .019	.43	305	.666
	<i>N</i>	%	S.D.	<i>N</i>	%	S.D.	OR	95% CI	<i>X</i> <sup>2</sup>	d.f.	<i>p</i>
Abstinent <sup>b</sup>	44	30.3	46.2	85	52.9	50.1	1.61	1.60–1.62	12.33	1	.000

<sup>a</sup> Change scores were calculated as baseline minus one year.

<sup>b</sup> At both the six-month and one-year follow-ups.

alcohol and drugs at both the six-month and one-year follow-ups than were patients in the standard condition (Table 3).

### 3.6. 12-Step group attendance and substance use outcomes

Having found that patients in the intensive referral condition were more likely to have attended at least one 12-step meeting, and to have attended meetings regularly (at least one time per week), during both the first and second six months of follow-up, we next examined associations between attendance and improvement at one year on outcomes (Table 4). Patients who attended at least one meeting during both time periods did not improve more on ASI alcohol or drug composite scores than did those who did not attend at least one meeting during both intervals. However, patients who attended at least one meeting during both time periods were more likely to be abstinent at both time periods from both alcohol and drugs than were patients who did not attend a meeting.

Patients who attended meetings once a week or more during both time periods improved more on ASI alcohol scores than did patients who attended meetings less regularly. The two groups did not differ on drug-related improvement. Patients who attended meetings once a week or more were more likely to be abstinent (at both follow-ups) than were patients who attended meetings less frequently.

### 3.7. 12-Step group involvement and substance use outcomes

Having found that patients in the intensive referral condition were more involved in 12-step groups and had better alcohol and drug use outcomes over the follow-up year, we next examined associations between each indicator of 12-step group involve-

ment that was associated with referral condition (see Table 2) and improvement over the year on outcomes. Specifically, we compared patients who reported each type of involvement to those who did not on ASI alcohol use and drug use composite change scores and abstinence (Table 5). Patients who read 12-step literature, did service at a meeting, and considered themselves a 12-step group member at both the first six months and the next six months of follow-up improved more on alcohol use and on drug use during the year and were more likely to report abstinence at both six months and one year. Improvement on alcohol was also associated with currently having a sponsor; improvement on drugs with having had a spiritual awakening; and abstinence with both having a sponsor and having had a spiritual awakening.

More Overall Involvement was significantly correlated with more improvement from baseline to one year on alcohol ( $r = .14$ ,  $p < .05$ ) and drugs ( $r = .17$ ,  $p < .01$ ). More Overall Involvement was also associated with higher rates of abstinence (at both the six-month and one-year follow-ups) from both alcohol and drugs ( $X^2 = 14.14$ ,  $p < .001$ ). The findings for involvement are illustrated in Fig. 2. Individuals who were not involved in any 12-step practices had a 26% likelihood of abstinence at both the six-month and one-year follow-ups from alcohol and drugs. In contrast, individuals who were involved in nine or more 12-step practices had an 83% likelihood of being abstinent on both occasions.

As noted, we conducted multiple regression analyses to determine the extent to which 12-step group Overall Involvement predicted improvement on alcohol and drug use when 12-step meeting attendance (i.e., at least one meeting; at least one meeting per week) was considered. In each regression examining alcohol use, more involvement was a significant independent predictor of more improvement (betas = .140 and .164, respectively, both  $ps < .05$ ). In each regression examining drug use,

Table 5  
ASI composite change scores and abstinence according to indicators of 12-step SHG involvement

	Engaged in 12-step practice						M difference	95% CI	t	d.f.	p
	No			Yes							
	N	M	S.D.	N	M	S.D.					
<b>Alcohol</b>											
Read 12-step group literature	95	.128	.308	212	.199	.291	-.071	-.133 to -.009	-1.89	305	.029
Provided service at a meeting	166	.148	.295	141	.212	.299	-.064	-.121 to -.006	-1.84	305	.033
Had a spiritual awakening	172	.170	.298	135	.189	.300	-.018	-.077 to .039	-0.53	305	.297
Considered self a 12-step member	104	.111	.276	203	.211	.304	-.099	-.157 to -.040	-2.79	305	.003
Celebrated a 12-step birthday	89	.132	.296	218	.196	.298	-.063	-.126 to -.003	-1.66	305	.049
Have a sponsor now	190	.144	.276	117	.235	.324	-.091	-.152 to -.029	-2.45	305	.007
<b>Drugs</b>											
Read 12-step group literature	95	.058	.116	212	.099	.118	-.041	-.066 to -.015	-2.66	305	.004
Provided service at a meeting	166	.073	.115	141	.101	.124	-.028	-.054 to -.002	-1.78	305	.038
Had a spiritual awakening	172	.073	.113	135	.102	.129	-.029	-.055 to -.002	-1.80	305	.036
Considered self a 12-step member	104	.067	.117	203	.095	.120	-.027	-.052 to -.002	-1.79	305	.037
Celebrated a 12-step birthday	89	.067	.120	218	.091	.119	-.023	-.050 to -.002	-1.50	305	.068
Have a sponsor now	190	.075	.115	117	.100	.129	-.025	-.053 to -.054	-1.56	305	.060
<b>Abstinent</b>											
	N(%)	%Abstinent	S.D.	N(%)	%Abstinent	S.D.	OR	95% CI	X <sup>2</sup>	d.f.	p
Read 12-step group literature	95(31)	31.3	46.6	212(69)	53.7	50.0	2.55	1.64–3.95	12.66	1	.000
Provided service at a meeting	166(54)	31.4	46.6	141(46)	70.7	45.8	5.27	3.31–8.38	37.84	1	.000
Had a spiritual awakening	172(56)	38.1	48.8	135(44)	58.9	49.5	2.33	1.50–3.61	10.24	1	.001
Considered self a 12-step member	104(34)	37.1	48.5	203(66)	51.7	50.1	1.82	1.20–2.76	5.62	1	.012
Celebrated a 12-step birthday	89(29)	29.5	45.9	218(71)	53.2	50.0	2.71	1.71–4.28	13.47	1	.000
Have a sponsor now	190(62)	36.5	47.1	117(38)	66.7	49.8	3.49	2.18–5.57	20.22	1	.000

more involvement was also a significant predictor of more improvement (betas = .176 and .252, respectively;  $p < .01$ ).

### 3.8. 12-Step group involvement as a mediator

Assignment to the intensive condition was a significant predictor of more improvement on the alcohol ( $b = .142$ ,  $p < .05$ ) and drug ( $b = .131$ ,  $p < .05$ ) composites. Assignment to the intensive condition was a significant predictor of more involvement ( $b = .230$ ,  $p < .001$ ). Referral condition was no longer a significant predictor of alcohol ( $b = .105$ ) or drug ( $b = .111$ ) use ( $p > .05$ ) when involvement was also entered ( $b = .122$ ,  $p < .05$  for alcohol;  $b = .156$ ,  $p < .01$  for drugs), indicating that involvement mediated part of the association of referral condition with alcohol and drug outcomes. The indirect effects of intensive

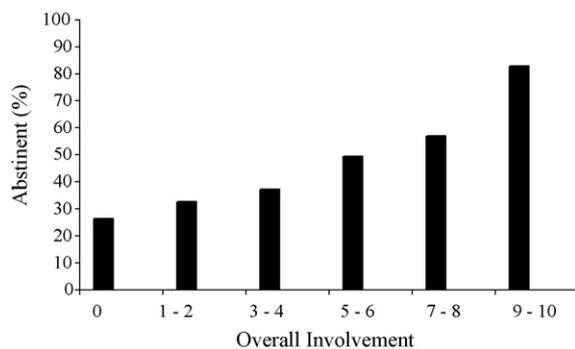


Fig. 2. Percent abstinent from alcohol and drugs at both the first and second six-month follow-ups according to 12-step involvement.

referral on alcohol use, and on drug use, improvement via Overall Involvement were significantly different from zero according to the Sobel test ( $z = 4.57$ ,  $p < .001$ ; and  $z = 2.40$ ,  $p < .05$ , respectively) (Baron and Kenny, 1986; MacKinnon and Dwyer, 1993; MacKinnon et al., 1995).

## 4. Discussion

We found that the intensive referral intervention was more effective than standard referral at promoting regular 12-step group attendance. In addition, the intensive intervention, with the key elements of connecting patients to 12-step volunteers and having counselors follow up with patients on agreements for attendance with the aid of a 12-step journal, was associated with increased 12-step involvement and more improvements on alcohol and drug use. Increased involvement occurred even though the intensive referral procedures in this study focused more on encouraging patients to attend 12-step meetings and to arrange to have a sponsor, than on getting involved in other ways, such as reading 12-step literature and providing service. Future intensive referral procedures should emphasize encouraging aspects of 12-step group involvement, in addition to attendance per se, to most benefit patients.

### 4.1. SHG attendance and SUD outcomes

Attending at least one SHG meeting per week, during both the first and second six months of follow-up, was associated with improved alcohol composite scores and higher abstinence

rates, in comparison to less frequent attendance. Similarly, AUD inpatients who attended AA on at least a weekly basis after treatment reported greater reductions in alcohol consumption and more abstinent days, compared to non-attenders or less frequent attenders, at a 6-month follow-up (Gossop et al., 2003). In addition, weekly or more frequent 12-step SHG attendance was associated with alcohol and drug abstinence at a two-year follow-up of SUD outpatients, but less than weekly participation was not (Fiorentine, 1999). Findings from all three of these studies are consistent despite differences in sample characteristics, follow-up times, and measures.

We considered why weekly SHG attendance was not associated with improved drug composite scores. A review of patients' 12-step journals suggested that patients found other members' stories related to substances that they themselves did not misuse to be relatively unhelpful. Most patients (80%) misused alcohol, whereas smaller proportions misused each specific type of drug. A perceived similarity of substance-related experiences among 12-step group members may strengthen the advantage of regular attendance. Future intensive referral interventions might help patients find 12-step groups with members who share their substance of choice, and identify commonalities between their own experiences and those of members who chose different substances.

#### 4.2. SHG involvement and SUD outcomes

More overall 12-step group involvement was associated with better alcohol and drug use outcomes and higher abstinence rates. An increase from 0 to 10 on the Overall Involvement score was associated with a 56% increase in the likelihood of abstinence. Moreover, engaging in 9 or 10 aspects of involvement, versus only 7 or 8, was associated with a 26% increase in the likelihood of abstinence. Thus, SUD treatment providers leading intensive referral interventions should encourage patients' broad involvement in 12-step groups. Possibly, such involvement may include aspects not measured here, such as speaking or reading aloud at, leading, or chairing a SHG meeting, or holding an AA or NA office (Thomassen, 2002). In light of a study of NA members finding that, on average, involvement increased over time (Toumbourou et al., 2002), perhaps patients should begin with one or two aspects of involvement and gradually increase their number of engagement practices as they become more comfortable doing so.

Involvement predicted better SUD outcomes even when meeting attendance was controlled. This finding supports others' conclusions that 12-step "dose" is not fully estimated by meeting attendance (Emrick et al., 1993), or that measures of 12-step involvement predict outcomes better than 12-step attendance does (Montgomery et al., 1995; Snow et al., 1994; Weiss et al., 2005). Some individuals attending 12-step SHGs may have difficulty embracing key aspects of SHG involvement that aid recovery (Caldwell and Cutter, 1998; Weiss et al., 2005).

In addition, Overall Involvement mediated part of the association between the intensive referral condition and less alcohol and drug use at follow-up (Crits-Christoph et al., 2003). More involvement may be positively related to abstinence

self-efficacy, which was found to mediate the effect of post-treatment AA attendance on later abstinence in people with AUDs (Bogenschutz et al., 2006). We found that three specific elements of SHG involvement were associated with both intensive referral and better SUD outcomes: reading 12-step SHG literature, providing service at a meeting, and considering oneself to be a 12-step SHG member.

Twelve-step literature can be read in the absence of attending 12-step SHG meetings (Thomassen, 2002). In this regard, Weiss et al. (2005) identified a group of "non-attending participators" who consistently were involved in 12-step activities such as reading literature, but inconsistently attended 12-step meetings. This group achieved outcomes comparable to those of a group that was both involved and attended meetings. Possibly, individuals who do not want to attend meetings could benefit from 12-step involvement that does not require meeting attendance, such as reading literature or participating in online SHGs (Weiss et al., 2005).

In one of the few studies to examine NA use, taking on a greater number of service roles was associated with better alcohol and drug use outcomes at 12 months, in part, perhaps, because more service work was associated with having a larger abstinence-oriented social network (Toumbourou et al., 2002). Another study found that providing service in AA and/or NA was the only aspect of 12-step involvement that predicted abstinence at one year post-treatment across all substance-of-choice groups (Witbrodt and Kaskutas, 2005). "Giving back" to one's peer community through service work benefits SUD outcomes because it increases individuals' commitment to recovery and self-perceptions of being important to others (Zemore et al., 2004).

Project MATCH found that self-identification as an AA member was one of the best predictors of fewer drinking days (Cloud et al., 2004). Providers might suggest sampling a variety of meetings to maximize exposure to different 12-step groups and increase the potential for a favorable client-group fit, leading to self-identification as a member. Intensive referral interventions should work through any barriers to reading literature, providing service, and membership identification (Cloud et al., 2004).

#### 4.3. Limitations

A limitation of this study was that the intensive referral intervention was delivered in an individual counseling format, despite findings that many outpatient SUD programs rely mainly on group counseling (Blume, 2002; Panas et al., 2003). However, the design of this study was based on an expert panel's determination that new VA SUD outpatients typically already receive at least 1 to 2 individual sessions (Timko et al., 2006), and that individual therapy was provided by 99% of a random, national sample of SUD treatment programs (Burling et al., 2005). We are currently evaluating an intensive referral intervention in group treatment settings.

Another limitation is that the intensive referral intervention was delivered in a treatment program with a CB/TSF orientation. Possibly, intensive referral would be more effective at increasing SHG attendance and involvement and improving SUD outcomes

in “pure” TSF-oriented programs, and less effective in “pure” CB- or other-oriented programs (Humphreys et al., 1999). Subsequent studies are needed to determine the extent to which the benefits of this intensive referral intervention generalize to programs with other treatment models, and in particular how to tailor intensive referral interventions to be effective in treatment programs lacking a clear SHG-compatible focus.

A third limitation is that patients were treated within the VA and virtually all of them were male. Publicly funded by the federal government, the VA operates the largest SUD treatment system in the United States. Generally, mental health (SUD and psychiatric) services in the VA are of similar quality and effectiveness to those in the private sector (Rosenheck et al., 2000). However, the VA patient population has poorer health status compared with the general patient population (Agha et al., 2000). The extent to which our findings will be replicated in studies of patients with more health and social resources and in other health care systems remains to be determined.

#### 4.4. Strengths and conclusions

A strength of this study is that it was a randomized controlled trial that did not impose exclusionary criteria on participants that might have reduced generalizability of the findings. Rather, the sample represented the full range of SUD outpatients, with the exception of those having relatively severe cognitive impairment. An advantage of the intensive referral intervention is that it is brief and feasible to implement routinely in “real-world” SUD outpatient programs. It could be used by primary care physicians, employee assistance programs, and clergy, and in other settings to which SUD patients may bring their problems, although staff assistance would be needed to coordinate SHG volunteers. Using peers as change agents has been shown to be feasible and successful among individuals with psychiatric disorders (Leucht and Heres, 2006) and HIV/AIDS (Messias et al., 2006).

Clinicians’ influence on patients’ involvement in 12-step SHGs provides one mechanism to enhance substance use outcomes at no additional cost. In this regard, a prospective study of individuals with AUDs found that those who initially chose to attend only self-help had lower per-person treatment costs over three years than did those who initially chose outpatient treatment, and that alcohol-related outcomes were similar for both groups (Humphreys and Moos, 1996). Patients treated in TSF programs were much more involved in 12-step SHGs and had 30% lower health care costs during the two years after discharge than did patients from CB programs, and TSF patients had higher abstinence rates as well (Humphreys and Moos, 2007). According to these findings, promoting SHG attendance and involvement during treatment appears to improve post-treatment outcomes while reducing the costs of continuing care.

This study found that an outpatient treatment program that explained and primed individuals for 12-step group attendance and involvement, as occurred in intensive referral, was effective in helping patients improve on substance use. When counselors educated patients during treatment about 12-step concepts and provided access to meetings and role models in recovery, patients attended meetings more regularly and were more involved in

12-step practices. Intensive referral to 12-step self-help during treatment may increase the likelihood that patients will maintain remission or continue to improve even after professional treatment has ended.

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