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Additional Treatment Services in a Cocaine Treatment Study: Level of Services Obtained and Impact on Outcome

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Abstract

The objective of this study was to examine the level of additional treatment services obtained by patients enrolled in the NIDA Cocaine Collaborative Study, a multi-center efficacy trial of four treatments for cocaine dependence, and to determine whether these services impact treatment outcome. Cocaine-dependent patients (N = 487) were recruited at five sites and randomly assigned to six months of one of four psychosocial treatments. Assessments were made at baseline, monthly during treatment, and at follow-ups at 9, 12, 15, and 18 months post-randomization. On average, patients received little or no additional treatment services during active treatment (first 6 months), but the rate of obtaining most services increased during the follow-up phase (month 7 to 18). In general, the treatment groups did not differ in the rates of obtaining non-protocol services. For all treatment groups, patients with greater psychiatric severity received more medical and psychiatric services during active treatment and follow-up. Use of treatment services was unrelated to drug use outcomes during active treatment. However, during the follow-up period, increased use of psychiatric medication, 12-step attendance, and 12-step participation was related to less drug use. The results suggest that during uncontrolled follow-up phases, additional non-protocol services may potentially confound the interpretation of treatment group comparisons in drug use outcomes.

Keywords

substance abuse; treatment services; treatment outcome; cocaine dependence

One concern in conducting a randomized clinical trial, especially an efficacy trial, is the extent to which protocol patients participate in non-protocol services designed to improve their overall functioning. In many studies, subjects who are currently in similar treatments to those in the protocol design are not eligible to participate. Moreover, once a trial has begun, participating in another similar treatment is grounds for designating the patient as a protocol violator. These decision rules, however, typically focus only on related treatments (e.g., psychotherapy or psychopharmacological treatments in a mental health or substance use disorder treatment study). Studies rarely if ever attempt to restrict the variety of other human services that patients can, and do, receive. Such services, such as legal, medical, and employment services, might be expected to affect patients' overall functioning.

The seeking of non-protocol services by patients in clinical trials might vary depending on the effectiveness of the protocol treatment and the phase of the study. While protocol treatment is ongoing, patients may expect the study treatment to produce positive changes and delay seeking additional helpful services. However, during the follow-up period after protocol treatment has terminated, patients may conclude that other services are needed and seek out such help. Patients who are receiving a protocol treatment that is relatively less efficacious overall might be more prone to seek other avenues to improve their functioning, including participating in other available human services. This potential confound may be especially evident during an uncontrolled follow-up evaluation phase.

Patients with substance use disorders often have a myriad of addiction-related problems. Such individuals may face legal difficulties associated with higher rates of criminal offending (criminality)¹ or medical problems associated with chronic substance use or neglect of medical care during years of addiction.² Those with substance use disorders are prone to absenteeism at work.^{3,4} Substance use disorders are associated with family problems such as child neglect^{5,6} and increased domestic violence.⁷ The existence of these legal, medical, employment, and family problems provide strong motivation for patients with substance use disorders to seek out available services to help with such problems. Once drug-dependent individuals decide to seek treatment for addiction, it is possible that such help-seeking increases the probability that they will also seek a range of human services as part of an attempt to turn their lives around.

Several studies have found that delivery of additional treatment services to individuals with substance use disorders improves functioning, treatment retention, and outcome.^{8,9} Other research has shown that when the ancillary services provided match the patient needs, provision of these services leads to a decrease in drug use.^{10,11} Furthermore, one study has shown that patients randomly assigned to an enhanced treatment condition involving more alcohol, medical, employment, and legal services than standard treatment achieve better drug use outcomes.⁸

Despite the potential importance of these ancillary services, few randomized clinical trials designed to examine the efficacy of treatments for substance use disorders have examined the amount and impact on outcome of such uncontrolled, non-protocol services. It has been shown that active outside-of-protocol participation in 12-step self-help groups can predict subsequent drug use during active treatment, but levels of 12-step participation, attendance, and relation of such activities to drug use outcomes during follow-up were not reported in the study.¹² We are unaware of any existing studies that have examined the level and effect of non-protocol treatment services obtained by patients over both active treatment and follow-up in a randomized clinical trial of treatments for substance use disorders. Presumably, the ancillary services received by some patients could confound the treatment group differences in outcome during active treatment and at follow-up assessments.

The current study examines the non-protocol treatment services obtained by patients in the NIDA Collaborative Cocaine Treatment Study, a multi-center project investigating the efficacy of four psychosocial treatments for cocaine dependence.^{13,14} A previous report presented the finding of a treatment condition difference, with the individual plus group drug counseling condition resulting in substantially superior drug use outcomes to the other three treatment conditions during 6 months of active treatment, 3 months of booster treatment, and 3 months of follow-up.¹⁴ The current report aims to present data on the level of non-protocol services received, examine any differences between treatment conditions, compare the level of services received during active treatment vs. follow-up, and examine the relation of services received to treatment outcome during active treatment and follow-up.

METHODS

Procedures

After telephone screening, eligible patients were scheduled for an intake visit whereby they provided informed consent and began a brief orientation phase. Following completion of baseline assessments and a urine drug screen, patients were randomized to one of four manual-guided treatments: cognitive therapy (CT) plus group drug counseling (GDC); supportive-expressive (SE) psychotherapy plus GDC; individual drug counseling (IDC) plus GDC; and GDC alone. Patients were randomized to treatment, with gender, marital status, employment status, mode of cocaine use, psychiatric severity, and antisocial personality traits considered to balance the treatment conditions.

Treatment involved a 6-month active phase and a 3-month booster phase. Individual treatment sessions (50 minutes) occurred twice per week during the first 12 weeks, weekly during Weeks 13–24, and monthly during the booster phase. GDC sessions (90 minutes) were held weekly during the 6-month active phase. During the booster phase, patients in the GDC-only condition met individually with the group counselor for 30 minutes once a month. Further details about the treatments and procedures can be found elsewhere.^{13,14}

Participants

Four-hundred eighty-seven patients, recruited from five sites in the northeast United States, were randomized to treatment. To be included in the study, patients (aged 18–60 years) must have received a principal diagnosis of cocaine dependence and must have reported cocaine use in the past 30 days. The Structured Clinical Interview for DSM-IV (SCID-P)¹⁵ was administered to each patient to obtain Axis I diagnostic status. Severity of the principal diagnosis was determined using a 9-point severity rating scale adapted from the Anxiety Disorders Interview Schedule – Revised;¹⁶ this rating reflected the diagnostician's judgment of distress and impairment due to each disorder.

The final patient sample was 77% male and 58% Caucasian, 40% African American, and 2% Hispanic. The average age at intake was 34 years old. Most patients lived alone (70%) and were employed (60%). On average, patients had completed 13 years of schooling. The majority were crack cocaine smokers (81%), and the remaining (19%) were intranasal users. At the time of intake, in the last month, patients had used cocaine for an average of 10 days and alcohol for an average of 7 days. The average length of cocaine use was seven years ($SD = 4.8$). Thirty-three percent of the patients met criteria for alcohol dependence, 4% for cannabis dependence, and 17% for cannabis abuse.

Therapists

Details on the selection, training, certification, and evaluation of the study therapists have been described previously.^{14,17} A total of 12 individual drug counselors, 15 CT therapists, 13 SE therapists, and 10 group drug counselors participated in the trial.

Measures

Assessments were completed at intake, post-intake (approximately 2 weeks later and prior to randomization), and then monthly for 6 months. Follow-up assessments were conducted at 9, 12, 15, and 18 months post-randomization. A variety of measures were used to assess drug use outcome and services received in several distinct categories. Outcome measures reported herein consist of the following: the Drug Use composite score, the Psychiatric composite score, and the "Use of Cocaine in the Past 30 Days" item of the Addiction Severity Index (ASI).¹⁸ Observed urine samples, a secondary outcome measure, were collected weekly and sent to be assayed for cocaine and other drugs at a central laboratory. Urine samples were collected to

examine the validity of the self-reported drug use measures. The correlation between the percentage of cocaine-free urine specimens during the first 4 weeks of treatment and reported cocaine use within the past 30 days from the ASI was 0.64 ($p < .001$). The kappa coefficient for comparing the results from weekly urine samples and the weekly self-report of cocaine use during the first month of treatment was 0.64. Specificity (conditional agreement given to a drug-positive urine test result) was 0.90 and sensitivity (conditional agreement given a drug-negative urine test result) was 0.74. This indicates that 10% of the urine test results in this study revealed some use when the patient denied using cocaine.

The Treatment Services Review (TSR)¹⁹ was used to measure the nature and number of treatment services actually received by patients during the course of treatment. It typically takes 5 minutes to complete and was administered either in person or on the phone by a trained independent research technician. The TSR records the number of problems, professional services, and discussion sessions that the patient received in each of seven problem areas covered by the ASI: 1) medical, 2) employment, 3) alcohol, 4) drug, 5) legal, 6) family, and 7) psychological/emotional. During the 6-month active treatment phase, the TSR was administered monthly and recorded services received during the past month. During the 12-month follow-up phase, the TSR was administered every 3 months and services received during the past 3 months were recorded. Composite scores were computed by adding the number of services across all items in each of the following subscales of the TSR: medical service, employment service, alcohol medication, legal service, family service, psychiatric medication, and psychiatric sessions. Because of the low frequency of services, a binary score indicating no services vs. any services was also created.

Twelve-step group attendance and participation were assessed every 3 months during follow-up, using the 29-item Weekly Self-Help questionnaire (WSH), which has shown a high degree of internal consistency.²⁰ A 12-step attendance score was computed by determining the average number of meetings that patients attended each month. A 12-step participation score was calculated by determining the average number of 12-step related activities the patient completed each month.

Statistical Analysis

To compare treatment conditions on levels of services received during the active treatment phase (baseline through month 6), we implemented a longitudinal mixed-model analysis of variance with the TSR composite scores as dependent variables. This mixed-model approach examined the average outcome over all post-baseline assessments, rather than assuming a linear slope over time. Main effects for site, time, and treatment condition were modeled, as well as a treatment by time interaction (to examine if any treatment condition differences would remain consistent over time). Time intervals were considered fixed, and baseline level of services was entered as a covariate in the model. Because the majority of responses indicated no services acquired, we also examined treatment condition differences in the proportion of patients receiving at least one service in each service area. Because this measure is binary and repeated, a generalized linear mixed model was used. We did not test for treatment condition differences in 12-step attendance and 12-step participation during the active phase since this analyses in this database was previously reported.²¹ This previous article reported that the IDC+GDC condition had higher 12-step attendance and participation throughout active treatment.²¹

Similar mixed model analyses were done to test for treatment group differences in obtaining non-protocol treatment services during the follow-up phase. These analyses included the comparison of treatment conditions on the TSR subscales and on levels of 12-step attendance and participation. Additional analyses compared services received during the active phase to services receiving during follow-up. For these analyses, new scores were created for the active phase in order to make the time frame equivalent to data obtained during the follow-up. To

accomplish this, we computed the proportion of patients who received any services during months 1–3 and months 4–6, since assessments were made every 3 months during follow-up. The analysis was a mixed-model analysis of variance that included main effects for site, phase, and treatment condition, plus the phase by treatment condition interaction (to examine if any phase effects were differential across treatment conditions). Baseline level of services was entered as a covariate in these models.

To examine the relationship between the levels of treatment services obtained and treatment outcome during active treatment, we calculated partial correlations between TSR subscales and three outcome measures: ASI Drug Use composite score, use of cocaine in past 30 days, and ASI Psychiatric composite score. All measures were averaged over the 6 post-baseline active phase monthly assessments. Partial correlations controlled for baseline scores on the TSR scales, baseline scores on the relevant outcome measure, and treatment condition. A previous article reported that consistent 12-step participation led to improved drug use outcome, while attendance and drug use outcome were not related,¹² and therefore the relation of 12-step attendance and participation and outcome during the active phase was not reported here.

Similar analyses were done to examine the relationship between treatment services (TSR subscales, 12-step attendance, and 12-step participation) and treatment outcome (ASI Drug Use composite score, use of cocaine in past 30 days, and ASI Psychiatric composite score) during follow-up. All measures were averaged over the four follow-up assessments. As with the active treatment analysis, partial correlations were calculated with follow-up measures controlling for baseline treatment services, the relevant outcome measure, and treatment condition.

RESULTS

Levels of Services Obtained During Active Treatment and Follow-Up

Overall, the mean levels of services obtained each month during active treatment and follow-up were low (Table 1 and Table 2). Obtaining some type of medical service was not uncommon, with 22% to 52% of the sample (depending on treatment group and assessment visit) receiving at least one medical service during each of the 3 month periods (Table 2). During follow-up, 12-step attendance and participation were common. The percent of patients attending at least one 12-step group ranged from 44% to 65%, and the percent of patients participating in at least one 12-step activities ranged from 52% to 70% (depending on treatment group and assessment visit).

Comparison of the treatment conditions during the active phase revealed one significant difference, $F(3, 395) = 4.77, p < .01$, with a larger percentage of patients in the SE condition receiving legal services than patients in the other conditions. The longitudinal mixed-model analysis of variance revealed no between-group differences in receiving medical services, $F(3, 397) = 0.95, p = .41$, employment services, $F(3, 397) = 1.84, p = .14$, family services, $F(3, 396) = 1.64, p = .18$, psychiatric medication, $F(3, 393) = 1.85, p = .12$, or psychiatric services, $F(3, 395) = 1.01, p = .39$, during the active treatment phase.

During the follow-up phase, the mixed-model analysis revealed no significant between-group differences in receiving medical services, $(F(3, 360) = 2.01, p = .11)$, employment services, $(F(3, 360) = 0.74, p = .53)$, medication for alcohol dependence, $(F(3, 360) = 0.45, p = .71)$, legal services, $(F(3, 358) = 1.13, p = .34)$, family services, $(F(3, 359) = 1.82, p = .14)$, psychological medication, $(F(3, 358) = 1.90, p = .13)$, psychiatric services, $(F(3, 358) = 0.70, p = .55)$, 12-step attendance, $(F(3, 406) = 1.20, p = .31)$, or 12-step participation, $(F(3, 406) = 1.55, p = .22)$.

Comparing Levels of Services Received During Active Treatment and Follow-Up

Compared to the active treatment phase, a significantly higher percentage of patients obtained treatment services in five of the seven TSR service areas during follow-up (Table 2). Differences were significant for medical services (28% to 38%), ($F(1,356) = 18.68, p < .01$), medication for alcohol dependence (0% to 2%), ($F(1,356) = 8.36, p < .01$), legal services (13% to 17%), ($F(1,354) = 5.09, p < .05$), psychiatric medication (5% to 8%), ($F(1,354) = 5.84, p < .05$), and psychiatric services (6% to 10%), ($F(1,355) = 12.16, p < .01$). The treatment by phase interactions were not statistically significant, so each phase difference was consistent across all four treatment conditions. The mixed-model analysis of variance indicated no phase difference in the percentage of patients receiving employment services, ($F(1,356) = 0.83, p = .36$), or family services, ($F(1,354) = 0.16, p = .69$), and the treatment by phase interactions were not statistically significant for these variables.

Across all treatment conditions, 12-step attendance was significantly lower during follow-up (57% in active phase compare to 50% during follow-up), ($F(1,332) = 16.97, p < .01$). Analysis of the treatment by phase interaction was not significant, ($F(3,329) = 0.70, p = .55$). Across treatment conditions, we found no main effect for phase in 12-step participation, ($F(1,332) = 1.42, p = .22$). However, the treatment by phase analysis revealed a treatment condition interaction effect in levels of 12-step participation, ($F(3,329) = 3.34, p < .05$). On average, more patients in the IDC+GDC condition participated in 12-step activities during treatment (69%) than during follow up (63%), although this within- group difference was not statistically significant. Significantly fewer patients in the GDC alone condition participated in 12-step groups during treatment (55%) than during follow-up (65%), ($t = -2.95, p < .01$).

Relation of Treatment Services to Drug Use and Psychiatric Outcome during Active Treatment

Table 3 presents the partial correlations for all TSR subscale scores and outcome variables during the active treatment phase, controlling for baseline and treatment condition. ASI drug use and use of cocaine in the past 30 days was not related to any treatment services during active treatment. Psychiatric severity was significantly correlated with medical services ($pr = .13, p < .01$), family services ($pr = .10, p < .05$), psychiatric medication ($pr = .23, p < .01$), and psychiatric sessions ($pr = .13, p < .01$) (more psychiatric impairment was associated with greater use of services).

Relation of Treatment Services to Drug Use and Psychiatric Outcome During Follow-Up

Table 3 presents the partial correlations for all TSR and WSH subscale scores and outcome variables during the follow-up phase, controlling for baseline severity and treatment condition. ASI drug use severity was significantly correlated with 12-step attendance ($pr = -.14, p < .01$) and 12-step participation ($pr = -.18, p < .01$) (greater 12-step attendance/participation associated with less drug use). Use of cocaine in the past 30 days was significantly correlated with use of psychiatric medication services ($pr = -.14, p < .01$), 12-step attendance ($pr = -.22, p < .01$), and 12-step participation ($pr = -.23, p < .01$) (more psychiatric medication use and 12-step attendance/participation associated with less cocaine use). Psychiatric outcome was significantly related to medical services ($pr = .12, p < .05$), psychiatric medication ($pr = .33, p < .01$), number of psychiatric sessions ($pr = .37, p < .01$), and legal services ($pr = -.15, p < .01$), with more psychiatrically impaired patients receiving more of these services. All other correlations were not significant.

DISCUSSION

This study examined the level and outcome effect of treatment services obtained during a randomized clinical trial for the treatment of cocaine dependence. Such additional treatment

services could confound treatment condition differences of a clinical trial if (1) treatment groups differed in the receipt of such additional services, and (2) obtaining such services was associated with treatment outcome. Previous studies have shown that providing additional services to patients can lead to improved outcomes,^{8–11} so such services might indeed produce confounds in a clinical trial.

In the current investigation, we found that patients receiving one of four different treatments obtained similar levels of non-protocol services during both active treatment and follow-up, with one exception. During the active treatment phase, we found that patients in the SE condition received more legal services than patients in the other 3 conditions. Given that we found no significant correlations between legal services and outcome, it is unlikely that this treatment condition difference had any effect on the treatment outcome differences in the trial.

On average, patients were more likely to seek out medical services, alcohol dependence medication, legal services, psychiatric medication, and psychiatric sessions during study follow-up than during active treatment. The study protocol prohibited the initiation of new medication during active treatment, but did not attempt to control it during follow-up, and patients did indeed seek out these and other services during the follow-up phase.

In general, fewer patients attended 12-step groups during follow-up compared to active phase. This was likely due to the encouragement during treatment to attend such 12-step groups. All patients received GDC treatment during the active phase, and a major component of GDC treatment is to facilitate involvement in 12-step groups. There was, however, a significant interaction of study phase with treatment condition in regard to participation in 12-step groups. While fewer patients in the IDC+GDC condition participated in 12-step activities during follow-up compared to the active treatment phase, more patients in the GDC alone condition showed participation in 12-step groups during follow-up compared to the active phase. Perhaps patients who have only group treatment during the active phase are more likely to become comfortable in such group settings, and this experience gradually carries over into participation in non-protocol 12-step groups after protocol group treatment has ended. These effects, however, were not large.

There was evidence that obtaining non-protocol services was related to psychiatric outcomes. During active treatment and follow-up, greater psychiatric severity was associated with higher reported medical services, use of psychiatric medication, and psychiatric sessions. Rather than increased treatment services influencing negative psychiatric outcome, these positive correlations likely are a function of the reverse direction of causation: participants with more psychiatric problems are more likely to seek treatment, or be referred for psychiatric treatment, during the active treatment and during follow-up.

Obtaining non-protocol treatment services during the active phase was not related to drug use outcomes. Given the lack of such relationships, and the lack of differences between treatment conditions in the receipt of non-protocol services, it seems likely that the primary active phase treatment group differences in drug use outcomes reported in the primary efficacy article¹⁴ were not confounded by any impact of non-protocol treatment services.

During the follow-up phase, some non-protocol treatment services were related to drug use outcomes. More use of psychiatric medication services was associated with less use of cocaine during the follow-up period. However, contrary to previous findings on long-term follow-up of patients with substance use problems,²² psychiatric counseling was unrelated to drug use outcomes. More 12-step attendance and participation was associated with both less use of cocaine and improved drug use outcomes overall. A previous article reported that 12-step participation, but not 12-step attendance, predicted subsequent drug use during active treatment.¹² The current report indicates that during extended follow-up, both higher 12-step

attendance and 12-step participation are related to less drug use. Because 12-step participation is related to more positive post-treatment outcomes, interventions should be designed that would encourage patients to seek out 12-step groups following the termination of their psychotherapeutic treatment. Attendance in 12-step groups may have the most impact on drug use outcome when patients are not receiving protocol psychosocial treatment. Without the regular protocol treatment sessions, it is possible that the 12-step groups become more important to patients in helping support their recovery.

Because use of psychiatric medication and 12-step attendance/participation were related to drug use outcomes, there is the possibility that such non-protocol services (self-help or professional treatment services) could influence treatment group comparisons on drug use outcomes during the follow-up phase. In the NIDA Cocaine Collaborative Study, treatment group differences that were apparent during the active phase were slightly attenuated during the follow-up phase.¹⁴ The current study reveals that use of psychiatric medication increased overall from active treatment to follow-up, but this increase was consistent across all treatment conditions, so it is unlikely that use of psychiatric medication led to this slight attenuation of treatment condition differences.

Effects seen here for participation in 12-step self-help groups may have attenuated treatment effects at follow-up. The IDC+GDC group showed relatively better efficacy compared to the other treatment groups during the active phase. This treatment group also had a decrease participation in 12-step activities from active treatment to follow-up. In contrast, the GDC alone group had relatively poorer efficacy during the active phase, but equal efficacy during the follow-up phase compared to IDC+GDC. The GDC alone group also had a significant increase in 12-step participation from the active phase to the follow-up phase, and increased 12-step participation was associated with better drug use outcomes. These findings, therefore, could partially explain the attenuated differences in drug use outcome at follow-up. Of course, there might be other treatment services, not measured here, that might be responsible for the attenuation of treatment group differences. Alternatively, this attenuation might be due to a “wearing off” of the treatment intervention effects rather than a confounding influence of non-protocol services on drug use outcomes.

It is important to note some cautions and limitations of the current study. The NIDA CCTS involved only outpatient psychosocial treatments for cocaine dependence, and it is unknown if these findings can be extended to other treatment modalities for other types of addictions. Some of the measures relied on data from patient self-report; however, the instruments (e.g., ASI, TSR) used are those most widely used in the substance abuse treatment field and have been validated in studies with similar populations. Future research is needed to replicate these findings and to determine if these findings can be extended across other treatment modalities and other addiction diagnoses. The current findings, however, suggest that addiction treatment studies should consider monitoring the use of treatment services during follow-up in order to inform interpretation of treatment group differences at such follow-up assessments. The extra burden of such assessments, however, needs to be weighed against the likelihood that treatment service differences might exist.

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TABLE 1
Means (SD) of TSR Composite Scores and 12-Step Attendance/Participation Scores Across Active Treatment and Follow-Up

Treatment	Baseline	Active treatment				Follow-up		
		Month 0	Month 1–3	Month 4–6	Month 7–9	Month 10–12	Month 13–15	Month 16–18
TSR subscale								
Medical	IDC+GDC	0.23 (1.49)	0.24 (0.53)	0.24 (0.40)	0.50 (1.37)	0.35 (0.86)	0.61 (1.73)	0.41 (1.26)
	CT+GDC	0.11 (0.44)	0.22 (0.53)	0.20 (0.60)	0.28 (0.65)	0.38 (1.22)	0.42 (0.80)	0.47 (1.06)
	SE+GDC	0.29 (1.46)	0.23 (0.67)	0.36 (1.71)	0.33 (0.99)	0.32 (0.74)	0.44 (1.34)	0.32 (0.71)
	GDC	0.11 (0.39)	0.21 (0.55)	0.21 (0.45)	0.66 (2.11)	0.49 (1.16)	0.52 (1.85)	0.49 (1.04)
Employment	IDC+GDC	0.19 (0.75)	0.15 (0.36)	0.19 (0.45)	0.41 (1.56)	0.30 (1.56)	0.14 (0.53)	0.47 (2.25)
	CT+GDC	0.26 (1.16)	0.11 (0.30)	0.21 (0.64)	0.24 (0.73)	0.21 (0.87)	0.16 (0.41)	0.07 (0.26)
	SE+GDC	0.12 (0.59)	0.11 (0.30)	0.18 (0.75)	0.37 (1.32)	0.21 (0.86)	0.56 (2.77)	0.73 (2.88)
	GDC	0.10 (0.43)	0.06 (0.23)	0.20 (1.01)	0.47 (2.22)	0.41 (1.63)	0.66 (2.05)	0.54 (1.56)
Alcohol medication	IDC+GDC	0.02 (0.19)	0.00 (0.00)	0.00 (0.00)	0.04 (0.34)	0.03 (0.24)	0.07 (0.37)	0.00 (0.00)
	CT+GDC	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.02 (0.17)	0.06 (0.28)	0.02 (0.17)	0.00 (0.00)
	SE+GDC	0.02 (0.19)	0.00 (0.00)	0.00 (0.00)	0.04 (0.21)	0.02 (0.14)	0.00 (0.00)	0.00 (0.03)
	GDC	0.19 (0.93)	0.00 (0.00)	0.02 (0.22)	0.15 (1.34)	0.52 (3.68)	0.23 (2.13)	0.32 (2.29)
Legal	IDC+GDC	0.18 (0.76)	0.09 (0.25)	0.06 (0.18)	0.11 (0.35)	0.22 (1.26)	0.23 (1.33)	0.25 (1.34)
	CT+GDC	0.06 (0.23)	0.08 (0.38)	0.03 (0.13)	0.15 (0.71)	0.15 (0.48)	0.17 (0.55)	0.16 (0.47)
	SE+GDC	0.06 (0.23)	0.12 (0.24)	0.11 (0.37)	0.17 (0.51)	0.15 (0.63)	0.25 (1.24)	0.17 (0.55)
	GDC	0.03 (0.21)	0.08 (0.30)	0.07 (0.22)	0.22 (1.06)	0.36 (1.32)	0.58 (1.90)	0.51 (2.27)
Family	IDC+GDC	0.02 (0.14)	0.02 (0.13)	0.02 (0.07)	0.09 (0.52)	0.14 (0.70)	0.08 (0.46)	0.14 (0.90)
	CT+GDC	0.04 (0.27)	0.00 (0.00)	0.03 (0.20)	0.10 (0.55)	0.13 (0.66)	0.16 (0.64)	0.12 (0.54)
	SE+GDC	0.12 (0.52)	0.07 (0.32)	0.03 (0.17)	0.06 (0.31)	0.06 (0.39)	0.01 (0.05)	0.05 (0.34)
	GDC	0.01 (0.10)	0.05 (0.36)	0.04 (0.18)	0.00 (0.03)	0.05 (0.42)	0.13 (1.07)	0.09 (0.47)
Psychiatric medication	IDC+GDC	0.04 (0.39)	0.06 (0.37)	0.09 (0.65)	1.69 (5.74)	2.60 (7.89)	3.54 (9.47)	2.80 (8.37)
	CT+GDC	0.00 (0.00)	0.00 (0.00)	0.09 (0.59)	0.67 (3.93)	0.75 (4.35)	1.27 (5.62)	1.18 (5.65)
	SE+GDC	0.13 (0.96)	0.11 (0.76)	0.28 (1.17)	1.41 (6.21)	1.48 (6.22)	1.70 (6.53)	2.05 (7.37)
	GDC	0.04 (0.27)	0.23 (1.09)	0.16 (0.69)	1.09 (5.27)	1.66 (6.57)	3.36 (9.17)	3.24 (8.50)
Psychiatric sessions	IDC+GDC	0.24 (2.05)	0.06 (0.27)	0.05 (0.31)	0.20 (0.90)	0.19 (0.63)	0.25 (1.38)	0.20 (0.70)
	CT+GDC	0.06 (0.49)	0.08 (0.68)	0.11 (0.41)	0.27 (1.38)	0.31 (1.18)	0.38 (1.60)	0.22 (0.80)

Treatment	Baseline	Active treatment				Follow-up			
		Month 0	Month 1-3	Month 4-6	Month 7-9	Month 10-12	Month 13-15	Month 16-18	
SE+GDC	0.31 (1.46)	0.03 (0.21)	0.07 (0.36)	0.15 (0.73)	0.15 (0.58)	0.23 (0.82)	0.23 (0.83)	0.17 (0.66)	
GDC	0.05 (0.29)	0.10 (0.79)	0.15 (0.73)	0.15 (0.73)	0.19 (0.75)	0.42 (1.43)	0.53 (2.06)	0.43 (1.68)	
<i>Weekly Self-Help Questionnaire</i>									
-	-	-	-	-	2.38 (2.66)	2.25 (2.75)	2.24 (2.98)	2.16 (3.04)	
-	-	-	-	-	2.11 (3.20)	1.80 (2.74)	1.94 (3.06)	1.43 (2.13)	
-	-	-	-	-	1.65 (2.58)	2.08 (3.25)	2.04 (3.03)	1.94 (3.21)	
-	-	-	-	-	2.34 (3.37)	2.03 (3.13)	2.03 (3.24)	1.56 (2.28)	
-	-	-	-	-	1.86 (1.89)	1.90 (1.97)	1.77 (1.92)	1.68 (1.98)	
-	-	-	-	-	1.61 (1.84)	1.40 (1.66)	1.48 (1.61)	1.44 (1.73)	
-	-	-	-	-	1.28 (1.61)	1.47 (1.83)	1.44 (1.88)	1.52 (1.97)	
-	-	-	-	-	1.76 (1.78)	1.69 (1.72)	1.62 (1.86)	1.56 (1.78)	
<i>12-step Attendance</i>									
-	-	-	-	-	2.38 (2.66)	2.25 (2.75)	2.24 (2.98)	2.16 (3.04)	
-	-	-	-	-	2.11 (3.20)	1.80 (2.74)	1.94 (3.06)	1.43 (2.13)	
-	-	-	-	-	1.65 (2.58)	2.08 (3.25)	2.04 (3.03)	1.94 (3.21)	
-	-	-	-	-	2.34 (3.37)	2.03 (3.13)	2.03 (3.24)	1.56 (2.28)	
-	-	-	-	-	1.86 (1.89)	1.90 (1.97)	1.77 (1.92)	1.68 (1.98)	
-	-	-	-	-	1.61 (1.84)	1.40 (1.66)	1.48 (1.61)	1.44 (1.73)	
-	-	-	-	-	1.28 (1.61)	1.47 (1.83)	1.44 (1.88)	1.52 (1.97)	
-	-	-	-	-	1.76 (1.78)	1.69 (1.72)	1.62 (1.86)	1.56 (1.78)	
<i>12-step Participation</i>									
-	-	-	-	-	2.38 (2.66)	2.25 (2.75)	2.24 (2.98)	2.16 (3.04)	
-	-	-	-	-	2.11 (3.20)	1.80 (2.74)	1.94 (3.06)	1.43 (2.13)	
-	-	-	-	-	1.65 (2.58)	2.08 (3.25)	2.04 (3.03)	1.94 (3.21)	
-	-	-	-	-	2.34 (3.37)	2.03 (3.13)	2.03 (3.24)	1.56 (2.28)	
-	-	-	-	-	1.86 (1.89)	1.90 (1.97)	1.77 (1.92)	1.68 (1.98)	
-	-	-	-	-	1.61 (1.84)	1.40 (1.66)	1.48 (1.61)	1.44 (1.73)	
-	-	-	-	-	1.28 (1.61)	1.47 (1.83)	1.44 (1.88)	1.52 (1.97)	
-	-	-	-	-	1.76 (1.78)	1.69 (1.72)	1.62 (1.86)	1.56 (1.78)	

TABLE 2
Percent of Patients Receiving At Least One Service During Baseline, Active Treatment and Follow-Up

Assessment Phase									
Treatment Condition	Baseline			Active treatment			Follow-up		
	Month 0	Month 1-3	Month 4-6	Month 7-9	Month 10-12	Month 13-15	Month 16-18		
TSR subscale									
Medical	IDC+GDC	8	30	37	36	35	52	38	
	CT+GDC	7	25	28	31	32	39	47	
	SE+GDC	11	28	25	26	35	36	33	
	GDC	8	22	26	41	39	41	41	
Employment	IDC+GDC	8	20	24	21	18	16	22	
	CT+GDC	8	16	19	21	10	19	13	
	SE+GDC	6	18	19	22	17	22	23	
	GDC	7	10	15	18	16	19	26	
Alcohol medication	IDC+GDC	0	0	0	1	1	5	0	
	CT+GDC	0	0	0	1	4	1	0	
	SE+GDC	0	0	0	3	2	0	1	
	GDC	0	0	1	2	2	1	2	
Legal	IDC+GDC	10	14	13	13	14	13	13	
	CT+GDC	6	10	6	14	16	16	20	
	SE+GDC	6	23	14	18	15	15	15	
	GDC	2	10	13	16	19	24	26	
Family	IDC+GDC	2	3	5	5	4	6	5	
	CT+GDC	2	0	4	5	7	7	7	
	SE+GDC	6	7	5	4	4	2	4	
	GDC	1	3	5	1	2	3	5	
Psychiatric medication	IDC+GDC	1	4	3	13	12	14	11	
	CT+GDC	0	0	3	3	5	6	6	
	SE+GDC	2	3	7	6	8	8	8	
	GDC	2	6	6	6	9	14	16	

Assessment Phase									
Treatment Condition	Baseline		Active treatment			Follow-up			
	Month 0	Month 1-3	Month 4-6	Month 7-9	Month 10-12	Month 13-15	Month 16-18		
Psychiatric sessions *	4	5	4	14	12	11	11		
	2	5	10	7	8	10	11		
SE+GDC	6	4	6	9	10	10	10		
GDC	3	4	8	9	13	13	14		
<i>Weekly Self-Help Questionnaire</i>									
IDC+GDC	-	-	-	65	59	55	52		
CT+GDC	-	-	-	48	46	51	47		
SE+GDC	-	-	-	48	46	51	40		
GDC	-	-	-	57	51	44	47		
IDC+GDC	-	-	-	70	65	61	57		
CT+GDC	-	-	-	63	57	59	57		
SE+GDC	-	-	-	54	56	52	54		
GDC	-	-	-	69	67	61	64		

* Note: Percentages reflect patients who attended at least one psychiatric session, one 12-step meeting, and participated in at least one 12-step activity.

TABLE 3

Partial Correlations of Treatment Services and Outcome Measures

Services	Outcome Measures					
	Active Phase			Follow-Up Phase		
	ASI Drug Use	Days used cocaine (past 0)	ASI Psychiatric	ASI Drug Use	Days used cocaine (past 30)	ASI Psychiatric
<i>TSR Subscales</i>						
Medical	.03	-.02	.13**	.07	-.05	.12*
Employment	-.01	-.06	.01	-.01	-.06	-.06
Alcohol medication	-.01	-.07	-.06	.01	-.05	-.03
Legal	-.04	-.02	.10	-.02	-.06	.15**
Family	-.03	-.06	.09	-.08	-.09	.03
Psychiatric medication	-.05	-.08	.23**	-.06	-.14**	.33**
Psychiatric sessions	-.05	-.05	.14**	.07	-.08	.37**
Weekly Self-Help Questionnaire		-	-	-	-	-
12-Step Attendance	-	-	-	-.14**	-.22**	.05
12-Step Participation	-	-	-	-.18**	-.23**	.07

Partial correlations are controlling for baseline level of the service, outcome variable, and treatment condition.

* $p < .05$.

** $p < .01$.