

From the Initial Clinic Contact to Aftercare: A Brief Review of Effective Strategies for Retaining Cocaine Abusers in Treatment

Stephen T. Higgins and Alan J. Budney

Psychosocial and pharmacological treatments for cocaine abuse are associated with high rates of attrition (e.g., Gawin et al. 1989; Higgins et al. 1993; Kang et al. 1991; Weddington et al. 1991). This is particularly unfortunate because poor drug abuse treatment retention is associated with poor outcomes. For example, several studies report that longer treatment duration predicts improved outcome: the Drug Abuse Reporting Program (DARP) (Simpson 1984), the Treatment Outcome Prospective Study (TOPS) (Hubbard et al. 1984), program-based evaluation research in therapeutic communities (DeLeon 1984), and research on the efficacy of methadone maintenance treatment (Ball and Ross 1991). Definitions of outcome varied across these studies, but typically included drug abstinence. Across all of these data sets, treatment durations of 3 months or more predicted improved outcome, and in some reports the degree of improvement was proportional to the length of time spent in treatment (Simpson 1984).

Results from more recent studies that focused exclusively on cocaine abuse also support a positive relationship between treatment retention and outcome. Wells and colleagues (1994), for example, examined abstinence in a group of 92 cocaine abusers who participated in an outpatient trial in which they received relapse prevention therapy or a 12-step support group. Across the two treatment groups, greater retention, defined as more treatment sessions, predicted less cocaine use at posttreatment and 6-month followup. Similarly, Carroll and coworkers (1993) followed 150 cocaine abusers who applied for inpatient or outpatient treatment and assessed the relationship between total days enrolled in treatment from any source during the year after baseline interview and 12-month abstinence. Abstinent subjects had significantly more days in treatment than did nonabstinent subjects.

Thus, treatment retention is associated with positive outcomes in drug abuse treatment in general and cocaine abuse treatment in particular. Of course, no causal inferences can be based on these correlations.

The greater amount of treatment received by individuals who are retained longer may indeed cause the greater reductions in drug use and other positive behavior changes observed in them, but equally plausible are the possibilities that those very improvements in reducing drug use and related behaviors cause individuals to remain in treatment longer, or that some third variable(s) causes both the greater treatment retention and improved outcomes. Controlled trials experimentally manipulating the duration of treatment are needed to determine which of these three (or more) possibilities is more accurate.

Despite these limitations in the understanding of the relationship between treatment retention and other outcome measures, considerable interest exists in identifying methods to improve retention of cocaine and other types of drug abusers in treatment. This chapter reviews the published literature on effective interventions for improving retention in cocaine abusers. While still few in number, effective strategies have been identified for addressing the following three basic issues regarding retention in treatment for cocaine abuse: (1) increasing retention between initial clinic contact and intake appointment, (2) increasing retention during treatment, and (3) increasing retention between discharge from treatment and entry into aftercare. This review includes only controlled clinical trials conducted with cocaine abusers. Studies conducted with cocaine abusers enrolled in methadone maintenance therapy were excluded because the relatively high retention rates associated with that therapy would likely increase the probability of type II errors regarding effects of other interventions on retention.

ATTENDING INITIAL INTAKE APPOINTMENTS

The authors are aware of one experimental study that has reported identifying an effective strategy for increasing attendance at initial intake appointments in cocaine abusers (Festinger et al., in press). Seventy-eight cocaine abusers who contacted an urban, outpatient treatment clinic were randomly assigned to either an accelerated or standard intake condition. In the accelerated condition, interviews were scheduled on the same day as the initial contact or on the morning of the next business day if the contact had been made after 3 p.m. In the standard condition, interviews were scheduled 1 to 3 days after the initial contact. Fifty-nine percent (23/39) of those assigned to the accelerated protocol attended their scheduled interview versus 33 percent (13/39) of those assigned to the standard protocol ($p <$

0.05). No significant differences in retention rates during treatment were discerned between patients entered via the accelerated and standard procedures, with the former and latter groups attending a mean of 11.1 and 10.1 therapy sessions, respectively.

RETAINING COCAINE ABUSERS DURING TREATMENT

Psychosocial Interventions

Six controlled trials have been reported in which a psychosocial intervention increased retention during treatment for cocaine abuse (table 1). Two of those studies compared a multicomponent behavioral treatment to drug abuse counseling from a disease-model orientation (Higgins et al. 1991, 1993). The first of those two trials was 12 weeks in duration and assigned consecutively admitted patients to the two treatment groups, while the second study was 24 weeks in duration and randomly assigned patients to the two treatments. These treatments have been described in detail previously and are only briefly outlined in this report (see Higgins et al. 1993, 1994a). The behavioral treatment combined a contingency-management program with the community reinforcement approach (CRA). In the contingency-management program, patients earned incentives in the form of vouchers redeemable for retail items contingent on submitting objective evidence of recent cocaine abstinence (i.e., cocaine-negative urinalysis). The value of the vouchers increased with each consecutive negative urinalysis test and cocaine-positive tests reset the value of the vouchers back to their initial low value. CRA therapy systematically promoted improvements in patients' family relations, social and recreational practices, vocation, and reductions in other drug use. Drug abuse counseling consisted of supportive and confrontational individual and group therapy, didactic lectures and videotapes on cocaine dependence, reliance on the disease model of addiction, and a self-help orientation. Across both trials, retention was significantly better in the behavioral than the drug abuse counseling groups. In the first study, 85 percent (11/13) of subjects assigned to the behavioral group completed 12 weeks of treatment versus 42 percent (5/12) of those assigned to drug abuse counseling ($p = 0.03$). In the second study, 58 percent (11/19) of subjects assigned to the behavioral treatment completed 24 weeks of treatment compared to 11 percent (2/19) of patients assigned to drug abuse counseling ($p < 0.01$).

Study	Treatment comparisons	No. of subjects	Treatment duration	Significant retention effect	
Psychosocial interventions					
Alterman et al. 1994	Inpatient vs. day hospital	55 56	28-31 days	89% vs. 54%	completed treatment
Carroll et al. 1991	Relapse prevention vs. interpersonal psychotherapy	21 21	12 weeks	86% vs. 57%	completed Æ 4 weeks of treatment
Higgins et al. 1991	Behavioral vs. drug abuse counseling	13 15	12 weeks	85% vs. 42%	completed treatment
Higgins et al. 1993	Behavioral vs. drug abuse counseling	19 19	24 weeks	58% vs. 11%	completed treatment
Higgins et al. 1994 <i>b</i>	Behavioral plus incentives vs. behavioral	20 20	24 weeks	75% vs. 40%	completed treatment

Study	Treatment comparisons	No. of subjects	Treatment duration	Significant retention effect	
Hughes et al. 1994	Residential w/children vs. residential	31 22	18 months	300 vs. 102	mean days of treatment
Pharmacological interventions					
Batki et al. 1994	Fluoxetine vs. placebo	32 total	12 weeks	11 vs. 3	median weeks of treatment
Gawin et al. 1989	Desipramine vs. lithium vs. placebo	24 24 24	6 weeks	37.9 vs. 32.7 vs. 30.6	mean days of treatment

The third study relevant to this section was designed to experimentally dismantle this multicomponent behavioral treatment to identify its active components (Higgins et al. 1994b). Forty patients were randomly assigned to the behavioral treatment with (N = 20) or without (N = 20) the incentive program in which patients earned vouchers by submitting cocaine-free urine specimens. The trial was 24 weeks in duration. The voucher program was in effect during weeks 1 to 12 of the trial, while during weeks 13 to 24 the two groups were treated the same. Seventy-five percent of patients assigned to the voucher group were retained for 24 weeks of treatment versus 40 percent in the no-voucher group ($p = 0.03$).

The fourth positive study randomly assigned 42 cocaine abusers to either relapse prevention or interpersonal psychotherapy treatment groups (Carroll et al. 1991). Relapse prevention is a cognitive-behavioral treatment that includes techniques to identify environmental and personal risk factors for drug use and provide skills training to help clients avoid high-risk situations and effectively cope with urges to use drugs. Interpersonal psychotherapy promotes changes in patients' interpersonal relations in order to resolve their drug use. The study was 12 weeks in duration and involved once-weekly individual therapy delivered by advanced graduate students in clinical psychology. Retention generally was higher in the relapse prevention group than the interpersonal psychotherapy group throughout the 12 weeks of treatment, but those differences were statistically significant only at week 4 (89 percent versus 57 percent, $p < 0.05$). Total number of dropouts was nearly twice as high in interpersonal psychotherapy than relapse prevention (13 versus 7), but that difference was not statistically significant.

Two subsequent trials examining the efficacy of relapse prevention have been reported. One compared it to case management in a randomized design with cocaine-dependent patients (Carroll et al. 1994) and the other compared it to 12-step-based counseling in an alternate-assignment trial with cocaine abusers (Wells et al. 1994). Each failed to observe significant differences between treatment groups in retention, but rates were somewhat higher in relapse prevention than in the comparison treatments in both trials.

In the fifth positive trial, cocaine-dependent adults (N = 111) were randomly assigned to a day hospital or inpatient treatment program (Alterman et al. 1994). Both programs were 28 days to 1 month in duration, utilized group therapy, and focused on overcoming patient denial, teaching everyday coping skills, and providing instruction on

environmental cues associated with relapse. Eighty-nine percent of patients assigned to inpatient treatment completed treatment versus 54 percent assigned to the day hospital program ($p < 0.001$).

In the sixth and final positive trial in this section, 53 cocaine-abusing women were randomly assigned to an 18-month residential treatment in which they could ($N = 31$) or could not ($N = 22$) bring one or two of their children to live with them (Hughes et al. 1995). Those assigned to the group that could bring children had a significantly longer mean length of stay (300 days) than those assigned to the group that excluded children (102 days) ($p < 0.05$).

Pharmacological Interventions

Two placebo-controlled, randomized trials were identified in which a pharmacotherapy for cocaine abuse significantly improved treatment retention (see table 1). The first was a 6-week trial comparing desipramine hydrochloride (2.5 milligrams per kilogram (mg/kg) body weight), lithium carbonate (600 mg), and placebo in 72 cocaine-dependent outpatients (Gawin et al. 1989). All subjects also received once-weekly individual, interpersonal psychotherapy. Subjects assigned to desipramine remained in treatment for an average of 37.9 ± 1.6 days versus 30.6 ± 2.5 and 32.7 ± 2.3 days in the placebo and lithium groups (contrast of desipramine versus others: $p = 0.02$). The second positive report was a 12-week trial comparing fluoxetine (40 mg/day) and placebo in 32 cocaine-dependent outpatients (Batki et al. 1994). Subjects in the fluoxetine group were retained for a median of 11 weeks versus 3 weeks for the placebo group ($p < 0.01$).

Each of these positive trials is countered by negative trials in which desipramine or fluoxetine failed to improve retention. Five randomized, controlled trials have been reported in which desipramine failed to improve retention (Carroll et al. 1994; Giannini et al. 1987; McElroy et al. 1989; Tennant and Tarver 1985; Weddington et al. 1991); similarly, the positive results with fluoxetine reported by Batki and colleagues (1994) must be weighed against the negative results from a placebo-controlled trial reported by Grabowski and colleagues (1995). In that trial, 228 cocaine-dependent patients were randomized to one of three drug conditions (placebo, 20, and 40 mg/day fluoxetine) and one of two different frequencies of weekly clinic visits to pick up medication (2 or 5 days per week). All patients participated in individual cognitive behavior therapy sessions once per week. The study included a 2-week stabilization period followed by a 12-week trial. Of the 228 patients the stabilization

period and entered the 12-week trial. Dropout rates during stabilization did not differ between the treatment groups, but retention during the trial was significantly lower in those assigned to active medication versus placebo ($p = 0.04$). Moreover, retention varied as a graded function of dose ($p < 0.05$). The placebo group had the best retention rate, followed by the 20 mg group, with the lowest retention rate being observed in the 40 mg group (placebo $>$ 20 mg $>$ 40 mg). Visit frequency also significantly affected retention ($p = 0.0001$), with patients assigned to the low-frequency schedule of clinic visits being retained longer than those assigned to the high-frequency schedule.

It merits mention that preliminary results from an ongoing, randomized trial suggest that desipramine and flupenthixol decanoate may increase treatment retention in cocaine abusers compared to placebo when the medications are administered in an outpatient setting in which minimal psychotherapy is provided (Khalsa et al. 1994).

INCREASING AFTERCARE PARTICIPATION

Positive effects on aftercare entry have been reported in three controlled trials; all were psychosocial interventions. For two (Higgins et al. 1993, 1994*b*), aftercare results were included in a followup report published after initial outcomes were reported (see Higgins et al. 1995). In one of the two trials mentioned above comparing the multicomponent behavioral treatment and drug abuse counseling (Higgins et al. 1993), 4 of 19 (21 percent) subjects in the behavioral treatment entered aftercare versus zero of 19 in the drug abuse counseling group ($p = 0.03$). Similarly, in the trial described above comparing the behavioral treatment with versus without the voucher program (Higgins et al. 1994*b*), 14 of 20 (70 percent) subjects in the group with vouchers versus 6 of 20 (30 percent) in the group without them enrolled in aftercare ($p = 0.01$). In both trials, the differential rates of aftercare entry appeared to follow directly from the differences in retention rates observed across the treatments; that is, those treatments that engendered higher retention rates were also more likely to have patients enter aftercare.

That logic does not hold for the third trial relevant to this section, which is the day hospital program versus inpatient treatment comparison described above (Alterman et al. 1994). Despite significantly higher retention rates in the inpatient treatment group

in that study, no significant treatment differences were discerned in the number of patients who entered aftercare. Twenty-five (45 percent) patients assigned to day hospital versus 17 (31 percent) patients assigned to inpatient treatment entered aftercare (N.S.). Interestingly, significant treatment differences in the number of treatment completers who entered aftercare emerged favoring the day hospital group. Twenty-five of the 30 patients (83 percent) who completed day hospital treatment entered aftercare versus 17 of the 49 patients who completed inpatient treatment ($p < 0.01$). Thus, while less effective in retaining patients in treatment, the day hospital treatment was more effective than inpatient treatment in fostering aftercare participation in treatment completers.

No published reports noting positive outcomes of pharmacotherapies on aftercare entry were identified, although preliminary results from an ongoing trial suggested that desipramine may facilitate transition from inpatient care to outpatient aftercare when the blood levels of the medication are in the therapeutic range (Hall et al. 1994).

RELATIONSHIP OF RETENTION TO COCAINE ABSTINENCE

An obvious and important issue is whether the improved retention rates observed in these trials were associated with greater cocaine abstinence. Abstinence data were not reported in the trial examining accelerated intakes and thus there is no way to know how that practice relates to cocaine abstinence (Festinger et al., in press). Abstinence data were included in seven of the eight reports shown in table 1 regarding retention in treatment (the exception being Hughes et al. 1995). Significantly greater cocaine abstinence was documented in the treatment groups with superior retention in five of those seven reports (Batki et al. 1994; Gawin et al. 1989; Higgins et al. 1991, 1993, 1994*b*); a nonsignificant trend in the same direction was evident in a sixth report (Carroll et al. 1991). The exception was the Alterman and colleagues' study (1994) in which inpatient treatment was more effective in retaining patients during the initial treatment period while day hospital treatment was more effective in getting completers to enter aftercare. No significant treatment group differences were discerned in abstinence levels assessed at 7-month followup. In the two other trials in which there were treatment group differences in the number of patients who entered aftercare, significantly more abstinence was observed in the treatment groups with greater aftercare participation (Higgins et al. 1995). Thus, in

the majority of studies, treatments that increased retention also increased cocaine abstinence.

CONCLUSIONS

The most important conclusion to be drawn from this brief review is that the high rates of attrition so commonly observed with cocaine abusers are not inevitable. Strategies can be devised to improve retention between the initial clinic contact and intake interview, during the treatment episode, and between completion of treatment and entry into aftercare.

The efficacy of accelerated intakes is encouraging in that it illustrates how a relatively minor change in clinic policy can substantially alter attrition rates (Festinger et al., in press). Reported attendance rates at the initial intake interview in the work by Festinger and colleagues (in press) increased 1.8-fold in the accelerated procedure. The comparable retention rates observed during treatment in that study suggest that accelerated procedures do not necessarily result in the admission of a larger proportion of individuals who are unmotivated for treatment relative to standard admission procedures.

Results from one controlled and two uncontrolled studies also support the efficacy of accelerated intake procedures. In a controlled trial conducted with a mixed sample of different types of drug abusers (35 percent primary cocaine abusers), consecutive callers to an urban outpatient drug abuse clinic were randomly assigned to either a condition wherein they had the option to come to the clinic immediately or were provided an intake appointment that on average was scheduled 9.7 days after the initial contact (Stark et al. 1990). Having the option to come immediately significantly increased attendance relative to the scheduled appointment. However, during-treatment dropout rates were higher in those provided the immediate option than the standard appointment, suggesting that there are instances where accelerated intake procedures can increase subsequent attrition rates.

Before undertaking the experimental study described above, Festinger and colleagues (Festinger et al. 1995) retrospectively examined data from 232 initial clinic contacts for cocaine abuse treatment. The best predictor of whether a client would attend the intake session was whether the appointment was scheduled on the same day as the initial contact. Retention data were not reported in that study. Finally,

effects of same-day versus delayed intakes were examined in a methadone maintenance clinic using an A-B design (Woody et al. 1975). Results were reported as retention rates during months 2 to 5 after admission. Moving from a practice of completing intakes on 2 designated days per week to conducting them on the same day as the initial contact significantly increased the proportion of patients retained during the 4-month observation period. The accelerated and standard groups both evidenced a steady dropout rate across the observation period. However, there were no differences between the groups on that measure, which is consistent with the findings of Festinger and colleagues (in press) that those entered via accelerated procedures are no less likely to remain in treatment than those admitted via standard procedures. In summary, then, the efficacy of accelerated procedures for increasing attendance at the intake interview is consistent across four studies in cocaine and other types of drug abusers, and during-treatment dropout rates were comparable across the accelerated and standard admission procedures in two of the three studies in which that information was reported.

Briefly, there is another study using a mixed sample of drug abusers (31 percent primary cocaine abusers) that merits mention (Stark and Kane 1985). As with the accelerated intake work, it also illustrates an effective strategy for combating the high rates of attrition associated with the intake process using an intervention involving minimal clinical effort. Applicants for outpatient treatment were randomly assigned to one of four conditions immediately following their intake interview: (1) 15-minute general orientation regarding what to expect from psychotherapy, (2) 15-minute specific orientation regarding what to expect from psychotherapy for drug abuse, (3) 15-minute general drug education, or (4) a no-treatment control. The specific orientation to psychotherapy for drug abuse significantly increased the proportion of patients who returned for a second visit by 19 to 40 percent compared to the other treatment groups. Considerable dropout was observed in all groups during the subsequent 90 days. However, all groups were comparable on that measure, suggesting that the advantage of the specific orientation procedure was not nullified by a subsequent higher dropout rate. Because results from cocaine abusers were not described separately in this report, the efficacy of this procedure in that population remains unclear. However, considering the minimal effort involved and the large effects observed, it certainly merits further investigation in cocaine abusers.

Accelerated intakes, and perhaps a brief orientation session, can improve the proportion of patients who complete the intake process and enter treatment, but the challenge of how to effectively retain them during treatment is not addressed by those procedures. The studies by Higgins and colleagues do address that challenge, and demonstrate that providing a structured, behavioral intervention that includes incentives can improve treatment completion rates by as much as fivefold compared to drug abuse counseling, and almost twofold compared to the same behavioral treatment without incentives (Higgins et al. 1991, 1993, 1994*b*). At this time, the efficacy of that approach for retaining cocaine abusers during treatment has more empirical support than any other strategy. Each of the three trials demonstrating the efficacy of this treatment for increasing retention was conducted in the same clinic, which is located in a small metropolitan area with an almost exclusively caucasian population. Thus, replications in other settings are needed, especially clinics located in large urban areas with minority populations. However, the generality of the incentive program used in that treatment to urban clinics and to minority patients has been demonstrated in two trials examining effects on cocaine abstinence (Silverman et al. 1995; Tusel et al. 1995). Both trials were conducted in methadone maintenance clinics, which precluded assessing effects on treatment retention. However, considering that the incentives improved cocaine abstinence in both trials, there is evidence that they are efficacious in those settings and thus may increase retention as well.

An obvious concern regarding the use of incentives in any setting is cost. The incentives used in the studies by Higgins and colleagues increased treatment costs by approximately \$600 per patient. While such extra costs pale when considered against the costs of inpatient hospitalizations for substance abuse (Alterman et al. 1994; Holder and Blose 1991), or the costs associated with treating the adverse consequences of drug abuse (e.g., acquired immunodeficiency syndrome (AIDS), prenatal drug exposure) (Drucker 1986; Phibbs et al. 1991), many community clinics are likely to be unable or unwilling to incur such extra costs. Hence, strategies for making incentives available for use in community clinics that require no additional financial expenditure on the part of the clinic are needed. Using access to public resources such as athletic or cultural facilities or requesting local businesses to donate retail items for use as incentives have been suggested previously (Higgins et al. 1994*a*). There may be any number of potential strategies of this type for implementing incentive programs in community clinics that would be efficacious and

fiscally feasible, although devising and managing them obviously will require considerable creativity and effort. When the potential therapeutic benefits of incentives are considered, such strategies certainly appear to merit exploration.

The initial trial by Carroll and colleagues (1991) suggested that relapse prevention may be an effective intervention for improving retention during outpatient treatment for cocaine abuse. However, that was less clear in the two subsequent trials in which relapse prevention was associated with somewhat higher retention rates than comparison treatments, but those differences were not statistically significant (Carroll et al. 1994; Wells et al. 1994). Nevertheless, considering the significant challenge that retaining cocaine abusers during treatment represents, and the positive trends evident across trials, relapse prevention certainly warrants further evaluation.

The finding that retention of cocaine-abusing mothers during residential treatment is improved by allowing their children to reside with them lends empirical support to a strategy that makes a great deal of practical sense (Hughes et al. 1995). Of course, this was only a single study. Thus, further information will be necessary to evaluate the value of this particular strategy. However, this study focuses attention on the more general issue of practical barriers to treatment completion. That is, drug abusers are faced with the same basic demands on their time that all of us confront. Efforts to identify how those everyday demands interfere with treatment retention and exploration of creative solutions to such barriers (e.g., flexible clinic hours, house calls, child care services in outpatient clinics) is an important direction for future research.

Little is known about the relative merits of treating cocaine abuse in inpatient versus outpatient settings. The study by Alterman and coworkers (1994) is the only controlled trial reported to date examining this topic. While retention rates in that study were significantly better for inpatient than outpatient care, that advantage appeared to be offset by the lower frequency at which inpatients entered aftercare upon discharge. No differences in abstinence rates were observed between the treatment groups at 7-month followup. Considering the greater expense of inpatient care, this study provides no compelling evidence to recommend inpatient over outpatient settings as a general strategy for treating cocaine abuse, especially without first exploring less costly options such as the use of incentives during outpatient care.

Relative to psychosocial interventions, less empirical support exists for the efficacy of pharmacotherapies in retaining cocaine abusers in treatment. The findings of Gawin and colleagues (1989) and Batki and coworkers (1994) suggest that there may be patient subgroups or particular circumstances in which antidepressant therapy can improve retention in outpatient settings. Patients with comorbid depression, for example, should benefit from such interventions and thus might be expected to remain in treatment longer than if they did not receive such care. However, as far as providing antidepressants to general clinical samples of cocaine abusers, the preponderance of empirical evidence suggests that these drugs do not improve retention. Moreover, at least one trial suggests that fluoxetine can adversely affect retention (Grabowski et al. 1995). The dose-dependent nature of that observation suggests that medication side effects may cause patients to terminate treatment prematurely. A great deal of research is ongoing to identify effective pharmacotherapies for cocaine abuse. Thus, avoiding a premature negative position on the potential utility of medications for retaining cocaine abusers in treatment is important. The quest for identifying effective new pharmacotherapies for cocaine abuse and for identifying circumstances under which existing medications might be more effective remains an active and important research area.

The ability of an intensive day hospital program to improve aftercare participation was discussed above (Alterman et al. 1994). The only other intervention demonstrated to influence aftercare participation thus far is behavioral treatment with incentives developed by Higgins and colleagues (Higgins et al. 1993, 1994*b*). Interestingly, those effects on aftercare were observed 3 months after the incentive program had ended, thereby demonstrating enduring effects of that treatment component. Other aspects of this multicomponent intervention may improve aftercare participation as well, but that remains to be demonstrated in controlled trials.

Finally, this review provides further evidence that improved treatment retention in cocaine abusers generally is associated with increased cocaine abstinence. That observation is consistent with a position that drug abuse treatment can be effective, but patients must be successfully retained so that they receive the recommended services. As was noted above, equally plausible alternative reasons for that relationship also exist. Clearly, much remains to be learned about how to improve treatment retention and how doing so affects other outcome measures, but this review illustrates that significant

inroads have been made in addressing each of the three major problems of attrition in cocaine abusers.

REFERENCES

- Alterman, A.I.; O'Brien, C.P.; McLellan, T.; August, D.S.; Snider, E.C.; Droba, M.; Cornish, J.W.; Hall, C.P.; Raphaelson, A.H.; and Schrade, F.X. Effectiveness and costs of inpatient versus day hospital cocaine rehabilitation. *J Nerv Ment Dis* 152:157-163, 1994.
- Ball, J.C., and Ross, A. *The Effectiveness of Methadone Maintenance Treatment*. New York: Springer-Verlag, 1991.
- Batki, S.L.; Washburn, A.; Manfredi, L.; Murphy, J.; Herbst, M.D.; Delucchi, K.; Jones, T.; Nanda, N.; Jacob, P.; and Jones, R.T. Fluoxetine in primary and secondary cocaine dependence: Outcome using quantitative benzoylecgonine concentration. In: Harris, L.S., ed. *Problems of Drug Dependence, 1993*. Vol. II: Abstracts. National Institute on Drug Abuse Research Monograph 141. NIH Pub. No. 94-3749. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1994. p. 140.
- Carroll, K.M.; Rounsaville, B.J.; and Gawin, F.H. A comparative trial of psychotherapies for ambulatory cocaine abusers: Relapse prevention and interpersonal psychotherapy. *Am J Drug Alcohol Abuse* 17:229-247, 1991.
- Carroll, K.M.; Power, M.E.D.; Bryant, K.; and Rounsaville, B.J. One-year follow-up status of treatment seeking cocaine abusers: Psychopathology and dependence severity as predictors of outcome. *J Nerv Ment Dis* 181:71-79, 1993.
- Carroll, K.M.; Rounsaville, B.J.; Gordon, L.T.; Nich, C.; Jatlow, P.; Bisighini, R.M.; and Gawin, F.H. Psychotherapy and pharma-cotherapy for ambulatory cocaine abusers. *Arch Gen Psychiatry* 51:177-187, 1994.
- DeLeon, G. Program-based evaluation research in therapeutic communities. In: Tims, F.M., and Ludford, J.P., eds. *Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects*. National Institute on Drug Abuse Research Monograph 51. DHHS Pub. No. (ADM)84-1329. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1984. pp. 69-87.
- Drucker, E. AIDS and addiction in New York City. *Am J Drug Alcohol Abuse* 12:165-181, 1986.
- Festinger, D.S.; Lamb, R.J.; Kirby, K.C.; and Marlowe, D.B. Accelerated intake: A method for reducing initial appointment no-

- show for outpatient cocaine addiction treatment. *J Appl Behav Anal*, in press.
- Festinger, D.S.; Lamb, R.J.; Kountz, M.; Kirby, K.C.; and Marlowe, D.B. Pre-treatment drop-out as a function of treatment delay and client variables. *Addict Behav* 20:111-115, 1995.
- Gawin, F.H.; Kleber, H.D.; Byck, R.; Rounsaville, B.J.; Kosten, T.R.; Jatlow, P.I.; and Morgan, C. Desipramine facilitation of initial cocaine abstinence. *Arch Gen Psychiatry* 46:117-121, 1989.
- Giannini, A.J.; Loiselle, R.H.; and Giannini, M.C. Space-based abstinence: Alleviation of withdrawal symptoms in combative cocaine-phencyclidine abuse. *Clin Toxicol* 25:493-500, 1987.
- Grabowski, J.; Rhoades, H.; Elk, R.; Schmitz, J.; Davis, C.; Creston, D.; and Kirby, K. Fluoxetine is ineffective for treatment of cocaine dependence or concurrent opiate and cocaine dependence: Two placebo controlled double-blind trials. *J Clin Psychopharmacol* 15:163-174, 1995.
- Hall, S.M.; Tunis, S.; Banys, P.; Tusel, D.; Clark, H.W.; Presti, D.; and Stewart, P. Enhanced continuity of care and desipramine in crack cocaine abusers. In: Harris, L.S., ed. *Problems of Drug Dependence, 1993*. Vol. II: Abstracts. National Institute on Drug Abuse Research Monograph 141. NIH Pub. No. 94-3749. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1994. p. 3.
- Higgins, S.T.; Delaney, D.D.; Budney, A.J.; Bickel, W.K.; Hughes, J.R.; Foerg, F.; and Fenwick, J.W. A behavioral approach to achieving cocaine abstinence. *Am J Psychiatry* 148:1218-1224, 1991.
- Higgins, S.T.; Budney, A.J.; Bickel, W.K.; Hughes, J.R.; Foerg, F.; and Badger, G. Achieving cocaine abstinence with a behavioral approach. *Am J Psychiatry* 150:763-769, 1993.
- Higgins, S.T.; Budney, A.J.; and Bickel, W.K. Applying behavioral concepts and principles to the treatment of cocaine dependence. *Drug Alcohol Depend* 34:87-97, 1994a.
- Higgins, S.T.; Budney, A.J.; Bickel, W.K.; Foerg, F.E.; Donham, R.; and Badger, G.J. Incentives improve outcome in outpatient behavioral treatment of cocaine dependence. *Arch Gen Psychiatry* 51:568-576, 1994b.
- Higgins, S.T.; Budney, A.J.; Bickel, W.K.; Foerg, F.E.; Ogden, D.; and Badger, G.J. Outpatient behavioral treatment for cocaine dependence: One-year outcome. *Exp Clin Psychopharmacol* 3:205-212, 1995.

- Holder, H.D., and Blose, J.O. Typical patterns and cost of alcoholism treatment across a variety of populations and providers. *Alcohol Clin Exp Res* 15:190-195, 1991.
- Hubbard, R.L.; Rachal, J.V.; Craddock, S.G.; and Cavanaugh, E.R. Treatment Outcome Prospective Study (TOPS): Client characteristics and behaviors before, during, and after treatment. In: Tims, F.M., and Ludford, J.P., eds. *Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects*. National Institute on Drug Abuse Research Monograph 51. DHHS Pub. No. (ADM)84-1329. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1984. pp. 42-68.
- Hughes, P.H.; Coletti, S.D.; Neri, R.L.; Urmann, C.F.; Stahl, S.; Sicilian, D.M.; and Anthony, J.C. Retaining cocaine-abusing women in a therapeutic community: The effect of a child live-in program. *Am J Public Health* 85:1149-1152, 1995.
- Kang, S.-Y.; Kleinman, P.H.; Woody, G.E.; Millman, R.B.; Todd, T.C.; Kemp, J.; and Lipton, D.S. Outcomes for cocaine abusers after once-a-week psychosocial therapy. *Am J Psychiatry* 148:630-635, 1991.
- Khalsa, E.; Jatlow, P.; and Gawin, F. Flupenthixol and desipramine treatment of crack users: Double blind results. In: Harris, L.S., ed. *Problems of Drug Dependence, 1993*. Vol. II: Abstracts. National Institute on Drug Abuse Research Monograph 141. NIH Pub. No. 94-3749. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1994. p. 438.
- McElroy, S.L.; Weiss, R.D.; Mendelson, J.H.; Teoh, S.K.; McAfee, B.; and Mello, N.K. Desipramine treatment for relapse prevention in cocaine dependence. In: Harris, L.S., ed. *Problems of Drug Dependence, 1989*. National Institute on Drug Abuse Research Monograph 95. DHHS Pub. No. (ADM)90-1663. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1989. pp. 57-63.
- Phibbs, C.S.; Batemen, D.A.; and Schwartz, R.M. The neonatal costs of maternal cocaine use. *JAMA* 226:1521-1526, 1991.
- Silverman, K.; Higgins, S.T.; Brooner, R.K.; Montoya, I.D.; Cone, E.J.; Schuster, C.R.; and Preston, K.L. Sustained cocaine abstinence in methadone maintenance patients through voucher-based reinforcement therapy. In: Harris, L.S., ed. *Problems on Drug Dependence, 1994*. National Institute on Drug Abuse Research Monograph 153. NIH Pub. No. 95-3883. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1995.

- Simpson, D.D. National treatment system evaluation based on the Drug Abuse Reporting Program (DARP) followup research. In: Tims, F.M., and Ludford, J.P., eds. *Drug Abuse Treatment Evaluation: Strategies, Progress, and Prospects*. National Institute on Drug Abuse Research Monograph 51. DHHS Pub. No. (ADM)84-1329. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1984. pp. 29-41.
- Stark, M.J.; Campbell, B.K.; and Brinkerhoff, C.V. "Hello, May we help you?" A study of attrition prevention at the time of the first phone contact with substance-abusing clients. *Am J Drug Alcohol Abuse* 16:67-76, 1990.
- Stark, M.J., and Kane, B.J. General and specific psychotherapy role induction with substance-abusing clients. *Int J Addict* 20:1135-1141, 1985.
- Tennant, F.S., and Tarver, A.L. In: Harris, L.S., ed. *Problems of Drug Dependence, 1984*. National Institute on Drug Abuse Research Monograph 55. DHHS Pub. No. (ADM)85-1393. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1985. pp. 159-163.
- Tusel, D.J.; Piotrowski, N.A.; Sees, K.L.; Reilly, P.M.; Banys, P.; Meek, P.; and Hall, S.M. Contingency contracting for illicit drug use with opioid addicts in methadone treatment. In: Harris, L.S., ed. *Problems of Drug Dependence, 1994*. National Institute on Drug Abuse Research Monograph 153. NIH Pub. No. 95-3883. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1995.
- Weddington, W.W.; Brown, B.S.; Haertzen, C.A.; Hess, J.M.; Mahaffey, J.R.; Kolar, A.F.; and Jaffe, J.H. Comparison of amantadone and desipramine combined with psychotherapy for treatment of cocaine dependence. *Am J Drug Alcohol Abuse* 17:137-152, 1991.
- Wells, E.A.; Peterson, P.L.; Gainey, R.R.; Hawkins, J.D.; and Catalano, R.F. Outpatient treatment for cocaine abuse: A controlled comparison of relapse prevention and twelve-step approaches. *Am J Drug Alcohol Abuse* 20:1-17, 1994.
- Woody, G.; O'Hare, K.; Mintz, J.; and O'Brien, C. Rapid intake: A method for increasing retention rate of heroin addicts seeking methadone treatment. *Compr Psychiatry* 16:165-169, 1975.

AUTHORS

Stephen T. Higgins, Ph.D.
Human Behavioral Pharmacology Laboratory
Department of Psychiatry
University of Vermont
38 Fletcher Place
Burlington, VT 05401

Alan J. Budney, Ph.D.
Substance Abuse Treatment Center
Department of Psychiatry
University of Vermont
1 South Prospect Street
Burlington, VT 05401

[Click here to go to page 44](#)