

A Brief Cognitive-Behavioral Intervention for HIV Prevention Among Injection Drug Users and Cocaine Smokers not in Treatment

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This study compared the effectiveness for altering sexual and drug use risk behaviors of an innovative cognitive-behavioral intervention with a standard intervention developed by the National Institute on Drug Abuse. Participants were 254 female and 488 male injection drug users and cocaine smokers not currently in treatment who were randomly assigned to receive one of the two interventions. Although a 6-month follow-up revealed some significant decreases in risk behaviors across both intervention groups, no significant differences were revealed in the effectiveness of the two interventions in creating changes in sex risk or drug using behaviors.

By virtue of high risk sexual and needle sharing behaviors, injection drug users and cocaine (crack) smokers are at great peril for contracting the HIV (e.g., Booth, Watters, & Chitwood, 1993; Dwyer et al., 1994). This population of drug users is experiencing one of the highest rates of increase in viral infection in the United States (Center for Disease Control, 1994). Not only does HIV present a serious threat to these individuals, but the sexual partners of these drug abusers are also at considerable risk for contracting the virus. Indeed, transmission to sexual partners is the greatest reported reason for infection among non-drug injecting heterosexuals (National Research Council, 1989).

Given the continued absence of an effective HIV vaccine, prevention through education, counseling, and other avenues continues to be the only means through which to deal with the HIV pandemic. To address the growing incidence of viral infection among injection drug users and cocaine smokers, and to determine effective interventions for the prevention of HIV transmission among this population, the National Institute on Drug Abuse (NIDA) established the Cooperative Agreement for AIDS Community-Based Outreach/Intervention Research. Focusing on out-of-treatment drug users, this multi-site project was designed for each participating site to evaluate the efficacy of their own innovative intervention against a standard intervention developed by NIDA.

As one of 22 sites across the United States, Anchorage, Alaska participated in the Cooperative Agreement. The innovative intervention (described in the Method section) developed at this site was based on cognitive-behavioral strategies. A primary assumption of the intervention is that although education concerning the avenues for transmitting and preventing HIV among drug users is necessary for behavior change, possessing this knowledge may be insufficient, particularly for individuals who have the basic knowledge but continue to engage in high-risk behaviors. It is the goal of cognitive-behavioral interventions to address barriers that impede the implementation of current knowledge (e.g., Bandura, 1989). Such strategies have been demonstrated to be effective in reducing risk behaviors among other populations, such as gay and bisexual men, substance dependent adolescents, and methadone maintenance participants (Baker, Heather, Wodak, Dixon, & Holt 1993; Kelly, 1992; Kelly, St. Lawrence, Hood, & Brasfield, 1989; Kelly, St. Lawrence, Betts, Brasfield, & Hood, 1989; St. Lawrence et al., 1994).

The intervention for the Anchorage site was designed to be brief and to include several cognitive-behavioral strategies. Brevity was important, as the best that can be hoped for is limited contact with injection drug users and cocaine smokers not currently in treatment. This is in contrast to the previously cited studies in which the drug using participants were in treatment and regular contact with them was possible (Baker et al., 1993; St. Lawrence et al., 1994). A multitude of strategies was included, each of which was intended to help create behavior change by either providing necessary skills or identifying cognitive barriers to safer behavior.

This innovative, or enhanced, strategy was compared to a standard intervention designed and refined by NIDA (Coyle, 1994). It was hypothesized that compared to the standard intervention, the enhanced intervention would lead to greater reductions in high-risk sexual behaviors and drug using behaviors.

Method

Participants

Participants in this study were injection drug users and crack smokers from the Anchorage site of the NIDA project described above. The interventions used at this site (described below) provide injection and other drug users not currently in treatment with educational counseling to help prevent the spread of HIV by reducing behavioral risk. Eligibility criteria for research participation include: a) being 18 years or older, b) not having been in substance abuse treatment in the last 30 days, and c) demonstrating current drug usage (needle marks or positive urinalysis for morphine, cocaine metabolites, or amphetamine). Table 1 provides demographic information about the participants, including drug use within the last 30 days and the last 48 hours, and results of drug use screening.

Table 1
Demographic Characteristics of Participants

	<i>N (%) or M (SD)</i>
<i>Ethnicity</i>	
Black	266 (35.8)
White	306 (41.2)
Hispanic/Latino	26 (9.7)
Asian/Pacific Islander	4 (1.5)
Native American/Alaskan Native	130 (14.1)
Other	18 (2.4)
<i>Gender</i>	
Female	254 (34.2)
Male	488 (65.8)
<i>Age (at RBA)</i>	
Range	18-80
Mean	34.53 (7.38)
<i>Educational Level (at RBA)</i>	
8th grade or less	25 (3.4)
less than high school	126 (17.4)
GED	107 (14.7)
high school graduate	260 (35.8)
trade/technical school	9 (1.2)
some college	172 (23.7)
college graduate	27 (3.7)

Table 1 (cont.)
Self-reported drug use in last 48 hours and 30 Days at RBA and RBFA

	<i>Last 48 Hours</i>		<i>Last 30 Days</i>	
	<i>RBA</i>	<i>RBFA</i>	<i>RBA</i>	<i>RBFA</i>
	<i>N (%)</i>	<i>N (%)</i>	<i>N (%)</i>	<i>N (%)</i>
No Drug Use	28 (13.8)	167 (22.6)		
Alcohol	517 (72.4)	408 (71.2)	665 (89.6)	597 (80.5)
Marijuana	261 (36.6)	226 (39.4)	496 (66.8)	425 (57.3)
Crack	584 (81.9)	334 (58.3)	695 (93.7)	537 (71.0)
Cocaine	100 (14.0)	57 (9.9)	278 (37.5)	155 (20.9)
Heroin	30 (4.2)	32 (5.6)	275 (37.9)	155 (20.9)
Speedball	6 (0.5)	3 (0.5)	24 (3.2)	28 (3.8)
Methodone	3 (0.4)	1 (0.2)	10 (1.3)	10 (1.3)
Other Opiates	47 (6.6)	30 (5.2)	117 (15.8)	68 (9.2)
Amphetamines	1 (0.1)	2 (0.3)	25 (3.4)	11 (1.5)
Other Drugs	29 (4.1)	29 (4.1)	93 (12.5)	32 (4.3)
<i>Positive Results of Drug Use Screening (at RBA)</i>				
Cocaine	669 (90.2)			
Morphine	63 (8.5)			
Amphetamine	2 (0.3)			
Visible Needle Tracks	218 (29.5)			

Instrumentation

Risk Behavior Assessment (RBA; National Institute on Drug Abuse, 1991). All participants completed this instrument during their initial contact with the project. The RBA is a structured interview that elicits demographic information and self reports of high risk behaviors such as drug use, needle sharing, and sexual behaviors. Most of the sexual behavior and drug use questions have a time reference of the past 30 days and several drug use questions also have a time reference of the past 48 hours. It has been determined that the RBA has good reliability and that the questions regarding drug use have good reliability and validity (Dowling-Guyer et al., 1994; Fisher et al., 1993; Needle et al., in press; Weatherby et al., 1994).

Risk Behavior Follow-up Assessment (RBFA; National Institute on Drug Abuse, 1991). This instrument was administered to participants upon their return for a 6-month follow-up. The format and content of the RBFA is analogous to that of the RBA with the additional inclusion of several questions regarding behaviors in the past six months. The RBFA has been reported to have good reliability and validity (Johnson et al., in press).

Procedure

Injection and other drug-using individuals were recruited from the Municipality of Anchorage through targeted sampling (Watters & Biernacki, 1989) and respondent-driven sampling (Broadhead, 1998) that incorporated various efforts, including word of mouth, flyers posted on bulletin boards at homeless shelters, and outreach workers. Upon determination of eligibility through urinalyses results or needle track marks and granting of informed consent, participants responded to the RBA, provided locator information, received pretest counseling (Session 1 of the Standard Intervention), and provided blood for HIV testing. Within 10 to 21 days later, participants returned to receive their HIV test results and posttest counseling (Session 2 of the Standard Intervention).

Participants were paid for their participation. To determine the stipend that maximized participation while minimizing expenditures, the money paid and other compensation provided for research participation was adjusted during the first year of the project. As a result of this experimentation, the final payment settled on was \$20 for the first session of the standard intervention and \$25 for the second session. Participants assigned to the enhanced intervention did not receive an additional payment for the first enhanced session but did receive \$10 for the second enhanced session. At the 6-month follow-up, the same payment schedule was used.

Based on the date of intake into the project, participants were randomly assigned to receive either the standard or enhanced intervention. Randomization was completed by calculating the number of operating days in a year, assigning each day a sequential numeric value, and generating a table of random numbers that was equal to 50% of the range. The days of operation that corresponded to the output values were assigned to the Standard Intervention and those remaining were assigned to the Enhanced Intervention. Intervention counselors were kept blind to this assignment until the completion of Session 2 of the Standard Intervention at which time they were informed. Participants who did not return for the HIV test results and posttest counseling within 21 days of the initial session were automatically assigned to the standard intervention. For those participants assigned to the Standard Intervention, their participation was completed at the end of Session 2 of the standard intervention; for those assigned to the enhanced intervention, additional sessions were provided. For all participants, information was provided about the 6-month follow-up and reminder cards were given. Additionally, during the ensuing time, postcards were mailed and telephone calls were made to remind participants of the follow-up visit. When subjects returned for the follow-up visit, they responded to the RBFA, received pre-test counseling, and gave blood for HIV testing.

Description of Interventions

Standard. The Standard Intervention consisted of two separate sessions and was developed and refined by NIDA for the purposes of this CA (Coyle, 1994). Each of the two sessions was conducted by an Intervention Counselor in an individual format and lasted approximately 30 minutes. The first session immediately followed administration of the RBA and involved providing information on HIV transmission and pretest counseling for the HIV blood test (e.g., meaning of negative or positive test result) that would be offered. An intervention counselor demonstrated how to apply a condom (using a penile model) and how to clean injecting equipment, after which the participant was asked to demonstrate the same skills. The second session occurred during a 10 to 21-day window after the first, and had as its primary purpose the provision of HIV test results and posttest counseling.

Enhanced. The Enhanced Intervention was originally designed to involve one additional, individual format session that followed immediately after the second session of the Standard Intervention. In November, 1993, a second, group format session was added to the Enhanced Intervention. The first session was approximately 30-45 minutes in duration and consisted of five cognitive-behavioral interventions: education, skills training, self-modeling, cognitive restructuring, and behavioral rehearsal. During the education component, the participant viewed a brief videotape that summarized the basic principles of safe needle use and safe sex practices, followed by an opportunity for discussion. During the skills training component, the participant first demonstrated appropriate condom use using a penile model and then demonstrated appropriate needle cleaning behaviors. During both demonstrations, the counselor provided feedback and the participant continued to practice until reaching an established criterion of appropriate demonstration.

The self-modeling component involved taking a picture of the participant (hands and torso only) during each of the condom and needle cleaning exercises. The purpose was to provide participants with the opportunity to view themselves successfully performing the appropriate behavior. The participant was given these pictures and asked to write on the back a rational belief concerning safe sexual or needle using behaviors identified during the next portion of the intervention. This next portion, cognitive restructuring, involved the participant being helped to identify possible cognitive barriers that may interfere with her or him putting into practice safe needle and sex behaviors. The counselor provided alternative realistic beliefs to help counter the irrational beliefs and, as appropriate, provided education to correct mistaken beliefs. The final component, behavioral rehearsal, provided an opportunity to practice appropriate responses to difficult situations. The counselor elicited situations in which the participant believed she or he may have difficulty engaging in the safe behavior. The counselor role-played one or two of these situations, thereby teaching the participant methods to choose the appropriate response.

The second Enhanced Intervention session was intended as a “booster” contact with participants and involved offering a group viewing of videotapes every Friday afternoon, accompanied by free pizza and soft drinks. Groups were gender specific and involved the showing of two brief videotapes that reviewed general principles of safe sex and drug use behaviors. Following the videotapes, a structured discussion was conducted in which the videotapes were discussed, changes in behavior since the last contact with the project were reviewed, and opportunities for referrals were provided. This session lasted approximately 30-45 minutes and was scheduled to occur 2-3 months after Session 2.

Data Analyses

Data analyses included repeated measures analyses of variance, logistic regression analyses, and McNemar's change test (variables and their scaling can be gleaned from Tables 2 to 5). The repeated measures ANOVAs were performed on continuous variables using SAS Proc GLM and were mixed models with Time (outcome measure at RBA versus the same measure at RBFA) as the within subjects factor, and Assignment (Standard versus Enhanced) as the between subjects factor. An Assignment effect would be indicated by a significant interaction between Time and Assignment. Logistic regression analyses were conducted for each outcome measure that was either originally coded dichotomously or recoded as dichotomous due to an extremely skewed distribution. In each model, the RBFA outcome measure was regressed on the RBA outcome measure, Assignment, and the interaction of these two. The effect of interest in these analyses was the Assignment term; a significant effect would indicate that, controlling for the outcome measure at RBA, Assignment predicted outcome at RBFA. McNemar's change test was used to assess any Time effects for the dichotomous variables.

Results

Of 1120 participants who were eligible for the project and who completed the RBA, 744 returned to complete the RBFA, a return rate of 66.4%. The period of time between the administrations of the RBA and RBFA ranged from 106 to 1080 days with a mean of 240.7 days ($SD = 149.1$), mode of 153, and median of 190. Of the 179 participants assigned to the Enhanced Intervention after attendance of the additional booster session, only 24 (13.4%) attended this session. With this low attendance, it was decided to combine all participants assigned to the Enhanced intervention for analyses.

Of the analyses conducted, 36 significant Time effects were revealed. Tables 2 and 3 provide all significant findings for the Time effect and show a reduction in the number of sex partners, number of unprotected sex acts, and perceived risk of acquiring AIDS and an increase in the number of protected sex acts and participants who always used condoms. Significant reductions for 32 drug use behaviors were found, primarily in regards to the frequency of drug use.

For the Intervention effect, means and F statistics are provided for the continuous variables in Table 4. Results revealed only one significant finding for the number of times used works were cleaned with boiling water before being used, $F(1, 22) = 10.70, p < .005$. As shown in Table 4, no change was revealed on this variable among participants assigned to the standard intervention, whereas for those assigned to the Enhanced intervention, there was a decrease. However, given that very few participants responded to this question and even fewer reported cleaning used works in this manner suggests that caution be taken in interpreting this effect. No other significant differences were revealed between the Standard and Enhanced Interventions.

Table 5 provides the frequencies of responses to the dichotomous variables and Wald X^2 statistics testing the parameter estimate for Assignment in each model. Assignment was only a significant predictor for whether alcohol was used in the 48 hours prior to the RBFA administration, $X^2(1, N = 740) = 5.81, p < .05$. As shown in Table 5, participants assigned to the Enhanced Intervention demonstrated a greater decrease in this behavior between RBA and RBFA than did those assigned to the Standard Intervention. No other significant differences were revealed between the Standard and Enhanced Interventions.

Discussion

Results revealed some changes in high risk sexual and drug use behaviors between the original two sessions and follow-up. Relative to sex behaviors, at follow-up, participants were more likely in the prior 30 days to have had fewer sex partners and fewer unprotected sex acts and more protected sex acts, and there were more participants who reported always using a condom. However, the magnitude of these changes was not great. Relative to drug use behaviors, a substantial decrease was revealed in drug consumption during the 30 days and 48 hours prior to the follow-up session. Although the intervention could have influenced this change, a more likely explanation is regression toward the mean. That is, we specifically targeted drug users with drug taking behaviors that deviated significantly from the average; thus, over time, regression to the mean would account for a decrease in drug taking behaviors. Perhaps as a result of these changes in behaviors, participants reported a mean decrease in perceived risk for HIV.

Although changes in sexual and drug using behavior over time were revealed, no significant differences were revealed between the Standard and Enhanced Interventions. One possible explanation for this lack of differences may be the number of sessions involved in the Enhanced Intervention. Although prior studies have demonstrated cognitive-behavioral interventions to be effective in reducing HIV risk behaviors (e.g., Baker et al., 1993, Kelly et al., 1989; St. Lawrence et al., 1994), these interventions involved multiple, separate sessions. This is further corroborated by research in other health-related areas, such as weight control and smoking cessation, where it has been documented that ongoing and intensive interventions are needed to create change, particularly if risk behavior patterns are well-established. Limited interventions, no matter how powerful or intensive, seem to be less effective in creating significant and long-term behavior change. Unfortunately, given the high monetary costs involved in recruiting participants as well as the difficulties in retaining participants for follow-up, we were unable to develop and test a cognitive-behavioral intervention that involved numerous sessions.

It may also be that by including five different cognitive-behavioral strategies in the enhanced intervention, we tried to offer too much. Perhaps focusing on just one or two strategies may have yielded different results. Further, had there been an assignment effect, it would have been difficult to parcel out what aspect of the intervention was effective. In this sense, clinical practice may have been at crossroads with research practice. That is, although a multi-faceted intervention may be more effective from a clinical perspective, it would be difficult to determine what aspect or combination of aspects led to the effectiveness from a research perspective. For better or worse, this was not an issue with which we had to contend.

An important point to make concerning the results, or rather the lack of significant results in this study, is that we did a tremendous number of statistical tests looking for any that would show an assignment effect (which is the term we used for our treatment effect of standard versus enhanced interventions). We pursued this to an extent that was what might be termed a “fishing expedition,” or “data snooping.” Because we ran approximately 100 tests, we could have expected to obtain at least 5 significant results through chance alone. Even though we went to this extreme, we still only had two statistically significant findings and even these two were discounted for the reasons provided above. This very sturdy lack of assignment effects is impressive in its own right. These kinds of negative or null results usually go unpublished in the literature and the effect of publishing only significant effects has created what some researchers have referred to as the “file drawer problem” (Glass, McGaw, & Smith, 1981; Rosenthal, 1979; Wolf, 1986). This refers to the tendency for studies reporting no significant results to be buried away in file drawers. The fact that we were able to run over 100 tests without a single important significant finding is something the causes and implications for which we need to consider seriously, especially given that this type of study is being carried out at 22 sites nationwide at the cost of millions of dollars.

One of the major reasons why we think that there were no effects of assignment on the outcome of the target behaviors is that clinicians and researchers really do not yet understand how the target behaviors occur in the natural environment, that is, the “real” world. It is not true that none of our subjects engaged in protective behaviors. Some of the participants in this study used condoms some of the time and some reported using them all of the time; some of the individuals who injected drugs used sterile needles for all injections, some cleaned their needles with bleach, and some of those cleaned with bleach for all injections. Although these individuals were in a distinct minority, nonetheless they did exist in our study. What needs to be done is to study under what circumstances these individuals engaged in their protective behaviors so we can begin to describe the physical and social environments conducive to engaging in such protective behaviors. Ideally, interventions would elicit the help of these “effective” or “safe” individuals to demonstrate how they go about negotiating condom use, obtaining sterile syringes, or whatever the critical part of the behavior is that most facilitates the protective behavior. Had we had that understanding, we would have been in a much better position to be able to teach, counsel, or intervene with protective behaviors with participants assigned to the Enhanced intervention of this study. As it was, we designed a well-thought-out intervention that was soundly based on principals of cognitive-behavioral therapy, but was apparently no more effective than the standard intervention.

In closing, we would like to identify several compensation-related lessons we learned through this research project. First, at the beginning of the project, we provided the entire research payment at the end of the first session of the Standard Intervention and asked for participants to voluntarily return for test results. Using this approach, our return rate for test results and posttest counseling was abysmal (15-30%). When we split the research payment and paid for participation at the end of both Sessions 1 and 2, the return rate skyrocketed to over 95%. Second, during the first year, we were forced to experiment with subject payment to determine the optimal incentives that would induce participants to participate. When we were offering \$10, we had very few takers; we tried adding bus tickets, food chits, etc. and barely affected the number of subjects. Over the course of the year we adjusted participant payment; only when we increased payment to \$45 (the highest amount paid at any NIDA Cooperative Agreement site), were we able to increase recruitment significantly. We also discovered a strong seasonal effect on recruitment that was impervious to compensation manipulation, with very high participation during winter months and significantly lower participation during summer months. This phenomenon may be unique to Alaska, a state with considerable seasonal work during the summer.

Last, when we added a booster session to the enhanced intervention, we initially offered only free pizza and soda for attendance and had very few takers. It was only when we added an additional monetary incentive that we were able to entice participants to attend this session. However, even then, since we were only able to offer a \$10 payment because of financial constraints, we still only attracted a handful of participants. It is important to note that another reason for the lack of participation in the booster session may have been participants' unwillingness or apprehensiveness about taking part in a group session. We concluded that although lack of return is at least partially explained by prior research findings that drug users have low return rates if they are required to return on a different day (Umbricht-Schneiter, Ginn, Pabst, & Bigelow, 1994), at least part of the explanation also has to do with level of compensation. This of course presents an ethical dilemma as well, when the paid participants are drug users, as in all likelihood, compensation is used to engage in further high-risk behavior.

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Table 2
RBA and RBFA Means and F Statistics for Significant Time Effect Findings : Continuous Variables

	RBA	RBFA	F Statistic
# of sex partners	2.95	1.89	$F(1,737)=3.51+$
# unprotected sex acts	22.84	19.02	$F(1,481)=4.10^*$
# protected sex acts	0.15	0.2	$F(1,456)=6.02^*$
# of days			
used alcohol	12.41	9.42	$F(1,694)=46.39^{***}$
used marijuana	6.28	4.72	$F(1,695)=22.87^{***}$
used crack	11.75	7.51	$F(1,694)=92.35^{***}$
used cocaine	2.55	1.3	$F(1,695)=22.15^{***}$
used methadone	0.08	0.03	$F(1,696)=5.82^*$
used other opiates	1.12	0.63	$F(1,695)=6.89^{**}$
used other drugs	0.84	0.28	$F(1,696)=9.83^{**}$
inject other opiates	0.58	0.27	$F(1,696)=7.43^{**}$
used/not inject cocaine	0.75	0.34	$F(1,694)=8.27^{**}$
used/not inject methadone	0.08	0.02	$F(1,696)=5.77^*$
used/not inject other drugs	0.8	0.25	$F(1,695)=9.73^{**}$
# of times			
injected cocaine	10.85	5.25	$F(1,696)=8.59^{**}$
injected other opiates	0.99	0.42	$F(1,696)=6.28^*$
injected any drug	14.47	7.6	$F(1,695)=10.30^{**}$
cleaned used works with	0.19	0	$F(1,22)=10.70^{**}$
boiling water only			
injections with used works	0.32	0.2	$F(1,101)=4.29^*$

+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3
RBA and RBFA Means and X2 Statistics for Significant Time Effect Findings : Dichotomous Variables

	RBA			RBFA			X2a
	N	n	%	N	n	%	
In last 48 hours							
Used any drug	740	712	96.2	740	572	77.3	107.69**
Used alcohol	740	515	69.6	40	407	55.0	40.78**
Used marijuana	739	260	35.2	39	226	30.6	4.74*
Used crack	739	582	78.8	39	333	45.1	94.36**
Used cocaine	740	100	13.5	40	57	7.7	17.28**
Used other opiates	740	47	6.4	40	30	4.1	5.25*
Used other drugs	740	29	3.9	40	14	1.9	5.23*
In last 30 days							
Always used condoms	485	33	6.8	485	52	10.7	5.92*
Used alcohol	742	665	89.6	742	597	80.5	37.29**
Used marijuana	742	496	66.8	742	425	57.3	5.85**
Used crack	742	695	93.7	742	527	71.0	153.39**
Used cocaine	742	278	37.5	742	155	20.9	71.70**
Used other opiates	742	117	15.8	742	68	9.2	17.79**
Used amphetamines	742	25	3.4	742	11	1.5	5.44*
Used other drugs	742	93	12.5	742	32	4.3	40.01**
High perceived risk of AIDS	702	182	25.9	702	138	19.7	12.25**

a X2 statistic for test of change (McNemar's test), with 1 degree of freedom and N as noted.

** $p < .001$ * $p < .05$

Table 4
Mean Drug Use and Sexual Risk Behaviors for Standard versus Enhanced Intervention Participants at Time 1 (RBA) and Time 2 (RBFA): Continuous Variables

	Standard					Enhanced					F
	N	M	SD	M	SD	N	M	SD	M	SD	
Number of in last 30 days											
Sex partners	484	3.12	19.88	1.85	8.01	257	2.63	10.18	1.97	6.68	0.02
IDU sex partners	467	0.40	1.34	0.26	1.47	247	0.48	2.61	0.40	1.73	0.11
Unprotected sex acts	307	23.30	37.12	18.45	24.12	178	22.04	29.82	20.02	27.51	0.31
Percentage of in last 30 days											
Protected sex acts	307	0.15	0.31	0.21	0.36	178	0.14	0.28	0.18	0.32	0.02
Number of days used in last 30 days											
Alcohol	484	12.72	11.03	9.80	10.28	256	11.80	10.44	8.69	9.68	1.14
Marijuana	485	5.92	8.96	4.51	8.05	256	6.97	9.42	5.11	8.41	1.74
Crack	483	11.84	9.94	7.73	9.39	257	11.58	9.76	7.11	9.29	1.48
Cocaine	484	2.63	5.69	1.31	4.49	257	2.41	5.97	1.29	4.39	0.67
Heroin	485	1.13	5.12	0.78	4.12	256	0.96	4.09	0.85	4.26	1.38
Speedball	485	0.15	1.40	0.20	1.83	257	0.18	1.35	0.25	1.86	0.02
Methadone	485	0.06	0.82	0.03	0.33	257	0.12	0.98	0.02	0.16	0.57
Other opiates	484	1.10	4.12	0.82	3.83	257	1.15	4.27	0.27	1.44	0.91
Amphetamines	485	0.22	2.04	0.04	0.44	257	0.12	0.74	0.05	0.43	0.44
Other drugs	485	0.66	3.30	0.32	2.40	256	1.18	4.89	0.21	1.40	0.71
Number of days injected in last 30 days											
Cocaine	484	1.94	5.05	1.01	3.97	257	1.61	4.82	1.16	4.30	1.61
Heroin	485	1.13	5.14	0.78	4.12	256	0.86	3.91	0.85	4.26	2.19
Speedball	485	0.15	1.40	0.20	1.83	257	0.16	1.32	0.24	1.85	0.01
Methadone	485	0.00	0.06	0.00	0.00	257	0.00	0.00	0.01	0.12	2.13
Other opiates	485	0.53	3.25	0.34	2.38	257	0.67	3.51	0.14	1.11	1.02
Amphetamines	485	0.04	0.65	0.02	0.38	256	0.00	0.00	0.03	0.36	1.14
Other drugs	485	0.03	0.30	0.00	0.06	256	0.00	0.00	0.00	0.06	1.66
Number of days used without injecting in last 30 days											
Cocaine	483	0.77	2.84	0.39	1.91	257	0.72	3.25	0.25	1.75	0.09
Heroin	484	0.00	0.06	0.02	0.46	256	0.09	1.26	0.01	0.09	1.39
Speedball	485	0.00	0.04	0.08	1.39	257	0.02	0.31	0.01	0.19	0.56
Methadone	485	0.05	0.82	0.03	0.33	257	0.12	0.98	0.01	0.11	0.83
Other opiates	485	0.59	2.68	0.47	3.04	256	0.47	2.31	0.13	0.92	0.11
Amphetamines	485	0.19	1.93	0.01	0.24	257	0.12	0.74	0.01	0.11	0.09
Other drugs	485	0.61	3.26	0.31	2.40	255	1.17	4.90	0.14	1.11	1.10
Number of times injected in last 30 days											
Cocaine	485	9.51	31.93	4.87	32.65	257	13.38	61.31	5.97	26.44	0.01
Heroin	485	2.73	15.50	1.76	9.97	256	1.61	7.66	1.73	9.97	1.80
Speedball	485	0.48	6.95	0.26	2.22	257	0.35	2.26	0.30	2.42	0.08
Methadone	485	0.01	0.16	0.00	0.00	257	0.00	0.00	0.01	0.12	2.12
Other opiates	485	0.89	5.78	0.54	3.87	257	1.18	6.74	0.17	1.36	0.41
Amphetamines	485	0.12	1.84	0.04	0.69	256	0.00	0.00	0.38	5.64	1.68
Other drugs	485	0.05	0.53	0.01	0.10	256	0.00	0.00	0.00	0.06	1.16
All drugs	461	14.44	40.81	7.85	37.36	243	14.51	54.43	7.13	25.67	0.21
Number of times in last 30 days											
Used used works	80	22.80	51.64	8.89	31.95	32	20.50	54.20	10.66	27.95	0.90
Bought used works	20	8.25	33.44	6.55	26.80	15	0.13	0.52	0.27	0.59	0.29
Used "dirty" works	20	19.60	56.41	12.30	34.23	15	0.53	1.13	0.73	1.22	1.39
Used used supplies	81	17.86	40.12	16.96	71.25	33	34.61	98.86	15.64	29.89	0.00
Gave away used works	81	13.84	37.22	10.67	67.92	32	9.84	28.56	11.09	29.91	0.60
Reused new works	78	10.41	13.35	9.28	14.15	29	10.72	11.41	10.00	18.72	0.06
Number of times in last 30 days cleaned works											
With water	15	37.40	74.24	26.13	49.85	12	26.08	48.61	17.75	43.53	0.05
With bleach	15	8.07	24.60	3.60	5.95	11	9.91	29.89	9.18	13.96	0.02
With alcohol	15	0.07	0.26	0.00	0.00	11	2.27	7.54	0.00	0.00	0.18
With boiling water	15	0.00	0.00	0.00	0.00	12	0.42	1.44	0.00	0.00	10.70
Another way	15	0.27	1.03	0.00	0.00	12	0.17	0.58	0.00	0.00	0.02
Number of times in last 30 days used used works											
At home	19	30.58	56.99	13.32	37.76	15	21.87	44.23	4.47	9.82	0.98
At gallery	19	0.16	0.69	0.00	0.00	5	0.00	0.00	1.60	2.87	2.02
At friends	19	11.21	27.31	3.84	9.30	15	13.47	30.65	11.53	38.42	0.12
In a park	19	0.00	0.00	0.89	2.47	15	2.00	6.49	0.00	0.00	0.87
In a car	19	2.11	5.84	5.11	18.34	15	0.00	0.00	0.00	0.00	2.50
Elsewhere	20	0.80	3.35	6.70	29.96	15	8.67	33.57	5.20	12.97	0.18
Percentage of injections in last 30 days											
With used works	80	0.33	0.40	0.15	0.32	31	0.31	0.39	0.29	0.39	0.29
Number of new works in last 30 days											
Injected drugs with	80	17.08	40.03	15.29	37.29	33	22.00	38.24	15.61	15.12	0.19

Table 5

Drug Use and Sexual Risk Behaviors for Standard versus Enhanced Intervention Participants at Time 1 (RBA) and Time 2 (RBFA): Dichotomous Variables

	<i>Standard</i>						<i>Enhanced</i>						<i>X²_a</i>
	<i>RBA</i>			<i>RBFA</i>			<i>RBA</i>			<i>RBFA</i>			
	<i>N</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>N</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>			
In last 48 hours													
Used any drug	483	466	96.50	375	77.60	257	46	95.70	197	76.70	3.60		
Used alcohol	483	335	69.40	270	55.90	257	180	70.00	137	53.30	5.81		
Used marijuana	482	151	31.30	140	29.00	257	109	42.40	86	33.50	0.01		
Used crack	483	380	78.70	223	46.20	256	202	78.90	110	43.00	1.48		
Used cocaine	483	71	14.70	37	7.70	257	29	11.30	20	7.80	0.37		
Used heroin	483	20	4.10	21	4.30	257	10	3.90	11	4.30	0.05		
Used speedball	483	4	0.80	3	0.60	257	2	0.80	0	0.00	b		
Used methadone	483	1	0.20	0	0.00	257	2	0.80	1	0.40	b		
Used other opiates	483	32	6.60	24	5.00	257	15	5.80	6	2.30	0.63		
Used amphetamines	483	1	0.20	1	0.20	257	0	0.00	1	0.40	b		
Used other drugs	483	21	4.30	8	1.70	257	8	3.10	6	2.30	b		
Injected any drug	363	54	14.90	48	13.20	191	27	14.10	21	11.00	0.02		
Used used works	34	11	32.40	10	29.40	14	6	42.90	5	35.70	0.61		
Cleaned works	7	6	85.70	5	71.40	3	3	100.00	3	100.00	b		
Gave used works away	33	11	33.30	6	18.20	14	5	35.70	3	21.40	1.90		
Used new works	34	16	47.10	24	70.60	14	9	64.30	8	57.10	0.69		
In last 30 days													
Used condom	307	88	28.70	98	31.90	178	50	28.10	57	32.00	0.05		
Always used condoms	307	26	8.50	39	12.70	178	7	3.90	13	7.30	2.99		
Used alcohol	485	432	89.10	400	82.50	257	233	90.70	197	76.70	1.90		
Used marijuana	485	317	65.40	270	55.70	257	179	69.60	155	60.30	1.11		
Used crack	485	453	93.40	354	73.00	257	242	94.20	173	67.30	0.14		
Used cocaine	485	186	38.40	105	21.60	257	92	35.80	50	19.50	0.20		
Used heroin	485	39	8.00	105	21.60	257	28	10.90	50	19.50	b		
Used speedball	485	12	2.50	17	3.50	257	12	4.70	11	4.30	0.60		
Used methadone	485	4	0.80	6	1.20	257	6	2.60	4	1.60	0.04		
Used other opiates	485	76	15.70	52	10.70	257	41	16.00	16	6.20	1.62		
Used amphetamines	485	14	2.90	6	1.20	257	11	4.30	5	1.90	b		
Used other drugs	485	56	11.50	23	4.70	257	37	14.40	9	3.50	0.57		
In last 30 days used use													
From spouse/lover	20	11	55.00	12	60.00	15	4	26.70	5	33.30	0.07		
From sex partner	20	2	10.00	1	5.00	15	2	13.30	3	20.00	b		
From running buddy	20	3	15.00	1	5.00	15	1	6.70	4	26.70	b		
From friend	20	5	25.00	5	25.00	15	9	60.00	5	33.30	2.82		
From acquaintance	20	0	0.00	1	5.00	15	1	6.70	0	0.00	b		
Without cleaning	20	5	25.00	7	35.00	15	4	26.70	5	33.30	0.00		
High perceived risk of AIDS	459	113	24.60	89	19.40	243	69	28.40	49	20.20	0.08		

a X^2 statistic for test of parameter estimate for Assignment in logistic regression models.

b Model would not converge, usually due to a low frequency of one of the response levels

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