Factors Contributing to Retention of Not-in-Treatment Drug Users in an HIV/AIDS Outreach Prevention Project

Julie A. Baldwin, PhD
Anne M. Bowen, PhD
Robert T. Trotter II, PhD

SUMMARY. Studies have attempted to identify the characteristics of substance-abusing clients that are related to premature termination from alcohol and drug *treatment*. Few studies, however, have looked at predictors of loss to follow-up among drug users participating in HIV/AIDS prevention projects. This paper develops and tests models of program retention employing data from approximately 250 not-in-treatment drug users enrolled in an outreach based HIV risk reduction program. Logistic regression was used to fit a model which included measures of: (1) *demographic characteristics* including: age and ethnicity; (2) *social environmental factors* including: living situation and

Julie A. Baldwin and Robert T. Trotter II are affiliated with Northern Arizona University. Anne M. Bowen is affiliated with the University of Wyoming.

Address correspondence to: Julie A. Baldwin, P.O. Box 15095, Flagstaff, AZ 86011.

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type of network connection; (3) *risk behaviors* including: composite scores for drug use in the past 30 days and history of Sexually Transmitted Diseases (STDs); and (4) *program factors* including: outreach workers' knowledge of clients and number of intervention sessions received. Findings suggest that social environmental and program factors are most predictive of client retention in the program. Implications for ways in which to monitor retention of out-of-treatment drug users participating in AIDS prevention programs are addressed. *[Article copies available from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]*

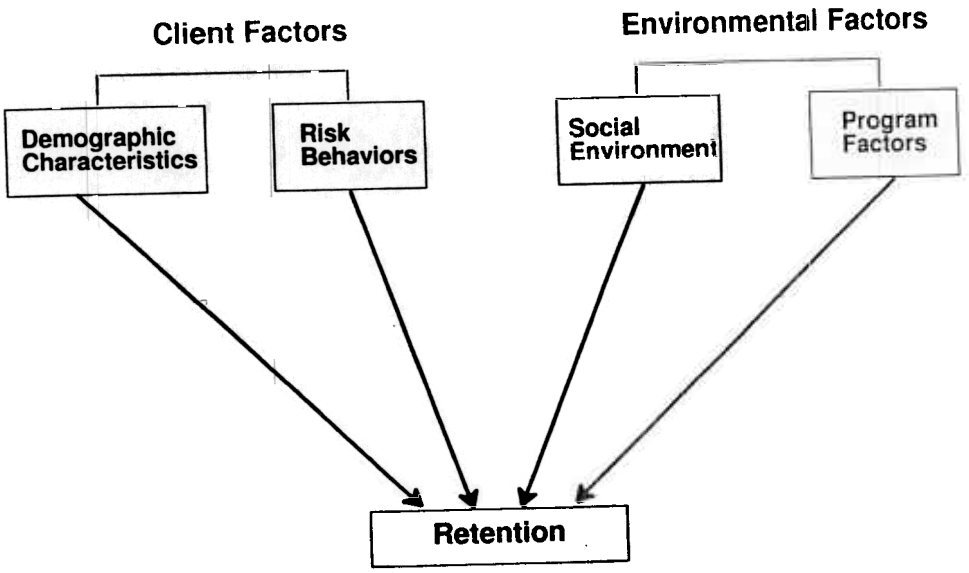
INTRODUCTION

Subject attrition poses a special problem with regard to evaluating the efficacy of HIV/AIDS intervention programs targeting not-in-treatment drug users. High subject retention is critical if research findings are to be generalized beyond specific samples. Further, the delineation of specific factors related to successful retention of subjects has implications for the design and implementation of follow-up strategies. As Rhodes, Wolitski, Humfleet, and Tanner (1990) have noted, "if factors related to subject retention can be specified, the efforts of follow-up staff can be focused on those categories of individuals most likely to be difficult to locate and to require special attention. In addition, clients at risk of loss to follow-up could potentially be identified at the time of study enrollment, and early action could be taken during the initial phases of the research to increase the likelihood of following them successfully" (pg. 104).

In the alcohol/drug abuse literature, there has generally been a lack of consensus as to the characteristics of substance-abusing clients that are related to premature termination from treatment (Stark, Campbell, & Brinkerhoff, 1990). Many researchers including Miller (1985) now argue against placing undue emphasis on client characteristics in understanding alcoholic dropout rates and suggest a more dynamic model that includes the importance of *environmental* and *therapist/program* factors in determining adherence to treatment. Because there are many obstacles to successfully retaining members of not-in-treatment drug users in alcohol and drug treatment programs, and more recently, HIV/AIDS prevention programs (Finlinson, Robles, & Colon, 1993), we have chosen to examine *both* client specific and environmentally related factors that may contribute to retention of clients in such programs.

As depicted in Figure 1, *client* factors are defined as demographic characteristics and risk behaviors; while *environmental* factors are defined as program and social environmental variables.

FIGURE 1. Factors Contributing to Retention



The rationale for examining client specific characteristics that predict retention stems from findings that attribute program attrition of not-in-treatment drug users to individual factors such as: change of local residence, undergoing hospitalization, dying, becoming incarcerated, and/or choosing for personal reasons not to continue participating (Finlinson et al., 1993). This paper investigates demographic characteristics and risk behaviors that are potentially associated with return for follow-up. Demographic characteristics include gender, age, and ethnicity; risk behaviors include composite scores for drug use in the past 30 days, injection drug use, unprotected and/or other high risk sexual behavior, history of STDs, time spent in jail, perceived chance of contracting HIV and number of times tested for HIV. These variables were chosen because they were consistent with what other researchers have examined in relationship to attrition (e.g., Rhodes et al., 1990), and it was important to determine whether or not subjects who were retained in the program versus those lost to follow-up differed on any of these individual characteristics that could act as mediators of the experimental effects.

Additionally, we sought to explore the impact of program factors (i.e., number of intervention sessions received and contact with outreach workers), as well as social environmental influences (e.g., social networks), on program retention. The rationale for examining the relationship between social networks and program retention comes from recent work in the area

of drug and HIV risk reduction (Friedman et al., 1994; Klovdahl, 1985; Trotter et al., 1994). Specifically, Trotter, Bowen, and Potter (1994) have demonstrated that ethnographic, ego-centered, and full network analysis of drug using groups fills an important information gap for understanding the impact of both peers and culture on risky conditions and practices. As Neaigus, Friedman, and Curtis (1994) have pointed out, the assumption that the individual should be the primary focus for behavioral change is restrictive, and fails to bring into the equation the influences of one's micro and macro social environment. Results of a study by Zapka, Stoddard, and McCusker (1993) provide further support both for the general hypothesis about the influence of peers and drug-use partners prior and subsequent to detoxification and for the greater effectiveness of the enhanced (group-based) intervention on social factors. Subjects who demonstrated "safer" levels of drug use at follow-up also reported an increased number of people they talked with when upset (social support), an increased frequency of argument skills about safe drug use (social influence), and a decreased number of friends who injected drugs (social network).

We also chose to examine the relationship of program factors to program retention, because the literature suggests that the vast majority of treatment effectiveness studies have ignored measures of dose response, characterizing interventions instead as "black boxes" and simply dichotomizing whether they were received or not (Lipsey, Cross, Dunkle, Pollard, & Stobart, 1985). Booth and Watter's (1994) review of papers assessing the effectiveness of risk-reduction interventions targeting injection drug users (IDUs) found that only a few of the 27 studies included measures of intervention dose. Further, the impact of outreach intervention on clients' behavior change has not been thoroughly examined (Leviton, Hegedus & Kurbrin, 1990; Schensul & Schensul, 1990). Because the efficacy of interventions can depend so much on the way in which they are delivered (or not delivered), it is important to look more closely at outreach contact and intervention dose in predicting retention of subjects in prevention programs (Booth & Koester, 1994). This paper seeks to overcome some of the gaps in the literature and to determine which *individual* and *environmentally-based* factors predict retention of not-in-treatment drug users in an HIV/AIDS intervention project.

METHOD

Participants

The HIV/AIDS intervention program described in this paper represents one of 25 independent projects that are part of a national HIV/AIDS

monitoring and intervention Cooperative Agreement Project funded by the National Institute on Drug Abuse. To date, 590 active drug users have been recruited into the project from two communities in the Southwestern U.S. with populations of 8,000 and 45,000. All participants were 18 years of age or older, either intravenous drug users (IDUs) or crack smokers and have not been in formal drug treatment for at least 30 days. Prior to data collection, informed consent was obtained and drug use status was established using evidence of fresh needle tracks and/or ONTRAK Rapid Assay for Drug Use (Roche Diagnostics, Nutley, NJ).

Intervention

Not-in-treatment drug users were recruited by indigenous outreach workers using a targeted sampling plan modified for small town conditions and randomly assigned by groups of associated drug users to a "standard" or "enhanced" intervention (Trotter et al., 1994). The "standard" intervention included 2 educational sessions (Sessions 1 and 2) in which basic information about HIV, its modes of transmission, and methods to avoid becoming infected were presented (NIDA, 1992). In addition, correct methods of condom use and cleaning injection equipment were demonstrated for the subject and then practiced. Voluntary HIV testing, including pretest counseling, was offered to each subject at the end of the first session. Session 2 was conducted two weeks after Session 1 and included a review of material presented during Session 1 and HIV posttest counseling, if applicable.

The "enhanced" intervention group received 2 additional sessions (Sessions 3 and 4) developed specifically for this project (Bowen et al., 1992). Session 3 was an individual session in which personal risks reported by the subject were discussed with specific goals for risk reduction. Session 4 was a group intervention, ideally with the subject's drug using network. Both sessions attempted to identify barriers to change, to develop a plan for overcoming these barriers, and to identify risk reduction goals (D'Zurilla & Goldfried, 1971; Prochaska & DiClemente, 1986).

Measures

The primary measures of risk behavior for this population were collected using the instrument developed for the Cooperative Agreement Project, the *Risk Behavior Assessment (RBA)* (NIDA, 1991). The RBA is a comprehensive assessment of drug use, sexual behavior, and the relationship of drug use and sexual behaviors that may place the subject at risk for contracting HIV. The questions are posed in the open-response format

(Catania, Gibson, Chitwood, & Coates, 1990). It is administered during Session 1 and again at 6 month follow-up (Risk Behavior Follow-up Assessment–RBFA).

As seen in Table 1, data from the RBA used in analyses for this paper included *demographic variables* and *behavioral risk* variables. The demographic variables were age, gender, and ethnicity. The behavioral risk variables included: (1) frequency of intercourse with intravenous drug users (recoded as 0 = no IDU partners, 1 = some or all IDU partners); (2) frequency of unprotected sex (recoded as 0 = 50-100% condom use, 1 = <50% condom use); (3) 30 day drug use patterns for intravenous and non-intravenous drugs (composite scores that summed the reported frequency of injection or non-injection use of cocaine, heroin, methadone, other opiates, and amphetamines during the last 30 days, respectively); (4) history of STDs (0 = no reported STDs, 1 = 1 or more reported STDs); (5) number of years spent in jail; (6) perceived chance of getting HIV (0%, 25%, 50%, 75%, or 100%); (7) number of times tested for HIV; and (8) ever received drug treatment (0 = no, 1 = yes).

Program variables included the number of intervention sessions clients received (1 to 4 sessions) and questionnaire items which reflected the outreach workers' knowledge of each client before and during the project. Specifically, outreach workers were asked to rate (on a five point scale) how well they knew the client and his or her network (0 = not at all to 5 = a lot) before the client began participating in the project and during the process of participating in the project.

Social environmental variables used in the analyses included: (a) the number of years one lived at current residence (0 = less than 1 year, 1 = 1 year or more); (b) single group membership vs. multigroup membership; and (c) network type (1 = Closed, 2 = Kinship, 3 = Friendship, 4 = Open access, and 5 = Isolates). A brief description follows on how the variable "network type" was created.

Network Type

The composition of networks has been classified within a drug network typology that provides important contextual information for assessing or reducing risky behavior (Trotter, Potter, & Bowen, 1993). The network characteristics either increase or decrease the risk for HIV infection over time and include three major variables: the open vs. closed nature of the network in terms of recruitment of new members; the type of social relationships that exist in the networks, such as kinship or friendship; and the type of activities that people engage in as network activities, like drug use, work or play.

The interplay of the three variables produced a typology of four drug network types (Trotter et al., 1993). Type A networks are closed groups based on very long term association, with virtually no social interaction beyond obtaining drugs. People use drugs in isolation and do not engage in drug or any related social activities. Type B drug networks are semi-closed and are predominantly kinship groups (family, in-laws, or fictive kinship such as compadrazgo relationships in the Hispanic community). One is either born into, marries into, or has a steady sexual partner in the group.

TABLE 1. Dependent and Independent Variables

DEPENDENT VARIABLE

6-month follow-up assessment completed (Yes or No)

INDEPENDENT VARIABLES

Demographics
Age
Gender
Ethnicity (African American, Anglo, Hispanic, Native American)

Behavioral Risk
Frequency of intercourse with non-intravenous drug users
Frequency of unprotected sex ("unsafe" sex index)
30 day drug use patterns for intravenous and non-intravenous drugs
History of STDs
Number of years spent in jail
Perceived chance of getting HIV
Number of times tested for HIV
Drug treatment

Social Environment
Number of years lived at current residence (Less than 1 year vs. 1 year or more)
Single network membership vs. multi network membership
Network type (1 = Closed, 2 = Kinship, 3 = Friendship, 4 = Open access, 5 = Isolates)

Program Factors
Outreach worker's knowledge of subject before project
Outreach worker's knowledge of subject during project
Outreach worker's knowledge of subject's network before project
Outreach worker's knowledge of subject's network during project
(Scale: 0 = Not at all, 5 = A lot)

Number of intervention sessions received (1-4)

The groups tend to be homogeneous in socioeconomic status and ethnic identification. Type C networks (friendship based networks) are semi-open systems whose members cop (buy drugs) together and are socially bonded by drug use. The predominant social bonds in the group are long term friendships, although some kinship relationships are normally present. Individuals in these networks involve one another in both drug use and in other types of social activities. Type D (acquaintance) networks are the most open of the four types. They often include poly drug users who bridge or skip from group to group. The most common drug used is crack cocaine. These groups are normally heterogeneous in terms of ethnicity. Finally, ISOLATES are individuals who could not be successfully assigned to any of the known drug networks in the study area. They have no identifiable lasting social relationships with network members, other than occasionally buying drugs from them.

Analyses

Data were analyzed using SPSS (Statistical Package for Social Scientists) for Windows (Version 6.0). The association of variables with RBFA completion was first examined at the bivariate level using chi-square and Kruskal Wallis one-way ANOVA (for nonparametric data). Variables were categorized (blocked) as demographic characteristics, risk behaviors, social environmental factors or program factors as seen in Table 1. All variables that were significant ($p < .05$) at the bivariate level were then introduced (by block) into a logistic regression equation to assess the influence of each variable (in the block), controlling for all others. A more parsimonious model was fitted by eliminating the weakest predictors in a stepwise fashion.

RESULTS

Sample Characteristics

For the analyses presented in this paper, approximately 250 participants were eligible for 6-month follow-up and had completed all of the Time 1 assessments. Sixty-nine percent (n = 177) completed the RBFA versus 31% (n = 80) who did not. A summary of the demographics of this sample can be seen in Table 2. The sample included individuals from all four local cultural groups: African American, Anglo, Hispanic, and Native American. Sixty-eight point three percent were male. The majority had a high school education or less and were between 18-34 years of age. Fifty-six

TABLE 2. Demographic Characteristics of the Sample

Gender	
Male	68.3%
Female	31.7%
Age Range	
18-24	41.4%
25-34	41.0%
35-44	13.0%
>44	4.6%
Ethnicity	
African American	20.0%
Anglo	26.5%
Hispanic	42.7%
Native American	10.8%
Education	
Less than High School	44.8%
GED or High School	37.5%
Trade School or College	17.6%
Drug Use	
Intravenous Drug User (IDU)	21.5%
Crack Smoker	56.4%
IDU & Crack Smoker	22.1%

point four percent were crack smokers (only), as opposed to 21.5% solely IDUs, and 22.1% both IDU and crack smokers. In addition, of these subjects, 60% had been assigned to a standard intervention (2 sessions), vs. 40% to the enhanced program (4 sessions).

Bivariate Analyses

Table 3 reflects the bivariate relationships between several of the categorical variables with retention (defined as completion of the 6-month follow-up assessment, the RBFA). Of the demographic variables, ethnicity and age were significantly associated with retention. Those who were 25-44 years of age and non-Anglo were more likely to return for 6-month follow-up. Behavioral risk variables that were significantly associated

with retention included: (1) history of STDs (with those reporting having more than one STD, more likely to return for follow-up) and (2) 30 day drug use patterns for *non-intravenous* drugs (X^2 (1, N = 252) = 4.52, p = .03)–with those reporting using non-injection drugs *fewer* times in the past month, *more* likely to return for follow-up. Other categorical risk variables seen in Table 3, such as drug treatment, IDU partners, and use of condoms were *not* significantly associated with retention. Similarly, Kruskal Wallis one-way ANOVA revealed that there was no significant difference in attrition between those who spent more time in jail (X^2 (1, N = 250) = .98, p = .27), those who perceived their risk of getting AIDS as higher (X^2 (1, N = 260) = 1.25, p = .22), those who used injectable drugs more often in the last 30 days (X^2 (1, N = 257) = .15, p = .66) nor those who were tested for HIV more times (X^2 (1, N = 257) = 1.44, p = .20).

Social environmental variables (one year or more at the same residence and network type) were also significantly associated with program retention (with those reporting more stable living arrangements, and members of kinship and friendship networks more likely to return for 6-month follow-up). Kruskal Wallis one-way ANOVA tests also indicated that clients and their networks who were better known by outreach workers before and during the project were more likely to return for follow-up. Chi-squares for the outreach variables ranged as follows: (X^2 (1, N = 258) 2.65 – 40.67, .02 < p < .0001).

Multivariate Model

Stepwise logistic regression was performed using the blocks of variables seen in Table 1. Blocks were entered into the model in the following order: (1) Program factors, (2) Social environment, (3) Behavioral risk, and (4) Demographics. The entry order of the blocks of variables was selected on the basis of what we hypothesized to be the easiest to manipulate (program factors) to the most difficult (i.e., gender and age). All variables were included as categorical variables except for outreach contact questions and drug use (continuous variables). As Table 4 reflects, the model predicted correct group membership for 81% of the subjects. From Block 1 (program factors), the number of intervention sessions entered the equation first, with less retention seen for those subjects receiving one and three sessions (vs. two and four sessions). Outreach contact with subjects during the project entered the equation second; outreach contact with subject's network before the project and during the project entered the equation third and fourth, respectively, with less contact significantly more likely to predict drop out at 6 month follow-up.

From Block 2 (Social Environment), stable residence (1 year or more at

TABLE 3. Categorical Variables Associated with Completion of 6-Month Follow-Up (RBFA)

	% Completed RBFA (N = 250)	X^2
DEMOGRAPHIC		
Gender		
Male	66.5%	2.37
Female	75.9%	
Ethnicity		
Black	75.0%	33.61***
White	42.0%	
Hispanic	79.3%	
Native American	85.7%	
Age		
18-24 yrs.	57.4%	13.13**
25-34 yrs.	78.5%	
35-44 yrs.	79.4%	
45+ yrs.	66.7%	
RISK BEHAVIORS		
No Drug Tx	69.9%	.05
Drug Tx	68.5%	
No IDU partners	73.2%	1.39
Some or all IDU	64.8%	
50-100% condom use	65.2%	1.47
< 50% condom use	72.2%	
No STDs reported	65.4%	5.37*
1 or more STDs	80.3%	
SOCIAL ENVIRONMENT		
Same residence < 1 yr.	57.9%	12.74**
Same residence ≥ 1 yr.	78.4%	
Single network membership	67.8%	.51
Multiple network membership	72.2%	
Network type		
Closed	60.0%	9.71*
Kinship	91.7%	
Friendship	73.2%	
Open access	64.4%	
Isolates	72.2%	
PROGRAM FACTORS		
1 intervention session	23.1%	50.43***
2 intervention sessions	75.0%	
3 intervention sessions	61.1%	
4 intervention sessions	85.7%	

*p < .05, ** p < .005, ***p < .0001

the same location) was found to be significantly predictive of retention. Network type entered the model last with "closed" networks experiencing the most loss to follow-up. From Block 3 (risk variables), neither drug use in the last 30 days nor reported STDs significantly predicted retention, when evaluated in the context of other predictors. From Block 4 (Demographics), neither age nor ethnicity was found to be a significant predictor of retention.

In examining the results from this multivariate model, some concern was raised about whether the number of intervention sessions subjects received was confounded by the assignment of subjects to enhanced (4 sessions) versus standard (2 sessions) intervention. Therefore, the same logistic model was run controlling for intervention assignment. The results for each group (enhanced vs. standard) were consistent with the total sample (i.e., even for the enhanced group, subjects who completed 1 and 3 sessions were less likely to return for six month follow-up than subjects who completed two and four sessions). Possible explanations for these results are addressed in the discussion.

DISCUSSION

We have argued that both client specific and environmentally related factors need to be examined in relationship to retention of not-in-treatment drug users in HIV/AIDS prevention programs. Interestingly, the analyses presented in this paper indicated that environmentally related factors (outreach knowledge, dose of intervention, and network characteristics) were more predictive of retention than individual client characteristics (e.g., drug behavior, demographics, etc.). For example, while noninjection drug use, history of STDs, ethnicity and age were all associated with program retention on a bivariate level, they did not play a significant role in the model in the context of more environmentally-based predictors.

We found that with one measure of social environment (network type), closed networks compared to the reference (isolates) were 7.01 times as likely NOT to return for follow-up. This may be explained by the following information: (1) the drug use behavior of Type A networks tends to be very secretive, (2) the primary purpose of the network is to pool resources for the acquisition of drugs, and (3) for the most part, joint social activities do not extend beyond drug scoring. Further, most of the members are married or in monogamous relationships, and they are employed at various economic levels. They may use a maintenance level during the week and get "loaded" on weekends or special occasions. These characteristics describe a group that could be more hesitant to return for follow-up due to

TABLE 4. Predictors of Retention of Subjects at 6-Month Follow-Up

	Imp. X^2 at entry[a]	Multiple Odds Ratio[b]	95% CI[c]
Block 1			
Intervention	47.3***		
1 session		10.44***	(2.97, 36.97)
2 sessions		n.s.	-
3 sessions		3.47+	(.86, 14.01)
4 sessions		REF	-
Outreach contact:			
Before project	n.s.	n.s.	
During project	22.27*	.6033	(.399, 1.38)
W/network before	2.76**	2.38	(1.36, 4.18)
W/network during	10.48**	.378	(.208, .693)
Block 2			
≤ 1 yr. same residence	7.06*	2.53*	(1.22, 5.26)
Network type	8.54+		
Closed		7.01*	(1.01, 48.9)
Kinship		n.s.	-
Friendship		n.s.	-
Open		n.s.	-
Isolate		REF	
Block 3			
Noninjection drug use	n.s.		
Reported STDs (Yes or no)	n.s.		
Block 4			
Ethnicity	n.s.		
African American		n.s.	
Caucasian		n.s.	
Hispanic		n.s.	
Native American		REF	
Age	n.s.		
18-24		n.s.	
25-34		n.s.	
35-44		n.s.	
45+		REF	

[a]Improvement X^2 at entry, [b]Multiple odds ratio, [c] 95% Confidence Interval
+ $p < .10$, * $p < .05$, ** $p < .005$, *** $p < .0005$

concern about disclosure of personal information to co-workers, relatives, and other people outside of their "closed" circle. They may also be less influenced by peer decisions than any of the other types of groups or may receive enough internal support that they do not feel they need to return to the program for assistance.

In contrast, members of Type B (kinship networks) and (to a lesser extent) Type C (friendship networks) were more likely to return for follow-up. This might be explained by having stronger pressures to conform to group norms (where, in this case, the group norm may have been to continue participation in the program). These findings suggest to us that it is extremely important to examine the influence that peer pressure and network norms may have on perceptions of risk and subsequent behavior.

The other social environment variable which was significantly predictive of retention was length of residence at the same location. One explanation is that clients who tend to live in one location (for one year or more) are easier to find at follow-up. In addition, because not-in-treatment drug users tend to change residences relatively frequently, those staying in one location for more than 1 year may be exhibiting more stability in their lives, which could translate into more commitment to stay in the prevention program or fewer external pressures to leave. Residential stability may also be a good indicator of social stability with participation in stable social networks.

The importance of indigenous outreach workers getting to know clients is also demonstrated in this model. The data indicate that the degree to which the outreach workers felt that they got to know the clients (and their networks) during the project played a major role in predicting retention. While establishing rapport with any client population is essential, this is perhaps more the case with not-in-treatment drug users. Finlinson et al. (1993) have suggested that for successful recruitment and retention of clients in such programs it is important to employ outreach workers: (1) who are rehabilitated drug users, and therefore understand the problems drug users face each day and the obstacles to ending drug use; (2) who can stress to potential recruits their genuine concern about the individual client, and their desire to help clients by offering counseling and referrals to medical and non-medical services; and (3) who can assist participating drugs users in meeting appointments. While Finlinson et al. (1993) have emphasized factors that assist in early contacts and rapport building processes, our data indicate a need for strategies that maintain contact and increase rapport through time. For effective follow-up of clients, the cooperation of all staff (interviewers, interventionist, etc.) is essential to have an impact on retention of participants. As Baker and

Johnson (1990) have noted, establishing good relationships with individual participants helps gain the target population's trust so that participants can feel secure enough to come back.

This relates to another finding presented in this paper: that intervention "dose" was significantly predictive of retention, although not in a completely linear fashion. While it seems logical that those clients who received only 1 session were the most likely NOT to return for 6-month follow-up, it is a bit more challenging to interpret why those who received 3 sessions were more likely to drop-out than those who received 2 sessions (and this was true even controlling for intervention assignment). We believe that this might be attributed to the nature of the "sets" of interventions that clients received. Sessions 1 and 2 presented basic educational information about HIV, its modes of transmission, and methods to avoid becoming infected. Voluntary HIV testing, including pretest counseling, was offered to each subject at the end of the first session, with results and HIV post-test counseling presented two weeks later during Session 2. Perhaps the sense of accomplishment and support (from staff, peers, etc.) of completing this first "set" or "package" of interventions provided enough incentive to return for 6-month follow-up, but inadvertently, made some clients feel that they did not need to return for the second "set" of interventions (Sessions 3 and 4). Further, members of the enhanced group who completed 3 but not all 4 sessions may have dropped out simply because they did not feel the same sense of accomplishment in completing a package of interventions (Sessions 3 and 4). Future analyses need to take a much closer look at what individual and program factors may have contributed to clients dropping out at different *stages* of the intervention process.

In conclusion, our findings emphasize the need for active utilization of process evaluation data to monitor program implementation and attrition, above and beyond simple measures of individual attributes of clients. Clearly, strategies employed to increase client engagement and retention must be tailored to the specific program context and the particular attrition source. However, in looking at attrition from HIV/AIDS programs, it is important to utilize both qualitative and quantitative methods to examine intervention and outreach delivery. These strategies may include: (1) informally assessing the reasons for program disengagement based on careful discussions with program staff; (2) utilizing a tracking system to review the client flow data in a more refined way to better understand the reasons for dropout, that is, examining various types of attrition for each intervention group; (3) conducting semi-structured interviews with a sample of clients who have dropped out vs. those who have remained in the program to ask them about the reasons for their discontinuance (or reten-

tion) in the program; and (4) examining pre-program predictors of attrition, but also more proximate, during-program factors associated with dropout. Research directed at identifying during-program predictors of attrition may suggest strategies that are effective at retaining these clients. For example, inquiries about social and familial network supports available to the client (before and during program participation) could be used to inform project staff of the resources that are either available or absent for clients (Schilling & Sachs, 1993).

Overall, it is critical to continue testing the efficacy of strategies designed to increase retention of not-in-treatment drug users in HIV/AIDS prevention projects. The search for effective HIV/AIDS intervention programs for this client population may well depend on solving the attrition problem.

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