PRETEST ASSESSMENT AS A COMPONENT OF SAFER SEX INTERVENTION: A PILOT STUDY OF BRIEF ONE-SESSION INTERVENTIONS FOR WOMEN PARTNERS OF MALE INJECTION DRUG USERS IN NEW YORK CITY

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ABSTRACT This pilot study evaluated whether brief safer sex interventions for women partners of male injection drug users significantly influenced perceptions of partner risk, human immunodeficiency virus (HIV) knowledge, correct condom usage, and self-reported consistent safer sex (abstinence or 100% of vaginal-penile intercourse acts protected by male or female condoms). The study also examined the impact of pretest assessment on those variables since pretest assessment may challenge participants' current knowledge, safer sex practices, and partner communication techniques. The study randomly assigned participants to pretest or no pretest assessment. Each group was also assigned randomly to a presentation modality: (1) safer sex pamphlet review only, (2) pamphlet review with demonstration of several safer sex alternatives, or (3) pamphlet review with skills practice to mastery with one safer sex alternative of the woman's choice. For the last two conditions, a 35-minute interactive session covered prevention efficacy of safer sex methods for HIV, sexually transmitted infections, pregnancy, correct use, eroticization, local cost and availability, and partner objections. At 7 weeks postintervention, a higher proportion of women who took pretest assessment reported consistent safer sex (66.7%) compared to those without pretests (55.6%). Assignment to the interactive interventions (skills or demonstra-

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tion) had little additional impact over pretest assessment for these women. Among women who did not take pretests, the interactive interventions had strong effects; 76.9% reported consistent safer sex versus 33.3% in the pamphlet review group. There were additional specific effects for pretest assessment on HIV knowledge and partner risk perception and for interactive intervention on correct condom usage. Brief interventions appear to have some positive short-term effects. Pretest assessment may be an important component of brief interventions.

KEY WORDS Assessment, Evaluation, Heterosexual Partners of IDUs, HIV, Intervention, Women.

INTRODUCTION

Heterosexual intercourse now accounts for nearly half of the new cases of human immunodeficiency virus (HIV) reported in US women. In New York City, where 22% of reported US acquired immunodeficiency syndrome (AIDS) cases in women have occurred, nearly 50% of heterosexual transmission of HIV to women is attributed to sex with an injection drug user (IDU).^{1,2} As part of a study of the safer sex decision making of inner-city women, one-session interventions for partners of IDUs were designed and carried out in English and Spanish in the Lower East Side (LES) of New York City. The LES is a neighborhood with 10% estimated HIV seroprevalence and high IDU and heterosexual transmission.^{2,3}

The brief interventions, and the pretest assessment accompanying them, addressed the cognitive barriers (e.g., denial of risk to self and partner or doubts about the efficacy of safer sex methods), personal barriers (e.g., interference with pleasure, mastery of safer sex techniques, perceived compatibility with pregnancy or birth control), and social barriers (e.g., cost, availability, partner objections) that inner-city women cite as preventing them from using safer sex methods.⁴⁻⁶

Pretest assessment may serve a "priming" or challenge function. Pilot work in the neighborhood suggested that residents almost always rated their HIV-related knowledge as high, but they were unaware of the range of safer sex products and strategies available and had not considered partner communication techniques such as having partner agreements on birth control and safer sex. The effect of baseline assessment as a primer has been hypothesized⁷ to account for the gains in safer sex outcomes and in the reduction in injection-related outcomes⁸ often found in comparison condition interventions. Pretest assessment was not designed to be a part of a motivational interviewing strategy in the current study; it was used as baseline assessment. Yet, challenge and self-assessment are an integral part of motivational interviewing techniques and may act as a catalyst to behavior change in brief interventions.⁹ In their study, Kalichman et al.⁹ gave pretests to all participants and varied the method of assessment (e.g., face to

face, self-administered), but did not treat pretests as an intervention component as the present study does.

Effective multisession group interventions for at-risk adults have been reported (e.g., for inner-city African-American women and male and female attendees of sexually transmitted infection [STI] clinics).^{7,10} These interventions may not reach persons unable or unwilling to attend multiple or group sessions. Because of scheduling requirements for group interventions, such interventions may challenge the organizational capacity of some host institutions. The current safer sex interventions were designed to be presented in a brief one-on-one session that could occur in any counseling setting (e.g., medical checkups, family planning clinics, community-based organizations, health fairs with private rooms or booths, STI or HIV testing sites where return rates to obtain test results are low).

Service providers usually have limited time in which to influence safer sex behavior; therefore, they must evaluate how that time can be used most effectively. If counselors desire their clients to be aware of safer sex alternatives, a review and discussion of written safer sex material may be appropriate. If they desire their clients to acquire skill in using safer sex methods, educators have two additional alternatives: (1) exploring and briefly demonstrating an array of safer sex methods and assisting a client in choosing one or (2) providing more comprehensive instruction about one alternative of the client's choice. In the former condition, since the educator must cover a range of safer sex methodologies, it is more efficient for the practiced educator to demonstrate correct usage of the many safer sex alternatives quickly rather than allowing the client to "fumble around" with each.¹⁰ In the latter condition, there is more time for direct skill acquisition by the client.^{11,12}

It was hypothesized that pretest assessment or participation in the interactive skills or demonstration interventions would increase the odds of consistent safer sex; the two together may have an interactive or multiplicative effect. Furthermore, both factors (pretest and type of intervention) may have single and joint impacts on perception that a past or future partner was at risk for HIV (for those women who did not already know that they had an HIV seropositive partner) and may increase scores on a 50-item test of HIV knowledge. It was also hypothesized that women exposed to the most interactive interventions—skills and demonstration—would score higher on skills acquisition in terms of condom use than women who reviewed and discussed a safer sex pamphlet. The skills intervention, with its emphasis on personal practice, was hypothesized to be more effective

than the demonstration intervention for correct condom use and self-reported consistent safer sex.

METHOD

Evaluation was based on a post-test only 2×3 factorial Solomon multiple group design¹³ and analyzed by 2×3 factorial analysis of variance for randomly assigned independent groups and by logistic regression. The primary outcomes were measured at 7 weeks postintervention. Baseline assessment (pretest, no pretest) was treated as a two-level factor; intervention was treated as a three-level factor (pamphlet only, demonstration, skills). The number of participants per cell varied between 8 and 16, with 45 (61%) of the 73 participants who completed the study receiving pretest assessment. Randomization was designed to assign 40% to the pamphlet review only intervention comparison and 30% each to the skills and demonstration interventions; 31 (42%) were assigned to pamphlet review only, and 20 (27%) and 22 (30%) were assigned to the skills and demonstration arms, respectively. Power was calculated using the PASS 6.0 program.¹⁴ In this pilot study, power was sufficient to detect large effect sizes ($f = 0.4$; f is defined for analysis of variance by Cohen).¹⁵ For main effects, power equaled 0.9 for pretest effects, 0.85 for intervention effects ($\alpha = .05$), and 0.8 for interactions ($\alpha = .05$).

PARTICIPANTS AND PROCEDURES

The pilot study took place, January through August 1996, in the LES of New York City. Subjects were women aged 21 to 55 years who reported they were sexually active in the last 30 days with men they knew or suspected had injected drugs within the last 10 years. Partner IDU risk within the last 10 years was chosen as an entry criterion since injection drug use during those years would coincide with the fulmination of the HIV epidemic in the LES. For the 30–40% of IDUs in the LES who were HIV infected during the mid-1980s to mid-1990s,³ many did not know their HIV status even while sexually active and practicing unprotected sex. For those who did know, there were obvious disincentives for disclosure to sexual partners. Women screened into the project reported they were not IDUs and had not traded sex for drugs/shelter/food/money. Participants reported that they had not been exposed to materials from a Centers for Disease Control and Prevention AIDS Community Demonstration project¹⁶ that operated in a local housing project from 1991 to 1994.

Outreach workers were recruited from 30 four-block areas of approximately equal geographic size; recruitment was according to a random algorithm, by which three factors—time of day (morning or afternoon), day of week (Monday,

Tuesday, Wednesday, Thursday, Friday), and area (1 through 30)—each were assigned randomly.¹⁶ Women appearing to be at least 21 years old and under 55 years old were approached and screened at public places in streets (e.g., entrances to shops and apartment buildings, parks, sidewalks) and in housing projects (e.g., playgrounds, walkways, entry foyers). Outreach workers, administering a scripted screening instrument, described the study as concerning an important problem in the neighborhood—HIV—and rewarded women with a yellow ribbon pin for completing the screener.

Eligible women were invited to a local storefront, where informed consent was obtained. Assessment and intervention immediately followed consent. Random assignment was determined in advance of participation; interviewers were blind to intervention assignment, and safer sex counselors were blind to pretest assignment. The outside of a sealed envelope determined pretest assignment; two sealed notes within determined intervention modality. All women assigned to intervention had a pamphlet review. After that review, a second sealed note assigned the respondent to no further intervention, skills, or demonstration. Assessment was performed by an interviewer if the participant had been assigned to the pretest condition, and intervention was conducted by a female bilingual English/Spanish safer sex counselor. The roles of interviewer and counselors were rotated so that participants received interventions and assessments from different individuals. Women were scheduled for follow-up assessment approximately 7 weeks postintervention and were paid \$15 for completion of both appointments.

Of 1,269 women approached by outreach workers, 1,170 (92.2%) were ineligible, the majority of these (91.3%) because they reported no IDU partner, no sexual intercourse within the last 30 days, or they had seen Centers for Disease Control and Prevention intervention materials. Less than 7% reported trading sex for money or drugs, having an injection drug use history, or having a combination of these two factors. The remainder either refused to complete the screening instrument (1.4%) or were under 21 years of age (0.6%).

Of the 99 women eligible for the study, 6 (6.1%) refused further participation, and 3 (3.0%) entered the study, but gave inconsistent responses or scored 13 of 14 on a measure of social desirability in sexual self-report. Of the 90 eligible street-recruited women entering the study, 73 (81.1%) completed all aspects of the study through 7-week follow-up. Of the 17 women lost to follow-up, 65% were assigned to the pretest condition. These women did not differ from women retained in the study and completing pretests ($N = 45$) at baseline on age, ethnicity, outcome variables, or indicators of relevant skills (i.e., partner negotiation, past

contraceptive use). Among the 45 participants completing pretests, there were no significant differences in demographics or sexual behaviors by assignment to intervention condition.

PRETEST AND FOLLOW-UP ASSESSMENT BATTERY

Given the quickly changing HIV epidemic, all measures were reviewed for accuracy by the New York State Department of Health AIDS Institute Office of Evaluation¹⁷ (e.g., available HIV treatments). All measures were administered at both baseline and follow-up. Instruments were either self-administered or read to the respondent in English or Spanish. There were no significant differences between scores of persons experiencing these various forms of administration with the exception of scores on a social desirability scale for women's sexual self-report, for which, as expected, scores were higher ($F = 8.9$, $P = .004$) when instruments were read to respondents. Fortunately, the proportion of women choosing to have the instrument read to them did not differ at follow-up for those who took pretests ($N = 17$, 38%) and those who did not ($N = 11$, 39%).

HIV knowledge A 50-item instrument adapted from earlier scales¹⁸⁻²⁰ assessed HIV knowledge. Content domains included knowledge about global and local prevalence of HIV, HIV transmission routes, protective measures to prevent transmission of HIV, treatments, risk behaviors, the relationships of STIs and HIV, infectivity of HIV versus infectivity of illnesses that a person with HIV might also have, relationship of HIV and AIDS, and the meaning of the HIV test. Items were answered in a true/false format with optional responses of "not sure" and "don't understand the question." Items endorsed as either "not sure" or "don't understand the question" were counted as incorrect. The measure was scored as total number correct; the Cronbach alpha is .8.

Perceived partner risk For those women whose partner did not disclose their HIV seropositive status to them, perception of current and future risk to the partner(s) was measured by a single item—"How likely is it any past, present, or future partner(s) will test positive for HIV?" The item was rated on a 6-point scale, with 1 = extremely likely and 6 = extremely unlikely.

Consistent safer sex Respondents were asked to report on the frequency of sexual intercourse in the last 3 weeks and to describe the frequency of vaginal-penile acts that were protected by safer sex or birth control methods. Male or female condom use for every instance of vaginal intercourse (anal intercourse was rare in this population) or abstention from vaginal sex was scored as 1; a score of 0 was given for less than 100% protection.⁹

Observation of male condom use Respondents demonstrated the safer sex technique that they said they had used most often in the last three weeks. Since the male condom was chosen across groups most often, only the male condom observation results were analyzed. To demonstrate the male condom, respondents selected from an array of condoms and lubricants and placed a condom on, and removed it from, a dowel representing an erect male penis. An interviewer noted if eight steps (select latex vs. lambskin condom, check date, and use water-based spermicidal lubricant, if applicable; tear package along side; put condom in "nylon stocking" position; pinch tip; roll down condom on penis replica; add extra nonoxynol-9 lubricant on the outside, if applicable; hold base of condom for removal; twist and knot end of condom and deposit in garbage) were completed correctly. Scores represent total correct.

Lifetime history of safer sex practices An 18-item checklist measured the lifetime history of acquisition or use of contraceptive or safer sex methods by self or partner. Typical items were "I have had sex with a man who used a male condom," "I have gotten a male condom and given it to a man." A 23-item scale in "Yes/No" format concerned partner communication and negotiation.¹⁶ Content domains included current partner agreement about safer sex or birth control, comfort in discussing sex, partner violence, and ability to refuse sex. Sample items were as follows: "Have you ever agreed to stop sex temporarily because of illness, pregnancy, or other conditions?" "Have you ever made an agreement with him about the safer sex methods you would use together?" The Cronbach alpha exceeded .7 for each.

Other measures Other measures included demographics (e.g., age, ethnicity, relational status, household composition), a checklist of sources of HIV information within the prior 30 days, and a social desirability scale for women's sexual self-report (Cronbach alpha = .8).¹⁷ The sources of information checklist described 48 large media, small media, print, interpersonal, and community-based sources of HIV information and asked if the respondent had used these sources.²¹ Half of the social desirability scale's 14 items described undesirable, but frequent (endorsed by over 90% of pilot subjects), behaviors (e.g., "I have faked an orgasm"), and half described desirable, but infrequent (endorsed by fewer than 10% of pilot women), behaviors (e.g., "I've only had sex with people I've loved"). Scoring reflects a greater social desirability response bias.

INTERVENTIONS

Pamphlet review A New York State Department of Health safer sex pamphlet was introduced and enhanced with maps depicting global and local HIV and

STI risk. A 7-minute scripted discussion of the pamphlet covered the positive and negative aspects of women's safer sex options, stressing efficacy or lack of efficacy for HIV/STI/pregnancy prevention, and was enhanced with discussions of ease of use, use within a relationship, opportunities for eroticization, and local cost/availability. The safer sex options included vaginal spermicides only (gels, creams, foams, films, suppositories with nonoxynol-9), diaphragm (with spermicide), female condom (with or without spermicide), male condom (with or without spermicide), and abstinence, which included nonpenetrative "dry sex" (i.e., without fluid exchange).

Experimental interventions Two 35-minute scripted experimental interventions aimed to teach about safer sex through (1) demonstration of a range of safer sex choices by a female counselor or (2) skills practice by the client with one safer sex option of the client's choice based on her thoughts about her current relationship and her abilities to obtain and use the safer sex method in her current and future relationships. The two arms had several features in common. Both included the 7-minute pamphlet review. Both had built-in check points at which queries or repeated performances confirmed understanding or mastery. Both were concrete and specific and used actual products in their packaging; names, addresses, and a visual map of local stores and clinics where the items could be purchased or obtained for free; Medicaid reimbursement numbers; requirements for obtaining safer sex supplies; scripted role plays of partner objections; prompts for eroticization; comparison of clients' rankings of the safety of safer sex alternatives to that of an expert panel; and use of medical adult-scale male and female genitalia models for demonstration and practice. Both interventions were accompanied by handouts illustrating safer sex techniques and visual introductions to games supporting safer sex.

The two interventions differed in their focus (one vs. all) on the safer sex options and the degree of active participation of the women clients. Demonstration participants had each safer sex option demonstrated to them by the safer sex counselor; demonstrations included a brief description of how the counselor would handle acquisition, use, partner objections, and eroticization. After pamphlet review, participants in the skills practice condition focused on the one safer sex option they felt best met their criteria of expense, ease of acquisition, comfort with use, and ease of use in current and future relationships. Skills intervention clients engaged in active practice (e.g., removing products from wrappers, pointing on a map to where they would get the product, role-playing) with prompting and physical guidance from the counselor.

ANALYSIS

Categorical data were analyzed by logistic regression, with pretest and intervention variables and their interaction entered as indicator variables and with social desirability and lifetime safer sex scores entered as covariates, and also by chi square. HIV knowledge and rating of partner risk were analyzed by factorial analysis of variance adjusted for unequal sample sizes per cell (2 [pretest, no pretest] $\times$ 3 [pamphlet only, demonstration, skills practice]). If, as expected, the overall main effect or interaction was significant, planned orthogonal contrasts for unequal cells compared the two interactive interventions—demonstrations and skills—to the pamphlet review and compared the efficacy of the demonstration to the skill intervention.²²

RESULTS

Respondents ranged in age from 21 to 52 years ($M = 36.7$, $SD = 7.5$). The majority were in committed relationships (28.8% living together, 21.9% committed but living separately, 15.1% married) averaging more than 5 years, while 23.3% were single; the remainder were separated, divorced, or widowed, and 16.4% were white, 38.4% were black, and 45.2% were Latino.

Logistic regression indicated that reported consistent safer sex at 7 weeks postintervention was most likely among two groups: (1) women exposed to pretest assessment, regardless of intervention group assignment, and (2) women who did not take pretest assessment, those who were in the interactive interventions. The Figure illustrates this interaction effect (adjusted odds ratio $[OR]_{\text{Pretest} \times \text{Intervention}} = 0.22$, 95% CI 0.06–0.78, $P = .01$). Two-thirds of women exposed to pretest assessment (66.7%) reported using safer sex consistently; this varied little by intervention group (68.8% for pamphlet review only, 65.5% for interactive intervention). Among the 45 women who did not take the pretest assessment, only those who participated in the interactive interventions significantly increased their likelihood of reported consistent safer sex (76.9% vs. 33.3% of women). Among women reporting consistent safer sex, 15 (33.3%) reported abstinence in the prior 30 days, while the remainder reported 3–4 acts per week of vaginal intercourse protected by male or female condoms.

Rating of partner risk was affected significantly by pretest assessment for the 53 women who had not had HIV+ status of their partner(s) disclosed to them ($F[1,47] = 9.7$, $P < .005$, $M_{\text{Pretest}} = 3.2$, $M_{\text{No pretest}} = 4.5$, where 1 = extremely likely to get HIV to 6 = extremely unlikely to get HIV). Type of intervention did not affect perception of partner risk significantly. There were main effects on HIV knowledge for both pretest assessment ($F[1,67] = 5.1$, $P < .05$, $M_{\text{Pretest}} = 41.3$,

FIGURE Women's self-reported abstinence and consistent male and female condom use by pretest assessment and interactive intervention at 7 weeks postintervention.

$M_{\text{No pretest}} = 38.5$) and intervention ($F[2,67] = 3.7$, $P < .05$, $M_{\text{Skills}} = 42.5$, $M_{\text{Demonstration}} = 40.4$, $M_{\text{Pamphlet only}} = 38.6$), but no significant interaction. Orthogonal contrasts revealed that demonstration and skills interventions were together superior to pamphlet review ($F[1,67] = 5.0$, $P < .05$), but not significantly different from one another in influencing HIV knowledge.

For the 51 women choosing the male condom as their safer sex strategy, only intervention modality had a significant impact on scores on the observational test of correct usage ($F[2,45] = 7.23$, $P < .01$, $M_{\text{Skills}} = 5.9$ of 8 steps, $M_{\text{Demonstration}} = 5.4$, $M_{\text{Pamphlet only}} = 3.6$). Again, demonstration and skills were equally effective and superior to pamphlet review ($F[1,45] = 13.3$, $P < .05$). There were no other significant main effects or interactions.

Several competing rival hypotheses¹² were tested to account for the pretest effects. Women exposed to pretests reported accessing more sources of HIV information than women who did not take pretests [less than 10 vs. 10 sources or more, chi square (1) = 7.2, $P < .01$]. No such information awareness was associated with modality of intervention [chi square (2) = 2.5, ns]. On average, all participants had moderate social desirability scale scores ($M = 7.0$, $SD = 2.7$). In addition, social desirability scores for those who took pretests did not change from pretest to follow-up ($t_{\text{dep}}[44] = -0.08$, ns; $M_{\text{At pretest}} = 6.80$, $SD = 3.1$; $M_{\text{At follow-up}} = 6.82$, $SD = 2.8$). Likewise, social desirability scores did not differ at follow-up between those who

took pretests and those who did not ($F[1,71] = 0.44$, ns, $M_{\text{Pretest, at follow-up}} = 6.82$, $SD = 2.8$, $M_{\text{No pretest, at follow-up}} = 7.25$, $SD = 2.6$) or among intervention groups ($F[1,71] = 1.6$, ns; $M_{\text{Pamphlet only, at follow-up}} = 7.5$, $SD = 2.4$; $M_{\text{Interactive interventions, at follow-up}} = 6.6$, $SD = 2.8$).

DISCUSSION

The generalizability of this pilot study is limited by its small sample size, restricted power, and concentration on an at-risk population in a neighborhood with high seroprevalence. Even though the sample size per cell in this pilot study met the standard requirements for analysis of variance,²² it may not have had the requisite power to detect differences between the two interactive intervention modalities or enough power to identify subtle interaction effects. Nonetheless, the findings of this study may have important implications for practice if replicated in larger samples.

First, and foremost, pretest assessment appears to be an important component of intervention. Second, brief one-session interventions appear to have at least short-term positive effects. The pretest assessment queried not only knowledge and perceived partner risk, but also past safer sex behavior and partner communication conditions and strategies; it was beyond the scope of this pilot work to determine if any particular aspect of these pretest questions contributed to their impact. It is also not clear whether these results are limited to women and sexual risk. Simpson et al.²³ found no impact of assessment for injection drug risk in a sample that was 82% men. Likewise, we were unable to assess whether the characteristics these interventions shared in common—concreteness, specificity, feedback on understanding or skills, incorporation of neighborhood and relational context, attention to cost and acquisition of safer sex materials, eroticization of safer sex—contributed to their successes compared to other interactive interventions that might have been designed.

The effects of pretest assessment on outcomes commonly measured in HIV research were robust in this pilot study, not limited to one outcome measure, and of a magnitude to be meaningful for HIV prevention for the high-risk sample studied here. Participants' experience of pretest assessment had a significant impact on self-reported consistent safer sex, perception of partner risk, and HIV knowledge.

The two brief interactive interventions—skills and demonstration—had positive effects on HIV knowledge and the ability to use a male condom correctly. While pretest assessment uniformly affected reported consistent safer sex, these interventions led to greater likelihood of reported consistent safer sex only among those women who were not given pretest assessment. In this study, both experi-

mental interventions led to equally positive outcomes. These results suggest that the impact of brief interventions can be enhanced if they are implemented with pretest assessment.

The data collected allowed some analysis of why pretest assessment was effective. When repeated measurement occurs and scores improve from pretest to follow-up, practice effects and social desirability commonly are implicated.¹² Pretest assessment could also make participants aware of deficits in their knowledge and practice and instigate change. Auxiliary findings lend support to the latter interpretation. Self-report of access to information sources was associated with pretest assessment, but not type of intervention. Women who took pretest assessment seem to have broadened their search for HIV information by follow-up. The social desirability measure, specifically relevant to the sexual behavior outcomes, was not affected by either pretest assessment or intervention. Bias in self-report due to exposure to project staff or instruments does not appear to be a factor.

It may be important to conceive of pretest or baseline assessment as a component of intervention. Recent emphasis on translation of research to practice suggests it is important to understand the extent to which assessment itself is integral to intervention effects and ought not be discarded as part of the "research" rather than "practice" of intervention.

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