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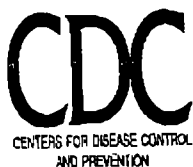
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ISSUES- Prevention-
Counseling and
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October 1998

Most Definitive Study to Date on Effectiveness of HIV Counseling and Testing Finds Significant Reduction in Sexually Transmitted Diseases:

Counters Previous Beliefs on Approach to Prevention

A simple change in HIV and STD counseling across the nation could make a tremendous difference in slowing the spread of HIV and other STDs, suggests new data from the Centers for Disease Control and Prevention (CDC). Researchers found that when counselors "encourage" and "discuss" prevention strategies with people at risk, rather than simply providing a "lecture" on HIV prevention, it significantly reduces their risk of STDs.

In a study involving nearly 6,000 heterosexual men and women attending STD clinics in five U.S. cities, CDC found that *talking with, rather than to* men and women at risk actually resulted in a 20% decrease in new STDs among study participants overall, and a 40% decrease among adolescents and people diagnosed with an STD on their first visit.

Additionally, the study, published in the October issue of the *Journal of the American Medical Association*, found that the "encouragement" approach was just as effective in two brief twenty-minute counseling encounters as in a more extensive, four-session program. These findings indicate that, if well designed, brief interventions can make a significant impact.

"This study showed that it's not *how much* you talk to people about HIV prevention that matters most – but *how* you talk with them, especially if people are encouraged to participate in developing their own risk reduction plan," said Helene Gayle, Director of CDC's Center for HIV, STD, and TB Prevention, NCHSTP.

According to CDC, the brief sessions used in this study were not only as effective as the longer four-session intervention, but are feasible to implement in busy health care settings.

The CDC study, entitled *Project RESPECT*, compared brief (2 session) and enhanced (4 session) interactive prevention counseling to the brief (2 session) didactic (e.g. "lecture-type") messages typical of current care. The "encouragement" approach used in the interactive sessions was modeled after the personalized HIV counseling approach recommended by CDC since 1993.

Counseling was provided to HIV-negative heterosexuals at five public STD clinics in Baltimore, Denver, Long Beach, Newark, and San Francisco who came in for STD examinations. Participants were followed for twelve months to measure new STDs (gonorrhea, chlamydia, syphilis, and HIV) and self-reported condom use. The study is one of the few studies to date to measure not only condom use, but also disease outcomes.

Findings at each of the five sites showed a significantly lower incidence of STDs among both men and women participating in interactive counseling sessions, with the greatest impact among adolescents and individuals diagnosed with an STD at their initial visit.

"The program seems to make the greatest difference for those who need it most," said Dr. Kevin De Cock, Director of NCHSTP's Division of HIV Prevention – Surveillance and Epidemiology. "We know that the majority of new STD infections, including HIV occur among teens and young adults, and the interactive approach reduced risk among young people and others at high behavioral risk."

CDC believes that while the program was tested in STD clinics, the findings are likely to have relevance in any setting in which HIV and STD counseling is provided. Rather than simply providing the facts regarding how HIV transmission can be prevented, counselors in this program engage in a conversation with the individual at risk to identify a small behavior change the patient is willing to make. Counselors then build on this "first step" in the second session to develop a long range risk-reduction plan.

Lead CDC investigator on the study, Mary Kamb, M.D., M.P.H., explained how the conversation needs to differ from the didactic approach. "Instead of beginning with 'these are the facts about transmission and how to protect yourself', the counselors ask questions like – 'what's the one thing you think you could do next week to reduce your risk? How would you try bringing up using condoms with your partner?'"

In this study, the approach was implemented with existing clinic staff, in not much more time than that required for didactic messages, and cost only \$8 additional dollars per client to implement. The costs were primarily related to training counselors and assuring the quality of counseling on an ongoing basis.

"Far too often, prevention programs found to be ideal in research settings are too difficult and expensive to implement in the real world," said Kamb, "With this program the ideal can be real, with few additional resources."

As a result of these findings, CDC hopes that the approach will be widely adopted in STD clinics and other health care settings across the nation. CDC is refining its 1993 HIV Counseling and Testing recommendations to provide even more specific guidance on incorporating this now-proven approach to risk-reduction counseling. CDC will also provide technical assistance to facilities including training existing staff and monitoring the quality of counseling provided at clinics. According to CDC, clinics may have been

reluctant to adopt this approach in the past because they didn't believe it worked better than didactic counseling or because they felt it was too costly and difficult to implement. This study should help put both fears to rest.

"When you compare an additional \$8 investment in HIV prevention to the estimated \$154,000 in lifetime treatment costs and the tremendous human suffering caused by HIV infection, there is no question that this investment is worth making," said Gayle.

Efficacy of Risk-Reduction Counseling to Prevent Human Immunodeficiency Virus and Sexually Transmitted Diseases

A Randomized Controlled Trial

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Context.—The efficacy of counseling to prevent infection with the human immunodeficiency virus (HIV) and other sexually transmitted diseases (STDs) has not been definitively shown.

Objective.—To compare the effects of 2 interactive HIV/STD counseling interventions with didactic prevention messages typical of current practice.

Design.—Multicenter randomized controlled trial (Project RESPECT), with participants assigned to 1 of 3 individual face-to-face interventions.

Setting.—Five public STD clinics (Baltimore, Md; Denver, Colo; Long Beach, Calif; Newark, NJ; and San Francisco, Calif) between July 1993 and September 1996.

Participants.—A total of 5758 heterosexual, HIV-negative patients aged 14 years or older who came for STD examinations.

Interventions.—Arm 1 received enhanced counseling, 4 interactive theory-based sessions. Arm 2 received brief counseling, 2 interactive risk-reduction sessions. Arms 3 and 4 each received 2 brief didactic messages typical of current care. Arms 1, 2, and 3 were actively followed up after enrollment with questionnaires at 3, 6, 9, and 12 months and STD tests at 6 and 12 months. An intent-to-treat analysis was used to compare interventions.

Main Outcome Measures.—Self-reported condom use and new diagnoses of STDs (gonorrhea, chlamydia, syphilis, HIV) defined by laboratory tests.

Results.—At the 3- and 6-month follow-up visits, self-reported 100% condom use was higher ($P < .05$) in both the enhanced counseling and brief counseling arms compared with participants in the didactic messages arm. Through the 6-month interval, 30% fewer participants had new STDs in both the enhanced counseling (7.2%; $P = .002$) and brief counseling (7.3%; $P = .005$) arms compared with those in the didactic messages arm (10.4%). Through the 12-month study, 20% fewer participants in each counseling intervention had new STDs compared with those in the didactic messages arm ($P = .008$). Consistently at each of the 5 study sites, STD incidence was lower in the counseling intervention arms than in the didactic messages intervention arm. Reduction of STD was similar for men and women and greater for adolescents and persons with an STD diagnosed at enrollment.

Conclusions.—Short counseling interventions using personalized risk reduction plans can increase condom use and prevent new STDs. Effective counseling can be conducted even in busy public clinics.

IN THE UNITED STATES, an estimated 580 000 people are infected with human immunodeficiency virus (HIV). New acquired immunodeficiency syndrome (AIDS) cases are declining among gay men and injection drug users but continue to rise among heterosexuals and women.¹ AIDS is now the leading cause of death for black women aged 25 through 44 years.² Among heterosexual patients attending publicly funded sexually transmitted disease (STD) clinics, HIV prevalence is 50% to 100% higher than in the general population.³

Recent therapeutic breakthroughs have led to marked improvement in morbidity and mortality for HIV-infected persons; however, treatment costs are high and there is still no cure.⁴ Sound policy recommendations for disease pre-

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A complete list of the members of the Project RESPECT Study Group appears at the end of this article.

Reprints: Reprint Services, Office of Communications, NCHSTP, Mailstop E-08, Centers for Disease Control and Prevention, 1600 Clifton Rd NE, Atlanta, GA 30333. Additional information is available at http://www.cdc.gov/nchstp/hiv_aids/projects/RESPECT.

JAMA. 1998;280:1161-1167

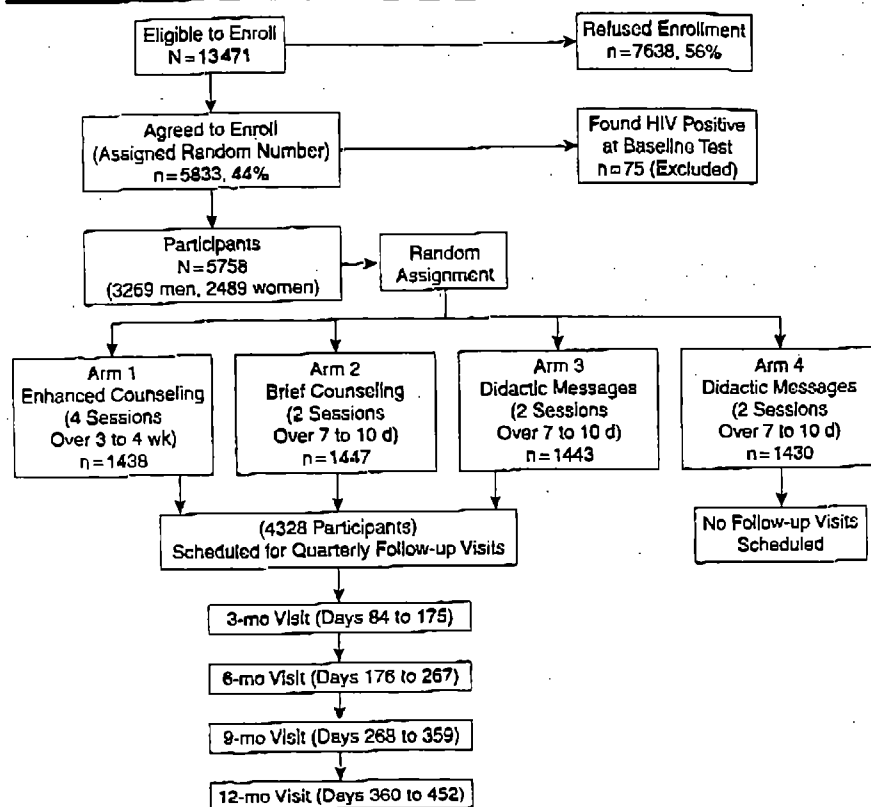


Figure 1.—Study visits were calculated from the enrollment date to occur at 3-month intervals. The first visit occurring during each calculated 3-month interval was considered as the follow-up visit. For the first follow-up visit (3-month visit), the interval began 7 days before the calculated date 3 months after enrollment and may have occurred up to 7 days before the calculated date 6 months after enrollment. HIV indicates human immunodeficiency virus.

vention depend on reliable efficacy data, preferably based on the results of well-conducted randomized controlled trials measuring disease outcomes.^{5,7} However, there are limited data supporting the impression that current HIV prevention strategies, including HIV/STD counseling, are effective in reducing new infections. In the case of HIV counseling, studies that have attempted to evaluate counseling efficacy have been limited by inadequate experimental designs, interventions, and outcomes.^{5,8,9}

Considerable debate has occurred on the content and duration of counseling necessary to achieve meaningful change in risk behaviors. Many HIV counseling programs focus on collecting risk data and providing general information about HIV/AIDS. However, a number of health professionals have argued that, for greatest benefit, counseling should be an interactive process aimed at personal risk reduction.¹⁰ Brief intervention strategies have been successfully applied in behavioral interventions for other health risks such as alcohol use,¹¹ but other experts maintain that changing sex behaviors requires multiple (ie, ≥ 10) intervention sessions.¹²

Project RESPECT was a randomized controlled trial specifically designed to as-

sess the efficacy of HIV prevention counseling in reducing high-risk sexual behaviors and preventing new sexually transmitted infections. We studied counseling approaches believed by experts to have the highest likelihood for success and, thus, evaluated risk reduction counseling models that used an interactive process between counselor and client. We were also concerned about feasibility and coverage of the interventions, and thus, we studied interventions that were acceptable to participants and able to be replicated in busy public clinic settings. This project evaluated one-on-one HIV/STD prevention counseling models—one with 4 sessions (200 minutes total) and the other with 2 sessions (40 minutes total). We compared the counseling models with each other and with brief, didactic messages that approximate the one-on-one prevention approach typically used in STD clinics and other HIV test sites.

METHODS

Study Design

The trial was conducted from July 1993 through September 1996 among patients from public, inner-city STD clinics in Baltimore, Md; Denver, Colo; Long Beach, Calif; Newark, NJ; and San Fran-

cisco, Calif, in collaboration with the Centers for Disease Control and Prevention (CDC), Atlanta, Ga. Eligible participants were HIV-negative men and women aged 14 years or older who came to one of the clinics for a full diagnostic STD examination and agreed to have an HIV test. Men who reported having a male sex partner in the past 12 months or who identified themselves as bisexual or homosexual were excluded from the study. All potential participants whose command of English would limit full participation in the interventions and those who had declined to participate in the study at earlier clinic visits were excluded also. All participants gave written, informed consent, and the institutional review boards at each site reviewed and approved the protocol.

Participants were assigned randomly to 1 of 4 intervention arms (Figure 1). Those assigned to arms 1, 2, or 3 were asked to return for follow-up appointments 3, 6, 9, and 12 months after enrollment. We included arm 4 to assess the possible intervention effects of repeated follow-up contacts, because it was speculated that these might be of sufficient magnitude to obscure differences between the interventions. Arm 4 participants had no follow-up visits scheduled after the intervention but results for syphilis and gonorrhea tests (routinely done at all 5 clinics) were obtained each time they voluntarily returned to the clinic during the 12-month study interval. To assess the effects of repeated contact, we excluded from the analysis STDs diagnosed for arm 3 participants at study-prompted follow-up visits, and we compared participants in arm 3 with arm 4 on the proportion for whom syphilis or gonorrhea was diagnosed at voluntary (unscheduled) visits. In addition, 12 months after enrollment, arm 4 participants were sought and, if located, interviewed. Their recent condom use was compared with arm 3 participants.

Randomization

Random assignment took place after enrollment and before the baseline interviews and examinations. Allocation concealment procedures were defined by protocol and complied with published recommendations.¹³ A data management company provided each site with opaque, sealed envelopes containing computer-generated random assignments. To ensure the numbers in arms were roughly equal, random assignments were made within blocks that varied in size from 4 to 20 and were done separately for men and women at each site. Once a number was assigned, it was not reassigned even if participants dropped out of the study.

Interventions

Participants were assigned to 1 of 3 individual face-to-face HIV prevention strategies that each involved an HIV test. All interventions encouraged consistent condom use for vaginal and anal sex with all partners; however, interventions were tailored to each individual's personal risks.¹⁰ For arm 1, the 4 sessions were completed within 4 weeks of enrollment. For arms 2, 3, and 4, both sessions were completed within 10 days. Whenever possible, the same counselor conducted all of a participant's sessions. The counselor conducting an intervention never collected outcome data for that participant. No interactive counseling was provided at follow-up visits; however, regardless of assigned intervention, whenever HIV tests were obtained counselors provided brief information about the test and answered any questions.

Patients assigned to arm 1 received enhanced counseling.¹⁰ This 4-session intervention, based on the theory of reasoned action and social cognitive theory,¹⁴⁻¹⁶ sought to change key theoretical elements (eg, self-efficacy, attitudes, and perceived norms) underlying condom use. Session 1 lasted 20 minutes and was conducted during the initial clinic visit; the remaining sessions were 60 minutes each. Test results for HIV were given during session 3. Each session built on lessons from the preceding session. The first 3 sessions concluded with a behavioral goal-setting exercise in which the participant arrived at a small behavioral risk-reduction step that could be achieved before the next session. At the final session, a longer-term, risk-reduction plan for each participant was agreed on.

Participants assigned to arm 2 received brief counseling, a 2-session intervention modeled after CDC's recommended HIV counseling for patients attending public clinics and HIV test sites.^{17,18} Session 1 (20 minutes) was conducted during the initial clinic visit and was identical to the first session of enhanced counseling. Session 2 (20 minutes) included a discussion of the HIV test result as well as additional counseling. The objectives of brief counseling were to assess actual and self-perceived HIV/STD risk, to help the participant recognize barriers to risk reduction, to negotiate an acceptable and achievable risk-reduction plan, and to support patient-initiated behavior change. The first session concluded with a behavioral goal-setting exercise in which the participant arrived at a small risk-reduction step that could be achieved before the second session. At the second session, progress in completing the behavioral step was reviewed, barriers and facilitators to completing the behavioral step were dis-

cussed, and a longer-term risk-reduction plan was developed.

Participants assigned to arms 3 and 4 received didactic messages. This 2-session informational intervention was designed to approximate what was being done in most STD clinics.¹⁰ Two brief messages about HIV and STD prevention were delivered, explicitly not engaging the participant in interactive counseling. Session 1 (5 minutes) was conducted by the clinician who had examined and treated the participant during the STD clinic visit. In session 2 (5 minutes), participants were informed about their HIV test results and limitations of the test and were given didactic prevention messages about HIV and STD pertinent to their reported risks. Participants were asked whether they had questions.

To ensure the quality and consistency of interventions, counselors and clinicians received a standard training course from a single trainer, used structured intervention protocols, and had routine observation and feedback by on-site supervisors and an outside observer who traveled to all sites (6% of the sessions were observed). In addition, process evaluations assessing intervention content and client satisfaction with the interventions were performed periodically by surveying participants, counselors, and clinicians.¹⁰

Study Outcomes

Principal outcomes were defined before the trial. Incident STDs were defined by laboratory tests, with gonorrhea defined as a positive culture for *Neisseria gonorrhoeae* or, for men, gram-negative intracellular diplococci on a Gram stain of a urethral swab; chlamydia as a positive *Chlamydia trachomatis* polymerase chain reaction from an endocervical (women) or a urine (men) specimen; syphilis as a suggestive history and physical examination with supportive treponemal and nontreponemal antibody test results; and HIV infection as a repeatedly reactive enzyme immune assay for HIV antibody with a positive confirmatory test result. Study clinicians collected specimens necessary for each of these tests from participants assigned to arms 1, 2, or 3, at the baseline, at 6- and 12-month visits, and at all voluntary (unscheduled) clinic visits. Specimens were also obtained at 3- and 9-month visits if participants or their sex partners had symptoms of an STD or if participants requested tests. Study clinicians used standard procedures to collect the study specimens and used an order specified by protocol. Specimen collection procedures were periodically monitored. Arm 4 participants returning to the clinic during a self-initiated visit underwent only tests routinely performed at the clin-

ics (ie, gonorrhea culture and syphilis serology). Participants found to have STDs at the baseline or subsequent visits were treated according to standard treatment guidelines and were advised (when applicable) about the importance of partner treatment.¹⁹ Participants found to have HIV were referred for early intervention services, available at all 5 clinics.

We planned to use self-reported 100% condom use during vaginal and anal sex as principal behavioral end points. However, anal sex was rarely reported. At enrollment, 10% of the participants reported having anal sex during the past 3 months and half of these reported only 1 episode. Thus, we used self-reported 100% condom use during vaginal sex with all sex partners as the principal behavioral outcome, measured as "no unprotected vaginal sex" (ie, either no sexual contact or condom use during every sex episode). Interviewers asked about behaviors during the preceding 3 months, including frequency of vaginal sex and condom use with primary and any other sex partners. We calculated condom use from the total number of times condoms were used and from the total number of sex episodes. Interviewers also asked participants about number of sex partners they had; about the risks of their sex partners; and about the participants' and partners' condom use beliefs, attitudes, self-efficacy, intentions, and perceived norms regarding consistent use of condoms. Participants in arms 1, 2, and 3 were interviewed at enrollment, immediately after the final intervention session, and at the 3-, 6-, 9-, and 12-month visits.

Incentives

For intervention sessions, participants were offered free condoms at every visit and \$15 for each session attended after the first session (ie, for enhanced counseling, a maximum of \$45, and for brief counseling and didactic messages, a maximum of \$15). For collection of outcome data, participants who returned for scheduled follow-up visits were offered \$15 for each questionnaire and \$25 for each STD examination. No incentives were given for voluntary (unscheduled) STD examinations, including those completed at the 3- and 9-month visits.

Data Analysis

Assuming 15% per year cumulative incidence of STD among didactic messages participants,²⁰ we calculated a recruitment goal of 6000 (1500 per arm) for 80% power to detect a 25% reduction in STDs between counseling and control arms. For preliminary analyses of principal outcomes, analysts were blinded to intervention arm. For all analyses, any patient as-

Table 1.—Baseline Characteristics of Participants According to Intervention Arm (N = 5758)*

Characteristics	Arm 1 Enhanced Counseling (n = 1438)	Arm 2 Brief Counseling (n = 1447)	Arm 3 Didactic Messages (n = 1443)	Arm 4 Didactic Messages (n = 1430)†
Sex, %				
Female	43	43	43	43
Male	57	57	57	57
Site, %				
Baltimore, Md	19	19	19	19
Denver, Colo	24	24	24	24
Long Beach, Calif	18	19	18	18
Newark, NJ	21	21	20	20
San Francisco, Calif	18	18	18	18
Report of previous HIV test, %	72	71	69	72
Report of previous STD, %	61	64	64	63
STD at enrollment, %	33	31	30	33
Injected drugs, %	2	2	1	2
Ever had a sex partner who had injected drugs, %	16	14	14	18
Ever had a known HIV-positive sex partner, %	2	1	1	2
Ever gave (men) or took (women) money for sex, %				
Men	8	7	6	8
Women	12	13	16	17
Sex partners last 3 mo, mean/median No.	2.1/1	2.3/1	2.5/1	2.4/1
At least 1 new sex partner in last 3 mo, %	49	46	48	48
Have a primary partner, %				
Men	76	75	77	76
Women	88	89	89	87
Have a nonprimary partner, %				
Men	81	60	59	61
Women	38	36	38	40
Vaginal sex episodes with a condom in last 3 mo, %				
None	38	38	38	38
1-49	24	23	25	26
50-99	23	25	24	24
100	16	13	13	12

*HIV indicates human immunodeficiency virus; STD, sexually transmitted disease.

†For arm 4, screening demographic data were collected on all participants, but full behavioral questionnaires were collected only on a sample (484 [34%]) of the 1430 participants.

signed a random number was included except for 75 persons whose baseline HIV test result was positive (Figure 1). Outcome analyses were performed using data on all participants, whether or not they completed their assigned intervention (intent to treat).^{20,21} For STD outcomes, we compared the cumulative percentage of participants with any STD from enrollment until the end of a specified visit interval. For behavioral outcomes, we compared the proportion of subjects reporting the behavior during the 3 months before each scheduled visit, first considering all participants who came to any follow-up visit and then only those who came to all 4 follow-up visits (51% of all enrolled). For comparisons between interventions, we used χ^2 tests, relative risks with 95% confidence intervals (CIs), and generalized estimating equations²² to account for correlations due to repeated observations on the same subject. In addition to the principal outcomes, we performed 5 subset analyses, stratifying on sex, site, age (≤ 20 vs ≥ 21 years), STD diagnosis at enrollment vs no STD, and report at enrollment of a prior HIV test vs no prior test.

RESULTS

Participants

From July 1993 through June 1995, 13 471 eligible patients were invited, and 5833 (43%) agreed to participate. After excluding 75 patients with positive baseline HIV test results, there were 3269 men and 2489 women (Figure 1). Study participants resembled the clinics' total populations in that they were young (median age, 25 years), minority (59% black, 19% Hispanic, 16% white, 6% other races), and low income (54% unemployed, 42% with annual income $< \$5000$). Study participants and those who had refused were similar in age, racial and ethnic background, and education (median, 12 years). But compared with those who had refused, participants were more likely to be women (relative risk [RR], 1.49; 95% CI, 1.44-1.55), to have had an STD at enrollment (RR, 1.19; 95% CI, 1.14-1.24), and to have been previously tested for HIV (RR, 1.13; 95% CI, 1.08-1.18). The intervention arms were similar at baseline with respect to demographic characteristics, risk behaviors, condom use, and STD diagnoses at enrollment (Table 1).

Intervention Adherence

Of 5758 patients enrolled, 82% completed all assigned intervention sessions. Completion was lower ($P < .001$) for those in the 4-session enhanced counseling arm (72%) than for those in either of the 2-session interventions (brief counseling, 85%; didactic messages, 85%). For the enhanced counseling arm, 99% of participants completed the first session, 80% completed the second session, 72% completed the third session, and 72% completed all 4 sessions. Regardless of assignment, most participants ($> 85\%$) surveyed about the interventions reported that the sessions were "informative," "good," and "helpful."

Coverage at Follow-up Visits

Of the 4328 participants assigned to follow-up visits every 3 months, 71% returned for the 3-month, 70% for the 6-month, 64% for the 9-month, and 66% for the 12-month visits. Of all 4328 participants, 81% returned for at least 1 of the 4 follow-up visits; 73% for at least 2 visits; 63% for 3 visits; and 51% for all 4 scheduled visits. Return for follow-up visits did not differ significantly between intervention arms.

Intervention Efficacy Behaviors

At the follow-up visits, reported condom use and "no unprotected vaginal sex" increased substantially over baseline for all 3 interventions (Figure 2). At the 3- and 6-month visits the greatest increases were among those in the 2 counseling intervention arms, with enhanced counseling participants most frequently reporting any condom use (86%) and "no unprotected vaginal sex" (46%). At the 3-month visit, enhanced counseling participants reported "no unprotected vaginal sex" significantly more often than participants in the didactic messages control intervention arm (46% vs 38%; RR, 1.21; 95% CI, 1.09-1.35). This was also true for brief counseling participants vs didactic messages participants (44% vs 38%; RR, 1.15; 95% CI, 1.03-1.27). Differences in "no unprotected vaginal sex" between enhanced counseling and brief counseling were small (46% vs 44%; RR, 1.06; 95% CI, 0.96-1.17). Frequency of sex was similar among the interventions. At the 6-month visit, differences in "no unprotected vaginal sex" between interventions were less pronounced, although trends were similar (39% enhanced counseling vs 34% didactic messages; RR, 1.14; 95% CI, 1.01-1.28; and 39% brief counseling vs 34% didactic messages; RR, 1.12; 95% CI, 1.00-1.25). At the 9- and 12-month visits, any condom use and "no unprotected vaginal sex" were reported more

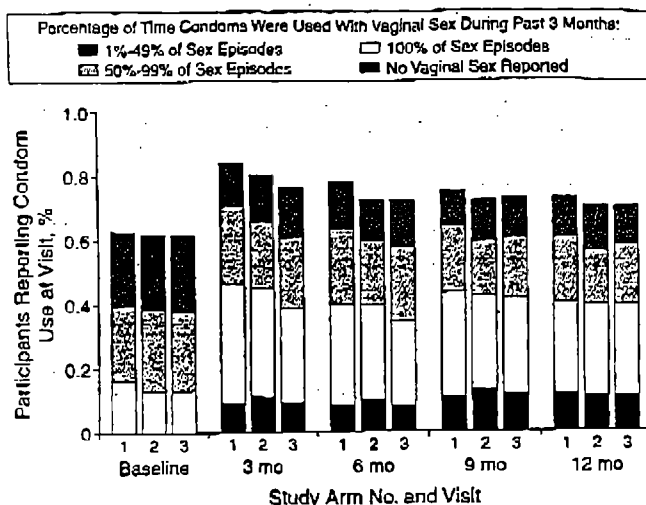


Figure 2.—Percentage of participants reporting condom use with vaginal sex during the preceding 3 months, baseline, and 3-, 6-, 9-, and 12-month visits.

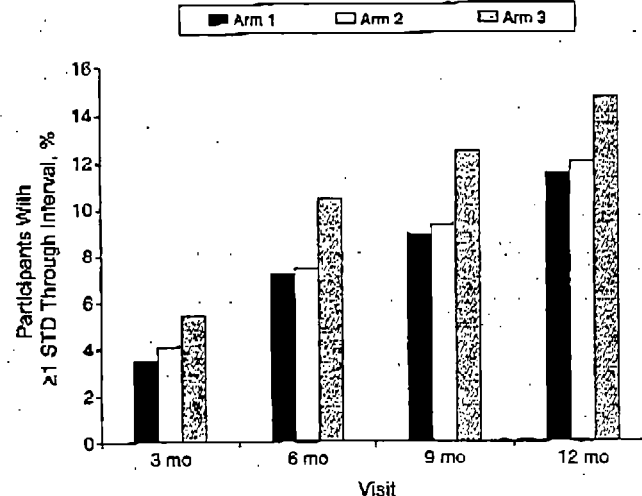


Figure 3.—Percentage of participants with a new sexually transmitted disease through the 3-, 6-, 9-, and 12-month visits.

frequently than at enrollment, but there were no significant differences among interventions. Considering only the 2732 participants who came to all 4 follow-up visits, we observed similar results. Using generalized estimating equations, we found enhanced counseling participants were more likely to report "no unprotected sex" than participants in the other interventions at 12 months ($P = .02$).

The interventions focused on consistent condom use, but we observed modest differences among them for some other "safe" behaviors (Table 2). At the 3- and 6-month visits, more participants in each counseling intervention reported safe behaviors compared with those in the didactic messages arm. For measures of condom use (eg, "any use" and "condoms with last sex"), enhanced counseling participants tended to report safe behaviors most often, followed by those who were assigned to the brief counseling arm and then those who were assigned to the didactic messages arm. But for safe behaviors unrelated to condoms (eg, "no casual partners" and "no new partners"), brief counseling participants tended to report safe behaviors most often, followed by those assigned to the enhanced counseling arm, and then by those assigned to the didactic messages arm. At the 9- and 12-month visits, there were no significant differences between the interventions.

Sexually Transmitted Diseases

Through the 12-month visit, a total of 549 participants (12.7%) were diagnosed as having a new STD, including 314 men (12.8%) and 235 women (12.6%). There were 271 participants (6.3%) diagnosed as having gonorrhea; 315 (7.3%) as having chlamydia; 25 (0.6%) as having syphilis; and 8 (0.2%) as having HIV. Some

participants had multiple diagnoses.

Fewer participants assigned to either of the interactive counseling intervention arms developed new STDs compared with participants assigned to the didactic messages control arm (Figure 3). Through the 6-month visit, 149 participants (10.4%) in the didactic messages arm had new STDs compared with 103 (7.2%) in the enhanced counseling arm (RR, 0.69; 95% CI, 0.54-0.88) and 107 (7.3%) in the brief counseling arm (RR, 0.71; 95% CI, 0.58-0.89). Through the 12-month visit, 211 participants (14.6%) in the didactic messages arm had developed new STDs, compared with 165 (11.5%) in the enhanced counseling arm (RR, 0.78; 95% CI, 0.64-0.94) and 173 (12.0%) in the brief counseling arm (RR, 0.81; 95% CI, 0.67-0.98). The 2 interactive counseling interventions had very similar cumulative incidence of STD through the 6- and 12-month visits. The number of participants counseled per STD averted during the 12-month study interval was 31 for the enhanced counseling arm and 38 for the brief counseling arm.

The STD reduction associated with the interactive counseling interventions was similar among men and women, that is, about 30% fewer participants had new STDs at the 6-month visit and 20% fewer participants had new STDs at the 12-month visit, respectively. Consistently at all 5 study sites fewer participants in the counseling intervention arms had new STDs compared with those in the didactic messages arm. Considering specific STDs as outcomes, counseling was equally effective for gonorrhea and chlamydia. For HIV, there were 4 new infections among those in the didactic messages arm, 4 in those assigned to the enhanced counseling arm, and none in those assigned to the brief counseling arm

($P = .06$) through the 12-month visit. In the subgroup analyses, efficacy was highest in the subgroups with highest risk (ie, highest STD incidence), although differences were not significant at $P < .05$. The relative effectiveness of counseling was greatest for patients aged 20 years or younger (vs those older), patients reporting no prior HIV test (vs those reporting a test), and patients who had an STD diagnosed at the enrollment visit (vs those with no STD).

Effect of Repeated Contact

Gonorrhea and syphilis were diagnosed at voluntary clinic visits less often among arm 3 participants (3.3%) than arm 4 participants (4.1%), although observed differences may have been due to chance (RR, 0.80; 95% CI, 0.55-1.17). At 12 months, only 462 arm 4 participants (32%) were found and interviewed. However, compared with these, arm 3 participants were more likely to report "no episodes of unprotected vaginal sex" during the previous 3 months (39% vs 34%; RR, 1.15; 95% CI, 0.99-1.33). Although some biases are possible, these analyses were consistent in suggesting that repeated contact with study personnel, instruments, or both may have themselves had a modest intervention effect.

COMMENT

Project RESPECT demonstrated that interactive, client-centered HIV/STD counseling resulted in an overall reduction in STD incidence of about 30% after 6 months and 20% after 12 months of follow-up. The STD reduction occurred among both men and women and was observed consistently at all 5 study sites. Since 1994, CDC has recommended client-centered HIV prevention counseling for persons determined to be at risk for HIV infec-

Table 2.—Proportion of Participants With Selected Safe Behaviors by Intervention Arm at the 3-Month and 6-Month Visits*

Safe Sex Behavior Last 3 Mo	Arm 1 Enhanced Counseling		Arm 2 Brief Counseling		Arm 3 Didactic Messages	
	3 mo, %	6 mo, %	3 mo, %	6 mo, %	3 mo, %	6 mo, %
Any condom used	83†‡	78†‡	79	73	76	73
≤1 Sex partner	71†	70	72†	70	66	68
No casual partners	70	69	73†	70	66	66
Condoms last sex, primary partner§	63†	59	61	59	59	54
Condoms last sex, other partner	79†	78	80†	77	73	74
No new partners	72	71	75†	73	71	70
If new partner, asked if partner:						
Tested for HIV	58	56	61†	50	50	52
Tested for STDs	44	46	50†	41	41	38
Ever injected drugs	40	39	41	38	35	35

*HIV indicates human immunodeficiency virus; STD, sexually transmitted disease.

† $P < .05$ compared with arm 3 (didactic messages) at same study visit.‡ $P < .05$ compared with arm 2 (brief counseling) at same study visit.

§For those reporting a primary sex partner.

||For those reporting a nonprimary ("other") sex partner.

tion.^{17,18} Several observational studies and a few randomized trials using behavioral outcomes support that direct, personalized ("client-centered") counseling is likely to initiate the behavior changes that might lead to reduction in new HIV infections.^{8,9,23,24} However, the efficacy of such counseling in reducing HIV or other STDs had not been shown. This large randomized controlled trial evaluating interactive risk reduction counseling among STD clinic patients is the first to report that counseling leads to reduction in sexually transmitted infections. In addition to concerns about efficacy, concerns that interactive counseling is not feasible for busy, publicly funded clinics, or cannot be conducted by the personnel currently employed by health departments, should now be put to rest.

The follow-up results indicate that interactive counseling had greatest disease reduction benefit during the first 6 months after intervention completion but suggest that some counseling benefits continued over time. Even if the counseling benefits wane, a 20% STD reduction over 12 months is important for several reasons. A 20% STD reduction in these clinic patients will diminish disease prevalence in the community. In addition, reducing or eliminating STDs such as syphilis, gonorrhea, chlamydia, and herpes may directly reduce new HIV infections, as the presence of these STDs has been found to enhance HIV acquisition and transmission.^{7,25} Furthermore, even transient reduction in risk for an individual may have large effects on lifetime risk if the behavior changes occur when the likelihood of infection is high (eg, during adolescence). As for whether the STD reduction found with counseling would hold true for HIV as well, we cannot say this with certainty. To the extent that sexual trans-

mission of the condom-preventable STDs we studied here and HIV are similar, client-centered counseling is likely to have the same disease prevention benefits. Human immunodeficiency virus seroconversion is relatively rare in the United States, even among this high-risk population. To find a 20% reduction in HIV transmission in this population with incidence of 0.3% per year would require a study size of 241 000 in order to have an 80% likelihood of detecting a difference. The cost of such a study would be prohibitive. But the cost of counseling programs for 241 000 people (which we estimate at \$8 per patient over current costs) would be easily recovered in savings from preventing an expected 145 new AIDS cases, which cost an estimated \$100 000 to \$200 000 per case.⁴

The finding that the 4-session enhanced counseling and the much shorter 2-session brief counseling had equivalent STD reduction was surprising and is good news for public health programs. Conventional wisdom has suggested that multiple-session interventions are needed for effective change of sexual behavior,¹² but our results challenge this viewpoint. Timing may be an important element for intervention success; it is possible that individuals who seek STD testing and treatment are particularly amenable to behavior change. However, this is not the first study indicating that brief interventions may be as effective as longer therapies. Recently published results of a large alcohol treatment study indicate that a brief motivational intervention was as effective in achieving alcohol cessation as a longer, more intensive counseling intervention.¹¹ A brief intervention in active drug users has also been reported as being effective as a longer intervention in changing risk behaviors.²⁶ We studied 4-session coun-

seling because we were not convinced that CDC's recommended 2-session counseling would have such a powerful disease reduction impact. Although long recommended and supported by counselors, client-centered HIV prevention counseling is seldom done in STD clinics, probably because program managers also have not believed that a 2-session intervention could have a significant impact. However, this brief counseling model was designed for implementation, at low cost and with existing personnel, in the context of routine health care services. The intervention adherence we found suggests that 2-session counseling would have at least the same retention as the didactic approach that is currently used and would have greater retention than longer therapies.

This study has several strengths. The randomized controlled design, if well conducted, permits the most unbiased comparison of effects. In conducting this trial, we sought to comply with recommended procedures that have since been published as guidelines for conducting and reporting randomized controlled trials.²⁷ The use of disease as an outcome measure can help validate self-reported data. More important, measuring disease outcomes allowed us to measure directly the interventions' disease reduction effects, and thus permit counseling to be directly compared with other HIV/STD prevention strategies. Losses to follow-up could be an important source of bias if those not returning differed in risk from those who returned for follow-up. Our 66% follow-up after 12 months (81% with at least 1 follow-up visit) is within an acceptable range for prospective studies. Follow-up was similar for all intervention arms, and our study population rarely sought STD care at other locations,²⁸ so the differences between interventions are unlikely to be caused by loss to follow-up. We also attempted to minimize biases in the analysis by identifying principal outcomes before the trial and by masking investigators to intervention strategies during preliminary analyses. An additional strength of this study was the use of several quality-control procedures, helping ensure that the counseling interventions were conducted by counselors at all sites consistently and as conceived.¹⁰ Also, the long follow-up period allowed us to measure the interventions' effects over time.

We were unable to avoid some potential biases. One limitation mentioned earlier was the use of STDs as a surrogate for HIV infection. Although STDs inform about unprotected sex and partner risk, they may not be an accurate measure of heterosexual HIV risk.²⁹ Generalizability of results is also of concern. We studied 5 widely located STD clinics that we believe

to be fairly representative of the range of public clinics in the United States. However, the 43% enrollment rate was low (although not unexpected, given the length and intensity of the follow-up that participants were asked to complete). Intervention enrollment may be higher in practice because participants would not need to return for the study-related follow-up. However, participation may be lower without the \$15 incentive used in this study. Perhaps more important, results may not pertain to other populations or settings. Since we studied only heterosexual STD clinic patients, we cannot know whether similar counseling sessions would be effective in other settings where HIV tests are performed, such as alternative test sites (where many gay men go for testing), among injection drug users, or at managed care plans (where many adolescents and young women receiving Medicare obtain health care). However, the individually tailored approach used in the counseling models studied here could be easily adapted to different settings.

We conclude that brief, interactive HIV/STD prevention counseling prevents new STDs and, by inference, HIV infections. This quality of counseling can be successfully conducted in busy public clinic settings. These results have several implications for existing programs, particularly those serving populations with a high HIV/STD prevalence. First, most clinics already employ HIV counselors who collect risk data, discuss the HIV test, and provide didactic prevention messages.³⁰ These counselors could prevent new infections if they adopted interactive HIV/STD prevention counseling aimed at risk reduction. The Project RESPECT counselors were health department staff members who were motivated and enthusiastic but typically did not have advanced degrees or long experience in interactive counseling. Second, quality-control measures are critical to intervention success and are feasible for most programs.¹⁰ Quality assurance should be approached as an integral part of the process and as a means of providing a better product. Third, some programs might consider targeting counseling to higher-risk clients, such as adolescents and individuals with previous STDs, to reduce costs while retaining large effects on disease reduction. Finally, given our finding that counseling benefits may wane over time, we wonder if an additional interactive counseling session done some months after brief 2-session counseling might be beneficial and might sustain or even enhance the risk-reduction benefits observed in this trial.

We are grateful to the study participants who volunteered for Project RESPECT and to our coun-

sors and research and clinical staff in Baltimore, Denver, Long Beach, Newark, and San Francisco. We also thank Robert Cannon, MD; Millie Solomon, DrEd, Jeff Kelly, PhD, Nancy Corby, PhD, and the TAKE study team, Houston, Tex, for help in intervention development; Richard Wolitski, PhD, for questionnaire development; Miriam Alter, PhD, Brad Woodruff, MD, Steve Lambert, Scott Schmid, PhD, James Dobbins, PhD, and Joel Lewis for assistance in laboratory aspects; and Roche Pharmaceuticals for supplying chlamydia tests. For assistance in the trial, we are grateful for the help of Frankie Barnes, MPH, Galen Cole, PhD, Darlene Davis, Mary Guinan, MD, Russ Havlak, Ken Hunt, Joanne Jackson, Hugh Klein, PhD, Robin MacGowan, MPH, Brian Mahoney, MPH, Ron Nuse, Carol Orsini, Ken Schulz, PhD, Cam Solomon, Jack Spencer, Mike St. Louis, MD, and Ron Valdiserri, MD. We recognize Bill Killean, Dan Newman, and Annette Ladan for their work on data analysis. Beth Dillon, translated CDC's HIV Prevention Counseling model into the Brief Counseling intervention and developed quality assurance tools. Nancy Rosenshine, provided intervention training. Karen Willis, and Beth Dillon were the outside observers who ensured intervention consistency across sites.

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta, GA 30333

October 7, 1998

Dear Colleague:

I am writing this letter to call your attention to the findings of a Centers for Disease Control and Prevention (CDC) collaborative study published in the October issue of the *Journal of the American Medical Association (JAMA)*. The study demonstrates that interactive counseling makes a tremendous difference in slowing the spread of HIV and other STDs. Using interactive counseling interventions--where counselors "encourage" and "discuss" prevention strategies with people at risk, rather than simply providing a "lecture" on HIV prevention--can prevent new STDs and can be easily implemented even in busy public health clinics.

The study, entitled "Efficacy of Risk-Reduction Counseling to Prevent Human Immunodeficiency Virus and Sexually Transmitted Diseases," involved nearly 6,000 young, heterosexual, minority, low-income men and women attending public STD clinics in five cities. The study has several important findings:

- fewer individuals (20%) in the interactive counseling sessions had new STDs after 12 months of follow-up, when compared to those given didactic information
- two brief twenty-minute interactive counseling sessions were just as effective in STD reduction as an enhanced intervention involving one twenty-minute session, followed by three sixty-minute sessions
- data from each of the five sites demonstrated lower incidence of STDs among both men and women participating in interactive counseling sessions, with the greatest impact among adolescents and individuals diagnosed with an STD at their initial visit

This study is first to report the good news that interactive counseling leads to fewer sexually transmitted infections.

While these interactive approaches were tested in STD clinics, we believe the findings are likely to have relevance in any setting in which HIV counseling is provided. The way in which we talk with individuals at risk--in any setting--rather than how much information we provide is what will encourage people to participate in their own risk-reduction plan. As a result of these findings, CDC hopes that interactive counseling will be widely adopted in many health care settings across the nation.

Page Two—Dear Colleague

Attached is a fact sheet detailing the findings of this important study. Reprints of the article may be obtained by contacting Joseph Rekash at *JAMA* at (312) 464-4594. Or, the full text article can be found on the *JAMA* Web site at <http://www.ama-assn.org/special/hiv/library/readroom/jama98/joc80102.htm>. Should you have any questions or need additional information, please call our Office of Communications at (404) 639-8063.

Sincerely,

A handwritten signature in black ink that reads "Melissa B. Shepherd". The signature is written in a cursive, flowing style.

Melissa Shepherd
Associate Director for Communications
Director, Office of Communications
National Center for HIV, STD, and TB Prevention

Reproduced with permission from publisher. Cheney R. and Merwin A. Integrating a theoretical framework with street outreach services: Issues for successful training. *Public Health Reports* 1996; 3(Suppl. 1):83-88.

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The work was supported by the Centers for Disease Control and Prevention under Cooperative Agreement U62/CCU307190.

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Integrating a Theoretical Framework with Street Outreach Services: Issues for Successful Training

SYNOPSIS

HIV/AIDS PREVENTION PROJECTS utilizing indigenous outreach workers often rely on the life experiences and skills of the staff to structure the intervention, without grounding in theory. However, to be most effective, community outreach projects which target harder-to-reach high-risk populations should both utilize and enhance the natural strengths of indigenous field workers' experience and style of interaction, while guiding intervention content with theoretical rigor.

In this paper we demonstrate that the challenge of successfully integrating a theoretically guided program design with field staff's credibility with, and sensitivity toward, drug-using clients can be practically and satisfactorily met through appropriate training. This training is an important investment for better utilizing valued and scarce prevention resources.

The Philadelphia site of the AIDS Evaluation of Street Outreach Project (AESOP), a cooperative agreement of the Centers for Disease Control and Prevention, designed and implemented staff trainings to reflect the enhancement of the outreach program by the Stages of Change model. Through these trainings, the outreach workers have learned to integrate their natural street and intervention skills into the structure of a theoretical framework. This paper presents specific training components, relevant issues within these components, and areas for evaluation and feedback.

Public health researchers counsel that prevention interventions targeting behavior change are more likely to succeed if they are grounded in theory (1-6). However, the design of many direct service outreach interventions to high-risk populations in community settings is often based on "an informal blend of logic and practical experience" (7). In part this may reflect a misperception that behavioral or social science theories merely confirm what intuition or "common sense" would naturally indicate (6). On the other hand, informal service designs also may result from service providers' reluctance to explore the incorporation of theory, which they may consider overly complex or impractical, into field protocol (2). Sole reliance on these informal practical skills and life experiences of staff members may create interventions that are inappropriate and difficult to evaluate and/or transfer, as they are neither standardized nor grounded in tested the-

ory (4,7). To be effective, HIV prevention outreach projects which target street drug users should both utilize and enhance the natural strengths of indigenous field workers' experience and style of interaction, while guiding intervention content with theoretical rigor.

This paper seeks to address the need to integrate a behavioral research perspective into outreach program design, without rejecting intuition and common sense. The authors suggest that the challenge of successfully integrating field staff's credibility with, and sensitivity toward, drug-using clients into a theoretically guided program design can be practically and satisfactorily met through appropriate training. Three basic components are necessary for comprehensive and comprehensible training of qualified outreach workers.

First, training must ensure credible and culturally competent field delivery—within the practical constraints of serving individuals engaging in high-risk behaviors. Second, outreach workers need to accept, internalize, and incorporate theory-driven elements of the intervention in natural and credible interpersonal interactions with clients. Third, evaluation and feedback are crucial to ensure the success and replicability of both the training program and a successful street intervention.

As part of a CDC-funded, multisite cooperative agreement, the AIDS Evaluation of Street Outreach Projects (AESOP), a training program was developed that addressed these issues. AESOP focuses on promoting behavior change among street drug users engaging in a number of behaviors known to transmit HIV, such as needle sharing and unprotected sex. Indigenous outreach workers, who are typically residents of the target communities, if not in recovery for drug use themselves, deliver the intervention in street interactions (5, 7-10).

The enhancement to the existing ("standard") outreach program introduced the transtheoretical model of Stages of Change (11, 12). This model describes behavior change as occurring in stages, from an initial lack of awareness and/or a lack of acknowledgement of the need for change, through making and maintaining the change. The enhanced intervention is structured around the "stage-based encounter": an extended conversation between an outreach worker and an at-risk individual (13). Elements of a stage-based encounter include rapport-building; assessing both risk and readiness to change; providing stage-appropriate risk-reduction messages, materials, and/or referrals; and planned follow-up. In addition to the framework provided by the Stages of Change model, outreach worker-client interactions also are guided by the social work concept of the helping relationship, with a core strategy being "reflective listening" (14, 15).

Training for Successful Service Delivery

A successful service delivery system is a necessary prerequisite for fielding an intervention. A number of authors have addressed various elements of appropriate outreach (5, 7-10, 15, 16). Training issues vital to service delivery are appropriate attitude and demeanor toward clients, attention to safety and conflict resolution, and the ability to provide accurate information and referrals to clients (7, 10, 16).

The design of many direct service outreach interventions to high-risk populations in community settings is often based on "an informal blend of logic and practical experience."

Demeanor and attitude. Recognizing both the value and limitations of outreach workers' status as indigenous to the targeted communities is crucial to the success of community-based interventions (7-9). Their long-cultivated knowledge of the streets provides them with an invaluable ability to utilize an appropriate

style of interaction, to anticipate and deflect potential conflicts and dangers, and most importantly, to be considered "approachable" by the clients due to their racial, ethnic, or linguistic similarity; appearance; demeanor; and apparent comfort with the streets. These qualities alone, however, are not sufficient to ensure successful delivery of outreach. Outreach workers' attitudes toward the target population, while possibly adaptive to living in high-risk neighborhoods, may not be appropriate for direct service professionals. Staff also may experience difficulty retaining a nonjudgmental attitude with clients who constantly relapse; they may feel a sense of superiority over them, and/or resent their antisocial behaviors within their home communities. Training should include candid dialogue and exercises to investigate biases and assumptions (14), as well as draw on staff's personal insights on the process of recovery.

Safety and conflict resolution. While the outreach workers are acutely aware of the dangers of the street, they may need to learn how to handle potentially volatile situations in an appropriate and professional manner. For example, they may have to accept losing face by walking away from a hostile client, rather than fighting or engaging in heated discussion. Field and supervisory staff must maintain an open dialogue in order to understand fully and address the wide variety of safety issues occurring in outreach areas. Trainings led by veteran outreach workers, local police officers, and martial arts instructors emphasize conflict identification and avoidance, appropriate responses to threatening situations or persons, and the dynamics of partner cooperation to ensure mutual safety. Trainings should be ongoing, with further support and reinforcement provided by a program safety manual formalizing protocols and procedures.

Building an information base. To provide clients with accurate, up-to-date information about their risk and about appropriate prevention strategies, outreach staff require thorough training in HIV and STD transmission and prevention and related health issues. Regular seminars by medical professionals in "AIDS 101," STD diagnosis and treatment, contraceptive technology, and the physiology of drug addiction can address these requirements. By encouraging staff to present questions from or about clients to a physician or medical consultant, outreach workers are able to provide up-to-date information to clients, while supervisory staff are made aware of the evolving health concerns of clients.

Referral provision. Since clients frequently have survival needs that outreach workers cannot directly address, staff must be aided and encouraged to become familiar with relevant social service agencies and appropriate referral mechanisms (10, 16). An understanding of how to negotiate the public assistance systems and their linkages with providers of services such as drug treatment, shelter, and medical care, among others, enhances the helping relationship and facilitates the referral-making process.

Training for a Theory-Guided Intervention

The second component of successful outreach is providing a framework of tested behavioral theory. As stated previously, numerous authors have targeted theories derived from the behavioral and social sciences as crucial contributors to successful HIV prevention (1-6).

Academic explanations are a relatively foreign modality for most outreach workers, who typically report no formal education beyond high school. Further, outreach workers are often called upon to conduct multiple and simultaneous tasks in an outreach environment constrained by the threat of violence and the unpredictable attention spans of drug-using clients. Therefore, thorough training and preparation are required for complex interpersonal interventions that must be conducted without the luxury of time and reflection.

A number of elements were identified as necessary for the implementation of a program to train outreach workers to deliver stage-based encounters. Such training must encourage outreach workers to accept the utility of theory, incorporate it into their interactions, and document its use. Maintaining both a skills and a knowledge base requires ongoing refresher trainings, as well as allowing for adjustment and reassessment of evolving local conditions.

Acceptance of the theoretical model. It is of prime importance that outreach workers find the Stages of Change theory to be valid and useful in its own right (17). In the course of trainings, staff are encouraged to examine and discuss points of personal identification with the principles of the Stages of Change theory. Personalizing the theory fosters greater comprehension and, perhaps more importantly, renewed appreciation for the difficulties of the change process.

Advantageously, several of the outreach workers said they prefer the enhanced intervention to standard outreach. The encounter format provides a framework for their interactions with clients, unlike the unstructured standard outreach. Moreover, lengthier interactions with clients are rewarded, since the encounter forms emphasize the importance of the quality of the interactions over the quantity of materials distributed.

Prior to the implementation of the enhanced intervention, the outreach workers experienced difficulty in determining which messages and services were appropriate for given clients. Their definition of success was either nebulous, too ambitious (for instance, the rare victory of seeing a client begin to use a new needle for every injection), or unrewarding (for example, handing two condoms apiece to persons obviously in need of extensive social service intervention). The "small steps" approach endorsed by the Stages of Change model enables the outreach workers to note more realistic increments in the progress of their clients and to record them for field and research supervisors.

Incorporation of counseling techniques. It is essential that assessment and intervention with the Stages of Change take place in a context of attentive listening and empathy on the part of the outreach worker (18). A "helping relationship" with clients is characterized by listening reflectively; accepting clients "where they are;" assessing their needs, strengths, and problem-solving abilities; and gently directing at-risk individuals to insight and action.

Trainings in motivational interviewing serve to enhance the outreach staff's natural ability to empathize with the situations of people who resemble them, members of their families, neighbors, and friends. Skills developed in the training include formulating open-ended questions, navigating ambivalence, overcoming resistance, and increasing attention to nonverbal cues (arising from both staff and client) (8, 14, 18). These trainings typically take the form of discussions, role-plays, and one-on-one and group exercises.

As with the initial approach to the Stages of Change theory, outreach staff were introduced to the concepts of reflective listening on a highly personal level. Significantly, staff continue to note the utility of these techniques in their personal lives. Over time, the agenda of the trainings began to include actual client case studies. As training progressed, staff showed increased proficiency in applying trained techniques for identifying and lowering resistance.

Building assessment, intervention skills. Another challenge addressed in training field staff is instructing them in the specific skills and knowledge necessary to apply the Stages of Change model in their interactions with clients. Outreach workers must be able to make rapid assessments of client concerns and needs and to provide appropriate messages and services. Their brief encounters with clients typically occur on noisy, dangerous street corners, with individuals who are distracted by goings-on in the street, drug

withdrawal, or being high. Thus, they must know thoroughly the five stages and their accompanying intervention strategies suggested by the Stages of Change theory, and be able to apply them to one prioritized risk behavior.

Training in the Stages of Change theory takes place in a variety of formats. The planned lectures were modified to incorporate experiential and creative teaching techniques once the trainers recognized the staff's relative passivity when presented with charts and cue cards (19). While lecturing is occasionally necessitated by the material, attempts are made to include a large proportion of discussion, role-playing, and games (14). This eclectic style of presentation accommodates the high staff turnover often noted in outreach programs (7, 9). Interspersing games into trainings is more enjoyable for experienced staff than redundant refresher lecturing, while allowing new staff to begin to learn the basics of stage-based assessment.

Discussion. Making discussion a habitual component of training encourages staff to offer their perceptions of the validity of the Stages of Change theory and the suggested strategies, and to seek parallels in their lives and the lives of their clients.

Role playing. Role playing allows staff to simulate potential street scenarios while among trainers and peers. Staff playing clients are either assigned to feign a particular client profile or encouraged to devise one. Role-play encourages discussion about the strategy the outreach worker player has chosen, allows for alternate versions with different players, and provides feedback from the client player about his or her experience in the scene.

Games. Two games were developed to reinforce staff's ability to make assessments with the Stages of Change and to select outreach strategies. The first is AESOPOLY, a board game in which teams of players move around the board from stage to stage, and at various points must correctly identify the stage for which a given strategy (such as "raise client's awareness about her risk") is appropriate. Staff debate the strategy within their team, as well as defend their answer to dissenting opinions from other teams, thus reinforcing their understanding of tailored messages. The second game, OEAST (Outreach Education and Safety Training), is an open table card game. Players seek to match their hand of cards with open-ended questions of the sort that the staff are encouraged to use on the street (for example, "How do you feel about using condoms?"). Players also must correctly stage the clients

depicted in story cards, and determine whether certain field behaviors (such as "wear flashy jewelry") are appropriate or inappropriate.

Maintaining skills and knowledge base. Once staff have undergone extensive initial training, it is necessary to periodically test and renew their skills and knowledge base. Refresher sessions supplement a regularly scheduled ongoing training agenda. These may take the form of case review-style meetings in which an outreach worker will describe a recent personal encounter for the group. Other staff members then provide feedback about the outreach worker's assessment and choice of intervention strategy. Challenging outreach workers from another AIDS prevention project at our agency to a game of AESOPOLY provides not only refresher training to the project staff, but also allows for a transfer of ideas and skills to other programs.

Feedback and Evaluation

The feedback and evaluation component measures the benefits of staff trainings to the outreach workers, as well as their ability to apply what they have learned to their field interactions. The success of training is evaluated through both staff-instructor evaluation sessions and improvements in field staff capabilities. Researchers and supervisors have evaluated staff competency in implementing the enhanced intervention through the following: training session observation (particularly of role plays and the games of AESOPOLY and OEAST), in-field observations, post-field debriefings (both individual and in regularly scheduled meetings), aggregate review of process data, and regular interaction between field workers and supervisors.

Observation of training sessions. Observation of role play allows the identification of both individual and group capabilities, difficulties, and other issues related to proposed intervention techniques. The games of AESOPOLY and OEAST allow both supervisory and outreach staff to gauge individual and group progress and to assess field staff's continued ability to identify appropriate strategies for intervention. The natural rewards of a game format also enhance peer feedback among outreach staff.

In-field supervision. Field supervisors periodically monitor staff performance of their outreach responsibilities (7, 10). In-field monitoring serves as a supportive forum for feedback, and is also a mechanism to stem street-level

Building a solid foundation of training and evaluation should not be viewed as a luxury, but rather a prudent investment in outreach resources.

"opportunism" (9). Based on observations of outreach worker-client interactions, supervisory staff may make suggestions for improvement, problem-solve difficulties encountered, and remark on successful contacts and encounters made. Feedback from in-field supervision is also incorporated into the planning of project activities and training sessions.

Debriefing. Daily debriefing sessions with field supervisors allow staff to comment on any unusual events that arise during the day's outreach. Weekly project meetings provide a forum for field staff to brief research staff on their application of the outreach protocol and to discuss potential changes and improvements. During these meetings, field staff supply anecdotal material about their reception by clients and identify any potential threats to safety among any client groups or in sections of the target areas.

Regular debriefing is also conducted immediately following a review of outreach worker field documentation, which consists of daily logs and encounter forms. These process data are collected on forms completed by the outreach workers upon their return from the field. Staff's daily logs detail the outreach workers' activities for the day, including the number of contacts made and materials distributed, an intersection-by-intersection account of the outreach, and a brief description of their stage-based encounters. Supervisors review the daily log before it is entered into a database for aggregate analysis. Encounter forms allow outreach workers to provide detail for a sample of their lengthier conversations with clients, to describe their stage-based assessment, and to devise a plan for intervention with the client. The encounter forms are discussed in individual debriefing sessions, with a small sample introduced for group input during regularly scheduled staff meetings.

Staff have demonstrated mastery in making stage-based assessments and have shown progress in their ability to intervene appropriately with clients. The content of their encounter forms has deepened considerably over time, especially in the follow-up plans which they design for future intervention with individuals. Process data analysis indicates that as training progressed and outreach workers became more comfortable with the protocols of the enhanced intervention, the number of encounters recorded by the staff increased.

Furthermore, preliminary data collected in street-based surveys to evaluate the efficacy of the enhanced intervention reveal that while equal proportions of respondents in the control and intervention areas reported ever seeing an outreach worker, 50 percent more respondents in the intervention area reported talking to an outreach worker in the prior 6 months.

In addition to external measures, the training program has been observed to improve staff satisfaction with their role as outreach providers. They are encouraged to view themselves as professionals with an impressive amount of knowledge and resources, rather than as local do-gooders.

They state, for example, that they have benefited from their safety training and the reflective listening training both in and out of the work environment. Moreover, the Stages of Change theory has proven successful in creating a common language for outreach workers, research staff, and supervisors to discuss clients' inertia and/or progress.

Discussion

Street-based AIDS education and prevention programs are growing in importance as a key modality for reducing HIV transmission within harder-to-reach high-risk populations. Incorporating theory and evaluation components into program design increases intervention effectiveness while generating standardizable, rigorous protocols that improve transferability to other sites and circumstances and provide persuasive data to funding organizations.

Given the costs of staffing and infrastructure for a street outreach intervention program, investment in a sound intervention framework and appropriate and effective staff training is wise. Despite the immediacy and urgency of the epidemic, it is important for service providers to recognize that prevention should also be viewed from a long-term perspective. Building a solid foundation of training and evaluation should not be viewed as a luxury, but rather a prudent investment in outreach resources.

Despite the different viewpoints of researchers and service providers, training in stage-based encounters has been shown to improve field staff satisfaction. Moving from distributing materials and having brief contacts to engaging in stage-based encounters has had numerous advantages. With effective training, outreach staff can feel that they have a structure for their work that is recognized by both their field and research supervisors, and program management can gain a more reasonable measure of the effectiveness of the intervention. Most importantly, clients receive more effective interventions. These benefits to clients are ongoing, as outreach workers continue improvement through training and feedback.

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INNOVATIVE OR PROMISING PRACTICES

in HIV Prevention, HIV Community Planning,

and Application Development

March 1998

Centers for Disease Control and Prevention
National Center for HIV, STD, and TB Prevention
Division of HIV/AIDS Prevention - Intervention Research and Support



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service



**INNOVATIVE OR PROMISING PRACTICES
in HIV Prevention, HIV Community Planning,
and Application Development**

The external review teams that looked at the Fiscal Year 1998 HIV prevention applications and comprehensive plans identified, as part of the review process, a large number of innovative or promising practices. The reviewers recommended that these practices be shared with co-chairs as soon as possible.

The following is an initial list of many innovative or promising practices identified from the applications. These exemplary practices cover a wide range of activities related to HIV prevention interventions, community planning processes, and application development. For additional information, please contact the name provided.

ALABAMA

The Alabama community planning process is mobilized by a **peer-led** body of health department **co-chairs**, community co-chairs and representative community planning group (CPG) at-large members from 9 Public Health Areas. The 33 member centralized group represents more than 200 community planning participants. Responsibilities of the Council include: peer led monthly meetings, centralized scheduling of tasks for prevention plan completion; standardization of CPG core membership; epi-profile; needs assessment and evaluation tasks; annual training events; and peer supported technical assistance.

Contact: Sharon Jordan Shaver or Annie Howerton, (334) 206-5364

Fax: (334) 206-2092

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Alabama offers a statewide symposium, led by teens, for **teens involved in peer-based programs** across the state. The goal is to increase knowledge about teen health issues and offer training to build skills in postponing sexual involvement, developing healthy relationships, and effectively communicating with adults and peers. The Alabama Teen Health Symposium provides interactive workshops, networking, and the exchange of education strategies between participating peer groups.

Contact: Tony Thompson, (334) 471-5277

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Facing our Challenges Using Sense (FOCUS), is an **urban-based project for at-risk African American 10-13 year old youth** (especially males) in Montgomery. Awareness and responsibility are emphasized in culturally sensitive group settings and programs. Education and socialization skills highlight the risks of unprotected sexual activities and drug abuse. Programs offer various activities to encourage more positive lifestyles and environments.

Contact: Willie Cook. (334) 288-7026; 281-6040 (H)

Fax: (334) 288-7083

Pager: (334) 516-7837

In collaboration with the J. T. Strickland Youth Center for **incarcerated youth**, the Mobile County Health Department developed and implements a peer-led HIV risk reduction program. Confined juveniles are offered a comprehensive program of interactive HIV prevention education. Skills building, HIV testing, counseling and prevention resources are included. Evaluation, tracking and follow-up are key elements of the program.

Contact: Alfreda King, (334) 690-8167

Fax: (334) 433-0108

A program originally formed to target **African-American female youth** has been adapted to reach a broader population in **rural churches** where the congregation is predominantly people of color. Project Strength, Ability, Values, and Empowerment (S.A.V.E). is a skills-based training program consisting of eight sessions. Session topics include: AIDS in the Community, Protecting Yourself from HIV and STDs, Life Skills, Job Skills, Substance Abuse and Prevention, Domestic Violence, Communication Skills and Teach Back What You Have Learned. Volunteer mentors have been recruited and trained from a variety of organizations. Continuous program evaluations are conducted with participants and mentors to assess program impact.

Contact: Rita Flegel, (205) 832-0100

Fax: (205) 832-0327

Diverse in race and gender, a **Youth Advisory Committee** in Alabama Public Health Area (PHA) 6 provides information on adolescent issues and concerns to the CPG. With the support of parents and faculty, the students attend and actively participate in CPG meetings. The youth also conduct teen focus groups in PHA 6 high schools.

Contact: Thomas N. Robertson, Jr, (205) 236-3274

Fax: (205) 237-7974

ARIZONA

Each of Arizona's three **regional HIV prevention community planning groups** (CPG) identifies target populations and interventions, and submits a plan to the Arizona Department of Health Services (ADHS) detailing program objectives and activities. Each CPG establishes its own by-laws, meeting times, and prioritization process, and elects co-chairs. Arizona does convene a Statewide CPG Steering Committee that is composed of the CPG co-chairs, two voting members from the Native American HIV/AIDS Prevention Task Force, the ADHS Prevention Manager and the HIV/STD Office Chief. This group meets quarterly to establish common community planning goals, and serves as a communication forum for sharing innovative strategies in HIV prevention among the three regions. However, the Steering Committee does not override decisions made by the regional CPGs.

Each of the CPGs has a **high level of respect for diversity**. They are committed to a planning process that enhances representation, inclusion, and parity among members. For example, in March 1997, the Central Region formed "Voices", a concept designed to increase participation in the CPG from high risk populations. "Voices" groups may be based on race/ethnicity, geographic

area, behavior, age, or whatever criteria the group wishes. A liaison (usually a current CPG member) meets with the group outside of the CPG setting and brings the “voices” (opinions, ideas, perceptions) of the group members back to the CPG. Both the Central and Southern Regions conduct priority-setting workshops. Local community residents provide valuable input about their communities at these workshops, and are integral in prioritizing target populations and interventions for their county or reservation. In the Northern Region, CPG members are encouraged to participate on various subcommittees, which usually meet every month to discuss research needs and services in the north.

Contact: Lee Connolly 602-230-5819

CALIFORNIA

The Office of AIDS and the Community Planning Working Group (CPWG) collaborated on a **resource allocation formula** to provide funding to all 61 local health jurisdictions in California to implement community planning at the local level. The local health jurisdictions were provided with an overview of the CDC guidance and referred to California’s Guidelines for HIV Prevention Community Planning for Local Health Departments. Some of the jurisdictions have combined with others and have organized into 56 Local Implementation Groups (LIGs). These 56 LIGs each developed a local HIV prevention plan and are continuing to implement the goals and objectives outlined in each of their local HIV prevention plans.

In an effort to **enhance public comment**, the Community Planning Working Group (CPWG) added a public comment roundtable for Local Implementation Group Co-Chairs of each of California’s 56 Local Implementation Groups to participate at CPWG meetings, in addition to the time that is set aside at each CPWG meeting for an open forum for public comment. The public comment roundtable provides the local co-chairs with an opportunity to interact with the CPWG members and to share innovative ideas and barriers they have experienced through planning and implementation of their local HIV prevention plans. The local co-chairs were asked to prepare a written presentation focusing on what worked and what did not work in the planning process, and the implementation of their local HIV prevention plan. The information they presented has become a part of the California HIV Prevention Plan.

The Office of AIDS (OA) and the California Department of Corrections (CDC) have entered into a memorandum of understanding to coordinate a **corrections initiative** from the Centers for Disease Control and Prevention. The memorandum has resulted in an interagency agreement between CDC and OA to (1) provide training for correctional staff involved with the Inmate Peer Education Program (IPEP), (2) develop HIV prevention materials for the IPEP, and (3) develop a Train-the-Trainers course to generate a pool of institution-based trainers who will link with the IPEP.

The Office of AIDS also has an interagency agreement with the California Department of Education (CDE). This agreement assists the department in implementing the requirements of a California law which states that students must receive HIV/AIDS education and prevention

instruction, once in middle school and once in high school unless the parent requests that their child not attend this instruction. CDE provides **direct funding to school districts** to develop and implement an HIV/AIDS prevention education program for youth in school. Since the behaviors that place youth at risk for HIV infection also contribute to the transmission of STDs, the HIV/AIDS prevention education programs for youth in school address both HIV and STD prevention

The Office of AIDS has developed several **contracts to facilitate the CPWG meetings**:

One contractor provides **professional facilitation** at all CPWG meetings. The facilitator provides an environment for respectful engagement in a neutral environment. In addition, the facilitator assists in preparing meeting agendas, goals and objectives, facilitating Community Planning Advisory Group (CPAG) meetings, debriefing meetings, and providing expertise in conflict resolution, Robert's Rules of Order and facilitation strategies.

The Office of AIDS also has a contract with a **professional meeting planner** to provide logistical support for all CPWG/CPAG meetings. Additional responsibilities are to transcribe the minutes, arrange for court reporters to record public comments, arrange for professionals to provide services to the members with special needs (i.e., individuals to provide sign language to one of our CPWG members, and a personal assistant for a CPWG member who is physically challenged), and processing expense reports for travel and per diem, meeting costs, and subcontractors. The contractor provides the necessary comfortable work environment for the CPWG members by arranging for lodging, meals, and transportation to all meetings.

The Office of AIDS contracts with various **consultants to provide expertise** in HIV prevention community planning at the State and local level. The consultants take into consideration CDC's five core objectives and the CPWG mission statement in the development of strategies and interventions that are action-centered, and have an outcome-oriented approach to HIV prevention that includes planning, program implementation, and evaluation.

The Office of AIDS and the CPWG Coordination and Linkages Committee strive to strengthen coordination and **linkages at the State level** with other State programs which have a common goal of reducing the spread of HIV/AIDS in the communities in which they serve. The agencies and collaborative projects that make up the interagency council are the, 1) Department of Health Services; Sexually Transmitted Diseases and Tuberculosis, 2) Department of Health Services; Family Planning and/or Maternal and Child Health, 3) Department of Corrections, and 4) Department of Education. The Office of AIDS is also working with the University System in California to foster collaborative research/service projects in prevention.

Contact: Wayne Sauseda (916) 323-7415

COLORADO

Colorado's Community Planning Work Book is an **orientation manual** that acts as an exceptional source of qualitative and quantitative information. This information includes a mission statement, letter of commitment, a list of intervention groups, history of the CPG (Coloradans Working Together-CWT), glossary, a list of community resources, and population grids used for prioritization.

Contact: Bob Bongiovanni (303)692-2736

CONNECTICUT

The Connecticut CPG, as a part of its priority-setting process, decided to treat the inmates and staff of the **Department of Corrections (DOC) as a separate region** with its own set of interventions. The CPG determined that the inmates and staff of DOC, who come from all six geographical community planning regions of the state, have some specific characteristics and needs that are not common to the general populations of the six regions. Ex-inmates on the CPG provided input on the interventions chosen. The CPG plans in the future to strengthen ties with DOC and possibly have advisory groups within the inmate population of DOC.

In an ongoing process of **insuring parity in its actual meetings**, the CPG tracks meeting attendance by several categories including ethnicity, sex, geographic region, HIV status, sexual orientation, and substance abuse background. This methodology was developed in response to the realization that the parity and diversity represented by the membership list does not necessarily match the representation of the group members actually present at a given meeting, and that the latter is a better reflection of parity, inclusion and representation. A committee reviews the statistics on a monthly basis and makes recommendations to the CPG based on its findings.

Recognizing the importance of evaluating the effectiveness of HIV prevention programs, the CPG recommended development of an **"evaluation bank,"** consisting of the availability of prepaid consultation in program evaluation from experts in the field. This project, funded through supplemental funds, offers flexibility to community based organizations to design customized and culturally competent evaluations of their prevention programs. This may increase the sense of ownership they feel for evaluation and its usefulness for them. CBOs funded with supplemental funding are assigned an "evaluation bank account." The CBO will be the evaluator's client and has control over the content of the technical assistance. The evaluator works collaboratively with the CBO in designing the evaluation, collecting and analyzing data, and preparing reports.

In early 1995 Connecticut was awarded supplemental HIV prevention funding by the CDC for an **epidemiological mapping project**. The project, completed in 1997, developed epidemiologic and risk data from the old tables-and-graphs method onto maps which can facilitate planning in regions, towns and neighborhoods. Target populations were (1) persons having unprotected sex and (2) those using injection drugs. Data were developed using "surrogates" (e.g., STD rates, teenage pregnancy rates, etc.). The project focused on how the information can be used in

planning HIV services that are based on regions and target populations. In particular, comparisons between risk incidence and services location can be useful. The homeless, deaf and hard of hearing, and Southeast Asians were suggested as possible target groups for future mapping. A statewide resource inventory as a future task was also suggested. Another suggestion was to overlay needs/populations to resources maps (e.g., sites and areas of providers and transport routes).

Contact for the above items: Lennon Hite (860) 232-9224.

Project M is a statewide HIV prevention initiative for **HIV-infected people** using behavioral science and research coordinated by AIDS Project Hartford. A number of six-session HIV prevention interventions with HIV+ gay men have been completed. Based on the feedback from the pilot groups, the intervention was changed to an eight-session mode. The program is based on the Information, Motivation, Behavior Skills model developed by Dr. Jeffrey Fisher of the University of Connecticut. There are also elements of the Natural Opinion Leader model and the theories of self-efficacy and reasoned action. Five facilitators will implement the intervention throughout the state. Besides AIDS Project Hartford other participating organizations include two other AIDS projects, a Latino AIDS organization, two drop-in centers and two gay and lesbian health organizations.

Contact: Debbie Cornman (860) 951-4833

A major initiative called "**social marketing/community mobilization**" is to "sell" HIV prevention the way Coke or Pepsi is sold. This approach replaces bland public service announcements with sophisticated and well researched mass media and community level campaigns. Connecticut uses a modification of the traditional social marketing/community mobilization model. Communities most affected by AIDS develop their own social marketing campaigns, rather than having the campaigns imposed upon them by outsiders. Local social marketing campaigns have started in Hartford and New Haven. They coordinate artwork, peer education, street outreach, and media buys to deliver consistent and powerful AIDS prevention messages for neighborhoods hit hard by AIDS.

Contact: Ann McLendon (860) 509-7801

DELAWARE

To assure parity, representation and inclusion the Division of Public Health, the Prevention Planning Committee and the HIV Consortium worked collaboratively to establish a PWA Coalition and **youth work group**. To assist with the establishment of the PWA Coalition, Delaware requested the assistance of the National Association of People With AIDS (NAPWA). Their experience in this area was critical in the development of the coalition. As a result, Delaware has increased representation from the PWA community and assured the issues of youth are addressed.

The HIV Consortium serves as the umbrella for several planning committees which includes prevention and care. Representatives from each committee actually form the membership of the

consortium. As a result of this organizational structure the consortium is able to serve as a coordinating body and facilitate the **linkage between primary and secondary care**.

Contact: Jim Welch (302) 739-3032

FLORIDA

Plans have been developed to enhance the outstanding work being done by the CPG in the areas of technical assistance and evaluation. Included in this are the past success of technical assistance and evaluation and the goals and objectives for future activities. Tables have also been developed for **training and technical assistance** to include the issue, a description, the time frame, and the key personnel responsible. In the same way, **evaluation** has a table for the component, description, tools, and key personnel.

The format for **identifying target populations** is clearly defined: For each target population identified, a description of the justification, estimated size of the population, the objectives for that population, and strategies are clearly and succinctly documented.

Florida's **committee structure** has representation from both prevention and care on one statewide and fourteen local partnerships. An effective structure has been developed to facilitate the completion of tasks. Each planning group member must participate on at least one committee at the statewide group. The committees consist of steering, nominations and membership, planning and evaluation, prevention interventions, bylaws, client services, conflict resolution, communication and public relations, and most recently, resource allocation.

Contact: Melissa Beaupierre (850) 487-3684

HAWAII

A joint **care and prevention community planning newsletter** was initiated in 1997. The purpose of the newsletter is to enhance communication and share information with the HIV communities about the community planning process for HIV care services and prevention. The newsletter also invites the reader to provide the health department planning groups with information that would be helpful to the planning process. The newsletter is distributed to members of both the care and the prevention planning groups as well as to the AIDS Educators and members of the Governor's Committee on HIV/AIDS. The individual assistant AIDS directors on most islands mail this newsletter along with their own newsletter.

Contact: Katalina McGlone (808) 733-9010

FAX (808) 733-9015.

Hawaii's **Syringe Exchange** Program is unique in that it operates on a statewide basis and is fully funded by the State Department of Health. The program operates out of two fixed locations on Oahu and five mobile van routes, which cover Oahu and the other major islands. In 1997, there were 143,715 syringes exchanged through the program. Also during that year, referrals to drug

treatment centers from the syringe exchange program resulted in 96 admissions.

Contact: Suzette Smetka, (808) 848-2469

Fax: (808) 842-0838

Gay MAP (Gay Men's AIDS Prevention) is a committee of individuals (nearly all gay men) involved in HIV prevention for MSM throughout Hawaii. The committee includes community-based educators and outreach workers, community planning group (CPG) members, and DOH staff (from health education, secondary prevention, and counseling and testing). Members represent Maui, Oahu, Kauai, and the east and west sides of the Big Island. Gay MAP brings together gay men at all levels of HIV prevention (planning, contract development, program implementation) to share information and experiences in order to improve quality and effectiveness of current programs, and ensure that experiences gained in current programs inform planning decision and future contracts. Gay MAP functions as a working committee of the CPG, and makes recommendations on issues related to prevention for MSM.

Contact: Tim McCormick, (808) 733-9281

Fax: (808) 733-9291

INDIANA

The Indiana CPG has issued a new RFA that solicits and emphasizes the implementation of **behavior change interventions**. The Indiana State Department of Health and the Indiana CPG proposes that this new RFA will encourage an informed approach which would serve to incorporate specific behavior change intervention strategies and prevention activities in to current and proposed prevention efforts.

In order to facilitate the use of HIV prevention funds in a manner consistent with the goals set by the CDC, the Indiana State Department of Health and the CPG, all sites requesting funds for 1998 FY are required to complete an **outlined program plan** that accurately reflects the needs of the jurisdiction and coincides with the philosophy of the HIV/AIDS Program and the CPG. All programs are encouraged to incorporate the suggestions for counseling and testing that were suggested in the Indiana HIV Prevention Plan.

Contact: Lori Phillips (317) 23374

MARYLAND

The Maryland CPG has an **Evaluation Advisory Committee** as a standing committee. The committee was developed several years ago when a need for an enhanced approach to evaluation of prevention programs was identified. CPG members and program and evaluation staff serve on the committee. Its purpose is to consult with and advise the AIDS Administration on evaluation issues.

Structured Public Input is the term used by Maryland to describe the process of collecting local and regional information from target populations. The information is used to identify prevention

needs and set priorities in each of the five regions in Maryland. This input is gathered primarily by Regional Work Group members. The regional epidemiologic profiles are the basis for determining which populations may be most important for each RWG to collect input from. Although methods to collect information may differ, the input is "structured" around general questions asked across all regions.

The University of Maryland developed a **Regional Work Groups Planning Workbook** for Maryland's CPG and Regional Work Groups. The workbook was intended as a guide for the RWGs to use in assessing regional HIV prevention needs and determining priority activities. The workbook is presently under revision for use in the development of the next 3-year plan.

Contact: Beth Wells (410) 767-5314

MASSACHUSETTS

The Massachusetts HIV Prevention Planning Group meets monthly in the center of the state and has developed an innovative **structure and system**. The process is organized around prioritized questions, which will inform the HIV Prevention Plan, rather than rewriting of the plan annually. These questions rise from a variety of sources including: The Department of Public Health's priorities, current events (such as the HIV Reporting issue), and topics which arise from MPPG work and activities (such as the HIV Prevention needs of HIV-positive individuals). The MPPG is divided into three working groups, each of which has a contractor with expertise in evaluation, needs assessment, behavioral surveillance, or other behavioral sciences. Each working group chooses a question or questions to pursue over a period of time. Currently the MPPG is pursuing three questions: What are the HIV prevention needs of HIV-positive individuals, What is the efficacy of an HIV Prevention Intervention (Safety Net), and What are the HIV Prevention Needs of Young Drug Users. In addition the MPPG has recently made recommendations on: the future of HIV Counseling and Testing Intervention (based on an outcome evaluation), and HIV reporting in MA.

The MPPG also has started an ad-hoc working group, which meets before the full planning group meets to handle publicity and public information as well as media requests. This group has worked to develop a **web page**, to oversee the quarterly writing and distribution of an newsletter, and to make numerous invitations to members of the HIV prevention community to their meetings. The MPPG has hosted more than 400 guests in the past year, and has received thousands of requests for MPPG materials and publications.

One of the projects the MPPG is proudest of is its work with **young men who have sex with men**. This work included both a large behavioral survey of 250 young men in three cities in MA and a smaller seroprevalence survey of young MSM in Boston. The findings are currently in press for a peer reviewed journal but here are a few of the highlights. Young men were much more likely (statistically significantly) to engage in HIV risk behaviors if they were bisexually active, if they reported a history of sexual assault, or if they had met sex partners in anonymous locations. Both the behavioral and seroprevalence survey also found higher risk, though not

statistically significant, among transgender MSM.

Contact: Kristin duBay, Rebecca Joyce, or Katie White (617) 624-5327 or www.mppg.com

MICHIGAN

A Community Health Assessment and Implementation (CHAI) initiative is underway in Michigan. The CHAI is facilitated in collaboration with local health agencies and other local providers. The process is comprehensive and includes assessment, determination of priority community health problems and the development of action plans to address these problems. The CHAI has direct implications for the community planning process and health indicator data used in the CHAI process can strengthen the needs assessments conducted by the RCPGs.

Contact: Lisa Randall (517) 335-8468

MISSOURI

The Missouri CPG has set a year 2000 goal for **integration of STD prevention planning into the HIV prevention community planning process.**

To assure that youth have input into the HIV/STD prevention planning process, Missouri regional planning groups will be conducting **youth focus groups** in 1998 to assess: 1) HIV/STD prevention needs of high-risk youth; 2) identify innovative and effective strategies for involving youth in community planning efforts; and 3) conduct youth peer-review of the regional prevention plans.

To assure that targeted populations are being reached effectively, the following regional planning groups are conducting specific innovative interventions:

Southeast: **Chat line involving gay/bisexual teen** issues about "coming out".

Southwest: For MSMs, **personal ads** are answered through phone calls wishing them luck in their search or a letter wishing them well with condoms and safe sex information.

Kansas City: For women at risk, safe sex education sessions for prostitutes entitled "**working girl lunches**".

Northwest: For at-risk heterosexuals, a **food kitchen outreach where safe sex** is discussed and informational brochures and condom packets are handed out. Orasure testing also takes place through this venue. For **people of color, an annual leadership conference** takes place within the African American Community in which HIV prevention information is presented.

Contact: Mary Hayes (573) 751-6141

MONTANA

Montana is one of only a few states to incorporate a Native American Advisory Committee (NAAC) into its State Planning Group to ensure that there is **diverse Tribal representation** in Montana's planning process. The NAAC is very active and contributes important perspectives and cultural insights into Native American issues.

Montana's SPG has taken the lead in **collaborating with other frontier states** in designing and implementing HIV prevention/ intervention efforts as well as preparing guidance documents, orientation manuals, and improving PIR efforts.

Montana's SPG sponsors **HIV-positive Men's and Women's** Retreats that include people from Montana as well as neighboring states. These retreats provide valuable connections, support and holistic education to people dealing with their infections.

Contact: Kathleen Martin (406) 444-4735

NEVADA

The external review stated that Nevada had a **very inclusive planning process**. The process includes: conducting information gathering sessions to garner input from the community at large as well as to share information on HIV prevention decisions in the state; a combined HIV needs assessment for care and prevention; and a number of individuals are members of both the Ryan White II Care Council and CPG; The State's HIV prevention program also closely coordinates activities with the care, STD, and TB programs, as well as with the two largest health authorities.

Contact: Ken Adams, (702)687-4800

NEW MEXICO

The New Mexico Department of Health's HIV Prevention Program is collaborating with the University of New Mexico's Master's in Public Health Outreach Education Program (PHOEP) to create a **certificate program for New Mexico's HIV community-based organizations** and Department of Health personnel. The objectives of this program are to provide HIV prevention staff with knowledge and skills in principles of public health and to build public health capacity statewide. The program will provide participants with training sessions and workshops geared towards strengthening program planning, development, implementation and evaluation. Courses include basic principles of public health; needs assessment and communities; epidemiology and its application in program planning; behavioral health theory and its application in targeted interventions; harm reduction; and program planning and evaluation.

Contact: Lorenzo Olivas (505) 476-8476

NEW YORK STATE

In 1997, the AIDS Institute worked with the Department of Correctional Services to **pilot OraSure with state prison inmates** in four facilities. Surveys were completed both by the inmates, who had a choice of serum or oral fluid testing, and the counselor staff who performed the tests. The overwhelming acceptance of the product led to its introduction to all correctional facilities throughout the state.

The **Community Needs Index (CNI)** has been developed as a tool to assist the HIV prevention program in identifying communities at the zip code level that are at increased need for interventions. Risk scores are computed through the use of variables including risk behavior indicators related to pregnancy and substance use, as well as seroprevalence studies and AIDS case reports. The CNI includes maps that show high risk areas and provides mapping of existing funded providers. This format allows for greater ease in determining prevention coverage and service gaps.

Native American Needs Assessment and Prevalence Study - the PPG-assigned epidemiologist, along with the invaluable help of a community member, was able to gain access to two major Native American gatherings that took place in the summer of 1997, one in New York City and one on Long Island. The epidemiologist tested and completed prevention surveys with hundreds of individuals. OraSure was used to collect test samples. Since there is a dearth of information concerning HIV infection among Native Americans, such targeted studies may provide one mechanism to begin to understand the status of risk taking and the epidemic in this population.

To promote STD screening and treatment as an HIV prevention intervention and to better integrate HIV prevention services and STD testing and treatment services at the community level, an **HIV/STD workgroup** was created from AIDS Institute staff, representatives from the Bureau of STD Control, and PPG members from each of the population-based committees. The short term goals of the group are: 1) to widely disseminate the new information that treating STDs is a viable strategy for HIV prevention, 2) to improve the integration of HIV prevention and STD screening at CBOs, and 3) to improve STD screening and treatment, and HIV counseling and testing in health care settings that see large numbers of clients at risk for both.

The NYSDOH's AIDS Institute, in collaboration with its HIV Community Prevention Planning Group (PPG), convened an **MSM/Gay Men's Leadership Forum**. This group is made up of thirty-five epidemiologists, research scientists, policy experts, community leaders, client advocates, the Director of Gay/Lesbian Health of the New York City Department of Health and other persons with demonstrated experience in the field of HIV prevention. Participants represent all regions of the state, a variety of racial/ethnic groups, and include a significant number of persons living with HIV/AIDS. A major report from the Leadership Forum is currently in draft form. The model also will be reflective of an important theme that arose among forum participants — that gay men need to be empowered to identify and articulate their own prevention needs. Other findings of the forum stress the importance of developing indigenous markers of

success for HIV prevention in the MSM community, integrating into a comprehensive program efforts to address secondary prevention and secondary transmission, as well as grounding prevention work in an understanding of the dynamics of the MSM/Gay Men community, social networks, and their partnerships/relationships.

Contact: Dan O'Connell (518) 473-2300

NORTH CAROLINA

The debut of the **HIV Prevention and Community Planning Academy** occurred on June 16-19, 1997. Over 150 participants attended the two institutes: 1) Basic Community Planning; and 2) Financial Management of Community-Based Organizations. The goals and objectives of the Academy were two-fold: 1) to insure that new and former community planning group members were oriented to the basic components and core objectives of community planning, including the roles, responsibilities, and the structure of the North Carolina HIV Prevention Community Planning Process, and 2) to provide opportunities for building and strengthening the infrastructure of state-funded prevention community-based organizations. The credentialing process for the Academy Faculty provided excellent training including national and statewide perspectives and resources. The success of this inaugural event played a significant role in the development of intermediate level instruction to be provided during the spring 1998 Academy.

The next Academy will be held May 5-6, 1998 in Winston-Salem at the Hawthorne Inn. This Academy will present an Institute for Community-Based Organizations, Regional Community Planning Groups, Statewide Community Planning Groups, and Consortia. In addition, the Institute will provide hands on training in Program Evaluation. The Ryan White Care Consortia has been added to the HIV Prevention, Community Planning and Care Academy.

Contact: Audrey McMillian (919) 733-9528.

PENNSYLVANIA

The University of Pittsburgh Graduate School of Public Health, with support from the Division of HIV/AIDS, Pennsylvania Department of Health has established an **Internet site at URL: <http://www.stophiv.com>**. Included at the site are a service provider resource directory with information on over 1200 service providers in Pennsylvania; current epidemiologic data; personal stories page; HIV prevention bibliographic databases; treatment page; young adult roundtable page; and chat line/bulletin boards.

In November 1997, the Department of Health began tracking the number of "hits." Even though the marketing campaign has not yet taken place, the site averages about 300 hits per week. Future additions to the site will include the provision of accurate information on funding issues and grant writing; development of a chat line for consumers; and access to information on consumer benefits for Pennsylvania's AIDS Drug Assistance Program.

Contact: Joseph M. Pease (717) 783-0572

PHILADELPHIA

The Philadelphia CPG engaged in a formulaic process to determine **allocation of funding** by target population. This formula heavily weighed available epidemiologic information, and included the following factors per population: HIV seroprevalence, size of population, prevalence of risk through sexual behaviors, riskiness of sexual behaviors, prevalence of risk through injection behaviors, riskiness of injection behaviors, level of exposure to high seroprevalence populations, prevalence of substance abuse in population, current availability of publicly funded prevention resources, and difficulty in meeting prevention needs.

Contact: Karen Llanos (215) 546-0300 extension 3250

The Philadelphia Department of Public Health has **expanded HIV counseling and testing sites without the expenditure of additional public funds** by establishing noncontractual sites over the last year. These sites are referred to as "service agreement sites," and were specifically set up to target at-risk individuals as identified by the CPG's priority populations. While the sites are not provided funding by the health department, the written agreements mirror the contract language of the publically funded counseling and testing sites, including the protocols and quality assurance components. In addition, they participate in all system-wide meetings, training, and conferences. In exchange for their services, the Department of Health offers the noncontractual sites other resources such as prevention counseling certification offered by the Department of Health.

Contact: John Cella (215) 685- 6757

The CPG engaged in a national and local literature search for all prevention interventions which have been studied to determine their outcome effectiveness. This search was lead by a nationally known social scientist. All information gathered was summarized in chart form and distributed to the CPG. The **models that were found effective by outcome evaluation** were compared to existing publicly funded interventions in Philadelphia to determine whether current models of interventions were based on effective models. The models also serve as the basis of interventions that can be funded in the 1998 Philadelphia HIV Prevention RFP.

Contact: Dr. Loretta Sweet-Jemmott (215) 898 8287

SAN FRANCISCO

Through a contractor, San Francisco used many methods to evaluate the community planning process, including meeting evaluation, participant dialogue, member background experiences, and start-up. In addition, there are **process evaluation** activities conducted that nurture the heart and spirit, including vision or value statements, stories, humor, symbols and images, messages/ mottos to the world, etc.

Prevention providers funded by the AIDS office are required by their contracts to conduct a one-time **behavioral risk assessment**, documenting the risks for HIV in a populations and then incorporating the results into their program plans.

As part of the prevention plan, the **Intervention Research** section presents an outstanding summary of strategies and interventions in discrete categories to assist prevention planning and program design. As part of the epidemiologic profile, the **Psychological Co-factors**, presents examples of co-factors including social support, mental health stressors, and self-esteem and HIV risk. For each, the connection between the co-factor and HIV risk and who is a beneficiary of the co-factor is presented.

Contact: Valerie Kegebein (415) 554-9023

SOUTH CAROLINA

South Carolina has developed an excellent flow chart, **Model of Action**, that depicts the impact of the community planning process on prevention activities, from existing services in 1994 to expanded services in 1997.

Youth teams have been developed at five colleges and universities from across the state to obtain input from young people on HIV prevention. The teams are titled **Listen Up!** Activities include the description of unmet needs, HIV prevention strategies, social norms, cultural values, and channels of communication among high risk youth. Information from these youth teams is incorporated into the plan.

South Carolina conducts a **self-assessment**. Specific tables addressing priority populations, needs and interventions are developed as a result of the assessment. Comparisons are made between the HIV prevention plan, the Department of Health and Environmental Controls application, progress, and the application plan for the following year. In doing so, a comparison can quickly be made regarding the linkage between the plan and the application for funds.

Contact: Dorothy Waln (803) 737-4110

TEXAS

The **user-friendly, regionally based HIV Prevention Community Planning Epidemiologic Profile** is an excellent tool. The 1100-page epidemiologic profile is very well organized and user friendly. Jargon is not utilized in the description of rates; rather, examples are given that are easily understood. Instructions on how to look at and interpret tables and data are precise and provide useful guidance, a roadmap and an explanation of how data is organized.

Contact: Susan Hillman (512) 490-2515

WEST VIRGINIA

West Virginia developed *A Media Guide for CPGs: Getting your Message Across*. This packet of information was created to help each of the eight CPGs in West Virginia utilize local news media to effectively publicize news about HIV/AIDS, their CPG or upcoming events. The packet teaches CPG members how to select a media focus, designate a group media contact and how to research appropriate media outlets in their area.

Several strategies for increasing participation in the community planning process have been developed. A **Grand Network Meeting** was held to expand information to volunteers and professionals about HIV community planning by District 1 CPG. The one-day meeting brought together individuals from HIV care, treatment, and prevention to share information and provide input on the plan.

Because of difficulties in reaching certain populations in West Virginia, one CPG started inviting specific **target population members to meetings as "consultants."** The individual would be provided time on the meeting agenda to discuss their issues and concerns. This allows the CPG to have access to valuable information to help them plan and also provides a nonthreatening way for the consultants to learn more about the CP process.

Contact: Laura Lambert (304) 342-9633

UTAH

Utah holds **annual Ethnic Symposiums** that includes representatives from a variety of ethnic/cultural communities, ages and levels of understanding and engages them in HIV & STD prevention issues. This statewide symposium serves as a source of unity, enthusiasm and acclamation for all of Utah's urban and rural communities.

Utah's **Interfaith Project** has been instrumental in initiating open, honest conversations among communities of faith, so that focus can be placed on developing united messages and approaches in preventing the spread of HIV and STD in their communities.

Utah has contracted for services geared to developing a mobile **Safe Space for at-risk youth** which are staffed by and for youth. Services provided include understanding diversity, cultural sensitivity, harm reduction and providing safe environments and outreach to kids who are at high risk of contracting HIV due to drug use, sexuality issues, cultural differences and socio-economic burdens.

Contact: Randy Den (801) 538-6184

WASHINGTON, D.C.

To ensure the community planning group considers the diversity of the epidemic in the District, many non-traditional providers are accessed for data collection. These providers include, but are not limited to, laboratories, private physicians and Health Maintenance Organizations (HMO's). Utilizing these **non-traditional data sources** allowed for expanded data retrieval, information and insight regarding the epidemic.

The DC HIV Prevention Community Planning Committee (HPCPC) will be updating their comprehensive plan during fiscal year 1998. This will present new opportunities for linking the plan to the application for funding and allocation of prevention resources. One new activity will be to prepare readable, **accessible summaries of the plan and the epi profile** for HPCPC

member to use in gaps analysis and priority setting. The summaries are planned to be 1-3 pages and will serve to assist members in making a connection between plan findings and directives and subsequent decision-making.

Contact: Ivan Torres, (202) 727-2500

WISCONSIN

In order to address the service, program, intervention and **collaboration needs between the TB program and CBOs**, the Wisconsin CPG has developed a plan and protocol to aggressively include the TB program in training and consultations efforts directed to HIV/AIDS CBOs. Such efforts should serve to enhance efforts to control the spread of multiple drug resistant TB by expanding the number and type of providers offering TB screening and to enhance training and prevention efforts supported by the HIV/AIDS and STD programs in Wisconsin.

Contact: Mari Gasirowicz (608) 266-9853

WYOMING

Wyoming has developed several very strong interventions that make excellent use of existing community resources. These include a **pro-active approach to engaging gay men** who cruise in a local Cheyenne park into adopting HIV risk reduction techniques. A conference entitled "Different and Equal" was sponsored jointly by the area CPG and Human Rights Network Gay Youth Hotline, to promote understanding of and equal treatment for **teens at-risk** in Wyoming. This is an excellent resource of youth empowerment and HIV, STD prevention education.

The Wind River Reservation **Peer Youth Group** called Warrior Spirit is actively engaging their peers in discussing HIV prevention techniques at Tribal health fairs and performing short plays dealing with the results of contracting HIV.

Contact: Ruth Davis (307) 777-5932

The Effects of HIV/AIDS Intervention Groups for High-Risk Women in Urban Clinics

ABSTRACT

Objectives. This study reports the results of a behavior change intervention offered to women at high risk for human immunodeficiency virus (HIV) infection seen in an urban primary health care clinic.

Methods. Participants were 197 women randomly assigned to either an HIV/acquired immunodeficiency syndrome (AIDS) risk reduction group or a comparison group. Women in the HIV/AIDS intervention group attended five group sessions focusing on risk education; skills training in condom use, sexual assertiveness, problem solving, and risk trigger self-management; and peer support for change efforts. Women in the comparison group attended sessions on health topics unrelated to AIDS.

Results. At the 3-month follow-up, women in the HIV/AIDS intervention group had increased in sexual communication and negotiation skills. Unprotected sexual intercourse had declined significantly and condom use had increased from 26% to 56% of all intercourse occasions. Women in the comparison group showed no change.

Conclusions. Socially disadvantaged women can be assisted in reducing their risk of contracting HIV infection. Risk reduction behavior change interventions should be offered routinely in primary health care clinics serving low-income and high-risk patients. (*Am J Public Health*. 1994;84:1918-1922)

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Introduction

Inner-city women with multiple sexual partners or with high-risk partners constitute a population increasingly vulnerable to human immunodeficiency virus (HIV) infection. Although only about 10% of all American acquired immunodeficiency syndrome (AIDS) cases to date have been diagnosed in females,¹ women constitute the group with the greatest proportionate increase in AIDS diagnosis rate over the past several years,² and AIDS is already one of the six leading causes of death among women between the ages of 18 and 45 in the United States.³ Recently reported increases in the prevalence of HIV infection among women seen in urban sexually transmitted disease clinics, primary care clinics, and high-risk pregnancy programs portend a continued rise in HIV disease, especially in inner-city areas where drug abuse, "traditional" sexually transmitted diseases, unwanted pregnancies, and other social health problems related to disadvantage are common.⁴⁻⁷ The alarming prevalence of widely disseminated HIV infection among heterosexuals with multiple or high-risk partners in developing countries with Pattern II epidemiology is now well-known.^{8,9} There is a pressing need to identify, evaluate, and implement primary prevention methods to curtail new HIV infections in our most vulnerable urban populations.

A number of writers have called for the development of HIV/AIDS prevention efforts that can be integrated into primary health care settings, and several writers have described general AIDS education approaches that may prove useful for urban minority women.¹⁰⁻¹⁴ However, we are aware of no controlled studies systematically evaluating the be-

havior change impact of prevention interventions for inner-city women who are at elevated risk for HIV infection and are seen in primary health care clinics. Recent research has shown that group behavioral risk reduction skills training interventions that combine risk education, sexual assertiveness and communication skills training, risk reduction problem solving, and similar health counseling approaches can produce sexual risk behavior changes in gay men^{15,16} and adolescents.^{17,18} If such interventions can be adapted to promote risk behavior reduction in inner-city women—a population facing many other concerns and problems related to social disadvantage—models for effective HIV primary prevention can be identified and then routinely offered in health care clinics. The purpose of this research was to experimentally evaluate a primary care clinic-based HIV prevention intervention for high-risk inner-city women of childbearing age.

Methods

Setting and Participant Characteristics

This research was undertaken in 1991 and 1992 at a comprehensive community primary health care clinic in Milwaukee, Wisc. The clinic, located in a central city neighborhood with high rates of poverty, sexually transmitted diseases,

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This paper was accepted March 8, 1994.

drug abuse, and teenage pregnancy, serves predominantly low-income minority patients.

Women between the ages of 18 and 40 years attending clinic appointments were informed of the study and were then individually screened to determine whether they met the criteria for high-risk behavior: multiple male partners, diagnosis of a sexually transmitted disease, or unprotected sex with any high-risk male partner (such as an injection drug-using partner) during the preceding 12 months. Women who met any of these criteria ($n = 197$) provided written informed consent and were entered in the study. The mean age of participants was 29 years, their mean education level was 11 years, 97% were unemployed, and 75% had total household incomes of under \$8000 per year. The racial/ethnic composition of the sample was 87% African-American, 6% White, 4% Native American, and 3% Hispanic. Forty-seven percent of the women had been treated at some time for a sexually transmitted disease. Although 54% of the women reported being in long-term relationships, the fact that all of these women met the entry criteria indicates that their relationships were often risk-producing.

Baseline Assessments

Each woman was individually assessed by a female assistant using a questionnaire and a sexual assertiveness skill role-playing task to ascertain risk behavior and other risk characteristics over the 3 months prior to study entry. (Copies of the assessment measure and intervention outline are available upon request.) The questionnaire was pilot tested earlier with women of low reading level to ensure clarity and comprehensibility of items; the research staff member assisted women who had difficulty by reading items aloud and allowing the participant to mark her answers privately. To promote candor, the women used code numbers rather than their names on the measures.

Using question and response formats previously shown to have high validity and reliability for sexual behavior assessment,^{15,19,20} each participant reported the number of male sexual partners she had had during the previous 3 months, frequency of unprotected and condom-protected intercourse, and whether she had had high-risk partners (defined as men who used injection drugs, men who were believed to be having sex with other women, or men who were believed to be

having sex with men) during the same time frame.

The women described their use of alcohol, marijuana, cocaine, and injection drugs during the previous 3 months on a scale ranging from 1 (no use) to 6 (use of the substance more than once daily). They also indicated the number of times they had had sex when intoxicated or high.

A 40-item true/false measure, previously normed and validated with minority populations,²¹ was administered to assess practical understanding of HIV/AIDS risk, steps that reduce risk, and misconceptions about AIDS. The women were asked to estimate their personal risk for contracting HIV infection on a scale ranging from 1 (no risk at all) to 5 (extremely high risk).

Because HIV risk occurs in the context of an interpersonal relationship and risk reduction requires either refusing risky sexual interactions or negotiating condom use, each woman also participated in a role-playing exercise to assess her sexual communication skills. A set of four scenes was constructed. In each scene, a potentially risk-producing situation was described and then two statements that might be made by a coercive male partner were read. After the narrative description and presentation of coercive statements, the woman was asked to role-play how she would respond; her responses were recorded on audiotape. The four role-playing situations simulated interactions in which, to avoid risk, the woman would need to initiate a discussion of condom use, request that her partner postpone sex because he didn't have a condom, resist her partner's pressure to have sex without a condom, or refute her partner's protestation that condoms imply a lack of trust. These situations had previously been identified as critical areas by focus group participants.

The recordings of the role-playing exercise were transcribed. A panel of four women experienced in conducting AIDS prevention programs for women was presented with each participant's transcript. The raters were not told whether the participant was in the intervention or comparison group or whether the transcript was from the baseline assessment or the follow-up. The four expert raters independently assigned a rating of 1 to 10 for each participant's overall effectiveness in handling each situation. High effectiveness was defined as a response that would prevent high-risk behavior from occurring in the situation. (Because of a technical recording malfunction, audible role plays

could not be obtained for rating from 21 women. Data are presented from the 39 AIDS intervention and 29 comparison group women whose role plays were recorded.)

The Intervention and Comparison Groups

After assessment, the participants were randomly assigned to either the HIV/AIDS intervention group or a comparison group. Women assigned to the HIV/AIDS intervention attended a series of four weekly 90-minute group sessions and a 1-month group follow-up, all conducted in the health clinic. Sessions were attended by 8 to 10 women and 2 female group leaders. To ensure consistency of content and procedures, the group leaders followed detailed outlines for the conduct of each session.

The women in the intervention group received detailed information about HIV risk, focusing especially on behaviors that confer risk, common misconceptions about AIDS, and steps that lessen risk for contracting HIV infection. National and local HIV seroprevalence and epidemiology were summarized to personalize risk situations and the possibility of encountering an infected partner. Because success in effecting risk behavior change is also determined by cognitive-attitudinal, behavioral skill, and social factors,²²⁻²⁵ the intervention emphasized these areas. The participants role-played how they would initiate a discussion of AIDS concerns and condom use with a potential sexual partner and how they would resist sexual pressure from a man whose risk history was unknown or with whom the woman did not want to have sex. To desensitize participants to issues involving condoms, condom demonstrations and practice with phallic replicas were incorporated in the sessions. Considerable attention was also directed toward identifying, understanding, and managing one's personal "triggers" to high-risk behavior, such as drinking or drug use, loneliness, or involvement in coercive or power-imbalanced sexual relationships. Group problem-solving approaches were taken to assist participants in developing alternative strategies to handle situations that had formerly triggered high-risk sexual behavior.

Although the intervention was conceptually grounded in cognitive-behavioral and risk reduction skills training principles, the women took on roles that actively supported one another's change efforts. For example, participants often shared their personal experiences in han-

TABLE 1—Changes from Preintervention to Follow-Up in HIV/AIDS Risk Behavior among Intervention and Comparison Group Women

Behavior in Previous 3 mo	AIDS Intervention Group (n = 100)		Comparison Group (n = 87)		F or t	P <
	Preintervention	Follow-Up	Preintervention	Follow-Up		
Mean no. of male sexual partners (SD)	2.3 (5.0)	1.7 (2.6)	1.7 (1.3)	1.2 (0.7)	1.10	NS
Mean frequency of unprotected vaginal intercourse (SD)	14.0 (17.2)	11.7 (22.8)	13.0 (18.3)	15.0 (26.4)	4.40	.04
Mean no. of unprotected vaginal intercourse partners (SD)	1.4 (1.1)	0.7 (0.9)	1.3 (1.1)	0.8 (0.5)	2.71	NS
% of vaginal intercourse occasions on which condoms were used	26	56	26	32	13.33	.001
% of women using condoms at any time	43	66	45	44	5.78	.001
% of male partners with whom condoms were used	43	66	42	48	3.58	.001

Note: NS = not significant.

dling high-risk sexual pressures, endorsed the norm that men can be denied sex unless condoms are used, and identified benefits associated with change, including protection of one's family and children from AIDS, feelings of personal control concerning sex, and confidence in sexual decision making. These peer support elements appeared critical for promoting behavior change among disadvantaged women whose initial efforts might not be supported by their male partners and would be made more difficult by other life stressors.

Women assigned to the comparison condition attended a series of three 90-minute group sessions on topics unrelated to AIDS but relevant to low-income women, including family and child nutrition, healthful meal preparation, and ways to promote nutritious food choices among children. The comparison group was employed in the study to control for the effects of group attendance, involvement in a health intervention, reactivity or sensitization effects of measure completion, and other nonspecific group participation effects unrelated to the HIV/AIDS intervention.

Follow-Up

Three months after completing the intervention, the participants completed individually administered follow-up assessments that were the same as those used at baseline. Thus, for each woman, preintervention and 3-month follow-up data were obtained on sexual behavior and substance use over the past 3 months, AIDS risk behavior knowledge, personal estimation of risk, and behavioral ratings of sexual communication skills.

Results

Of the 197 women who entered the study and completed baseline assessments, 100 were randomly assigned to the AIDS intervention and 87 to the comparison group. Fifty-four women assigned to the AIDS intervention attended the full intervention and completed the 3-month follow-up assessment (54% follow-up rate); 39 women who had been randomized to the comparison group attended all three sessions and completed the follow-up assessment 3 months later (44% follow-up rate). Although loss following initial assessment was relatively high, probably owing to the impoverished, transient nature of the population and the approximately 6-month interval between preintervention and follow-up assessments, there were no significant differences between completers and non-completers in demographic or risk characteristics at baseline; the primary reason for loss at follow-up was relocation.

To examine outcomes of the intervention in a stringent and conservative manner with maximum external generalizability, we performed analyses using the criterion of "intention to treat."²⁶ A multiple imputation procedure was employed. As recommended by Levy and Lemeshow,²⁷ all participants who entered the study were assigned to categories based on their age, educational level, and whether or not they had ever been treated for a sexually transmitted disease. Women for whom follow-up data could not be obtained had follow-up scores on each variable imputed on the basis of a rotation system employing data from study completers in the same age, education, and

sexually transmitted disease history categories (see Levy and Lemeshow²⁷ for details). This strategy yields a more conservative test of intervention outcome effects than would a comparison including only women for whom both preintervention and follow-up data were obtained.

Effects of Intervention on High-Risk Sexual Behavior and Condom Use

Table 1 presents data on participants' sexual behavior during the 3 months before entry into the study and the 3 months following the intervention. The sexual behavior data were nonnormally distributed because some women had very high rates and others had more moderate rates of sexual behavior. For that reason, the ordinal (frequency variable) sexual behavior data were first linearly transformed ($\log_{10} X + 1$) to approximate normality as recommended by Winer,²⁸ and analyses of covariance were then performed with baseline scores used as covariates to control for any group differences at baseline. *T* tests were used to compare differences in proportionality between intervention and comparison groups on categorical variables at the baseline and 3-month follow-up periods.

There were no significant differences in mean number of male sexual partners at baseline or follow-up. However, there were significant differences in the risk levels of sexual practices and condom use patterns with those partners. At follow-up, women in the intervention group differed from women in the comparison group in frequency of unprotected vaginal intercourse; women in the intervention group had reduced their frequency of

TABLE 2—Analysis of Covariance for Preintervention-to-Follow-Up Changes in HIV/AIDS Risk-Related Characteristics among Intervention and Comparison Group Women

	AIDS Intervention Group				Comparison Group				F	P<
	Preintervention		Follow-Up		Preintervention		Follow-Up			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
AIDS risk behavior knowledge ^a	29.2	5.1	31.1	4.8	28.6	5.0	29.5	6.7	3.47	.06
Personal estimation of risk ^b	2.1	1.2	2.0	1.1	1.9	1.2	1.7	0.8	3.67	.06
Rated effectiveness of sexual communication skills ^c										
Initiating condom discussion	19.4	9.3	24.6	6.5	20.6	7.8	21.9	8.0	2.56	NS
Postponing sex until condom obtained	18.3	7.7	28.3	9.0	19.8	7.7	22.6	6.4	10.02	.002
Refusing sex without a condom	21.2	8.8	26.6	10.3	17.1	10.3	20.8	9.2	3.01	.05
Refuting that condoms mean lack of trust	20.5	8.4	23.3	10.8	19.8	7.9	20.3	9.4	0.66	NS

Note: n = 93 (AIDS intervention n = 54, comparison intervention n = 39), except for role play skill, where n = 68 (AIDS intervention n = 39, comparison intervention n = 29 for preintervention and follow-up). NS = not significant.

^aScore on a 40-item true/false measure.

^bOn a scale of 1 (no risk at all) to 5 (extremely high risk).

^cValues are pooled across the four judges, with a range of 4 to 40 for overall assertion effectiveness for each scene.

unprotected sex to a greater extent than had comparison group women.

The most consistent behavior changes following intervention were in condom use. An average of only 26% of intercourse occasions were protected among intervention group women during the 3 months before study participation. Condom use increased to an average of 56% of all intercourse occasions in the 3 months following the intervention. Comparison group women showed little corresponding change in condom use. A larger percentage of women in the intervention group used condoms at some point during the 3 months following participation in the intervention than before it (66% at follow-up vs 43% before intervention), and they used condoms with a larger proportion of their male partners after intervention. No significant changes over time were observed in any indices of condom use among women in the comparison group, and no change in substance use was found for women in either condition.

Effects of Intervention on Risk Knowledge, Sexual Communication Skills, and Personal Estimation of Risk

Table 2 presents baseline and 3-month follow-up results for women in the two groups on AIDS-related cognitive and attitudinal characteristics. To control for any preexisting differences between groups, all analyses were performed with analyses of covariance (ANCOVAs), using pretest scores as covariates. At follow-up, women who participated in the HIV/AIDS intervention tended to differ from

comparison group women in AIDS risk behavior knowledge scores and in rated accuracy of personal estimation of risk; intervention group women had become more knowledgeable about risk and viewed themselves as more vulnerable to HIV infection than did comparison group women.

Table 2 also presents ratings of the participants' sexual communication skills made by the panel of four experienced AIDS educators, broken down by role-playing scene. The ANCOVA on the AIDS educators' pooled ratings shows that participants in the intervention group differed significantly from comparison group women at 3-month follow-up in effectively requesting that a partner postpone sex because a condom was not available and in effectively resisting pressure to have sex without a condom. In both areas, intervention group women exhibited change indicative of greater sexual negotiation and assertive communication skills than comparison group women.

Discussion

A five-session cognitive-behavioral skills training group intervention offered in an urban primary health care clinic produced behavior changes among disadvantaged women at high risk for contracting HIV infection. The most pronounced changes were a reduction of unprotected sex and an increase in condom use; the proportion of condom-protected sexual acts more than doubled for intervention

group women in the 3 months following the intervention. This indicates that the women were more able to negotiate condom use, convince their partners to use condoms, or establish relationships with men who would use condoms. Interestingly, we did not find evidence of a change in the number of male partners in relation to experimental condition; women in both the intervention and comparison groups reported fewer partners at follow-up. This reduction may have been due to AIDS sensitization effects of completing the measures or to other factors. However, only women in the intervention condition significantly increased their use of condoms and significantly decreased their frequency of unprotected vaginal intercourse. Our use of a long follow-up period, combined with the transience of this low-income unemployed population, resulted in a relatively high loss of participants to follow-up. However, loss was unrelated to experimental condition or participants' initial risk characteristics, and our conservative analysis based on intention to treat establishes the validity of the findings in spite of attrition.

The sexual behavior assessment methods employed in this study were chosen on the basis of the reliability and validity they had shown in earlier research.^{13,18,19} However, other data corroborate these behavior self-reports, especially the improvement in objectively rated sexual communication skills 3 months postintervention. Confidence in the validity of the findings is increased because multiple measures of risk-related charac-

teristics assessed in different ways (knowledge, risk estimation, rated behavioral skills, and self-reported sexual behavior) all changed in the predicted direction only for intervention group participants. However, it will be important for future research employing larger samples to further corroborate intervention effects on long-term sexually transmitted disease incidence, unintended pregnancy outcomes, and—ideally—HIV seroconversion rates. Such outcomes can be detected only in larger-scale field trials with much larger samples and statistical power. These results support the promise of such trials.

Women in this study faced numerous barriers to behavior change, particularly those related to social disadvantage and competing life stressors due to unemployment and sexual relationships with high-risk men. It is unlikely, under these circumstances, that AIDS education alone—without attention to cognitive-attitudinal factors, risk reduction skills training, and strong peer and problem-solving support from other women—would prove effective in promoting behavior change. Even though women in the HIV/AIDS intervention made significant changes in their behavior, condoms were not used on all intercourse occasions after the intervention, and research is needed to identify ways to further increase the magnitude of risk reduction behavior change. Nonetheless, these results underscore the potential benefits of making HIV/AIDS risk behavior change groups routinely available in health and public health clinics that serve high-risk patients. □

Acknowledgments

This research was supported by grants R01-MH41800 and P30-MH52776 from the National Institute of Mental Health.

We thank Joan Lawrence and Jacqueline Sills for their assistance in conducting the research and Michael C. Costanza for his statistical consultation.

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SPECIAL POPULATIONS

Culturally Tailored HIV-AIDS Risk-Reduction Messages Targeted to African-American Urban Women: Impact on Risk Sensitization and Risk Reduction

Seth C. Kalichman, Jeffrey A. Kelly, Tricia L. Hunter, Debra A. Murphy, and Richard Tyler

African-American women recruited from low-income housing projects in Chicago ($N = 106$) were randomly assigned to view 1 of 3 20-min videotapes: a standard public health service tape on prevention of acquired immunodeficiency syndrome (AIDS), the same public health service tape but matching presenter and participant ethnicity and sex, or a tape that included the same content but was framed in a context specifically intended to increase cultural relevance. Participants who viewed the tapes presented by African-American women were significantly more sensitized to AIDS and were more likely to have discussed AIDS with friends, to be tested for human immunodeficiency virus (HIV) antibodies during the follow-up interval, and to request condoms at follow-up. These results support the use of culturally sensitive AIDS prevention messages targeted to specific populations, particularly to promote HIV-antibody testing.

Women account for approximately 11% of acquired immunodeficiency syndrome (AIDS) cases in the United States, 53% of women with AIDS are African American, and most live in urban areas (Centers for Disease Control, 1992). Numerous education programs, mass media campaigns, and community-based interventions have been developed, but few have been systematically evaluated. The need for AIDS education designed to reach ethnic minorities is evidenced by greater misinformation about AIDS and a stronger tendency to underestimate personal risk for human immunodeficiency virus (HIV) infection among minorities, compared with nonminorities (Kalichman, Hunter, & Kelly, 1992; Marin, 1989; Williams, 1986). Misperceptions regarding risk may partly result from a lack of cultural and personal relevance of AIDS prevention messages (Mays & Cochran, 1988; T. Prochaska, Albrecht, Levy, Sugrue, & Kim, 1990).

Precaution-taking behavior is related to personal concern for contracting a behavior-related illness. Underestimates in perceived vulnerability may result from the perception of self as dissimilar from those at risk on the basis of attributes irrelevant to actual risk (Kahneman & Tversky, 1972). Misperceptions of risk for HIV infection among African-American women appear, at least in part, to have resulted from a lack of identification with popular images of HIV-AIDS risk groups, such as gay men and individuals who engage in injection drug use (Mays & Cochran, 1988; T. Prochaska et al., 1990; Siegel & Gibson, 1988). In the present study, we hypothesized that knowledge acquisition and threat sensitization would be enhanced by embedding HIV-AIDS information in a culturally and personally relevant context and, furthermore, that the resulting AIDS sensitization would lead participants to contemplate behavior change (J. O. Prochaska & DiClemente, 1983; T. Prochaska et al., 1990).

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This research was supported by Grant R01-MH41800 from the National Institute of Mental Health awarded to Jeffrey A. Kelly and Biomedical Research Support Grants from the University of Mississippi Medical Center and Loyola University of Chicago.

We thank Delores Heard, The Chicago Department of Health, Roberta Douglas, The Clarence Darrow Family Resource Center, Pamela Banks, Aretha Powers, Robert L. Russell, Moira Kalichman, and Yolanda Diaz for their contributions to this study.

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Method

One hundred six African-American women living in inner-city, low-income housing projects in an area of Chicago with a high incidence of AIDS (Chicago Department of Health, 1992) were recruited through a community-based family resource center. Announcements of an AIDS education session were distributed through community service centers, health clinics, and outreach programs. Interested women contacted the family resource center and were randomly assigned to experimental conditions. The mean age for the sample was 32.1 years ($SD = 7.8$), 32% had obtained less than a high school education, 87% had annual incomes below \$10,000, 80% were single, and 96% had at least one child.

With respect to HIV risk, 37% of the women reported having more than one sexual partner in the past year, 3% reported histories of injection drug use, 11% had sexual partners who engaged in injection drug

use, 4% had male partners believed to be bisexual, 29% reported a history of sexually transmitted diseases, and 20% had been tested for HIV antibodies, although none were seropositive. Women in the sample indicated that condoms were used in only 19% of their occasions of vaginal intercourse in the past year. In addition, 65% of the women reported use of alcohol, 25% used marijuana, and 19% had used cocaine in the past year.

Participants provided informed consent and viewed one of three 20-min videotapes, each providing HIV-AIDS information related to sexual and drug use behaviors in varied contexts. The following are brief descriptions of the three tapes.

A standard public health message condition was a videotape titled *AIDS: What You Need to Know*, presented by former Surgeon General C. Everett Koop and two White professional broadcasters. In the first segment of this tape, the former surgeon general discusses the history and epidemiology of HIV-AIDS and briefly describes HIV and its course of infection. The second segment presents a White male broadcaster who describes the disease process of HIV infection. The segment describes the early stages of asymptomatic infection, HIV antibodies, early symptoms of AIDS, and AIDS-related opportunistic infections. The second segment also discusses risk through sexual behavior and practices common with injection drug use. The third segment is presented by a White female broadcaster who focuses on common myths and misconceptions about AIDS. The safety of the blood supply and absence of risk through casual social contact are also discussed.

The ethnicity and sex control condition presented identical information and integrated the graphics used in the standard public health service tape just described. However, the presenters in this videotape condition were African-American women. Three women presented the content of the three segments from the standard public service tape verbatim, one at a time, and in their respective order. Thus, the information and graphics of the standard tape were presented in this condition, but the ethnicity and sex of the presenters were manipulated to match the subject population.

Women in the cultural context condition viewed a videotape that included an enhanced framing context intended to stress culturally relevant values. In developing this tape, a focus group of African-American women helped to provide examples of three themes believed to be culturally and personally relevant to African-American women: cultural pride, community concern, and family responsibility (Mays & Cochran, 1988). These examples were integrated into the tape to link behavior change recommendations to attitudes and values that are culturally relevant and important to minority women. For example, the tape used in this condition frames the importance of risk avoidance in the context of remaining healthy to protect one's future children from AIDS. Other segments stress the adverse effects of AIDS in African-American communities and link behavior change to pride in one's ethnic background and community. Video footage of African-American families and young adults was edited into the tape to further enhance the salience of the cultural theme. The presenters are the same three African-American women appearing in the ethnicity and sex control tape and in the same order. In this condition, the women are dressed more casually and speak with less authority. The HIV-AIDS information content of the tape is the same as in the other two tapes.¹

The tapes were viewed in small groups of 6 to 10 women, and child care was provided. Participants' names never appeared on any of the measures, which were numbered in a system independent of identifying information. Participants were asked to return 2 weeks after viewing the tape to complete the study. Seventy-six women (72%), evenly distributed across conditions, $\chi^2(2, N = 76) = 1.26, p > .1$, returned for follow-up. Statistical tests showed that women who did and did not return were similar in age, education level, number of children, pretest

AIDS knowledge, HIV testing histories, and interest in AIDS information. Women were compensated with payment of \$10 after the videotape viewing session and \$5 after completing the follow-up measures. All participants were provided with HIV-AIDS information brochures, an opportunity to ask questions, and telephone numbers of local AIDS prevention service agencies.

Measures were administered immediately before, immediately after, and 2 weeks after participants viewed the videotape. At pretest, they completed measures of demographic characteristics, drug use (e.g., alcohol, marijuana, cocaine, and injected drugs), and sexual behavior histories (e.g., number of male sex partners; vaginal, anal, and oral intercourse; and frequency of condom use) using open-response formats (Catania, Gibson, Chitwood, & Coates, 1990). To assess AIDS-related knowledge, we developed a 16-item objective true-false AIDS knowledge test from existing measures (DiClemente, Boyer, & Morales, 1988; Kelly, St. Lawrence, Hood, & Brasfield, 1989). Participants also responded to items concerning interest in AIDS-related information and beliefs about casual transmission of HIV (see Table 1 for items).

Immediately after viewing the videotape, participants completed the same knowledge and attitude measures administered in the pretest in a counterbalanced order. The posttest also included an assessment of affective reactions to the videotape, such as fear, worry, anger, and concern in response to the question, "How much did the tape make you feel . . . ?" Appraisal of the videotapes was also measured by using six subjective judgments of presenter expertise, level of trust, and concern expressed by the presenters. As a behavioral measure, participants were given a coupon marked with an identification number that they could return at the follow-up assessment to receive six free latex condoms.

The 2-week follow-up assessment measured the same knowledge and attitudes used in the pre- and posttests. Participants also completed a measure asking if they had engaged in six activities related to risk reduction. Finally, participants who returned the coupon or verbally requested condoms were coded as requesting condoms. No cues to request condoms were ever provided, and the experimenter who conducted the follow-up assessments was blind to the subjects' experimental conditions.

Results

Preliminary analyses did not indicate any significant differences among conditions in demographic characteristics, risk histories, HIV-antibody testing, and pretest AIDS-related knowledge and attitudes.

The eight items measuring affective responses to the videotapes were factor analyzed for the purpose of data reduction. Results indicated three orthogonal factors that accounted for 73% of the variance: (a) Fear-Anxiety (fearful, with a rotated factor loading of .82; and worried, .88), (b) Sadness-Anger (helpless, .61; sad, .82; and angry, .79), and (c) Concern (concerned about self, .69; concerned about someone else, .83; concerned about community, .74). Factor scores were computed and used as dependent measures regarding threat sensitization.

A multivariate analysis of variance (MANOVA) indicated significant differences between conditions on the affective response factors, with Wilks's lambda as the multivariate criterion, $F(6, 198) = 2.09, p < .05$. Planned orthogonal contrasts

¹ Transcripts of the videotapes and the measures used in this study are available from Seth C. Kalichman.

Table 1

Means and Standard Deviations of HIV/AIDS-Related Knowledge and Attitudes by Conditions and Assessment Times (N = 76)

Measure	Cultural context						Ethnicity and sex control						Standard condition					
	Pre		Post		Follow-up		Pre		Post		Follow-up		Pre		Post		Follow-up	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Knowledge score ^a	12.0	1.8	12.9	1.9	12.5	2.3	12.2	1.8	13.0	1.5	12.4	2.2	12.7	1.7	13.3	1.9	13.2	1.7
How much do you know about AIDS? ^b	2.9	0.6	3.1	0.6	3.3	0.6	2.9	0.5	3.1	0.6	3.4	0.6	2.6	0.9	2.8	0.8	3.0	0.8
How interested are you in getting more information about AIDS? ^c	3.7	0.6	3.8	0.4	3.8	0.6	3.9	0.2	3.9	0.2	3.9	0.3	3.9	0.4	3.8	0.4	3.8	0.5
Children with AIDS should not be allowed in public schools. ^d	1.7	0.9	1.5	0.9	1.8	1.1	1.9	0.9	1.7	0.7	1.6	0.7	1.7	1.3	1.7	1.2	1.6	1.0
Concerned about contracting AIDS in a restroom ^d	2.1	1.2	1.4	0.9	1.4	0.8	2.3	1.2	1.6	0.9	1.7	1.1	1.8	0.9	1.2	0.7	1.4	0.8
Afraid to be in the same room with a friend with AIDS ^d	1.9	1.1	1.6	1.0	1.5	0.8	1.7	1.1	1.4	0.8	1.5	0.8	1.6	1.1	1.4	0.9	1.5	0.9
AIDS is not very important compared to other problems. ^d	1.5	1.1	1.6	1.2	1.5	1.1	1.8	1.3	1.9	1.4	1.5	1.1	1.4	1.1	2.2	1.5	1.5	1.1

Note. HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome; Pre = preassessment; Post = postassessment.

^a Number correct on a 16-item true-false objective test. ^b Responses on 4-point scale ranging from *much less than most people* (1) to *more than most people* (4). ^c Responses on 4-point scale ranging from *not at all interested* (1) to *very interested* (4). ^d Responses on 4-point scale ranging from *strongly disagree* (1) to *strongly agree* (4).

were conducted to evaluate differences between the cultural context and the standard conditions and between the cultural and combined control conditions. Results demonstrated that participants in the cultural context condition reacted with significantly more fear and anxiety, $t(101) = 2.11$, $p < .05$, and greater concern than those viewing the standard tape, $t(101) = 2.53$, $p < .01$. Participants in the cultural context condition also expressed greater concern than those in the two control conditions combined, $t(101) = 2.27$, $p < .05$ (see Table 2).

A second factor analysis was conducted for the measure of appraisal of the tapes, resulting in a two-factor solution accounting for 65% of the variance: (a) Presenter Expertise ("The presenters seemed to know a lot about AIDS," .82; "the tape would be good for my friends to see," .79; "I felt that I could trust the presenters," .84), and (b) Presenter Expression of Care And Concern ("the presenters seemed concerned about families and

communities," .90; "presenters seemed concerned about women like me," .85; "the presenters were like me," .38). A MANOVA conducted between conditions on the two resulting factor scores indicated significant differences, $F(4, 204) = 2.52$, $p < .05$. Planned orthogonal contrasts did not indicate significant differences between conditions with respect to presenter expertise. However, presenters in the cultural context tape were perceived as expressing more care and concern than the presenters in the standard condition, $t(103) = 3.02$, $p < .01$, and the two control conditions combined, $t(103) = 2.70$, $p < .01$ (see Table 2).

Repeated measures analyses were conducted on pre-, post-, and follow-up assessments for the three groups to test for differential impact of conditions on HIV-AIDS information and attitudes. Results did not indicate any significant differences between conditions, and conditions did not interact with the repeated measures. However, within-subject effects were

Table 2

Means and Standard Deviations for Sensitization and Appraisal Factor Scores by Videotape Condition (N = 106)

Factor	Cultural context		Ethnicity and sex control		Standard condition	
	M	SD	M	SD	M	SD
Fear-Anxiety	.21	1.0	-.01	.9	-.26 ^a	.9
Sadness-Anger	.08	.9	.08	1.0	-.17	1.0
Concern	.27	.8	-.05	.9	-.30 ^{a,b}	1.2
Presenter Expertise	-.07	1.2	-.04	.9	.14	.9
Presenter Care-Concern	.31	.9	-.06	1.0	-.36 ^{a,b}	1.1

^a Significant difference between cultural and standard tapes. ^b Significant difference between cultural tape and combined controls.

indicated for AIDS-related knowledge, $F(2, 72) = 8.22, p < .01$, and self-perceived knowledge, $F(2, 69) = 6.31, p < .01$.² After viewing the tapes, women were also less concerned about contracting HIV-AIDS in restrooms, $F(2, 71) = 19.17, p < .01$, or from being near individuals with AIDS, $F(2, 71) = 3.77, p < .05$. Women also increased their rating of AIDS as an important problem, $F(2, 71) = 3.04, p < .05$. However, attitudes toward children with AIDS being allowed in public schools did not change, $F(2, 71) = 1.26, p > .1$. Thus, knowledge and attitude changes occurred across conditions but did not differ between conditions (see Table 1).

Self-reported behaviors related to HIV-risk reduction at the 2-week follow-up failed to show differences between conditions for having sought more information about AIDS, attempting to use condoms more often, talking with sex partners about condom use, or purchasing condoms. However, participants in the cultural context and the ethnicity and sex control conditions were significantly more likely to request condoms at the follow-up assessment, $\chi^2(2, N = 76) = 13.66, p < .001$,³ and were also more likely to have talked with friends about AIDS in the previous 2 weeks, $\chi^2(2, N = 76) = 6.36, p < .05$. In addition, 18% of the women in the cultural context condition reported having been tested for HIV antibodies in the 2 weeks after viewing the videotape, compared with none of the women in the two control conditions, $\chi^2(2, N = 76) = 8.48, p < .01$ (see Table 3).

Discussion

African-American women who received AIDS information specifically framed within a cultural context were more likely to identify AIDS as a personal threat, compared with women who viewed a standard public health message. Furthermore, women who viewed the culturally relevant tape were more likely to report, 2 weeks later, behaviors that were consistent

with increased perceived threat, including getting tested for HIV antibodies. These results are consistent with studies that demonstrate the effectiveness of targeting African-American cultural values in advertising and using models perceived as similar to observers (Pitts, Whalen, O'Keefe, & Murray, 1989; Rokeach, 1969).

The effects of the cultural tape were partially driven by matching presenters and participants with respect to ethnicity and sex. Both tapes with African-American women presenting HIV information demonstrated greater impact on activities related to HIV risk than did the standard public health service tape. Matching subjects and presenters on ethnicity and sex enhanced the impact of the ethnicity and sex control tape to a level between the cultural and standard tapes on most measures and to the same level as the cultural tape on some other measures. However, when factored into the standard condition as controls, ethnicity and sex did not mitigate differences between the cultural and standard conditions. This effect was most evident in the finding that 18% of the women who viewed the cultural tape sought HIV testing, whereas no women in the other conditions did so. Cultural values related to ethnicity, family, and community influenced women's perceptions of their risk. HIV prevention efforts and antibody testing campaigns may benefit from both using presenters matched for ethnicity with targeted populations and linking behavior change recommendations to values that are important and culturally relevant to the community populations.

All three tapes in this study produced gains in AIDS-related information, but there were no differences between conditions for these measures. Conditions also did not differ with respect to behaviors linked to risk reduction at follow-up. Talking with friends, requesting condoms, and seeking HIV-antibody testing may, therefore, have been short-term strategies to reduce anxieties and fears induced by the cultural context condition. The health threat literature has demonstrated similar effects, in which fear motivates behavior, although not necessarily behavior specific to risk reduction (Rippetoe & Rogers, 1987; Sutton & Hallett, 1989). Women who became sensitized to their AIDS risk probably lacked adequate risk reduction skills and engaged in behaviors that may evidence risk contemplation but not necessarily risk reduction. Use of fear induction and sensitization alone are likely to be insufficient for risk reduction unless accompanied by specific strategies to change high-risk behavior.

Results of this study are limited by several methodological constraints. First, manipulated factors in the experimental tapes may have included subtle, uncontrollable differences. Al-

Table 3
Percentages of Self-Reported HIV-Related Behaviors in 2-Week Interval After the Viewing of the Videotape

Item	Cultural context (<i>n</i> = 33)	Ethnicity and sex control (<i>n</i> = 21)	Standard condition (<i>n</i> = 22)
Tested for HIV antibodies	18	0	0*
Sought more AIDS information	69	79	52
Talked with friends about AIDS	88	95	68*
Tried to use more condoms	47	57	59
Talked with sex partner about AIDS	78	86	73
Purchased condoms	44	48	46
Requested free condoms at follow-up	88	91	50*

Note. HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome.

* Significant $\chi^2(2, N = 76)$ at $p < .05$.

² Responses to attitude items on 4-point scales were highly skewed. Self-perceived knowledge, concern about casual transmission of HIV, and perceptions of AIDS as important were linearly transformed for data analysis with the formula $\log_{10}(X)$. However, for interpretability, observed values are presented in Table 1.

³ The relationship between conditions and requesting condoms among women reporting no condom use in the previous 6 weeks ($n = 49$) was also significant, $\chi^2(1, N = 49) = 11.70, p < .01$; 92% of women in the cultural condition and 100% of women in the ethnicity and sex control condition requested condoms, compared with 55% of women in the standard condition.

though the content of the ethnicity and sex control tape was identical to that of the standard public health tape, the presenters also varied along other dimensions, such as broadcast experience. In addition, the cultural condition manipulated several contextual variables simultaneously, including presentation variables, verbal and graphic context material, and stressing information most relevant to the targeted population. Thus, it is not possible to determine precisely what aspects of the cultural context and the ethnicity and sex control tapes produced the observed effects. Finally, although the 2-week follow-up resulted in an acceptable response rate, the final sample was relatively small across conditions.

The present results have direct implications for future HIV-AIDS prevention. Strategies based on health behavior models should incorporate specific features of cultural relevance derived from targeted communities. Community members and leaders should be consulted to assist in identifying specific values to be integrated with AIDS information. Given the relative ease of implementation and cost effectiveness, we support the use of videotapes as one component of comprehensive AIDS prevention programs, although they may be more useful for inducing a sense of vulnerability than for promoting behavior change. It is also likely that the effects of cultural and personal relevance extend beyond videotape interventions. Community-based prevention efforts, education programs, and HIV-antibody testing promotion should carefully consider cultural, attitude, and value framing contexts relevant to their targeted populations.

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Received January 31, 1992

Revision received May 27, 1992

Accepted June 4, 1992 ■

Reduction in Risk Behavior Among Adults With Severe Mental Illness Who Learned to Advocate for HIV Prevention

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Objectives: The study evaluated the relative impact of HIV risk reduction interventions for adults with severe mental illness living in the inner city. **Methods:** A total of 104 chronically mentally ill men and women were interviewed to determine sexual risk behavior over the past month and to assess HIV risk-related psychological characteristics, including their knowledge about risk behavior, their belief in their ability to change their behavior, their perceptions of peer and social norms about safer sex, their expectancies about the outcomes of these changes, and their perceived barriers to condom use. Participants were then randomly assigned to one of three conditions: a single AIDS education session, a seven-session cognitive-behavioral HIV risk reduction group intervention, or a seven-session group intervention that combined the cognitive-behavioral intervention with training to act as a risk reduction advocate to friends (advocacy training). Individuals were reinterviewed three months after completion of the intervention. **Results:** Although all participants exhibited change at follow-up in some risk-related psychological characteristics and sexual risk behaviors, participants who received the cognitive-behavioral intervention that included the advocacy training reported greater reductions in rates of unprotected sex and had fewer sexual partners at follow-up. **Conclusions:** HIV prevention interventions that teach risk reduction skills and then encourage participants to advocate behavior change to others appear to strengthen participants' capacity to change their behavior to reduce HIV risk, even those from a disenfranchised group such as severely mentally ill adults. (*Psychiatric Services* 48:1283-1288, 1997)

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Recent investigations reveal alarming levels of human immunodeficiency virus (HIV) infection among chronic mentally ill adults in urban areas. In New York City, 5 percent to 7 percent of newly admitted patients with acute psychiatric illness are infected (1,2), while even higher HIV infection prevalence has been found among homeless chronic mentally ill men and women (3,4).

A variety of factors probably contribute to the HIV-AIDS vulnerability of persons with severe mental illness. Many severely mentally ill individuals live in inner-city areas with high rates of sexually transmitted disease, drug use, poverty, and, increasingly, HIV infection. Many have patterns of multiple or casual sexual partnerships. High rates of drug and alcohol use in this population have been found. Sequelae of severe psychopathology, including poor skills in social problem solving, impulse control, and assertiveness, also contribute to their vulnerability, as do the debilitating effects of pervasive life disorganization, chaos, and poor social supports.

Other psychological factors predictive of a high level of risk for HIV infection among severely mentally ill

men and women include doubts about one's ability to use condoms (low perceived self-efficacy), the perception that safer sex is not well accepted by peers or sexual partners, and poor sexual assertiveness and communication skills (5-8).

HIV risk reduction interventions undertaken with populations such as gay men, adolescents, and women have demonstrated the effectiveness of intensive group programs that employ cognitive-behavioral procedures to strengthen intentions to change behavior. Such programs provide education about risk reduction steps and teach assertiveness and safer-sex negotiation skills. They help individuals identify and plan how to handle situations that increase their risk and reinforce their efforts to change behavior (9-14). Such approaches also hold promise for the development of HIV prevention efforts for persons with severe mental illness when adapted to address the cognitive, affective, and risk circumstances of these individuals (15).

An important question not yet studied in the HIV prevention literature is whether individuals are better able to reduce HIV risk behavior when, in addition to being helped to change their own behavior, they are also systematically taught to advocate behavior change to their own friends, acquaintances, and family members. Attitude research in the areas of cognitive dissonance and belief formation has established that persons who become public advocates for a cause tend to adopt personal attitudes consistent with their public statements (16,17). To the extent that participants in HIV prevention interventions are not only helped to change personal high-risk behavior patterns but are also actively engaged to serve as HIV risk reduction advocates or educators to their peers, they may have greater success in achieving and maintaining a change in their own behavior.

This study evaluated and compared the effectiveness of three behavior change interventions for severely mentally ill men and women at high initial risk for contracting HIV infection. The interventions

tested were a single AIDS risk reduction educational session, a cognitive-behavioral risk reduction intervention in which participants attended seven 90-minute group sessions that focused on behavior changes to reduce the risk of contracting HIV, and a seven-session group intervention designed to help participants reduce risk behavior and teach them AIDS prevention messages to be communicated to their friends and acquaintances (advocacy training).

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Methods

Participants and setting

Participants in the study were 49 men and 55 women with severe mental illness receiving public mental health services at a clinic in Milwaukee, Wisconsin. They were recruited by screening clinic patients for HIV risk. Patients were eligible if they were over 18 years of age and if they were sexually active outside of a long-term relationship, had multiple partners, had a partner who used injection drugs, or had been treated for a sexually transmitted disease in the past year.

Chart records of the 104 patients were reviewed to document psychiatric diagnoses. Nineteen percent of the patients had a primary diagnosis of schizophrenia, 58 percent had a mood disorder, 11 percent had an anxiety disorder, and 11 percent had a substance use disorder or a person-

ality disorder. More than 80 percent of the patients had a history of previous psychiatric hospitalizations, and many had multiple hospitalizations. The mean $\pm$ SD age of participants was 33.7 ± 6.4 years, and 61 percent had a high school education. Fifty-two percent of participants were white, 39 percent were African American, and 9 percent were from other ethnic groups.

Participants included in the study were those for whom baseline and follow-up data were obtained and who attended at least one session of the intervention to which they were assigned. Dropouts (N=46) and non-dropouts (N=104) did not differ in background or demographic characteristics, and there was no difference between conditions in the dropout rate.

Baseline assessment measures

Baseline interviews were conducted individually by a research assistant of the same gender as the participant after the participant provided written informed consent. The 90-minute assessment interview was read aloud and followed a structured protocol that had been extensively pilot-tested; these tests included studies to ensure psychometric soundness of the scales and comprehensibility of scale items.

Sexual behavior in the past month. Participants reported the number of their male and female sexual partners in the past 30 days, as well as the number of occasions of vaginal, anal, or oral intercourse (with and without condoms) and non-penetrative safer sex. Partners were described by the respondent as regular partners with whom they had an ongoing relationship, new partners with whom they had sex for the first time, or casual partners with whom they had sex on an occasional but not an exclusive basis.

Knowledge about risk behaviors. Practical knowledge about AIDS, risk behaviors, and safer-sex practices was assessed by responses to a scale of 14 true-false items. For example, one item stated "AIDS can be transmitted from women to men," and another stated "Latex condoms protect against the AIDS virus."

Risk reduction self-efficacy. A 27-item scale was used to assess perceived self-efficacy for using condoms in a variety of sexual situations. Sample items included "I can use a condom without fumbling around," and "I can talk to every new partner about the importance of using a condom." Participants responded using 5-point scales, ranging from not at all sure to completely sure, yielding a score of between 27 and 135. The measure had high internal consistency (Cronbach's $\alpha = .92$).

Social norms for condom use. Fourteen statements, each rated using a 5-point scale ranging from strongly agree to strongly disagree, measured perception of social acceptance of condom use and safer sex. The measure contained two subscales. The first was a four-item scale reflecting the respondent's perception of condom-use norms held by his or her own sexual partner(s) (partner social norms). For example, one item stated "Using condoms is completely accepted by my main sexual partner." The other was a ten-item scale assessing normative beliefs held by friends (peer norms). For example, one item stated "Using condoms is completely accepted by my friends." Cronbach's alphas were .65 for the partner scale and .74 for the peer scale.

Outcome expectancies of condom use. A 29-item scale assessed outcome expectancies of condom use. Each item was rated using a 5-point scale ranging from strongly disagree to strongly agree, with high scores reflecting perception of more positive outcomes associated with condom use. Items on this scale included "Sex feels good with a condom," and "Saying we have to use a condom is like saying I don't trust you" (Cronbach's $\alpha = .89$).

Perceived barriers to condom use. A ten-item scale measured perceived barriers to condom use, including resistance to safer sex by sexual partners, negative beliefs or attitudes about condoms, and difficulties encountered in condom use. The items were also anchored on 5-point scales ranging from strongly agree to strongly disagree, yielding total scale scores that ranged from 10 to 50 (Cronbach's $\alpha = .81$).

Intervention procedures

After the individual assessments, participants were randomly assigned to one of three interventions. Each intervention included separate groups for men and for women. All intervention activities were conducted in the mental health clinics where study participants had been recruited and received their mental health care.

Comparison group. Participants assigned to the comparison condition attended a single 60-minute AIDS

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■

risk reduction educational session. The session provided basic information about AIDS, corrected misconceptions about risk, described high-risk practices, provided risk reduction and safer-sex information, and allowed the participant to ask questions about risk behavior.

Cognitive-behavioral skills group intervention. Participants assigned to the cognitive-behavioral intervention attended a series of seven twice-weekly 90-minute group intervention sessions. The sessions, led by two facilitators, were composed of six to eight participants of the same gender who met as a group.

Each session followed a detailed content and procedures outline. The topics of the sessions were risk education, enhancing perceived personal risk, sensitization and readiness

for change, and correcting misconceptions about AIDS (session 1); establishing personal goals for reduction of risk behavior (session 2); identifying personal triggers related to substance use, mood, setting, and partner that potentiate sexual risk behavior (session 3); developing personal self-management strategies for avoiding sex or practicing only safer sex when confronted with risk triggers (session 4); and condom use skills training and practice (session 5). Session 6 provided sexual assertiveness training to enable participants to refuse coercion to have unwanted sex. If sexual activity was desired, they were taught how to negotiate condom use and safer sex. Through practice sessions, they also learned how to introduce condom use in new or ongoing sexual relationships. Session 7 consisted of a final review.

Skills training was accomplished by the facilitators' modeling the skill and providing guided instructions, followed by participants' practicing the skill in rehearsal exercises or role plays. Practice exercises were observed by the facilitators, who provided reinforcement, feedback, and suggestions, followed by additional practice. Each session ended with a discussion of strategies that could be used to practice the skill or to implement in real life a change discussed in the group. Successes or difficulties encountered in the intervals between sessions were always reviewed at the beginning of the next session.

Addition of advocacy training. Participants assigned to the third intervention received the cognitive-behavioral training plus advocacy training. They attended seven 90-minute group sessions. The same topics, discussions, group procedures, and practice assignments used in the cognitive-behavioral skills condition were concentrated in the first four group sessions. The final three group sessions highlighted the role that group members could play as AIDS educators and advocates of behavior change to their friends, acquaintances, neighbors, and family members.

Participants were taught charac-

Table 1

Changes in HIV sexual risk behavior from baseline to three-month follow-up among patients with severe mental illness assigned to three interventions¹

Risk behavior	Comparison group (N=34)			Cognitive-behavioral group (N=42)			Cognitive-behavioral advocacy training group (N=28)		
	Baseline	Follow-up	Difference	Baseline	Follow-up	Difference	Baseline	Follow-up	Difference
Sexual partnerships									
Mean number of sexual partners	1.2	0.7	0.5*	0.9	0.9	0	1.7	0.9	0.8*
Percentage with multiple partners	32.0	6.0	26.0**	24.0	12.0	12.0	39.0	11.0	29.0*
Mean number of new or casual partners	0.8	0.4	0.4	0.4	0.4	0	0.9	0.4	0.5*
Percentage with new or casual partners	35.0	32.0	3.0	24.0	26.0	-2.0	50.0	25.0	25.0*
Exposure frequency									
Mean number of unprotected acts	7.4	3.0	4.5	10.3	6.7	3.6	9.7	3.6	6.1**
Percentage having unprotected sex	59.0	35.0	24.0*	52.0	52.0	0	75.0	54.0	21.0*
Number of unprotected acts of anal or vaginal intercourse	3.9	1.9	2.0	5.4	3.4	2.1	4.9	1.9	3.0**

¹ The difference value reflects the magnitude of change from baseline to follow-up, with positive values indicating change in the direction of reduced risk.

* $p < .05$, for significance of within-group change from baseline

** $p < .01$, for significance of within-group change from baseline

teristics of effective conversational messages about AIDS and health, including the importance of identifying the threat of AIDS, correcting others' misconceptions about AIDS, recommending methods to reduce risk, and stressing that behavior changes are attainable and wise. Examples of peer education messages were illustrated by the facilitators, and participants then role played conversations they might have with friends and acquaintances within their own social networks. At the end of each group session, participants agreed to initiate conversations with friends in their peer group to share what they had learned about avoiding the risk of HIV and AIDS.

Follow-up assessments

All participants completed the same interview assessment three months after completing the baseline intervention. Research personnel who conducted the intervention sessions were not the same personnel who conducted the interviews.

Statistical analysis

Comparison of the impact of the three interventions on sexual risk behavior and risk-related psychological characteristics were based on between-groups analyses of change from baseline to the three-month follow-up. Repeated-measures an-

alyses of variance were conducted to assess the impact of the intervention on the frequency of unprotected sexual behavior and on psychological characteristics related to HIV risk behavior.

The log ($x+1$) transformation was used to reduce skewness in the variables related to frequency of sexual activity. Because the number of sexual partners reported by participants over a 30-day period was typically low, the comparison of the difference in number of sexual partners at baseline and at follow-up was made across experimental groups using the Kruskal-Wallis test with large-sample chi square approximation. For types of sexual risk behaviors, including engaging in sexual activity with new or casual partners or engaging in any unprotected sexual activity, we examined the impact of the three interventions using a logistic regression likelihood ratio test.

In addition, we examined changes within each experimental group separately from baseline to follow-up using corresponding tests for dependent samples.

Results

All participants in the comparison group received the single AIDS education session. Participants assigned to the cognitive-behavioral condition

attended an average of 5.6 sessions, and participants assigned to the cognitive-behavioral plus advocacy condition attended an average of 5.9 of the seven sessions. Thus individuals in these two interventions received high and comparable dosages of the intervention they were intended to receive.

Between-groups differences

Between-groups differences were found for two sexual risk behavior variables, with trends for differences in two others. In all cases, participants in the advocacy training condition showed greater evidence of reduction in risk behavior than participants receiving the cognitive-behavioral training alone. At follow-up, the advocacy training group reported a significantly greater reduction in the number of different sexual partners (from a mean of 1.7 to a mean of .9), compared with participants assigned to the cognitive-behavioral intervention alone (a mean of .9 at both time points) (Kruskal-Wallis $\chi^2=7.88$, $df=2$, $p<.02$).

At follow-up, those who received the advocacy training also reported a greater reduction in the frequency of unprotected sexual activities (from a mean of 9.7 to a mean of 3.6 episodes), compared with those who received only cognitive-behavioral training (means of 10.3 and 6.7) ($F=$

Table 2

Changes in psychological characteristics related to HIV risk behavior from baseline to three-month follow-up among patients with severe mental illness assigned to three interventions¹

Risk behavior	Comparison group (N=34)			Cognitive-behavioral group (N=42)			Cognitive-behavioral advocacy training group (N=28)		
	Base-line	Follow-up	Difference	Base-line	Follow-up	Difference	Base-line	Follow-up	Difference
Risk reduction self-efficacy	84.4	92.8	8.4*	77.7	92.5	14.7***	81.8	96.0	14.3**
AIDS risk behavior knowledge	10.3	11.2	0.9	10.9	12.1	1.2***	10.4	12.4	2.0***
Sexual partner social norms	12.0	13.6	1.6*	11.6	13.5	2.0**	11.9	13.9	2.0**
Peer social norms	32.9	33.0	0.2	31.5	31.5	0	32.2	32.0	-0.2
Condom use outcome expectancies	102.2	107.7	5.4*	96.1	106.8	10.7***	99.9	109.8	9.9***
Perceived barriers to condom use	27.8	25.4	2.4*	28.1	23.9	4.2**	27.5	23.8	3.7**

¹ Values are scores. Except for perceived barriers to condom use, higher scores indicate positive changes.

* $p < .05$, for within-group change from baseline

** $p < .01$, for within-group change from baseline

*** $p < .001$, for within-group change from baseline

4.92, $df=2,101$, $p < .01$). In addition, participants in advocacy training showed a trend toward a greater reduction in the number of casual and new sexual partners (from a mean of .8 to a mean of .4), compared with participants in the cognitive-behavioral intervention alone (means of .4 at both time points) (Kruskal-Wallis $\chi^2=4.73$, $df=2$, $p < .10$). The proportion of participants reporting having any unprotected sexual activity tended to decline more among the advocacy training participants (from 75 to 54 percent) than among the cognitive-behavioral participants (52 percent at both time points) (likelihood ratio $\chi^2=4.88$, $df=2$, $p < .09$).

Within-groups differences

As Table 1 shows, at follow-up participants assigned to the single AIDS education session exhibited significant reductions in the number of sexual partners and in the percentage of participants reporting multiple partners and unprotected sex. Participants assigned to the cognitive-behavioral intervention showed downward trends but no significant change in any sexual risk behavior from baseline to follow-up.

In contrast, at follow-up participants in cognitive-behavioral plus advocacy training exhibited consistent change across virtually all measures of sexual risk behavior. These participants were less likely to have multiple sexual partners ($t=2.53$, $df=27$, $p < .05$), to have new or casu-

al sexual partners ($t=2.25$, $df=27$, $p < .05$), and to report any unprotected sex ($t=2.71$, $df=27$, $p < .05$). In addition, they had fewer unprotected sex acts ($t=3.02$, $df=27$, $p < .01$) and had less frequent unprotected anal or vaginal sex ($t=2.74$, $df=27$, $p < .01$) in the follow-up month than the baseline month.

The magnitude of these behavior changes for participants who received advocacy training was substantial. For example, the proportion of participants with multiple partners declined from 39 percent at baseline to 11 percent at follow-up, the proportion with new or casual partners declined from 50 percent to 25 percent, and the mean frequency of unprotected vaginal or anal intercourse episodes decreased from 4.8 to 1.9 from baseline to follow-up.

Changes in psychological characteristics

Within-group changes were then examined for the corroborative measures of HIV risk-related psychological characteristics. Table 2 shows scores at baseline and follow-up, and the magnitude of differences between them, on these corroborative measures. Participants in each condition exhibited change indicative of positive benefit on most risk-related psychological characteristics with the exception of the peer social norm variable. For the most part, change was found in scores for risk reduction, perceived self-efficacy, AIDS

risk behavior knowledge, partner social norms, outcome expectancies about condom use, and perceived barriers to condom use. The greatest magnitude of change occurred for participants in the cognitive-behavioral condition and the cognitive-behavioral plus advocacy training condition, and the lowest magnitude of change occurred among comparison group members.

Discussion and conclusions

In this study all three of the interventions tested had some positive effects on HIV risk-related characteristics, such as risk reduction self-efficacy, outcome expectancies about condom use, and perceived barriers to condom use. However, the most critical outcome was change in participants' risk behavior practices. The intervention that both helped participants make personal risk reduction changes and then think of themselves as AIDS prevention advocates produced the greatest reductions in unprotected sexual acts and number of different sexual partners.

Teaching people to become advocates for changing high-risk behavior as part of a cognitive-behavioral training program may have beneficial effects for several reasons. Persons who publicly endorse a cause tend to shift their personal beliefs in the direction of their public statements to reduce cognitive dissonance or to bring their private beliefs into congruence with their pub-

lic statements (16,17). Teaching persons to make convincing statements endorsing change to others may strengthen their own intentions to change and their beliefs about their ability to change (18) or may cognitively prompt them to make the changes they endorse to others (19).

Interventions that emphasize educating others about AIDS may help persons with high-risk behavior feel like part of the community's solution to preventing HIV rather than as part of the AIDS problem. Seeing oneself in a role of helping others avoid HIV risk may be particularly important and uplifting to disenfranchised individuals like severely mentally ill adults, whose contributions to community development are rarely acknowledged or sought.

It was informative that one group of mentally ill participants in the advocacy training condition came to call themselves the AIDS Busters to reflect their role as HIV prevention spokespersons to peers. Several participants, after years of hospitalization, explained that this was one of the first times they felt that they could help solve a community problem and that they found the role of AIDS prevention advocate to be gratifying.

Many past investigations have established the efficacy of cognitive-behavioral group interventions in reducing sexual risk behavior for HIV (10-15). In this study the cognitive-behavioral intervention without advocacy training had modest effects on sexual behavior. Several factors may account for this result. Participants assigned to this intervention had lower levels of risk behavior at baseline. Consequently, they may have had less room to change. Many group interventions for HIV prevention that use cognitive-behavioral training and that have been shown to be efficacious in past research have provided considerably more of the intervention, such as 12 group sessions for gay men (11) and up to 30 sessions for homeless adolescents (13). The seven-session cognitive-behavioral intervention used in this study may have not been sufficiently intensive to promote sexual behavioral change with severely mentally

ill men and women. The advocacy training elements may have served to boost the behavior change potency of the intervention.

Differences in baseline HIV risk behavior levels across study conditions despite randomization, large variance in frequencies of risk behavior, and a modest sample size limited the power of between-groups outcome analyses. In common with most HIV prevention research, this study relied on participants' self-reports of their sexual behavior to assess the program's impact. Self-reported behavior may not always conform to participants' actual behavior. Although the study included both men and women, sample-size limitations precluded definitive analysis of effects by gender. Consequently, this study must be viewed as preliminary.

Further research with larger samples and longer follow-up periods is needed to more fully delineate the effects of various HIV prevention interventions for severely mentally ill persons. Nonetheless, these findings provide evidence that HIV risk reduction interventions offered in mental health settings can benefit men and women with serious mental illness. ♦

Acknowledgments

This research was supported by grants P30-MH52776 and MH49055 from the National Institute of Mental Health. The authors thank John Prestby, Ph.D., Jon E. Gudeman, M.D., and Kathleen Eilers, R.N., for their assistance.

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Use of a Brief Behavioral Skills Intervention to Prevent HIV Infection Among Chronic Mentally Ill Adults

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Objective: Research shows that many chronic psychiatric patients are at risk for infection by the human immunodeficiency virus (HIV). This study investigated the effects of a behavioral skills training program designed to prevent HIV infection among chronic mentally ill adults living in an inner-city area.

Methods: Twenty-seven men and 25 women were randomly assigned either to a four-session AIDS prevention program emphasizing risk education, sexual assertiveness, condom use, risk-related behavioral self-management, and problem-solving skills or to a waiting-list group, who later received the same intervention. **Results:** Compared with the waiting-list control group, participants in the prevention program demonstrated significant gains in AIDS-related knowledge and intentions to change risk behaviors. The prevention program also significantly reduced rates of unprotected sexual intercourse and increased the use of condoms over a one-month follow-up period. A subset of participants who provided two-month follow-up data maintained some behavior changes. **Conclusions:** A relatively brief, skills-focused AIDS preven-

tion program for chronic psychiatric patients produced reductions in HIV risk behaviors. Such HIV risk reduction intervention programs may be of use in inpatient, outpatient, and community-based settings.

Several recent investigations have established that a large proportion of chronic mentally ill adults living in urban communities are at high risk for contracting human immunodeficiency virus (HIV) infection. Many psychiatric patients engage in high-risk sexual practices with multiple high-risk partners and frequently report sexually transmitted infections and injection drug use (1-7). High-risk sexual behaviors appear to be particularly prevalent among patients who are marginally functional and who have chronic mental illnesses (2).

Although many factors contribute to these patterns of risk, chronic mentally ill adults may be particularly susceptible to HIV infection due to poor judgment, limited impulse control, and deficits in problem-solving skills related to their psychiatric disturbances. Other factors include difficulty forming stable social and sexual relationships, comorbid alcohol and drug abuse, sexual coercion or exploitation, and other situations encountered by persons with poor social supports, transient living circumstances, and socioeconomic disadvantages (8).

Because many chronic mentally ill adults live in poverty in inner-city areas with high rates of sexually transmitted infections, drug use, and HIV seroprevalence, vulnerability to HIV infection among sexually active patients or those who use injection

drugs is very high. In New York City, HIV seroprevalence rates of 5 to 7 percent have been reported among acute psychiatric inpatients (1,2), and rates of 6 to 19 percent have been reported among homeless adults with psychiatric disorders (3,9).

Although chronic mentally ill adults in urban areas have increased rates of HIV risk behaviors and infection, controlled studies that have evaluated the effects of HIV prevention programs for this population are lacking. Interventions combining risk education with intensive skills instruction to effect changes in high-risk sexual behaviors, such as condom use, sexual assertiveness, and problem solving aimed at reducing risk, have shown promise with homosexual and bisexual men (10,11), adolescents (12,13), and inner-city women of color (14). Similar cognitive-behavioral and structured skills training procedures have been successfully used in interventions to improve the social functioning, community living, and self-care skills of chronic psychiatric patients (15-18). The purpose of the study reported here was to determine if a relatively brief group intervention based on risk education and skills instruction would reduce behaviors associated with high risk of HIV transmission among chronic mentally ill adults.

Methods

Participants. A total of 52 participants (27 men and 25 women) were recruited from two psychiatric outpatient community support programs for chronic mentally ill adults in downtown Milwaukee, Wisconsin. Patients were recruited through notices posted in clinic waiting rooms and through referrals made by

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therapists and outreach workers. Because of potential benefits to patients, no restrictions were placed on entry into the study.

The mean $\pm$ SD age of participants was 39.2 $\pm$ 8.0 years. Thirty-eight (73 percent) were Caucasian, ten (19 percent) were African American, and four (8 percent) were of other ethnic backgrounds. Thirty-three (63 percent) of the participants were not married and not living with a sexual partner; 29 (56 percent) had at least one child.

The mean $\pm$ SD years of education was 12.3 $\pm$ 2.5; 35 patients (67 percent) had 12 years of education or less, including equivalency degrees. A total of 45 patients (87 percent) were unemployed; 38 patients (73 percent) reported annual incomes under \$8,000.

With respect to risk for HIV infection, 38 participants (73 percent) reported one or more sexual partners in the past year; 16 (31 percent) reported histories of sexually transmitted infections; seven (13 percent) had exchanged sex for money or drugs; 14 (27 percent) had been coerced or forced into having sex; and eight men (30 percent of the men) reported homosexual experiences. One participant reported injection drug use, seven (13 percent) reported having sexual partners who had injected drugs, and ten (19 percent) reported being in nonmonogamous sexual relationships. In all, 58 percent of patients (N=30) reported at least one of these risk factors for HIV infection. Nineteen participants (37 percent) had been tested for HIV antibodies and were HIV negative.

Clinic chart reviews revealed several primary diagnoses: chronic undifferentiated schizophrenia, 22 participants (42 percent); paranoid schizophrenia, ten (19 percent); schizoaffective disorder, 12 (23 percent); and major affective disorders, including bipolar disorder, seven (13 percent). Nine patients (17 percent) also received a diagnosis of a personality disorder. The mean $\pm$ SD Global Adaptive Functioning score was 46.9 $\pm$ 13.1, with a range from 21 to 70, indicating that on average the sample was at the lower range of adaptive functioning. Forty-nine

participants (94 percent) had histories of inpatient psychiatric hospitalizations, and sixteen (31 percent) had been in alcohol and drug treatment programs.

Study design and data analysis. After completing a baseline assessment, participants were randomly assigned to receive a four-week inter-

Study participants who received the brief behavioral skills intervention differed significantly from the waiting-list control group in knowledge about condom use.

vention (immediate intervention) or to a four-week waiting-list control group. Twelve men and 11 women received the immediate intervention, and 15 men and 14 women were placed on a waiting list. The waiting-list group received the same intervention after a four-week delay.

In addition to the baseline assessment, three other assessments were conducted with the entire sample of 52 participants. The first assessment was conducted after the immediate-intervention participants completed the program (postintervention) but before the waiting-list group received the intervention. A second assessment was conducted immediately after the waiting-list group completed the four-week intervention, which constituted a one-month follow-up assessment for the immediate-intervention group. Finally, a third assessment was conducted one month after the waiting-list group completed the intervention, which constituted a two-month follow-up for members of the immediate-intervention group. Thus participants in the immediate-intervention group completed baseline, postintervention, and one-month and two-month follow-up assessments, and the waiting-list group completed two baseline assessments, a postintervention

assessment, and a one-month follow-up assessment.

The study design permitted comparison of a group that had received the intervention with a group that had not. After the first postbaseline assessment, differences between these groups in AIDS-related knowledge and intentions to change behavior over the previous month were evaluated using analyses of covariance (ANCOVA), with preintervention scores as the covariate. Maintenance of change was tested using repeated-measures multivariate analyses of variance (MANOVA) followed by within-subjects analyses of postintervention and follow-up assessments compared with baseline. Two-tailed levels of statistical significance were used throughout.

During assessments participants were asked to report sexual behaviors for the previous month. At postintervention assessments, this time frame overlapped with the intervention period. Thus between-group comparisons of sexual behaviors were not possible. Changes in behavior were tested within subjects using repeated-measures MANOVAs, with changes expected to be greatest at follow-up assessments. To clarify interpretations of changes in sexual behavior and to increase the power of statistical tests, changes in behavior were examined only among the 38 participants who reported at least one sexual partner in the past year.

Reports of vaginal and anal sexual intercourse without condoms were added together to form a combined variable—unprotected sexual intercourse. Similarly, reports of vaginal and anal intercourse with condoms were combined into one variable—sexual intercourse with condoms. Distributions of sexual behaviors were highly skewed and did not conform to the assumptions of parametric statistical tests. Thus they were transformed using the formula $\text{Log}_{10}[X+1]$ (19,20).

Intervention procedures. Participants attended a group prevention program consisting of four weekly, 90-minute sessions. (Outlines of the sessions are available from the first two authors.) Groups consisted of five to seven same-sex participants

with two group leaders. The group leaders were experienced in HIV risk reduction interventions and were trained to deliver the intervention implemented in this study. The leaders were the same sex as the participants. Sessions were conducted on site at the community mental health centers from which participants were recruited.

The first session used a videotape (21) and presentations to review information about HIV transmission and risk behaviors. Using a group discussion format, the prevalence of HIV and AIDS was reviewed, misconceptions were clarified, myths about AIDS were dispelled, and HIV antibody testing was described. Participants were given an assignment to identify personal cues or triggers that lead to sexual risk-producing situations, such as substance use, experiencing negative emotions, and being offered commodities in exchange for sexual favors.

Session two focused on developing skills related to HIV risk reduction. Participants discussed personal risk behaviors and cues that they identified in the past week's homework assignment. Group leaders encouraged each participant to think of ways to manage factors that may contribute to risk. Behavioral self-management of cues and barriers was placed in the context of a problem-solving model in which participants identified personal problem situations, gathered information for possible solutions, evaluated options, and planned a course of action to avoid risk-producing sexual situations.

The benefits and limitations of condoms were discussed, and proper condom use was demonstrated and practiced using anatomical models. Methods of effectively cleaning drug injection equipment were also discussed in this session. Finally, group leaders reviewed problem-solving strategies by role playing effective responses to potentially risk-producing situations. Participants identified individual risk reduction strategies and were given an assignment to implement one or more steps toward their personally identified behavior goals.

The third session was designed to increase skills for resisting a partner's coercion to engage in sexual intercourse without a condom and to increase comfort in discussing safer sex with a sexual partner before engaging in sexual activity. Basic components of interpersonal assertiveness, refusal to engage in risk-related sexual behaviors, and negotiating safer sexual activities were modeled by group leaders and practiced by participants. Participants again practiced condom placement and discussed successes and difficulties encountered in working toward their goals.

The fourth and final session consisted of a comprehensive review of the material and skills covered in the previous three sessions. Repetition and reinforcement of skills were emphasized. Participants reviewed their individual behavior goals and generated additional strategies for initiating and maintaining risk reduction.

Assessment procedures. All assessments were conducted in small groups using written self-report questionnaires. To ensure anonymity of responses, participants' names did not appear on any questionnaires, and data tracking was accomplished through a number coding system. To control for variations in reading level, questionnaires were administered using overhead projection of the questionnaire forms, which were read by a research assistant while participants followed along and recorded their own responses.

The specific assessment domains included information on patients' demographic characteristics and personal history, knowledge about condom use and AIDS, intentions to change risk behaviors, and sexual and drug use behaviors.

A 23-item true-false test adapted from measures used in previous research (4,5,10) was administered to assess knowledge of condom use and AIDS-related information. The measure consisted of a 12-item scale measuring knowledge about condom use and an 11-item scale measuring AIDS-related knowledge, both scored for the number of correct responses. Test-retest correlations over a one-month period were .76 for

knowledge about condoms and .90 for AIDS-related knowledge. (The baseline and second assessments of the 27 participants in the waiting list group were used for reliability analyses. Estimates of the measure's reliability, therefore, may be limited to the present sample.)

Participants responded to five items reflecting their personal intentions to engage in risk-reducing behaviors. The items were anchored on 6-point scales that ranged from 1, strongly disagree, to 6, strongly agree. One-month test-retest correlations for these items ranged from .55 to .81.

Participants were asked to report the number of times in the past year and previous month they had engaged in sexual intercourse (vaginal and anal), the number of times that condoms were used during sexual intercourse, and the number of sexual partners they had during those time periods. Self-reports of sexual behaviors using similar instruments have been reliable in studies with psychiatric patients (4,22).

Results

Participants who received the immediate intervention did not differ from the waiting-list control group on any dependent measures at baseline. Of the 52 patients enrolled in the study who completed the baseline assessment, 44 (85 percent) completed the intervention program, as defined by attending a minimum of two of the four intervention sessions. The eight patients who did not complete the program did not differ from those who did in demographic characteristics, psychiatric history, AIDS-related risk, knowledge of condom use, and AIDS-related knowledge. The waiting-list group did not demonstrate changes on any of the dependent measures between baseline and the second assessment before they also received the intervention.

Knowledge of condom use and of AIDS. Table 1 shows scores for measures of knowledge about use of condoms and AIDS. An ANCOVA was conducted on data from the scale measuring knowledge about condom use comparing postintervention scores of the immediate-inter-

Table 1

Mean scores¹ on knowledge of condom use and AIDS and on intentions to reduce HIV risk behaviors of 52 chronic mentally ill adults who completed a brief intervention to prevent HIV infection

Measure	Baseline		Postintervention		One-month follow-up		Two-month follow-up ²	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Knowledge about condom use	6.4	2.6	8.8*	2.1	8.7*	2.3	8.6*	1.8
AIDS-related knowledge	5.9	2.5	8.4*	2.4	8.2*	2.6	8.0*	2.2
Intention								
To use condoms during every future sexual occasion	3.7	1.9	4.5*	1.9	4.5*	1.9	4.7*	1.5
To use condoms after drinking	3.6	2.0	4.8*	1.7	4.3*	1.9	4.8*	1.6
To insist on condom use with resistant partners	3.8	2.0	4.6*	1.7	4.5*	1.8	4.3*	1.8
To discuss HIV and AIDS with sexual partners	4.2	1.8	4.8	1.7	4.6	1.7	5.0**	1.2
To use condoms during the next sexual occasion	4.0	2.0	4.8**	1.7	4.5	1.9	4.9	1.6

¹ Scores on knowledge about condom use are based on the number of correct responses to 12 true-false questions; scores on AIDS-related knowledge are based on the number of correct responses to 11 true-false questions. Intention responses were on a 6-point scale ranging from 1, strongly disagree, to 6, strongly agree.

² Results are based on 17 participants in the immediate-intervention group.

* Mean is significantly different from baseline (two-tailed *t* test, *p* < .01).

** Mean is significantly different from baseline (two-tailed *t* test, *p* < .05).

vention group and second baseline scores of the waiting-list control group, covarying preintervention scores. It showed that participants who received the intervention differed significantly from the waiting-list group in knowledge about condom use ($F=15.71$, $df=1,41$, $p<.001$). Similarly, an ANCOVA for AIDS-related knowledge showed

significant differences ($F=31.78$, $df=1,39$, $p<.001$). Gains in both knowledge about condom use (Wilks' lambda = .474, $S=1$, $M=0$, $N=18$, $p<.01$) and AIDS-related knowledge (Wilks' lambda = .503, $S=1$, $M=0$, $N=19$, $p<.01$) were shown by both groups at postintervention and at one- and two-month follow-ups.

Intentions to change risk behaviors. Table 1 also shows scores on measures of intention to change HIV-related risk behaviors. Analyses of covariance for the five items measuring intention to change behaviors showed that participants who received the immediate intervention had significantly stronger intentions than control group members to use

Table 2

Changes in sexual behaviors during the past month of 38 chronic mentally ill adults who completed a brief intervention to prevent HIV infection¹

Behavior	Baseline		Postintervention		One-month follow-up		Two-month follow-up ²	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Number of conversations with sexual partner about safer sex and AIDS	.81	1.31	2.25*	3.03	1.53**	2.30	1.75	2.96
Number of occasions of unprotected sexual intercourse ³	5.72	7.67	2.87*	4.84	1.97*	3.64	1.25*	2.86
Number of occasions of sexual intercourse protected by condoms ³	.52	1.12	.94	1.59	1.38**	2.24	2.25	3.31
Percentage of occasions of sexual intercourse protected by condoms	18.17	33.30	38.49*	40.90	52.55*	42.50	62.50	44.30

¹ Of the 52 persons in the sample, 38 reported at least one sexual partner in the past year.

² Two-month follow-up results are based on 12 participants.

³ Data were transformed for parametric analyses using the formula $\text{Log}_{10}[X+1]$, as recommended by Winer (19) and Kirk (20). Observed values are presented in the table.

* Mean is significantly different from baseline (two-tailed *t* test, *p* < .01).

** Mean is significantly different from baseline (two-tailed *t* test, *p* < .05).

condoms the next time they had sex ($F = 5.41$, $df = 1, 41$, $p < .05$) and to insist on using condoms even if a sexual partner resisted the idea ($F = 6.03$, $df = 1, 41$, $p < .01$). Differences between groups on the remaining three items were not statistically significant.

After the intervention, all participants reported significantly stronger intentions to change behaviors in three of the five areas. These intentions were maintained at one- and two-month follow-ups: to consistently use condoms (Wilks' $\lambda = .782$, $S = 1$, $M = 0$, $N = 19$, $p < .01$), to use condoms after drinking alcohol (Wilks' $\lambda = .774$, $S = 1$, $M = 0$, $N = 19$, $p < .01$), and to insist on condom use with sexual partners who resisted use of condoms (Wilks' $\lambda = .822$, $S = 1$, $M = 0$, $N = 18$, $p < .02$).

Behavior change from baseline to postintervention. Table 2 shows changes in sexual behaviors during the past month of 38 participants who reported at least one sexual partner in the past year. Multivariate analyses showed that after the intervention, subjects were significantly more likely to report talking with sexual partners about safer sex and AIDS (Wilks' $\lambda = .781$, $S = 1$, $M = 0$, $N = 13$, $p < .05$). Significant decreases were reported in the frequency of unprotected intercourse (Wilks' $\lambda = .563$, $S = 1$, $M = 0$, $N = 13$, $p < .01$), while the frequency of condom-protected intercourse increased (Wilks' $\lambda = .805$, $S = 1$, $M = 0$, $N = 12$, $p < .05$), as did the percentage of occasions of sexual intercourse during which condoms were used (Wilks' $\lambda = .459$, $S = 1$, $M = 0$, $N = 6$, $p < .01$).

Planned comparisons for postintervention effects showed that the intervention resulted in a significant increase in the number of conversations about safer sex and AIDS with sexual partners in the past month ($t = 2.78$, $df = 31$, $p < .01$). After the intervention, the frequency of sexual intercourse without the use of condoms was significantly reduced ($t = 2.54$, $df = 31$, $p < .01$), and the percentage of occasions of sexual intercourse during which condoms were used significantly increased ($t = 2.76$, $df = 20$, $p < .01$).

Behavior change from baseline to one-month follow-up. Significant maintenance of changes in sexual risk behavior were observed at one-month follow-up. The number of conversations about safer sex with sexual partners in the past month was significantly different than at baseline ($t = 2.25$, $df = 29$, $p < .05$) and

This relatively brief HIV risk reduction intervention offered in an urban mental health clinic produced evidence of behavior change among chronic mentally ill adults.

the frequency of unprotected sexual intercourse was reduced ($t = 3.86$, $df = 29$, $p < .01$). Participants continued to report increased use of condoms during sexual intercourse ($t = 2.33$, $df = 28$, $p < .05$) and an increase in the percentage of occasions of sexual intercourse during which condoms were used ($t = 4.29$, $df = 16$, $p < .01$).

Behavior change from baseline to two-month follow-up. Two-month follow-up assessments for the 12 sexually active participants who received the immediate intervention demonstrated maintenance of some behavior changes. The frequency of discussions about safer sex with sexual partners did not significantly differ from the baseline level. However, participants did maintain reductions in unprotected sexual intercourse ($t = 3.71$, $df = 11$, $p < .01$). Although the difference was not significant ($p < .08$), the percentage of occasions of sexual intercourse during which condoms were used was increased over baseline.

Discussion

HIV risk among chronic mentally ill adults is determined by multiple and interacting factors, which include misinformation about risk; poor sexual assertiveness, negotiation, and

problem-solving skills; lack of experience with condoms; and vulnerability to coercive relationships. Even with these multiple complicating factors, results of this study show that a relatively brief HIV risk reduction intervention offered in an urban mental health clinic produced evidence of behavior change among chronic mentally ill adults. Compared with a waiting list control group, the group that received the immediate intervention reported changes in knowledge about condom use and AIDS risk and in intentions to change risk behaviors. Most of these changes were replicated when the intervention was provided to the control group. More important, substantial reductions were found in rates of unprotected sexual intercourse, and increases in condom use were reported.

The intervention tested in this study was based on cognitive-behavioral and skills instruction models and incorporated risk education and risk sensitization components. These components are similar to those used in HIV-prevention interventions with other populations and may be especially important to include in developing risk reduction interventions for persons with cognitive, affective, and behavioral difficulties associated with chronic mental illness. We specifically chose to test a brief group intervention that would be feasible for implementation in mental health facilities serving adults. However, because some intervention effects appeared to decay by two-month follow-up, longer interventions may be necessary to sustain long-term behavior change.

This study had several limitations. First, the sample was small. Although intervention effects were robust enough to be detected in the small sample, the sample size constrains the generalizability of the results. Second, although both men and women were included in the study, the sample size did not allow for examining postintervention differences between sexes. In addition, the study used only a relatively brief two-month follow-up period to track behavior change. Although some reductions in risk behaviors were

maintained for two months after the intervention, skills training interventions with other populations show a pattern of risk behavior relapse within months after effective interventions (23). Thus long-term maintenance of behavior change should be the focus of future studies.

Finally, our study design did not provide a control condition beyond the immediate postintervention assessment when the waiting-list group received the intervention. Although a control group at the follow-up assessments would have been desirable, delaying the intervention longer for the waiting-list group did not seem appropriate given the known risk for HIV infection in this population.

Although further and larger-scale research is needed to address these limitations, the results of this study are encouraging. They suggest that group interventions of this kind to reduce HIV risk behaviors may be useful in mental health settings that serve chronic mentally ill adults.

Acknowledgments

The authors thank Jennifer R. Johnson, Veral Adair, James O. Gordon, L. Yvonne Stevenson, Paul Jazdzewski, Mike Gunsolley, Darlene Luedke, Kathleen J. Eilers, Jon E. Gudeman, and the community support services division of the Milwaukee Mental Health Complex. This study was supported by grants P30-MH52776 and R01 MH49031-01 from the National Institute of Mental Health.

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Behavioral Intervention to Reduce AIDS Risk Activities

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Behavior change can curtail the spread of acquired immune deficiency syndrome (AIDS). In this study, 104 gay men with a history of frequent AIDS high-risk behavior completed self-report, self-monitoring, and behavioral measures related to AIDS risk. The sample was randomly divided into experimental and waiting-list control groups. The experimental intervention provided AIDS risk education, cognitive-behavioral self-management training, sexual assertion training, and attention to the development of steady and self-affirming social supports. Experimental group participants greatly reduced their frequency of high-risk sexual practices and increased behavioral skills for refusing sexual coercions, AIDS risk knowledge, and adoption of "safer sex" practices. Change was maintained at the 8-month follow-up.

Acquired immune deficiency syndrome (AIDS) is recognized as the most serious infectious disease epidemic of modern times by the Public Health Service, the American Academy of Sciences, and the World Health Organization. The number of new cases doubles every 12-14 months, and at least 270,000 AIDS cases are expected in the United States by 1991 (U.S. Department of Health and Human Services, 1986).

The agent responsible for AIDS, human immunodeficiency virus (HIV), was identified in 1983 (Barre-Sinoussi et al., 1983; Gallo et al., 1984). Most individuals infected with the virus are asymptomatic and healthy for long periods but can still transmit the virus to others. Persons with HIV infection may develop AIDS or other illnesses years after their initial viral exposure (Groopman, 1985; Seale, 1985). The virus that causes AIDS is concentrated in blood, semen, and probably vaginal secretions. Transmission can occur if these fluids from an infected individual enter the bloodstream of another person (U.S. Department of Health and Human Services, 1986). The vast majority of AIDS cases are attributable to sexual transmission of the virus.

The HIV infection can be transmitted during heterosexual intercourse either from men to women or from women to men (Fischl et al., 1987; Redfield et al., 1985). However, asymptomatic HIV infection is especially prevalent among sexually active homosexual men (Anderson & Levy, 1985; Lang et al., 1987). Gay men who engage in sexual practices that permit the efficient transmission of HIV infection are at imminent risk for exposure to the virus and, ultimately, for developing AIDS or

AIDS-related illnesses (Kingsley et al., 1987). The risk practices most strongly associated with HIV infection among gay men are unprotected anal intercourse (e.g., intercourse without a condom) and penetrative sexual activities that permit body fluid exchange (Detels et al., 1983; Goedert & Blattner, 1985; Jaffe, Hardy, Morgan, & Darrow, 1985; Kingsley et al., 1987; Newell et al., 1985). The risk for HIV infection is lessened if the individual consistently avoids unprotected anal intercourse, limits the number of sexual partners, and (if sexually active) engages only in "safer sex" practices that do not permit efficient HIV transmission. These reduced-risk practices include condom use during intercourse and nonpenetrative sexual activities such as mutual masturbation and body rubbing that do not afford the virus ready bloodstream entry (U.S. Department of Health and Human Services, 1986).

To slow the spread of AIDS and HIV infection, it is critical that persons at greatest risk for the disease quickly alter those behaviors that place them at risk. However, when individuals have a long-standing history of engaging in risk activities, when the immediate consequences of the risk behavior are reinforcing and the negative consequences long-delayed, and when the risk behavior is prompted by others, behavior change assistance may be needed. Effective interventions for such health-threatening patterns as cigarette smoking, obesity, and cardiovascular unfitness combine education with assistance in behavioral self-management, group or peer support for reduced-risk conduct, assertion training, and reinforcement of alternatives to current high-risk activities (Fredericksen, Solomon, & Brehony, 1984; McAlister, 1984; Ockene & Camic, 1985; Swain & Stekel, 1981). The purpose of the current study was to evaluate the impact of a community-based AIDS risk reduction program that incorporates such elements.

Method

Subjects and Subject Recruitment

The study was conducted in a metropolitan area of 400,000 residents. The area has a moderate but increasing number of AIDS cases and is

This research was supported by National Institute of Mental Health Grant R01-MH41800. The authors thank Donald Penzien, Peter Campos, Eddie Sandifer, Jack Myers, Michael Myers, Rev. Sam Edelman-Richard, Judith Worell, and Greg Swanner for their assistance.

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representative of many medium-sized American cities with respect to the prevalence and demography of AIDS and HIV infection.

After the project was endorsed by gay community organizations, materials describing the study were distributed to patrons of gay bars and at health department clinics. To establish credibility and trust, research team members visited bars on several occasions to answer questions. Interested persons telephoned for individual assessment appointments. Study entry criteria included being a man over 21 years of age, identifying oneself as homosexual or primarily homosexual, engaging in any high-risk sexual practices during the past year, and having no symptoms of AIDS or other HIV illnesses based on responses to a standard AIDS health survey (Darrow, 1983). High-risk sexual practices were defined to include unprotected anal or oral intercourse to orgasm and oral/anal contact.¹

Participation criteria were met by 104 men. Subjects' mean age was 31 years ($SD = 8.3$); 87% were White and 13% were Black or Hispanic; 45% had completed college. Subjects reported an average of 16.2 ($SD = 30.4$) same-sex partners during the previous 12-month period. High-risk sexual practices during the past 12 months included unprotected anal intercourse as the insertive partner ($M = 19.0$, $SD = 81.4$) or the receptive partner ($M = 18.3$, $SD = 97.6$), unprotected oral intercourse to orgasm as the insertive ($M = 19.1$, $SD = 55.4$) or receptive ($M = 15.0$, $SD = 45.4$) partner, and oral/anal contact ($M = 10.6$, $SD = 16.5$). Thus, the sample consisted of apparently healthy, sexually active gay men who were engaging in activities that placed them at extremely high risk for AIDS or for transmitting the virus to others.

Measures

All subjects completed a set of self-report, behavioral, and self-monitoring measures. To promote candid responses, code numbers rather than names were used on all measures.

Risk History Survey. Modeled after instruments extensively used in previous AIDS risk factor research (Darrow, 1983; McKusick, Horstman, & Coates, 1985), a self-administered measure eliciting detailed information about sexual behavior and health over the past 4-month period and past 12-month period was completed by each subject. This measure asked the respondent to report the frequency of specific high- and low-risk sexual activities. Behaviors assessed in the measure included anal and oral intercourse, intercourse occasions in which condoms were used, digital/anal (finger insertion) activities, and oral/anal contact as either the insertive or receptive partner. Data on risk activities occurring over the past year were gathered only for sample description purposes. Data on behavior occurring over the past 4 months constituted a pretraining baseline.

Risk behavior self-monitoring. To obtain more detailed data on the frequency of risk activities in a manner less susceptible to retrospective recall inaccuracy, we asked subjects to complete behavior self-monitoring forms over a 4-week baseline period. The forms were administered and collected at 2-week intervals. Subjects marked the frequency and type of sexual activities that occurred during the previous 2 weeks in a format similar to the Risk History Survey.

Self-report inventories. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the state version of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), and the Health Locus of Control Inventory (HLOC; Wallston, Wallston, & Devellis, 1978) were administered to assess depression, anxiety, and attributions concerning internal versus external factors that influence general health.

AIDS Risk Knowledge Test. The authors (Kelly, St. Lawrence, Brasfield, & Hood, 1988) developed an objective-format test to assess knowledge of AIDS risk behavior. Intended for use with homosexual men, the test contains 33 true/false and multiple-choice items that tap practical understanding of risk practices. Items and item-scoring criteria are

based on the findings of AIDS risk-factor epidemiological research. A single total score reflects the sum of items answered correctly.

Sexual assertiveness role plays. Lack of assertiveness can contribute to AIDS risk if an individual is unable to initiate discussion with a partner concerning the importance of safer sex practices or if an individual is unable to effectively resist coercions to engage in high-risk sexual activities (Kelly & St. Lawrence, 1988; Morin, Charles, Coates, & McKusick, 1987). To assess assertion skill, a set of eight role-play scenes was constructed. Following standard paradigms for assertion assessment (cf. Eisler, Miller, & Hersen, 1973; Hersen & Bellack, 1976; Kelly, 1982), each role play consisted of a scene narration followed by three prompts. The narrations described situations in which a sexual partner attempts to pressure the subject to engage in a high-risk practice (in which effective refusal assertion skill is needed) or another person proposes a sexual encounter (in which initiating discussion about the importance of low-risk practices, declining the immediate sexual overture, or proposing to get to know the person better socially were considered appropriate responses). Scene narrations were presented on audiotape, and prompts were delivered live by a trained male research assistant who simulated the verbal conduct of the coercive partner. Subjects' responses were audiotape recorded.

Intervention Procedures

When all subjects had been assessed, they were randomly divided into two groups. One group ($n = 51$) participated in the experimental intervention immediately. The other group ($n = 53$) constituted a waiting-list control group. After the intervention, all subjects from both groups were individually reassessed to determine the change associated with participation in the intervention. Eight months later, subjects from the experimental group were reassessed with the 4-month version of the Risk History Survey, another 4-week period of behavior monitoring, and the AIDS Risk Knowledge Test. Comparison with an untreated control group was no longer possible at this long-term follow-up point because control subjects were offered the intervention immediately after posttraining assessments for ethical reasons.

Of the subjects assessed before training and assigned to the experimental group, 47 (92%) began the intervention and 42 (82%) completed training and postintervention assessments. Dropouts ($n = 9$) did not differ significantly from completers in mean age, education, AIDS risk knowledge pretest score, or number of sexual partners during the past 12 months, although racial minorities discontinued participation more often, $\chi^2(2, N = 51) = 15.94, p < .001$. Thirty nine subjects (93% of the intervention completers) were available for the 8-month follow-up. Attendance at the 12 training sessions was high among experimental group members ($M = 10.3$ sessions attended, $SD = 2.0$, mode = 12). Subjects missed sessions occasionally because of unexpected schedule conflicts, minor illness, or for other reasons. Missed sessions were handled with individual makeups when possible. Of the 53 subjects assigned to the control group, 43 (81%) were available for reassessment after the experimental group completed its intervention. Attrition from both groups was primarily due to moves from the geographical area.

The experimental intervention consisted of twelve 75- to 90-min weekly group sessions led by two clinical psychologists and two project assistants. Because a group of 51 persons is too large for discussion and behavioral training, the experimental group was subdivided into three

¹ Certain other sexual practices are also high in risk for HIV transmission but were reported rarely or never by subjects in this study. There is debate in the literature concerning the level of risk posed by some activities. Unprotected anal intercourse is the strongest empirical AIDS risk predictor, but the consensus of health authorities is that any activities that permit fluid exchange carry some potential risk.

smaller groups that met on different evenings of the week but had the same leaders and received identical training.

AIDS risk education. In two sessions, the leaders presented information about AIDS, HIV infection, and methods of viral transmission. Participants were told that, although the only absolute protections from sexually transmitted HIV infection were celibacy or an exclusive relationship in which both partners were monogamous and HIV-unexposed, sexually active persons could substantially reduce AIDS risk by refraining from high-risk practices and consistently adopting low-risk activities. Both general rules concerning risk reduction (e.g., avoid sexual activities that permit the entry of body fluids) and specific high- and low-risk practices were described. Sexual activities were conceptualized along a continuum from those very high in risk (such as unprotected anal intercourse) to those that pose less risk (intercourse using condoms, oral sex not to orgasm) and to those of lowest risk (nonpenetrative activities in which partners do not have direct contact with one another's body fluids). Participants were encouraged to think of low-risk activities as a way to prevent HIV exposure if they were unexposed, to avoid reinoculation with the virus in the event that they had already become exposed, and to avoid inadvertent transmission of the virus to others.

Behavioral self-management. During three sessions, participants discussed past situations in which they had engaged in high-risk sexual activities. For each situation, the participant identified mood, setting, substance use, and other antecedents preceding the risky encounter. Participants reported patterns such as alcohol overuse, visiting settings known for casual sexual encounters, or going to a setting alone in an effort to meet a casual partner. The group leaders identified strategies that could be used to rearrange the environment to lessen risk such as curtailing alcohol use, socializing with friends, avoiding sexually oriented settings where high-risk activities had occurred in the past, and keeping condoms easily available if sexual activity might occur. Participants reported, in subsequent sessions, how high-risk antecedents were handled. Participants were also trained to generate and practice self-statements emphasizing that safer practices could be developed (e.g., "I can change risky sex practices"), that anxiety would be reduced by doing so ("I will feel much better tomorrow if I don't do anything risky tonight"), and that risk-reduction change was praiseworthy ("I am proud that I didn't do anything high in risk this week").

Assertion training. Assertiveness was taught in three contexts: initiating discussion about one's commitment to low-risk behavior in advance with any potential sexual partner, refusing pressures to engage in high-risk practices, and declining an immediate sexual proposition from a person that one might instead like to get to know socially. Rationales and elements of effective social skills were demonstrated, with instruction and modeling by the group leaders, and were based on standard clinical assertion training procedures (Eisler et al., 1973; Hersen, Eisler, & Miller, 1973; Kelly, 1982). For example, when confronted with a sexual partner's verbal or nonverbal coercions to engage in a high-risk practice, participants were trained to acknowledge the partner's wish but to firmly refuse the partner's unsafe request, to provide a reason for the refusal, and to suggest an alternative that would not create risk.

Participant dyads role-played assertive responses in several practice coercive situations with feedback and corrective instruction provided by the group leaders. The role-play scenes rehearsed in the group sessions were similar, but not identical, to those used for assessment purposes. Participants were instructed to use these skills in vivo if they encountered coercive sexual pressures. During subsequent group sessions, members reviewed occasions in which they had utilized the skills. Assertion training was the focus of three group meetings.

Relationship skills and social support development. The establishment of steady relationships characterized by a shared commitment to health can afford greater protection from AIDS for gay men just as it can for heterosexuals. Group members verbally identified the negative consequences associated with frequent casual sexual activity, including

susceptibility to coercions to engage in AIDS high-risk practices and feeling used following transient encounters. Participants problem-solved strategies for relationship development such as social dating prior to sexual activity, expressing affection initially in nonsexual ways, and becoming involved in gay community activities that reinforce a sense of pride and health-consciousness. The importance of maintaining low-risk sexual practices even in committed, steady relationships was stressed. This intervention phase lasted for three sessions.

The intervention concluded with a session in which each participant identified risk reduction changes he had made and the strategies he had used to make them. This permitted members to observe the strategies used by others to reduce risk, provided multiple coping models, and strengthened personal expectancies of the efficaciousness of AIDS risk-reduction behavior change (McKusick, Wiley, Coates, & Morin, 1986).

Rating and Scoring of Measures

All self-report inventories were scored in their standard fashion. The Risk History Survey was scored to yield number of sexual partners over the past 4 months and frequency of unprotected anal and oral intercourse, of intercourse with condoms used by the insertive partner, and of oral/anal and digital/anal practices as well as the proportion of anal intercourse occasions in which condoms were used. Self-monitored recordings were scored for the same behaviors but over individual 2-week monitoring periods. Although both experimental and control group subjects monitored risk behavior for 4-week periods before and after the experimental group received training, experimental group subjects also completed self-monitoring forms throughout the intervention and at the 8-month follow-up.

Tape recordings of the assertiveness role plays were presented to a trained research assistant naive to whether scenes were from pre- or postintervention assessments and whether they were from experimental or control group subjects.² Subject responses in the six scenes depicting partner coercions to engage in high-risk behavior were rated for discrete components of assertion skill: acknowledging the partner's request, specifically refusing the high-risk behavior, providing a reason for the refusal, noting the need to be safer, and suggesting a specific low-risk alternative. The rater also assigned a score from 1 (*very ineffective*) to 7 (*very effective*) to reflect the subject's overall verbal and nonverbal skill in resisting the coercive pressures. A highly effective response was defined as one that would successfully prevent high-risk activity from occurring. The two assessment role-play scenes depicting a partner proposing an immediate sexual encounter were also rated on a 7-point overall effectiveness scale from 1 (*very ineffective*) to 7 (*very effective*).³

Results

Preliminary Analyses

A preliminary multivariate analysis of variance (MANOVA) indicated no statistically significant differences between the ex-

² A second research assistant independently rated an overlapping, randomly selected 25% of all tapes to establish reliability of the role-play ratings. Interrater reliability coefficients, calculated using Pearson product-moment correlations between each judge's ratings, were .87 (overall effectiveness, casual proposition scenes), .79 (high-risk coercion refusal scenes), and .75-.95 (individual skill behaviors).

³ Subject responses in the casual proposition scenes were defined as highly effective if the subject skillfully explained to the partner his commitment to low-risk practices, verbally declined the sexual proposition and indicated a desire to socialize to get to know the other person better, or verbally declined the proposition and provided some other reason. Because casual propositions could be handled skillfully in these ways, ratings of specific verbal content were not made.

perimental and control groups on the dependent measures prior to intervention, Hotelling's T^2 (17, 67) = .23, *ns*. Analysis of variance (ANOVA) and chi-square comparisons also confirmed the equivalence of the experimental and control groups on age, education, and race.

Because experimental subjects had been subdivided into three smaller groups for training purposes, MANOVAs were also used to evaluate whether there were any significant differences between the three groups on the dependent measures before or following the intervention. No significant differences were found between the three intervention subgroups before or after the intervention, confirming that the three groups were not significantly different from one another and that outcome was not differentially affected by the intervention subgroup in which subjects participated.

Intervention Effects

Although each subject engaged in high-risk behavior, the specific practices varied from person to person, producing frequency distributions for each variable that included numerous zero values but other very high scores. This effect was more pronounced on the 4-month data than on the biweekly, self-monitored data because the longer time frame permitted high frequencies for subjects who engaged regularly in a specific risk practice. Because subjects had idiosyncratic risk behavior profiles characterized by very high frequencies of some risk practices and no occurrences of other risk behaviors, the positively skewed sexual practice variables (4-month frequencies of unprotected anal intercourse, anal intercourse with condoms, oral intercourse, oral/anal contact, and digital/anal activities) were linearly transformed prior to analysis using the formula $\log_{10}(X + 1)$, as recommended by Kirk (1968) and Winer (1971).

Between-groups treatment effects were evaluated at postintervention using multivariate analyses of covariance (MANCOVAs), with pretest performance as the covariate set. Separate MANCOVAs were calculated for the 4-month sexual risk behavior variables, assertiveness role plays, and self-report inventories. Significant overall multivariate effects were followed by univariate analyses of covariance (ANCOVAs) on each variable. Group comparisons on the AIDS Risk Knowledge Test and the percentage of total anal intercourse occasions in which condoms were used were evaluated with separate ANCOVAs, using pretest performance as covariates. Changes in the treatment group from postintervention through the 8-month follow-up were evaluated by within-group multivariate ANOVAs. The means and standard deviations for all dependent variables are presented in Table 1.

Sexual risk practices during 4-month retrospective periods. To assess whether the experimental participants differed in sexual behavior during the 4 months after intervention from persons in the waiting-list control group, a MANCOVA was calculated using preintervention frequencies of risk practices as covariates. The experimental and control groups differed significantly at postintervention, Hotelling's T^2 (6, 72) = .52, $p < .0001$. As shown in Figure 1, experimental participants, relative to control subjects, significantly reduced their frequency of unprotected anal intercourse, $F(1, 77) = 8.83$, $p < .004$, and increased condom use during intercourse, $F(1, 77) =$

14.56, $p < .0001$. Significant group differences were not found for oral/anal activity ($F < 1$) digital/anal activity ($F < 1$), oral/genital practices ($F < 1$), or number of sex partners ($F < 1$). A repeated-measures MANCOVA evaluated the experimental group's maintenance of behavior change from postintervention through the 8-month follow-up, again using preintervention scores as covariates. The results indicated no statistically significant change from posttreatment to follow-up, confirming behavior change maintenance.

To examine whether the total proportion of anal intercourse occasions protected by condoms was influenced by the intervention, an ANCOVA was calculated and was significant, $F(2, 47) = 18.11$, $p < .0001$. The results are shown in Figure 1 and Table 1. Prior to the intervention, subjects in both groups used condoms during only 23–24% of all anal intercourse occasions. Control group subjects used condoms during only 19% of intercourse occasions during the 4-month posttraining period, whereas experimental group subjects increased their condom use to 66% of all intercourse occasions by the postintervention period and to 77% by the 8-month follow-up period. Although the change from postintervention to follow-up was not statistically significant ($F < 1$), it confirmed the maintenance of intervention outcome. This indicates that the nonsignificant visual suggestion of a decrease in frequency of condom use at the 8-month follow-up, shown in the middle panel of Figure 1, reflects fewer acts of anal intercourse because the proportion of occasions when condoms were used increased in the same follow-up period.

AIDS Risk Knowledge Test. Scores on the AIDS Risk Knowledge Test are presented in Table 1. To assess whether experimental group subjects' scores differed at postintervention from the waiting-list control subjects, a one-way ANCOVA was computed using pretest scores as a covariate. After training, the experimental group's test scores were significantly higher than those of the control group, $F(2, 82) = 34.26$, $p < .0001$. A within-subjects ANCOVA showed that experimental subjects' scores decreased from postintervention to follow-up, $F(1, 38) = 15.78$, $p < .0001$. Post hoc Scheffé comparisons indicated that experimental subjects' scores were slightly lower at follow-up than at postintervention, $F(1, 38) = 3.94$, $p < .05$, but remained significantly higher than prior to intervention, $F(1, 38) = 10.03$, $p < .001$.

Assertiveness role plays. A one-way MANCOVA, using pretest scores as covariates, compared the experimental and control groups' role-play performance at postintervention. The two groups were significantly different at postintervention, Hotelling's T^2 (7, 70) = 2.65, $p < .0001$, and their mean performance levels are reflected in Table 1. One-way ANCOVAs indicated that, after the intervention, experimental subjects relative to control subjects were rated as more skillful in handling casual propositions, $F(1, 76) = 41.17$, $p < .0001$, and coercions to engage in high-risk activities, $F(1, 76) = 181.19$, $p < .0001$. On the specific verbal assertive content components, experimental subjects significantly more often acknowledged the partner's wish, $F(1, 76) = 29.19$, $p < .0001$; verbally refused to engage in high-risk practices, $F(1, 76) = 30.50$, $p < .0001$; provided reasons for their refusals, $F(1, 76) = 77.06$, $p < .0001$; stated the need to be safe, $F(1, 76) = 63.21$, $p < .0001$; and verbally suggested lower risk alternatives to the proposed unsafe activity,

Table 1
Means and Standard Deviations for All Variables

Variable	Experimental group						Control group			
	Pretreatment		Posttreatment		Follow-up		Pretreatment		Posttreatment	
	M	SD	M	SD	M	SD	M	SD	M	SD
Sexual risk practice ^a										
Unprotected anal intercourse	7.8	13.9	2.3	5.7	.74	2.3	11.0	33.8	8.3	23.3
Anal intercourse with condom	2.6	6.0	5.8	15.2	3.9	9.4	1.9	4.6	.1	2.5
Oral/anal activity	2.9	5.7	1.3	4.5	.4	1.6	2.2	3.8	2.1	7.1
Digital/anal activity	7.9	16.8	1.4	3.1	.8	2.0	3.8	6.1	4.0	11.8
Oral/genital intercourse	8.8	16.5	3.0	8.1	.8	3.0	12.7	35.6	3.1	8.0
Casual sex partners	5.0	7.4	2.7	4.2	2.5	5.1	4.1	7.0	1.8	4.1
Condom use (%)	23		65		77		24		19	
AIDS Risk Knowledge Test	26.2	3.0	29.4	1.7	28.2	1.8	25.3	3.8	25.4	3.7
Behavioral role-play test ^b										
Casual propositions overall skill	3.2	1.1	5.1	1.1			2.9	.9	3.3	1.2
High risk coercions overall skill	2.6	1.1	5.1	.6			2.5	.8	2.7	1.0
Acknowledges partner's request	.1	.1	.3	.3			.03	.1	.03	.1
Refusal	.5	.4	1.0	.5			.4	.4	.5	.5
Rationale for refusal	.4	.4	1.0	.4			.4	.2	.4	.3
Need to be safe	.3	.3	1.0	.5			.2	.2	.6	.5
Lower risk alternative	.3	.2	.8	.5			.2	.4	.3	.5
Paper-and-pencil inventories										
Health Locus of Control	32.6	7.2	31.8	6.8			32.5	6.8	34.2	7.9
State-Trait Anxiety Inventory	40.6	11.4	41.1	12.8			38.2	10.5	40.1	12.3
Beck Depression Inventory	8.5	6.9	7.4	8.1			7.7	9.5	8.2	11.0

^a Sexual activity assessed over 4 months. Means reflect actual behavior frequency before $\log_{10}(X + 1)$ transformation. ^b Means reflect the average occurrence across role-play scenes.

$F(1, 76) = 36.76, p < .0001$. Thus, the intervention improved behavioral skills for handling pressures and coercions to engage in risky conduct.

Self-report inventories. To assess whether the intervention was associated with changes in HLOC, STAI, and BDI scores, a MANCOVA was calculated on postintervention scores with the pretest scores as a covariate set. The results indicated no significant difference between the experimental and control groups at postintervention. This may have resulted because subjects scored at or near the norms for general adult populations even before training, as reflected by the means presented in Table 1.

Biweekly self-monitored sexual risk behavior. Figure 2 depicts the biweekly behavioral self-monitoring results for the experimental and control groups over 4 baseline weeks and 4 weeks after the intervention as well as changes in the experimental group throughout the intervention and again at the 8-month follow-up assessment. Data from the biweekly self-monitoring records were analyzed with 2×4 (Group $\times$ Time) repeated-measures ANOVAs for the group comparison tests. To protect against the greater likelihood of chance significance when multiple univariate analyses are conducted, the overall alpha level was divided by the number of analyses (.05/6), and the more stringent level of $p < .008$ was observed as the criterion for statistical significance on the repeated-measures ANOVAs. No significant main effect differences were found, but significant Group $\times$ Time interactions were found for the frequency of un-

protected anal intercourse, $F(3, 81) = 5.13, p < .002$, and the proportion of intercourse occasions in which condoms were used, $F(3, 81) = 4.14, p < .002$. Post hoc Scheffé mean comparison tests revealed that experimental subjects were significantly different than at baseline and than the control group at either baseline or posttest (all $ps < .05$). Experimental subjects relative to control subjects significantly decreased their frequency of unprotected anal intercourse and used condoms more frequently during those intercourse occasions that did take place. Significant interaction effects were not found for the frequency of oral intercourse ($F < 1$) or oral/anal activity, $F(3, 81) = 1.49, ns$, but a trend suggested decreases for the experimental group relative to the control group in frequency of oral/anal activity, $F(3, 81) = 2.97, p = .03$, and number of sex partners, $F(3, 81) = 2.39, p = .07$.

Changes within the experimental group are also shown in Figure 2. The experimental group's changes across time were evaluated with ANOVAs because, from baseline through follow-up, 12 self-monitoring periods occurred and repeated-measures analyses would have dropped all data for any subject who missed even a single session. Factorial analysis of variance was therefore used to examine changes over time within the experimental group. A more stringent criterion for significance ($\alpha/6 = .008$) was used to control for the increased likelihood of spurious findings with multiple univariate analyses.

Significant changes across time within the experimental group were found for three risk variables: for unprotected anal

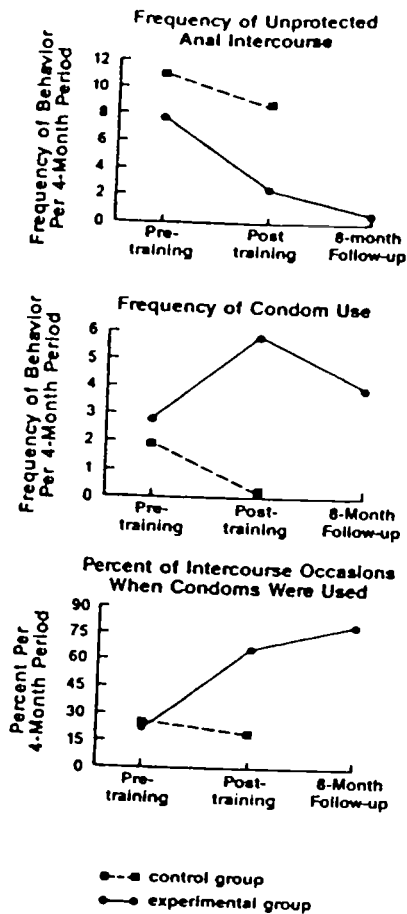


Figure 1. Frequency of unprotected anal intercourse, frequency of condom use during intercourse, and proportion of intercourse occasions protected by condoms among experimental and control group subjects during 4-month periods before and after intervention.

intercourse, $F(11, 486) = 3.46, p < .0001$; for proportion of intercourse occasions in which condoms were used, $F(11, 158) = 2.95, p < .002$; and for anal/digital activity, $F(11, 485) = 4.01, p < .0001$. Post hoc Scheffé comparisons indicated that, in each case, subjects lowered their risk behavior from baseline rates during the course of intervention, maintained their lowered risk behavior at posttraining and at the 8-month follow-up assessments, and did not evidence significant change from posttraining to follow-up, confirming outcome maintenance 8-months following the intervention. Significant change across time was not found for oral/anal activities, $F(11, 485) = 1.41, ns$, oral intercourse, $F(11, 485) = 1.34, ns$, or number of sex partners, $F(11, 486) = 1.33, ns$.

Participant Satisfaction Ratings

All experimental group subjects completed anonymous questionnaires to evaluate their satisfaction with the intervention. On a 10-point scale, from 1 (little value) to 10 (very valuable), participants assigned the program a mean rating of 9.8. Subjects also assigned a mean rating of 8.9 for the degree to which the intervention was perceived as personally helpful in reducing AIDS risk. All participants indicated they would recommend project participation to friends.

Discussion

In the present study, gay men reduced their frequency of risk behavior following participation in a group intervention program relative to persons in a waiting-list control group. The effects of the intervention were confirmed by multiple measures including behavior self-monitoring records, reported frequency of high-risk activities occurring over 4-month time periods, AIDS risk knowledge, and behavioral skill when handling role plays of sexually coercive situations. Although several sexual practices did not show change, large effects were found for unprotected anal intercourse, the practice most strongly predictive of the development of HIV infection among homosexual men (Jaffe et al., 1985; Kingsley et al. 1987). Change in sexual practices is now considered more critical than simply reducing the relative number of partners given the now-high possibility that any gay male partner may be HIV seropositive (Bauman & Siegel, 1987).

The experimental intervention included risk education, self-management skill and sexual assertiveness training, efforts to promote feelings of self-pride and responsibility toward others,

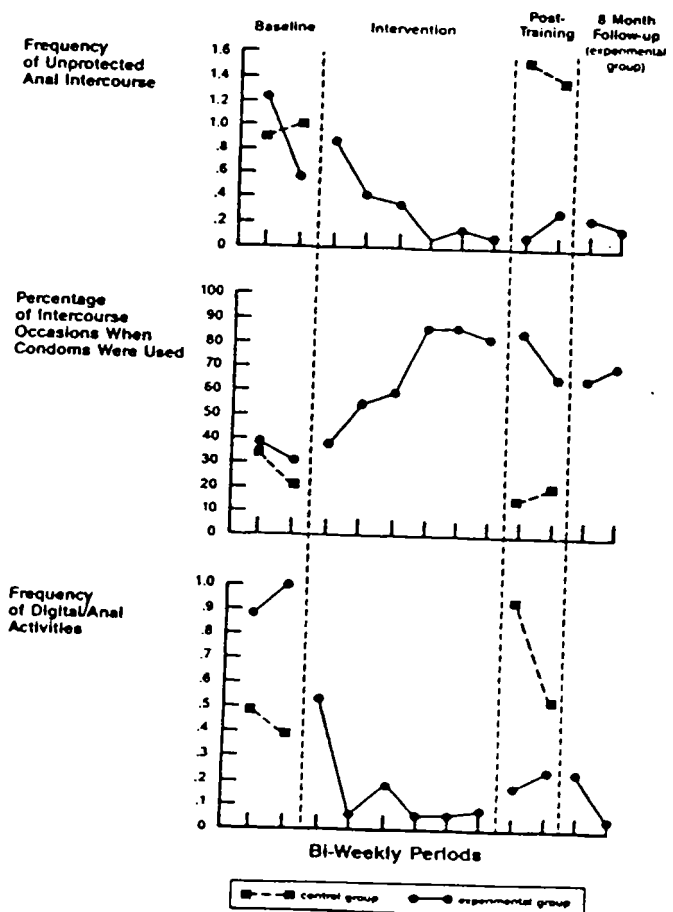


Figure 2. Self-monitored frequency of unprotected anal intercourse, proportion of intercourse occasions when condoms were used, and frequency of digital/anal contacts by experimental and control group subjects. (Each point represents mean value per 2-week monitoring period.)

and the development of social supports. Participants may also have derived benefit from group support or by observing successful behavior change in others. The study's design did not permit an identification of which components were most responsible for change and cannot rule out the nonspecific effects associated simply with participation in the intervention. In addition, checks were not made of compliance with behavioral practice assignments. Although certain training elements may have been more salient for some participants than for others, frequent AIDS high-risk behavior is probably determined by multiple cognitive, situational, self-control, social skill, and relationship factors (Coates et al., 1987; Kelly & St. Lawrence, 1987; Solomon, 1988). This argues in favor of multifaceted prevention efforts. Approaches that help individuals correctly gauge their level of risk and then acquire the skills needed to reduce risk appear especially promising (Bauman & Siegel, 1987; Joseph et al., 1987).

Intervention of the kind described here is relevant in several contexts. Therapists who see clients at risk for AIDS could use similar intervention procedures on an individual or group basis. Community programs may find it useful to offer intervention to persons who have difficulty changing high-risk patterns without assistance (Kelly & St. Lawrence, 1986, 1988; Solomon, 1988). Although AIDS primary prevention requires community intervention on a scale much larger than organized groups alone permit, research findings from group interventions may elucidate principles that can then be applied in wider scale programs.

The present investigation relied on self-monitored and self-report measures of risk behavior as well as on measures of behavioral skill and knowledge in areas related to risk. Given the private nature of AIDS risk activities, intervention assessment must rely primarily on such measures. Candor and accuracy in self-report data were encouraged through the use of subject-generated code numbers rather than names on recording sheets, brief retrospective monitoring periods, and checklist items with explicit sexual behavior referents. The HIV status of subjects was not assessed in this study. However, HIV antibody seroconversion rates could serve as a direct measure of AIDS prevention program effectiveness. Although the aim of this intervention was to reduce risk for becoming HIV infected, similar techniques might prove useful in counseling persons who are already HIV seropositive to alter behaviors that could result in their own reinfection or in the infection of others.

Given the urgency of the AIDS health crisis, the critical role of behavior change intervention for preventing AIDS, and the paucity to date of controlled studies, the present results demonstrate the clear potential impact of psychological interventions to prevent AIDS. Further outcome research on ways to reduce the spread of HIV infection is needed.

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Received March 21, 1988

Revision received June 20, 1988

Accepted July 7, 1988 ■

THE LANCET

Randomised, controlled, community-level HIV-prevention intervention for sexual-risk behaviour among homosexual men in US cities

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Reprinted from THE LANCET Saturday 22 November 1997
Vol. 350 No. 9090 Pages 1500-1505

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Summary

Background Community-level interventions may be helpful in population-focused HIV prevention. If members of populations at risk of HIV infection who are popular with other members can be engaged to advocate the benefits of behaviour change to peers, decreases in risk behaviour may be possible. We assessed a community-level intervention to lower the risk of HIV infection, focusing on men patronising gay bars in eight small US cities.

Methods We used a randomised community-level field design. Four cities received the intervention and four control cities did not. Participants were men from each city who went to gay bars. Men completed surveys about their sexual behaviour on entering the bars during 3-night periods at baseline and at 1-year follow-up. In the control cities, HIV educational materials were placed in the bars. In the intervention cities, we recruited popular homosexual men in the community and trained them to spread behaviour-change endorsements and recommendations to their peers through conversation.

Findings Population-level rates of risk behaviour decreased significantly in the intervention cities compared with the control cities at 1-year follow-up, after exclusion of surveys completed by transients and men with exclusive sexual partners. In a city-level analysis, in the intervention cities we found a reduction in the mean frequency of unprotected anal intercourse during the previous 2 months (baseline 1.68 occasions; follow-up 0.59; $p=0.04$) and an increase in the mean percentage of occasions of anal intercourse protected by condoms (baseline 44.7%; follow-up 66.8%, $p=0.02$). Increased numbers of condoms taken from dispensers in intervention-city bars corroborated risk-behaviour self-reports.

Interpretation Popular and well-liked members of a community who systematically endorse and recommend risk-reduction behaviour can influence the sexual-risk practices of others in their social networks. Natural styles of communication, such as conversations, brought about population-level changes in risk behaviour.

Lancet 1997; **350**: 1500–05

*Listed at end of paper.

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Introduction

Efforts to curtail the incidence of HIV infection require that individuals at risk of infection change their sexual behaviour. Studies have shown that intensive small-group interventions combining risk education with activities to improve safer-sex attitudes, behaviour-change intentions, risk-reduction skills, and problem-solving can decrease the rate of high-risk sexual behaviours among homosexual or bisexual men,^{1,2} women,^{3,4} and adolescents.^{5,6} However, intensive counselling of individuals or small-group interventions, although necessary, are not sufficient to curtail a major public-health epidemic. Community-level prevention efforts that focus on HIV-vulnerable populations are also essential and urgently needed.

Few randomised, controlled trials have studied community-level interventions aimed at decreasing the rate of risk behaviour in HIV-vulnerable populations. Among populations in developing countries where even basic knowledge about HIV is commonly lacking, outreach education has produced positive effects in some single-city campaigns.^{7,8} However, approaches are needed that extend beyond risk education. Several small-scale trials of community-level interventions to prevent HIV infection have shown promising results. Previous studies^{9,10} tested a community intervention in which popular members of gay communities in three small cities were asked to endorse, through conversations with their friends, the social desirability of lessening high-risk behaviour. Cross-sectional surveys revealed downward trends in the sexual-risk behaviour of homosexual men in each of the three cities after intervention. Kegeles and colleagues¹¹ used a similar single-city intervention, supplemented by HIV-prevention social events in gay communities, and found a change in the amount of risk behaviour. HIV-prevention community projects have shown that continuous outreach programmes focused on changing the norms of sexual behaviour can influence the intentions, readiness to change, and behaviour of some populations at risk of HIV.¹²

We investigated the effectiveness of a community-level intervention to prevent HIV infection among homosexual men in 16 small-sized to moderate-sized cities in the USA. Eight cities—four intervention and four control cities—constituted the first wave of the trial and we report our findings for these cities here. The other eight cities—four intervention and four control cities—were entered in the trial 6 months after the start of the first wave. The baseline and 1-year follow-up surveys in the first-wave cities were carried out during winter months, and in the second-wave cities were carried out during the summer months. Baseline risk-behaviour results in the second-wave cities were much different than in the first-wave cities and the proportions of transient respondents were higher. In addition, a bar in one of the second-wave intervention cities closed during the trial, and in a second-wave control city, the intervention was

implemented by a local organisation. Therefore, the expansion of the trial in the second wave was unsuccessful and led us to report only the outcomes of the first-wave cities.

By contrast with previous studies that have examined single-city interventions, we used a randomised field-trial design in which four city populations received the intervention and four control cities did not. In each city, we targeted men without exclusive partners, who visited gay bars. Although incidence of HIV infection among older, white, homosexual men has levelled in many original, large, urban HIV epicentres, HIV risk-behaviour rates^{13,14} and new HIV infections,^{15,16} remain high among homosexual men in many areas traditionally deemed "second tier" areas for HIV. Men who visit gay bars tend to be young and have higher rates of HIV infection than their older counterparts.^{17,18} These men have also been shown to have higher rates of high-risk sexual behaviour than men who do not visit gay bars,¹⁹ and, therefore, are at particularly high risk of HIV infection.

The rate of HIV risk behaviour may be high in certain communities because behaviour change through risk reduction is not an accepted social norm. Several studies have shown that perceptions of whether safer-sex practices are viewed as norms among one's friends, sexual partners, and other peer-group members, are important factors in an individual's own adoption of behaviour change.^{13,20,21} These findings suggest that interventions that redefine social norms of sexual behaviour towards avoidance of high-risk practices may have substantial impact on the rate of high-risk behaviour. Social norms are commonly initially formed by observing the behaviour or standards of visible, popular, and well-liked members of one's own peer network.²² Because the standards communicated by such opinion leaders serve as modelling influences that can be spread to others,^{23,24} interventions that engage popular opinion leaders to endorse behaviour change in communities may be especially powerful for altering risk-behaviour practices. We investigated whether an intervention in which popular opinion leaders endorsed risk avoidance could reduce the rate of sexual-risk behaviour among homosexual men visiting gay bars.

Methods

We did our study between 1991 and 1994 in eight US cities, with populations of less than 180 000, in four states: Wisconsin, New York, West Virginia, and Washington. We selected these areas because they represent different regions of the country and because we had previously found that men visiting gay bars in these cities had high rates of sexual-risk behaviour.¹¹ Each study city was located at least 50 miles from any other city of equal or larger size, and had between one and three gay bars. We used this geographical isolation criterion to limit the possibility of population crossover or experimental contamination, and the likelihood that HIV prevention programmes in neighbouring cities would affect the study cities. We selected gay bars as venues for population assessment and intervention activities because men who visit these bars have an increased likelihood of engaging in high-risk sexual behaviour,¹⁹ and because gay bars constitute an environment where homosexual men socialise freely.

We organised the eight study cities into four pairs, two cities in each state, to control for possible differences in state HIV-prevention policies, programmes, HIV-testing procedures, and other factors. One city in each city pair was randomly assigned intervention and the other was the control.

To find out rates of risk behaviour at baseline, we gave survey

questionnaires to all men entering gay bars in the eight cities on 3 consecutive weekend nights.

Respondents reported their age, ethnic origin, level of education, whether they lived in the area, and how many times they had visited gay bars in that city in the previous 2 months. Men were also asked whether they had exclusive sexual partners and whether they had ever been tested for HIV infection and the result. All respondents reported the number of men with whom they had had sex in the previous 2 months, the number of times, and the number of partners with whom they had engaged in anal intercourse, as the insertive or receptive partner, with or without a condom. We also asked for information on the occurrence of vaginal intercourse, but this activity was reported by few of the respondents. We investigated data for the previous 2 months because recall for this length of time is reported to be reliable.²⁵

We investigated practical knowledge of HIV risk behaviour in the baseline survey. Respondents were knowledgeable about HIV, answering on average almost 11 of the 12 questions correctly. Therefore, we did not include questions about this knowledge in later surveys.

We also investigated changes in the number of condoms taken from dispensers in all study-city bars. For 1 week after the baseline survey, a large bowl filled with free packets of latex condoms was placed near the doorway of each bar. We counted the number of condom packets in the container at the beginning and the end of the week to find out the total number taken in each city.

We used a standard survey procedure in all cities. A researcher asked men entering the bars if they would complete a 10 min survey. Men completed surveys privately at small tables or on clipboards. To avoid completion of surveys by men who were intoxicated, men were surveyed only when they first entered a bar. Each man completed a survey only once in the 3-night survey period, even if he visited the bar more than once. To find the proportion of all men entering bars who completed surveys, we counted all men entering the bars on each night.

2 months after the baseline survey, we began intervention activities in each study city. In the bars in the four control cities, we displayed HIV-education materials.

The HIV-education materials were high-quality wall posters, graphics, and brochures on HIV prevention; all of the materials were produced by major public-health and HIV-prevention organisations and aimed at homosexual men. Each study and control bar kept the materials prominently displayed. Every 3 months, throughout the study, we replaced the posters and brochures with different ones. In this way, the control populations were continuously exposed to the same level of high-quality material about HIV prevention.

In the intervention cities, as well as the educational materials, endorsements of safer-sex practices were spread by popular opinion leaders through conversations with their peers.

To identify popular opinion leaders, we trained bartenders in all the intervention-city bars to observe the crowds in the bar for 10 days and to record the names of the people they judged to be the most popular with the other men (eg, those who were most often greeted, greeted others most, and seemed well-liked). Each bar had several bartenders, and each bartender made independent popularity nominations. Nomination lists were crossmatched, and we took those whose names appeared on more than one list to be opinion leaders; we recruited these men for training. Each opinion leader was also asked to nominate one or two popular friends, in the same way, to attend training sessions. Smaller numbers of opinion leaders were recruited in cities with one bar and smaller crowds than in cities with larger crowds and more than one bar. The number of opinion leaders trained was about 8% of the total number of men present in each city's bars during the baseline survey period.

In each city, the opinion leaders attended 2 h group sessions once a week for 5 weeks. To ensure uniformity of intervention procedures across cities, we used a standard protocol for all training sessions. We trained the opinion leaders to be experts on resources for HIV-risk reduction. We used modelling and role-play exercises to teach participants to deliver messages about

behaviour change, such as the importance of the carrying of condoms at all times, discussion of risk-reduction precautions with partners before sex, avoidance of sex when intoxicated, or refusal of unwanted sexual coercions. We also taught them to communicate benefits of change, to correct listeners' misconceptions about risk, and to identify safer-sex practices as socially acceptable norms. Conversational messages emphasised positive and desirable consequences of changes to behaviour. At the end of each session, all opinion leaders agreed to speak with between four and ten peers before the next session. Outcomes of these conversational assignments were reported at each meeting. Opinion leaders were also given badges to wear with a traffic-light logo. The badges had the same logo as the large colour posters in the bars. The opinion leaders were frequently asked by friends about the meaning of the logo, which was intended to depict the need for caution. This curiosity led to many opportunities for conversation and also visibly identified the opinion leaders as endorers of behaviour change.

For 3 weeks after participation in the training sessions, opinion leaders completed forms summarising their conversations with peers. All opinion leaders reported an average of ten conversations about HIV with peers in this period. Many of the opinion leaders also seemed to sustain their efforts after this period.

Although a short-term follow-up survey was carried out, our primary objective was to find out the long-term effects of the intervention. Therefore, 12 months after intervention activities had ended, we repeated the surveys with the same methods as at baseline; the surveys in the control cities were carried out at the same time as those in their intervention-city pair. In the baseline and follow-up surveys, to exclude data from transient or occasional visitors who might not have been exposed to the intervention, we included only data from men who had visited the bars more than five times. We also repeated the assessment of condom-taking behaviour for 1 week immediately after the survey was finished.

Some men reported that they were in exclusive relationships, and neither they nor their partners had sex with anyone else. Most of these men also reported that they had been tested for HIV infection and knew their serostatus. We did not target these men for intervention because they are generally at low risk of infection with HIV and these data might have distorted population risk estimates.

From the baseline and follow-up surveys, we assessed four key behavioural-risk indicators: the mean number of times respondents had engaged in unprotected anal intercourse during the previous 2 months; the proportion of surveyed population members who had had unprotected anal intercourse during the previous 2 months; the percentage of all anal intercourse in the previous 2 months for which condoms were used; and the mean number of sexual partners reported by each respondent during the previous 2 months. Unprotected anal intercourse was our main outcome because many epidemiological studies have shown that this is the sexual practice most strongly associated with risk of contracting or transmitting HIV infection during male homosexual intercourse.³⁰ Reductions in the rates of these variables would show positive impact by the intervention on the population's behaviour.

We used a nested cross-sectional design in which city pairs were the units of randomisation. Visitors to gay bars in the intervention cities formed the study population for the intervention. We used methods of analysis that account for intact social groups as the unit of randomisation, as well as the interdependent presence of members within these social groups.²⁷⁻²⁹

Our primary analyses of behaviour-response data were at city level and use a mixed-model generalised linear approach.³⁰ The model describing the response Y_{ijk} of the i^{th} individual within the $k(i)^{\text{th}}$ city nested within the j^{th} condition and surveyed at the j^{th} time point is as follows:

$$Y_{ijk} = \mu + G_j + T_i + GT_{ij} + C_{k(i)} + CT_{k(i)} + e_{ijk}$$

The nested cross-sectional design model for an individual's

response includes the grand mean component and terms for the effects attributable to the study condition (G_j), the survey time (T_i), the city nested within condition ($C_{k(i)}$), together with the interactions of condition and survey time (GT_{ij}), city and survey time ($CT_{k(i)}$), and a residual term (e_{ijk}) for the unexplained variation. The effect attributable to city and the interaction of city and survey time effect are included as random effects nested within the condition. In the assessment of the effectiveness of an intervention, when the study outcomes are measured at multiple time points, including before and after intervention, the presence of an interaction due to the study condition and survey time effects (GT_{ij}) is of primary interest. A significant effect attributable to the interaction of the study condition and survey (time) effects on the response suggests that one study condition group has changed their HIV-risk sexual practice patterns more than the other study condition group during the same period.

We used the SAS procedure Proc MIXED program (version 6.12) and the SAS macro GLIMMIX program (version 6.12) for estimation and testing in the generalised linear mixed-model framework. We used restricted maximum-likelihood estimation for parameter estimation. The SAS macro GLIMMIX enables the use of non-Gaussian residual-error distributions in model specification. For study endpoints that represent frequency of an occurrence, such as the number of occasions of unprotected anal intercourse, we used a Poisson error model with a log-link function. For study endpoints that represented binary data, such as any unprotected anal intercourse during the previous 2 months, we used a binomial-error model with the logit link function for modelling. For the outcome percentage of anal intercourse protected by condom, the variance of the proportion of occasions of such anal intercourse depends on the number of occasions of anal intercourse reported. Therefore, the total number of occasions of anal intercourse reported by an individual, protected or not, was used as a weighting factor for the purpose of estimation.

When a city is chosen as the unit of analysis, dependence within a city among population-members' response data is accounted for in the analysis, but there were few degrees of freedom for comparisons of interest because only four cities were studied in each group. Consequently, after the primary city-level analysis, we did a supplemental analysis to assess individuals, our unit of observation. If the unit of observation is chosen as the unit of analysis, any within-city dependence is ignored and the analysis has many more degrees of freedom for comparisons at the expense of possible inflation of the rate of type I errors.³¹ The extent of the inflation of the type I error depends on the magnitude of the intraclass correlation. Our use of the individual as the unit of analysis provided a test of comparison, on the assumption that the between-class correlation was zero. We adjusted the p values of the individual-level analysis to reflect the intraclass correlation among the population members in each city and to maintain the nominal rate of type I errors. We estimated the within-class correlation from the results of the one-way ANOVA of the baseline, in which city was the only grouping factor. We used a within-class correlation of 0.005, from the analysis of frequency of unprotected anal intercourse, to adjust the individual-level tests results. Adjusted p values were obtained by deflating the F statistic by the factor $1+(n-1) \times$ within-class correlation in which n is the average number of individuals surveyed per city at each assessment time, together with the full individual-level degrees of freedom.

Results

A total of 1126 men in the eight cities (range 51–343 per city) completed the baseline surveys during the 3-day period of baseline-data collection (completion rate in intervention cities 88%, in control cities 84%). At the 1-year follow-up, 1010 men were surveyed across cities (50–300, 86% completion rate in both groups). Therefore, we obtained behavioural data from a large proportion of all men entering the bars at both assessment

Variables	Intervention cities		Control cities		Results of between-group analyses	
	Baseline (n=268)	1-year follow-up (n=199)	Baseline (n=174)	1-year follow-up (n=131)	Community level p	Individual level adjusted p
Mean number of occasions of unprotected anal intercourse in previous 2 months	1.68	0.59	0.93	1.29	0.04	0.013
Number of population members reporting any unprotected anal intercourse in previous 2 months	86 (32.1%)	40 (20.3%)	47 (27.0%)	38 (29.3%)	0.07	0.05
Percentage of anal-intercourse occasions protected by condoms in previous 2 months (total number of occasions)	44.7% (143)	66.8% (85)	62.0% (89)	58.7% (65)	0.02	0.002
Mean number of different male sexual partners in previous 2 months	3.11	2.40	3.05	2.43	0.89	0.89

NS=not significant. *Adjusted individual-level values are corrected for the within-class correlation among members of the same population.

Results of between-group analyses of change in population risk behaviour from baseline to 1-year follow-up

points. Different numbers of men in each city completed the survey because some cities had only one small bar, whereas other cities had several bars with larger numbers of men entering them.

498 baseline surveys and 546 follow-up surveys were completed by transients, and we excluded them from analysis. In addition, about 28% of non-transient respondents were exclusively partnered and were also excluded. The percentage of transient and exclusively partnered men was similar across all cities. We analysed 438 surveys at baseline (265 men in the intervention cities, 173 men in the control cities) and 327 surveys at follow-up (197 in the intervention cities, 130 in the control cities).

The mean age of participants in all cities was 31.1 years (IQR 11). The overall sample consisted of 90% white, 3% African American, 2% Hispanic, 3% Native American, and 2% of other ethnic origins. 32% of respondents had a high-school education or less; 40% had attended but not graduated from college; and 28% had completed college.

We found significant reductions in the mean number of occasions of unprotected anal intercourse during the previous 2 months in intervention cities (mean occasions, baseline 1.68, follow-up 0.59), compared with control cities (baseline 0.93, follow-up 1.29, $p<0.04$; table). As a fraction of its baseline value, the mean frequency of unprotected anal intercourse found at follow-up in the control cities was about 3.9 times more than that found at follow-up in the intervention cities (95% CI 1.12–13.66).

The percentage of all anal intercourse occasions during the previous 2 months in which condoms were used in the intervention-city populations increased from 44.7% at baseline to 66.8% at 1-year follow-up; we found no increase among control-city populations (baseline 62.0%, follow-up 58.7%, $p<0.02$). The between-group difference in the change in percentage of anal intercourse occasions protected by condoms was 25.4% (6.1–44.7).

Finally, we found a declining trend in the percentage of intervention-city population members who engaged in any unprotected anal intercourse during the previous 2 months at follow-up compared with baseline. 32% of intervention-city respondents had engaged in unprotected intercourse at baseline, but only 20.3% reported that they had at follow-up; the percentage of control-city population members who engaged in any unprotected anal intercourse was similar at baseline (27.0%) and follow-up (29.3%, $p<0.07$). The odds ratio of a control-city population member engaging in unprotected anal intercourse at 1-year follow-up compared with baseline was 2.08 times the odds ratio among intervention-city

men (1.10–4.76). We found no significant changes for mean number of different sexual partners during the previous 2 months reported by intervention and comparison members at baseline and follow-up.

At follow-up, 26 intervention-city survey respondents had been trained as opinion leaders. To confirm that the lower rate of risk behaviour found at follow-up in the intervention cities was not due simply to change in behaviour made by opinion leaders, we reanalysed all outcomes without the 26 opinion-leader surveys. We found significant differences in any of the outcomes in either analysis.

We did supplemental analyses of outcome with individuals as the unit of analysis to find out whether result patterns were the same or different (table). We adjusted individual-level p values to account for the within-class correlation among members of the same population. As expected, the individual-level findings paralleled those of the city-level analysis, but with greater significance because of the higher number of degrees of freedom. In this supplemental analysis, the mean number of occasions of unprotected anal intercourse, of anal intercourse protected by condoms, and population members reporting any occurrence of unprotected anal intercourse all showed significant positive changes among intervention-city men. The mean number of different sexual partners did not change in either analysis.

To take into account the differences in crowd sizes at the clubs in the assessment of condom-taking behaviour, we constructed an index by dividing the number of condoms taken by the total number of men who entered each bar during the baseline and follow-up survey periods. We found a decrease in condom-taking behaviour in the control-city bars from baseline (2.06 condoms per man) to follow-up (1.06). By contrast, we found an increase of 65% from baseline to follow-up in the intervention cities (baseline mean 2.52 condoms per man, follow-up 4.15). Since the proportion of transient visitors was similar in intervention and control populations, these data on condom-taking corroborate changes in the self-reported sexual behaviour practices of intervention-city men.

Discussion

Most HIV-prevention approaches have involved assessment of programmes that deliver intensive face-to-face assistance with behaviour change to individuals or small groups at risk of HIV infection. We studied an approach for changing the risk behaviour of HIV-vulnerable populations by larger-scale intervention. Interventions to prevent HIV infection at a community

level have the potential to reach large numbers of people in a cost-effective way and to lower rates of future infections.

Intervention approaches that redefine social and peer-group norms to make risk avoidance more acceptable and expected are useful. Such approaches may help individuals to change their behaviour and to help them maintain changes by social support. We found that conversational messages systematically delivered by popular and well-liked opinion leaders to members of their social networks influenced the sexual-risk behaviour of population members to a greater extent than did HIV education posters, brochures, and other printed information alone. By contrast with interventions delivered by external agents, we used key members of the population to support reductions in risk behaviour among their peers. Such approaches are likely to be perceived as credible and empowering by community members.

We targeted non-monogamous men who frequently visited gay bars. Our analyses of several risk indicators showed evidence of behaviour change in intervention cities. Rates of unprotected anal intercourse declined to a third of their baseline values, the percentage of population members reporting unprotected anal intercourse declined by 30% from baseline, and the percentage of intercourse occasions protected by condoms increased by 50% from baseline in intervention cities. We did not see behaviour changes in the control-city populations, despite other continuous prevention services, such as HIV counselling and testing. Decreases in risk behaviour after intervention were robust, which may have been due to delivery of prevention messages by known and trusted peers. We did not find changes in the number of sexual partners reported by population members, which suggests that the effect of the intervention led to reductions in high-risk sexual practices rather than number of sexual partners.

We assessed the effect of the community-level intervention by surveying men in each bar at baseline and at follow-up. We compared cross-sectional samples of the populations rather than an identified cohort of the same individuals. Only about a third of men reported completed surveys both at baseline and follow-up. The effects of the intervention on the behaviour of the population were substantiated by detection of risk behaviour in largely non-overlapping cross-sections of the same population in both surveys.

Our study illustrates the application of a community-level intervention targeted to a well-defined subset of a population vulnerable to HIV. Social-network approaches may be particularly useful for HIV-prevention interventions at a community level since HIV-vulnerable populations commonly have behavioural norms different from the general population.

Although we focused our research on homosexual men in bars, similar methods could be useful with other HIV-vulnerable populations, including injecting drug users, adolescents, or populations in developing countries in which condom use is not an accepted norm. In addition, the approach of engaging popular opinion leaders to endorse behaviour changes within their social networks may be useful for prevention of disorders other than HIV. Because this approach uses conversation to deliver the intervention messages, it is suitable for populations with poor literacy and reading abilities. Such populations in many areas of the world are most threatened by HIV and other social-health problems.

Community HIV Prevention Research Collaborative

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Contributors

Jeffrey A Kelly was principal investigator of the overall study and participated in all components of research. Debra A Murphy and Kathleen J Sikkema were study coinvestigators, responsible for development of the central intervention delivery and survey assessment protocols, as well as direction of study implementation in two cities. Timothy L McAuliffe was the project's lead biostatistician and supervised data analysis. Seth C Kalichman did the interim data analysis. Roger A Roffman was lead investigator of the Seattle team and directed study activities in two cities. Richard A Winette was lead investigator of the Virginia team and directed study activities in two cities. Laura J Solomon was lead investigator of the Vermont team and directed by study activities in two cities. All investigators contributed to the writing of the paper.

Acknowledgments

This research was supported by grant R01-MH42908 and P30-MH52776 from the National Institute of Mental Health.

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HIV Risk Behavior Reduction following Intervention with Key Opinion Leaders of Population: An Experimental Analysis

ABSTRACT

Background and Purpose. Peer norms influence the adoption of behavior changes to reduce risk for HIV (human immunodeficiency virus) infection. By experimentally intervening at a community level to modify risk behavior norms, it may be possible to promote generalized reductions in HIV risk practices within a population.

Methods. We trained persons reliably identified as popular opinion leaders among gay men in a small city to serve as behavior change endorsers to their peers. The opinion leaders acquired social skills for making these endorsements and complied in talking frequently with friends and acquaintances. Before and after intervention, we conducted surveys of men patronizing gay clubs in the intervention city and in two matched comparison cities.

Results. In the intervention city, the proportion of men who engaged in any unprotected anal intercourse in a two-month period decreased from 36.9 percent to 27.5 percent (–25 percent from baseline), with a reduction from 27.1 percent to 19.0 percent (–30 percent from baseline) for unprotected receptive anal intercourse. Relative to baseline levels, there was a 16 percent increase in condom use during anal intercourse and an 18 percent decrease in the proportion of men with more than one sexual partner. Little or no change was observed among men in the comparison cities over the same period of time.

Conclusions. Interventions that employ peer leaders to endorse change may produce or accelerate population behavior changes to lessen risk for HIV infection. (*Am J Public Health* 1991;81:168–171)

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Introduction

Experience in many health promotion areas supports the importance of social influence as a determinant of population risk behavior patterns.^{1–3} Gay men who successfully implement risk reduction report greater peer support for behavior change than their unsuccessful counterparts,^{4–6} while beliefs that one's friends have already made precautionary changes and that these changes will be well accepted predict compliance with acquired immunodeficiency syndrome (AIDS) risk reduction recommendations.^{5,6} Reductions in high-risk sexual behavior among homosexual men in urban centers appear linked to new norms in the gay communities of large cities which discourage high-risk activities such as unprotected anal intercourse and encourage precautionary steps such as condom use or other safer sex modifications.^{7,8}

Persons frequently seek the advice of friends concerning steps needed to reduce risk for AIDS.⁹ Diffusion of innovation theory posits that trends and innovations are often initiated by a relatively small segment of opinion leaders in the population.¹⁰ Once visibly modeled and accepted by natural opinion leaders, innovations then diffuse throughout a population, influencing others. The purpose of this investigation was to experimentally test an AIDS prevention intervention based on diffusion of innovation/social influence principles. Because HIV (human immunodeficiency virus) risk behavior levels remain high among gay men in small cities^{5,6,11} and because geographically isolated communities constitute compact environments where it is feasible to ex-

perimentally evaluate community-level intervention of this kind, the project targeted homosexual men in small cities.

Methods

Setting and Baseline Survey

The study was conducted late in 1989 in Biloxi and Hattiesburg, Mississippi, and Monroe, Louisiana, selected because they are relatively small (populations of 50,000 to 75,000 residents), separated by at least 60 miles from one another or from any other city of larger size, and because each city had one or two large gay bars. Due to the geographical isolation of the cities and the paucity of other meeting places, these clubs tend to attract large, stable crowds of homosexual men and serve as the primary social setting in each city's gay community. An earlier survey of men patronizing clubs in these cities revealed alarmingly high rates of high-risk sexual behavior.⁶ AIDS incidence data for the cities are not compiled, but data from local health department HIV testing sites indicate relatively low seroprevalence rates (approximately 2 percent) among all men who seek testing in the cities. This suggests that HIV infection prevalence is still moderate but will increase unless behavior changes among gay men are quickly implemented.

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To obtain baseline data on population AIDS risk characteristics, men entering each city's clubs were initially surveyed over three consecutive nights. The survey measure was completed anonymously and individually at small tables located near the club entrances; men who completed the questionnaire on one night did not complete it again during the same three-night sampling period. In addition to demographic information, the measure assessed:

- knowledge about AIDS risk behaviors and risk reduction steps using a 23-item true/false test¹²;
- perceived social norms concerning the acceptability of adopting safer sex precautions measured by endorsement on 5-point Likert scales of five statements (example: "My gay male friends insist on using condoms when they have intercourse") and yielding scores of 5 to 25^{5,6}; and
- personal sexual behavior occurring over the past two months, including number of occurrences and different partners for unprotected insertive and receptive anal intercourse, anal intercourse with condoms, and other low-risk practices (frottage, mutual masturbation, and similar activities). This measure was pilot tested extensively and has been successfully used in prior surveys of gay men's risk behavior.^{5,6,11}

The same survey procedure was repeated in a second three-day sampling period four months later at each club in each city to establish baseline stability in population risk characteristics. A preliminary review of survey data revealed that AIDS risk knowledge scores were consistently high among men in each city ($M = 21$ of 23 items answered correctly) so basic knowledge items were deleted from subsequent surveys. Counts were made of the total number of men who entered clubs to determine the proportion of the entire population successfully surveyed.

Study Design and Intervention Procedures

Following baseline population assessments in all cities, one community (Biloxi) was randomly selected to receive the intervention while the other two communities served as comparison cities. The comparison cities received no specific intervention, although AIDS prevention posters and brochures were generally available in gay clubs in the cities. No significant differences in population risk behavior were found between the two comparison cities.

In the intervention city, a three-stage process identified, trained, and then contracted with popular opinion leaders among gay men to endorse behavior change to their peers.

Identification of Opinion Leaders: To identify key popular people, four club bartenders familiar with population members were trained to observe social interaction patterns within the city's gay clubs. Each made unobtrusive behavioral observations in the clubs for one week, recording first names and a physical identifier for 30 persons observed to socialize and be greeted positively most often by men in the clubs. Recording sheets were cross-matched for repeated mention; 36 of a total of 82 names received multiple nominations and were considered key popular people. Twenty-two were located, entered in the program, and asked to invite one friend also considered to be highly popular with gay men and not already a participant. The total training group consisted of 39 men and four women with a mean age of 30 years and a mean education level of 13.8 years; 91 percent of the group was White and 9 percent African-American or Hispanic.

Training the Opinion Leaders: The training consisted of four weekly, 90-minute group sessions led by a male and a female leader. In session one, the leaders reviewed basic epidemiology of HIV infection, high-risk behavior, and precautionary changes needed to reduce risk and misconceptions concerning risk. They discussed the steps that can be used to successfully implement risk reduction, including: keeping condoms readily available if sexually active; avoiding excessive intoxicant use before sex; discussing precautions in advance with sexual partners; resisting coercions to engage in high-risk practices; and self-reinforcing for behavior change efforts.

Session two described characteristics of effective health promotion messages: sensitizing others to the potential threat of AIDS; stressing that HIV infection can be prevented by behavior change; identifying specific behavior changes needed to reduce risk; suggesting strategies for implementing these changes; using self as an example in order to avoid a "preachy" tone (i.e. beginning statements with "I am learning to . . ." rather than "You should . . ."); and personally endorsing the positive value and desirable benefits of behavior change.

In the third session, leaders modeled conversational examples which incorporated the characteristics discussed in ses-

sion two. Following discussion of the enactments, participants role-played how they would initiate conversations, incorporating these message characteristics. Group leaders and assistants observed this social skill rehearsal, providing feedback and suggestions. After becoming proficient in the role-plays, each participant identified four gay male friends with whom s/he could initiate an endorsement conversation in the next week. Monitoring forms were provided for recording descriptions of these conversations.

Session four reviewed outcomes of the real-life conversations; most participants reported positive reactions from others. The leaders and participants then problem-solved persons, settings, strategies, and times which would afford opportunities to initiate additional conversational contacts with other peers. All members agreed to initiate and monitor at least 10 more peer conversations over the next two weeks. The session concluded with further discussion emphasizing the participants' important role in stressing the benefits of behavior changes to prevent HIV infection among gay men in their own community. Of the 43 opinion leaders who began the intervention, 35 attended all the sessions.

Later review of participants' self-monitoring forms indicated that 371 peer conversations were monitored over the two-week period. This probably underestimates the number of conversations which actually took place because peer conversations were likely to have continued beyond the monitoring phase. In addition, before and after the training program, each opinion leader was asked to role-play standard, simulated peer educational conversations. Ratings of the tape recorded role-plays were made by trained judges, naive to whether practice conversations were pre- or postintervention. These rates revealed that, after training, the opinion leaders more frequently exhibited skills taught in the program (data available on request to author). These checks confirm social skill acquisition and conversational assignment compliance by the opinion leaders.

To stimulate opportunities for initiating peer conversations, posters with a traffic light logo (red, yellow, and green circles) but no printed explanation were placed throughout the clubs shortly before the end of the intervention. Each training participant was given a small lapel button with the same logo and asked to wear it. Participants reported that this cuing device led many people to inquire about the

TABLE 1—Measures of Behavior in Surveyed Populations Prior to Intervention and Behavior Change Postintervention

Behavior Characteristics ^a	Preintervention		3-6 Month Changes		Difference (95% CI)
	Intervention City	Comparison Cities	Intervention City	Comparison Cities	
Percent of Respondents Engaging in:					
Any Unprotected Anal Intercourse	36.9	40.4	-9.4	-2.9	6.5 (6.4, 6.6)
Unprotected Receptive Anal	27.1	30.9	-8.1	-3.7	4.4 (4.3, 4.5)
Unprotected Insertive Anal	31.5	31.5	-9.6	+0.4	10.0 (9.9, 10.1)
Percent of Anal Intercourse Occasions Protected by Condoms:					
Any Anal Intercourse	48.8	54.5	+6.5	-6.1	12.6 (12.5, 12.7)
Receptive Anal Intercourse	50.4	55.4	+8.0	-7.8	15.8 (15.7, 15.9)
Insertive Anal Intercourse	49.2	54.7	+5.2	-5.1	10.3 (10.2, 10.4)
Percent of Respondents Reporting Multiple Sexual Partners	42.4	38.2	-7.8	+1.9	9.7 (9.6, 9.8)

^aIn two months prior to survey point.**TABLE 2—Percentage Distribution for Number of Sexual Partners for Unprotected Anal Intercourse in Prior Two Months: Intervention and Comparison Populations Before and After Intervention**

Number of Partners	Intervention City		Comparison Cities	
	Pre	Post	Pre	Post
0	70.7	80.0	68.8	70.9
1	7.1	5.2	7.9	8.4
2	4.2	3.4	3.5	3.7
3	2.0	1.0	4.0	3.4
4	1.9	1.3	6.5	6.6
5	2.6	0.9	2.5	4.0
6	2.9	1.2	1.3	0.8
7+	8.6	7.1	5.5	2.2

meaning of the symbol. These questions, in turn, stimulated opportunities to explain precautionary changes from the traffic light scheme (high-risk, moderate-risk, low-risk) and endorse these changes in the conversational style that was practiced in training. The lapel buttons also served as visual cues which reinforced the endorsement of behavior change by well-known and popular individuals.

Several months after the intervention's completion, participants were re-contacted by telephone, encouraged to continue their peer education conversations, and commended for their continued efforts.

Determining Change in Population Risk Characteristics

Surveys of all male club patrons in all cities were repeated in the same manner as at baseline three months and again six months after the end of the training period. Responses of training participants were excluded. Intervention city men reported

they were approached to initiate a mean of 7.1 conversations, demonstrating that the conversations encouraged in the training program occurred frequently.

Results

A total of 659 surveys were completed at the two baseline survey periods (intervention city N = 328, comparison cities N = 331) and 608 men completed surveys at the two postintervention periods (intervention city N = 278, comparison cities N = 330). This was an average of 81 percent (range = 68 to 88 percent) of all men patronizing each city's clubs during the survey periods. Between 24 and 47 percent of the men who completed measures on one occasion were the same men who completed them earlier; over 70 percent of respondents lived in the city where the survey was conducted. The mean age of all men surveyed was 29.1 years; the mean education level 14.9 years; 86 percent of men were White and 14 percent

African-American or Hispanic. There were no significant differences between intervention and comparison city populations, nor were there systematic changes over time within a city's surveyed population, for these characteristics.

Table 1 presents behavioral characteristics for both the intervention and comparison cities before and following intervention with 95% CIs of the differences in behavior change. For purposes of brevity, results of the two baseline surveys and the three- and six-month postintervention surveys are averaged as a single figure. Populations in the intervention and comparison cities were initially comparable in risk characteristics. At the postintervention surveys, the proportion of men who engaged in unprotected anal intercourse decreased by about 30 percent from their initial levels. Much less change was evident in the population of men in the comparison cities. Similarly, there was an increase in proportion of all anal intercourse occasions when condoms were used only in the intervention city. Finally, the intervention produced a decrease in the proportion of intervention city men who reported having multiple sexual partners in the preceding two months, an effect not found in the comparison cities.

Table 2 shows the percentage distribution for number of sexual partners in the intervention and comparison populations before and after intervention. These results show some shifts reflecting an increased proportion of intervention city men who had either one or no sexual partner from pre- to postintervention and slight general decreases in the proportion of men who had two or more partners (Z

= 1.66, $p < .05$ for nonparametric Wilcoxon signed rank test).

Survey responses of the male opinion leaders, examined separately, showed that in the two months before training, 39 percent of opinion leaders engaged in unprotected anal intercourse; in the postintervention survey, 24 percent engaged in this practice.

Distinctive changes in social norm measure scores were not associated with the intervention; only a general and modest pre- to posttest increase in scores was found (from $M = 15.6$ to 17.0). However, intervention city men who refrained from unprotected anal intercourse reported in posttest surveys receiving health message conversations from peers more ($M = 6.3$ conversations) than men who still engaged in unprotected receptive anal intercourse ($M = 3.5$) or in any unprotected anal intercourse ($M = 4.8$).

Discussion

To the best of our knowledge, this constitutes the first report of an experimentally controlled study evaluating a community-level field test of an intervention for HIV risk reduction. This study found that engaging key opinion leaders popular with gay men in small cities to serve as behavior change endorsers to their peers, produced reductions in the proportion of men in the population who engaged in high-risk activities and produced concomitant, population-wide increases in precaution-taking. The magnitude of these shifts compares favorably to those commonly found following mass, community-based population intervention for other health behavior problems such as cigarette smoking and cardiovascular risk reduction. This suggests a cost-effective HIV prevention model which may be of benefit in interventions with gay men, intravenous drug users, adolescents, and other groups.

Several findings in this study were of particular interest. First, AIDS risk behavior knowledge scores were high among men in each city even before intervention, suggesting that lack of knowl-

edge about AIDS was not a critical dimension in the populations studied and that intervention methods which induce behavior change implementation and social acceptability of changes are needed. Second, while we anticipated that the intervention would alter perceptions of social norms, the norm measure did not reflect changes parallel to the population behavior shifts. Generalized changes in sexual behavior may precede peer norm changes rather than cause the initial adoption of risk reduction. In that case, elements of the intervention responsible for population behavior change may have included frequent safety prompts delivered by credible peers, conversational dissemination of suggestions for implementing precautionary changes, legitimization of making risk reduction changes by opinion leaders, or other factors.

While the study's results are highly promising, a number of cautions must be raised. We studied only men who patronized clubs and relied on self-reports of behavior. However, the geographical isolation of the study cities, the stability of club populations over time, and the function of clubs as the major social setting for gay men in these communities supports the relevance of data collection at these sites. While self-report behavior measures are essential in large-scale HIV risk behavior research, other data corroborating population behavior change—such as changes in community STD (sexually transmitted disease) incidence, condom purchasing patterns, or HIV testing requests and infection incidence—are needed to substantiate future conclusions about intervention impact. Finally, only a small number of cities were involved in this demonstration. Wider-scale clinical field trials of such experimental models in multiple cities and with larger populations are needed to establish their generalizability. □

Acknowledgments

This research was supported by grant #R01-MH42908 from the National Institute of Mental Health. The authors thank Laura J. Solomon, PhD, G. Richard Bahr, EdD, Barry G. Bradley,

and Michael Kauth, MS, for their assistance in intervention planning, and John Bebler, Dennis Tolbert, Thomas Robinson, Jr, and Rex Howe for assistance in intervention implementation in the field cities.

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ABSTRACT

Objectives. It is critical to extend community-level acquired immunodeficiency syndrome (AIDS) prevention efforts beyond education alone and to develop models that better encourage behavioral changes. Gay men in small cities are vulnerable to human immunodeficiency virus (HIV) infection due to continued high rates of risk behavior. This research introduced an intervention that trained popular people to serve as behavioral change endorsers to peers sequentially across three different cities.

Methods. Populationwide surveys were conducted of all men patronizing gay clubs in each city to establish risk behavior base rates. After a small cadre of popular "trendsetters" were identified, they received training in approaches for peer education and then contracted to communicate risk reduction recommendations and endorsements to friends. Surveys were repeated at regular intervals in all cities, with the same intervention introduced in lagged fashion across each community.

Results. Intervention consistently produced systematic reductions in the population's high-risk behavior (unprotected anal intercourse) of 15% to 29% from baseline levels, with the same pattern of effects sequentially replicated in all three cities.

Conclusions. This constitutes the first controlled, multiple-city test of an HIV prevention model targeting communities. The results support the utility of norm-changing approaches to reduce HIV risk behavior. (*Am J Public Health.* 1992;82:1483-1489)

Community AIDS/HIV Risk Reduction: The Effects of Endorsements by Popular People in Three Cities

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Introduction

Reductions in acquired immunodeficiency syndrome/human immunodeficiency virus (AIDS/HIV) high-risk practices among gay men in large cities have been attributed, in part, to evolving social norms that now discourage risky practices and advocate the adoption of precautionary measures.¹ The influential role of peer norms on HIV risk behavior patterns is further highlighted by findings that gay men who successfully reduce their high-risk practices report greater peer support for making these changes,² and by strong associations between risk behavior levels and perceptions of the social/peer acceptability of condom use.^{3,4} From a community intervention perspective, HIV primary prevention efforts could be enhanced by developing practical strategies for introducing new behavioral standards and social norms that can encourage individuals to avoid high-risk activities and adopt risk reduction precautions. To be most effective from a primary prevention perspective, however, these changes must precede rather than follow dissemination of widespread HIV infection in a risk population. Unfortunately, almost no experimental research has yet been directed to the question of how best to produce these community-level behavioral changes.

We recently reported the results of a preliminary investigation on the effect of training popular opinion leaders in the gay community of a small city to serve as behavioral change endorsers to their friends and acquaintances.⁵ That study, undertaken in a single city selected because of high rates of initial risk behavior in its gay population, found that frequency of risk practice was reduced in the population fol-

lowing intervention with key opinion leaders, lending credence to the notion that it is possible to induce risk behavior change experimentally by intervening with a socially influential subset of a population. This effect would be predicted from diffusion theory,⁶ in which "trendsetters" who endorse innovations can help to refine behavioral norms and standards. The purpose of the current investigation was to replicate, extend, and better establish the generality of this model by evaluating it sequentially in three different communities.

Method

This research was conducted from 1989 to 1991 in three small southern cities: Biloxi, Mississippi; Hattiesburg, Mississippi; and Monroe, Louisiana. These cities were selected because they constitute compact, independent environments in which it is possible to evaluate the impact of a community intervention. Each city is at least 60 miles from another of the same size or larger; each has one or two heavily patronized gay bars that attract large and

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This paper was submitted to the *Journal* August 6, 1991, and accepted with revisions June 16, 1992.

TABLE 1—Characteristics of Survey Design, of Populations Surveyed in Gay Club(s), and of Opinion Leaders Recruited in Each City

	City 1 Biloxi	City 2 Monroe	City 3 Hattiesburg
3-night baseline survey periods preceding intervention, n	2	4	4
Completed baseline surveys, n	295	355	274
3-night survey periods following intervention, n	3	2	1
Completed postintervention surveys, n	348	185	12
Men approached who completed surveys (response rate), mean %	82	82	80
Mean age, y	31.5	27.1	28.9
Race, %			
White	87	80	89
African American	6	15	7
Hispanic/other	7	5	4
Opinion leaders trained, n	31	29	15
Mean age, y	32.0	26.6	28.0
Sex, % male (female)	90 (10)	81 (19)	93 (7)
Race, %			
White	90	90	87
African American	10	3	13
Hispanic/other	0	7	0

stable crowds; and prior surveys of club patrons in each city revealed high levels of risk behavior.^{3,5} The cities have populations of under 75 000 and are demographically comparable to most other cities.⁷ No systematic HIV seroprevalence studies have been conducted in these cities, but AIDS cases are much less common here than in larger urban areas. Most gay bars in these cities had AIDS education brochures and publications that provided risk information. These materials, probably representative of the kinds of materials available in most cities' gay clubs, were present throughout the full term of the study.

The experimental design used in this investigation was a multiple baseline or sequential stepwise lagged design,⁸ in which initial baseline survey data were collected in all three cities, intervention was then conducted in the first city, surveys were repeated in all cities following the city 1 intervention, intervention was then introduced in city 2, and so on, until each city sequentially received the same intervention. This design permits a systematic comparison of pre- to postintervention risk behavior levels in each community at staggered points to control for extraneous factors that might be responsible for changes and to replicate the same intervention in the three different communities.

Population Survey Methods

To establish risk behavior levels among gay men, anonymous surveys were conducted over 3-night periods at the gay bar(s) in each city. All men entering the clubs were asked at the door, before drinking, and at individual tables to voluntarily complete a questionnaire that elicited information on sexual behavioral practices (including the number of sexual partners, occurrences of unprotected anal intercourse, and condom use during sex) over the past 2 months. Respondent perception of peer norms concerning the acceptability of safer sex practices was also assessed using five 5-point Likert scale items (sample: "Most of my friends insist on condom use during intercourse"), yielding a score ranging from 5 (social norms not favoring risk behavior avoidance) to 25 (social norms strongly favoring risk behavior avoidance). Items assessing risk behavior knowledge⁹ were included in initial surveys but were later dropped because baseline data indicated that factual knowledge about AIDS was already high in each city's population. Across all cities and all survey points, an average of 81% of all men entering the clubs completed the measures, providing a large and representative sampling of each city's population of gay men present in the clubs. Fully completed surveys were collected from 1469 respondents during the

course of the project in all three cities. Unlike clubs in large cities, which commonly reflect transient patterns among their populations, each of these small-city clubs attracted a relatively stable, non-transient local population. A check conducted between the first two baseline surveys indicated that 70% of the persons present at the second survey point had completed the first survey at a bar in the same city. Thus, the data collection method provided successive, partially overlapping cross sections of each city's gay male population. Table 1 summarizes characteristics of the population surveyed in each of the three cities.

Intervention Procedures

When intervention was introduced in a community, each bartender in that city's gay clubs was trained to observe people in the club independently over a 1-week period and to identify individuals who were most popular with gay men (e.g., those who greeted others, were greeted most often, and were sought out for advice by gay male friends). Bartenders served as judges because they were familiar with club socialization patterns. Persons receiving nominations by more than one bartender were considered to be popular opinion leaders and were recruited for training. Opinion leaders recruited in a city averaged 7% of the total number of men present in the city's club population at the initial baseline survey. Table 1 shows characteristics of the opinion leader cadre recruited in each city.

Opinion leaders attended four weekly 90-minute sessions that taught them the social skills they needed to serve as risk reduction endorsers to their peers. As we have described previously,⁵ these sessions trained the opinion leaders how to (1) correct others' misconceptions concerning AIDS risk; (2) recommend to peers the strategies needed to implement risk reduction (e.g., keeping condoms nearby if sexually active, avoiding sex when intoxicated, negotiating safety commitment in advance with a potential sexual partner, and assertively refusing unsafe sex coercions); and (3) personally endorse the benefits, importance, and social acceptability of making precautionary behavioral changes. Training was accomplished using didactic and group discussion methods, modeling of effective health promotion messages, and extensive role play. Each opinion leader contracted to have at least 14 conversations with peers; group sessions reviewed and reinforced these efforts. To stimulate conversational

opportunities further, each opinion leader agreed to wear a small button with a red, yellow, and green traffic light logo (but no text) that matched the logo of special posters placed throughout the clubs. This ambiguous logo elicited numerous questions by others and allowed participants to explain the traffic light color symbolism (high-risk, cautionary, and low-risk behavior) and to deliver additional endorsement messages taught in the sessions. Thus, the objective of the intervention was to establish a cadre of already known, trusted, and well-liked persons who were taught to endorse actively and visibly the importance and acceptability of behavioral change, as well as to convey strategies for change implementation.

Three months following completion of the intervention in the first city (Biloxi), club population surveys were repeated in all three study cities. At that point, the same intervention was introduced in the second city (Monroe), with a survey repeated 3 months later in all three communities. Finally, the intervention was replicated in the third city (Hattiesburg), with another postintervention survey conducted 3 months later across all cities. A city's survey periods were separated by 3 to 6 months. If the intervention successfully influenced a city's population, change in population behavior was expected to be detectable between each city's baseline survey points and its postintervention surveys, with a similar pattern evidenced sequentially across the other communities.⁸

Results

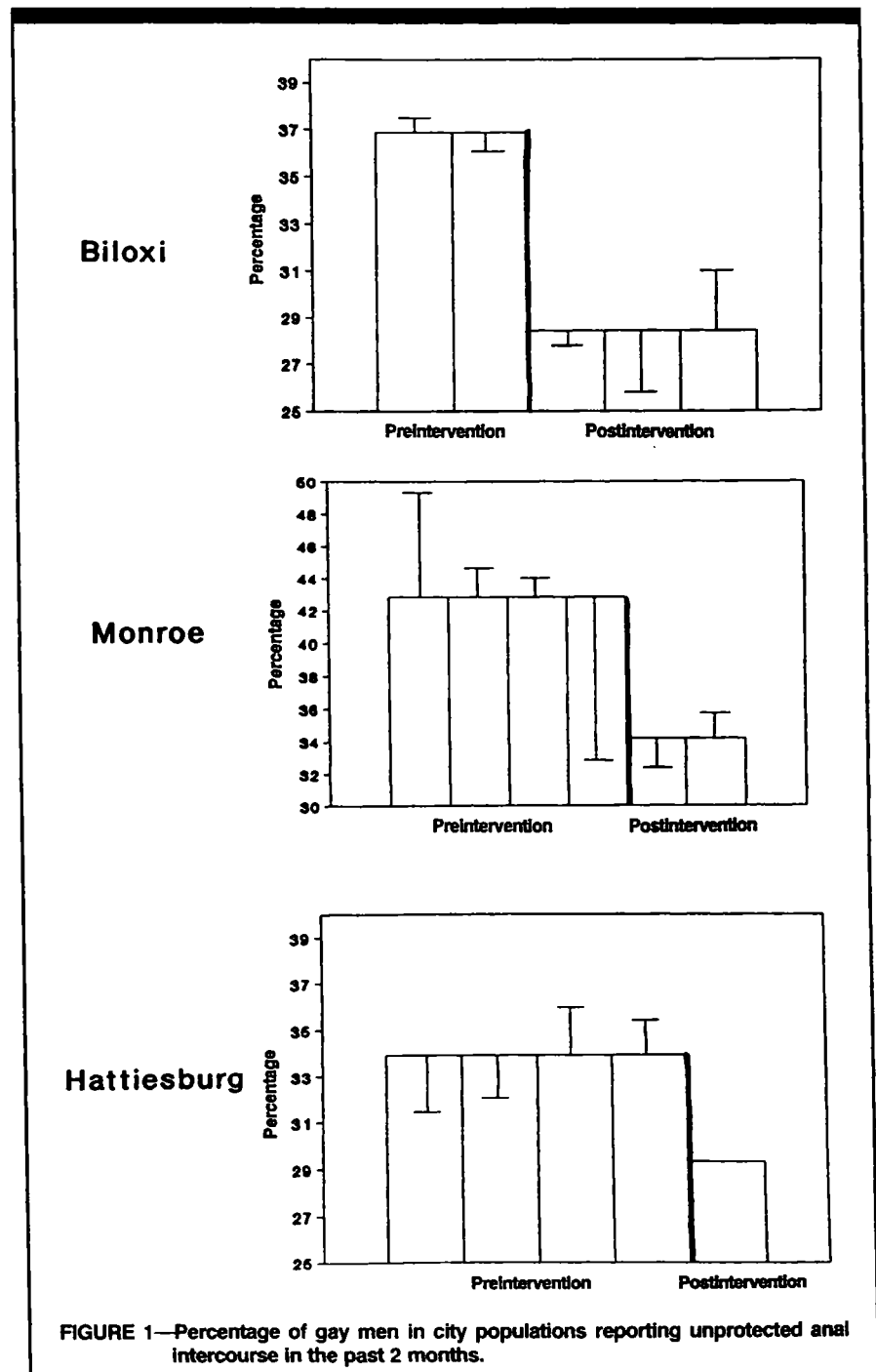
Manipulation Checks on Skill Acquisition and Behavior of Opinion Leaders

Before and after participating in the training program, opinion leaders individually role played how they would handle three situations that presented them with the opportunity to initiate conversation with a peer about AIDS risk precautions. For example, one enactment asked the opinion leader to role play what he or she would say to a friend who was sexually active and who was not believed to practice safer sex. Role plays were audiotape-recorded, after which two independent judges, who were uninformed as to the tapes' pre- or posttest status, rated the role plays for the frequency with which the opinion leader incorporated elements of effective health communication messages. Interrater agreements were high

($r = .71$ to $.90$) for elements of skill in the role plays and confirmed that opinion leaders learned to use skills such as identifying AIDS as a risk to men in that community (pre mean $[M] = 0.9$ occurrences per conversation, post $M = 1.5$ occurrences per conversation), explicitly identifying a high-risk sexual practice (pre $M = 0.0$, post $M = 0.3$), recommending a specific safer sex precaution (pre $M = 0.1$, post $M = 0.8$), personally endorsing the importance of risk reduction change (pre $M = 0.0$, post $M = 0.3$), and handling the conversation with greater

overall social skills based on 10-point Likert scale ratings (pre $M = 2.5$, post $M = 4.9$). This check confirmed that opinion leaders acquired the peer conversational effectiveness skills.

Opinion leaders also monitored the number of AIDS educational conversations they had with peers during a 17-day postintervention period. Monitoring records revealed that, for the intervention programs in all three cities, opinion leaders had an average of 6.1 peer conversations in the immediate postintervention period, confirming that the trendsetters



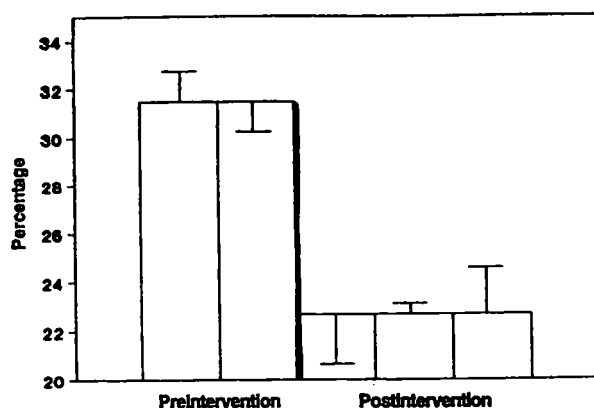
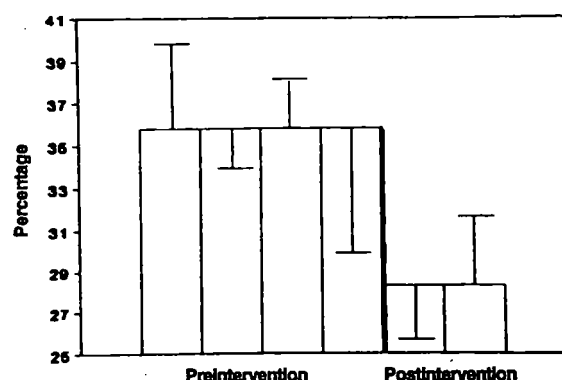
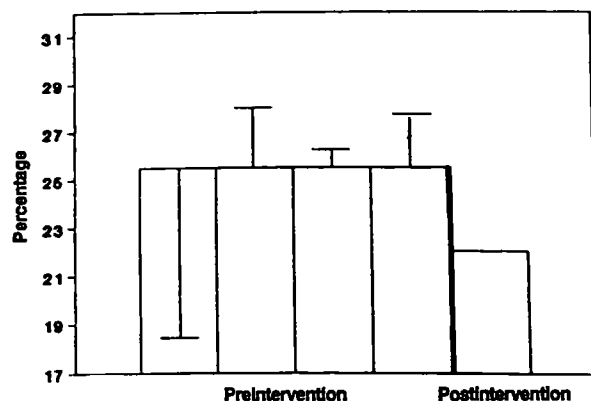
Biloxi**Monroe****Hattiesburg**

FIGURE 2—Percentage of gay men in city populations reporting insertive unprotected anal intercourse in the past 2 months.

communicated health messages to others. We believe that the actual total number of opinion leader–peer conversations was actually much higher, but we used only a brief monitoring period in which to assess compliance.

Effects of Intervention on Community Population Behavior

Figure 1 shows the percentages of men in each city who reported occurrences of unprotected anal intercourse in the 2 months before each survey point.

Because of the lagged intervention design, each city had different numbers of baseline and postintervention survey points. The figure shows the average of all baseline and of all postintervention surveys for a city (indicated by the consolidated pre- and postintervention aggregate bars), and results of each individual survey point (indicated by a hatch mark above or below the bar). As Figure 1 shows, between 31% and 49% of men reported unprotected anal intercourse during the past 2 months at baseline in the three cities. Following step-

wise introduction of the intervention, the change in the mean percentage of gay men who engaged in this high-risk behavior from mean baseline was –24% for Biloxi ($z = 2.29, P < .01$), –21% for Monroe ($z = 1.97, P < .02$), and –15% for Hattiesburg ($z = .79, P = \text{not significant [NS]}$).^a

Figures 2 and 3 show changes in the percentages of men in the surveyed populations who engaged in unprotected anal insertive and receptive intercourse, respectively. These data reflect similar shifts in population behavior from mean baseline for both insertive anal intercourse (Biloxi: –29%, $z = 2.50, P < .01$; Monroe: –22%, $z = 1.79, P < .04$; and Hattiesburg: –14%, $z = .66, P = \text{NS}$) and receptive anal intercourse (Biloxi: –26%, $z = 2.08, P < .02$; Monroe: –27%, $z = 2.11, P < .02$; and Hattiesburg: –28%, $z = 1.38, P < .08$). While there was some variability across individual survey points, which was probably due to “noise” or variability associated with the cross-sectional sampling procedure, the overall effects were detectable from the baseline to the postintervention periods in each city, confirming that the observed pattern of behavioral change resulted from the intervention.

Figure 4 shows the percentages of all anal intercourse occasions when condoms were reportedly used by population members. For both Biloxi and Monroe, increases in condom use were evident between the pre- and postintervention survey points (Biloxi: +15% from mean baseline; Monroe: +17%). In Hattiesburg, a smaller magnitude of change (+4%) was evident. However, the Hattiesburg population exhibited higher baseline rates of condom use and lower baseline rates of unprotected anal intercourse than the other two cities.

Changes in the number of sexual partners reported by survey respondents in the past 2 months were also investigated. The Biloxi population showed a reduction in men reporting more than one sexual partner from 43% at mean baseline to 37% ($z = 1.29, P < .1$), as did the Monroe population, decreasing from 41% to 33% ($z = 1.69, P < .05$), while the Hattiesburg population remained unchanged at 38%. However, in Hattiesburg, reductions were found for the percentage of

^aBinomial z-scores were calculated to test for significant changes in proportion from pooled preintervention to pooled postintervention survey points, and significance levels are for one-tailed tests.

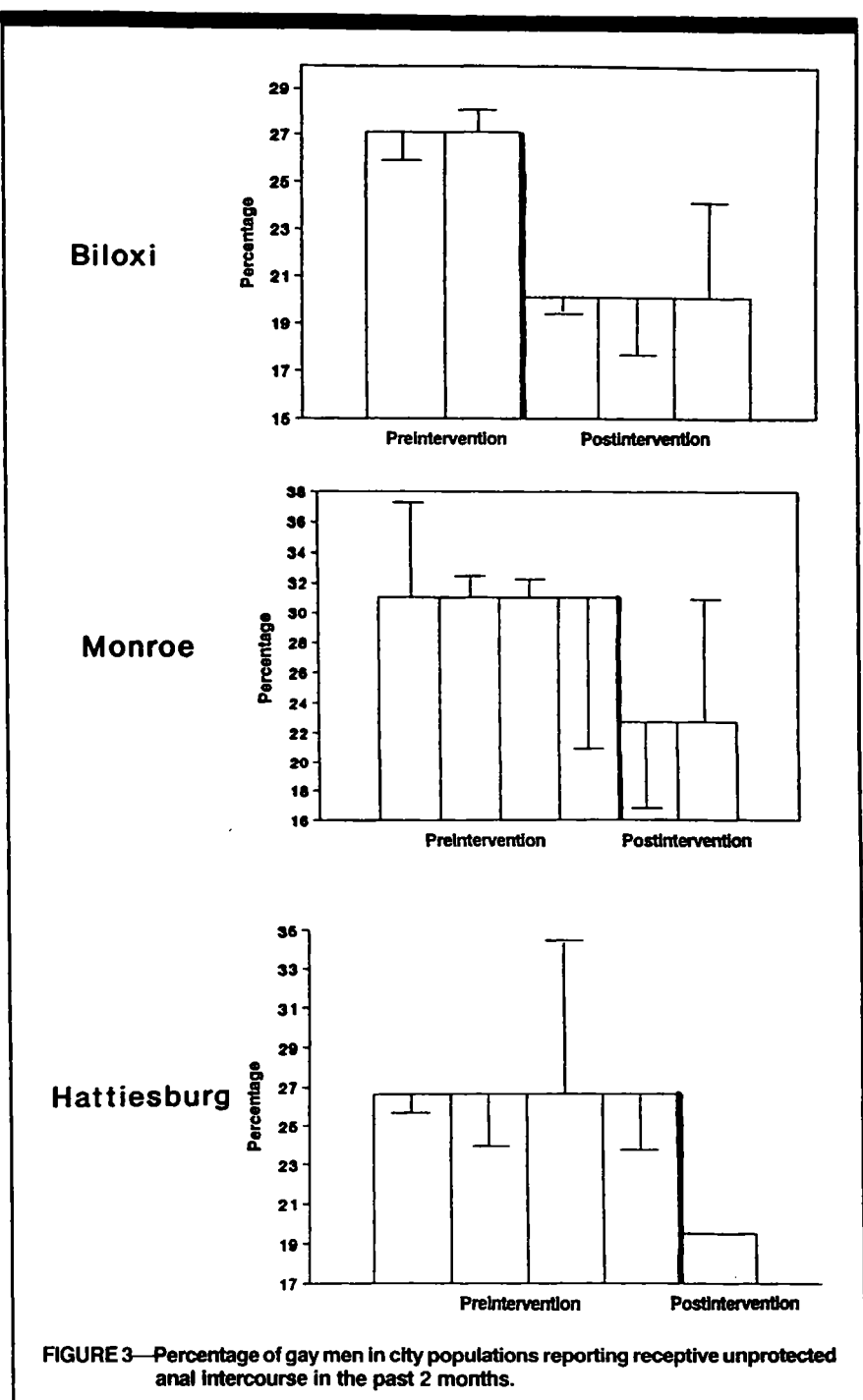
men who had unprotected anal intercourse with multiple partners (from 8% in the 2 months before baseline surveys to 4% in the 2 months before postintervention surveys) or who had unprotected receptive anal intercourse with multiple partners (from 6% at baseline to only 1% at postintervention survey points).

Change was also examined on the measure of perceived social norms concerning peer acceptance of safer sex and precautionary behaviors. There were increases in social norm perception measure scores from mean baseline survey points to mean postintervention survey points in all three cities (Biloxi pre $M = 15.88$, post $M = 16.72$, 95% confidence interval [CI] = 16.02, 16.65; Monroe pre $M = 16.49$, post $M = 17.40$, 95% CI = 16.47, 17.13; Hattiesburg pre $M = 16.56$, post $M = 17.92$, 95% CI = 16.48, 17.27). These data confirm that the intervention produced shifts among gay men in each city in the perceived social acceptability of insisting upon safer sex practices.

Finally, because the trained opinion leaders were also members of the surveyed city populations, we isolated their postintervention surveys (7% of all completed surveys) from those of the population members who were uninvolved in the training (83% of all completed surveys). We found that, at the first survey following intervention in each city, while persons who had participated in the training were less likely to report engaging in unprotected anal intercourse than the surveyed population as a whole (19% vs 39%), they did not otherwise differ in risk characteristics. (E.g., both populations reported condom use in 73% of their anal intercourse occasions.) Thus, shifts observed in population behavior were disseminated throughout each city's population and were not simply the result of changed behavior on the part of the trained opinion leaders themselves.

Discussion

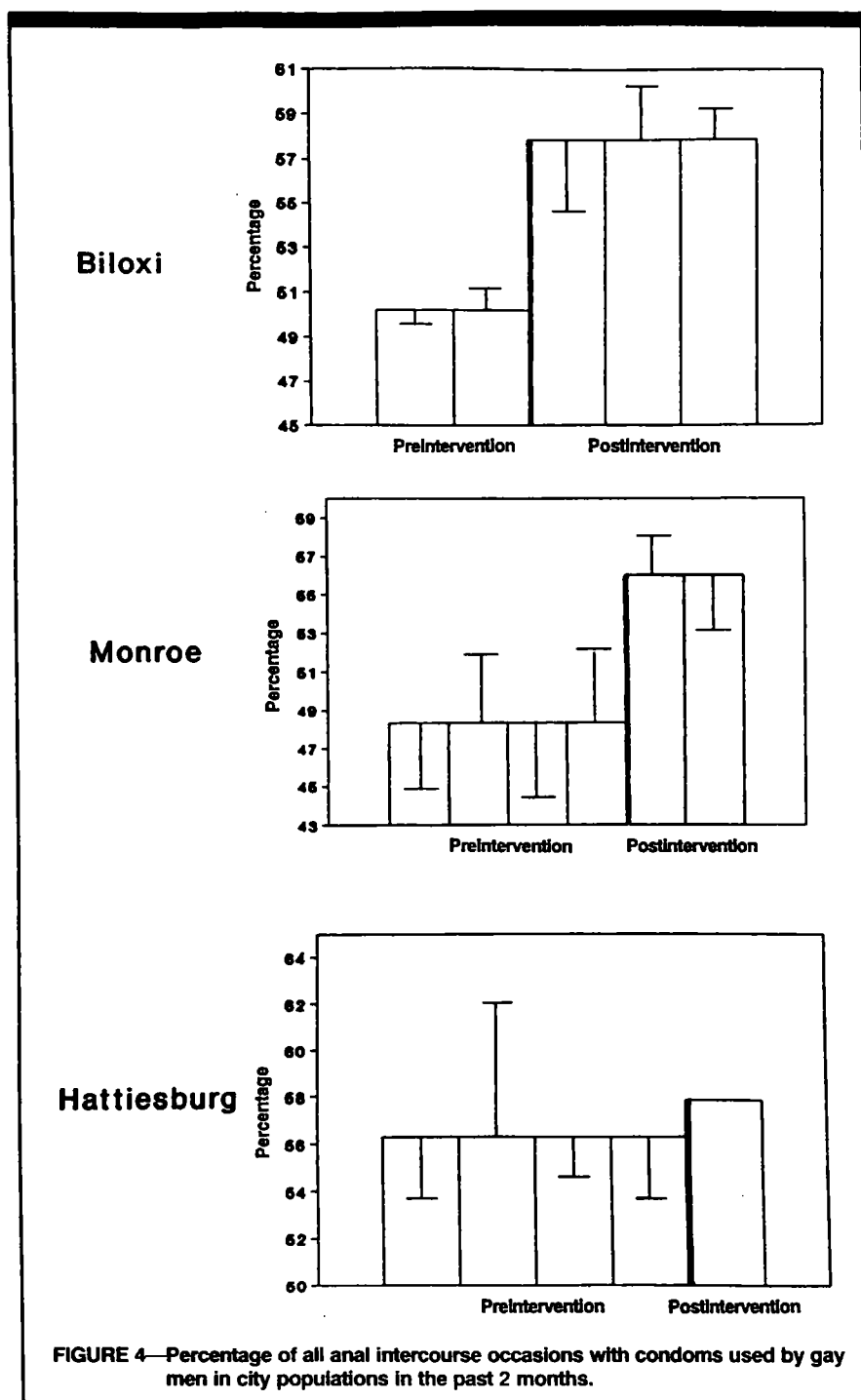
AIDS education efforts have been under way in the United States for a number of years and have increased the knowledge level of most adults concerning risk behaviors for HIV infection. There is now a need to extend community-level primary prevention to better address factors that influence whether persons *implement* the behavioral changes about which they have become knowledgeable. One strategy for doing so is to redefine behavioral norms within vulnerable populations to favor in-



creased precaution taking. If risk reduction is an expected and accepted norm within one's peer and social network, individuals will be encouraged to adopt precautionary patterns. The high levels of risk behavior initially found among gay men in these small cities substantiate the need for such an approach.

This study establishes and extends the generality of a community intervention model that was identified as promising in earlier, preliminary research.⁵ To the best of our knowledge, this constitutes the first experimentally controlled evalu-

ation of a mass-level AIDS/HIV prevention effort undertaken in multiple cities. The effects of the intervention on the primary risk behaviors of importance were quite robust for a community-level mass approach; the magnitude of behavioral change—with reductions of 15% to 29% from baseline levels for the proportion of men in a population who engaged in any unprotected anal intercourse—compares favorably with that usually found in population-based prevention programs in other public health areas. Because all of the cities' gay communities had standard,



ongoing AIDS education programs before and throughout the intervention (such as AIDS brochures and posters in bars), the effects produced by the experimental intervention exceeded what would be expected through usual "passive" education campaigns alone.

Very similar patterns were found in Biloxi and Monroe; in Hattiesburg, however, the population response was substantial in some key respects, particularly the 28% reduction in the proportion of men who engaged in any unprotected re-

ceptive anal intercourse, but not in others, such as absence of change in the number of different sexual partners. The Hattiesburg population was the youngest of the three and included many college students; this may account for the absence of change on the measure of multiple partners. However, the important qualitative change found in sexual practices—with only 1% of men reporting unprotected anal receptive intercourse with more than one partner at the postintervention survey points—underscores the impact of inter-

vention on the single behavior of greatest significance for HIV risk reduction among gay men.

As a field investigation, this study has a number of limitations, including imprecision associated with sampling a community population with repeated cross sections, inability to track the behavior of specific individuals over time, and limited strategies for distinguishing population responders from nonresponders to the intervention. Although it is possible that transients present in a city population at a specific survey point could have distorted population risk behavior levels, the predictable pattern of change across cities following sequential intervention makes this unlikely. The size of the gay community samples surveyed in these cities was relatively small. However, compactness of population was deemed necessary to identify intervention effects reliably in this initial experimental field trial. As in most HIV behavioral research, this study relied primarily on respondent self-reports of behavior. While anonymous surveying procedures were used to minimize response bias and while other studies have established the validity and reliability of similar HIV risk behavior self-report procedures,^{10,11} it will be important for future research to corroborate reported behavioral change with indices such as change in local sexually transmitted disease incidence, condom purchases, or HIV antibody test requests. The specific mechanisms responsible for the intervention effect also require further study. They may include diffusion of innovations that were modeled and endorsed by the opinion leaders,⁶ effects of having the popular people prompt their peers and advise their friends on steps for implementing behavioral change, increased salience and personalization of risk perceived by population members, or some combination of these factors. While the risk behavior shifts following the intervention were notable because they were disseminated across entire population samples, it seems evident that this form of intervention is only one of many approaches needed in a comprehensive effort to prevent AIDS/HIV.

Small-city gay men constitute a relevant population for intervention of this kind. However, this mode of intervention may prove equally applicable to other populations, including young adolescents, college students, intravenous drug users, populations in developing countries, and other communities with closely knit social influence networks. The intervention's

promising effects shown here and the cost efficiency of this intervention approach merit continued field trials with other populations. □

Acknowledgments

This research was supported by grant R01-MH42908 from the National Institute of Mental Health.

Portions of this research were presented at the Seventh International Conference on AIDS, June 16–21, 1991, in Florence, Italy.

The authors extend appreciation to Debra A. Murphy, Michael E. Andrews, Michael R. Kauth, Joseph E. Smith, Laura J. Solomon, John Biebler, Tom Robinson, and Rex Howe for their assistance.

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