

**Community-Level Prevention of  
Human Immunodeficiency Virus Infection  
Among High-Risk Populations:  
The AIDS Community Demonstration  
Projects**

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Centers for Disease Control and Prevention ..... David Satcher, M.D., Ph.D.  
*Director*

The material in this report was prepared for publication by:

National Center for HIV, STD, and  
TB Prevention (Proposed)..... Helene D. Gayle, M.D., M.P.H.  
*Director*

Division of HIV/AIDS Prevention ..... Helene D. Gayle, M.D., M.P.H.  
*Acting Director*

The production of this report as an *MMWR* serial publication was coordinated in:

Epidemiology Program Office..... Stephen B. Thacker, M.D., M.Sc.  
*Director*

Richard A. Goodman, M.D., M.P.H.  
*Editor, MMWR Series*

Scientific Information and Communications Program

*Recommendations and Reports*..... Suzanne M. Hewitt, M.P.A.  
*Managing Editor*

Nadine W. Martin  
*Project Editor*

Peter M. Jenkins  
*Visual Information Specialist*

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Single copies of this document are available from the Centers for Disease Control and Prevention, National AIDS Clearinghouse, P.O. Box 6003, Rockville, MD 20850. Telephone: (800) 458-5231.

*The following CDC staff members prepared this report:*

Carolyn A. Guenther-Grey, M.A.

Wayne D. Johnson, M.S.P.H.

Donna L. Higgins, M.S.

Martin Fishbein, Ph.D.

Robin R. Moseley, M.A.T.

*National Center for HIV, STD, and TB Prevention (Proposed)*

## **AIDS Community Demonstration Projects**

### **Participating Sites\***

#### **Dallas County Health Department, Dallas, TX**

Suzi Berman  
Anne Freeman, M.S.P.H. (Principal Investigator)  
Curtis Jackson  
Martin Krepcho, Ph.D.  
Elvin Magee, M.S.  
Jo Ann Valentine

#### **Department of Public Health, Denver Health and Hospitals, Denver, CO**

David Cohn, M.D. (Principal Investigator)  
Tim Davis, R.N.  
Franklyn Judson, M.D. (Principal Investigator)  
Steven Kane, M.S.  
Catherine Martindale, R.N.  
Janet Morgan, R.N.  
Diane Ortega  
Patrick Piper  
Cornelis Rietmeijer, M.D., M.S.P.H.  
Paul Simons

#### **Long Beach Department of Health and Human Services and Center for Behavioral Research and Services, California State University, Long Beach, CA**

Nancy Corby, Ph.D. (Principal Investigator)  
Susan Enguidanos  
Margaret Jamner, Ph.D.  
Fen Rhodes, Ph.D.  
Richard Wolitski, M.A.  
Jefferson Wood

#### **National Development and Research Institute, New York, NY**

Abu Abdul-Quader, Ph.D.  
Beatrice Krauss, Ph.D.  
Martha Sanchez  
Paul Simons  
Susan Tross, Ph.D. (Principal Investigator)

#### **Seattle-King County Department of Public Health, Seattle, WA**

Gary Goldbaum, M.D., M.P.H. (Principal Investigator)  
Karen Hartfield, M.P.H.  
Thomas Perdue  
John Wiesman, M.P.H.  
Robert Wood, M.D. (Principal Investigator)  
Tianji Yu, M.P.H.

---

\*Organization affiliations are given for the period during which staff persons collaborated on this research project and do not necessarily represent their current affiliations.

**Project Consultants****CONWAL, Inc., McLean, VA**

John Sheridan

**LTG Associates, Tacoma Park, MD**

Cathleen Crain, M.A.

Nathaniel Tashima, Ph.D.

**University of Illinois, Champaign, IL**

Martin Fishbein, Ph.D.

**University of Rhode Island, Kingston, RI**

James Prochaska, Ph.D.

**University of Texas, School of Public Health, Houston, TX**

Alfred McAlister, Ph.D.

LeaVonne Pulley, Ph.D.

# Community-Level Prevention of Human Immunodeficiency Virus Infection Among High-Risk Populations: The AIDS Community Demonstration Projects

## Summary

*The AIDS Community Demonstration Projects (ACDPs) were community-level human immunodeficiency virus-prevention programs targeting high-risk populations in five U.S. cities. For the intervention design, researchers developed a common study protocol based on behavior-change theories and models. This report describes the common study protocol used in the ACDPs, the preliminary findings, and the conclusions regarding the design, implementation, and evaluation of a community-level intervention; specific case studies from each project site are also described.*

## INTRODUCTION

The AIDS Community Demonstration Projects (ACDPs) began in 1989 as community-level human immunodeficiency virus (HIV)-intervention projects targeting high-risk, hard-to-reach groups in five U.S. cities: Dallas, Denver, Long Beach, New York City, and Seattle. All project sites, except Dallas, developed interventions for 1–3 of the following high-risk groups: street-recruited injecting-drug users (IDUs); female sex partners of male IDUs; women who trade sex for money or drugs (female sex traders); men who have sex with men (MSM) but do not self-identify as homosexual (nonhomosexually identifying MSM); and youth in high-risk situations (e.g., street youth who spend most nights away from home). The Dallas project developed interventions for persons residing in two separate census tracts that had high rates of both sexually transmitted diseases (STDs) and injecting-drug use.

The goals of this research were to determine the efficacy of a specific community-level intervention for groups considered hard to reach and, if effective, to apply the strategies used in the intervention to subsequent HIV prevention programs. The objectives of the projects were to a) increase the prevalence of consistent condom use among persons in targeted groups in all sites and b) increase the use of bleach to clean injection equipment\* among IDUs at sites directing interventions to this population. To achieve these objectives, project researchers developed a common study protocol based on behavior-change theories and models that allowed for flexibility in creating interventions for specific at-risk populations and communities in each city ( 1).

This report describes a) the common study protocol used by the ACDPs; b) preliminary data regarding community exposure to the interventions and self-reported behavior changes among targeted populations; and c) conclusions from the design and implementation of a community-level, multisite intervention designed to facilitate

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\*In 1989, because of available information and the unavailability of needle-exchange programs in the project areas, project researchers focused on the consistent use of bleach to clean injection equipment among IDUs who shared equipment.

behavior change. Case studies describing the implementation and adaptation of the protocol for a specific population or community in each city also are included (Appendix).

## STUDY PROTOCOL

Researchers from the selected project sites and CDC, as well as expert consultants, collaborated to design a common study protocol for community-level HIV prevention interventions. The protocol was based on previously designed and implemented methods (2–4). The key components of the protocol included a) use of behavior-change models and theories to design the intervention; b) formative research within the project communities before implementing the intervention; c) development of print materials (e.g., pamphlets, brochures, flyers) containing stories of persons in the targeted populations who had changed their HIV-risk behaviors (i.e., role-model stories); d) distribution of these materials with condoms and bleach kits\* by community networks; and e) use of an evaluation protocol that measured both implementation and outcome.

This protocol was systematically implemented and adapted to specific populations in each city. Implementation of the protocol varied across cities because of the unique characteristics and needs of the at-risk populations and the availability of local resources (5). The implementation and adaptation process for the ACDPs included a) defining the target population or community; b) using data from formative research to determine community characteristics, project and community resources, and community preferences for the print materials; c) recruiting community members to deliver these materials and build community support for the intervention; and d) using local data collected during the study period to develop role-model stories and intervention materials.

## Theoretical Foundation of the Intervention

The design of the ACDPs' intervention was based on published behavioral research and incorporated elements of the following behavioral theories and models: Health Belief Model (6), Theory of Reasoned Action (7), Social Cognitive Theory (8), and Stages of Change (SOC) continuum of the Transtheoretical Model (9–11). These theories and models indicate that several factors can influence a person's intentions and behaviors. Such factors include the person's a) perception of susceptibility to a given disease or illness; b) attitude toward performing the behavior; c) normative beliefs, including the perception that others in the community are also changing behaviors; d) self-efficacy, or belief that one can perform the recommended behavior under various circumstances; e) acquisition of the social and physical skills necessary to perform the behavior; and f) readiness to change behavior (12). The project interventions also encouraged behavior change by focusing the intervention messages on one or more of these underlying cognitive factors that the empirical data indicated were important in each community. The relative importance of these factors as determinants of intention and behavior was expected to vary across behaviors and populations (National Institute of Mental Health, unpublished report, 1991). Because environmental constraints can also influence attempts at behavior change, the projects sought to create

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\*Bleach kits contained instructions (usually illustrated) for using bleach and water to clean injection equipment, a small bottle of bleach, and sometimes water and alcohol pads.



an environment that facilitated the use of condoms and bleach kits by making these items readily available to persons at risk.

The SOC continuum provides a framework for understanding a person's readiness to change behavior. This continuum describes a series of steps or stages on a behavior-change continuum: a) precontemplation; b) contemplation; c) ready-for-action; d) action; and e) maintenance. At the first stage (precontemplation), an at-risk person may have no intention of changing the high-risk behavior or of adopting a given risk-reduction behavior. Any one of several events may then lead the person to form intentions to adopt the behavior in the distant future (contemplation). These intentions may be followed by an intention to adopt the behavior in the immediate or foreseeable future and may be accompanied by initial, perhaps exploratory, attempts to adopt the behavior (ready-for-action). The new behavior is then adopted (action) and ultimately becomes a routine part of the person's life (maintenance). Effective movement through these stages is assumed to be sequential, although persons may relapse at any stage and cycle back through the stages repeatedly before achieving long-term maintenance (9–11).

Based on these assumptions, an intervention designed to help persons change their behavior should first determine their stage on the SOC continuum and then help them move to subsequent stages. By identifying such immediate objectives for adopting a specific risk-reduction behavior among the at-risk populations in each city, researchers were able to target the interventions to the needs of persons in these specific communities. For example, persons who had not even thought about adopting a risk-reduction behavior received different messages to encourage behavior change than those trying to adopt that behavior.

Earlier research in the study communities had indicated that the behavioral goals of "condom use" and "cleaning of injection equipment" were too broad. For precise measurement, the behavioral goals of the intervention were defined as a) consistent condom use in four situations (vaginal intercourse with a main partner, vaginal intercourse with nonmain partners, anal intercourse with a main partner, and anal intercourse with nonmain partners) and b) consistent use of bleach to clean injection equipment. Consistent condom use was considered necessary to protect oneself from STDs, including HIV infection (13–14). In addition, condom use in each of these situations was considered a distinct behavior because the cognitive factors influencing condom use can vary by situation (e.g., intercourse with a main partner versus intercourse with a nonmain partner). For cleaning injection equipment, consistent and correct use of bleach was considered necessary for persons sharing injection equipment. Behavioral outcomes for each individual were measured along the SOC continuum from the precontemplation stage to maintenance stage (Table 1). Progress along these behavioral-change stages was considered success, although the consistent practice of risk-reduction behaviors (i.e., the action and maintenance stages) is necessary to prevent transmission of HIV.

## **Formative Research**

By implementing interventions that facilitate behavior change directly in their communities, project investigators attempted to reach at-risk persons who might not use facility-based programs. The projects defined the specific communities to receive the

**TABLE 1. Method for assigning stage of change for consistent condom use\***

Criterion	Stage of change				
	Stage 1 Pre- contemplation	Stage 2 Contemplation	Stage 3 Ready for action	Stage 4 Action	Stage 5 Maintenance
Frequency of use <sup>†</sup>	—	—	Sometimes/ almost every time	Every time	Every time
Duration of "every time" use <sup>§</sup>	—	—	—	<6 months	≥6 months
Immediate intention <sup>¶</sup>	—	—	Extremely/ quite/ slightly sure will	—	—
Future intention <sup>**</sup>	—	Extremely/ quite/ slightly sure will	Extremely/ quite/ slightly sure will	—	—

\* A person's stage of change (SOC) for condom use is assigned by starting with the criteria necessary for Maintenance, then Action, etc. This method also is used for assigning SOC for consistent use of bleach to clean injection equipment.

<sup>†</sup>Persons interviewed were asked, "When you have (vaginal/anal) intercourse with your (main/nonmain) partner, how often do you use a condom?" Respondents' choice of answers included the following: every time, almost every time, sometimes, almost never, never.

<sup>§</sup>Persons interviewed who reported using a condom every time or almost every time were asked, "How long have you been using a condom (every time/almost every time) you have (vaginal/anal) intercourse with your (main/nonmain) partner?"

<sup>¶</sup>Persons interviewed were asked, "How likely do you think it is that from now on you will use a condom every time?" Respondents' choice of answers included the following: extremely/quite/slightly sure I will, undecided, slightly/quite/extremely sure I won't.

<sup>\*\*</sup>Persons interviewed were asked, "In the next 6 months, how likely do you think it is that you will start using condoms every time?" Respondents' choice of answers included the following: extremely/quite/slightly sure I will, undecided, slightly/quite/extremely sure I won't.

interventions based on local needs. The Dallas project defined community in terms of geography and developed a community-level intervention in two separate census tracts that had high rates of STDs. The other four projects defined community in terms of specific populations at risk (e.g., IDUs or female sex traders) and developed interventions directed to those populations.

Before implementing the intervention, researchers in each project site developed a thorough knowledge base about their targeted populations that included a) the geographic areas in each city where at-risk populations congregated and where the intervention and evaluation could be conducted; b) the specific subpopulations within each at-risk population; c) the existing risk behaviors; and d) barriers (e.g., dislike of condoms, desire to become pregnant) and facilitators (e.g., belief that condoms protect against acquired immunodeficiency syndrome [AIDS]) to risk reduction among persons in the risk populations.

To collect this information, project staff in each city conducted 6 months of formative, ethnographic research (15–16). This research included interviews with health department professionals and AIDS researchers to determine their knowledge of the risk populations as well as interviews with other professionals who had contact with the targeted populations, including staff at drug-treatment and mental-health facilities, family-care services, police departments, and community-based organizations.

Using a standard protocol that was adapted to the local needs of the sites, project staff also conducted qualitative, semistructured interviews with persons identified by health department and other professionals as potential “gatekeepers” in the community. These persons often served as the link between the at-risk populations and the larger community and could be either members or nonmembers of these populations. In addition to providing additional information about the targeted populations from the perspective of persons closer to the community, the gatekeepers helped to build support for the project among community members and to facilitate access to target population members.

Project staff also initiated field observations in areas where target population members lived or gathered. These observations documented the demographics, activity patterns, and physical environment of the target population. The observations were useful in supplementing information from the individual interviews with professionals and gatekeepers, mapping potential intervention sites, establishing the visibility of project staff, and creating contacts with community members.

Through the gatekeeper interviews and field observations, project staff were able to identify persons in the at-risk populations and recruit them to participate in interviews and focus groups concerning the design and implementation of the intervention. Data obtained from these interviews and focus groups were integrated with information collected in earlier phases of the formative evaluation to provide a broader perspective of the life circumstances and HIV risk of persons in these communities.

These data also were used locally to adapt the common study protocol. Project staff in each city used the data to develop intervention materials that more appropriately addressed the attitudes, norms, barriers, and facilitators regarding risk reduction among persons in the targeted populations. Through gatekeepers and members of the target populations, project staff recruited peers and other community members to deliver and build further community support for the intervention. Data from the formative research were also used to develop evaluation instruments.

## **Print Materials**

The intervention materials were designed to facilitate behavior change; they included brochures, pamphlets, flyers, and baseball trading cards containing role-model stories (17). These stories presented first-hand accounts of persons within the target communities who had changed their behaviors. Each story described the person’s motivation for initiating or considering a behavior change, the type of change initiated, how barriers to change were overcome, and the reinforcing consequences of the change. Through the role-model stories, an at-risk person could learn to perform or begin thinking about performing the new behavior and receive positive reinforcement (8).

The role-model stories were developed from interviews with members of the target populations and communities; new stories were produced approximately once a month. Ongoing feedback from collected data guided the selection and development of new role-model stories. Stories were written to reflect the behavioral stages beyond the most common or median SOC among persons in the community. The stories highlighted the specific cognitive factors that correlated most strongly with movement to that next behavioral stage, based on the current data from that community.

In addition to the role-model stories, the written materials contained basic AIDS information, instructions on the use of condoms or bleach to clean injection equipment, biographies of community members participating in the project, notices of community events, and information on other health and social services (e.g., locations of homeless shelters or needle-exchange settings, schedules for free meals, mammogram screening, or drug- and alcohol-treatment services). By including other relevant community concerns identified from the formative and ongoing qualitative research, the investigators hoped to promote community interest in and support of the program.

Local data also were used to design the print materials that appealed to the targeted populations and reflected their culture and language. For example, in Seattle, the materials produced for nonhomosexually identifying MSM were folded so that men could discreetly store the materials in a shirt pocket. The Long Beach project developed a "Road Dogs" flyer for IDUs; the term "road dog" referred to persons, generally drug users, who associated with each other on the streets. Several of the projects recruited local persons to serve as models for photos accompanying the stories.

### **Distribution of Materials by Community Network Members**

The print materials, along with condoms and bleach kits, were distributed to persons in the at-risk populations by networks of community members. These networks were created by the projects and comprised members or peers of the target populations and "interactors," defined as merchants, community leaders, or other nonpeers who interacted regularly with the target population. Some materials also were distributed by project staff.

Network members were recruited through contact with a project outreach worker, referral from a service organization, or referral from current or former network members (18–20). Training sessions for the network members were held at each site and included the following elements: a) an introduction to the project; b) basic education about HIV infection and AIDS; c) an explanation of the role-model stories; d) a discussion of methods of street approach, nonthreatening conversation, positive reinforcement, and responding to persons who refuse materials; and e) role-playing interactions between the network members and the recipients of the materials.

During distribution of these materials, network members emphasized the role-model stories to the recipients and reinforced the social acceptability of behavior change. Peer network members who had tried to reduce their high-risk behavior were encouraged to share their personal stories and experiences with other community members.

In the second year of the intervention, the average number of peers distributing materials per month for each specific intervention varied across cities from 4 to 85. In many sites where peer networks were small, interactors were instrumental in distributing materials to the at-risk populations. Also during this period, the average number of print materials distributed per month for each specific intervention varied across cities from 800 to 6,350 (Appendix). These differences were caused by several factors, including: a) size of the distribution networks; b) number of populations at which the materials were directed; and c) estimated size of the at-risk population in each city. In addition to the print materials, thousands of condoms and bleach kits were distributed to provide the targeted populations with easy access to materials that would enable them to practice safer behaviors.

Several strategies were used to help retain network members. These included a) offering material incentives (e.g., small amounts of cash, food or movie coupons, and T-shirts or buttons with the project logo); b) providing recognition of the achievements of the network members through awards or certificates; and c) maintaining frequent contact between outreach workers and network members for encouragement and reinforcement of their roles (18,20).

Three of the project sites (Dallas, Denver, and New York) maintained storefronts either within or near the intervention neighborhoods. These served as focal points for project activities (e.g., meetings to assemble intervention materials, support-group meetings for peer network members or for HIV-infected persons, health-screening programs, and community events). Project efforts provided the community with intensive prevention messages by maximizing the size and effectiveness of the peer network, the cooperation of community businesses, and the appeal of the print materials.

## Evaluation Protocol

**Process measures.** To determine if the intervention was reaching persons in the targeted groups, project sites used the following process measures: a) records of monthly averages of the numbers of network members and distributed print materials; b) interviews with key observers and persons in the target populations regarding changes in the community; c) records of daily outreach activities; and d) in the Dallas project, unobtrusive observations of discarded condoms, bleach bottles, or print materials.

**Outcome evaluation design.** The common outcome evaluation design was linked to the underlying behavioral theory of the intervention and involved three basic elements: a) each intervention was implemented in one geographic area, while a paired area served as a comparison; b) the data-collection schedule included multiple waves of cross-sectional data collection in both areas before and after the intervention began; and c) the data-collection instrument measured a common set of behavioral and cognitive variables across all communities and survey periods. In Dallas, intervention and comparison status was assigned randomly in each of the two pairs of communities; in the other sites, status was assigned based on practical considerations (e.g., the availability of a storefront and geographic proximity). Because assignment to

intervention or comparison status was random only in Dallas, the outcome evaluation design was considered a quasi-experimental design (21).

Information from the formative evaluation process was used to identify areas that were comparable in terms of environmental conditions and the characteristics linked to the risk behaviors under study. For eight of the 10 intervention communities, a comparison community was identified in a nearby geographic area. For nonhomosexually identifying MSM in Seattle, a community in Long Beach was selected as the comparison area. Because population shifts disrupted the community that was originally selected to serve as a comparison area for the Denver intervention targeting IDUs, data from comparison areas used for the Long Beach intervention targeting IDUs were duplicated for use in the Denver project.

**Data collection instrument.** To collect data from the study populations, the project sites developed a street interview instrument\* containing questions linked to the behavioral theories underlying the intervention. At the beginning of the interview, persons were screened to determine if they were eligible for the complete interview. Respondents were eligible if they a) reported having had sexual contact in the past 30 days or having shared injection equipment in the past 60 days and b) met specific criteria regarding the particular risk population (e.g., IDUs, female sex traders) targeted for the local intervention.

The interview questions assessed the person's stage on the SOC continuum with respect to consistent use of condoms during sexual contact and consistent use of bleach when sharing injection equipment and the theoretical factors underlying these risk-reduction behaviors. Specific sexual or drug-using behaviors were defined as a) vaginal intercourse with a main partner; b) vaginal intercourse with nonmain partners; c) anal intercourse with a main partner; d) anal intercourse with nonmain partners; and e) for IDUs, sharing injection equipment. Interview questions also assessed the person's exposure to HIV/AIDS information and to the project intervention as well as other indicators of risk-reduction behaviors (e.g., carrying a condom or having been tested for HIV). No personally identifying information was collected. Because the number of persons reporting having had anal intercourse with a main partner was too small to yield statistically meaningful results, these data are not presented in this report.

**Data collection schedule.** Following a pilot period, periodic cross-sectional surveys were performed in 10 waves of data collection from February 1991 through June 1994. The timing of these waves was generally consistent across sites. In nine of the 10 pairs of communities, two waves of baseline data were collected from February through June 1991, before the intervention was implemented. Eight subsequent waves of data were collected during the development and implementation of the intervention. Each wave lasted 3–5 months and was followed by a 4–6-week period during which no data were collected. In the second pair of communities in Dallas, data collection began in August 1991 but thereafter was consistent with the other sites (Appendix).

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\*For further information regarding this instrument, contact the Behavioral Intervention Research Branch, Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention (Proposed), CDC, MS E-44, 1600 Clifton Road, N.E., Atlanta, GA 30333.

A minimum number of respondents (sampling quota) was determined for one or more of the risk behaviors for each targeted community (e.g., vaginal intercourse with a main partner for female sex partners of IDUs). Locations and times for interviewing were selected to reflect the best available information about the targeted population in each community. In most communities, persons to be interviewed were selected by tables of randomly generated numbers; when populations were sparse (e.g., non-homosexually identifying MSM), only times and locations for interview were randomized and all eligible respondents were interviewed. Similar sampling methods have been used elsewhere with other communities considered hard to reach (22).

Respondents were given small amounts of cash or food coupons for participating. Interviewers were not involved with distributing the intervention materials, although they did know which areas were receiving the intervention.

## **PRELIMINARY FINDINGS**

Preliminary assessments regarding the outcome of the intervention efforts were based on a) the respondents' reports of exposure to project materials, network members, and staff, and b) changes in self-reported behaviors across time.

### **Exposure to Project Materials, Network Members, and Staff**

Exposure to project materials, network members, and staff was measured by a series of questions at the end of the street interview. All respondents were asked to describe HIV/AIDS-related materials they had seen in the community as well as persons who had spoken to them about AIDS during the last 3 months. Interviewers recorded information on up to four occasions of exposure to materials and three occasions of interpersonal contact. Responses were coded into specific categories for exposure to various project materials, project staff, network members, storefronts, and nonproject sources. Respondents who reported any exposure to project materials or talking about AIDS with someone associated with the ACDPs were classified as exposed. Respondents reporting only nonproject sources or no sources were classified as nonexposed.

The 10 waves of data collection were summarized into four phases: baseline, start-up, early implementation, and late implementation. For seven pairs of communities, the baseline phase included two waves of data collected from February through June 1991. However, because data collection began later for the second pair of communities in Dallas, the baseline phase for this pair included only one wave of data collection from July through October 1991. In addition, because the two designated waves of baseline data collection in the Seattle comparison areas for both female sex traders and nonhomosexually identifying MSM yielded few responses, the baseline phase for these two pairs was extended by 3 months (one wave) through October 1991. Therefore, the end of the baseline phase for these two pairs of communities coincided with the schedule for the second pair of communities in Dallas. Thereafter, the phases for these three pairs are the same as for the other seven pairs.

The start-up phase ran from July 1991 (or November 1991 for the three pairs of communities previously mentioned) through May 1992 and included data from the first three (or two) waves after the intervention began. The early implementation

phase ran from June 1992 through August 1993 and included the next three data-collection waves. The late implementation phase began in September 1993 and included the two final waves of data collection.

Two methods were used to eliminate duplicate interviews. During the baseline phase, interviews were included only from respondents who reported no previous interview. During subsequent phases, interview items were added to allow exclusion of previous interviews from the same community within the same phase that matched on sex, race/ethnicity, and location and date of birth.

Exposure rates among eligible respondents ranged from 1% to 18% during the start-up phase and from 22% to 68% during the early implementation phase (Table 2). Characteristics of the populations (e.g., size, interest in the intervention, migration patterns) varied among the 10 intervention communities and are likely reflected in the proportion of respondents who indicated that they had been reached by project efforts. As of early implementation, female sex traders were most likely among respondents to report exposure to project materials and staff, and nonhomosexually identifying MSM were the least likely to report exposure. This result appears consistent with the relative accessibility and geographic mobility of these two populations. Overall, however, these data indicate that in several populations, high rates of exposure to this type of intervention can be achieved within 2 years of implementation of the intervention.

## Changes in Self-Reported Behaviors

The outcome objective of the ACDPs was to promote progress along the SOC continuum toward the goals of consistent use of condoms and bleach. The design of the ACDPs, along with the measurement of exposure in the intervention areas, enabled investigators first to compare this progress across time among intervention and comparison area respondents (intervention effect) and then to determine cross-sectionally whether intervention-area respondents who reported direct project exposure were at a more advanced stage on the SOC continuum than intervention-area respondents who did not (exposure effect).

General linear models were used both to evaluate the statistical significance of the intervention and exposure effects and to calculate adjusted mean SOC values for each

**TABLE 2. Intervention exposure by city, intervention community, and phase**

City	Intervention community	Start-up exposure rates	Early implementation exposure rates
Dallas	Two census tracts	33/329 = 10%	109/352 = 31%
Denver	IDUs*	4/307 = 1%	48/217 = 22%
Long Beach	IDUs	25/326 = 8%	168/305 = 55%
	Female sex traders	26/322 = 8%	187/274 = 68%
	Female sex partners of male IDUs	10/135 = 7%	55/121 = 45%
New York City	Female sex partners of male IDUs	32/176 = 18%	80/174 = 46%
Seattle	Nonhomosexually identifying men who have sex with men	2/77 = 3%	24/108 = 22%
	Female sex traders	23/125 = 18%	79/217 = 36%
	Street youth	32/214 = 15%	50/202 = 25%

\*Injecting-drug users.



phase (23). Analyses are presented briefly for four behaviors: consistent condom use for vaginal intercourse with a main partner, consistent condom use for vaginal intercourse with nonmain partners, consistent condom use for anal intercourse with nonmain partners, and consistent use of bleach by IDUs to clean injection equipment.

Behavioral outcomes for each respondent were measured along the SOC continuum; stages were coded from 1 (precontemplation) to 5 (maintenance) (Table 1). Independent variables used in these analyses included the following: a) time; b) interview area (intervention or comparison); and c) exposure to the project intervention. Analyses were stratified by city, type of community, sex, race or ethnicity, and age.

**Consistent condom use for vaginal intercourse with a main partner.** During the first three phases of the study, 6,754 respondents reported vaginal intercourse with a main partner. More than half (n=3,884 [58%]) of the respondents were female, the largest subgroup of whom comprised sex partners of IDUs (n=1,541 [40%]). Among the 2,870 male respondents, approximately half were IDUs (n=1,382 [48%]). At baseline, the mean SOC value among intervention-area respondents (1.60) was similar to that among comparison-area respondents (1.57). These low values correspond to a high proportion of respondents in the precontemplation stage for this behavior (72% in both the intervention and comparison areas). Among intervention-area respondents who reported having had vaginal intercourse with a main partner in the past 30 days, 10.6% reported exposure to the project intervention during the start-up phase and 40.7% at the early implementation phase. As of early implementation, the mean SOC value among intervention-area respondents (2.02) was higher than that among comparison-area respondents (1.87). Although data indicated more progress toward consistent condom use in the intervention areas were more likely to consistently use condoms than in the comparison areas, the intervention effect was not significant. At the same time, however, the mean SOC value among intervention-area respondents who recalled exposure to project material (2.10) was significantly higher than that among persons in the intervention areas who did not recall exposure (1.96) (exposure effect,  $p<0.05$ ).

**Consistent condom use for vaginal intercourse with nonmain partners.** Vaginal intercourse with nonmain partners was reported by 5,532 respondents. Respondents were almost evenly divided between women (n=2,770 [50%]) and men (n=2,762 [50%]). Most male respondents were IDUs (n=1,410 [51%]), and most female respondents were sex traders (n=2,075 [75%]). At baseline, the mean SOC values were similar: 2.78 for intervention-area respondents and 2.74 for comparison-area respondents. Among intervention-area respondents who reported having had vaginal intercourse with nonmain partners during the previous 30 days, 9.0% reported project exposure during the start-up phase and 42.9% at early implementation. As of early implementation, the mean SOC value for this behavior had increased to 3.08 among intervention-area respondents, compared with 2.85 among comparison-area respondents, representing a statistically significant intervention effect for vaginal intercourse with nonmain partners ( $p<0.05$ ). These results correspond to a 43.9% increase (from 23.0% to 33.1%) in the proportion of intervention-area respondents in the action or maintenance stages (always using condoms). In contrast, this proportion decreased slightly among respondents in the comparison areas. During the early implementation phase, the mean

SOC value among intervention-area respondents reporting exposure to the project intervention (3.36) was higher than that for those reporting no exposure (2.87). A much higher proportion of exposed respondents (41.3%) than of nonexposed respondents (27.1%) reporting consistent condom use (action or maintenance stage) contributes to this highly significant exposure effect ( $p < 0.001$ ).

**Consistent condom use for anal intercourse with nonmain partners.** Most (82%) of the 986 respondents who reported having had anal intercourse with nonmain partners were men ( $n=810$ ), of whom 368 (45%) were nonhomosexually identifying MSM. Of the 176 female respondents, 72% were sex traders. Mean SOC values increased from 2.78 to 3.00 among comparison-area respondents but from 2.64 to 3.15 among intervention-area respondents. Although this increase was greater among respondents in the intervention areas than among those in the comparison areas, the difference did not reach statistical significance. However, at early implementation, the average SOC value of 3.78 among intervention-area respondents who recalled exposure to the project materials was significantly higher than the SOC value of 2.86 among the nonexposed group (exposure effect,  $p < 0.001$ ). In the intervention areas, 58% of respondents who were exposed to the project reported consistent condom use for anal intercourse compared with 27% of respondents who were not exposed to the intervention.

**Consistent use of bleach to clean injection equipment.** Of the 3,441 IDUs responding to questions regarding consistent use of bleach to clean injection equipment, approximately two thirds (2,317) were male. At the early implementation phase, almost half (45.6%) of the intervention-area respondents recalled exposure to the intervention. The mean SOC value for this behavior decreased from 2.65 to 2.51 among comparison-area respondents, but increased from 2.94 to 3.12 among respondents in the intervention areas (intervention effect,  $p = 0.002$ ). As of early implementation, the mean SOC value among intervention-area respondents who recalled exposure to the project (3.33) was significantly higher than that for the nonexposed group (2.95) (exposure effect,  $p = 0.001$ ).

## Summary and Limitations of Findings

For each of these four behaviors, the mean SOC value among persons in the intervention areas who reported exposure to the project intervention was greater than the mean SOC value among those who did not report exposure. For two of the behaviors (consistent condom use for vaginal intercourse with nonmain partners and consistent use of bleach by IDUs to clean injection equipment), a statistically significant divergence across the first three phases of the study was observed between all intervention-area respondents (including those who were not exposed to the intervention) when contrasted with respondents in the comparison areas.

Although the above analyses include adjustments for demographics, city, and type of community, they represent only an overview of the results of the various projects. The intervention and exposure effects may vary among sites and target populations.

Estimates of the project effects for some behaviors may be conservative because all respondents were included in the above analyses, regardless of whether the re-

ported behavior was targeted by the intervention for a specific population. For example, most intervention efforts directed toward nonhomosexually identifying MSM involved condom use for both vaginal intercourse with a main partner and anal intercourse with nonmain partners because these were the most frequently reported behaviors. However, men in this population who reported either vaginal intercourse with nonmain partners or sharing injection equipment were interviewed regarding condom or bleach use during these behaviors and were included in these analyses. Similarly, although intervention messages for most populations did not address consistent condom use for anal intercourse with nonmain partners, all respondents who reported having had anal intercourse with nonmain partners were included in the analysis.

Persons who are at a higher stage on the SOC continuum may be more likely to seek information on preventive behaviors (selective exposure) or to remember and report project exposure (selective recall); this possibility should be considered when evaluating the extent and influence of community-level interventions (24–25). However, the trend across time for each of the four behaviors was positive, even among *nonexposed* respondents in the intervention areas. Furthermore, this trend was greater than that observed among respondents in the comparison areas for three of the four behaviors. These results do not reveal any substantial influence of selective exposure or selective recall on the apparent exposure effect.

Several methodological issues should be considered when making inferences from this research. First, the cities and geographic areas within each city where this research was conducted were chosen based on access to persons in at-risk populations and applicants' ability to follow a common study protocol. The study samples of persons at each site were used only to make inferences about changes in the study communities from which they were drawn; the study communities were not assumed to be a representative sample of a larger set of communities or populations at risk for HIV infection. Therefore, findings from the ACDPs should be viewed as indicative of what *can* occur with this type of community-level behavioral intervention. Data-collection methods did not include probability sampling to achieve a representative sample of the at-risk populations in the study communities. However, devices such as random number lists and minimal visual screening by interviewers were used to reduce some selection bias.

Finally, the private nature of sexual activity and drug use requires that this study rely on self-reported data for the primary outcome measures. However, externally measurable outcomes (e.g., carrying condoms) also were assessed and showed similar results.

## CONCLUSIONS

The preliminary findings indicate that many persons who are at high risk for either sexually transmitted or needle-borne infections can be favorably influenced toward consistent risk-reducing behaviors through a community-level intervention. However, to maximize the influence of the intervention, efforts should be made to expose as many persons as possible in the intervention communities to the specific prevention messages. For each behavior, persons in the intervention areas who were exposed to the project intervention were more likely to be at a more advanced point on the SOC

continuum than those who were not exposed. However, exposure levels of at least 20% were not reached in the project sites until approximately 1 year after the start-up phase began. Therefore, sufficient time should be allowed to establish a minimum level of exposure to the intervention among community members. In addition, because behavior change takes time and often occurs in discrete steps, use of the SOC continuum to examine these steps allows for documentation of important changes that could be overlooked if behavior were assessed as a dichotomous variable only.

As HIV-prevention programs shift toward a model of comprehensive intervention strategies, the potential contribution of a community-level component should be considered. Based on experience with this study protocol (Appendix), the following suggestions should be considered when designing and implementing a community-level HIV-prevention intervention targeted toward at-risk populations traditionally considered hard to reach:

- **Before implementing an intervention, health departments and other agencies should develop a thorough understanding of the target population.** For the ACDPs, a health department was the lead agency in implementing the intervention in three of the five cities. Initially, project staff had little or no experience in conducting a community-level street intervention. The project sites needed to conduct formative research on the targeted risk groups as well as their communities. Formative research in the communities participating in the ACDPs was useful to identify the following: a) the behaviors that contributed to risk for HIV infection; b) the geographic areas that could serve as access points for the intervention and for evaluation interviews; c) subgroups within the risk groups; d) the attitudes, norms, barriers, and facilitators regarding risk reduction among persons in the risk groups; and e) potential community partners.
- **Concepts from behavioral theories and models should be used to develop and guide prevention activities (26–28).** Important concepts from several behavioral science theories and models were integrated to form a framework for the ACDPs prevention activities. These concepts provided a basis for the specific prevention strategies used in the projects. For example, role-model stories were used to illustrate important determinants of intention and behavior change such as perceived norms and attitudes (7) or self-efficacy regarding condom use (8) in a way that was relevant to the target audience. In addition, the SOC continuum was used both to tailor intervention messages and to assess progress toward behavior change among participants.
- **An intervention protocol should be designed to allow for adaptation to different populations and communities.** Although the ACDPs adhered to a common study protocol, each project was able to tailor the interventions to the specific targeted populations and to the environmental conditions in each city.
- **Ongoing qualitative research should be used to ensure that the intervention responds to changes in the community.** After the project interventions began, the environment of the project sites continued to change. The information obtained through qualitative research enabled the project researchers to continue to appropriately tailor their interventions throughout the 3-year intervention period and provided insights regarding the effectiveness of the intervention.

- **Persons within the communities should be recruited to deliver intervention messages.** Although the specific methods and relative success of the ACDPs differed, each project established a peer network and recruited a cadre of interactors (except New York, which sought to establish a peer network only). These networks enabled the interventions of the projects to reach greater numbers of persons and appeared to encourage behavior change among community members. Although network members received instruction in a core set of practices, the extent to which they assumed different roles in the intervention effort was determined by their personal strengths, beliefs, and level of comfort regarding their role in the intervention. The intervention strategy also encouraged community involvement with the project and enabled participants to acquire skills for helping others in their communities. To retain network members, project staff used both monetary and nonmonetary incentives.
- **Community-level HIV prevention interventions should be used to reach less accessible populations at risk for HIV infection.** One of the primary goals of these projects was to target HIV-prevention interventions to at-risk populations who were not necessarily participating in established, facility-based prevention programs (29). The community-level activities were meant to initiate change in the community norms regarding protective behaviors to provide a more supportive environment for consistent condom and bleach use among community members. The research and prevention approach was designed to be as sensitive as possible to the populations concerned, mainly relying on the participation of persons who were part of that population (peers). Because the intervention was implemented in the environment of persons at risk for HIV infection, it could provide constant cues for adopting preventive behaviors.

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## Appendix: Implementation and Adaptation of the Common Study Protocol

The following case studies describe the process of implementing and adapting the common study protocol used in the AIDS Community Demonstration Projects (ACDPs) for a different population in each city. These case studies summarize project activities that took place from July 1991 through August 1993 and present the following information for each site: a) the defined population or community at which the intervention was directed; b) specific data-collection procedures at each project site; c) demographic and other characteristics of the study community at baseline; d) a description of intervention activities in that community; and e) exposure of community members to the intervention as of the early implementation phase.

### Case Study #1: Dallas

Four Dallas County census tracts with high rates of syphilis and gonorrhea served as the intervention and comparison areas for the project. The census tracts were grouped into two pairs based on their physical proximity; within each pair, the census tracts were randomly assigned to intervention or comparison status. The selected communities primarily comprised persons residing in low socioeconomic neighborhoods, with both federally subsidized and public housing.

Based on ethnographic data, three sites in each census tract were selected as data-collection points. Interviewers visited data-collection sites according to a randomly determined schedule; at the sites, interviewers followed a prespecified route and used a list of randomly ordered numbers to determine which persons to approach for interview. Persons who completed either the initial or the full street interview received a coupon for food or beverage from a business within the community.

Demographic data from the baseline phase indicated that respondents in the intervention and comparison areas were similar. In both areas, most respondents were men (78% in the intervention areas and 79% in comparison areas) and most were black (95% in intervention areas and 83% in comparison areas). The average age of respondents was 34 years in the comparison areas and 36 years in the intervention areas.

Mean assessments for behavioral stage of change (SOC) at baseline indicated that the mean response in both intervention and comparison areas was between the pre-contemplation and contemplation stages for consistent condom use for vaginal intercourse with a main partner but between the contemplation and ready-for-action stages for consistent condom use for vaginal intercourse with nonmain partners. The mean SOC for consistent condom use for anal intercourse with nonmain partners also was between the contemplation and ready-for-action stages in both areas (though slightly higher in the comparison area). For consistent use of bleach to clean injection equipment among injecting drug users (IDUs), the mean SOC was above the contemplation stage in both areas.

The Dallas project, known locally as the "AIDS Prevention Project," employed four full-time workers and one half-time worker who recruited, trained, and maintained networks of community members in both intervention areas. The average size of the

adult population ( $\geq 18$  years of age) in the intervention areas was approximately 5,300 persons. Intervention materials were distributed to any person  $\geq 16$  years of age encountered in the streets, at storefronts, or at interactor sites. The intervention strategy involved the diffusion of prevention materials into the community through the project's networks and through the social networks within these communities. During the start-up phase, an average of 25 network members per month distributed materials. This number increased to 46 in the early implementation phase. Each network member made an average of 53 contacts per month (range 1–80) during which they distributed the intervention materials and encouraged the use of condoms (and bleach among IDUs) to protect against HIV infection. Several local businesses also distributed the intervention materials.

Within each of the communities receiving the intervention, network members and project outreach workers managed a project storefront. Local residents visited the storefronts to learn about HIV prevention; obtain print materials, condoms, and bleach kits;\* and receive other services (e.g., blood-pressure screening and education on other health issues).

Training of new network members and updates for long-term network members were held monthly at the storefronts. Some individual training was conducted to accommodate the network members' schedules. Tangible incentives (e.g., baseball caps and tote bags with the project logo, coupons for local businesses, and certificates of participation) were given periodically to network members.

The print materials consisted of quarterly and later monthly newsletters known as the *Neighborhood Voice* and *West Dallas Today*, which contained role-model stories, coupons, and relevant community information. The newsletters were distributed along with condoms and bleach kits by the project networks. Between the start-up and early implementation phases, the average number of materials distributed per month increased from 922 to 2,454.

Qualitative interviews, observation, and exposure data indicated that the intervention was both visible by and popular with community residents. For example, events sponsored by the project (e.g., a commemoration of World AIDS Day and the broadcast of a popular local minority talk show) were attended by up to 100 persons. By the early implementation phase, 31% of respondents in the two intervention areas reported exposure to the intervention.

## Case Study #2: Denver

In Denver, one intervention was targeted to IDUs residing in two predominantly black-populated areas on the east side of Denver and one predominantly Hispanic-populated area on the west side. One of the areas is the oldest community of blacks in Denver and included two taverns that are alleged distribution points for heroin and crack cocaine. The other two locations included large public-housing areas.

Because migration among IDUs in Denver precluded the use of a comparison area within the city, a comparison area was identified in Dallas. However, changes in this area during the start-up phase led to a sharp decline in the number of IDUs available for interviews; therefore, the comparison area for the Long Beach intervention targeting IDUs also was used for the comparison area for Denver.

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\*Bleach kits contained instructions (usually illustrated) for using bleach and water to clean injection equipment, a small bottle of bleach, and sometimes water and alcohol pads.



Interviewing teams visited nine data-collection locations following a randomly determined schedule. The interviewers followed prespecified routes and used a list of randomly ordered numbers to determine which persons to approach for interview. Persons completing a full questionnaire were given the equivalent of \$10 in nonmonetary incentives. To be eligible for the interview, a person must have injected drugs within the past 30 days and either had vaginal or anal intercourse during the past 30 days or shared injection equipment within the past 60 days.

At baseline, the racial/ethnic composition of Denver respondents was 55% white, 29% black, and 14% Hispanic. For the Long Beach comparison sample, this composition was different: 48% of the respondents were black, 26% Hispanic, and 23% white. In both areas, most respondents were male (89% in Denver; 79% in Long Beach); the mean age of respondents was 35 years for Denver and 39 years in Long Beach.

The mean SOC for consistent condom use for vaginal intercourse with a main partner was between the precontemplation and contemplation stages in both Denver and Long Beach. The mean SOC for consistent condom use for vaginal intercourse with nonmain partners was slightly below the contemplation stage in Denver and slightly above the contemplation stage in Long Beach. In both cities, the mean SOC for consistent use of bleach to clean injection equipment was between the contemplation and ready-for-action stages. The mean SOC for consistent condom use for anal intercourse with nonmain partners was above the contemplation stage in Denver and between the precontemplation and contemplation stages in Long Beach.

The Denver intervention for IDUs was known locally as "Project REACH." Two community networks were formed to distribute intervention materials: a peer network consisting of past or current IDUs and an interactor network comprising persons from local businesses or social service agencies. Three full-time Project REACH staff recruited network members and supplied them with intervention materials. They also regularly monitored project areas and visited taverns, community centers, and other places frequented by IDUs. During the start-up phase of the project, the recruitment of peer-network members was more successful on the west side. To increase the project's visibility on the east side, a storefront was opened at the center of one of the intervention areas in April 1993 (early implementation phase). The location of this facility enhanced the project's ability to recruit peer-network members in this area and provided a convenient place for peer-network training and focus-group meetings.

Peer-network training was held monthly for persons who were recruited to join Project REACH. Project staff contacted peer-network members either weekly or bi-weekly and paid them \$5 for each week during which they distributed materials.

The project newsletter, *Reaching Out*, was produced biweekly and contained role-model stories and relevant community information. The newsletter was distributed along with condoms and bleach kits. The average number of peer-network members distributing materials per month increased from 12 during the start-up phase to 30 during the early implementation phase. However, to enable project staff to focus on recruiting peer-network members, the interactor network was downsized during this period from 26 to 17. Together, the peer and interactor networks distributed an average of 969 print materials monthly during the start-up phase; this increased to an average of 1,216 materials distributed monthly in the early implementation phase.

By the early implementation phase, 22% of IDUs interviewed in the intervention area reported exposure to the intervention. As the project storefront gained visibility

in the community, the peer network grew more rapidly. During the late implementation phase, the peer network included as many as 200 persons who distributed an average of >5,000 materials per month. Preliminary data from the late implementation phase indicate that exposure to the intervention continued to increase among respondents.

### **Case Study #3: Long Beach**

The Long Beach project was targeted to three populations: women who trade sex for money or drugs (female sex traders), IDUs, and female sex partners of male IDUs. This case study focuses primarily on intervention activities for female sex traders.

The intervention was purposefully assigned to an area comprising seven contiguous census tracts covering 2.3 square miles in the central part of the city. This area was chosen because of its high prevalence of drug abuse and prostitution. Comparison data were collected at sites located in other areas of Long Beach and in two nearby communities.

Data-collection sites in the intervention and comparison areas were matched by using data collected during the formative research; interviews were conducted in 126 sites. Interviewers visited data-collection sites following a randomly constructed schedule. They remained at a given location for a short time, collecting a maximum of six interviews during a visit. Women who completed only the initial screening part of the interview received two food coupons (worth \$1 each); those who completed the full street interview received \$5 in cash. A woman was considered to be a sex trader if she reported a) having exchanged sex for money or drugs in the past 30 days; b) having had at least one nonmain male sex partner in the past 30 days; c) being  $\geq 18$  years old; and d) having had vaginal intercourse in the past 30 days.

Baseline data indicated that the average age of female sex traders was 31 years among respondents in the intervention area and 33 years among those in the comparison area. The racial/ethnic distribution of the respondents in the two areas also was similar. In both areas, more than 60% of respondents were black; however, whites comprised a higher proportion of respondents in the intervention area (22%) compared with the comparison area (11%). In addition, 8% of intervention-area respondents were Hispanic, compared with 16% of respondents in the comparison areas.

Among female sex trader respondents in both intervention and comparison areas at baseline, the mean SOC for consistent condom use for vaginal intercourse with a main partner was between the precontemplation and contemplation stages, whereas the mean SOC for consistent condom use for vaginal intercourse with nonmain partners was between the ready-for-action and action stages. Among female sex traders who reported injecting drugs, the mean SOC for consistent use of bleach to clean injection equipment also was higher in the intervention area (above the ready-for-action stage) than in the comparison area (between contemplation and ready-for-action stages).

In Long Beach, the prevention activities were known collectively as "Road Dogs," a term that referred to persons, generally drug users, who associated with each other on the streets. Two different intervention packets were developed for distribution to the three target populations. One packet, designed for high-risk women encountered,

contained a *For Women Only* flyer, five condoms, and instructions for correct condom use. The other packet, directed to both male and female IDUs (many of whom were also sex traders), contained a *Road Dogs* flyer, a 1-oz. bottle of household bleach (labeled with instructions for its use in disinfecting injection equipment), condoms (and instructions), and three alcohol wipes. Because approximately 37% of the female sex traders reported having injected drugs in the past 6 months, this population was given both packets.

In accordance with the study protocol, each flyer contained factual stories of members of the target population who had successfully overcome personal barriers to lowering their risk for HIV infection. Feedback from the network members and target population members indicated that the stories were relevant to the situations and circumstances in which persons often found themselves. Anecdotal data suggested that the women were interested in the stories, particularly those featuring a person they knew or that portrayed provocative situations. Flyers also contained local health-services referral information, word games, and cartoons.

Materials were distributed by target-population peers and through local businesses (e.g., motels and liquor stores) that served members of the target population. Peer-network members directed the target population's attention to the role-model stories and reinforced acceptance of and interest in the materials. Many of the peer-network members were sex traders themselves. Other network members interacted with members of the target populations through familial, social, or business relationships. Network members received a monthly nonmonetary incentive (e.g., a candy-filled mug, a T-shirt with the project logo, or food coupons).

Records were kept on the number of network members and the number of materials distributed for all three populations. In the start-up phase, an average of 21 peer network members and 10 businesses distributed approximately 2,108 materials per month to the three target populations, including female sex traders. By the early implementation phase, an average of 85 persons and 12 businesses distributed an average of 6,357 flyers per month to the three populations. The number of materials distributed by the peer network members and the participating businesses exceeded the number of materials that the outreach staff could have distributed on their own.

By the early implementation phase, 68% of female sex traders interviewed in the intervention area reported exposure to the intervention. These data suggest that even before the late implementation phase, exposure to the intervention was high among this population.

### **Case Study #4: New York City**

In New York City, female sex partners of male IDUs were targeted for the project intervention. The intervention area was a public-housing development in the Lower East Side of Manhattan. Approximately half of the 4,798 residents were adult or adolescent women. A second public-housing development located within six blocks served as the comparison area. This area was chosen for the intervention because during the formative research, respondents indicated that one of the public-housing areas was more crime-ridden than the other and abutted a major drug-dealing section of the city.

Interviewers visited data-collection locations in the intervention and comparison areas following a computer-generated schedule that was based on the buildings in each housing development, day of the week, and time of day. One of a team of female interviewers who spoke both Spanish and English approached every fifth woman the team encountered in the lobbies, courtyards, or other public spaces of the designated building. Participants received \$3 for completing the initial screening interview and \$20 for completing the full street interview.

A woman was eligible for interview as a female sex partner of an IDU if she reported a) having had a main male sex partner whom she knew or suspected to have injected drugs during the past 5 years; b) having had an active sexual relationship with this partner within the past 30 days; and c) not having injected drugs or traded sex for money, drugs, or other rewards within the past 30 days.

Among female sex partners of IDUs who were interviewed at baseline in the intervention areas, the average age was 32 years; by race/ethnicity, 78% were Hispanic and 19% were black. Similar demographic information was found for respondents in the comparison areas (average age 33 years, 79% Hispanic, 18% black). The mean SOC for consistent condom use for vaginal intercourse with a main partner was similar in both areas at slightly below the contemplation stage. In both the intervention and comparison areas, few women reported having had vaginal or anal intercourse with nonmain partners.

Women who lived in the housing project were recruited to distribute newsletters (businesses were not recruited). This peer network called themselves "compañeras," which translates to mean friend or comrade and signifies solidarity. Each weekday, compañeras disseminated the *Compañera Newsletter* in 2–3 shifts; each compañera distributed approximately 20 newsletters per shift. The compañeras were asked to distribute newsletters during at least one shift each month but could distribute materials as often as one shift per day. The monthly newsletter contained two culturally specific role-model stories of women from the Lower East Side. These stories depicted the factors that inhibited or facilitated consistent condom use with a male partner. Condoms were attached to the newsletters.

Compañeras were recruited by veteran compañeras while they were distributing brochures, through street recruitment by veteran compañeras or project staff, and by referrals from staff of different neighborhood agencies who had clients who lived in the intervention housing project. Women who were recruited attended a storefront orientation party to learn about the program. After completing the training, each woman received a \$20 honorarium, a certificate of completion, the offer of ongoing information about job opportunities, and a letter of reference if needed in the future. Compañeras were also asked to sign up for 4 hours of outreach and print-material distribution per month; after each of these sessions, they were interviewed about the outcome and paid \$5.

Several incentives helped to sustain the compañera's ongoing participation in the outreach and distribution activities. Incentives were intended to provide both material and nonmaterial rewards and to minimize practical barriers to compañera activities. Incentives included a) weekly support-group meetings; b) weekly debriefing interviews; c) special events such as barbecues and holiday parties for compañeras and their families; d) weekly telephone reminders to compañeras; e) provision of child care

during storefront meetings and interviews; and f) refreshments and donated gifts (for compañeras and their families) at holidays.

During the start-up period, an average of 13 compañeras distributed approximately 704 newsletters monthly. In the early implementation phase, an average of 19 compañeras distributed approximately 1,922 newsletters monthly.

A focus group was conducted with 12 experienced compañeras to determine reasons given by women for refusal of the compañeras' outreach. Although all of the compañeras reported low refusal rates, cold weather and time constraints were the most commonly cited reasons for refusal to accept the newsletter. Other barriers to outreach included discomfort about the offer of condoms, claims of already having received HIV education in the neighborhood, and perceptions of being at low risk for HIV infection because of being in a monogamous relationship. By the early implementation phase, 46% of women interviewed in the intervention areas reported exposure to the intervention.

### **Case Study #5: Seattle**

In Seattle, interventions were targeted to men who have sex with men (MSM) but do not self-identify as homosexual (nonhomosexually identifying MSM). The intervention areas included several indoor and outdoor locations in Seattle where men were known to seek potential sex partners. These included the "back room" video arcades of adult bookstores and erotica shops and areas in public parks.

Information collected during the formative research indicated that the mobility of this population precluded having separate intervention and comparison areas within Seattle. Beginning in August 1991, comparison data were gathered in Long Beach, primarily in public parks and other outdoor soliciting areas.

To collect a sufficient number of responses from the comparison area, the baseline data-collection period was extended through September 1991 for the intervention and comparison areas. Otherwise, the start-up and early implementation phases followed the same schedule as in the other interventions.

Men were interviewed at 17 locations in three geographic areas of Seattle and in 17 locations in Long Beach. In both cities, these locations included public parks and outdoor cruising areas; in Seattle, interviews were also conducted in adult bookstores and video arcades.

In Seattle, interviewers made an approximately equal number of visits to each of these locations during a data-collection period. Interviewers used a list of random numbers to select men to approach; when few men were at a location, each man was approached. Men not looking for sex (e.g., police, employees of bookstores and arcades, men with their families) were not interviewed. Those completing the survey received \$10.

Interviewers in Long Beach visited each location several times during a data-collection period; the most frequently visited locations were those with more activity among nonhomosexually identifying MSM. Because of the small number of potential respondents, interviewers approached all men who appeared to be  $\geq 18$  years of age. Participants received \$5 for completing the initial screening portion of the interview and another \$5 for completing the full street interview.

For outcome analyses, a man was included if he reported all three of the following criteria: a) oral or anal intercourse with a man in the past year; b) anal intercourse with a man or vaginal/anal intercourse with a woman in the past 30 days; and c) self-identification as heterosexual or bisexual.

Baseline data indicated that the average age of men interviewed in Seattle was 36 years and, in Long Beach, 32 years. In Seattle, 82% of respondents were white compared with 46% in Long Beach, where there was a higher proportion of black (18%) and Hispanic (27%) respondents. For consistent condom use for anal intercourse with nonmain partners, the mean SOC for respondents in the Long Beach comparison area was above the action stage, whereas the mean was between the ready-for-action and the action stages for respondents in Seattle. In Seattle, the mean SOC for consistent condom use for vaginal intercourse with a main partner was between the precontemplation and contemplation stages, whereas in Long Beach, the mean SOC was between the contemplation and ready-for-action stages. The mean SOC for consistent condom use for vaginal intercourse with nonmain partners was between the contemplation and ready-for-action stages in both the intervention and comparison areas.

The Seattle intervention project was known in the community as the "Shiftin' Gears Project." One outreach worker recruited a network of men (composed primarily of homosexual men) and supplied them with intervention materials. Both these men and the interactors (local merchants, social service providers) were recruited to distribute condoms and brochures known as *Shiftin' Gears*, which contained targeted role-model stories.

The network members distributed intervention materials in locations where non-homosexually identifying MSM were known to frequent. They engaged other men in brief outreach interactions, directing the men to the particular topic or cognitive element highlighted in each role-model story and praising and reinforcing reported behavior changes. Actual stories gathered through interviews with local men were abstracted for the brochures. Both the men who distributed materials and the interactors received an incentive of \$20 per month as well as occasional thank-you cards.

During the start-up phase, an average of three men and 13 interactors distributed an average of 1,004 brochures per month. During the early implementation phase, approximately four men and 12 interactors distributed an average of 888 brochures each month. Maintaining interactors was difficult because managers at some of the distribution sites complained about increased litter (e.g., used condoms and discarded project brochures) and decreased condom sales. Maintaining participation of peer network members also complicated the distribution process because many men reported feeling uncomfortable distributing materials in sexually charged environments. Therefore, there were fewer men participating and lower distribution levels than had been anticipated. By the early implementation phase, 22% of men interviewed in the intervention area reported having been exposed to the intervention.

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