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ORIGINAL PAPER

CDC AIDS Project 72: The Prostitute Study

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Abstract
In the early years of the AIDS epidemic, the occurrence and potential for heterosexual transmission of human immunodeficiency virus type 1 (HIV 1) in the United States were uncertain. To better understand infection among women and the possible role of prostitution in the emerging epidemic, the Centers for Disease Control and Prevention established CDC AIDS Project 72, a multisite study of 1 410 women with recent histories of prostitution recruited from eight areas of the United States during 1986 and 1987. Participants were interviewed, examined, and tested for serologic markers of HIV 1, hepatitis B virus (HBV), syphilis, herpes simplex virus types 1 and 2 (HSV 1 and HSV 2), and human T cell lymphotropic virus types I and II (HTLV I/II). HIV 1 antibodies were detected in approximately 12% of women tested, but prevalence varied considerably across study sites. HSV 2 was the most commonly detected infection, followed by HSV 1, HBV, syphilis, HIV 1, and HTLV I/II. HIV 1, HBV, and HTLV I/II were strongly associated with injection drug use, whereas syphilis and HSV 2 followed different patterns related to sexual exposure. Among women without evidence of injection drug use, infrequent condom use during vaginal intercourse with clients was associated with HIV 1 infection. Project 72 showed that prostitution alone did not explain infection risk among these women. Injection drug use, sexual and injection networks, local prevalence of infection, and the social circumstances in which women lived and worked were also important. The project contributed to an evolving public health approach that emphasized epidemiologic evidence, cooperation with affected communities, and practical strategies for reducing risk rather than assumptions about stigmatized populations.

Keywords Acquired immunodeficiency syndrome · Epidemiology · Human immunodeficiency viruses · Prostitution · Sexually transmitted diseases · Substance abuse

Introduction

> *This is clearly a very exciting and exhilarating time to be working in health and human rights—but it is necessarily also a difficult time. For we are creating, participating in, and witnessing an extraordinary moment in social history—the emergence of a health and human rights movement—at the intersection and at the time of two enormous paradigm shifts (Dr. Jonathan Mann, Director of the World Health Organization Global Programme on AIDS, 1986–1990)* [1].

The emergence of the acquired immune deficiency syndrome (AIDS) in the early 1980 s represented a period of profound uncertainty in public health, followed by rapid scientific discovery, evolving epidemiologic understanding, and growing concern about the social and human consequences of a newly recognized epidemic [2]. At the time, public health practitioners and researchers were confronted not only with identifying the etiologic agent and modes of transmission, but also with understanding how the disease might spread beyond initially affected populations [3]. The earliest cases were detected among homosexual men living in major metropolitan areas of the United States [4]. Subsequently, cases were identified among people with hemophilia, recipients of blood transfusions, people who inject drugs, and immigrants from Haiti [2, 5]. As reports

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accumulated, public health officials were confronted with a series of urgent questions. What was causing this mysterious outbreak, how was it being transmitted, and how could it be stopped?

By January 1986, the epidemiology of AIDS in the United States had been fairly well characterized, with over 13, 000 reported cases since the first cases were identified in 1981 [2, 6]. The majority of cases occurred among men who have sex with men (MSM), but increasing numbers were also being reported among people who inject drugs, their female partners, and children [5]. These patterns raised important questions about the potential for heterosexual transmission and the broader spread of the epidemic [5]. Within this evolving epidemiologic context, particular attention was directed toward populations historically associated with sexually transmitted infections [7].

If the etiologic agent was a sexually transmitted pathogen, why were women with large numbers of sexual partners not being reported with the disease? This question reflected broader concerns regarding HIV infection among women rather than a narrow focus on prostitution itself. Evidence from Africa and other settings suggested that women were becoming infected with HIV, yet many did not present with the same clinical manifestations that had initially characterized AIDS among MSM [8, 9]. Conditions such as Kaposi's sarcoma and certain opportunistic infections were less commonly recognized among women, raising concerns that AIDS cases among women might be going undiagnosed or unreported [9, 10].

These concerns arose during a period when the women's movement was challenging gender based discrimination and calling greater attention to women's health, safety, reproductive rights, and equal treatment [11]. Women's health advocates and members of the CDC Task Force argued that women affected by the epidemic deserved the same scientific attention and protections afforded to other populations. Mary Guinan and Ann Hardy contributed to this work by describing the epidemiology of AIDS among women in the United States and publishing their findings in JAMA in 1987 [9]. Their work helped document how the epidemic was affecting women and reinforced the need for additional research.

Members of the CDC Task Force together with women's health advocates questioned whether the epidemic was being adequately studied among women. Were women becoming infected but not being recognized? Were the manifestations of disease different from those observed among MSM? These questions became a major focus of inquiry for members of the CDC Task Force.

Prostitution and Public Health Concern

Prostitute women had long been recognized as a population at increased risk for sexually transmitted diseases (STDs) and blood-borne infections [7, 12]. This perspective was influenced, in part, by the Social Hygiene Movement of the late nineteenth and early twentieth centuries, during which Progressive reformers sought to address social problems such as venereal disease, prostitution, and public intoxication through public education, moral reform, and disease prevention [13, 14]. The movement emphasized sexual restraint and viewed prostitution as both a public health and social problem. Although public health priorities evolved over time, many of these ideas continued to influence public health thinking at the beginning of the AIDS epidemic [14].

Early in the epidemic, the retrovirus now known as human immunodeficiency virus type 1 (HIV-1) was referred to as human T-cell lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) [15]. HTLV-III/LAV had been found frequently among prostitutes in Central Africa, whereas infection appeared to be less common among prostitutes in Europe and North America [16, 17]. In developed countries, seropositivity among women was more often associated with injection drug use, but available data were limited and incomplete [9, 17].

Historically, prostitutes had often been blamed for spreading venereal diseases in American communities, despite limited empirical evidence to support such claims [13]. By the mid 1980 s, a small number of women engaged in sex work had been reported to CDC with Kaposi's sarcoma or opportunistic infections [5, 18]. These observations prompted important epidemiologic questions [3]. Would an epidemic of heterosexual transmission follow the current epidemic among MSM? Was such an epidemic already underway?

Twentieth century public health campaigns often reflected these longstanding views about prostitution and venereal disease [13]. Figure 1 shows a poster distributed by the Florida Venereal Disease Control Program stating that "Prostitution spreads Syphilis and Gonorrhea." Although such messages were common, some epidemiologists questioned whether sufficient data existed to support these claims. Critics argued that prostitutes were often portrayed as vectors of disease without sufficient epidemiologic data demonstrating their contribution to transmission [13]. These debates reinforced the need for systematic research. Rather than relying on assumptions, Project 72 was undertaken to collect epidemiologic data that could help answer these questions [19].

These concerns extended beyond CDC investigators. Public health officials, clinicians, policymakers, women's health advocates, and members of the public were increasingly worried about the possibility that HIV could spread

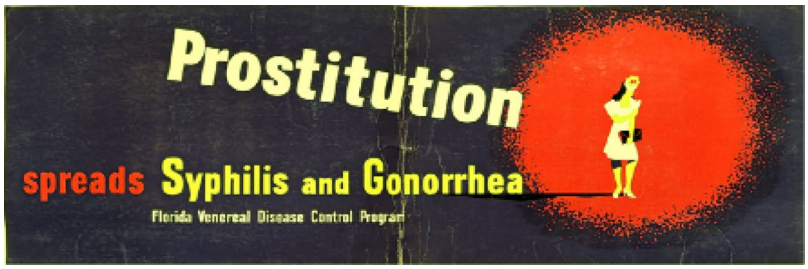

Fig. 1 Prostitution spreads syphilis and gonorrhea, poster by Leonard Karsakov, sponsored by the United States Public Health Service, 1941 or 1942. The copy shown bears the imprint of the Florida Venereal Disease Control Program.Source: William W. Darrow personal collection; Library of Congress reproduction no. LC-USZC4-4258 [20]

widely into the heterosexual population [6, 18]. The lack of systematic epidemiologic data reinforced the need to better understand HIV infection and other sexually transmitted diseases among women engaged in prostitution [19].

Although Project 72 focused on female prostitutes, the study was not simply about prostitution. Rather, it represented an effort to address one of the central public health questions of the era: whether HIV could spread efficiently through heterosexual contact in the United States. Women with large numbers of sexual partners were viewed as an important population in which to seek answers, making Project 72 a critical component of the broader effort to understand the future trajectory of the AIDS epidemic.

Gaps in Knowledge

At the same time, important gaps in knowledge remained. Few studies had systematically collected nationwide data on HIV-1 infection among prostitutes in the United States, and little was known about the prevalence of other infections such as herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2), human T-cell lymphotropic virus types I and II (HTLV-I/II), hepatitis B virus (HBV), or syphilis in this population [19, 21]. Public health officials recognized important limitations in existing surveillance systems. Surveillance data could identify reported AIDS cases, but they could not determine how many infections remained undiagnosed or unrecognized in the general population. Because HIV infection could remain asymptomatic for years, the true extent of the epidemic was uncertain [22]. CDC leaders debated whether large scale serologic surveys would be necessary to determine how widely the virus had spread throughout the United States. Some envisioned population-based testing programs that would include a broad range of demographic and social groups, regardless of perceived risk. However, such an undertaking would have required substantial financial resources, extensive logistical coordination, and broad political support, all of which were difficult to obtain during the early years of the epidemic.

As a practical alternative, CDC investigators pursued targeted seroprevalence studies among populations thought to be at elevated risk for HIV infection or particularly informative for understanding transmission patterns. These included prostitutes, adolescents, incarcerated populations, people who inject drugs, and other groups whose experiences could help clarify the extent and direction of the epidemic [22]. Project 72 emerged from this broader effort to answer a fundamental public health question: how far had HIV already spread, and what populations might be at risk for future transmission?

Key Questions Facing the CDC Task Force

Several key questions guided the work of the CDC Task Force. Investigators sought to determine whether HIV was being transmitted heterosexually in the United States, whether prostitutes represented a significant source of transmission, whether women exhibited different clinical manifestations than men, and which sexual behaviors were associated with increased risk. The answers to these questions had important implications for surveillance, prevention, and public health policy. They would also help determine whether the epidemic was likely to remain concentrated within identified risk groups or expand more broadly into the heterosexual population. Importantly, Project 72 was designed as a study of prevalence rather than incidence. Its purpose was to measure the extent of infection within a population at a particular point in time and to identify characteristics associated with infection [19].

Although the study had important limitations, it provided valuable insights into the epidemiology of HIV infection among women engaged in prostitution. One of its most significant findings was that infection appeared to be more strongly associated with injection drug use than with sexual activity alone. While heterosexual transmission clearly occurred, the data suggested that prostitution itself was not the primary driver of HIV transmission within the study population. Instead, injection drug use emerged as a major risk factor, directing attention toward transmission networks involving shared injection equipment and overlapping sexual and drug use behaviors [19, 21].

These findings helped inform the evolving understanding of HIV transmission in the United States. Rather than supporting fears of widespread transmission through commercial sex alone, the results pointed investigators toward the important role of injection drug use in sustaining the

epidemic among certain populations [19, 21]. In retrospect, Project 72 contributed to a broader shift in public health thinking by highlighting the need to address drug related transmission risks, an insight that would later support the development of harm reduction approaches, including syringe services and other interventions aimed at reducing blood borne transmission [23, 24]. At the same time, some questions remained unresolved. Because the study was cross sectional, it could not establish the direction or timing of transmission events, nor could it fully disentangle the relative contributions of sexual and injection related exposures [19, 21]. Nevertheless, Project 72 provided critical evidence during a period of considerable uncertainty and helped narrow the range of plausible explanations for the continued spread of HIV in the United States.

Toward CDC AIDS Project 72

In response to these uncertainties, a multi-site cross sectional study was designed to assess the prevalence of seromarkers and associated risk factors for HIV 1, HBV, syphilis, HSV 1, HSV 2, and HTLV I/II among female prostitutes in the United States [21]. This effort, later designated CDC AIDS Project 72, was intended to provide systematic data to clarify patterns of transmission and inform public health responses. CDC sought collaborators in state and local health departments and academic research centers who could recruit and enroll women with recent histories of prostitution. Cooperative agreements were negotiated with applicants who were judged to offer the strongest proposals and most qualified staff. The study ultimately enrolled 1 410 participants across eight sites in the United States, making it one of the largest investigations of HIV and other sexually transmitted infections among female prostitutes conducted during the early years of the AIDS epidemic [21].

Project 72 was part of a broader portfolio of CDC investigations undertaken to address critical unanswered questions about the emerging epidemic. The study became known as Project 72 because it was the seventy-second project undertaken by the CDC AIDS Task Force that involved the collection and testing of biological specimens. By the time Project 72 was initiated, 71 other studies involving specimen collection and testing had already been completed or were underway. These included studies of individuals with no previously identified risk factors, investigations of possible heterosexual transmission, and case-control studies designed to identify behavioral and biological determinants of infection. The project numbers were assigned by CDC laboratories to track the large number of specimens being collected and tested across these investigations. Responsibility for these studies was distributed among members of the CDC AIDS Task Force according to their expertise and research interests. Because of my previous work in sexually transmitted diseases and sexual behavior, I was assigned to coordinate Project 72. My responsibilities included overseeing study implementation and coordinating the collection, management, and scientific use of specimens obtained through the project. As project coordinator, I also reviewed requests from investigators seeking access to study specimens or related data.

The study represented an ambitious effort to answer questions that could not be addressed through routine surveillance alone. By systematically collecting biologic specimens and behavioral information from women engaged in prostitution across multiple cities, Project 72 sought to clarify patterns of HIV infection and associated risk factors in a population viewed as potentially important to understanding the future course of the epidemic. Together with other CDC investigations conducted during this period, the project contributed to a broader effort to determine how HIV was spreading and which prevention strategies would be most effective in limiting its impact.

Methods

Study Design and Eligibility

To be eligible for participation in the study, women had to be 18 years of age or older and report that they had exchanged sexual service for money or drugs at least once since January 1, 1978. They had to provide informed consent, provide approximately 10 mL of blood, undergo examination and complete an interview. A standard research protocol was developed by the Centers for Disease Control and Prevention (CDC) epidemiologists, statisticians, and other staff members with representatives of each collaborating institution [19, 21].

Because the study was conducted in diverse settings across the United States, investigators recognized that recruitment procedures would need to vary from site to site. Representatives of the collaborating centers therefore agreed to use different approaches for identifying and enrolling eligible women while adhering to a common definition of prostitution and a single standardized protocol. This approach allowed local investigators to recruit participants in ways that reflected local conditions while ensuring that data collected at different sites could be compared.

A common definition of prostitution was considered essential because one of the primary objectives of the study was to compare findings across geographically diverse populations. Although recruitment strategies differed among sites, investigators sought to ensure that participants represented a comparable study population. Because the study

was designed to examine HIV and other infections among women engaged in heterosexual activity, eligibility was limited to biological women who reported exchanging sexual services for money or drugs. Before recruitment began, the study protocol was reviewed and approved by CDC and by the participating institutions.

Standard Protocol and Collaborating Sites

Identical data collection instruments were used in northern New Jersey (Jersey City, Newark, and Paterson); southern New Jersey (Atlantic City and Camden); San Francisco; Atlanta; Miami; Colorado Springs; southern Nevada; and Los Angeles (Fig. 2). The eight collaborating centers were selected through a competitive application process. Organizations submitting the strongest proposals were supported through cooperative agreements with CDC. Although recruitment procedures varied across sites, all participating centers agreed to use the same study protocol and data collection instruments. Each site also agreed to send serum specimens to CDC for laboratory testing [21].

Applicants were selected not only on the basis of their proposals but also on their experience working with women involved in prostitution and other marginalized populations. Many collaborating investigators had previously conducted research or provided services in these communities and were familiar with the challenges of recruitment and data collection. The study also benefited from the participation of investigators with expertise in women's health and advocacy, including researchers at the University of California, San Francisco.

Local legal and social conditions influenced how recruitment was conducted. At the time, prostitution was illegal in most jurisdictions represented in the study. Investigators working on the study in Nevada were based in Las Vegas, but no data were collected in Clark County, where prostitution was illegal. Data collected in southern Nevada were obtained at the Shamrock Ranch, a licensed brothel in Lathrop Wells, Nye County, where prostitution was legal [21]. This approach reduced the potential for conflict with local authorities and provided access to a legally recognized population of sex workers. In some jurisdictions, possession of condoms could be used as evidence of prostitution, illustrating the legal and social environment in which many participants lived and worked.

Procedures were approved by institutional review boards at CDC and at each participating site. Clearance to collect data from incarcerated women was obtained from the Office for Protection from Research Risks (OPRR) at the National Institutes of Health. Because some participants were recruited through detention facilities, additional protections were required for research involving incarcerated women. Consent forms were available in English and Spanish.

Recruitment of Participants

Eligible women were recruited from January 1986 through November 1987 using several different approaches. In Miami and Los Angeles, women were approached through the medical clinics of the Women's Detention Center and Sybil Brand Institute, respectively. All women enrolled in southern Nevada were recruited from the Shamrock Ranch, a licensed brothel in Lathrop Wells, Nye County. A public

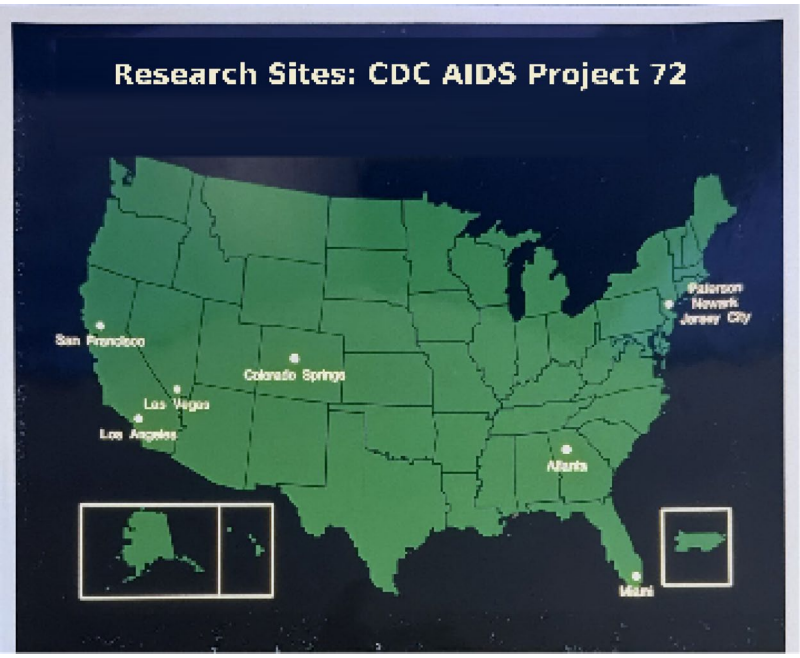

Fig. 2 Research sites participating in CDC AIDS Project 72. The Nevada research team was based in Las Vegas; participants in southern Nevada were recruited at a brothel in Lathrop Wells, Nye County.Source: William W. Darrow personal collection

clinic for the diagnosis and treatment of sexually transmitted diseases served as the primary recruitment site in Colorado Springs. In Atlanta (Fig. 3a), San Francisco, and New Jersey, most participants were enrolled through outreach efforts, including pamphlets, advertisements, and direct personal contact on the street. Some women in northern New Jersey were also recruited through a methadone maintenance clinic.

Recruitment materials and study procedures were developed with input from local research teams and community consultants. The Atlanta research team included two former call girls who provided advice regarding recruitment strategies and communication with potential participants. Their experience helped investigators understand how women engaged in prostitution might perceive recruitment materials, interview questions, and study procedures. They reviewed recruitment materials and suggested changes in wording to avoid language that could be perceived as offensive, judgmental, or stigmatizing. Dolores French also contributed to the development of recruitment materials used in Atlanta, including the poster shown in Fig. 3a.

I first became acquainted with Dolores through another scientist participating in the project who had previously worked with her and recommended that she be included in study planning. At the time, involving former prostitutes in research discussions was not unprecedented, but it remained controversial. When a meeting was held at CDC to discuss study procedures, some administrators expressed concern about including former prostitutes as consultants. I was advised that their participation could create problems because of the political climate of the Reagan administration and the possibility that federal funds could be perceived as supporting prostitutes. Nevertheless, I believed it was important to include individuals who could provide insight into the population we were attempting to study.

Dolores participated in the meeting along with other experts. Her observations sometimes challenged assumptions made by investigators and led to several heated discussions about study procedures and recruitment strategies. Although I was criticized for inviting them, no adverse publicity resulted from their involvement. Looking back, their participation strengthened the study by providing perspectives that otherwise might not have been represented.

Figure 3a shows a recruitment poster distributed in Atlanta, and Fig. 3b presents the invitation to participate printed on the reverse side.

Informed Consent, Examination, and Interview Procedures

After informed consent was obtained, blood was drawn by venipuncture, arms were inspected for needle marks, and histories of recent or current lesions and other symptoms were obtained. The skin, mouth, and lymph nodes were examined, but genital or pelvic examinations were not routinely offered. Confidential interviews were conducted to collect information on medical problems, health practices, contraceptive use, pregnancies, injection drug use, number of sexual partners, and types of sexual practices with clients and nonpaying partners.

Although a standardized protocol was used across all study sites, each collaborating center was responsible for selecting interviewers and training them to follow study procedures. This approach allowed local investigators to recruit and interview participants using staff familiar with local populations while maintaining consistency in data collection.

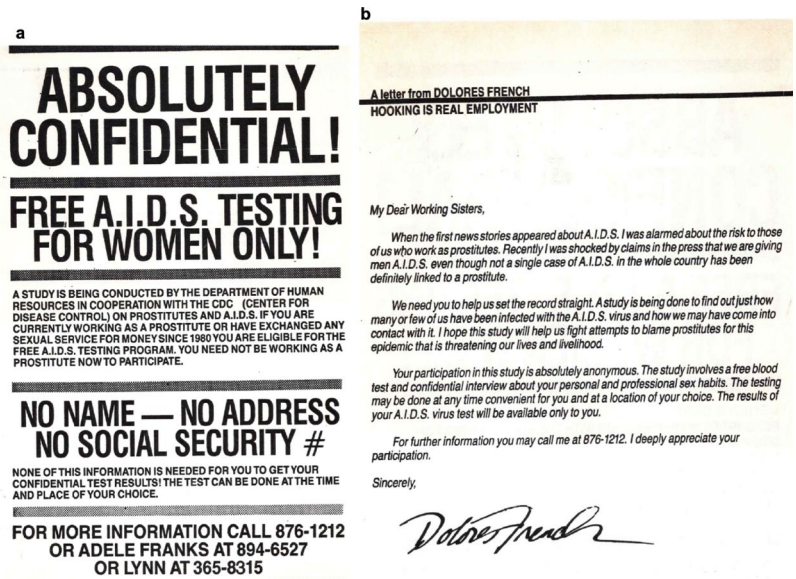

Fig. 3 Atlanta recruitment materials for CDC AIDS Project 72: **a** recruitment poster distributed in Atlanta; **b** invitation to participate printed on the reverse. Source: William W. Darrow personal collection

Concerns about confidentiality were addressed primarily through the use of experienced public health personnel. Many interviewers and investigators had previously worked in sexually transmitted disease control programs and were accustomed to conducting sensitive interviews and partner notification investigations. Their experience helped establish rapport with participants and facilitated the collection of information on highly personal topics, including prostitution, drug use, and sexual practices.

Beyond maintaining confidentiality, members of the CDC Task Force sought to assure research participants that their health, safety, and rights were our primary concern. We sought to conduct the research involving women engaged in prostitution with respect for their dignity and with the expectation that the findings would contribute to improving public health and the care of vulnerable women.

Laboratory Testing

Blood specimens collected at participating sites were sent to CDC for testing according to standardized procedures. Centralized testing helped ensure consistency across study sites and allowed all specimens to be analyzed using the same laboratory methods. As Project Coordinator, I was responsible for overseeing specimen storage and approving requests for specimen testing. Arrangements were made with several CDC laboratories to test specimens for HIV 1, hepatitis B virus (HBV), syphilis, human T cell lymphotropic virus types I and II (HTLV I/II), and herpes simplex virus (HSV), and to report results to the collaborating centers.

HIV-1

Serum was tested for antibody to HIV-1 by commercially available enzyme immunoassays (EIAs) (Abbott, North Chicago, IL, or Genetic Systems, Seattle, WA); repeatedly reactive EIA results were also tested by Western blot (WB) and interpreted according to established criteria [25].

HBV

Commercially available radioimmunoassay kits (Abbott, North Chicago, IL) were used to test for antibodies to hepatitis B surface (anti-HBs) and hepatitis B core (anti-HBc) antigens; specimens positive for anti-HBc were also tested for hepatitis B surface antigen (HBsAg) [12].

Syphilis

The rapid plasma reagin (RPR) card test and microhemagglutination (MHA-TP) assay were used to test for syphilis; discrepant test results were resolved by the fluorescent treponemal antibody-absorption double-staining (FTA-ABS) test. Women with positive RPR and negative MHA-TP and FTA-ABS tests were considered to be negative for syphilis. Women with a positive confirmatory MHA-TP or FTA-ABS test and RPR titers 1:8 or greater or RPR titers < 1:8 and clinical evidence or a self-report of recent lesion were considered to be more recently infected with syphilis than those with RPR titers < 1:8 and no lesion [26].

HTLV-I/II

Unfrozen serum aliquots were screened for antibodies to HTLV-I/II by EIA; reactive sera were tested further by WB and radioimmunoprecipitation assay (RIPA). Antibodies to both gag and env gene products by either WB or RIPA indicated a positive test for HTLV-I/II [27]. Serologic tests could not distinguish HTLV-I from HTLV-II.

Herpes

Remaining sera from all sites except Miami were screened by EIA for herpes simplex virus; sera positive by EIA were subsequently tested for HSV-1 and HSV-2 type-specific antibodies by using glycoprotein G-specific immunodot assays [28].

Data Management and Analysis

Interview guides and clinical findings were reviewed at each study site and forwarded to CDC, where they underwent additional editing and computer assisted analyses. At the time, centralized data management was common practice for multicenter CDC investigations because it helped ensure consistency in data cleaning and analysis across participating sites. Records with identical or highly similar identification codes, dates of birth, and serologic test results were reviewed as potential duplicate enrollments, and only the earliest specimen was retained for analysis.

The statistical methods reflected the standard epidemiologic practice of the mid 1980s. Measures of central tendency and dispersion were calculated to summarize participant characteristics. Associations between variables were evaluated using chi square tests, odds ratios, and 95% confidence intervals. Selected variables were further examined using stepwise logistic regression models, an approach that was widely used at the time to identify independent predictors of infection [29]. Although these methods may seem routine today, they represented the principal analytic tools available to epidemiologists before the widespread use of more advanced statistical software and modeling techniques.

Findings from CDC AIDS Project 72

Project 72 ultimately enrolled 1410 women from eight study sites across the United States, bringing together participants from markedly different local settings. Recruitment reflected these differences. More than half of the women entered the study through detention facilities in Miami (32%) and Los Angeles (21%), whereas participants in San Francisco (15%), Atlanta (9%), and most of those in New Jersey (14%) were reached through community outreach. Others were recruited through an STD clinic in Colorado Springs (7%) and licensed brothels in southern Nevada (3%). This diversity in recruitment settings became important when interpreting the differences observed across study sites.

The women themselves represented a diverse population. They ranged from 18 to 59 years of age, although the typical participant was considerably younger, with a median age of 27 years. Most were born in the United States or Puerto Rico, but 79 women came from 25 other countries. The study also included substantial racial and ethnic diversity: 43% identified as Black, 41% as White non-Hispanic, 12% as Hispanic, 2% as Asian or Pacific Islander, and 2% as American Indian or Alaska Native.

Nearly half of the women reported having injected drugs. Because physical examinations were part of the study, we identified an additional eight women with visible needle marks who did not report injection drug use and included them in this group. Street based sex work was also common: slightly more than half of the participants reported working exclusively on the street, and another quarter solicited clients both on the street and elsewhere. Women with evidence of injection drug use were more likely to solicit clients on the street, illustrating the considerable overlap between sex work and drug use within the study population.

Condom use was more complicated than a simple distinction between women who used condoms and those who did not. 22% reported no condom use with male partners during the previous five years, while others reported varying degrees of use. I remember one participant in San Francisco who told us that she had enjoyed having many sexual partners while living in the Haight Ashbury area and had not required them to use condoms. After she began working as a prostitute, however, she used condoms with clients because she regarded them as "dirty men." She tested positive for genital herpes.

The distinction between clients and other sexual partners became even clearer when we examined condom use by partner type. Among the 897 women who reported using condoms, nearly all (99%) had used them with one or more clients during the previous five years, compared with only 21% who reported condom use with a husband, boyfriend, or other nonpaying male partner. This pattern was consistent with my recollection that many women reported using condoms selectively with clients but not with other male partners.

Contraceptive practices added another dimension to this pattern. About one quarter of the women reported using oral contraceptives at some point during the previous five years, although only 5% reported using them throughout that period. Women who used oral contraceptives throughout the five years also reported more frequent condom use during vaginal intercourse, particularly with clients, indicating that oral contraceptive use was not associated with less frequent condom use in this group.

Serologic Findings

Serologic testing revealed a substantial burden of infection among Project 72 participants. HIV 1 antibodies were confirmed in 172 women, representing approximately 12% of those tested. Evidence of several other sexually transmitted or bloodborne infections was even more common. More than 80% of women with available specimens were seropositive for HSV 2, nearly three quarters were seropositive for HSV 1, and hepatitis B markers were also common. About one quarter had serologic evidence of syphilis, while approximately 7% were seropositive for HTLV I/II. Most striking, however, was how much these patterns differed across the eight study sites (Table 1).

The geographic differences were particularly striking in southern Nevada. Although three quarters of the women recruited from licensed brothels had evidence of HSV 2 infection and nearly one quarter had hepatitis B markers, none had serologic evidence of syphilis, HIV 1, or HTLV I/II. At the time, women working in Nevada's licensed brothels were routinely screened for syphilis, HIV 1, and gonorrhea, could not work if infected, and were prohibited from injecting drugs. In contrast, HIV 1 and *HBV were most common in northern New Jersey*, *while HSV 1 and HSV 2 were most frequently* detected in southern New Jersey (Table 1).

These differences led us to look more closely at the relationship between infection and injection drug use. A clear pattern emerged. HIV 1, HBV, and HTLV I/II were strongly associated with evidence of injection drug use, whereas HSV 1, HSV 2, and syphilis were not (Table 2). Racial and ethnic differences were also observed for several infections, although these patterns varied according to infection and injection drug use.

Syphilis

Syphilis was common among Project 72 participants. Of the 1308 women tested, 342 (26%) had serologic evidence of T. pallidum infection. Evidence consistent with more recent

Table 1 Seromarkers for sexually transmissible infections in female prostitutes in the United States

	Herpes simplex virus type 1	Herpes simplex virus type 2	Hepatitis B	Syphilis	Human immunodeficiency virus type 1	Human T lymphotropic virus type I or II
Research site	Number positive/number tested (%)					
Northern New Jersey	109/139 (78.4)	113/140 (80.7)	117/159 (73.6)	26/151 (17.2)	75/158 (47.5)	26/144 (18.1)
Southern New Jersey	16/19 (84.2)	18/19 (94.7)	18/26 (69.2)	2/23 (8.7)	6/28 (21.4)	2/23 (8.7)
Miami-Dade County[a]	–	–	245/434 (56.4)	198/426 (46.5)	66/440 (15.0)	16/430 (3.7)
San Francisco	139/201 (69.2)	166/201 (82.6)	95/211 (45.0)	19/205 (9.3)	10/212 (4.7)	15/206 (7.3)
Los Angeles	144/185 (77.8)	160/185 (86.6)	215/293 (73.4)	79/267 (29.6)	12/300 (4.0)	16/188 (8.5)
Colorado Springs	52/82 (63.4)	66/82 (80.5)	29/94 (30.8)	2/84 (2.4)	2/98 (2.0)	2/90 (2.2)
Atlanta	79/117 (67.5)	85/117 (72.6)	43/123 (35.0)	16/118 (13.6)	1/123 (0.8)	7/121 (5.8)
Southern Nevada	28/36 (77.8)	27/36 (75.0)	9/37 (24.3)	0/34 (0.0)	0/37 (0.0)	0/37 (0.0)
Total	567/779 (72.8)	635/780 (81.4)	771/1377 (56.0)	342/1308 (26.2)	172/1396 (12.3)	84/1239 (6.8)
	$p = 0.04$	$p = 0.06$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$

[a]Specimens from Miami-Dade County were not tested for herpes simplex virus

Table 2 Association of seromarkers with injection drug use in Black and Hispanic or White and Other prostitutes

Seromarker	Evidence of injection drug use			No evidence of injection drug use			Injection drug use vs no use[a]
	Black or Hispanic[b]	White or other	Total	Black or Hispanic[b]	White or other	Total	
HSV-1	165/223 (74.0)	140/195 (71.8)	305/418 (73.0)	151/199 (75.9)	108/159 (67.9)	259/358 (72.3)	$p = 0.865$
		$p = 0.614$			$p = 0.095$		
HSV-2	186/223 (83.4)	160/195 (82.0)	346/418 (82.8)	166/200 (83.0)	120/159 (75.5)	286/359 (79.7)	$p = 0.276$
		$p = 0.714$			$p = 0.078$		
Hepatitis B	280/348 (80.5)	228/341 (66.9)	508/689 (73.7)	149/399 (37.3)	114/283 (40.3)	263/682 (38.6)	$p < 0.001$
		$p < 0.001$			$p = 0.437$		
Syphilis	106/326 (32.5)	60/315 (19.0)	166/641 (25.9)	137/396 (34.6)	37/265 (14.0)	174/661 (26.3)	$p = 0.838$
		$p < 0.001$			$p < 0.001$		
HIV-1	101/347 (29.1)	36/345 (10.4)	137/692 (19.8)	28/412 (6.8)	7/286 (2.5)	35/698 (5.0)	$p < 0.001$
		$p < 0.001$			$p = 0.010$		
HTLV-I/II	55/303 (18.2)	13/304 (4.3)	68/607 (11.2)	14/379 (3.7)	1/247 (0.4)	15/626 (2.4)	$p < 0.001$
		$p < 0.001$			p = 0.009		

[a]Chi-square test of significance for seromarkers in women with evidence of injection drug use compared with those without evidence of injection drug use

[b]Chi-square test of significance for seromarkers in Black and Hispanic women engaged in prostitution compared with White or other (Asian and American Indian) women engaged in prostitution

infection was identified in 181 women. Women who were Black or Hispanic, engaged in street-based sex work, and reported larger numbers of clients per month were more likely to have evidence of either previous or more recent syphilis infection (Table 3). Oral contraceptive use, in contrast, was inversely associated with syphilis. Evidence of more recent infection was found at nearly every study site but was concentrated in Miami, where 116 (64%) of the 181 women meeting these criteria were identified.

After accounting for place of enrollment, several of these relationships remained. Race and ethnicity, number of clients, and oral contraceptive use were independently associated with syphilis, particularly with evidence of more recent infection. The relationship with street-based sex work and number of clients, however, differed by race and ethnicity. Among White and other women, street-based sex work and reporting more than 10 clients per month were strongly associated with evidence of more recent syphilis infection, whereas these associations were not observed among Black and Hispanic women. Oral contraceptive use remained inversely associated with evidence of more recent infection in both groups.

Table 3 Risk factors for syphilis, recent syphilitic infection (RPR titer 1 : 8 or RPR titer < 1 : 8 and lesion), and herpes simplex virus type 2 (HSV-2)

Risk Factor	Ever infected with syphilis	Recent syphilitic infection	HSV-2
Race/ethnic group			
Black, non-Hispanic	193/569 (33.9)	102/569 (17.9)	282/329 (85.7)
Hispanic	52/158 (32.9)	33/158 (20.9)	72/96 (75.0)
Asian/Native American	12/50 (24.0)	6/50 (12.0)	20/26 (76.9)
White, non-Hispanic	85/531 (16.0)	40/531 (7.5)	261/329 (79.3)
Total	342/1308 (26.2)	181/1308 (13.8)	635/780 (81.4)
	p<0.001	p<0.001	p=0.048
Street prostitution in past 5 years			
Exclusively	218/692 (31.5)	123/692 (17.8)	313/382 (81.9)
Some	78/324 (24.1)	35/324 (10.8)	173/204 (84.8)
None	45/270 (16.7)	22/270 (8.1)	135/175 (77.1)
Total	341/1286 (26.5)	180/1286 (14.0)	621/761 (81.6)
	p<0.001	p<0.001	p=0.154
Clients per month in past 5 years			
90 or more	195/631 (30.9)	109/631 (17.3)	282/332 (84.9)
30 to 89	74/289 (25.6)	41/289 (14.2)	148/184 (80.4)
10 to 29	33/153 (21.6)	11/153 (7.2)	82/106 (77.4)
1 to 9	38/219 (17.4)	19/219 (8.7)	115/149 (77.2)
Total	340/1292 (26.3)	180/1292 (13.9)	627/771 (81.3)
	p<0.001	p=0.001	p=0.125
Condom use with clients in past 5 years			
Never	62/257 (24.1)	34/257 (13.2)	104/139 (74.8)
Sometimes	146/476 (30.7)	80/476 (16.8)	257/310 (82.9)
Frequently	118/495 (23.8)	56/495 (11.3)	240/286 (83.9)
Total	326/1228 (26.5)	170/1228 (13.8)	601/735 (81.8)
	p=0.034	p=0.044	p=0.059
Oral contraceptive use			
Not in last 5 years	289/968 (29.9)	157/969 (16.2)	439/537 (81.8)
Less than 12 months	20/118 (16.9)	8/118 (6.8)	59/75 (78.7)
12 to 59 months	25/158 (15.8)	14/158 (8.9)	95/115 (82.6)
60 months	7/58 (12.1)	2/58 (3.4)	37/48 (77.1)
Total	341/1302 (26.2)	181/1302 (13.9)	630/775 (81.3)
	p<0.001	p<0.001	p=0.776

Neither age, years of sexual activity, nor specific sexual practices with clients were associated with syphilis test results. What stood out instead was the overlap between syphilis and other infections. Women with serologic evidence of T. pallidum infection were more likely to have markers of HIV 1, HBV, and particularly HSV 2.

Herpes Simplex Viruses

The strong overlap between syphilis and HSV 2 did not mean that the two infections shared the same pattern of associated factors. HSV 2 was not strongly associated with street-based sex work, number of clients per month, or oral contraceptive use (Table 3). Instead, HSV 2 seropositivity was associated primarily with longer duration of sexual activity, and women who were HSV 2 positive tended to report more frequent condom use with their sexual partners. HSV 2 was also associated with hepatitis B markers but was not significantly associated with HIV 1. HSV 1, in contrast, was associated with HIV 1 and was the only factor identified as significantly associated with HSV 1 in these analyses.

Human Immunodeficiency Virus Type 1

When we examined the factors associated with HIV 1 infection, a clearer picture emerged. After accounting for differences among study sites, HIV 1 infection was independently associated with hepatitis B markers, injection drug use, and being Black or Hispanic. Evidence consistent with more recent syphilis infection was the only sexually transmitted infection that remained significantly associated with HIV 1 after these factors were considered. Other characteristics, including longer duration of sexual activity and street-based sex work, initially appeared to be associated with HIV 1 but were no longer independently associated after hepatitis B, injection drug use, and race and ethnicity were taken into account.

Condom use provided an important additional finding. Among women overall, condom use with clients and oral contraceptive use were not associated with HIV 1 infection, whereas number of clients was associated with HIV 1 infection. Among women with no evidence of injection drug use, however, infrequent condom use during vaginal intercourse with clients was associated with HIV 1 infection (Table 4). This association was observed specifically among women without evidence of injection drug use.

Public Health Implications

One of the most important findings from Project 72 was the strong relationship between injection drug use and several viral infections. Women with evidence of injection drug use were at substantially greater risk of HBV, HIV 1, and HTLV

Table 4 Risk factors for antibody to human immunodeficiency virus type 1 in prostitutes with and without evidence of injection drug use

Risk Factor	No evidence of injection drug use	Evidence of injection drug use	Total
	Number HIV 1 positive/ number tested (%)		
Race/ethnicity			
Black, non-Hispanic	22/350 (6.3)	87/243 (35.8)	109/593 (18.4)
Hispanic	5/63 (7.9)	15/104 (14.4)	20/167 (12.0)
Asian/Native American	1/37 (2.7)	1/21 (4.8)	2/58 (3.4)
White, non-Hispanic	6/249 (2.4)	35/325 (10.8)	41/574 (7.1)
Total	34/699 (4.9)	138/693 (19.9)	172/1392 (12.4)
	$p = 0.093$	$p < 0.001$	$p < 0.001$
Street prostitution in past 5 years			
Exclusively	20/356 (5.6)	86/371 (23.2)	106/727 (14.6)
Some	9/151 (6.0)	35/206 (17.0)	44/357 (12.3)
None	5/177 (2.8)	16/110 (14.5)	21/287 (7.3)
Total	34/684 (5.0)	137/687 (19.9)	171/1371 (12.5)
	$p = 0.308$	$p = 0.062$	$p = 0.007$
Clients per month in past 5 years			
90 or more	16/357 (4.5)	54/327 (16.5)	70/684 (10.2)
30 to 89	11/158 (7.0)	32/143 (22.4)	43/301 (14.3)
10 to 29	4/73 (5.5)	27/93 (29.0)	31/166 (18.7)
1 to 9	3/105 (2.9)	24/122 (19.7)	27/227 (11.9)
Total	34/693 (4.9)	137/685 (20.0)	171/1378 (12.4)
	$p = 0.464$	$p = 0.052$	$p = 0.019$
Condom use with clients in past 5 years			
Never	3/133 (2.3)	34/134 (25.4)	37/267 (13.9)
Sometimes	18/208 (8.7)	51/295 (17.3)	69/503 (13.7)
Frequently	9/314 (2.9)	46/223 (20.6)	55/537 (10.2)
Total	30/655 (4.6)	131/652 (20.1)	161/1307 (12.3)
	$p = 0.003$	$p = 0.149$	$p = 0.162$
Oral contraceptive use			
Not in last 5 years	23/489 (4.7)	111/536 (20.7)	134/1025 (13.1)
Less than 12 months	3/66 (4.5)	13/60 (21.7)	16/126 (12.7)
12 to 59 months	6/101 (5.9)	12/70 (17.1)	18/171 (10.5)
60 months	2/41 (4.9)	1/24 (4.2)	3/65 (4.6)
Total	34/697 (4.9)	137/690 (19.9)	171/1387 (12.3)
	$p = 0.961$	$p = 0.221$	$p = 0.201$

I/II infection than women with no evidence of injection drug use. Nearly half of the women in the study had injected drugs [19]. Although the association of hepatitis B and HTLV I/II with injection drug use was not unexpected, the extent of HIV 1 infection observed in Project 72 was more surprising and drew further attention to the importance of injection drug use in HIV transmission [19, 27].

The contrast between northern New Jersey and southern Nevada illustrated these differences particularly well. Women recruited through a methadone maintenance clinic or community outreach in northern New Jersey had some of the highest prevalences of HBV, HIV 1, and HTLV I/II observed in Project 72. Injection drug use was common in this sample, and infection was even more frequent among women with evidence of injecting drugs. In southern Nevada, by contrast, women working in licensed brothels had substantially lower prevalence of HBV and no identified HIV 1 or HTLV I/II infections, even though some reported having injected drugs [19, 27]. These geographic differences suggested that individual behavior alone could not explain infection risk and raised questions about the role of sexual and injection networks and the behaviors of partners.

These questions were explored further in subsequent research in Colorado Springs. Studies by Al Klovdahl, John Potterat, Steve Muth, Don Woodhouse, and colleagues mapped networks of sex workers, people who injected drugs, and their sexual and injection partners [30]. This work demonstrated the value of looking beyond individual risk behaviors to the broader social networks through which HIV and other infections could spread. Network position, connections among individuals, and changes in network structure provided information about transmission risk that could not be captured by individual behavior alone [30–32].

As evidence accumulated that injection drug use was an important route of HIV transmission, prevention efforts began to reach beyond traditional drug treatment programs. In 1987, the National Institute on Drug Abuse (NIDA) initiated the National AIDS Outreach Demonstration Research Project to reach people who injected drugs who were not in treatment and their sexual partners [33]. Community based programs combined outreach and HIV education with research on drug use, sexual behaviors, and HIV risk. By 1990, more than 30 000 people who injected drugs and their sexual partners had been enrolled through 41 community-based programs [34].

Research from these programs challenged the belief that people actively using drugs could not or would not change behaviors that placed them at risk for HIV infection, showing that people who injected drugs could reduce behaviors such as sharing injection equipment when reached through community based prevention programs [34, 35].

Yet approaches that came to be associated with harm reduction, particularly syringe exchange, remained controversial. Federal restrictions limited funding for syringe exchange programs for much of the period that followed [36].

The higher prevalence of HBV, HIV 1, and HTLV I/II among women who injected drugs also raised questions about the racial and ethnic differences observed in Project 72 [12, 19, 27]. Other investigators reported similar racial and ethnic differences among people who injected drugs, but these disparities could not be explained solely by individual injection or sexual behaviors [37, 38]. Injection practices, sexual partnerships, geographic and socioeconomic conditions, and the social environments in which drug use occurred all appeared to be important [37, 38]. These observations reinforced the importance of looking beyond individual behavior when trying to understand differences in infection across populations.

Sexual exposure presented a different pattern. Unlike HBV, HIV 1, and HTLV I/II, syphilis and HSV 2 were not strongly associated with injection drug use in Project 72. Syphilis increased with the reported number of clients, particularly among White women outside Miami, suggesting that sexual exposure remained an important component of infection risk. During this period, a CDC investigation in neighboring Broward County, Florida, documented a substantial increase in early syphilis and found that prostitution appeared to play an increasing role in the epidemic [39]. During the years that followed, the growing use of crack cocaine further complicated the relationship between drug use, sex work, and sexually transmitted infections. Research in San Diego linked crack cocaine use and prostitution with the syphilis epidemic and showed some of the limitations of traditional partner notification in this setting [40]. Ethnographic research by Claire Sterk among women engaged in sex work provided another perspective, describing how drug use, economic circumstances, relationships with clients and partners, and the conditions under which sex was exchanged could shape HIV related risk and prevention practices [41].

Another important observation concerned the distinction women made between clients and their other sexual partners. Participants were much less likely to report condom use with husbands, boyfriends, and other nonpaying partners than with clients. At the time, studies of gonorrhea were demonstrating how relatively concentrated groups and their sexual connections could sustain transmission within communities [42]. Project 72 suggested that the sexual networks surrounding women engaged in prostitution extended well beyond their commercial encounters and that nonpaying partners also needed to be considered when assessing the potential for transmission.

These findings also challenged common assumptions about who women engaged in prostitution were. Many had husbands or boyfriends, children, and families to support. Earlier research had already shown that entry into prostitution could reflect complex personal and economic circumstances rather than a single pathway [43]. I remember hearing women talk about needing to leave to pick up a child from child care or about earning money to pay their bills. These were women whose lives and relationships could not be reduced simply to their involvement in prostitution.

Oral contraceptive use produced another unexpected finding. Women in Project 72 who reported using oral contraceptives were less likely to have evidence of syphilis, and the likelihood of infection continued to decrease with longer reported use. Oral contraceptive use was also associated with more frequent condom use. These findings suggested that some women were taking precautions against both unintended pregnancy and sexually transmitted infections rather than substituting one form of protection for another. The findings differed, however, from a prospective study of 124 women engaged in prostitution in Nairobi, where oral contraceptive use was associated with an increased risk of HIV 1 acquisition [44]. The contrasting findings raised questions about whether oral contraceptive use itself influenced susceptibility to infection or instead reflected differences in sexual behavior, partner selection, and the social circumstances in which contraception was used.

For women engaged in sex work, avoiding an unintended pregnancy could have immediate consequences for their ability to support themselves and their families. The association between oral contraceptive use and more frequent condom use in Project 72 suggested that pregnancy prevention and protection from sexually transmitted infections were not necessarily competing priorities. Yet consistent condom use remained uncommon, particularly with nonpaying partners. Subsequent studies of heterosexual HIV transmission helped establish that transmission risk depended not simply on the number of sexual partners but also on sexual practices, condom use, history of sexually transmitted infections, and other biological and behavioral factors [45]. These findings reinforced the importance of prevention strategies that women could use consistently across different types of sexual relationships.

Another important consideration was the prevalence of infection among the sexual partners and communities surrounding women engaged in prostitution. Risk of exposure could be particularly high where an infection was already common. This was becoming apparent for HIV 1 in parts of Africa [46] and syphilis in southern Florida [39], while Project 72 documented a particularly high prevalence of HSV 2 among the women tested. This may also help explain why HSV 2 in Project 72 was more strongly associated with years of sexual activity than with race or ethnicity, number of clients, or contraceptive history. The longer women

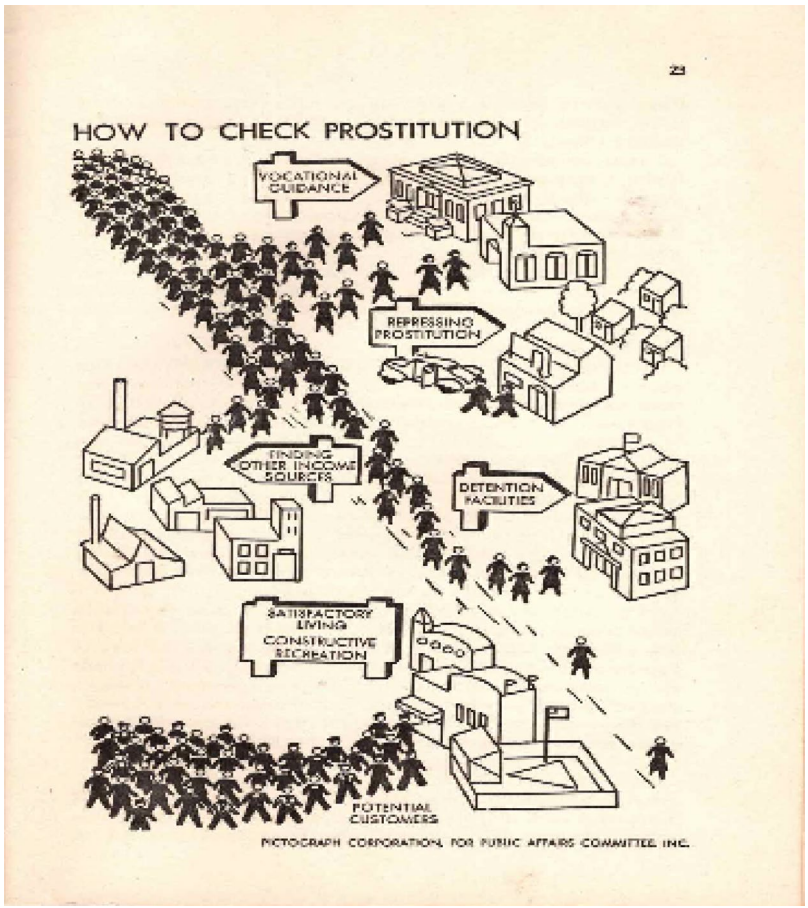

Fig. 4 "How to Check Prostitution," illustrating the social protection approach to prostitution during World War II. Reproduced from Broughton [48]

remained sexually active within networks where HSV 2 was common, the greater their opportunity for exposure. These findings reinforced the importance of consistent condom use, not only with clients but across sexual relationships.

Project 72 was never intended to provide a representative sample of women engaged in prostitution in the United States or of the settings in which prostitution occurred. We also recognized the limitations of collecting sensitive behavioral information across very different recruitment sites. Some participants were better able than others to recall and describe their experiences, field staff differed in their experience and interviewing skills, and maintaining consistent data collection across eight sites was challenging. Nevertheless, the study revealed remarkable differences in six sexually transmissible infections both between and within study sites. Looking back, these differences could not be understood through individual behavior alone. They also pointed to the importance of the sexual and injection networks in which women participated, the prevalence of infection among their partners and communities, and the broader social conditions that shaped their lives and relationships.

A Kinder Gentler Approach

The approach taken in Project 72 differed from earlier efforts to control prostitution and sexually transmitted infections [47]. During much of the twentieth century, public health responses to prostitution had been shaped by social protection programs that combined disease control with law enforcement, detention, and efforts to remove women from prostitution (Fig. 4) [48]. Project 72 took a different approach. Rather than treating women primarily as sources of infection to be controlled, we sought their cooperation, listened to their experiences, and asked about the circumstances surrounding their sexual relationships, drug use, and prevention practices.

What we learned reinforced the importance of working with women rather than simply attempting to control their behavior. Subsequent research similarly showed that effective prevention required attention to the social circumstances in which sex work occurred and access to health services that women could and would use [49]. Long term studies also documented risks extending well beyond sexually transmitted infections. Research in London described health and safety concerns associated with sex work [50], while a long term study of women in Colorado Springs documented

markedly elevated mortality during periods of active prostitution, including deaths associated with violence and drug use [51]. Together, these findings supported a broader view of public health that addressed not only infection but also the conditions affecting women's health and safety.

Looking back, Project 72 was part of this change in perspective. This study could not address all of the risks associated with prostitution, nor could research alone address the circumstances that brought women into it. It did, however, demonstrate the value of approaching women as participants in prevention rather than simply as targets of disease control. Cooperation, access to prevention and health services, and opportunities to reduce risk offered a less punitive and more practical public health response than the social protection model that had preceded it.

Conclusion

Project 72 demonstrated that women engaged in prostitution in the United States were at substantial risk for HIV 1 and other sexually transmissible and blood borne infections, but that these risks differed considerably across geographic and social settings. Injection drug use was strongly associated with HIV 1, HBV, and HTLV I/II, while syphilis and HSV 2 followed different patterns related to sexual exposure. Taken together, the findings showed that prostitution alone could not explain infection risk. Sexual and injection partnerships, local prevalence of infection, drug use, and the broader circumstances of women's lives also mattered.

At the same time, approaches to prostitution and HIV prevention were changing. Margo St. James founded Call Off Your Old Tired Ethics, known as COYOTE, in 1973 and became a prominent advocate for the rights of women engaged in prostitution [52]. As concern about AIDS grew, the California Prostitutes Education Project, or CAL PEP, brought sex worker participation into HIV prevention, education, and outreach [52, 53]. Jonathan Mann articulated a broader principle that became central to the global response to AIDS: protection of human rights and protection of health were closely connected [1]. These developments reflected an important lesson that was also emerging from Project 72. Effective prevention required not only identifying risk but also listening to the people affected and working with them to develop practical ways to reduce it.

Project 72 also provided a foundation for subsequent research and prevention efforts. CDC supported collaborative work with women engaged in prostitution in San Francisco, Atlanta, and Colorado Springs. These projects extended the work from cross sectional epidemiologic investigation toward community-based outreach, repeated testing and counseling, and risk reduction [54, 55]. The work reinforced the importance of translating epidemiologic findings into prevention programs that could reach people in the communities where they lived and worked.

Years later, the implications of these findings extended beyond research. In 1995, I was asked to provide expert testimony in a federal case in Florida concerning prostitution and public health. During my deposition, I drew on studies of women engaged in prostitution, including work arising from Project 72, to explain that prostitution itself appeared to play a relatively minor role in the transmission of sexually transmitted infections in most settings in the United States. Risk depended instead on factors such as injection drug use, sexual partnerships, socioeconomic conditions, access to health care, and opportunities for prevention. I also argued that legal and political restrictions could interfere with efforts to test and implement effective public health interventions [56]. The experience reinforced for me the importance of allowing epidemiologic evidence, rather than assumptions about prostitution and disease transmission, to guide public health policy.

Looking back, Project 72 provided more than estimates of infection among women engaged in prostitution. The women who participated helped us understand how sexual relationships, injection drug use, social networks, and local circumstances shaped their risks in ways that surveillance data alone could not. They also demonstrated the limitations of making assumptions about stigmatized populations. Nearly four decades later, that lesson remains relevant: public health policies and prevention programs are most useful when they are guided by epidemiologic evidence, informed by the experiences of the people affected, and implemented with respect for their dignity.

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