

Prostitutes and AIDS: A Health Department Priority?

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Abstract: With increasing competition for resources, health departments are faced with the question of whether to target female prostitutes as a high priority component of AIDS prevention strategy. Prostitutes are considered to be a reservoir for transmission of certain sexually transmitted diseases (STDs). However, a variety of studies suggest that human immunodeficiency virus (HIV) infection in prostitutes follows a different pattern than that for STDs: HIV infection in non-drug using prostitutes tends to be low or absent, implying that sexual activity alone does not place them at high risk, while prostitutes who use intravenous drugs are far more likely to be infected with HIV. Emerging data from heterosexual groups simi-

larly suggest a low rate of heterosexual transmission, particularly from women to men. Prostitutes who do not use intravenous drugs probably face their highest risk from steady partners who may be infected with HIV and other STDs and with whom barrier protection is generally not used. Nevertheless, there are good reasons for health departments to place high priority on prevention efforts directed to prostitutes: 1) prostitutes often have other risky behaviors such as drug use; and 2) prostitutes are reachable, being a group which is already in the health care system administered by health departments. (*Am J Public Health* 1988; 78:418-423.)

Introduction

Control of communicable diseases is a prominent activity of most health departments, one of the most important groups of such diseases being sexually transmitted diseases (STDs). This function has achieved even greater attention recently because of the acquired immunodeficiency syndrome (AIDS), a disease primarily transmitted through sexual contact. The devastating medical, social, and economic consequences of AIDS and the unknown future course of the disease have created tremendous demand for identification and implementation of control measures. This emphasis is reflected by the increase in funding for control of AIDS through state and local health departments. According to Row and Ryan, state AIDS expenditures, without Medicaid or federal funds, have increased 15-fold, to \$156.3 million, between fiscal 1984-1988.¹

Recent increases in other STDs have also made control programs for these diseases an increasingly prominent component of many health departments. For example, over the past decade in the United States, the annual number of cases of penicillin-resistant gonorrhea has increased from zero to 13,000 and congenital syphilis and chancroid have tripled.^{2,3} Viral STDs have also become an important concern: over the last decade, physician office visits for genital herpes have doubled, and papilloma virus, increasingly linked with cervical cancer, continues to cause an increase in physician consultations for genital warts.²

Prostitutes are defined for this review as women who exchange sex for money or other items. Prostitutes may engage in "unsafe" sex practices which place them at heightened risk for AIDS and other STDs: they have numerous partners, usually lack the ability to screen them, and may not use barrier methods of contraception. Regular partners (boyfriends or husbands) often use intravenous drugs and are at high risk for STDs. Because these women are viewed as a reservoir of infection for STDs and are frequently treated by health departments, they are often targeted as a high priority group for identification, treatment and, to a lesser degree, prevention efforts by health departments.

AIDS, however, presents a new dilemma for health departments: are prostitutes a group at high risk for becoming infected with human immunodeficiency virus (HIV), as they appear to be at high risk for other STDs? If so, are they at high risk for passing it on to their partners? Should health departments and other enforcement agencies focus on this group? If so, should they seek to curtail prostitution, encourage "safe" forms of practicing the trade, or promote other prevention and control measures?

If there is reason to believe that prevention and/or intervention efforts will be successful in slowing the steadily increasing toll of AIDS, then criteria are met for placing prostitutes as a high priority for such efforts. The increased urgency which results from the deadliness of HIV infection and our inability to treat the disease brings health departments under pressure for effective AIDS prevention programs. At the same time, however, health departments must weigh the demands of this prominent disease against the dangers posed by other kinds of infection. They must also balance AIDS prevention efforts with programs aimed at reducing illness and death from other causes.

Prostitutes as a Reservoir for STDs in the United States

Although few studies compare the prevalence or incidence of bacterial STDs in prostitutes and other groups, women who are identified as prostitutes have higher prevalence rates than would be expected among the general population (Table 1).⁴⁻¹⁶ Gonorrhea has been most extensively studied, with prevalence rates in the United States ranging between 34.8 per cent in 1943 and 5.2 per cent in 1956, the most recent portion of a 20-year prevalence study.⁴ The most current investigation, from 1981, found a rate of 17.4 per cent among women arrested for prostitution in Atlanta, Georgia.⁷ Studies of prostitutes outside the United States show a range of prevalence rates, from 8.3 per cent in Taiwan to 51.2 per cent in Central Africa.⁸⁻¹¹

Syphilis has also been studied in prostitute groups. Two studies, one from the US and one from Greece, reflect substantially higher rates of infection among prostitutes than among "comparison groups" of women—those applying for health cards and premarital testing in one study, and pregnant women in another.^{12,13}

Information on other diseases spread through sexual contact are sparse. Two studies of prostitutes, one in the United States⁷ and one in Kenya,¹¹ reflect prevalence rates of 7.8 and 6.0 per cent, and chancroid prevalence of 5.2 per cent. Although

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TABLE 1—Prevalence of Sexually Transmitted Diseases in Female Prostitutes

Year	Sample Source	Study Site	No. Subjects	Prevalence (%)	Reference
Gonorrhea, US					
1936	women arrested for prostitution	New York, NY	3,824	23.3	4
1937			4,254	28.4	
1938			4,798	26.1	
1939			4,586	22.6	
1940			5,561	37.0	
1941			5,303	45.1	
1942			5,520	34.3	
1943			4,595	34.8	
1944			4,488	33.9	
1945			4,814	32.2	
1946			4,038	23.6	
1947			3,588	24.4	
1948			3,685	21.7	
1949			3,269	16.5	
1950			2,999	12.0	
1951			2,681	5.8	
1952			2,268	6.7	
1953	2,306	6.1			
1954	2,448	5.8			
1955	2,891	5.7			
1956	2,852	5.2			
1979	women arrested for prostitution	Colorado Springs, CO	79	22.0	5
1979	prostitutes	STD clinic, Fresno County, CA	451	21.7	6
1981	women arrested for prostitution	Atlanta, GA	321	17.4	7
Gonorrhea Non-US					
1969	licensed prostitutes	bars, nightclubs, restaurants, Philippines	702	15.2	8
1974	prostitutes working in local bars or homes	Butare, Central Africa	86	51.2	9
1978	registered prostitutes	government clinics, Taipei, Taiwan	515	8.3	10
1985	prostitutes working in bars and homes	Nairobi, Kenya	192	29.7	11
Syphilis, US					
1936	women arrested for prostitution	New York, NY	3,824	35.7	4
1937			4,254	31.6	
1938			4,798	31.2	
1939			4,586	30.1	
1940			5,561	21.7	
1941			5,303	18.1	
1942			5,520	15.6	
1943			4,595	15.8	
1944			4,488	14.6	
1945			4,814	15.9	
1946			4,038	21.3	
1947			3,588	20.7	
1948			3,685	17.0	
1949			3,269	15.9	
1950			2,999	9.5	
1951			2,681	10.4	
1952			2,268	11.9	
1953	2,306	7.4			
1954	2,448	3.1			
1955	2,891	6.2			
1956	2,852	8.5			
1979	prostitutes	STD Clinic, Fresno County, CA	451	6.3	6
1981	women arrested for prostitution	Atlanta, GA	321	2.5	7
1983	women arrested for prostitution	Memphis, TN	414	6.0	12
	persons applying for health cards and premarital tests		Unknown	1.0	
Syphilis Non-US					
1974	registered prostitutes	Athens, Greece	293	15.4	13
	pregnant women	Athens, Greece	379	0.0	
1985	prostitutes	Nairobi, Kenya	192	41.1	11

(continued next page)

TABLE 1—Continued

Year	Sample Source	Study Site	No. Subjects	Prevalence (%)	Reference
Trichomoniasis, US					
1981	women arrested for prostitution	Atlanta, GA	321	7.8	7
Trichomoniasis, Non-US					
1985	prostitutes	Nairobi, Kenya	192	6.0	11
Chancroid, Non-US					
1985	prostitutes	Nairobi, Kenya	193	5.2	11
Hepatitis B (HBsAg), Non-US					
1974	registered prostitutes	Cali, Colombia	272	5.0	14
	females, general population		162	9.0	
1973	nuns	Public Health Service Institution, Munich, Germany	30	10.0	15
	prostitutes		273	2.2	
1974	blood donors	Munich, Germany	5,000	0.4	13
	registered prostitutes		293	4.4	
1984	pregnant women	Hospital, Athens Greece	379	3.4	16
	prostitutes		163	2.5	
1984	STD clinics, Sydney, New South Wales	South Wales	163	2.5	16
	female heterosexuals		200	0.5	
Hepatitis B (HBsAb), Non-US					
1974	registered prostitutes	Cali, Colombia	272	20.0	14
	females, general population		162	12.0	
1974	nuns	Athens, Greece	30	23.0	13
	registered prostitutes		293	56.7	
1984	pregnant women	Hospital, Athens Greece	379	24.5	16
	prostitutes		163	1.8	
1984	STD clinics, Sydney, New South Wales	South Wales	163	1.8	16
	female heterosexuals		200	3.5	

comparison groups were not included, these figures are higher than would be expected for the general population. Studies of hepatitis B antigen (HBsAg) and antibodies (HBsAb) conducted among prostitutes and other groups produce inconsistent results, reflecting the different predominating modes of transmission in different settings. In countries with poor sanitation, nonsexual transmission predominates, while in the developed countries, infection is less common, and sexual transmission predominates. The ability of infected women to pass these diseases on to their partners is dependent on the ease of transmission and frequency of exposure, among other factors. Gonorrhea is the only disease for which efficiency of transmission has been studied, with the suggestion that male-to-female transmission is at least twice as efficient as female-to-male.¹⁷⁻¹⁸ This may be at least partially explained by the greater mucosal surface exposed in the female during sexual contact, a factor which suggests other STDs may be more efficiently transmitted from men to women than vice-versa.

Prostitutes and AIDS

The prevalence of HIV antibodies among prostitutes ranges between zero and 65 per cent (Table 2),¹⁹⁻²⁸ with the single most important risk factor in the US being intravenous drug use. For example, a large multicenter collaborative study found that of 62 women who were HIV-seropositive, 76 per cent had injected drugs.¹⁹ The highest rate of seropositivity for all centers occurred in New Jersey, which is an area of high drug use; here, the rate of seropositivity among 56 women prostitutes was 57 per cent.¹⁹ Another cross-sectional study found that among 535 practicing prostitutes in Nevada, 7 per cent of whom admitted to intravenous drug use, none

were positive. In contrast, 370 incarcerated prostitutes, all of whom had used drugs intravenously, had a seropositive rate of 6.2 per cent.²⁰

Other prostitute studies tend to be small but similarly emphasize the central role of drug use as a major risk factor: in New York City, 50 per cent of 12 drug users were positive, compared with 7 per cent of 65 nonusers;²¹ in Italy, 59 per cent of 22 drug users were positive, whereas none of the nonusers were.²⁸ None of the 50 prostitutes tested in London, 56 in Paris, or 399 in Nuremberg were seropositive.²³⁻²⁵ The disparity in rates according to drug use suggests that drug use may overshadow sexual exposure as a risk factor among these women.

In parts of Africa, however, infection rates are high among female prostitutes and appear to be related only to sexual activity.²⁹ However, there may be other relevant factors which affect susceptibility in that population.³⁰

Heterosexual Transmission of HIV

If prostitutes are at heightened risk because of drug use, the degree of risk attributable to sexual activities remains a question. Heterosexuals continue to be among the groups with lowest number and rates of AIDS cases. At the end of 1987, 4 per cent of reported AIDS cases occurred among heterosexuals. Within this heterosexual group, most cases have been traced to needle sharing or exposure to other contaminated blood products. Only 15 per cent were persons who either denied contact with intravenous drugs or blood products or in whom the cause was undetermined or under investigation.³¹ Among this subgroup of heterosexuals without other risk factors, 76 per cent are women, and 60 per cent of the subgroup became infected by contact with an intrave-

TABLE 2—Cross-sectional Studies of Prevalence of HIV Antibody in Female Prostitutes

Date	Study Site	TOTAL		Intravenous Drug Users		Non-intravenous Drug Users		Comments	Reference
		No. Subjects	Prevalence (%)	No. Subjects	Prevalence (%)	No. Subjects	Prevalence (%)		
US									
1987	newspaper ads, pamphlets, street outreach, Atlanta, GA	92	1.1						19
	prisons, Miami, FL	252	18.7						
	drug rehabilitation program, Newark, Jersey City, & Patterson, NJ	56	57.1						
	STD clinics, Colorado Springs, CO	71	1.4						
	STD clinics, Las Vegas, NV	34	0						
	prisons, Los Angeles, CA	184	4.3						
	newspaper ads, pamphlets, street outreach, San Francisco, CA	146	6.2					47 (76%) of 62 with antibody to HIV had injected drugs	
1987	brothels, Nevada	535	0					7% IV drug use in last 5 years	20
	prison, Nevada	370	6.2					100% IV drug use in last 5 years	
1987	streets, New York, NY	78	13	12	50	65	7	overall seropositivity 13%	21
1987	South Florida	90	41	63	46	27	30	0/25 "escorts" seropositive—drug use not specified	22
Non-US									
1986	licensed prostitutes, West Germany (testing mandatory)	399	0	1	0	398	0		23
1985	STD clinic, London	50	0	3	0	47	0		24
1985	Rue Saint-Denis, Paris	56	0	0	—	56	0		25
1987	Nairobi, Kenya	535	65						26
1985	Athens, Greece	200	6	0	—	200	6		27
		400	0					drug use not specified	
1987	Pordenone and Treviso, Italy	36	36	22	59	14	0		28

nous drug user.³¹ The latter point is particularly important, since many prostitutes have regular, nonpaying relationships with boyfriends or husbands who are drug users.

Receptive anal intercourse is clearly demonstrated to be a strong risk factor among homosexuals,³²⁻³⁴ and this risk appears to also apply to women who practice anal sex.^{35,36} In prostitutes, anal sex is not routinely practiced.^{11,23,35}

Unfortunately, there are few data available on persons with heterosexual contact with prostitutes. Those who have contact with prostitutes or multiple sex partners are neither considered part of the "heterosexual transmission" category nor are they separately tabulated by the Centers for Disease Control. Such persons are grouped along with patients for whom information is incomplete due to death; who refuse to be interviewed; who are lost to follow-up; who are still under investigation; or for whom no risk is identified.

While the risk of heterosexually acquired HIV infection with partners who are not intravenous drug users has not been well studied, there is ample evidence that penile-vaginal transmission occurs, though with considerably less ease than gonorrhea.³⁷ One estimate of the risk of the probability of male-to-female transmission is 0.001 per contact with an infected partner.³⁸ This may be compared with an estimated per-event risk of transmission through parenteral exposure of 0.001-0.004 and through contaminated blood products of 0.661.³⁷ Probability of spread from women to men remains unquantitated but is probably lower than that from men to women.³⁷

Ulcerative genital lesions may enhance transmission of HIV, perhaps by providing a more direct portal of entry into the bloodstream. In Africa, syphilis and chancroid are risk factors for HIV heterosexual transmission and, in the United States, syphilis and herpes have been shown to be cofactors.^{39,40} The difference in prevalence rates of ulcerative diseases between the two areas may help explain the greater importance of heterosexual spread in Africa as well as its apparent facility in transmission from men to women and from women to men. HIV transmission may also be facilitated by a reduced number of T4 cells in the infected partner and other factors.⁴¹

Number of sexual partners is also important in determining probability of spread. The disparity between the US and Africa in importance of heterosexual spread may also reflect in part the greater number of sexual partners that is normative in Africa. Even among women such as prostitutes who have many partners, for example, a probability of 0.001 per sexual contact means that a woman would have to have sex with nearly 700 infected partners to have a 50 per cent chance of becoming infected. However, prostitutes may be at heightened risk of infection from their boyfriends or husbands, who are often drug users and who generally do not use condoms. In contrast, customers of prostitutes may be at lower risk because they are less likely to have other STDs which can facilitate transmission (because they less frequently have sex) and more frequently use condoms.

Prostitutes as Intervention Targets

Prostitutes, like other high-risk groups, have shown signs of altering their sexual practices in the face of perceived risk of sexual transmission. This has taken the form mainly of increased use of condoms,¹⁹ which are widely promoted through a variety of channels, including mass media, as reducing the risk of HIV infection. Preliminary information suggests that prostitutes are eager to learn and are accepting of safer-sex messages and that such programs can markedly increase the use of condoms and other safer sex practices (Priscilla Alexander, personal communication).⁴² Most prostitutes in the United States try to use condoms, both for vaginal and oral sex. However, customer demands sometimes make compliance difficult, and the more desperate the woman is for money, the less likely it is that preventive measures will prevail. Prostitutes tend not to use condoms with their boyfriends or husbands, many of whom may be at high risk for HIV and other STDs.

Although prostitutes in the US are probably at low risk of HIV infection based on their sexual activities, they are nonetheless an important target group for the efforts of health departments:

- They are often at high risk of becoming infected with HIV because of other high-risk behaviors, most notably intravenous drug use;
- They often have sexual relationships with others at high risk of both STD and HIV infection;
- They are already part of the health care systems administered by the health department (STD clinics) and are therefore already identified and familiar with health department capabilities and facilities;
- They may be a conduit through which educational and other intervention efforts aimed at reducing the risk of HIV transmission could be distributed to partners, friends, and others.

Health departments and other public agencies must also consider the issues of HIV testing and contact tracing in the contexts of AIDS. Arguments have been advanced for mandatory testing for HIV (and other STDs) among women arrested for prostitution based on the assumption that the need for societal protection outweighs the rights of the individual. However, such efforts are strongly resisted by prostitutes and may be counterproductive. For example, only women arrested for prostitution could be forced to undergo testing, and many others who might have voluntarily tested would be scared away. In some cities, women arrested for prostitution are offered the choice of going to jail, or to an STD clinic where they undergo a battery of tests. Of interest is the fact that COYOTE, a prostitute advocacy group, recommends that women not be tested unless they are considering pregnancy or participating in anonymous studies (Priscilla Alexander, personal communication).

The effectiveness of any of the intervention methods outlined here depends to a large degree on cooperation from prostitutes themselves. Given the notoriety about this deadly disease, prostitutes, like other groups, are to some extent concerned about avoiding infection and appear to be open to educational efforts.

Summary

Strategies to reduce the incidence of HIV infection within this population are desirable, but approaches such as mandatory testing and contact tracing are difficult to implement. Educational approaches, by contrast, have fared

somewhat better. Although successes to date have been modest, a number of programs that aim to reach prostitutes with prevention messages report that prostitutes want AIDS information and are much more approachable than IV drug users, a comparable risk group. In addition, local health departments, primarily because of their established relationship with such women, can play a lead role in promoting such education efforts. Education related to AIDS could pay added dividends in relation to other STDs. An important part of the prevention message should be the effectiveness of condoms, spermicides, and other forms of barrier contraception. While clients or boyfriends may resist condoms, spermicides in the form of the contraceptive sponge, vaginal foams, jellies, or suppositories can be employed with or without the compliance of a male partner; they are effective against other STDs and may be effective in reducing risk of HIV infection as well.

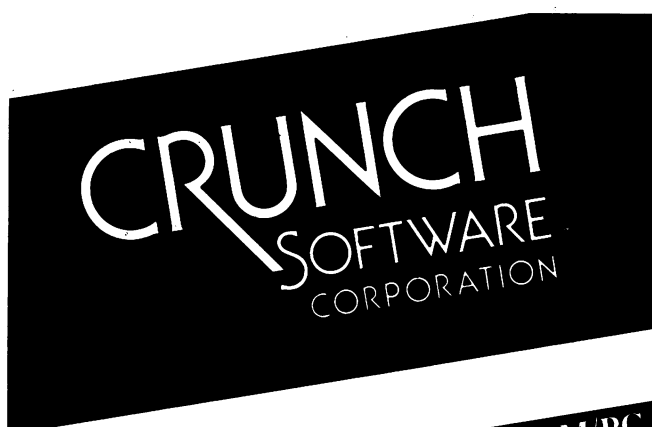
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