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Risk factors for HIV infection in Thailand

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Introduction

The HIV/AIDS epidemic has swept through the Thai population with startling rapidity. In a few years, infection levels in 21-year-old male conscripts in some northern provinces have gone from 0 to 30%. In the same period, infections in women attending antenatal clinics in these provinces have climbed steadily to 10% today. Originally perceived in the popular press as a disease of homosexual men and intravenous drug use, the epidemic continued its spread through commercial sex workers (CSW) and their clients, while people engaging in risk behaviors denied their membership of risk groups and refused to take the precautions required to protect themselves. The invisibility of HIV infection, coupled with the low numbers of AIDS cases seen in the early years of a rapidly expanding epidemic, gave a sense of invulnerability to those practicing risk behaviors. Despite the low caseloads, the ongoing HIV sero-surveillance done by the Ministry of Public Health and the Royal Thai Army revealed the true extent of what was happening nationwide.

This monitoring showed that HIV infection had spread extensively throughout the population. The focus initially placed on risk groups served only to divert attention from the true levels of HIV risk behavior in the Thai population. Over the past several years, a number of behavioral studies have helped in understanding the factors that have fueled the rapid and thorough dissemination of HIV through the general Thai population, as outlined in [1]. Here we will summarize the results of these studies and outline the most urgent areas for future research and intervention emphasis.

Although female CSWs exhibit high levels of risk behavior, this paper will not focus on them as a group. There has been little change in the findings on partner numbers and risk factors since the time of Weniger *et al*'s original paper [2], and continued intervention work with sex workers and their clients is needed. Several recent papers [3–6] have focused on the sociocultural context or reviewed the current situation of sex workers in the country. Similarly, intravenous drug users (IVDU) were discussed comprehensively in [1] and will not be further addressed here. Instead, this paper focuses on those factors responsible for the spread of HIV in the general Thai population. These include levels of individual knowledge, awareness, risk perception and risk behavior, as well as cultural and socioeconomic factors contributing to risk.

Knowledge of AIDS and personal risk perception

In order for people to take protective measures against AIDS, they must be aware of what the disease is, how susceptible they are to infection, and what constitutes effective prevention. Knowledge and personal risk perception are not sufficient to induce behavior change, but they are generally seen as prerequisites for adopting disease-preventive behaviors. Several studies have examined the level of AIDS knowledge in the Thai population [7–15]. Media coverage of AIDS in Thailand is extensive, so most studies have found that the majority of respondents have heard of AIDS. For example, 99.4% of the 2801 participants in the Survey of Partner Relations (general population, nationwide, mid-1990) [7], 98.2% of 330 village women (northeast, late 1991 to early 1992) [8], 99% of the 4090 participants in an AIDS media effectiveness survey (general population, nationwide,

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Table 1. Sampling of levels of belief in casual transmission of HIV from various studies

Study [reference]	% Believing in	casual transmission mode
Survey of Partner Relations 1990 [7]		
Nationwide	60%	by insect bite
	52%	by toilet seats
	50%	by sharing food
Lyttleton 1991 [12]		
Northeastern villagers	31%	by mosquito
	42%	by visiting same clinic as person with AIDS
	19%	by eating with person with AIDS
MOPH Telephone Survey 1991 [13]		
Bangkok	44%	by mosquito
	51%	by donating blood
	24%	by eating with person with AIDS
Mahidol Media Effectiveness Survey 1993 [9]		
Nationwide	42%	by mosquito
	23%	by sharing clothing
	17%	by sharing eating utensils

MOPH, Ministry of Public Health

late-1993) [9] and 96% of 760 women in Bangkok (mid-1987) [10] had heard of AIDS In all these surveys, the vast majority of respondents reported getting most AIDS information from the electronic or print mass media

Studies find that public knowledge of actual HIV transmission modes is also uniformly high For example, 98 1% of participants in a mid-1990 survey of the general population in mid-1990 [7] and 96% of 435 villagers in the northeast (late 1991) [12] knew that HIV can be transmitted by sexual intercourse. Similar high percentages of correct responses are given about transmission by sharing of needles Thus, the Thai population has good knowledge of how HIV is transmitted

Unfortunately, there are high levels of belief in one or more casual transmission modes by which HIV infection is extremely unlikely or impossible A sampling of levels of belief in various casual transmission modes is presented in Table 1 Attention must be focused on resolving these misunderstandings because they are one of the factors contributing to fear of and discrimination against HIV-infected people Given the high prevalences of HIV in Thailand, this is critically important community- and family-based care will be essential to the country's ability to cope with the increasing burdens of HIV infection and AIDS cases These approaches cannot succeed if communities and families react to people with HIV and AIDS with fear and rejection instead of compassion and support

Other serious deficiencies in knowledge that are relevant to AIDS prevention efforts have been observed. Most studies find a significant percentage of people who believe HIV infection must be symptomatic. Table 2 presents the percentages of people in various surveys who either believed that HIV infection must always be symptomatic or were uncertain on this issue People who believe they can identify HIV carriers may be more inclined to have unprotected sex with someone without symptoms Survey respondents have sometimes expressed a belief in the curability of AIDS (39 4% of the women in the village survey in the northeast [8] and 11 8% of homosexual or bisexual men in another study in the northeast [14]) Future mass media interventions should address these weaknesses in AIDS knowledge

Table 2 Reported levels of belief in the symptomatic nature of HIV infection

Study [reference]	Believe always symptomatic	Uncertain
Survey of Partner Relations [7]		
Nationwide, 1990	20%	12%
Lyttleton [12]		
Northeastern villagers, 1991	38%	50%
MOPH Telephone Survey [13]		
Bangkok, 1991	30%	-
Mahidol Media Effectiveness Survey [9]		
Nationwide, 1993	31%	-

MOPH, Ministry of Public Health

Extensive condom promotion campaigns have been mounted, with 60–70 million condoms distributed free of charge each year to Government sexually transmitted disease (STD) services and sexual service establishments, and another 60–70 million sold in commercial markets annually As a consequence, condom use has increased significantly in commercial sex [1] If all these condoms were used, they would protect 60% of commercial sex acts as reported by men in the 1990 Survey of Partner Relations. In surveys people are generally aware that using condoms and reducing sexual contacts outside relationships help to prevent AIDS However, many incorrect assumptions and mistaken beliefs,

which are rarely captured in standard knowledge, attitudes, behavior and practices (KABP) surveys, still influence sexual risk behavior For example, many have interpreted the media AIDS messages as meaning that by avoiding membership of risk groups or contact with those at risk, one can remain free of AIDS Unfortunately, definitions of 'at risk' can be quite fluid For example, CSWs may not be perceived as such if they receive regular check-ups or work at a 'clean' site Individual definitions of risk groups may also be narrow For example, Kanato *et al* [15] point out that in a rural community in the northeast, villagers with lower education think that only sexual intercourse with low-class sex workers and IVDUs are high-risk behaviors These findings are of concern, since the majority of the Thai population is rural with primary or lower education

These mistaken understandings have seen expression in several forms of ineffective self-protection strategies Many Thai men believe that by selecting establishments for commercial sex carefully, they can avoid AIDS Lyttleton [12] gives an example of one village teacher who feels that the restaurant he visits for commercial sex is subject to such strong health regulation that he does not need to use condoms Many commercial sex sites actively advertise that their women receive regular HIV and STD check-ups, making their sites safe This misconception that testing is a form of prevention is common in Thailand [16] Havanon *et al* [17] point out a variety of approaches used by men for 'reducing' their risk in sexual encounters, including looking for visible symptoms in their partners, choosing less attractive sex workers, or selecting sexual service establishments that are lower risk, such as cleaner sites, or restaurant based sites rather than brothels, where the number of partners a women has is thought to be lower (Although it is true that sex workers whose charges are relatively low have higher infection levels than those who charge more [2], failure to use a condom with any sex worker in Thailand remains an extremely high-risk activity) Another strategy mentioned was visiting one sex worker regularly This perceived risk reduction has also been seen in studies of sex workers, who reported they were less likely to use condoms with regular clients [16,18] In a series of focus groups on child prostitution, selection of child sex workers was mentioned by many participants as another strategy for reducing risk [19] Unfortunately, this may actually increase risk for a number of reasons (1) young girls may be biologically more susceptible to infection, (2) young women may be at a higher risk of HIV infection because they may be preferentially selected for unprotected sex and may have higher numbers of clients because of this perception of lower risk, and (3) there is evidence that transmission of HIV is greatly enhanced in the viremia following initial HIV infection, and selecting younger sex workers likely to have been infected recently increases the probability of contact during this initial highly infectious phase

Partly as a result of this belief in the efficacy of personal screening methods, perceptions of personal risk for HIV remain comparatively low, even in those with high levels of sexual risk behavior For example, in the Survey of Partner Relations [7], only 19 5% of men reporting unprotected sex with CSWs in the past year thought they were at high risk, 55 2% of men having unprotected commercial sex, 74 7% of those reporting protected commercial sex, and 75 5% of those reporting noncommercial sex outside relationships said they were at little or no risk of contracting HIV

As will be discussed in the next section, many married Thai women are placed at risk through the premarital or extramarital activities of their husbands In Partner Relations [7], 36 1% of currently married women thought they were at risk for HIV, despite reporting levels of extramarital sexual contact under 1% In the survey of northeastern women [8], 31 8% of the women thought they were at risk, but only 53% of these felt it was because of their husband visiting sex workers Of the 60% who thought they were not at risk, 74% said it was because they believed their husband did not visit sex workers In many cases, however, there is a disparity between the wife's knowledge and the husband's activities In one study in the north [20], 33% of husbands reported visiting sex workers, while only 15% of their wives thought they did so One other misconception revealed by the northeastern study [8] was the belief of some women that using a condom with their husband for a short period after he had had commercial sex could protect them against HIV These women viewed HIV transmission as a short-term phenomenon or as only possible during symptomatic periods The emphasis on commercial sex settings in many interventions and media messages has produced serious misunderstandings of the reality of transmission to and from long-term partners Conventional KABP surveys often fail to pick up these more subtle but intervention-relevant distinctions More qualitative work, such as focus groups and in-depth interviews, is needed to explore these personal conceptualizations of AIDS and HIV in detail and to design interventions to address them

Patterns of commercial and casual sex

As revealed by numerous studies [21–25] and the epidemiological waves of infection [1,2], the dominant risk factor to date for HIV infection in Thai men is unprotected sex with CSWs The dominant risk factor for HIV-infected Thai women is sexual intercourse with their husbands, a practice most

3

people would generally not characterize as a 'risk behavior'. This sex difference results from the radically different risk behavior patterns of Thai men and women. The most comprehensive nationwide study on this subject was the Survey of Partner Relations and Risk of HIV Infection [7]. Conducted in mid-1990, this survey of 2801 men and women aged between 15 and 49 years gathered detailed information on sexual behavior, condom use, and sexual partnering in the general Thai population.

The survey found large differences in sexual behavior outside marital relationships as a function of sex, marital status, and urban-rural residence. Although 46.6% of single men (51.4% urban and 44.0% rural) reported having sex within the past 12 months, only 4.1% of single women reported doing so (2.8% urban and 5.1% rural). Although 30.6% of urban married men and 12.4% of rural married men reported sex with someone other than their spouse in the past year, only 1.3 and 0.7% of urban and rural married women, respectively, did so. It should be noted that there are indications of under reporting of risk behavior by women in such surveys. In a special section for adolescents, far more male adolescents reported first female partners who were friends or acquaintances than was compatible with the very low levels of premarital sex reported by women. In field work for the qualitative component of the Partner Relations study, even women who were selected for high risk behavior were often reluctant to report it. Nevertheless, there is a substantial difference in levels of risk behavior between men and women in Thailand.

As is invariably the case in studies of sexual behavior, determining the validity of self-reported data is difficult [26]. Given the importance of such data to determination of risk levels and evaluation of intervention effectiveness, there remains a strong need for methodological work comparing different modes for collecting such data in Thailand, including self-administered questionnaires, face-to-face interviews, focus group discussions, and in-depth interviews. Most researchers doing qualitative work, such as in-depth interviews, have noted an increase in willingness to discuss sensitive sexual matters on the part of Thai men as the interview progresses and a rapport is established between respondent and interviewer. This rapport and the resulting openness may be more difficult to establish in a structured interview situation, although good community preparation for field work and a well-designed questionnaire can significantly improve the chances of obtaining higher levels of validity and reliability.

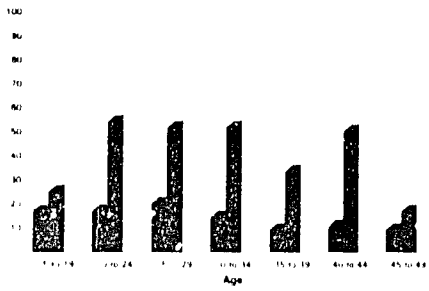
This pattern of men having a great deal of sex outside relationships and women having little is a natural reflection of traditional Thai attitudes towards male and female sexuality. Societal expectations are that men will be sexually active and will seek variety in sexual experiences, whereas women are expected to be virgins at marriage and faithful to their husbands. There are some indications that levels of premarital sex among young Thai women have been increasing, but they are still substantially lower than those among men.

This behavioral dichotomy creates a supply/demand problem. The number of men seeking sexual contact outside relationships vastly exceeds the supply of women available for such contact. The result is a well-attended commercial sex sector of approximately 150,000 sex workers [16], which absorbs much of the male sexual outlet. Recently, part of this supply problem has been addressed by recruiting women from neighboring countries, such as Myanmar and China, and from hill tribe communities. (In some areas of the north most of the women working in brothels are non-Thai, and numerous reports appear in the Thai media of police raids on brothels with large numbers of Burmese sex workers, many of whom are already HIV-infected. This may reflect the higher risks faced by these women in sexual service because of their inability to speak Thai or limited control of sexual negotiations because of their illegal immigration status, a factor often used by the brothel owners to maintain control over them.)

The high levels of commercial sex reported by the men in this survey confirm the importance of commercial sex as an outlet. Commercial sex in the past year was reported by 24.2% of urban married men and 9.5% of rural married men. For single men, the urban and rural figures were 39.5 and 38.1%, respectively. Comparing these numbers with the percentages reporting sex outside marriage shows that a significant proportion of Thai men use commercial sex services. When disaggregated by age, the numbers become even stronger evidence that a very high proportion of Thai men pay for commercial sex. Figure 1 shows the percentage of married men, single men with sexual experience, and all single men who have visited CSWs in the past year. For single men with sexual experience in their 20s, this percentage grows to 90%.

Similar high levels of sex worker contact have been reported in a number of other studies. For example, a survey of 1034 never-married men in the north [27] found that 90% of sexually experienced men had visited a sex worker and, of those, 69% had visited a sex worker in the past month. There were substantial differences in frequency of visiting CSWs and age at first intercourse between students, young military men and retail clerks. Two conscript studies [21,22] in the North found that 74.7 and 81.1% of participants had a history of sex with a CSW. An urban sample of men in Bangkok found that 75% had ever visited sex workers [28]. There are indications that these percentages may be somewhat lower in rural areas, perhaps because of decreased

4



ig. 1. Percentage of married (▨) single (▩) and single with sexual experience ( ) men reporting commercial sex in the past 12 months. Single men here means all single men; single men with sexual experience includes only men who have had at least one sexual encounter in their lifetime. Source: Survey of Partner Relations and Risk of HIV Infection [7]

anonymity, more restrictive local norms, or lower income, making commercial sex less affordable. Tyrlleton [12] reported that 48% of sexually experienced male respondents in a northeastern village had ever visited a CSW primarily when they were either away from the village for seasonal work or visiting the provincial capital or large towns nearby. This lower number may be related to more conservative norms of behavior in the northeast, as observed in the Partner Relations study [7]. The Partner Relations study also found regional variations in the level of commercial sex risk behavior, with the north showing higher levels and the northeast lower levels than the rest of the country.

The high prevalence of contact with CSWs, coupled with high levels of HIV infection in CSWs [1] and high transmission rates, as estimated by Mastro *et al.* [29], explains the epidemiological pattern and the rapid growth of the epidemic in the general male population. Because of their low levels of extramarital and premarital activities, most Thai women remain comparatively insulated against HIV until they marry. This transmission dynamic, combined with many early infections in homosexual/bisexual men and injecting drug users, creates a large early imbalance in the number of men and women infected, which is reflected in the current male to female AIDS case ratio of almost 7:1. However, male and female infection levels can be expected to eventually achieve rough equality.

There are preliminary indications in sexual behavior data from the 1993 Mahidol media effectiveness survey (V. Thongthai, personal communication, 1994) that the number of men visiting CSWs has been dropping since 1990. This is probably because of concerns about AIDS and increasing biases against CSWs, who are popularly perceived as heavily infected and responsible for spreading the disease to men. However, the number of CSWs reported by the Venereal Disease Division has only shown a slight decline over the same time. These apparently incompatible results may result from another phenomenon: a shift in the forms of sex work. In surveys of sex-work sites conducted in Bangkok by the Thai Red Cross Society as part of the Multisite Intervention Research Project on Sex Workers and HIV Transmission [30], fewer brothel-based sites were found in 1993 than in 1990, whereas there were more indirect sites, such as restaurants, cafes and karaoke bars. Because women in indirect sites have fewer clients, it is possible for the number of clients to decline, but the number of sex workers to remain almost constant.

Commercial sex has received the bulk of the attention and intervention focus in Thailand, but patterns of noncommercial extra-marital and premarital sex may be almost as important in transmitting HIV, especially for Thai women. Some married Thai men support one or more minor wives, a traditional practice among the wealthier segments of society; some also visit CSWs after work or while traveling. In one study of women in the northeast [8], many married women said they did not fear contracting HIV from their husbands because the husbands did not travel, implying that having commercial sex while traveling was expected of men.

Many unmarried Thai men engage in a combination of commercial and non-commercial casual sex. In the 1988 National Survey of Adolescent Sexuality [31], a sample of 529 rural Thai men, almost all of the Thai men who reported having had sex with female friends also reported having had sex with CSWs. The percentage reporting sex with friends grew steadily to almost 50% by the age of 24 years. A study of 412 university students in Songkhla Province [32] completed in April 1991 found that 36.9% of the sexually experienced men reported sex workers only as partners, 21.1% reported girlfriends or boyfriends only, while 25.5% reported a mix of sex workers and girlfriends or boyfriends. These results indicate that at least some single Thai women are engaging in casual sex and being placed at risk through their male contacts. Recent results from Behavioral Sentinel Surveillance studies in Bangkok [33] have found that 18% of single women reported ever having had sex, while 9% had sex within the past year.

In determining the overall risk to partners, it is important to examine these sexual networks of Thai men and women. Havanon *et al.* [17] found that the sexual networks in a Central Thai province were complex and extensive. The men in their study, admittedly a sample selected for high risk, reported having mixes of sexual partners that might include CSWs, minor wives, girlfriends, and casual encounters. Although the sample was small, there were variations between students and white- and blue-collar

5

workers in the mix of commercial and non-commercial partners in the networks. These complex sexual networks link perceived 'low-risk' women into the commercial sex networks through their male partners. In most cases, these women are unaware of the other activities of their partner and may not view themselves as at risk for HIV infection. There are indications from other studies under way that these complex sexual networks may be the rule rather than the exception for Thai men.

With such extensive sexual networks, condoms are essential to slowing the spread of HIV in Thailand. Since the early days of the epidemic, the government has promoted the distribution and use of condoms in commercial sex aggressively. In the Partner Relations [7] survey, only 33.2% of male clients of sex workers reported always using condoms in commercial sex. In 1993, the Mahidol media effectiveness study found that 78% of men having commercial sex reported always using condoms (V. Thongthai, personal communication, 1994). Although some of this increase may be positive reporting bias caused by the extensive promotion of condoms nationwide, it is clear that condom use in commercial encounters has increased dramatically. However, the same survey found that 57% of male respondents reported never using condoms in noncommercial casual sexual encounters. This is a reflection of the fact that condoms are generally considered more appropriate for commercial sex than for sex within a relationship. In the Partner Relations survey, 88.4% of respondents agreed that condoms were suitable for casual partners, but only 30% agreed with this for a spouse or regular partner. Condom use for contraception by married couples is low, at less than 5%. In light of the apparent complexity of Thai sexual networks, these numbers give cause for concern. This concern is heightened by the so far unconfirmed suspicions of some researchers that many men who report ceasing visits to CSWs may be engaging in casual sex with other female partners with whom condom use is avoided or considered threatening to the relationship.

As with levels of commercial sex, regional variations in condom use in commercial sex have been noted in some studies. A study of condom use by the Ministry of Public Health in 1990 found that condom use was lowest in the south with direct (i.e., brothel- or tea-house based) sex workers and lowest in the Central region with indirect (for example, bar- or restaurant based) sex workers [33]. The recent survey of sex workers by Chulalongkorn University [5] found that sex workers in the north reported always using condoms 85% of the time, compared with 24% of sex workers in the south. Much of this difference is attributed to the fact that many clients in the south are from Malaysia and may not have been as exposed to intervention messages as Thai clients.

One final factor that enhances the risk of Thai men is use of alcohol in conjunction with commercial sex. One study [35] found that high levels of alcohol consumption were associated with frequent commercial sex. Another prospective study [36] linked alcohol use with increased risk for HIV seroconversion in clients of CSWs. As Fordham [37] discusses, alcohol serves an important role in male social relations in Thailand, especially in rural areas. A ritual of eating and drinking often precedes a group of men visiting a brothel together and is considered to be essential for deep friendship. This means that the men are often drunk at the time they visit a brothel. In VanLandingham *et al.*'s study [27], 35% of men in the north reported usually drinking before visiting a sex worker, and 76% reported drinking before their last visit. In a military study in the north [38], 51.3% reported usually or always drinking before going to brothels. Sex workers have often reported difficulty in getting drunk customers to use condoms, so much of the increased risk of HIV infection is probably associated with lower levels of condom use by drunk men. In one study of 100 male clients in 1990, the most common reasons for not using condoms included: condoms did not have that natural feeling, the men thought the sex workers were disease-free, the men were drunk, or there was no condom available [39].

Sex tourism

Many of the earliest cases of AIDS in Thailand were associated with overseas travel by Thais or contact with foreign nationals, many of whom were tourists, within the country [40–42]. This perception of AIDS as a *farang* (foreigner) problem, which might negatively affect tourism, delayed early intervention efforts in Thai populations. Recently, instead of focusing on the introduction of HIV from foreign sources, reports on tourism and HIV in Thailand have turned to the issue of risk to tourists from Thai CSWs. Despite publicity on the high levels of HIV infection in CSWs, many tourists continue to visit them, in some cases resulting in HIV infection. Noone *et al.* [43] report 22 cases since 1989 in which heterosexual contact within Thailand was the probable mode of transmission, 17 of these cases occurred in 1991 and 1992. Serotyping of HIV strains in Japan [44] has detected numerous foreign nationals and five Japanese men infected with Thai genotype A, two of whom were infected in Japan, indicating the role of both international travel and indigenous spread in HIV transmission.

The sexual risks taken by tourists have also been addressed in several studies. Kleiber and Wilke [45] described a survey of German tourists who had sex in foreign countries and found less than 50% of the male heterosexuals used condoms and many

6

had contracted STDs through their activities. Many had spouses or regular partners in their home countries and generally did not use condoms with them, thus potentially placing them at risk. In a study of young Australians traveling to Thailand, Mulhall *et al* [46] reported that 70.3% of men said they might have sexual contact while in the country, although 78.4% said they would use condoms 100% of the time if having sex there. In contrast, a study by the Institute of Population Studies of sex workers in the south of Thailand, who have predominantly (90%) Malaysian and Singaporean customers, found that only 2.4% reported always using a condom [3]. Japanese men visiting Thailand frequently use commercial sex services with high levels of condom use on initial contact [47]. However, the AIDS knowledge of these men was poor, and condom use was often discontinued after repeated visits to the same sex worker.

These studies highlight the ongoing need for interventions to educate travelers on the risk of HIV and STD acquisition in foreign settings and the promotion of condom use. More resistance to these programs is likely to be found from tourism authorities and travel agencies, which fear reductions in tourism as a result of AIDS education programs than from travelers themselves [48–50]. Gruer *et al* [51] reported that a safer sex intervention with travelers at an international departure lounge in Glasgow Airport was well accepted.

Male homosexuality and bisexuality

The earliest cases of AIDS in Thailand were predominantly in homosexual or bisexual men [52]. Through September 1986, 15 of the first 17 AIDS and AIDS-related complex cases in Thailand were homosexual or bisexual men [40,41]. This was well publicized in the Thai media and fed a public perception of AIDS as a homosexual/bisexual disease [53]. On the positive side, this publicity resulted in numerous interventions being started in gay bars and attempts made to inform men who had sex with other men of the risk of unprotected intercourse [54–58]. On the negative side, the prejudices that focused on AIDS as a disease of gay men allowed many to justify heterosexual risk behaviors.

As the attention shifted to CSWs and their clients, homosexual/bisexual men received less attention in the Thai national program. Between 1989 and 1991, various interventions were organized in gay bars by gay-oriented groups such as TACT and the organization of gay bar owners [54–58]. The Ministry of Public Health's Venereal Disease Division also provided outreach, education, and condom distribution to gay bars. However, since 1991 men who have sex with men have become almost invisible in the eyes of the public-health establishment. This shift of intervention emphasis resulted from the comparatively few newly diagnosed HIV-infected men reporting sex with other men as a risk factor (only 1.4% of AIDS cases through August 1993 listed homosexuality or bisexuality as a risk factor). Another contributing factor was that although the general Thai attitude towards men having sex with men is permissive, these behaviors are not openly discussed in Thai society. As a result, only a handful of studies have actually focused on the behavioral risk, AIDS knowledge and seroprevalence levels in homosexual/bisexual men. This stands in stark contrast to the United States and parts of Europe, where perhaps the majority of behavioral, clinical and epidemiological studies have been among gay men.

The prevalence of homosexuality has been touched on in a few studies. In the Partner Relations study [7], 3.1% of men said their current general sexual experience included both men and women, while 0.2% said it involved exclusively men. This may be an underestimate because of the reluctance to discuss these behaviors. A survey of male conscripts in the north [59] found that 25.6% had some previous same-sex experience, with 14.5% reporting either insertive or receptive anal intercourse. These results indicate that high-risk homosexual behavior is not confined to those who report having regular male partners.

A few behavioral studies of male bar workers have been conducted [56–58], and the Sentinel Surveillance System gathers seroprevalence data on male workers in four tourist-oriented provinces. These data have consistently shown lower levels of prevalence in male CSWs than in female CSWs (4.4–15% in June 1992, when the female CSW rate was on average 28% nationwide). Male bar workers, however, are in a high-risk occupation, are predominantly heterosexual in orientation, frequently visit CSWs, and therefore cannot be considered representative of the entire homosexual/bisexual population. Aside from bar workers, no data on seroprevalence among men who have sex with men are available.

The only behavioral study of men who have sex with men done to date, in 157 men in a northeast urban area in early 1991 [60], found high rates of partner exchange, complex sexual networks, and serious defects in AIDS knowledge. The mean number of partners in the preceding year was 29 (median, eight), with 40% indicating more than 10 partners. 12.7% reported both male and female partners in the preceding year and only 12.4% of those with exclusively male partners reported having a lover only. The remainder reported sex with some combination of lovers, friends, strangers and sex workers. Almost half of the sample had at least one major misunderstanding of AIDS that could predispose them to behavioral risk, such as believing that AIDS was

7

curable or could not be transmitted to the insertive partner in anal intercourse.

Although it is impossible to generalize from this study to a nationwide level, it indicates very high levels of HIV risk behavior in at least one urban Thai homosexual/bisexual population. Discussions with key informants in the homosexual/bisexual community in Bangkok also indicate that high levels of partner exchange and low levels of condom use in anal intercourse may be a problem in some sections of the community there, particularly among younger men and those recently arrived from provincial areas. In one 1992 survey of three gay bars in Bangkok (mentioned in [60]), 53% of the sex workers reported at least one instance of unprotected insertive or receptive anal intercourse in the preceding year, indicating that some of their clients continue to engage in high-risk behaviors. Thus the lack of information about men who have sex with men should not be construed as the lack of a problem in the community.

Injections and blood transfusion

Medical practices involving injection can be extremely efficient in transmitting HIV if sterile syringes and needles are not used. Although these risks are well known in the medical community in Thailand, there is some evidence that injection associated risk may still exist outside the formal medical system. In a report on AIDS education campaigns in the rural northeast in mid 1991, Lyttleton [12] describes the practices of local 'injection doctors' who are usually not trained medical professionals, but who give injections of vitamins and drugs to rural villagers. Because of their low charges, their willingness to make house calls, their acceptance of deferred or instalment payments, and the villagers' desire to avoid complex and intrusive admission procedures in hospitals or clinics, these illegal injection doctors remain popular in Thailand. In Lyttleton's survey, two injection doctors claimed they no longer re-used needles and syringes, but the villagers said that they did. A third demonstrated a sterilization technique he used to clean needles between clients that was clearly ineffective. In another report on sex workers in Khon Kaen in November 1990, Rehle *et al.* [61] found that using injectable contraceptives were associated with HIV infection in a logistic regression analysis. The general belief of the Thai population in the efficacy of injections as a medical treatment makes it important to address these unsafe injection practices. In the nationwide Survey of Partner Relations [7], 38.1% of men and 13.1% of women reported receiving at least one injection in the past year.

Blood transfusion, however, has now been removed as an important route of HIV transmission because of the introduction of widespread antibody testing in 1988. Through 31 August 1993, 0.6% of reported AIDS cases in Thailand were caused by receipt of blood products [62]. However, because of the high incidence of new infections in a rapidly growing epidemic, some researchers became concerned about HIV transmission via HIV-negative blood collected during the window period before seroconversion. Reports of infection from HIV-negative blood samples [63,64] led to the institution of p24-antigen screening for blood in 1993. It is estimated that 60 cases of post-transfusion HIV infection are prevented annually by screening all blood donations for antigen [65].

The practice of donor self-deferral was slower in gaining acceptance in Thailand, partly because high levels of risk activity in the male population would result in deferral of a large percentage of annual donations if factors such as sexual contact with CSWs were used. More objective and easier to ascertain criteria could reduce the blood supply substantially. For example, Kitayaporn *et al.* [66] estimated that using sex and age as deferral criteria to capture those in the window period could have resulted in the loss of 31.2% of HIV negative donations in 1990 and 1991. Adding a positive venereal disease research laboratory (VDRL) test result reduced this to 1.5% of negative donations. At present, those who have risk behaviors are encouraged not to donate blood. Concerns about protection of the rights of the infected and the use of blood donation as an HIV-screening method for high-risk people led the Thai Red Cross Society to establish Thailand's first anonymous testing clinic in 1991 [6]. Anonymous test clinics have since been established nationwide.

Conclusions

The Thai population shows high levels of knowledge of HIV and AIDS, but major misconceptions about the disease and those at risk for it persist. These are primarily in the areas of casual transmission, means of protection, and self-perceptions of risk. The epidemiological patterns observed in seroprevalence data are consistent with behavioral studies indicating a male population with high levels of HIV sexual risk behavior who place their wives and girlfriends at risk. Commercial sex has clearly been the dominant factor in the early phases of the heterosexual epidemic, driven by the considerable difference between male and female sexual activity levels, which supports a sex-worker population with high contact numbers and a large client base.

In future, however, noncommercial casual contacts by men are likely to assume a much larger role in

HIV transmission. Although it has been difficult to gather conclusive information on levels of female premarital and extramarital sex, there are sufficient indications that it is occurring frequently enough to justify intensifying intervention programs targeting these women. This is particularly critical because of the high levels of HIV infection in young Thai men and the low levels of condom use in these noncommercial casual encounters.

Condom use has risen dramatically in commercial sex, but there is still more to be done. Men's beliefs in their ability to screen partners for HIV or select sex-worker establishments for cleanliness and high levels of alcohol use present formidable barriers to further increasing condom use. Effective strategies that target these issues must be developed and implemented. Many tourists are placed at risk or place sex workers at risk by continuing to visit sex workers and refusing to use condoms. Programs must be developed to teach them the risks and encourage them to use condoms. Little is actually known about risk behaviors or seroprevalence in homosexual and bisexual men. In the absence of information, it is more difficult to justify, promote and evaluate interventions. There is a clear need for research assessing these men's risk and what constitutes effective intervention in their communities. Finally, there may still be substantial transmission problems with injecting doctors in rural situations. Research coupled with interventions that work with the injecting doctors to improve their sterile practices are needed.

A number of residential, socioeconomic and cultural factors must also be considered in addressing the epidemic. There are regional variations in levels of risk behavior, condom use and seroprevalence. Further research is needed to clarify the cultural and socioeconomic factors that influence these differences and determine how they affect locally relevant intervention design. Rural single men report almost as high a level of commercial sex as their urban counterparts, but lower levels of condom use. Yet, to date, most resources for and efforts at intervention have been concentrated in more urban areas, this has often led to a rural perception of AIDS as an urban problem. Increased efforts to reach rural people in the villages where they live are essential. The unequal sex roles of men and women create conditions promoting commercial sex and high-risk encounters. For example, women traditionally have strong obligations to support their parents. For those coming from poor villages with little or no education, commercial sex may appear an attractive alternative. Young men, increasingly turning away from commercial sex, may be seeking more noncommercial casual female partners. To address issues such as these requires a variety of interventions, including increasing educational and occupational opportunities for young Thai women and providing Thai adolescents with the skills needed to negotiate sexual abstinence or safer sex with their peers.

The Thai HIV epidemic is far from over. Risk levels appear to have decreased in men, but there are still substantial levels of sexual risk. Rates of increase in the HIV levels of 21-year-old conscripts have slowed somewhat, but they are still rates of *increase* and represent substantial numbers of new infections in Thai men every year. Because of the growing reservoir of infected men, risks to Thai women are actually increasing with time, especially for married women, who have little negotiating power but a strong obligation to have sex with their husbands. Thailand has made progress in the battle against AIDS, but until the Thai people become convinced of their own risk, motivated to avoid risks, trained in the social skills to protect themselves, and *choose* to protect themselves, HIV will continue its rapid spread through the country.

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11

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