Cambodia: STD and HIV Prevention and Control Efforts

Prepared for

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I. Cambodia's Social Context

Cambodia is emerging from three decades of civil conflict including the genocidal rule of the Khmer Rouge from 1975 to 1979. Cambodia came out of this period with basic infrastructure in shambles and the human resource base of the country decimated. Over the years, efforts were made to reconstruct the health care system but activities were constrained by an ongoing civil war, insecurity, international isolation and lack of resources. Donor assistance for the health sector became available in significant amounts in 1993 following the signing of a peace accord and an internationally recognized election.

Demographics and ethnicity

The Kingdom of Cambodia covers a territory of 181,035 square kilometers and lies between Thailand on the west and north, Laos to the north, Vietnam to the east and the Gulf of Thailand to the south. Based on a population census, Cambodia in 1998 had 11.4 million inhabitants with more than two-thirds of the population under the age of 19. The annual population growth rate is 2.49 percent. Administratively, Cambodia has 24 provinces/municipalities, 183 districts, more than 1,600 communities and about 13,400 villages.[1]

About 1 million people live in Phnom Penh and about 16 percent of the population lives in urban areas. Women account for 52 percent of the population and head one-quarter of the country's households. About 18 percent of all women over the age of 15 years of age are widows. About 96 percent of the population is ethnic Khmer. Other ethnic groups in Cambodia include Vietnamese (about 100,000), Chinese (more than 50,000), Cham Muslins (about 200,000) and Khmer Loeu, or "hill tribes," (about 70,000).[2]

Economy

The per capita Gross Domestic Product is estimated at $300. Cambodia is primarily a rural agricultural economy with approximately 75 percent of the country's populations working in the agricultural sector. Employment options for unskilled persons are extremely scarce. There is a great deal of internal migration for work as many men and women leave their homes for better employment prospects and income support for their families. Rural men migrate to urban centers in the dry season to work on construction projects. Recent foreign investment in the garment industry in Cambodia has resulted in several large factories in Phnom Penh employing hundreds of Khmer women, the majority of whom are internal migrants. There is also migration across the borders. On average, the household size in Cambodia is about six persons. The average monthly expenditure is about $116, of which 75 percent is spent on food and housing and about 8 percent on medical care.

Health

The infant mortality rate based on a 1998 health survey is estimated to be 89 per 1,000 live births and the under-five mortality rate is about 115 per 1,000 live births.[1] Mortality in the first months of life (neonatal mortality) is 36 per 1,000 live births. There was an increase in post-neonatal mortality from 1993 to 1998, increasing from 30 to 54 deaths per 1,000. Major causes of infant and child mortality are dysentery, diarrhea and acute respiratory tract infections. Maternal mortality is 473 per 100,000 live births. The life expectancy is 50.3 years for men and 58.6 years for women.

Education

The education system in Cambodia is reestablishing itself after being halted during the Khmer Rouge reign and then run by the Vietnamese government in the 1980s. The Ministry of Education, Youth and Sport is in the process of redeveloping the educational system. Curriculum and textbooks have been redeveloped and teachers undergoing training. Among adults, 43 percent of women and 22 percent of men are illiterate. The rates of illiteracy in rural areas are higher than in urban areas. On average, men have 4.7 years of schooling and women have three years. In addition there are literacy programs through the UN, non-governmental organizations (NGOs), Ministries of Education and Women's Affairs. These programs are implemented in remote rural areas. The majority of students in the literacy programs are between the ages of 15 and 35 years.[3, 4]

Gender issues

Women in Cambodia have a low social and economic status and are discouraged through cultural norms and peer pressure from being knowledgeable about sexual matters. Women traditionally are seen as the "giver" or "creator" of STDs while men "get" syphilis. It appears, however, that the cultural tradition of young women being chaste before marriage is changing. Teenage women now have boyfriends and some have engaged in sexual intercourse.[3] If financial resources of the family are limited for school fees, boys are generally educated while girls are pulled from school. Adolescent girls may be sold into sex work to support families.

II. Nature of Sexual Networks

Commercial sex

A large part of commercial sex in Cambodia is brothel-based. Brothels are located in every province in the country. Girls are sold into prostitution as a means to support their families, as in Thailand [5]; parents either receive a lump sum payment or loan. The girl continues to work to repay the debt to the brothel owner. Once the debt is repaid the girl is free to leave the brothel. The total amount of debt these girls have to repay and the length of time they

remain in sex work is unknown. The majority of sex workers in Cambodia are Khmer, although there is also a large proportion of Vietnamese sex workers. The Vietnamese sex workers tend to be grouped in brothels or red light districts separate from the Cambodian sex workers. Indirect sex workers are also common where they have other means of minimal income support and engage in informal sexual relationships—freelance, beer promotion girls and bar girls.

In 1998, a census of commercial sex outlets was conducted in three provinces in Cambodia—Phnom Penh, Kandal and Kampong Cham.[6] It covered the provincial capital of Kampong Cham, Kandal and district and roadside centers with a known concentration of commercial sex establishments and/or freelance access points. The entire urban area of Phnom Penh municipality was canvassed. In these three provinces a total of 1,302 commercial sex outlets were identified and a total of 7,346 brothel-based and indirect sex workers enumerated (Table II-1 and II-2).

Table II-1: Number of sex/indirect sex establishments by province

Establishment	Kandal	Kampong Cham	Phnom Penh	Total
Brothel	77	84	325	486
KTV parlors	0	24	61	85
Restaurant	22	59	221	302
Massage	1	1	42	44
Guest house/hotel	91	50	162	303
Dancing hall	0	0	3	3
Nightclub	1	1	25	27
Freelance sites	5	6	7	18
Billiards/Game	0	2	20	22
Barbershop	0	0	12	12
Total	197	227	878	1302

Table II-2: Commercial/indirect sex establishments—women by establishment

Establishment	No. of Women	Khmer Women	Vietnamese Women	Other
Brothel	2066	1382	680	4
KTV parlors	407	324	83	0
Beer promoters/servers	1725	1704	7	14
Massage	552	273	249	0
Guest house/hotel	607	574	29	4
Dancing hall partner	125	75	50	0
Nightclub dancers	1252	826	426	0
Freelance sex workers	357	347	10	0
Billiards/Game	172	162	10	0
Barbershop	113	5679	1645	22
Total	7346	5679	1645	22

Khmer women constituted 61 percent of the sex workers in brothels in Phnom Penh, 89 percent in Kampong Cham brothels and 74 percent in Kandal brothels. The remaining sex workers were Vietnamese except for one to two percent Cham or Lao women. In this survey in 1998, 33 percent of the brothels in Phnom Penh, 25 percent in Kampong Cham and 18 percent in Kandal had never received a visit by an HIV/AIDS organization staff member. In this survey, condom availability was not uniform across establishments. Condoms were available in 91 percent of the brothels surveyed, 89 percent of the guest houses/hotels, 45 percent of the massage parlors, 6 percent of the restaurants and 9 percent of the KTV.

There are occasional crackdowns on red light areas by the authorities. They serve to disperse the commercial sex establishments more widely and drive commercial sex underground, making access more difficult. In November 1997, there was a nationwide crackdown on brothels. Commercial sex workers were arrested and brothel owners had to pay fines, forcing many out of business. A total of 42 percent of the owners of sex establishments in the survey cited above indicated that the crackdown had resulted in a reduction in the number of sex workers in their establishments. This census estimated the reduction to be 29 percent. The information from the census also suggests that as a result of the crackdown the commercial sex workers went back to their village (or to Vietnam), were working in a nightclub, freelance or in factories. At the time of this census there were also fewer establishments due to a general economic downturn in Cambodia.

In 1996 an STD prevalence and behavior study that included sex workers from three cities—Battambang, Sihanoukeville and Phnom Penh—assessed the sexual behavior of brothel based sex workers (Table II-3).[7] While the data are not presented here by city there were difference in the brothels between cities. Battambang had the largest brothels (a mean of 8.7 sex workers), highest percentage of women paid monthly (65 percent) and the largest number of clients per day (4.97 mean). Phnom Penh, on the other hand, had the smallest brothels (a mean of 6.1 sex workers) and the lowest percentage paid monthly (15 percent).

The brothels are relatively small, with a high turnover of sex workers given the short mean of months sex workers report being at the brothels. [8] As indicated above, many women enter prostitution by the family who sell them into sex work to support families. Added to this debt that a sex worker must work off before she is free to leave a brothel are added her living and medical expenses. The fact that large portions of women are only paid monthly versus by client suggests that these women may have less control in the commercial sex encounters.

Table II-3: Sexual behavior of brothel-based FSWs and brothel dynamics in three cities in Cambodia, 1996

Variable	All FSW
Mean age (western)	21.4*
Age first sex (western)	16.3
Age first commercial sex	19.3
Number of clients/day	3.3
Number of condoms used previous day	2.4
Number of condoms used last 10 sex acts	6.4
Oral sex ever	12%
Anal sex ever	2.5%
Mean number of FSWs in brothel	7
Mean months in brothel	5.2
Percent paid monthly	48.5%
Percent paid directly by client	29.7%
Mean price per sex act	$4.10
Percent with debt	45%
Mean debt	$98.00
Median debt	$100
Percent assaulted	6.5%

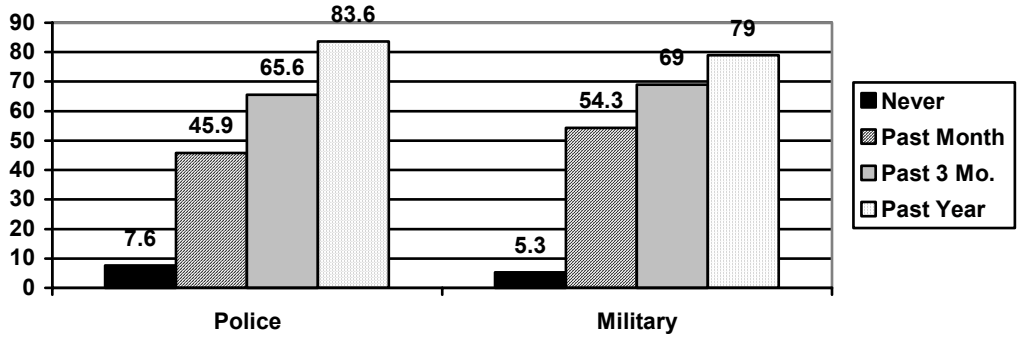
* The mean age of FSW in the one predominantly Vietnamese red light district was 18.9 years.

Like male commercial sex patronage in Thailand, male commercial sex patronage in Cambodia is common. It is viewed as male entertainment, is socially acceptable for both single and married men and often occurs in the company of friends.[9] A survey conducted in 1996 found that patronage of commercial sex was fairly common among urban Cambodian men from the military and police(Figure II-1).[7, 10] A total of 42 percent of married policemen and 61 percent of married military reported sex with a FSW in the previous month. It should be noted that the police and the military are likely to represent a group of men with the highest level of risky sexual activity (they were chosen for study because they were felt to be at high risk) and thus, represent an extreme of Cambodian male sexual behavior.

Other surveys conducted in general population men in Cambodia also found high rates of commercial sex patronage. One study reported that 31 percent of men between the ages of 13 and 40 years reported ever having commercial sex [11], and another in Phnom Penh found that 27 percent of males reported commercial sex patronage in the last year.[12]

In terms of male behavior in the patronage of commercial sex establishments it is interesting to note that men go in small groups (mean number 2.7) and that alcohol is consumed only about one-third of the time [13, 14]. The price is negotiated three-quarters of the time with the brothel owner only.[7] The number of men reporting always using condoms with FSW was 37.4 percent compared to 6.1 percent with girlfriends and 14 percent with wives.

Figure II-1: Reported commercial sex visit by police and military, Cambodia, 1996



Data from a 1997 behavioral survey estimated that 20.5 percent of military men, 15.7 percent of police and 14 percent of motodrivers were "active bridgers"[15]. Active bridgers in this study were defined as men who have unprotected sex with partners at high risk—in this case, FSWs—within a two-month interval prior to having sex with low-risk individuals such as wives or sweethearts. [Note: *Sweetheart* represents a regular partner who may or may not provide payment to the female sex worker.] In a multivariate analysis active bridging in the military and police was associated with age, age of sexual debut, having friends who are patrons of sex workers and residing in a port city. For motodrivers active bridging was associated with living in a port or border city.

Non-commercial sex

There are very few data that characterize the distribution of sexual behavior in the general population of Cambodia. Besides military, police and sex workers, the 1996 survey cited above also studied more than 300 women from reproductive health clinics. [5] Some sexual behavior characteristics are available from this survey (Table II-4). The small difference between the age of sexual debut and the age of marriage in women suggests that while premarital sex occurs in Cambodia, it may not be extensive prior to marriage. Age of marriage was higher for men than women in this small sample.

The 1997 and 1998 BSS also included sentinel groups of "low-risk" men and women and included young women between 18 and 30 years old sampled from a variety of occupations such as daytime market vendors, factory workers, sanitation crew, hotel and restaurant workers. For males, in 1997 vocational students were a sentinel group and in 1998 the group of low-risk men was expanded to include "working men" sampled from the same types of employment as the working women. Very low sexual risk was reported among these groups. For example, among the working women the median number of lifetime sexual partners was one and the mean was 0.5. Sexual activity levels of unmarried women were also low. Most of the 11 percent of unmarried working women who report sexual experience were divorced or separated and less than one percent of never-married working women reported sexual experience. In addition, only 7.4 percent of working women reported ever having a sweetheart (6.1 percent reported a sweetheart in the past year). Men reported many more lifetime partners than low-risk women; the median number of partners for vocational students and working men was five, though the mean was higher for working men (17 vs. 10). A little more than half of unmarried men reported being sexually active (63 percent of working men and 54 percent of vocational students). Finally, a relatively high percentage (42.8 percent) of low-risk men reported using commercial sex. The combined low-risk groups of men reported sex with a sex worker in the past year and 19 percent reported sex with a FSW in the past month. While these numbers seem high, they were significantly lower than the other sentinel groups of men including military, police and motodrivers[16].

Table II-4: Sexual behavior and demographic characteristics of women in reproductive health settings, military and police in Cambodia, 1999

	ANC	FP	RHAC	Military	Police
Mean age (western)	29.1	32	31.2	30.8	30.6
Married now	94.7	92.9	95	65.6	67.2
Mean number of living children	2.0	2.8	3.0	1.8	.18
Percentage with no schooling	12.2	6.3	12.3	0.5	0
Age first sex (western)	20.7	20.9	19.5	20.5	21.1
Age marriage (western)	20.7	21.3	19.5	23	22.7
Sexual frequency – Marital	3.7	4.4	4.1	4.7	3.7
Percentage with new partner in the past three months	--	--	--	56.6	55.9
Have a girlfriend (percent)	--	--	--	17.7	15.6

Population parameters of sexual and health practices

In 1999, the majority of brothel-based sex workers obtained care for STD symptoms from a medical source.[13] The second most frequented site among both groups was a pharmacy. About 11 percent of brothel-based sex workers received care at the brothel and a small percentage received care from traditional sources (Table II-5). On the other hand, most men, military, police and motodrivers sought care at pharmacies most of the time. Care from clinical services was sought less than a quarter of the time.

Table II-5: Reported source of care for last symptoms suggestive of STD, 1999

	Brothel-based SW (percentage)	Beer Promoters (percentage)	Military (percentage)	Police (percentage)
Medical	**60**	**52**	**22.3**	**20.5**
Pharmacy	**20**	**24.7**	**55.4**	**52.6**
Traditional	**7.3**	**7.7**	**20.1**	**23.4**
None	**1**	**5.8**	**1.4**	**2.6**
Brothel	**11**	**---**	**---**	**---**

III. Basic Public Health Organization and Infrastructure

Since 1993 there have been major efforts to revitalize primary health care service in many parts of the country. In 1993 the Ministry of Health, with support from a number of agencies, including the World Health Organization, developed a Health Coverage Plan that culminated a three-year planning exercise. This plan describes how and where health services would be

established throughout the country. It describes a network of static health serving catchment areas of 10,000 people. At the district level, management structures would be created and a referral hospital created. The Ministry of Health has defined a minimum package of services that includes such services as vaccinations, nutrition management, antenatal care, postnatal care and health promotion. Between 1996 and 1998, operational guidelines were developed and personnel at the national, provincial and district level were trained. With funding from two major donor projects—the World Bank (Cambodia Disease Control and Health Development Project) and the Asian Development Bank (Basic Health Services Project)—16 provinces containing about 80 percent of the country's population are implementing the plan. Most field activities commenced in 1998.[2]

There is a low rate of utilization of health services with an average Cambodian having 0.35 contacts with organized medical services per year. Only 16 percent of deliveries take place in hospitals or health centers. [1, 2]

STD and HIV/VCT service structure

There are five government STD clinics serving high-risk women, men and the general population in Phnom Penh, Kompong Cham, Battambang, Siem Reap, Kompong Som. Several NGOs also offer services to high-risk women and, in one case, high-risk men as detailed below:

- Medecins Sans Frontieres—four clinics in Phnom Penh, Sisophon, Piopet, Siem Reap.
- Pharmaciens Sans Frontieres—one mobile clinic in Phnom Penh
- Servants of Asia's Urban Poor—one mobile clinic in Phnom Penh
- Medecin Du Monde—one clinic for high-risk women, one in the military hospital and one in the police hospital

Services for general population women are also provided through government MCH services and health center services. Up to now, STDs have not been a major focus of MCH services as there have been other priorities. Syndromic management training in STDs is ongoing in almost all provinces in Cambodia for all health personnel. Insufficient supplies of antibiotics, however, will hamper implementation of the guidelines. There also are five Reproductive Health Association of Cambodia (RHAC) NGO clinics—two in Phnom Penh, one in Kampong Som, one in Kampong Cham and one in Battambang. RACHA, a reproductive health project, provides technical assistance to MCH clinics and has a community education program but does not provide direct services.

There are presently six government-run HIV voluntary counseling and testing centers (VCT) in Cambodia, two in Phnom Penh and one in every other major city. One VCT center is run privately by the Institute Pasteur in Phnom Penh. In the private sector many providers provide HIV testing, but the quality is unknown.

STD/HIV Laboratory Services

With regard to STD laboratory testing, most reference hospitals at municipal and provincial levels, as well as the country's five STD centers, provide serologic testing for syphilis (RPR and TPHA). But there is no routine screening for syphilis in ANC clinics.

The National Laboratory within the National Institute of Public Health in Phnom Penh has been recently upgraded. It provides services to private practitioners in the city for a fee. The Institute Pasteur also provides STD lab testing service for a fee. Outside of syphilis serology, Gram stain, other microscopy and HIV testing, laboratory diagnostic services for STDs are limited to Phnom Penh. Services available in Phnom Penh include:

- Culture and antimicrobial susceptibility testing for *Neisseria gonorrhoeae*
- Culture for *Trichomonas vaginalis*
- Gram stain scoring for bacterial vaginosis
- Syphilis serology, screening and confirmatory
- (Capability exists for *Chlamydia trachomatis* testing [ELISA equipment] and for PCR testing, but these technologies have not been applied to STD diagnostics)

Neither of these main laboratories in Phnom Penh provides direct diagnostic support for routine interventions with FSW, high-risk men or the general population except for the private practitioners. These laboratory capabilities are, however, a valuable resource for special STD studies that may be undertaken among these target populations.

IV. STD Prevention and Care Program

Program history

The STD control program in Cambodia has, in general, been closely linked with the HIV/AIDS prevention program. Groups working in maternal health also are addressing STDs in reproductive health clinics on a limited basis. The Royal Government of Cambodia recognized the significance of the STI/HIV problem from an early stage and took measures to respond. As early as 1991, a National AIDS Program (NAP) was set up to take responsibility for the national implementation of HIV/AIDS interventions. This has since developed into the National Center for HIV/AIDS, Dermatology and STDs (NCHADS), which is a combination of the National STD Program and the National HIV/AIDS program and takes a multi-sectoral approach to implementing the response of the Cambodian Ministry of Health to the HIV/AIDS epidemic.

The NCHADS provides wide scale national support for and management of HIV/AIDS projects. The activities directly related to sexual transmission include:

- HIV/AIDS program management, monitoring and evaluation
- The production and dissemination of IEC materials (information, education and communication) for risk reduction, condom use and STD treatment seeking behavior
- The implementation of a 100 percent condom use program
- National STD case management program
- HIV/STD surveillance and research
- Outreach program to high-risk populations

Additional NCHADS activities include national measures on prevention of mother-to-child transmission, HIV/AIDS care and support and advocacy for people living with HIV/AIDS and for HIV/AIDS organizations.

In 1999 a National AIDS Authority (NAA) was set up by the Prime Minister to coordinate an across-the-board response for Cambodia's ministries. The NAA replaced the National AIDS Committee and the National AIDS Secretariat, bodies which ceased to function. The NAA aims to develop national policies, coordinate the government response to HIV/AIDS and provide a platform for strategic planning involving 12 government ministries. In addition, the NAA aims to provide planning and policy support at the provincial level. Provincial governors have therefore been made members of its Policy Board.

The priorities set by the NCHADS have been developed as a means of using limited resources to greatest effect in reducing STD/HIV infection and caring for those who are already infected. The National Strategic Plan 1998-2000 describes the strategies and priorities of the NCHADS. NCHADS and the NAA agree that for interventions to have any success in decreasing the rate of STD and HIV infection among the general population, in care and support for people living with HIV/AIDS, they should include:

- A favorable policy environment at the provincial and national level
- Supportive behavior change communication strategies for those at high risk as well as members of the general population
- Adequate prevention and care services
- Consistent, high-quality research and data collection to enable both optimum program implementation and effective monitoring and evaluation of intervention impacts

The work of the government is supported by the work of multiple international and local NGOs). The number of agencies involved in HIV/AIDS work in Cambodia reflects the scale of the epidemic in the country, but also requires stringent coordination mechanisms and interagency cooperation. The HIV/AIDS Coordination Committee (HACC) is a well-established forum designed specifically for sharing information and ideas by NGOs working on HIV/AIDS within Cambodia. COCOM and Pro-COCOM is also one of the coordination mechanisms on health between government and NGOs or IOs at the national and provincial level. MEDICAM is a coordination forum for health-related programs. There are also other efforts to coordinate and strengthen local NGOs through FHI and the International

HIV/AIDS Alliance, both USAID-funded. Last but not least, the in-country activities of UNAIDS are also contributing substantially to improved coordination of the response to HIV/AIDS.

Surveillance activities

HIV

Cambodia established an HIV Sentinel Surveillance (HSS) system in 1994. Changes in the sentinel groups and locations over time have interfered with the stability of the prevalence figures. The HSS system has gradually expanded to cover an increasing number of provinces and rural as well as urban areas. The current Cambodian HSS system is highly advanced. The 1999 round of HIV surveillance included antenatal clinic (ANC) women (separate for provincial capitals and remaining districts), brothel-based sex workers, beer girls and police from 20 provinces. It also included TB and hospital patients from selected provinces, and household samples of males and females from five provinces.[17]

STD

Passive STD data collection has been hampered by the lack of standardization in the forms issued by the health information system, the STD control program and the numerous NGOs providing STD services in Cambodia. Systematic laboratory testing for STD pathogens, such as ANC syphilis screening, does not occur on a routine basis. Reporting and case notification forms with case definitions are being developed based on syndromes with four age groups and sex distribution.[18] Laboratory data also will be collected where they are available.

There has been no systematic assessment of STD prevalence since the 1996 STD prevalence and behavior study of bacterial and viral STDs conducted among FSW, military, police and women seeking reproductive care in the three cities mentioned above [7, 10]. But STD prevalence studies are planned in the sentinel groups of police, military, direct female sex workers and women attending ANC clinics. The next STD prevalence survey is scheduled from November 2000 to March 2001, and will involve more than 2,000 participants including brothel-based sex workers, freelance female sex workers, police, military, miners, general population women and men who have sex with men. [Personal communication, F. Stuer].

Behavioral

Cambodia has been conducting behavioral surveys on a regular basis to monitor the prevalence of behaviors associated with acquiring and transmitting STDs and HIV infection. These surveys, called Behavioral Surveillance Surveys (BSS), are designed to be administered on a regular basis in population subgroups to provide data on changes of risk behavior over time. [19, 20] There have been three waves of BSS in Cambodia—1997, 1998 and June 1999. These surveys are conducted in Cambodia's five major urban centers in five different provinces—Phnom Penh, Battambang, Siem Reap, Sihanoukville and Kampong Cham. It is assumed that higher risk behavior occurs in the cities compared to the rural areas. Moreover, each city has a specific social context in which risk behaviors are distributed in the groups studied—such as military presence, port cities or tourist trade. Individuals from sentinel

groups of female sex workers, military and police (considered high-risk groups), female beer promoters and male motodrivers (considered intermediate risk groups), and men and women working in factories and other low-wage jobs (considered low-risk groups) have been interviewed. A survey of the general population of males also will be conducted in autumn 2000 to compare the risk behavior of the sentinel groups to both urban and rural samples of men.

Social and behavioral interventions

Based on the results of the HIV, STD and behavioral surveys, Cambodia directed several behavioral interventions at high-risk and bridge populations, including:

- A 100 percent condom brothel policy instituted in 1999
- An aggressive and successful condom social marketing campaign by (*Number One* condom)
- Widespread free condom availability in the public sector
- Peer outreach, STD care, condom promotion and social mobilization of direct and indirect female sex workers
- Sensitization of military and police commanders, training of peer educators in the military and police and training of military and police health care providers in STD management
- Workplace programs, including policy and advocacy with company managers and reproductive health programs in the garment industry.
- Outreach and education to street children

These efforts are complemented by a large number of HIV/AIDS care and mitigation activities, including home care, interventions to prevent mother-to-child-transmission, TB/HIV activities and responding to the issue of orphans.

Case finding and management services

The MOH-approved syndrome management guidelines are based on the 1998 WHO recommendations. WHO is supporting the training of health care providers in nearly all the provinces in STD management based on these guidelines. Inadequate supplies of effective antibiotics hamper implementation in the public health system. A different, non-laboratory-based algorithm (except for syphilis serology when available) is being implemented for female commercial sex workers (FSW). There are regular meetings between the NGOs working with high-risk populations in order to coordinate efforts. The supply of antibiotics is more regular for FSW interventions. The Ministry of Health clinics provide STD services in the outpatient departments.

Several NGOs have been involved in providing STD prevention and care services for both general and high-risk populations. The following table shows the NGOs and their target populations in August 2000.

NGOs	Target populations
Reproductive Health Association of Cambodia (RHAC)	General population
Medecins Sans Frontieres (MSF)	Mixed: general and high-risk groups
RACHA	General population
Pharmaciens Sans Frontieres (PSF)	Mixed: general and high-risk populations
IMPACT/FHI	High-risk groups
Medecins du Monde	Mixed: general and high-risk populations
EU/ITM Project	Mixed: general and high-risk populations

Relative resource allocation and cost-effectiveness assessments

International donors provide the majority of funding for HIV prevention, surveillance and increasingly care.[21] In the early 1990s assistance came first from the UN agencies. Significant bilateral funding for HIV programs began in about 1995. Table IV-1 shows the estimated overall funding for HIV/AIDS programs from 1993 through 1999. About 80 percent of the bilateral funding for HIV has been made available through NGOs and 20 percent for government programs.

Table IV-1: Estimated overall funding for HIV/AIDS programs in Cambodia

Year	Overall funding (US$)
1993	668,000
1994	845,000
1995	2,300,000
1996	3,500,000
1997	5,904,000
1998	7,196,000
1999	9,437,000

There have been no cost-effectiveness assessments of the specific STD and HIV prevention interventions in Cambodia.

V. STD Epidemiology

Bacterial STDs

Bacterial STD prevalence was determined in 1996 in a cross sectional STD prevalence study in three cities (Battambang, Sianoukville and Phnom Penh) and in the risk populations of female sex workers, high-risk men and women in reproductive health clinics (Tables V-1 - 4).[5]

Table V-1: Overall prevalence of STDs in female sex workers (FSW), high-risk men and women in reproductive health clinics (RHC) in Cambodia in 1996.

	Chlamydia percentage (n)	Gonorrhea percentage (n)	Syphilis percentage (n)	Trich percentage (n)	BV percentage (n)
FSW (n=437)	22.4 (347)	35.0 (236)	14.0 (427)	5.4 (222)	31.5 (381)
Men (n=332)	2.1 (286)	17.0 (41)	6.6 (304)	N/A	N/A
RCH (n=314)	3.1 (260)	3.0 (233)	4.0 (303)	1.0 (98)	12.7 (283)

Table V-2: STD prevalence in female sex workers by infection and site

Brothel Area	Any STD	Gonorrhea percentage	Chlamydia percentage	Syphilis percentage	Trich percentage	BV percentage
Battambang (n=108)	37.4	12	25	13.9	4.0	26.3
Phnom Penh						
- TwolKork (n=50)	36.7	26	16.7	4.0	8.3	29.8
- Svay Pak (n=99)	44.4	25.3	30.5	4.1	4.1	32.0
- Sisaphon (n=78)	26.9	--	33.3	24.1	--	19.6
Sihanoukville (n=100)	58.6	31.4	26.2	19.2	7.2	37.6

TableV-3: STD prevalence in female reproductive health clinics by infection and site

RHC Area	Any STD	Gonorrhea percentage	Chlamydia percentage	Syphilis percentage	Trich percentage	BV percentage
Battambang (n=59)	11.9	5.1	0	6.9	4	20.2
Phnom Penh						
- PMI/7thJan (n=42)	7	2.3	3.6	2.6	--	9.2
- FPIA (n=112)	5.4	2.7	1.6	2.8	4.1	8.9
Sihanoukville (n=100)	10	3.3	4	4	5.4	9.4

TableV-4: STD prevalence in male military and police by infection and site

City	Any STD	Gonorrhea percentage	Chlamydia percentage	Syphilis percentage
Battambang (n=143)	14.8	2.1	2.5	7.5
Phnom Penh (n=83)	11.8	1.2	7.5	6
Sihanoukville (n=106)	10.8	2.8	1.3	5.8

Viral STDs

Results of the 1999 HIV surveillance in Cambodia are presented below.[17] The 1999 round of surveillance included ANC women (separate for provincial capitals and remaining districts), brothel-based sex workers, beer girls and police from 20 provinces. It also included TB and hospital patients from selected provinces, and household samples of males and females from five provinces. Consecutive sampling was used for ANC women and TB and hospital patients, and multi-stage cluster sampling design for all other groups. Target sample sizes ranged from 150 per province in groups with previous prevalence above five percent to 300 per province in groups with a previous prevalence below five percent. These targets were not always reached, especially among ANC women.

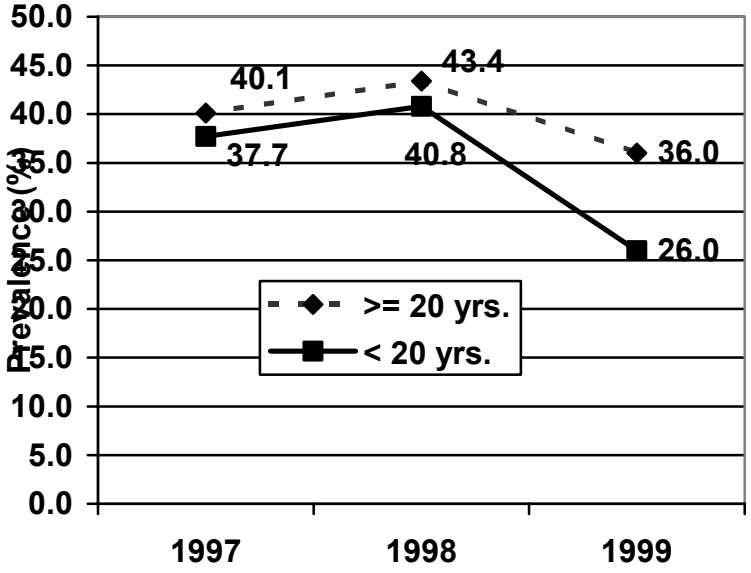
Table V-5 presents the crude national HIV prevalence among the various target populations in 1999. The levels observed across provinces are particularly high in brothel-based sex workers (average 33.2 percent) and indirect sex workers (16.7 percent), but also relatively high in the police (4.7 percent) and antenatal clinic women (2.6 percent).

Table V-5: HIV Seroprevalence among target populations in Cambodia, 1999

Population	Prevalence (percentage)
Direct FSWs	33.2
Beer girls	19.8
Freelance SW	16.7
Hospital in-patients	11.0
TB patients	7.9
Police	4.7
ANC attenders	2.6
Household males	1.8
Household females	1.2

Within these overall high levels, there is some indication of declines in HIV prevalence for a number of the population groups, including brothel sex workers, police and ANC women (down since 1997). Of particular note has been the decline between 1998 and 1999 among younger sex workers (under age 20) with HIV infection illustrated in Figure 1. A similar trend is seen among police as noted in Figure V-2.

Figure V-1: The trend of HIV seroprevalence among direct sex workers by age



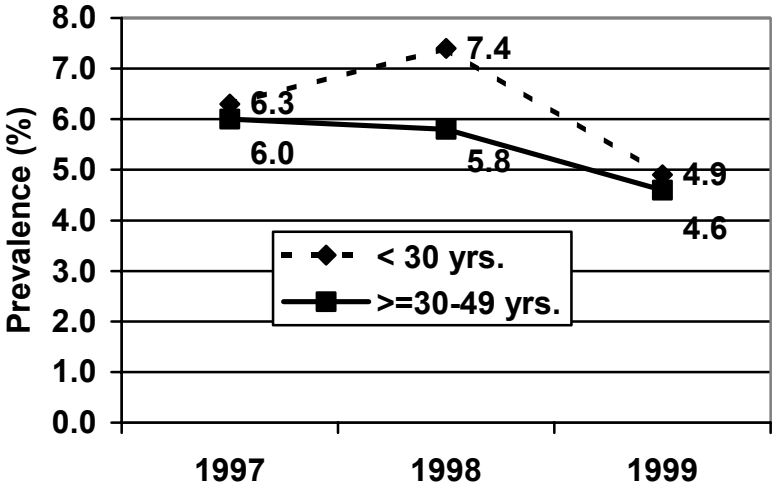


Figure V-2: The trend of HIV seroprevalence among policemen by age

The spread of HIV to Cambodia's rural areas is occurring mainly in the southeastern part of the country, toward the Vietnamese border. The concentration of HIV infection in the provincial capitals is occurring in the Western part of the country near the Thai border. Age-specific data for household males did not suggest any clear pattern, except that males over age

24 tended to have higher prevalence than younger males. In one province, Battambang, which is on the Thai border, household males ages 25-34 clearly had much higher prevalence than all other males. Their prevalence was around 9 percent.

Figure 3 illustrates the estimated national prevalence trends for infected adults ages 15-49 between 1996 and 1999. These estimates were constructed by applying the age- and population-specific ANC prevalence data to the population of women in each province to calculate the number of infected females. A similar process, based on an estimated male/female sex ratio, was used to estimate the number of infected males. These figures were used to derive the national estimated number of infections and, ultimately, the estimated prevalence for males and females between 15- and 49-years-old.

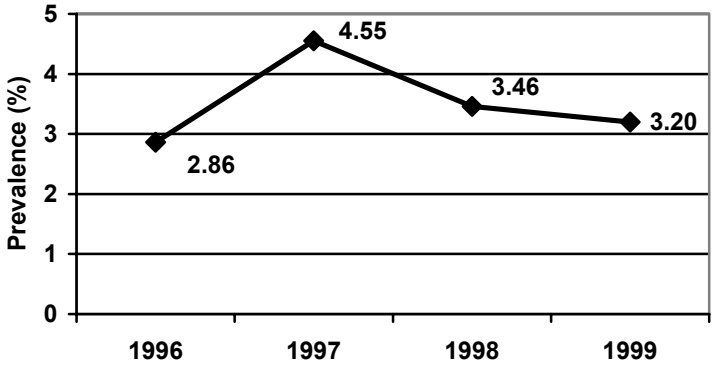


Figure V-3: HIV prevalence among male and female adults in Cambodia (age 15-49)

These encouraging signs, corroborated by behavioral surveillance (cited below), suggest that transmission rates may be declining among those at highest risk and not increasing rapidly in the general population. These results must be interpreted cautiously, however. Improvements in the quality of data available each year may simply mean that previous estimates were too high, rather than indicating a true drop in prevalence. The near-equal prevalence among household males and females indicates expansion of the epidemic beyond sex workers and their clients, into the general population. The data also indicate the epidemic is not confined to urban areas, but has spread to rural areas as well.

Transmission Dynamics

Population Services International (PSI) launched a condom social marketing campaign in 1995 selling subsidized condoms (*Number One*) in pharmacies and other outlets throughout Cambodia. Condom sales increased from 5 million in 1995 to about 13 million in 1999 (Table V-6). [Personal communication, J. Diedrick, PSI].

Table V-6: *Number One* condom sales

Year	Number
1995	5,031,604
1996	9,515,600
1997	10,519,100
1998	11,537,856
1999	12,904,600
YTD 2000	10,735,700

The three waves of the BSS in Cambodia and the 1996 STD/HIV Prevalence and Behavior Study illustrate the trends in risk behaviors in the target groups of female sex workers, female beer promoters and male military, police and motodrivers from five cities in five provinces. [16, 22]

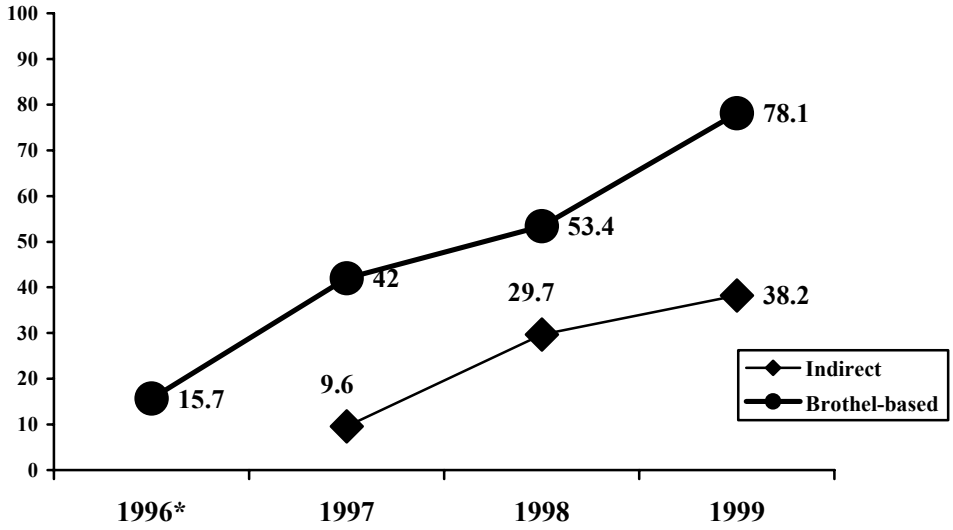
Brothel-based and indirect FSW

Figure V-4 below shows that the reported condom use by both brothel-based and indirect FSW with their clients has dramatically increased over the three years of the BSS survey.[22] Reported consistent condom use with clients increased 66 percent (from 42 percent to 69.8 percent) for brothel-based sex workers over three years of the BSS, 1997, 1998 and 1999. For indirect female sex workers reported condom use with clients increased 300 percent (from 9.6 percent to 81.3 percent) in the three years of the survey. The reported condom use rate by brothel-based sex workers with clients varied by city with Sihanoukville brothel-based FSW reporting consistent condom use 92.3 percent of the time in 1999 compared with 55.1 percent of brothel-based FSW in Battambang (data not shown). Nonetheless, reported condom use by sex workers has increased in every city evaluated in the BSS.

Many beer promoters also act as indirect sex workers. Among beer promoters there is a clear inverse relationship between living with family or other relatives, being single or having a "sweetheart" in the past year and engaging in commercial sex. Based on the 1999 BSS about 40 percent of the beer promoters reported having sex for money or a gift. A higher percentage, 61.4 percent, reported that many or most of their friends have sex for money or gifts. Beer promoters living away from relatives and who are single are most likely to practice commercial sex and have a sweetheart.

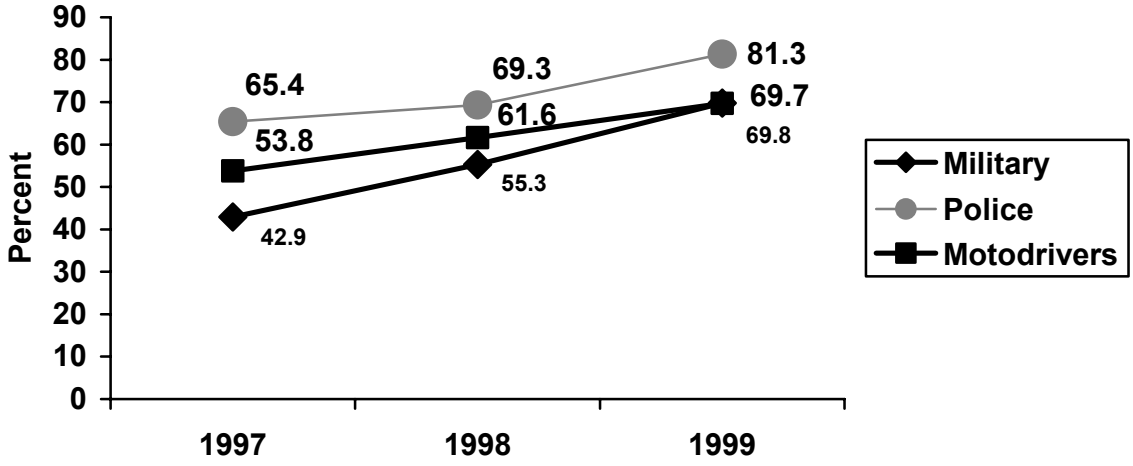
The women reported less condom use with a sweetheart than with strictly commercial partners. In the 1999 BSS, brothel-based FSWs reported consistent condom use 78.1 percent of the time with commercial partners but only 47.1 percent of the time with sweethearts. Similarly, beer promoters reported consistent condom use with commercial clients 38.2 percent of the time but only 26.1 percent of the time with sweethearts.

Figure V-4: Cambodia brothel-based and indirect FSWs reporting consistent condom use with clients, 1996-1999.



Reported consistent condom use with FSWs also increased over the three years of the survey among the three subpopulations studied—military, police and motodrivers (Figure V-5). There was a 63 percent increase (from 42.9 percent to 69.8 percent) reported by military men, a 23 percent increase (from 65.4 percent to 81.3 percent) among policemen, and a 29.6 percent increase (53.8 percent to 59.7 percent) among motodrivers. Consistent condom use with sweethearts was reported to be 12.8 percent for military, 32.4 percent for police and 27.8 percent for motodrivers [16, 22].

Table V-5: Reported consistent condom used with FSWs—military, police and motodrivers, 1997 – 1999.



VI. Future Directions of STD Research, Prevention and Policy Activities Based on Current Challenges and Opportunities

The current data in Cambodia provide clear documentation both behaviorally and biologically (STDs and HIV prevalence) of active core and bridge populations contributing to the spread of HIV and STDs in the country. Brothel-based sex workers have the highest number of reported partners and the highest STD and HIV prevalence of the subpopulations studied. These women are then followed in terms of their number of sexual partners and HIV prevalence by indirect sex workers (beer promoters), high-risk men (military and police), intermediate risk men (motodrivers) and then women using reproductive health clinics. Based on 1997 survey data, the extent of the linking between high-risk sexual networks (female sex workers) and the general population was estimated in Cambodia to be 20.5 percent, 15.7 percent and 14.7 percent for military, police and motodrivers, respectively.[15]

Wasserheit and Aral have argued that STD epidemics have both a natural history and a controlled history.[23] Specifically they point out that there are changes in the size and character of key subpopulations and changes in the distribution of STDs within these groups. These changes are influenced by social changes in societies regarding sexual practices, STD prevention interventions which are now more vigorously implemented as part of HIV control programs and STD detection and treatment interventions, measures that are closely linked with contact to the health care system. They also have described two types of population

substructures, spread subpopulations and maintenance subpopulations. These two subpopulations are defined in the manner in which they support the reproductive rate (R_o) of sexually transmitted infections in the May and Anderson equation.[24] Spread subpopulations (core and bridge groups) are characterized by high rates of concurrent relationships and the large number of sexual linkages throughout the subpopulations. They may have less efficient contact with the health care system, lower education, income, power and prestige. Maintenance subpopulations, on the other hand, have lower levels of concurrent relationships and sexual interaction, fewer sexual linkages and more limited contact with other subpopulations.[23]

Wasserheit and Aral have proposed that there are four phases of the epidemic lifecycle: Phase I, growth; Phase II, hyper-endemic; Phase III, decline; and Phase IV, endemic. They propose that interventions should be tailored to the phase of the epidemic as indicated in Table VI-1. Cambodia's response to the HIV/STD situation occurred when bacterial STDs were likely in the hyper-endemic phase (Phase II) and the HIV epidemic was likely still in the growth phase (Phase I). Cambodia's response, appropriately, was to rapidly focus the vast majority of efforts on the subpopulations at highest risk. This response occurred in the context of limited financial resources and a severely damaged health care infrastructure only at the beginning of revitalization. Cambodia's efforts have been remarkably successful in altering the risk profile of the population in a short time. Specifically:

- Consistent condom use by brothel-based sex workers has increased 86 percent in three years to 78 percent.
- Consistent condom use by beer promoters (a group of indirect sex workers) has increased 300 percent in three years to 38.2 percent.
- Consistent condom use by military, police and motodrivers increased 63 percent to 69.8 percent, 23 percent to 81.3 percent and 29.6 percent to 69.7 percent, respectively.
- Annual sales of *Number One* condoms have doubled to almost 11 million/year in six years.
- Based on the 1999 HIV Surveillance Survey (HSS) results, there is some indication of an HIV prevalence decline among brothel-based female sex workers and police and a stabilization among ANC women. This decline in sex workers and police is particularly pronounced among the younger ones (female sex workers under 20 years of age and younger police under age 30). This finding is consistent with the results of the 1999 BSS showing increasing levels of consistent condom use.

Cambodia rapidly and successfully implemented an HIV/STD risk reduction program in obvious high-risk and bridge populations. While the surveys, both BSS and HSS, indicate success with Cambodia's approach, current interventions need to be strengthened, refined and expanded. Suggested directions are indicated below.

1. There is a need to increase the breadth and depth of the interventions with direct and indirect FSWs for the following reasons:

- The current behavioral surveys are limited to five cities. While urban areas may have the highest risk behavior, it would be important to determine whether risk reduction interventions are penetrating the non-surveyed areas, including rural areas.
- There are still occasional police crackdowns on brothels, which disperse their FSWs to other, more clandestine sites. This dynamic situation requires constant adaptation by outreach NGOs working in this area.
- Based on the 1998 census of commercial sex outlets in three provinces, between one-fifth to one-third of the brothels had never had contact with an HIV/AIDS prevention organization.
- While brothel-based sex work may constitute the highest-risk sexual encounter, indirect sex work is also risky. Based on the 1998 census, indirect sex workers are more common than brothel-based FSWs. Indirect sex workers, as represented by beer promoters, have had a remarkable 300 percent increase in reported consistent condom use, up to 38 percent. A better understanding of how to reach these indirect sex workers with prevention interventions is important. Based on the Thai experience, one might expect brothels in Cambodia to become stigmatized because of HIV/AIDS. This may cause Cambodian men to turn increasingly to indirect sex workers for services.
- About one third of the brothel-based sex workers in Cambodia are Vietnamese. Specific efforts are needed to ensure that they are being reached with current interventions or determine whether current interventions should be adapted.

Table VI-1: Proposed phase-appropriate STD prevention strategies [18]

	Strategies for "Spread Networks"	Strategies for "Maintenance Networks"
Phase II (Hyper-endemic)	• Targeted health promotion • Outreach for screening and treatment • Peer-risk reduction counseling • Health department-assisted partner notification • Community-level behavioral interventions	• Mass media campaigns • Detection and treatment services • Provider-risk reduction counseling • Client initiated partner referral
Cambodia's response to and STD epidemic in Phase II (hyper endemic) and an HIV epidemic in Phase I (growth)	• Outreach to brothel-based sex workers and indirect sex workers with condom promotion • STD treatment provision and training of health care providers to SWs. • Condom social marketing with explicit outlets in brothels and bars. • FSW, MSM, military, police and select work-place peer-education. • Community mobilization of FSW • STD management training of military physicians. • 100% condom brothel policy • Free HIV VCT services in five major cities available	• HIV mass media campaigns • Condom social marketing • General population STD treatment guidelines developed and training of HCP. (Implementation limited by lack of antibiotics) • Free VCT services available in five major cities • Integration of HIV/STD education into reproductive health programs
Phase III (Decline)	• Targeted health promotion • Outreach for screening and treatment • Peer-risk reduction counseling • Health department-assisted partner notification • Community level behavioral interventions	• Detection and treatment services • Provider risk reduction counseling • Client-initiated partner notification
Phase IV (Endemic)	• Targeted health promotion • Outreach for screening and treatment • Peer-risk reduction counseling • Health department assisted partner notification • Community level behavioral interventions • Vaccines or selective mass treatment	• Detection and treatment services • Provider risk reduction counseling • Client-initiated partner notification

2. A more comprehensive understanding of sexual behaviors in Cambodia is vital to appreciate more fully the HIV/STD risk behaviors of a broader spectrum of Cambodians—other than military, police, direct and indirect sex workers and motodrivers. Cambodia is undergoing rapid social and economic change with exposure to outside cultures and significant cross-border and internal movement. Sexual behavior studies of general population men, youth and internally migrant women are needed to design appropriate interventions.

3. As in much of Southeast Asia, symptomatic Cambodian men do not seek care for STDs from clinical services. While efforts should be made to improve STD services at the place of employment, strategies should be explored to determine the feasibility and effectiveness of alternative approaches such as pharmacy interventions, pre-package therapy of urethritis treatment and outreach clinical services to reach these individuals. Likewise, while brothel-based services are relatively easy to implement, providing acceptable services to indirect sex workers remains a challenge.

4. Longer-term strategies to change the social norm of sex worker patronage by men in Cambodia will require additional research. Research to date indicates that sex worker patronage is associated with men living in situations and where social control structures are weaker—border towns (with a large movement of soldiers in and out of the town) and port cities (with large influxes of sailors) and is a group activity.

5. Condoms are currently promoted in Cambodia to protect against infection in commercial sexual relationships, which has been a successful strategy. The message should be altered slightly to promote condom use in casual relationships. The current approach may stigmatize commercial sex while implying that all other sexual relationships are safe. This may be reflected in part by the lower condom use rates reported with sweethearts.

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