Sexual behavior, STIs *and* HIV among men who have sex with men in Phnom Penh, Cambodia 2000

Family Health International
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Foreword

During the past few decades Cambodia has been through a series of rapid political and socio-economic changes. These include sexual behaviors and practices among both men and women. High population mobility, limited education, expanding contacts with the outside world and poverty have also made Cambodia vulnerable to the HIV epidemic.

However, concerted efforts from government and NGO sectors in behavioral interventions among high risk and bridging populations, improved sexually transmitted infection (STI) case management and aggressive national condom social marketing have contributed to a recent decline of both HIV and other STIs. The year 2002 is the third consecutive year where surveillance records shows a reduction in HIV prevalence across all key high-risk groups included in the surveys, with estimated national prevalence at 2.6 and at 28.8 % among direct female sex workers.

While the majority of HIV transmission in Cambodia is through heterosexual contacts, there remain some hidden sub-populations who practice high-risk behaviors and are vulnerable to HIV infection. As demonstrated by other countries in the region, one of the groups requiring attention is men who have sex with men (MSM).

During 1999-2000 Family Health International in Cambodia, with support from the Ministry of Health and other colleague agencies, conducted a survey examining sexual behaviors, and prevalence of STI and HIV infections, among men who have sex with men in Phnom Penh. The results of the study were alarming in that HIV prevalence among the 206 men who participated in the survey was at 14.4%. This was about the same level of HIV prevalence as among indirect female sex workers recorded in that year.

Although FHI had been supporting HIV/AIDS prevention among sex workers, including transgender individuals who are part of the MSM sub-population, since 1999, the findings of this study prompted the initiation of HIV/STI prevention interventions among men who have sex with men in early 2001. These interventions have been conducted through local NGOs where the focus is on safer sexual practices, knowledge about HIV/STI and linkages to appropriate STI treatment.

We hope that this report will increase understanding and acceptance of men who have sex with men and will encourage all those involved in the response to HIV/AIDS in Cambodia to join hands in creating an environment where they can access appropriate services and openly be part of Cambodian society.

Phnom Penh
October 2002

Dr. Chawalit Natpratan
Country Director
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Contents

	Page
ABBREVIATIONS	ii
EXECUTIVE SUMMARY	iii
I. BACKGROUND	1
II. OBJECTIVES	2
III. METHODS	2
IV. RESULTS	6
IV-1 SAMPLE DESCRIPTION / DEMOGRAPHIC PROFILE	6
IV-2 BEHAVIORAL AND CLINICAL FINDINGS	8
V. DISCUSSION	23
VI. RECOMMENDATIONS	25
REFERENCES	26
APPENDIX I: QUESTIONNAIRE	
APPENDIX II: CLINICAL PROTOCOL	

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
BCI	Behavior Change Intervention
BSS	Behavioral Surveillance Survey
CI	Confidence Interval
CT	*Chamydia trachomatis*
ELISA	Enzyme Linked Immunosorbant Assay
FHI	Family Health International
FSW	Female Sex Worker
HIV	Human Immunodeficiency Virus
HSS	HIV Sentinel Surveillance
IEC	Information, Education and Communication
IMPACT	Implementing HIV/AIDS Prevention and Care
IPC	Institut Pasteur de Cambodge
ITM	Institute of Tropical Medicine
MOH	Ministry of Health
MSM	Men who have Sex with Men
MSW	Male Sex Worker
N	Number
NCHADS	National Center for HIV/AIDS, Dermatology and STI
NG	*Neisseria gonorrhoeae*
NGO	Non-Governmental Organization
OR	Odds Ratio
PCR	Polymerase Chain Reaction
PLWA	Person Living With AIDS
PNP	Phnom Penh, Cambodia
PSF	Pharmaciens Sans Frontieres
RPR	Rapid Plasma Reagin
STI	Sexually Transmitted Infection
TPHA	*Treponema pallidum* Hemaggultination Assay
USAID	United States Agency for International Development
USD	United States Dollars
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

Executive Summary

Background

Cambodia has the highest national HIV prevalence in Asia. In 1999, the Cambodian national surveillance system suggested that 3.8%[1] of the population was infected with HIV. In Cambodia HIV is largely transmitted sexually, and most interventions and resources have been focused on reducing heterosexual transmission. The epidemic is fuelled by a large sex industry, poorly developed health and education infrastructures, and the increasing mobility of the population as the country resumes normal economic activity after decades of war.

In June 2000, FHI undertook a cross-sectional survey of men who have sex with other men. The objectives of this study were to assess the prevalence of HIV, syphilis and other sexually transmitted infections (STIs), and risk behaviors among men who have sex with men (MSM) in Phnom Penh (PNP), Cambodia. The survey was conducted at selected locations, as defined by an extensive mapping exercise.

Methodology

Using a two-stage time-location cluster sampling technique, a probability sample of two hundred and six (206) MSM aged 18 years and older from 16 sites in Phnom Penh, were selected. Inclusion criteria for recruitment into the study included self-reported male-to-male sex behavior, inclusive of non-penetrative sex, during the previous 12 months and being age 18 years or older. Potential participants were approached at the sites by trained interviewers and then accompanied back to one of the two drop-in centers, which were established for the purpose of the study.

At the centers, those who agreed to participate were interviewed and their sera, urethral and anal swabs were collected. Laboratory testing was conducted using ELISA for HIV, quantitative RPR for syphilis, PCR for *Chlamydia trachomatis* and modified Thayer-Martin medium for *Neisseria gonorrhoeae*.

The data were analyzed using cluster and weighted univariate and bivariate analyses with STATA. Confidence intervals (CI) were calculated with adjustment for design effect. The chi-square for independence (χ^2) was used to assess differences.

[1] NCHADS 1999, BSS

Results

- The majority of MSM surveyed did not identify as gay men but reported homosexual and bisexual practices
- Out of the total sample, 81% (167 men) reported anal sex with male partners in the 6 months prior to the interview and 61.2 % (125 men) reported having had vaginal sex with female partners.In the past 6 months 82.8% reported having male partners who paid them to have sex.;There was a reported high turnover of male partners (mean of 5.2 male partners in the past month).

- Condom use with different sex partners and genders varied significantly ; While 78% of MSM used condoms consistently when buying sex from women, only 47% did so when buying sex from men;

- Sera results showed HIV and reactive syphilis serology prevalence amongst MSM was 14.4 % and 5.5%, respectively;

- Other diagnosed STIs were urethral *Neisseria gonorrhoeae* 4.8%, anal *Neisseria gonorrhoeae* 0.3%, urethral chlamydial infection 7.2%, and anal chlamydial infection 1.0%.

- Overall, 26.5% of the respondents tested positive for at least one STI, including HIV ;

- Among only those MSM who reported selling sex, HIV prevalence was 15.0%. This is very similar to the national HIV prevalence among female indirect sex workers in 2000 (16.1%), though it still remains well below those female sex workers in brothels (31.1%)

- Risk factors for HIV infection were:

    - anal sex with multiple partners (OR 3.3, CI 1.3 – 8.5),
    - unprotected vaginal sex with female commercial partners in the past month (OR 3.3, CI 1.2 – 9.0),
    - current syphilis infection (OR 9.0, CI 2.0 – 40.2), and
    - any STI (OR 5.9, CI 1.5 – 23.6).

While the study strove to include as many MSM in Phnom Penh as possible, there were some limitations to the representativeness of the sample. Due to legal and social reasons, MSM who reported being under age 18 were not recruited for the study. However, a considerable number were identified during the mapping. Some locations where MSM could be located were not accessible to the research team such as exclusive entertainment establishments or telephone networks for commercial sex. The refusal rate was 37%, and upon inquiry the study team found that a majority of those men who refused were the clients of male sex workers (MSW).

Conclusions

In Phnom Penh, Cambodia, MSM should be considered are a group at high risk of HIV infection because of a significant proportion who reported unprotected anal intercourse and multiple sexual partners. A large proportion of MSM were also found to have penetrative sex with both males and females. This indicates that MSM could be serving as a "bridge group" of HIV transmission to the general population.

It can be concluded that male-to-male sexual behavior, which is often of a hidden nature, does represent a link in the spread of HIV and STIs in Cambodia. However, more research is necessary to determine the size of ther MSM population in both Phnom Penh and other parts of the country. This information would help in understanding both the possible contribution of this high risk population to the continued spread of the HIV epidemic, as well as the scale of resources needed to successfully reach MSM with interventions. Additional research would also provide a more knowledge about other MSM sub-populations not included in this study such as youth and some clients of male sex workers.

Interventions should be a priority among this group as HIV and syphilis have entered the population in a significant way, and programs should be tailored to the hidden and vulnerable nature of this group, as well as to their sexual risk taking activities which are different from other at risk male populations in Cambodia.

I Background

Cambodia has the highest national HIV prevalence in Asia. In 1999, the Cambodian national estimates suggest that 3.8%[2] of the population was infected with HIV. In Cambodia HIV is largely transmitted sexually, and most interventions and resources have been focused on reducing heterosexual transmission. The epidemic is fuelled by a large sex industry, poorly developed health and education infrastructures, and the increasing mobility of the population as the country resumes normal economic activity after decades of war.

Prevention efforts in Cambodia have focused on reducing risky behavior in heterosexual sex by targeting a reduction in multiple sex partners and increased condom use in commercial sex encounters. Behavioral surveillance data collected in several locations in 1999 suggested that annually around one-third[3] of the high risk male populations (police, military, moto drivers) continue to have sex with sex workers, with about one quarter of them not protecting all of their commercial sex acts with condoms.

Despite the intensive HIV research and surveillance that has been conducted in Cambodia, little was known about sexual behavior and HIV prevalence among men who have sex with men (MSM)[4], and there were no significant HIV prevention services for MSM. This follows a similar pattnern to other countries in Asia where there is limited data related to prevention programs focusing on male-to-male sexual behavior.[5] To date, the only data available on the existence of male-to-male sexual behavior in Cambodia were reported in a study among university students[6] showing that 8% of male students reported male-to-male sex behavior, and in an anthropological study about gender and sexuality among Cambodian youth,[7] which described the existence of male-to-male sexual behavior among youth. In 2000-2001, Family Health International noted the considerable gaps in understanding of MSM behavior and HIV prevalence and undertook the following study to gain a better understanding of overall HIV risk among MSM in order to better provide interventions to this community.

[2] NCHADS 1999, BSS

[3] NCHADS 1999, BSS

[4] The term "MSM" refers to biological males who engage in sex with other biological males, irrespective of their motivation for their sexual behavior and irrespective of their self-identification and even irrespective of whether they regard themselves as "men".

[5] Roy Chan et al, 1998

[6] Glaziou, 1999

[7] Chou Meng Tarr, 1996

II Objectives

Primary objective:

- To determine if interventions should be designed and implemented for MSM in Phnom Penh

Secondary objectives:

- To determine the prevalence of *Neisseria gonorrhoea, Chlamydia trachomatis*, syphilis and HIV among MSM in Phnom Penh, Cambodia
- To measure the frequency of and the correlations between risk behaviors and exposures to STI and HIV among MSM

III Methods

MAPPING

To evaluate the need for inclusion of MSM in the FHI/IMPACT HIV/STI prevention program, Family Health International (FHI) / IMPACT undertook a mapping exercise of MSM between February and May 1999 in Phnom Penh. The objectives of this mapping were to determine the locations where MSM congregate in Phnom Penh and to estimate the number of MSM who frequent these locations.

Due to the hidden nature of this population and difficulty identifying them, a snowball approach was used for the mapping. In snowball sampling, key informants in a sub-population identify other members of their community, or in this case other locations where MSM congregate. The people in each cluster are contacted, and they in turn identify further contacts. The process goes on until an adequate mapping is achieved and/or the number of sites exhausted.

One fieldworker, who is a member of the Phnom Penh MSM community, was involved in the mapping exercise. The FHI/IMPACT Behavior Change Intervention (BCI) and Evaluation officer supervised the fieldworker. At the research sites MSM were asked what other locations they knew and/or frequent to meet partners. The fieldworker then went to the newly identified locations and asked the same questions to new contact persons. Communication was established before asking questions. This was important in order to enable information exchange with this stigmatized group. As a result of the effort to first establish a relationship for communication, some MSM offered to personally introduce the fieldworker to new locations.

In general five to ten persons were approached and interviewed per location. The fieldworker did not tape or record the collected data on site in order to ease the discussion and avoid mistrust. All collected data was entered into a database at the FHI office the next day.

The exercise showed that there were MSM networks in Phnom Penh, however they were discrete enough that they were not obvious to the general population. The study team identified twenty-seven locations where MSM meet/gather including parks, karaoke bars, brothels, discotheques, massage parlors, cinemas and streets were identified during this

exercise. The venues most frequented by MSM were parks (10) throughout the city followed by karaoke bars (7) and discotheques/nightclubs (4).

Because of the floating nature of the population, it was not possible during this mapping to measure the exact number of MSM in Phnom Penh but it was possible to estimate the number of MSM at each location. An average of 19 MSM per location was recorded in a given evening with a range of five to 50. In addition, field workers estimated that fifty percent of the MSM identified might be selling sex services to clients – both to other males and, to a lesser extent, to females. Because the mapping research raised additional questions related to the vulnerability of MSM, it was decided to develop further research on male-to-male sex behaviors in Phnom Penh.

In April and May 2000, directly prior to the implementation of this cross-sectional study, a second mapping exercise was conducted. It was important to update the mapping since MSM meeting locations can change from month to month due to police crackdowns or pressures from the community living in those areas. To ensure that accurate data was available to design the sample frame, the methodology used for the second mapping was the same as used for the first mapping. This second mapping identified 16 locations compared to 27 that were identified in the 1999 mapping exercise. The findings of the mapping exercise were then used to develop the sampling framework as detailed below.

STUDY DESIGN

The protocol for this study was approved by Family Health International's Protection of Human Subjects Committee (PHSC) and the Ministry of Health in Cambodia

A cross-sectional study design was employed at 16 selected locations, as defined by the mapping exercise, in Phnom Penh, Cambodia. The study population for the survey was men found in these locations who reported having sex with other men.

The sample size was 200, and in order to reach the most representative sample of this floating population, a two-stage time-location sampling methodology was used. A total of 87 time-location clusters, made up of 16 locations, were defined. Forty-one clusters were randomly selected using equal probability sampling at the first stage. At the second stage, a fixed number of five individuals per cluster were randomly selected.

Two drop-in centers were established for the study where interviews and specimen collection were conducted. Two study teams of four men were organized, each consisting of one supervisor, one medical assistant, one interviewer, one outreach worker and one "count worker" responsible for counting all MSM at each location to calculate sampling probabilities for each cluster. All of the men in the teams were Cambodian and MSM.

Prior to the collection of data, field teams were trained in interviewing skills, sampling methodology, desensitization on sexual practices among MSM, and instructions on administering the questionnaire. Medical assistants practiced appropriate specimen collection for two weeks at an STI clinic.

One-week of pilot testing was organized to field test the sampling approach and the tools used for this study.

Questionnaires and core indicators from the *Guidelines for Repeated Behavioral Surveys in Population at Risk of HIV*[8] were adapted for use in this study. The questionnaire was written in English, and then translated into Khmer. Inclusion criteria for recruitment into the study included self-reported male-to-male sex behavior, inclusive of non-penetrative sex, during the previous 12 months and being age 18 years or older. No effort was made to categorize MSM into sub-groups, such as male sex workers, transvestites, self-identified gays or others as not enough was known about the extent to which these categories were appropriate. Potential participants were approached and told about the study. If they agreed to participate, they were accompanied to one of the drop-in centers established for the study. Witnessed oral informed consent was administered at the study site and no identifiers were recorded. Participants were able to stop the interview and specimen collection process at any time.

After completing the interview and administering the questionnaire, participants underwent a medical and physical examination. Anal specimens were obtained from all participants regardless of symptoms, and urethral specimens were taken from those presenting with urethral discharge. Specimens were inoculated onto Modified Thayer Martin Media in the clinic and placed in CO_2 extinction jars. All men were asked to provide a urine sample, and blood was collected for HIV and syphilis serology. Rectal and urethral swabs and urine specimens were collected for the detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis*.

Individuals with symptoms suggestive of an STI were treated syndromically without charge. Education and counseling were offered to each participant. Shower facilities were also offered to all participants. A small incentive consisting of a t-shirt and condoms were provided to the participants after completion of the interview, medical examination and specimen collection. A card with an ID number was given to the participants and they were invited to come back to obtain their STI results one week later. The results of the HIV test were not given at the drop-in center because of the absence of trained counselors in the team. Instead, each participant was offered a referral and transportation to a local anonymous testing site for free voluntary counseling and testing.

LABORATORY METHODS

Serologic testing for HIV and syphilis, *Neisseria gonorrhoeae* cultures and specimen handling were performed at the Pasteur Institute of Cambodia. Initial HIV screening was performed with a direct particle agglutination test (Serodia-HIV1, Fujirebio INC, Tokyo, Japan). If positive, a confirmatory ELISA (Vidas HIV DUO, bioMérieux Sa. Marcy l'Etoile, France) was performed. If the initial screening test was negative, the specimen was retested using a third generation ELISA (Geenscreen HIV 1/2, Biorad, France). The negative results of this test confirmed the HIV negative sero-status. Discrepant results were tested using the Vidas ELISA system.

Sera were tested for syphilis using quantitative Rapid Plasma Reagin (RPR) (Becton, Dickinson, Cockeyville MD, USA). RPR reactive sera were confirmed using particle agglutination (Treponema Pallidum Passive Particle Agglutination Serodia-TP-PA, Fujirebio INC, Tokyo Japan).

Gonorrhoea cultures for anal and urethral swab inoculated on modified Thayer-Martin medium at the clinic were transferred to incubators at 36°C in 5% CO2 atmosphere and

[8] Family Health International, 2000.

read at 48 hours and 72 hours. Positive cultures were confirmed using colony morphology, gram stain and oxidase testing.

Urine and anal specimens were frozen (-20°C), batched at the Pasteur Institute and transported to the Institute of Tropical Medicine (ITM) in Antwerp for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* detection using polymerase chain reaction (PCR) (Amplicor NG/CT co-amplification PCR, Roche Diagnostic System, Branchburg, NJ, USA).

DATA ANALYSIS

One "count worker" responsible for counting all MSM at each location and calculating sampling probabilities for each cluster was part of both of the two study teams. Double entry of the questionnaire data was done using SPSS 10.0 (SPPS Inc. Chicago, IL, USA) and compared with data entered into Epi Info 6 (Center for Diseases Control & Prevention, USA). After corrections, files were converted and analyzed, using STATA software (STATA Corporation, College Station, TX). Weighted univariate and bivariate analyses were conducted with STATA. Analysis was adjusting accordingly to account for a second random selection of participants to reach sample size. Confidence intervals (CI) were calculated adjusting for design effects and chi-square for independence (χ^2) was used to assess differences.

IV Results

The data collection was conducted over a span of four weeks in June 2000 in Phnom Penh, Cambodia. Behavioral and laboratory results are presented below in the following sections.

IV-1 Sample description / demographic profile

Study participants were selected from 807 males who were observed at the study locations during the data collection time period. Two hundred and six (206) males were enrolled in the study. While the study strove to include as many MSM in Phnom Penh as possible, there were some limitations to the representativeness of the sample. Due to legal and social reasons, MSM who reported being under age 18 were not recruited for the study. However, a considerable number were identified during the mapping. Some locations where MSM could be located were not accessible to the research team such as exclusive entertainment establishments or telephone networks for commercial sex. The refusal rate was 37%, and upon inquiry the study team found that a majority of those men who refused were the clients of male sex workers (MSW).

Respondents ranged in age from 19-42. Overall, respondents had a mean age of 24.4 years. Over one third of participants had a secondary education and less than 10% did not have formal schooling. The mean number of years of education was 6.4 (median 6). Almost all (91.2%) of the respondents were not married.

Table IV-1.1 Demographic profile of study participants: Age, Education and Marital Status

Characteristics	*%*	*Mean, Median, Range*
Age (years) N=206		
19 – 24	61.3	Mean: 24.4
25 – 30	26.7	Median: 23
Above 30	12	Min/Max: 19 – 42
Education, N=205		
No schooling	9.4	Mean: 6.4
Primary	33	Median: 6
Secondary	37.6	Min/Max: 0 – 14
High School	20	
Marital Status, N=206		
Single	91.2	
Currently Married	8.8	

About half of the respondents reported being unemployed at the time of the study. Laborers (15.9%) and street/market vendors (10.6%) were the most commonly reported occupations. About half the men reported earning between 1 and 50 USD per month, and less than 3% did not have any income in the last month. The mean income during the past month was 57.8 USD.

Table IV-1.2 Demographic profile of study participants: Occupation and Income

Characteristics	%
Occupation. N = 206	
Unemployed	50. 8
Laborer	15. 9
Street / Market Vendor	10. 6
Worker in private company	7. 6
Moto taxi driver	3. 3
Uniformed Services	3. 0
Civil Servant	2
Student	1.6
Other	5.2
Income past month (in USD). N = 194	
No Income	2.5
1 – 50	56.5
51 – 100	27.9
101 – 150	7.3
151 – 200	3.9
> 200	1.9

To assess the mobility of MSM in Phnom Penh (PNP), participants were asked how much time they had spent outside of PNP in the last year. One half said that they had been away from PNP for more than one month, in total, over the last twelve months. Over 40% had lived in Phnom Penh for three years or less, emphasizing the mobile nature of this population.

Table IV-1.3 Demographic profile of study participants: Mobility

Characteristics	%
Mobility. N = 206	
Away from PNP > 1 month past year	50.5
Away from PNP < 1 month past year	49.5
Year s in Phnom Penh. N = 205	
< 1 year	14.1
1 – 3 years	26.3
4 – 6 years	19.3
7 – 9 years	7.2
> 9 years	33.1

Participants were asked to characterize their sexual identity with regard to their male-to-male sexual behavior. Only one (0.1%) reported a "gay" identity versus 22.8% who reported homosexual behavior and 27.3% reporting bisexual behavior. A total of 39 respondents (19.7%) identified themselves as a 'woman.'

Table IV-1.4 Demographic profile of study participants: Sexual Identity / Labeling

Self-reported sexual identity/ labeling	*%*
N= 205	
Man	30.3
Gay	0.1
Homosexual	22.8
Bisexual	27.4
Woman	19.4

Almost one quarter of respondents (23.5%) replied that they had ever experienced harassment or coercion because of their male-to-male sex behavior.

IV-2 Behavioral and clinical findings

The reported mean age at first sex was 17.7 years. The majority of MSM had their first sexual partner between the ages of 16 and 18, with 17.3% reporting they were below the age of 16 and 32.2% were above the age of 18. In comparison, the average age of first sex among general population males in Cambodia is 22.0 years[9]. About half reported that their first sexual partner was male.

Table IV-2.1 Sexual History

	%	*Mean, median, range*
Age at First Sex , N= 206		
Under 16	17.3	
16-18	50.5	Mean: 17.8
19-21	24.1	Median: 18
>21	8.1	Range:10 - 29
Gender of first sexual partner, N=205		
Male	49.8	
Female	50.2	

The survey found that three fourths of the participants reported not drinking alcohol in the past month, and only 20% reported drinking alcohol the last time they had sex. During the previous twelve months, 3% used injecting drugs, and 24.1% reported non-injecting drug use.

[9] Cambodian Household Male Survey, BSS IV, NCHADS 2000

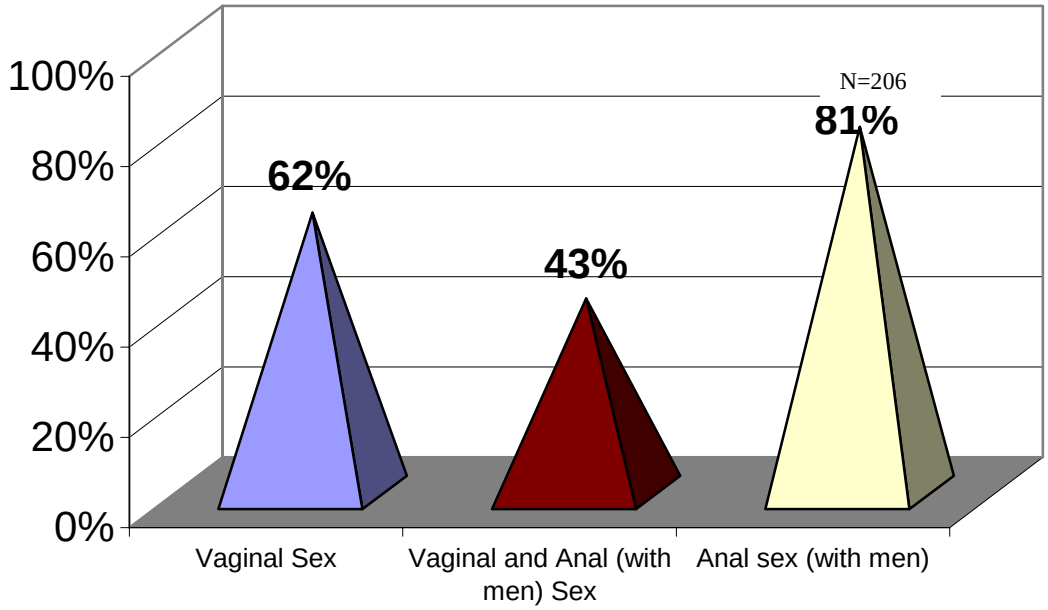
Among the total MSM sample, 11.4% reported marijuana use, 8.9% Valium, 7.1% amphetamine, and 6.3% glue 6.

Figure IV-2.2 Alcohol and drug use

	%
Drank Alcohol in Past Month	
Everyday	4
3-4 times a week	9
Once a week	12
Not at all	74
Drank Alcohol Before Last Sex	
A lot	2
Some	10
A little	8
None	80
Used Non-Injecting Drugs in Past 12 Months	**24**
Drug Used :	
• Marijuana	11.4
• Valium	8.9
• Amphetamine	7.1
• Glue	6.3
Used Injecting Drugs in Past 12 Months	**3.0**

Engaging in vaginal penetrative sex with a female partner during the previous 6 months was reported by 61.2% of participants. Penetrative anal sex with male partners in the 6 months prior to the interview was reported by 80.1% of respondents. A large proportion of respondents, 42.6%, reported having had penetrative sex with both male and female partners during the past 6 months.

Figure IV 2.1 Penetrative sex in the last 6 months



Participants were asked to catagorize their female and male sexual partners in the following way:

Female sex partners:

- **Regular partner**: spousal or cohabitational partner
- **Non-regular partner**: non-spousal, non-cohabitational and non commercial partner
- **Female sex worker:**: a partner who the respondent paid money in exchange for sex services
- **Female client**: a partner who gave the respondents money in exchange for sex services

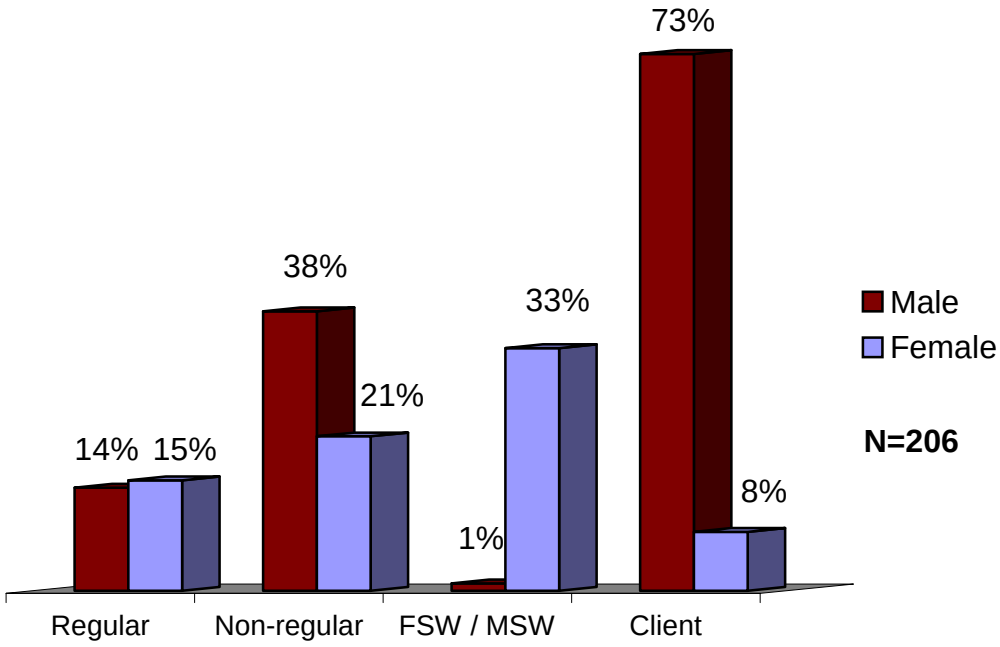
Male sex partners:

- **Regular partner**: a partner with whom the respondent has had sex with one year or longer
- **Non-regular partner**: a partner with whom the respondent had had sex with for less than one year
- **Male sex worker**: a partner who the respondents paid money in exchange for sex services
- **Male client**: a partner who gave the respondent money in exchange for sex services

Among the MSM sample, 15.3% reported vaginal sex with a regular female sex partner in the past six months, 21.1% with a non-regular female partner, 33.4% with a female sex worker, and 8.4 % reported having sex with a female client.

Almost fourteen percent (13.6%) reported anal sex with a regular male partner in the past six months, 37.7% with non-regular male partner, 1.5% reported anal sex with a male sex worker, and 72.7% with a male client.

Figure IV-2.2 Catagories of sex partners in the past 6 months



Among participants who had anal sex with a male client, 50.7% reported that they had the insertive role at last anal sex, while 24% reported the receptive role and 25.3% reported both roles. One-third of respondents reported male clients as the only catagory of male sexual partner with whom they had had anal sex.

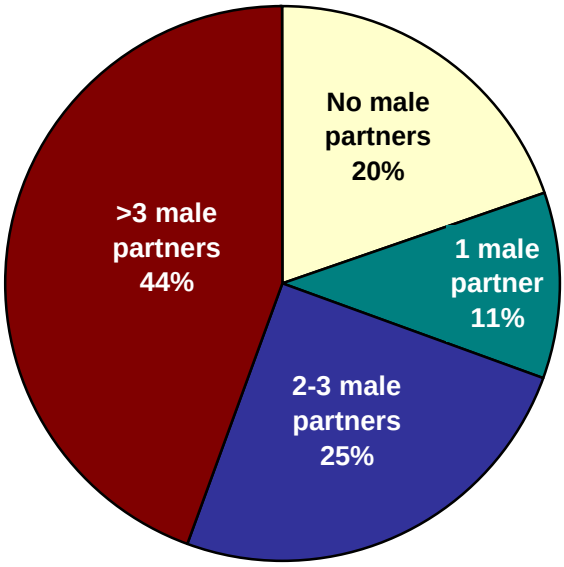
The mean number of female partners reported for the week and the month prior to the interview was 0.82 and 1.9, respectively. The mean number of male partners with whom respondents had had anal sex, during the week and the month before the interview was 1.72 and 5.12, respectively.

Table IV-2.3 Mean, median and range for number of partners over past week and past month

		Past Week	*Past Month*
Female	Mean	0.82	1.9
	Median	0	1
	Min/Max	0 / 6	0 / 17
Male	Mean	1.72	5.12
	Median	1	3
	Min/Max	0 / 15	0 / 66

Almost three fourths of those surveyed reported more than one male sexual partner in the past month, while 20% reported that they had not had a male partner in the past month.

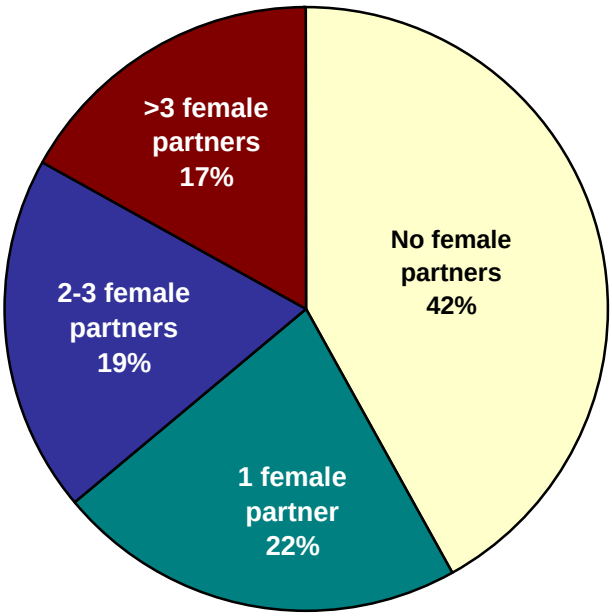
Figure IV-2.3 Proportion of respondents with male sex partners in the past month



N=206

Multiple female sex partners were less common than multiple male partners among MSM. One third of MSM had more than one female partner in the past month, and 42% reported none at all.

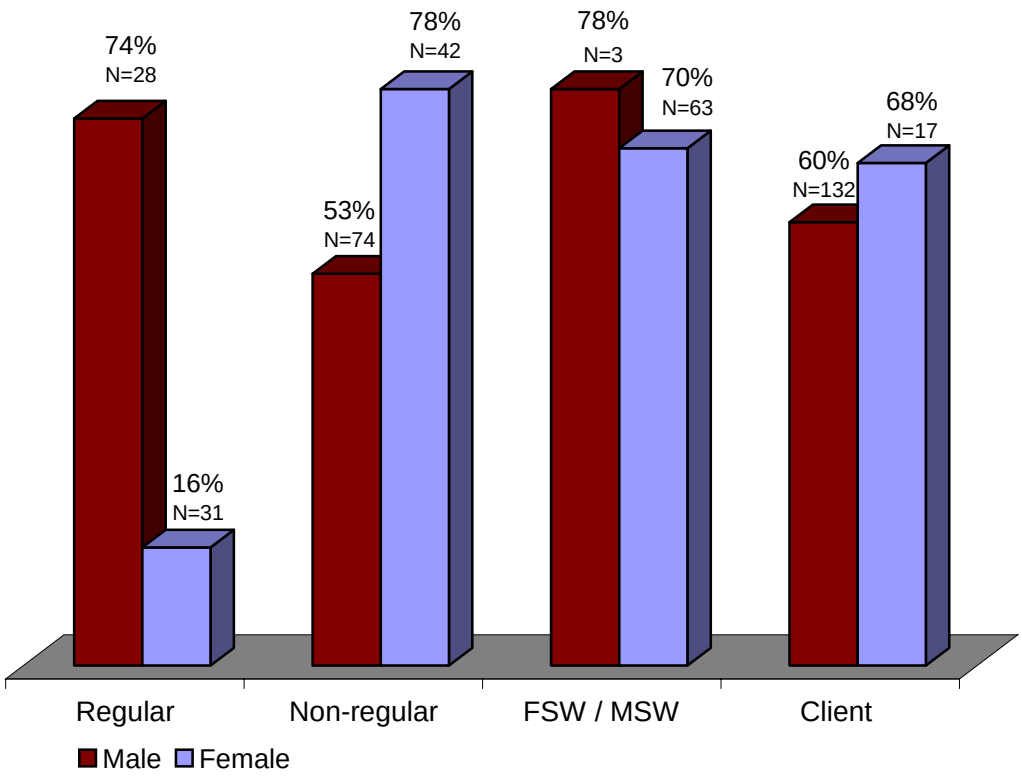
Figure IV-2.4 Proportion of Respondents with female sex partners in the past month



N=206

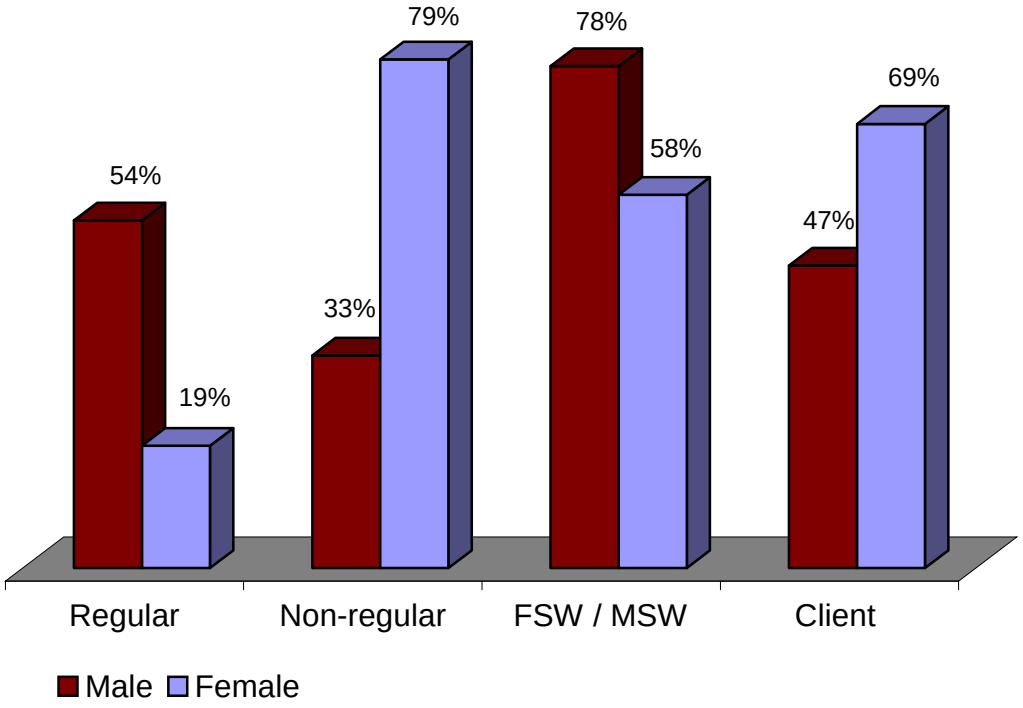
While similar proportions of MSM reported a male or female regular partner, condom use at last sex was significantly higher with their male than their female regular partners. In contrast, condom use was less common among male non-regular partners than among the female non-regualr partners. Condom use with female commercial partners was similar, whether they were buying sex from female sex workers (60% last time) or selling sex to women (68% last time). Less than two thirds of the MSM reported that they used a condom the last time they had sex with a client.

Figure IV-2.5 Condom use at last sex act by partner type



There was little difference between last time and consistent condom use among MSM with regular and non-regular partners and female clients, while 58% used a condom every time the bought sex from a female sex worker (in comparison to 70% at last sex). Consistent condom use in the past month fell to 50% and below for MSM with regular and non-regular partners and male clients.

Figure IV-2.6 Consistent condom use in the past month by partner type

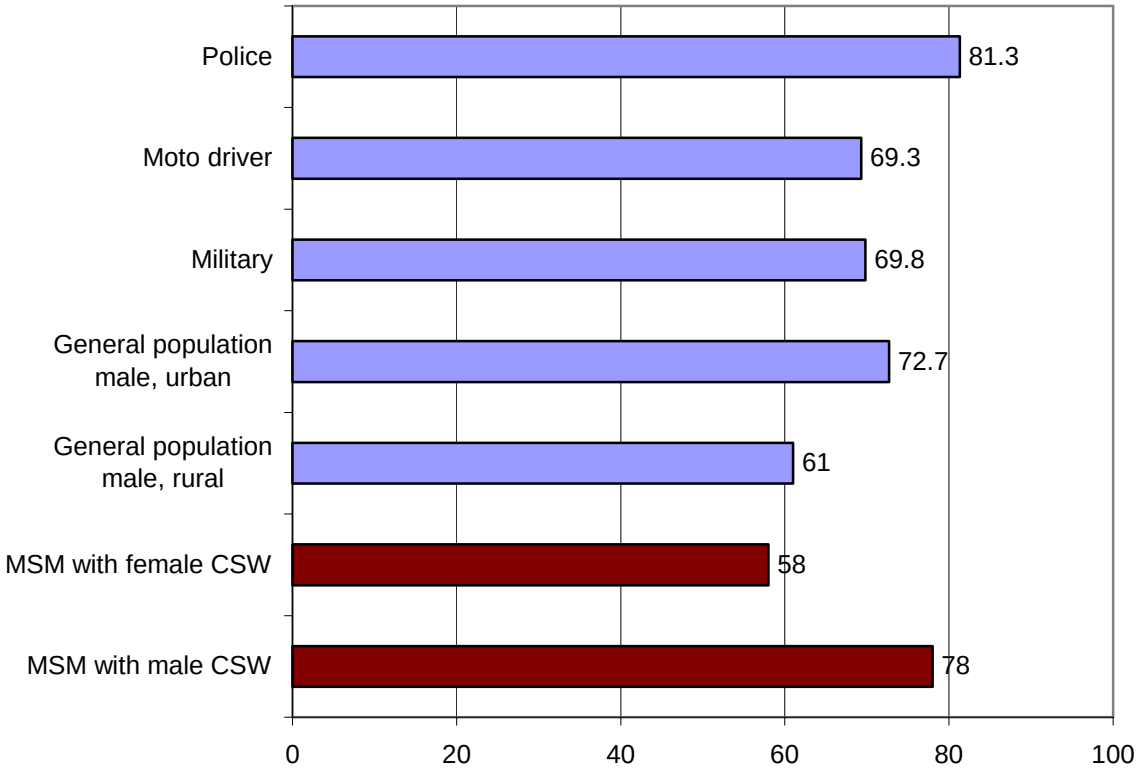


* Note that consistent condom use is marginally higher than last time condom use for female regular and non-regular partners and female clients. This is because consistent condom use was asked only for those men with that type of female sex partner in the *past month*, while last time condom use was asked for men with a female partner in the *past six months*. Thus the results about condom use with females are representing slightly different populations.

*13.3% of MSM reported unprotected sex with at least one male **and** one female partner in the past month.*

MSM reported less consistent condom use with female commercial partners than did three groups of high risk men in Cambodia (police, military and moto drivers) and general population men in urban areas.

Figure IV-2.7: Consistent condom use* among men buying sex in Cambodia

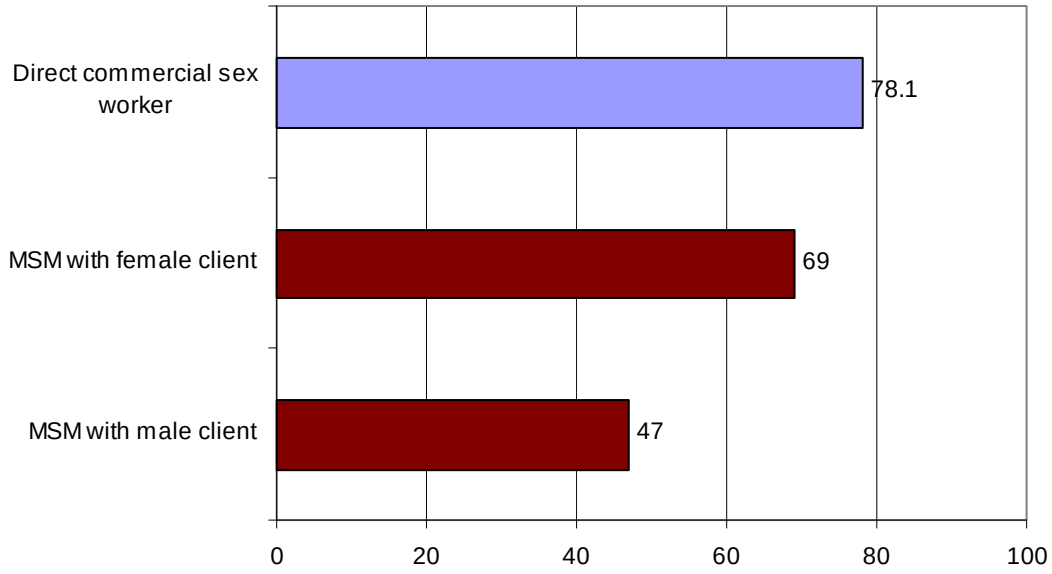


Source: Cambodian Behavioral Surveillance Survey, NCHADS 1999, and Cambodian Household Male Survey, BSS IV NCHADS 2000

* Consistent condom use measured in the past 3 months among high risk and general population men and in the past month among MSM

Figure 2.8 illustrates that not only are MSM less likely to use a condom than other high risk male populations when purchasing sex, they are also significantly less likely to use a condom when selling sex than are direct female sex workers, and their risk behavior is even greater with male clients than with female clients.

Figure IV-2.8: Consistent condom use among male and female sex workers in Cambodia



Condoms and lubricants

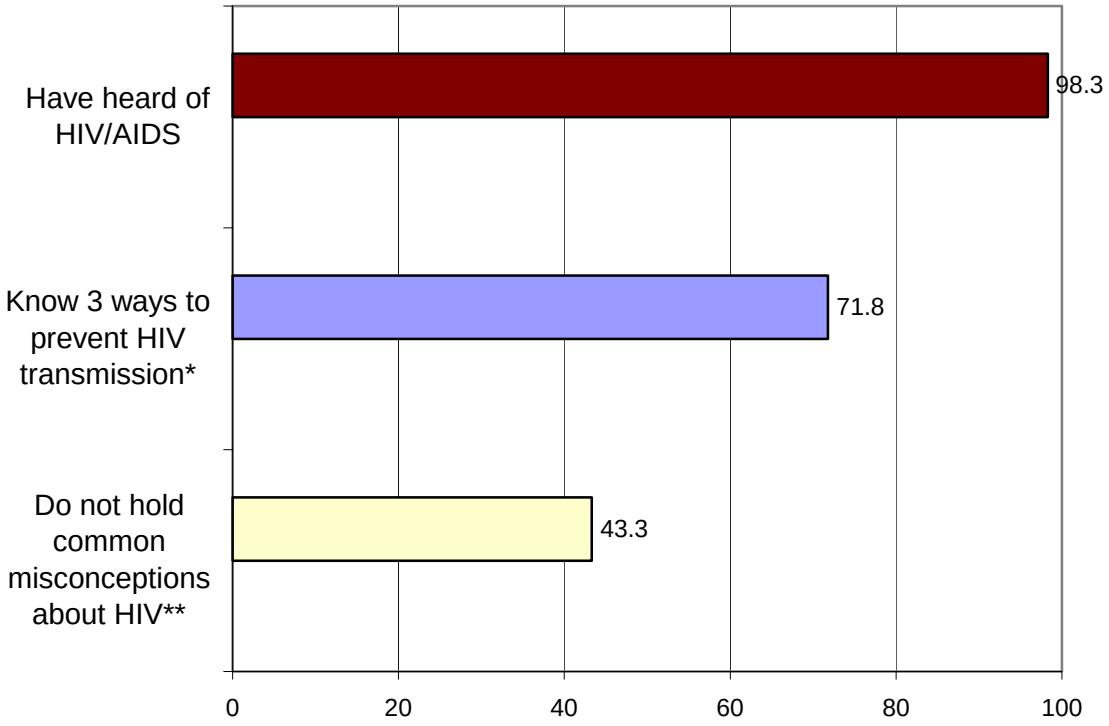
A total of 46% of respondents claimed that it was not possible to obtain condoms whenever they were needed. Over half of respondents reported using oil-based lubricants (beauty cream, cooking oil, medicinal cream and hair oil), and one third mentioned using saliva. Water-based lubricant was used by only 1% of all MSM, and 11.6% did not use any lubricant at all.

Table IV-2.4: Access to condoms and use of lubricants

	%
Condoms	
Can obtain everytime needed	46.0
Lubricants	
Use:	
• Oil-based	57.0
• Water-based	1.0
• Saliva	34.0
• None at all	11.6
• Don't know/remember	3.4

While almost every MSM in the survey had heard of HIV/AIDS, fewer than three fourths could name three ways a person can protect themselves from HIV infection including using a condom every time, only having sex with one uninfected partner who is also faithful, and remaining abstinent from sex. An even smaller number of MSM rejected three commonly held misconceptions about HIV/AIDS, namely that HIV is transmitted by mosquitos, that it can be passed by sharing a meal with an infected person, and that healthy looking people cannot have the virus.

Figure IV-2.9: Knowledge of HIV/AIDS and prevention of transmission

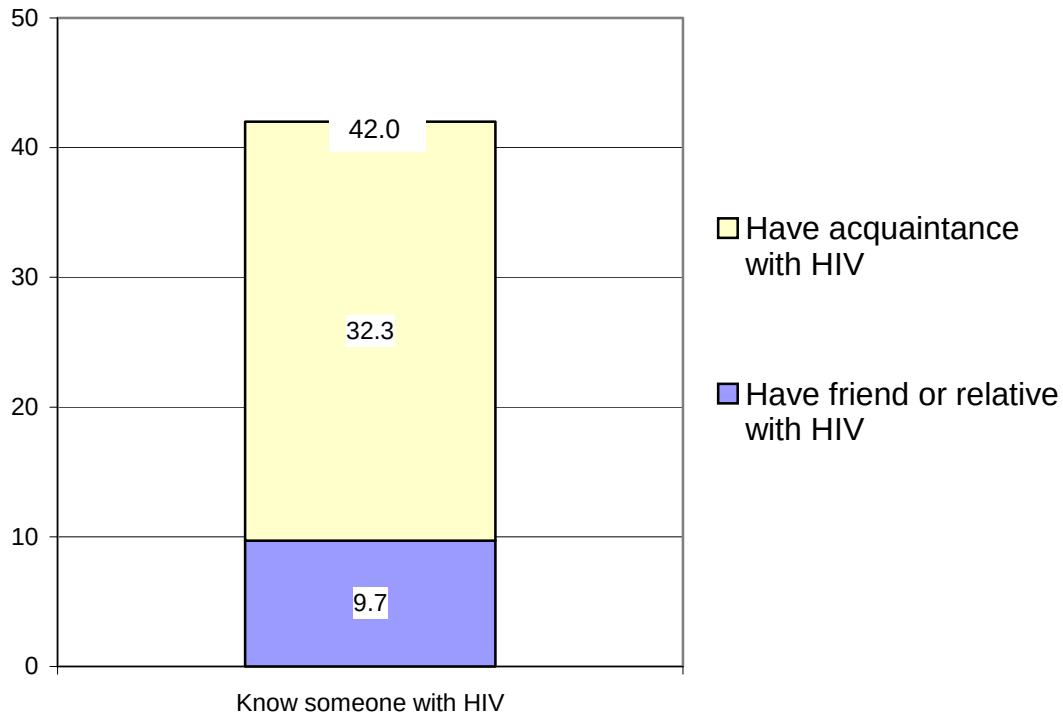


* Three ways to avoid HIV transmission include using a condom every time, only having sex with one uninfected partner who is also faithful, remaining abstinent from sex.

** Three common misconceptions include that HIV can be transmitted by mosquitos and by sharing a meal with an infected person, and that a healthy looking person cannot have the virus

A total of 41.8% answered that they knew someone with HIV/AIDS, and almost 10% of all MSM reported that they had a friend or family member living with HIV or who had died of AIDS.

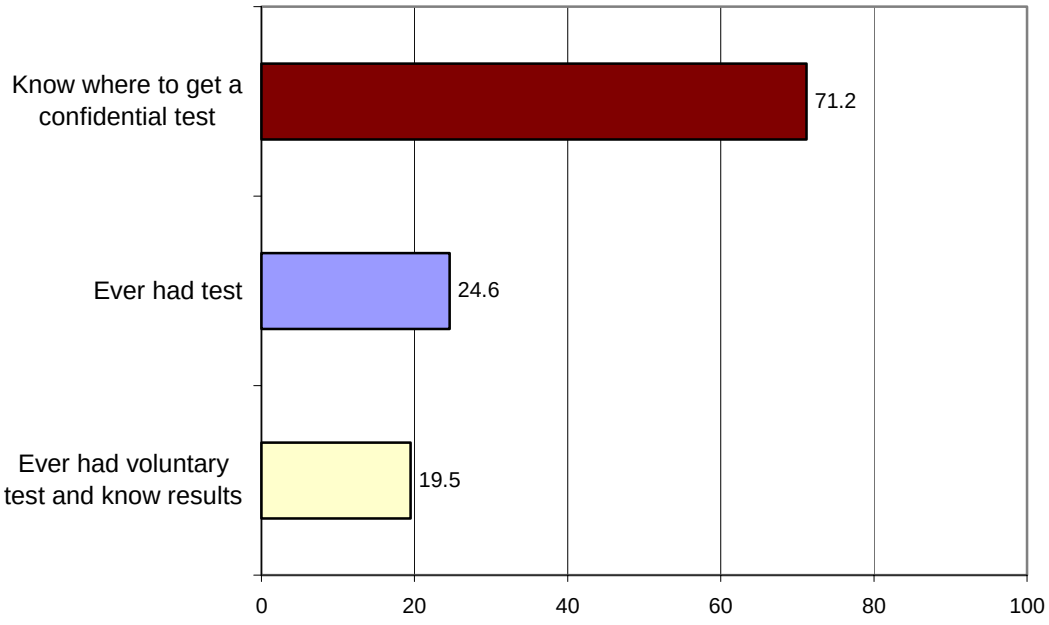
Figure IV-2.10: Know someone with HIV/AIDS



HIV Testing

A high proportion of respondents (71.2%) reported that it was possible to obtain a confidential HIV test. One quarter of MSM had already been tested for HIV, a majority of whom received a voluntary test and returned to learn their results.

Figure IV-2.11: Know where to get HIV test and ever had a test



Knowledge and History of STI symptoms

Half of MSM could name at least two STI symptoms that occur in men. One quarter of the population reported that they had an STI symptom in the past 12 months, the most common being urethral discharge (15.7%), and genital ulcer (15.3%), followed by anal ulcer (1.9%) and anal discharge (0.7%).

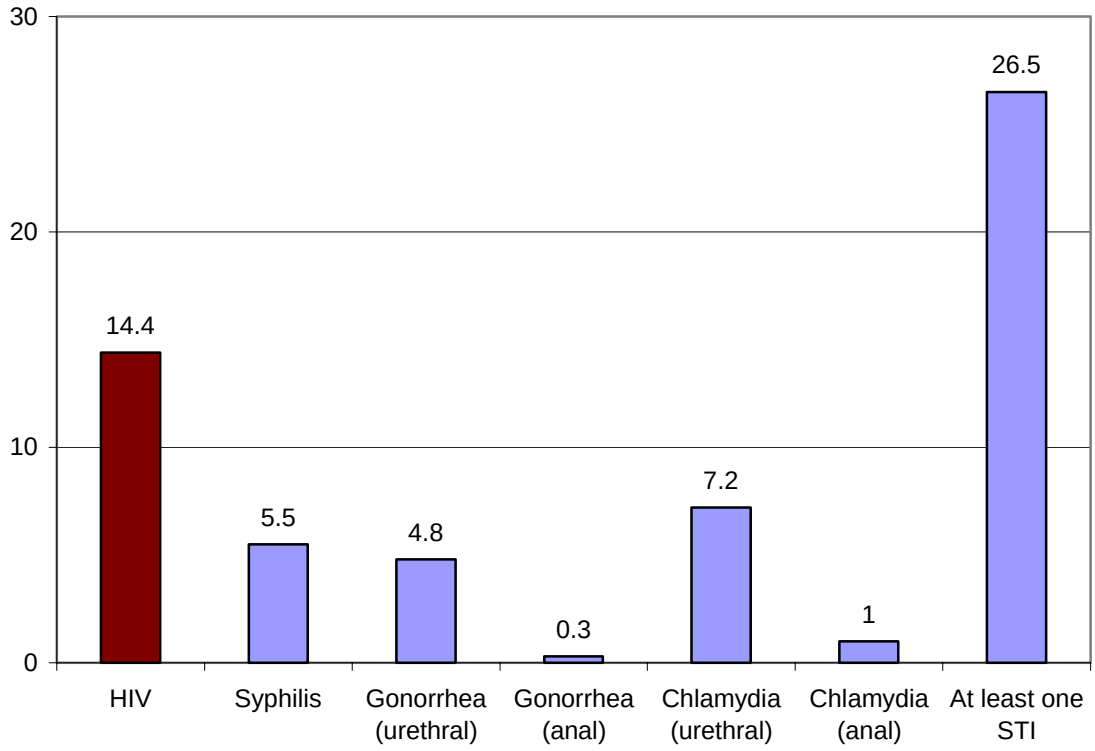
Table IV-2.5: Knowledge and history of symptoms

	%
Know 2 Male STI Symptoms	54.3
Had STI Symptom in past 12 months	21.1
Had:	
• Urethral discharge	15.7
• Genital ulcer	15.3
• Anal ulcer	1.9
• Anal discharge	0.7

HIV and STI Prevalence

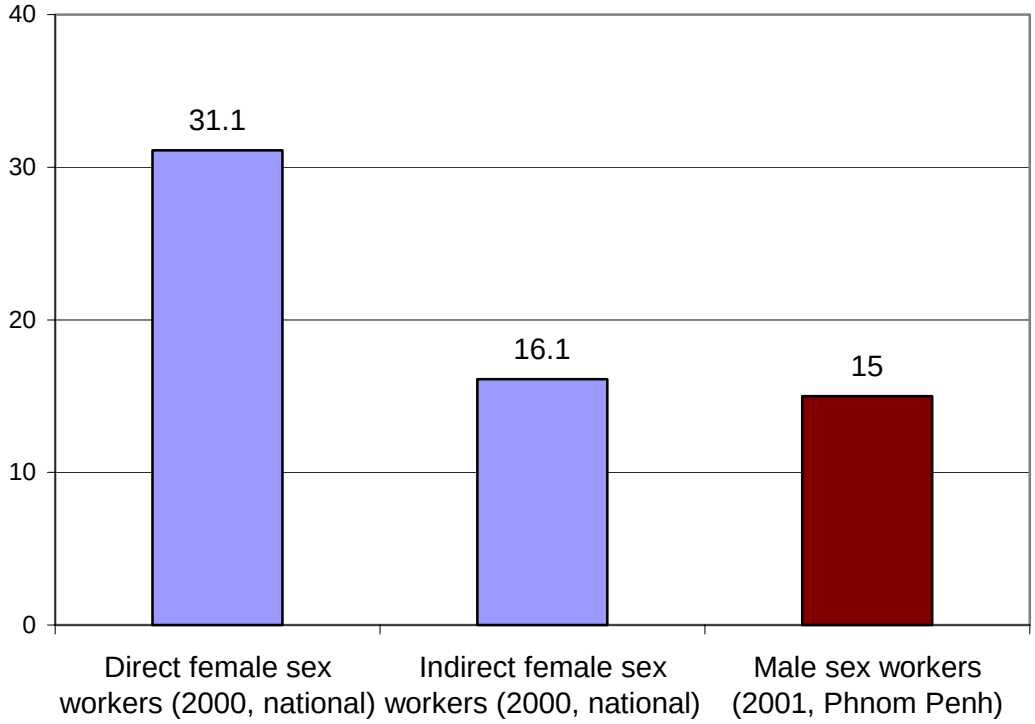
HIV and syphilis prevalence in the study population were 14.4% and 5.5 %, respectively. Overall, 26.5% of the respondents tested positive for at least one STI, including HIV. Other diagnosed STIs were urethral *Neisseria gonorrhoeae* 4.8%, anal *Neisseria gonorrhoeae* 0.3%, urethral chlamydial infection 7.2%, and anal chlamydial infection 1.0%.

Figure IV-2.12: Prevalence of HIV and other STIs



Among only those MSM who reported selling sex, HIV prevalence was 15.0%. This is very similar to the national HIV prevalence among female indirect sex workers in 2000 (16.1%), though it still remains well below those female sex workers in brothels (31.1%)

Figure IV-2.13: Prevalence of HIV among male and female sex workers



Source: Report on HIV Sentinel Surveillance in Cambodia, NCHADS 2000

Factors Associated with HIV Infection

It was found that there was no association between socio-demographic variables and being infected with HIV among MSM. However, two behavioral risks were found to be positively correlated with an increased chance of having HIV. If a participant reported having anal sex with multiple partners in the past month or if he had unprotected sex with a female commercial sex partner in the past month, there was a 3.3 times more likely to have HIV infection than someone who did not report engaging in those risk behaviors.

There was also a strong association between having any STIs and HIV infection (OR, 5.9, CI 1.5 – 23.6), and between having syphilis and having HIV (OR, 9.0, CI 2 – 40.2).

Table IV-2.6: Factors positively associated with HIV

		HIV positive				
Characteristic		*Weighted Count*	*%*	*(95% CI)*	*OR (95% CI)*	*P*
Anal sex with multiple male partners past month (N = 201)	***Yes***	**25**	**17.7**	**(10.6, 28.0)**	**3.3 (1.3, 8.5)**	**0.01**
	No	*4*	*6.1*	*(2.8, 13.0)*		
Unprotected vaginal sex with commercial female partners past month (N = 201)	***Yes***	**9**	**30.4**	**(16.2, 49.6)**	**3.3 (1.2, 9.0)**	**0.02**
	No	*20*	*11.6*	*(6.6, 19.5)*		
Biological evidence of any other STI* (N = 201)	***Yes***	**13**	**38.2**	**(16.7, 76.0)**	**5.9 (1.5, 23.6)**	**0.01**
	No	*16*	*9.5*	*(5.4, 16.0)*		
Biological evidence of Syphilis (N = 201)	***Yes***	**4**	**57.1**	**(25.6, 83.7)**	**9.0 (2.0, 40.2)**	**0.00**
	No	*25*	*12.8*	*(7.5, 21.1)*		

* STI: sexual transmitted infections included for this study: anal and urethral gonorrhea, anal and urethral chlamydia and syphilis
OR, Odds Ratio; CI, Confidence interval; P , P value

V Discussion

Although it was not the intention of the sampling strategy, the majority of those included as respondents in this survey were male sex workers (82.8%), a group of men at very high risk for HIV and other STIs. The sites identified in the mapping exercise were locations where men go to meet other men, which may account for the disproportionate number of men selling sex. Due to legal and social reasons, MSM who reported being under age 18 were not recruited for the study. However, a considerable number were identified during the mapping. Some locations where MSM could be located were not accessible to the research team such as exclusive entertainment establishments or telephone networks for commercial sex. The refusal rate was 37%, and upon inquiry the study team found that a majority of those men who refused were the clients of male sex workers (MSW). Hence, the group described in this survey may represent the group of MSM in Phnom Penh with the highest risk behavior, and may not be representative of all MSM.

However, this study has demonstrated that the MSM interviewed are vulnerable because of their risk behaviors, and their complex sexual networks do contribute to sexual mixing between high and low prevalence groups in Cambodia. MSM may serve as a "bridge group" in Cambodia – that is a higher risk population that can link HIV to the general population. In the past month, 13.0% of MSM reported unprotected penetrative sex with both male and female partners, and 9.5% reported having sex with both MSW and FSW, as well as with regular female partners. However, because the absolute size of the MSM population in Phnom Pehn and nationally remains unknown, it is difficult to estimate how influential MSM would be in contributing to the general population epidemic.

When MSM bought sex from women, far fewer used condoms than when buying sex from men. In fact, all high risk and general population male groups in the surveillance system reported using condoms more consistently than MSM with female commercial sex partners.[10] [11] At the same time that condom use was lower among MSM than the police, HIV prevalence among MSM was a good deal higher than the police[12] in 2000 (14.4% of MSM in Phnom Penh versus 3.1% of police nationally). The proportion of MSM with another STI was also higher across the board than it was for police in five provinces in a 2001 study[13] (*syphilis* - 5.5% MSM, 0.0% police; *chlamydia* - 7.2% MSM, 1.8% police; *gonorrhea* - 4.8% MSM, 0.0% police).

This risk taking behavior also extended to the MSM selling sex. Fully 30% more MSM reported not using condoms every time with their male clients than did direct female sex workers. While the prevalence among MSM who reported selling sex was significantly lower than that of direct female sex workers, it was almost the same as that of indirect female sex workers (15.0% versus 16.1%).

[10] Cambodian Household Male Survey, BSS IV, NCHADS 2000
[11] Cambodian Behavioral Surveillance Survey, NCHADS 1999
[12] Report on HIV Sentinel Surveillance in Cambodia, NCHADS 2000
[13] Cambodia STI Prevalence Survey, NCHADS 2001

HIV was associated with some sexual behaviors and STI status among MSM. Anal sex with multiple male partners, unprotected sex with commercial female partners, any diagnosed STI and biological evidence of syphilis were independently associated with HIV.

Few studies have been done in South East Asia that target MSM. In the north of Thailand, one study conducted in 1995 targeted male sex workers and found a high turnover of partners with low consistent condom use. The HIV prevalence rate was 16.6% and the syphilis rate was 7.6%.[14] Another study, done in the north of Thailand, found that MSM with more than one male sex partner, compared with those with only one partner, were more likely to be HIV infected; the HIV prevalence rate found was 12.1%[15]. The common point found in these studies was the high number of reported partners and the common factors associated with HIV i.e. biological evidence of syphilis and anal sex with multiple partners.

The existence of MSW sexual networks suggests the existence of of male-to-male sex behavior in Phnom Penh. In a study amongst conscripts from northern Thailand, male-to-male sexual behavior was reported by 6.5% of conscripts[16] and by 10.9% of conscripts in another study using self-administered questionnaires.[17] In both studies, the majority of respondents reporting male-to-male sexual behaviors also had female sex partners. While some limited comparison of studies done in Thailand can be drawn based on of the proximity of these countries and the similarity in the religious and socio-cultural context, the actual proportion of men in Cambodia who have sex with other men in still largely known.

It is clear is that the MSM studied in Phnom Penh are at high risk for HIV and STI infection, and risky sex behaviors persist even as sexual behavior amongst heterosexual males in Cambodia is becoming safer. In addition, many of these men have unprotected sex with both high and low risk female partners and therefore they may act as an efficient conduit for the virus between populations with different levels of risk behavior.

[14] Kunanararak, 1995
[15] Beyrer, 1995
[16] Beyer, 1995
[17] Tawesak Nopkerson, 1993

VI Recommendations

In light of these findings, it is not possible to ignore the existence of high-risk male-to male sexual behavior in Cambodia nor is it acceptable to neglect this group when planning HIV prevention interventions. Recommendations for appropriate interventions and additional research include the following:

- Male sexual health program including appropriate STI services, should be targeting different segments of the MSM population with a priority on male sex workers and transgender.

- Appropriate IEC material should be developed and based on sexual behavior and practices rather than solely on sexual identity and self- labeling.

- New and appropriate messages should be developed and integrated into IEC materials targeting male populations in Cambodia

- Water-based lubricant should be promoted through social marketing e.g., kit promotion including condoms, lubricant and IEC material

- Health care providers, counselors and health educators should be sensitized to the existence of male to male sexual behaviors in Cambodia and trained to provide appropriate care / education

- Policy makers, Program managers, Donor Agencies should also be sensitized on these issues

- Health Care Providers working in STI clinics should be trained to be able to talk with their clients about male to male sexual behavior and its risks

- Further research, especially qualitative research, is needed to gain a more in-depth understanding of the male to male sexual behavior in the Cambodia context; and
- Size estimations of the MSM population in Phnom Penh and nationally are needed.

References

1. Beyrer C, Eiumtrakul S, Celentano DD, Nelson KE, Ruckphaopunt S, Khamboonruang C: Same-sex behavior, sexually transmitted infections and HIV risks among young northern Thai men, AIDS 1995, 9: 171-176

2. Caceres CF, van Griensven GJP: Male homosexual transmission of HIV-1, AIDS 1994, 8: 1051 - 61

3. Chan R, Row Kavi A, Carl G et al: HIV and men who have sex with men: perspectives from selected Asian countries, AIDS 1998, 12 (suppl B): S59 –S68

4. De Lind van Wijngaarden JW: Between money, morality and masculinity: bar-based male sex work in Chiang Mai. In: Journal of Gay & Lesbian Social Services: issues in practice, policy & research, The Haworth Press, Inc., 1999, 9: 193-218

5. Family Health International, Behavioral Surveillance Surveys: Guidelines for repeated behavioral surveys in populations at risk of HIV. HIV/AIDS Prevention and care department, Arlington, USA, 2000.

6. Glaziou P, Bodet C, Loy T, Vonthanak S, El-Kouby S, Flye Sainte Marie F: Knowledge, attitudes and practices of university students regarding HIV infection, in Phnom Penh, Cambodia, 1999, AIDS 1999, 13, Correspondence, 1982 - 1983

7. Gorbach PM, Heng S, Phalla T et al: Sexual bridging by Cambodian men: potential importance for general population spread of STI and HIV epidemics, Sex Transm Dis 2000; 27, 320-324

8. Kunawararak P, Beyrer C, Natpratan C et al: The epidemiology of HIV and syphilis among male commercial sex workers in northern Thailand; AIDS 1995, 9: 517-521

9. National Center for HIV/AIDS, Dermatology and STIs, Ministry of Health, 1999 Behavioral Surveillance Survey Report, Phnom Penh, Cambodia, 2000

10. National Center for HIV/AIDS, Dermatology and STIs, Ministry of Health, Report on HIV Sentinel Surveillance 1999, Phnom Penh, Cambodia, 2000

11. Nopkerson T, Mastro TD, Sangkharomya S et al: HIV-1 infection in young men in northern Thailand, AIDS 1993, 7: 1233 – 1239

12. Ryan CA, Vathiny OV, Gorbach PM et al: Cambodia explosive spread of HIV-1 and sexually transmitted infection, Lancet 1998, 351:1175

13. Smith G.: Heterosexual and homosexual anal intercourse: an international perspective, Venerology 2001, 14: 28-37

14. Tarr, Chou Meng: People in Cambodia don't talk about sex... They simply do it! A study on the social and contextual factors affecting risk-related sexual behavior among young Cambodians. UNAIDS Cambodia / CASRP, 1996, Phnom Penh Cambodia

APPENDIX I: QUESTIONNAIRE

MEN WHO HAVE SEX WITH MEN (MSM) - FHI/IMPACT CAMBODIA YEAR 2000

IDENTIFICATION NUMBER: -

LOCATION NUMBER: -

CLUSTER CODE: - - - - - - - - - - - - - - - - -

Did the interviewee abandon the interview: ❒ **Yes (Precise the question number: Q - - -)**
❒ **No**

Interviewer Code: **Name:** -
Center Code:
Date Interview: - - / - - / **2000**
Checked by the supervisor: Signature - - - - - - - - - - - - - - - - - - **Date:** - - / - - / **2000**

QUESTIONNAIRE RECCORD 1 NUMBER: -

DATE OF RECORD 1: - - / - - / **2000**

QUESTIONNAIRE RECCORD 2 NUMBER: -

DATE OF RECORD 2: - - / - - / **2000**

Section 1: Background Characteristics

No.	Questions and filters	Coding categories	Skip to	Code
Q101	What is your age ? (in completed years)	Years____		
Q102	How many years of education have you completed up to now?	# Years Completed _____ Less than one year 88 No Response 98 Not Applicable 99		
Q 103	What is your mother tongue? **(Only one response)**	Khmer 1 Vietnamese 2 Chinese 3 Thai 4 Other 5 Specify:.....		
Q 104	For how long have you been living in this city?	Number Of Years _____ Record 00 if less than 1 year Don't Remember / Know 97 No Response 9 8		
Q 105	Which province did you live in before here?	Record the name of the province		---------- -
Q 106	In the last 12 months, have you been away from your home for more than one-month altogether?	Yes 1 No 2 No Response 98		
Q 107	What religion are you? (Only one response)	Buddhist 1 Muslim 2 Christian 3 Any Other 4 No Response 98		
Q 108	What is your main work **READ OUT** **(Only one response)**	Professional Student 01 Vocational Student 02 Moto-diver 03 Police 04 Military 05 Other civil servant 06 Seller 07 Private company staff 08 Organization Staff 09 Unemployed 10 Laborer 11 Other_____ 12 Don't Know 97 No Response 98		
Q 109	What is your total income from last month?	USD. ..... Riels. ..... Don 't know 97 No Response 98		
Q 110	How many people are you supporting now?	Number of people - - No response 98 Not applicable 99		
Q 111	During the last 4 weeks how	Every day 1		

	often have you had drinks containing alcohol? Would you say **READ OUT** **(Only one response)**	3-4 days a week 2 At least once a week 3 Did not drink alcohol in the last 4 weeks 4 Don't know / remember 97 No response 98		
Q 112	Last time you had sex, how much alcohol did you drink? **READ OUT** **(Only one response)**	A lot (more than 6 small beers or 3 glass of wine) 1 Some (3-4 small beers or 1-3 glasses of wine) 2 A little (1-3 small beers or 1 glass of wine) 3 No alcohol 4 Don't know/remember 97 No Response 98		
Q 113	Some people have tried a range of different types of drugs. Which of the following have you ever tried in the last 12 months? **READ OUT**	Yes 1 / No 2 / Don't Know 97 / No response 98 Ganja → Amphetamine (yaba or ya ma) → Knam Sawang (Valium) → Glue → Heroine → Other: ……		
Q 114	Some people have tried injecting drugs using a syringe. Have you injected drugs recreationally in the last 12 months **DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT**	Yes 1 No 2 Don't Know 97 No Response 98		

Section 2: Marriage and Partnership

No.	Questions and filters	Coding categories	Skip to	Code
Q 201	What is your current marital status? **READ OUT** **(Only one response)**	Unmarried 0 Married 1		
Q202	From the following statements, tell the one which is the most suitable to your current situation: **READ OUT** **(only one response)**	Currently married living with a spouse 1 Currently married, living with other sexual partner 2 Currently married, not living with spouse or any other sexual partner 3 Not married, living with sexual partner 4 Not married, not living with sexual partner 5 No Response 98 Not applicable 99	**→ Q 301** **→ Q 203** **→ Q 301** **→ Q 203** **→ Q 301** **→ Q 301** **→ Q 301**	

READ OUT

The following section deals with information on your sexual behaviour / practice. The information obtained from you shall be treated as confidential. Your truthful responses shall promote the quality of research. I remind you that you can stop at any time of the interview or do not answer to specific questions.

Section 3: Sexual History, Numbers and Types of Partners

No.	Questions and filters	Coding categories	Skip to	Code
Q301	At what age did you first have sexual intercourse? (anal and or vaginal sex)	Age In Years ____ Never had vaginal or anal sex 96 Don't Remember 97 No Response 98		
Q302	Was your first sexual partner male or female?	Male 1 Female 2 Don't remember 97 No response 98		
Q 303	Have you ever had sex (oral sex and/or vaginal sex and/or anal sex) with a female	Yes 1 No 2 No response 98	 **Q → 309** **Q → 309**	

Explain the different definition of female partner to the interviewee:

Regular Partner: **spousal or cohabitational partner**
Non-regular Partner: **non-spousal or non-cohabitational partner**
Paid Partner: Partner **with whom the respondents paid money in exchange of sex service**
Paying Partner: **Partner (client) with whom the respondents received money in exchange of sex services**

FEMALE PARTNERS

→ Ask each question with respect to all different categories of female partners

No.	Questions and filters	Coding categories (Fill in the code boxes)	Skip to	Regular Partner	Paid Partner	Paying Partner	Non Regular Partner
Q 304	Have you had vaginal sex with a female partner in the past six months? (put your penis in the women's vagina)	Yes 1 No 2 Never had vaginal sex 3 Don't Know/Remember 97 No Response 98 Not Applicable 99					
Q 305	With how many female partners in total have you had sexual intercourse during the past week? (anal and/or vaginal and/or oral)	No. of partners_____ Don't know / Remember 97 No Response 98 Not Applicable 99					
Q 306	With how many female partners in total have you had sexual intercourse during the past 30 days? (anal and/or vaginal and/or oral)	No. of partners_____ Don'tknow /Remember 97 No Response 98 Not Applicable 99					

Q307	With what frequency in the past 30 days condoms were used with your female partners?	Always 1 Most of the Time 2 Occasionally 3 Never 4 Don't Know/Remember 97 No Response 98 Not Applicable 99					
Q 308	The last time you had sex with your female partner, did you use a condom?	Yes 1 No 2 Don't Know/Remember 97 No response 98 Not applicable 99					

MALE PARTNERS

Explain the different definition of male partner to the interviewee:

Regular Partner: **a partner with whom you have sex since more than 1 year**
Non-regular Partner: **a partner with whom you have sex since less than 1 year**
Paid Partner: **Partner with whom the respondents paid money in exchange of sex service**
Paying Partner: **Partner (client) with whom the respondents received money in exchange of sex services**

FILTERS

Q 309 a	In the past 6 months, have you ever had a male regular sexual partner?	Yes 1 No 2	If "NO" write down right now the number "99" in the "regular partner" column from Q 310-330
Q 309 b	In the past 6 months, have you ever had a male paid sexual partner?	Yes 1 No 2	If "NO" write down right now the number "99" in the "paid partner" column from Q 310-330
Q 309 c	In the past 6 months, have you ever had a male paying sexual partner?	Yes 1 No 2	If "NO" write down right now the number "99" in the "paying partner" column from Q 310-330
Q 309 d	In the past 6 months, have you ever had a male non-regular sexual partner?	Yes 1 No 2	If "NO" write down right now the number "99" in the "non-regular partner" column from Q 310-330

→ Ask each question with respect to all different categories of male partners

No.	Questions and filters	Coding categories (Fill in the code boxes)	Skip to	Regular Partner	Paid Partner	Paying Partner	Non Regular Partner
Q 310	Have you had oral sex with a man in the past six months? (put your month on a man's penis or put your penis in another man's mouth)	Yes 1 No 2 Don't remember 97 No Response 98 Not Applicable 99					

No.	Questions and filters	Coding categories	Skip to	Code
Q 311	Have you ever had anal sex with a man? (put your penis in the man's anus or the man put his penis in your anus) **If the participant answer "no", repeat the question before giving definitively the code**	Yes 1 Never 2	**→ Q 322**	

No.	Questions and filters	Coding categories (Fill in the code boxes)	Skip to	Regular Partner	Paid Partner	Paying Partner	Non Regular Partner
Q 312	In the past 6 months, have you had anal sex? (put your penis in the man's anus or the man put his penis in your anus)	Yes 1 No 2 Don't know 97 No response 98 Not applicable 99	→ Q 322				
Q 313	With how many male partners did you have anal sex in the past week? (put your penis in the man's anus or the man put his penis in your anus)	Number of partners -- Don't know 97 No response 98 Not applicable 99					
Q 316	Think about your last partner with whom you also had anal sex. Which kind of anal sex have you practiced? (put your penis in the man's anus or the man put his penis in your anus)	Put your penis in the man's anus 1 The man put his penis in your anus 2 Both ways 3 Don't Know 97 No Response 98 Not applicable 99					
Q 317	With how many male partners did you have anal sex in the past 30 days? (put your penis in the man's anus or the man put his penis in your anus)	Number of partners -- Don't know 97 No response 98 Not applicable 99					
Q 318	In general, with what frequency did you and your partner used condoms in the last 30 days?	Always 1 Most of the time 2 Sometimes 3 Never 4 No response 98 Not applicable 99					
Q 319	The last time you had anal sex did you/ and your partner use a condom? (put your penis in the man's anus or the man put his penis in your anus)	Yes 1 No 2 Don't Know 97 No Response 98 Not applicable 99	Q → 322				
Q 320	Who suggested condom use that time?	Myself 1 Partner 2 Joint Decision 3 Don't Remember 97 No Response 98 Not applicable 99					

Q 322	Think about your most recent partners for each category of partner. How many times did you have anal sexual intercourse with this person over the last 30 days?	Number of times -- Don't know 97 No response 98 Not applicable 99					
Q 323	Think about your most recent partners for each category of partner. What is his ethnic/nationality? **Only one answer by type of partner**	Cambodian 1 Caucasian 2 Vietnamese 3 Thai 4 Other Asian 5 Other: ……..... 6 Don't know 97 No response 98 Not applicable 99					

No	Questions and filters	Coding Categories (Fill in the Code Boxes)	Regular partners	Paid Partner	Paying Partner	Non-Regular Partner
Q 324	**Only for interviewees who have paying partner** How much did you earn with your last paying partner?	Amount of money in USD or Riels Don't know/remember 97 No response 98 Not applicable 99	99	99		99
Q 325	**Only for interviewees who have paid partners** Last time you paid for sex, how much did you pay?	Amount of money in USD or Riels Don't know/remember 97 No response 98 Not applicable 99	99		99	99
Q 327	In the past 12 months, did any of your sexual partner(s) force you to have sex with them even though you did not want?	Yes 1 No 2 Don't remember 97 No response 98 Not applicable 99				
Q 328	Think about your last different sexual partners. Where did you meet your last partner?	Park 1 Discotheque 2 Karaoke 3 Massage parlor 4 Street 5 Pub/café 6 Brothel 7 Stadium 8 Other 9 Specify …… ….. Don't remember 97 No response 98 Not applicable 99				
Q 329	**Answer by Yes or No only.** Do you have the name and/or the address and or the telephone number of your last partner?	Yes 1 No 2 No response 98 Not applicable 99				

Q 330	Where have you had sex last time with your last male sexual partner? **Only one answer by type of partner**	Hotel / Guest house 1 My house 2 Discotheque rest room 3 Karaoke 4 Massage parlor 5 Café rest room 6 Partner's house 7 Brothel 8 Stade rest room 9 Open air site 10 Other 11 Specify:…… Don't remember 97 No response 98 Not applicable 99				

Section 4: Male Condoms and Lubricant

No.	Questions and Filters	Coding categories		Skip to	Code
Q 401	Which places or persons do you know where you can obtain male condoms? Any others? **READ OUT** **(Multiple responses possible)**	Shop Pharmacy Market Clinic Hospital Family Planning Center Bar/Guest House/Hotel Peer Educator Friend Sex worker /Brothel Other_____ Don't know No response Not applicable	01 02 03 04 05 06 07 08 09 10 11 97 98 99		
Q 402	Can you obtain a condom every time you need one?	Yes No Don't know No response Not applicable	1 2 97 98 99	**→Q 404**	
Q 403	Why can't you get a condom every time you need one? **READ OUT** **(Multiple responses possible)**	Cost too much Shop/pharmacy too far away Shops pharmacy closed Shy to buy condom Don't know where to obtain Other_____ I don't know No response Not applicable	01 02 03 04 05 06 97 98 99		
Q404	Last time you have use condom, why have used it? (Multiple responses possible) DO NOT READ OUT	To prevent STD 1 To prevent AIDS 2 To maintain genital Hygiene 3 Any other 4 Specify:…… Don't know 97 No response 98 Not applicable 99			

Q 405	What are the other natural or chemical lubricants that you used with condom during last anal sex? **READ OUT**	I don't use condom 0 Beauty cream 1 Nivea Cream 2 Mosquito cream 3 Saliva 4 Oil for hair 5 Oil for cook 6 Medicinal cream 7 Lubricant for condom 8 (water-based) 9 Other:…….. 10 Not use any lubricant 11 I don't know the lubricant 98 that I use 99 Not response Not applicable		
Q 406	In the past 30 days, how often you use water based lubricant with a condom during anal sex? Water based lubricant is a special cream with no oil to use especially with condom.	Always 1 Almost of the time 2 Sometimes 3 Never 4 I don't know 97 No Response 98 Not applicable 99	**→ Q 407** **→ Q 406** **→ Q 406** **→ Q 406** **→ Q 406** **→ Q 406**	
Q 407	What are the reasons explaining why you never use or you sometimes use water-based lubricant? **READ OUT** **(Multiple responses possible)**	Cost too much 01 Shop/pharmacy too far 02 away 03 Shops pharmacy closed 04 Shy to buy lubricant 05 Difficult to carry 06 Don't know where to obtain 07 I do not need to use 08 I don't know this lubricant 09 I use other cream 10 Other_____ 97 I don't remember 98 No response 99 Not applicable		
Q 408	For you, what are the purposes of using water based lubricant with condom during sex? **READ OUT** **(Multiple responses possible)**	Decrease pain 1 Decrease Inflammation 2 Increase feeling 3 Decrease risk of condom 4 breakage 5 Prevent HIV/AIDS infection 6 Other Specify: …….. 97 Don't know 98 No Response 99 Not applicable		

Section 5: STD

No.	Questions and filters	*Coding categories*	*Skip to*	*Code*
Q 501	Could you describe any symptoms of STD in men? Any other? **DO NOT READ OUT** Circle 1 when mentioned Circle 2 when not mentioned (Multiple responses possible)	Penis discharge 1 2 Burning pain on urination 1 2 Genital ulcers/sores 1 2 Swellings in groin area1 1 2 Anal discharge 1 2 Anal ulcer/sores 1 2 Other: ……..…….. 1 2 Don't know 97 No response 98		
Q 502	Have you had a urethral discharge during the past 12 months?	Yes 1 No 2 Don't know 97 No Response 98 Not applicable 99		
Q503	Have you had anal discharge during the last 12 months	Yes 1 No 2 Don't know 97 No Response 98 Not applicable 99		
Q 504	Have you had a genital ulcer / sore during the past 12 months?	Yes 1 No 2 Don't know 97 No response 98 Not applicable 99		
Q 505	Have you had ulcer / sore on your anus during the past 12 months?	Yes 1 No 2 Don't know 97 No response 98 Not applicable 99		

Q 506	**FILTER: SEE Q 502 – 503 – 504 – 506** Had genital ulcer / discharge / sore (penis and or anal) during the past 12 months	Yes 1 No 2	**→ Q 601**	
Q 507	Where have you been first to seek for advice/treatment for your last STD? READ OUT a. Seek advice/medicine from a health worker in a public clinic or hospital? b. Seek advice/medicine from a pharmacy? c. Seek advice/medicine from a drug seller? d. Seek advice/medicine from NGO clinic e. Seek advice/medicine from private clinic? f. Seek advice/medicine from a traditional healer? g. Seek no treatment? h. Took medicine you had at home? i. Other Specify: …… Not remember/know No response Not applicable	 01 02 03 04 05 06 07 08 09 97 98 99		

Section 6: Knowledge, Opinions and Attitudes

No.	Questions and filters	Coding categories	Skip to	Code
Q 601	Have you ever heard of HIV or the disease called AIDS?	YES 1 NO 2 NO RESPONSE 98	→ **Q 701**	
Q602a	Do you know anyone who is sick with AIDS?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98	→ **Q 603** → **Q 603** → **Q 603**	
Q602b	Do you have a close relative or close friend who is infected with HIV/AIDS or has died of AIDS?	YES, A CLOSE RELATIVE 1 YES, A CLOSE FRIEND 2 NO 3 NO RESPONSE 98		
Q 603	Can people protect themselves from the HIV virus by using a condom correctly every time they have sex?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 604	Can a person get the HIV virus from mosquito bites?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 605	Can people protect themselves from the HIV virus by having one uninfected faithful sex partner?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 606	Can people protect themselves from the HIV virus by abstaining from sexual intercourse?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 607	Can a person get the HIV virus by sharing a meal with someone who is infected?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 608	Can a person get the HIV virus by getting injections with a needle that was already used by someone else?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 609	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		

Section 6: Knowledge, Opinions and Attitudes (continued…)

No.	Questions and filters	Coding categories	Skip to	Code
Q 610	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 611	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? By confidential, I mean that no one will know the result if you don't want them to know it.	YES 1 NO 2 DON'T KNOW 97 NO RESPONSE 98		
Q 612	I don't want to know the result, but have *you* ever had an HIV test?	YES 1 NO 2 NO RESPONSE 98	→ **Q 701**	
Q 613	Did you voluntarily undergo the AIDS test, or were you required to have the test?	Voluntary 1 Required 2 NO RESPONSE 98 NOT APPLICABLE 99		
Q 614	The last time you had an HIV test, where did you go for testing? **READ OUT**	Private clinic 1 Public Hospital 2 Anonymous Testing Center 3 Private laboratory 4 Government test (HSS) 5 Other 6 Specify: …… Never been tested 7 Don't know 97 No response 98		
Q 615	Please do not tell me the result, but did you find out the result of your test?	YES 1 NO 2 NO RESPONSE 98 NOT APPLICABLE 99		

Section 7: Miscellaneous

No.	Questions and filters	Coding categories	Skip to	Code
Q 701	How many people have you talked to about your male to male sex behavior?	Number of persons: ---- Don't Know 97 No Response 98 Not applicable 99		
Q 702	What are the reasons that make you avoid talking about this matter? **READ OUT** **(Multiple responses possible)**	There is no problem for me 1 Afraid being discriminated 2 Private Issue 3 Shame 4 Other 5 Specify: ..... Don't know 97 No Response 98 Not applicable 99		
Q 703	With whom have you discussed this matter? **READ OUT** **(Multiple responses possible)**	Father 1 Mother 2 Other member of the family 3 Regular male partner 4 Non regular male partner 5 Regular female partner 6 Non- regular female partner 7 Close friend MSM 8 Close friend non MSM 9 Doctor/nurse at clinic or hospital 10 NGO worker 11 Other 12 Specify: ..... No Response 98 Not applicable 99		
Q 704	With what frequency have you experienced any harassment or black mail because of your male to male sex behavior?	Very often 1 Often 2 Sometimes 3 Never 4 Don't know 97 No response 98 Not applicable 99		
Q 705	By whom? **READ OUT** **(Multiple responses possible)**	Police 1 Military 2 Neighbors 3 Colleagues 4 Unknown persons 5 Sexual partner 6 Other 7 Specify:..... No response 98 Not applicable 99		
Q 706	With what frequency have you been exposed to HIV/AIDS and STD prevention program with regard to male to male sex behavior?	Very often 1 Often 2 Sometimes 3 Never 4 Don't know 97 No response 98		

	Precise Male to Male Sex behavior	Not applicable 99		
Q 707	With regards to your sexual behavior, how would you identify yourself? **DO NOT READ OUT** (Only one response)	Man 1 Ktoey 2 Gay 3 Homosexual 4 Bisexual 5 Woman 6 Other 7 Specify: …… Don't Know 97 No response 98		
Q 708	What are your main motivations to be engaged in male to male sex behavior? ... Other motivations? **DO NOT READ OUT** (Multiple responses possible)	Economic 1 Desire 2 Semen discharge 3 Other 4 Specify: …… Don't know 97 No Response 98		
Q 709	**Have you ever had sex in-group in the past 6 months? (manual/anal/oral sex with more than 1 partner in the same time)**	Yes 1 No 2 Don't know 97 No response 98 Not applicable 99		
Q 710	**Do you have experience with wearing woman clothes?**	Yes 1 No 2 Don't know 97 No response 98 Not applicable 99	→ **STOP**	
Q 711	**When do you wear woman clothes?** Only one answer	All the time 1 At night time only 2 Special Occasion 3 Other 4 Specify: …… Don't remember 97 No response 98 Not applicable 99		

That is the end of the questionnaire.
Thank you very much for taking time to answer these questions.
We do appreciate your help, indeed

APPENDIX II: CLINICAL PROTOCOL

STD Prevalence Study

Among Men Who Have Sex with Men (MSM)

in Phnom Penh, Cambodia

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AIDSCAP	AIDS Control and Prevention
FHI	Family Health International
HIV	Human Immunodeficiency Virus
IMPACT	Implementing HIV/AIDS Prevention and Control
MSM	Men who have Sex with Men
NCHADS	National Center of HIV AIDS Dermatology and STD
NGO	Non-Governmental Organizations
PCR	Polymerase Chain Reaction
RPR	Rapid Plasma Reagin
STD	Sexually Transmitted Diseases
TPHA	*Treponema pallidum* Hemaggultination Assay
USAID	United States Agency for International Development

I BACKGROUND

Cambodia has the highest HIV prevalence in Asia. The 1999 national estimates suggest that 3.8 percent of the sexually active population is infected with HIV. The HIV epidemic in Cambodia is largely due to sexual transmission and most attention to date has been focused on heterosexual transmission of HIV. The existence of men who have sex with men in Cambodia, the extent of the practice and its impact on the STD/HIV epidemic in Cambodia have been largely ignored.

Cambodia currently has a concentrated HIV epidemic where the prevalence of HIV is over 5 percent in high-risk groups but still under 1 percent in the general population. The FHI/IMPACT project is implementing an HIV prevention program that targets STD treatment provision, condom distribution and behavior change interventions at the high-risk groups of commercial sex workers and their clients. MSM is potentially another key target group for HIV prevention programs. Formative research needs to be done to understand whether and how to design prevention programs for this group.

A recent mapping exercise in Phnom Penh has identified various locations where MSM meet/gather in Phnom Penh such as parks, karaoke bars, brothels, discotheques, massage parlors, cinema and streets. The venues most frequented by MSM are the parks throughout the city. A key informant interview assessment will be done in order to learn more about the sexual behavior of MSM in Cambodia for the purpose of designing targeted HIV/STD prevention interventions.

There are little data on STDs in Cambodia and none in MSM. A study conducted in 1996 by Family Health International's AIDSCAP project with the University of Washington in Seattle documented prevalence rates in selected populations, determine gonococcal antibiotic susceptibility, assessed the validity of the proposed World Health Organization's treatment algorithms for Cambodia and documented high risk sexual behaviors in these populations. The STD prevalence rates found in this cross sectional study are in Table 1.

Table 1: STD prevalence in three groups in Cambodia in 1996

STD	Female Sex Workers (n=432)	High Risk Men (n=322)	Women Attending Reproductive Health Services (n=214)
Gonorrhea	**35 %**	**17 %**	**3 %**
Chlamydial infection	**22.4 %**	**2.1 %**	**3.1 %**
Syphilis	**14 %**	**6.6 %**	**4.0 %**
Trichomoniasis	**4.4 %**	**--**	**1 %**
Bacterial vaginosis	**31.5 %**	**--**	**12.7 %**
HIV	**41 %**	**12 %**	**4.5 %**

The main purpose of the proposed study is to determine STD and HIV prevalence in MSM in Phnom Penh. This study will provide data to serve as data to determine the potential risk of this population for STDs and HIV and, should interventions be designed and implemented for this group, as baseline data to monitor the planned FHI/IMPACT interventions.

II. OBJECTIVES

- To determine the prevalence of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, syphilis, and HIV among MSM in Phnom Penh, Cambodia.
- To measure the frequency of and the associations between risk behaviors and exposures to STD/HIV among MSM.
- To determine the antimicrobial resistance patterns of *N. gonorrhoeae* in MSM in Phnom Penh.
- To determine the etiology of genital ulcers.

III. METHODS

A) Study Population: The study population for the cross-sectional STD prevalence survey will be the MSM populations of Phnom Penh. A total of 200 MSM **over the age of 18 years** will be recruited.

B) Recruitment of Study Participants:

Two teams of four-person male study team will be organized for this survey consisting of the following:

- A physician/medical assistant will perform the examination, collect specimens, and give treatment.
- A male interviewer for completion of the questionnaire and registration
- A field worker to recruit participants at the different location and to bring them at the center.
- A count worker present all the time at the site to count the number of MSM present at the site during the survey. These informations will be used to weight the data during the analysis.

In addition, there will be an overall study coordinator who will coordinate the logistics and activities of the team. This study coordinator will have the overall responsibility to ensure the quality of the study and training of providers in STD.

The study population will be MSM approached by field workers in the various locations identified in Phnom Penh. These field workers are already employed with FHI/IMPACT and they have participated to the MSM mapping in Phnom Penh. Two male interviewers and two medical assistants will be recruited as short-term consultant for this study. The medical staff will attend a one-week STD clinical practice at one of the STD clinic managed by MDM (Médecins du Monde) in Phnom Penh. All the staff participating to the study will be also trained on interview skills and FHI/IMPACT staff will supervise them.

The FHI/IMPACT Cambodia office already has professional contacts with MSM through various HIV/AIDS prevention meetings in Phnom Penh.

A time location cluster sampling was designed (equal probability with sub-sample fixed) for the study. Towards the 27 locations identified during the mapping exercise, 158-time location clusters were defined. We obtained 40 sample cluster with a sub-sample fixed to 5 persons to control the over sample size. Data will be weighted during the analysis.

Potential participants will be approached at each sample cluster defined and told about the study and referred to the study site. Two study sites will be rented in the main target areas of MSM activity. There will be no remuneration for participation although refreshments (tea, water, cookies) and shower facilities will be available at the study sites.

After field worker referral, potential participants will voluntarily present at the study clinic. There they will be enrolled after the study is explained and all questions answered. Verbal consent will be administered by the interviewer in a private setting and witnessed by the physician/clinical officer. **No identifying characteristics will be collected.** All participants **will be 18 years old or older.**

In a private room the interviewer will administer a standard questionnaire. The questionnaire will include the following topics: socio-demographic profile, presence of related STD symptoms, sexual behavior and practices, number of sexual partners, history of previous STD, the presence of STD related symptoms and condom use. Upon completion of the questionnaire, the trained clinician will then perform the routine genital examinations for the presence of genital discharge, ulcers, and warts. Any visible urethral discharge will be cultured for *N. gonorrhoeae*. Additionally, an anal inspection will be done and the presence of discharge, ulcers and warts will be noted, then an anal swab will be collected for PCR examination for *N. gonorrhoeae* and *C. trachomatis* and *N. gonorrhoeae* culture. After genital examination, each participant will be asked to provide freshly voided urine for PCR examination for *N. gonorrhoeae* and *C. trachomatis*. Blood samples will be taken from subjects for syphilis and HIV serologic testing. **All questionnaires and specimens will be marked with a study number. No names will appear on the forms or collected specimens.**

Participants will be given a card with their study number and a time to return to the study site for test results and STD treatment (if necessary) of a sub-set their tests: syphilis serology and gonorrhea cultures. At this time they will receive additional counseling on STDs. Condoms will be given and demonstrated.

Participants will also have the choice to obtain the result of the HIV test. This result will be given during post-test counseling at the National Center of Dermatology and Venerology (Street Neru Sangkat Khan 7 January Psar Depot, Phnom Penh). This center has been recommended by NCHADS. Respondents' ID numbers with their corresponding HIV test results will be sent to NCHADS and given to the counseling center. Respondents have to show the card with their ID number to obtain the result of their HIV test. To ensure confidentiality no test results will be provided if a respondent can not show this ID card – even if they remember the correct ID number. **No exception to this rule will be allowed under any circumstances**

C) Study procedures

Clinical Examination:

- An external inspection of the genital area, noting the characteristics of any local changes such as erythema, abrasions, ulceration, warts and discharge at the urethral meatus, will be made and any ulcer will be swabbed;
- In the absence of visible urethral discharge, the patient will milk the urethra. The characteristics of any discharge will be noted and a swab for culture will be taken;
- If genital ulceration is found, the number and characteristics will be noted and it will be swabbed;
- An external examination of the anus will be done noting any discharges, abrasions, ulceration and warts. A swab will be introduced into the anal canal for culture and PCR. Taking, handling and transporting of the specimens will be according to the manufacturer's instructions.
- A first catch specimen of urine will be collected for PCR. The urine specimen will be handled, stored and transported as indicated in the manufacturer's instructions.
- Ten cc of blood will be drawn for syphilis and HIV serology.

Laboratory procedures

N. gonorrhoeae culture: Once the sample of urethral and anal discharge is inoculated on modified Thayer-Martin medium will be kept in a candle extinction jar and stored in a portable incubator set at 36°C until transport to the central laboratory in Phnom Penh where the jars will be place in an incubator at 36°C. Culture plates will be read at 48 and 72 hours. Identification of *N. gonorrhoeae* will be based on colony characteristics, Gram stain morphology and oxidase reaction. Isolates will be frozen and tested for antimicrobial susceptibility using E-test strips in the central lab in Phnom Penh and with agar dilution in a reference laboratory outside of Cambodia.

Polymerase chain reaction (PCR) for *N. gonorrhoeae* and *C. trachomatis:* Anal swabs inoculated into transport media and urine specimens from men will be stored in a cool box until transport to the laboratory on Phnom Penh. There the urine specimens will be aloquoted and the urine and anal specimens will be frozen at –20, batched, and transported to an international laboratory for processing.

PCR for herpes simplex virus, *T. pallidum* and *H. ducreyi*: Swabs of any ulcerations found in the course of this study will be placed in PCR transport media and placed in a cool box until transport to the central laboratory in Phnom Penh where they will be stored at –20 C until transport to the U.S. for testing with Roche Multiplex.

Syphilis testing will be done on sera transported in a cool box to the central laboratory in Phnom Penh using quantitative rapid plasma reagin (RPR) screening test with *Treponema pallidum* hemagglutination assay (TPHA) confirmatory test.

HIV infection: Sera will be tested using the standard HIV testing protocol used at the HIV voluntary counseling and testing center of the Institute Pasteur. Two HIV antibody tests of

different formats will be used. The first test is a particle agglutination test. All positives on this particle agglutination test will be tested using enzyme linked immunosorbant assay.

IV. DATA ANALYSIS

Questionnaire and clinical data forms will be transported daily from the field with the specimens and stored at the FHI/IMPACT office in a locked filing cabinet. Laboratory data forms will be collected on a periodic basis from the Institute Pasteur laboratories and sent on a periodic basis from the internal laboratory. Data entry will be done at the FHI/IMPACT office using standard database software. Data will be entered twice to maximize accuracy. Data analysis will be perform using SPSS. Chi square analysis and the two-tailed Fisher exact test will be used to assess the correlation between symptoms and STDs. Odds Ratios will be calculated. Simple proportions will be calculated to determine prevalence. Continuous variables will be assessed using student's t-test. Multivariate analysis, stepwise logistic-regression analysis will be used to for algorithm validation. The sensitivity, specificity, and positive predictive values with 95% confidence intervals will be calculated for each proposed algorithm. Treatment cost per confirmed case will be calculated for each algorithm

V. POTENTIAL RISKS AND BENEFITS

Potential Risks

There are minimal physical risks of bleeding and bruising related to venipuncture. However, the study will use only trained medical personnel to draw a blood and will ensure and adequate supply of new, sterile disposable needles. There may be discomfort from the anal swab. However, trained medical providers will perform the examinations. For individuals who are positive for syphilis and agree to treatment, there is a small risk of allergy go penicillin, the drug of choice for treatment. A trained medical practitioner will administer the treatment with the appropriate treatment for an adverse reaction in the setting. Alternative therapies will be offered to all those with a history suggestive of allergy.

There is a psychological risk due to the sensitive nature of the questions in the structured questionnaire. The questionnaire will be administered by same-sex study personnel in a private setting, will not contain identifiers and the participants will be told that they can refuse to answer any questions. There are also some psychological risks from learning that one has an STD or HIV infection. Participants will be referred to professional counselors to obtain the result of the HIV test. Appropriate referrals for HIV care services will be made. Medical staff will be trained on counseling for STD.

There may be social risks of being diagnosed with an STD or HIV or being identified as an MSM. Participants will be assigned a study number at the time of enrollment. No names or other personal identifiers will be recorded anywhere. This study number will not be linked to any personal identifiers. Study participants will have a card with a number that they must show to get their study results.

Potential Benefits

The principal benefit for the participants is that they will receive a comprehensive STD evaluation with free, appropriate treatment provided. They will also received HIV pre and post-test counseling and free HIV testing. Additionally, they will receive one-on-one education and counseling regarding STDs and HIV and be given condoms as well as instruction on condom use. The country of Cambodia will benefit because the information gained in this study will contribute directly to HIV/STD prevention efforts.

VI. ETHICAL REVIEW

The protocol, consent forms and draft questionnaires will be submitted for approval to both the Cambodian Ministry of Health, the NCHADS and the Protection of Human Subjects Committee of Family Health International. Approval will be obtained from both review bodies prior to subject recruitment.

VII. ETHICAL ISSUES

The study investigators are cognizant of the fact that the target groups for this study are at some risk for social harm should they be identified as MSM. We have designed this study to maximally protect the participants balanced with the individual benefit and community benefits from this study. Specifically,

- Field workers recruited from the MSM community and trained by FHI/IMAPCT will do initial study referral. Participants must voluntarily show up at the study site.
- Informed consent is witnessed.
- No names will be recorded. All documentation is anonymous, liked only by a study number

VIII. DISSEMINATION PLANS

A written report of the results of the study will be provided to the Ministry of Health, the NCHADS, the USAID mission and other NGOs and agencies in Cambodia working on STD and HIV issues. An oral debriefing will also be done with key interested parties including relevant ministries, other donors and key NGOs, and a specific dissemination will be done for the target group. Results from this study will be presented at national, regional and international meetings and published in international peer-reviewed journals.

IX. PROJECT TIMELINE

The study will be carried out from

- **December 1999 to April 2000:**

  Protocol development
  Questionnaire development, translation, reproduction
  Database development
  Protection of human subjects approval FHI and Cambodian
  Procurement of supplies
  Location and rental of clinic sites in Phnom Penh
  Recruitment and training of study team

- **May 2000:**

  Field work
  Data entry
  Specimens shipped out of country for specific tests

- **June-September 2000:**

  Finalization of data entry
  Data analysis
  Report writing
  Dissemination workshops