

HIV, STIs and Risk Behaviour in East Timor:

*an historic opportunity for
effective action*



Pisani, E. and Dili survey team (2004)
Dili, East Timor

Table of Contents

List of Tables .....	.ii
List of Figures .....	.ii
Acronyms .....	.iii
Executive Summary .....	.v
Significant levels of risk behaviour .....	.v
Untreated STIs in high risk groups .....	.v
Implications for HIV prevention and care programmes .....	.vi
Key indicators .....	.vii
Background .....	.1
Qualitative research identified risk behaviours .....	.1
Survey objectives .....	.2
The survey team .....	.2
Survey design .....	.2
Survey populations and sample sizes .....	.3
Sampling methods .....	.3
Survey procedures .....	.4
STI and HIV testing .....	.5
Ethical issues .....	.6
Additional information: the student survey .....	.6
Survey results: Who is at risk for HIV in East Timor? .....	.7
The ABC strategy .....	.10
Bisexual behaviour provides a “bridge” for HIV .....	.11
Evidence of drug injection should ring alarm bells .....	.13
The consequences of risk: HIV and STI infection .....	.14
Gonorrhoea and chlamydia .....	.14
Syphilis/yaws .....	.16
Herpes Simplex Virus Types 1 and 2 .....	.17
HIV .....	.17
With all this risk, why has HIV not exploded? .....	.18
Keeping HIV prevalence low: the importance of targeted STI treatment .....	.19
Cutting down the need for STI treatment: increased condom use is the key .....	.21
Can prevention programmes make a difference in high risk groups? .....	.24
Demand for other prevention services: higher than expected .....	.27
The future of the HIV epidemic in East Timor: lessons from the STI survey .....	.28
Acknowledgements .....	.31

List of Tables

Table 1:	Survey populations and sample sizes	3
Table 2:	Biological tests performed during the survey.....	5
Table 3:	STI infection rates in survey populations.....	14
Table 4:	Difference in test results between vaginal and urine samples, and estimated prevalence of gonorrhoea and chlamydia among sex workers.....	15
Table 5:	Rectal and urethral infections among MSM in Dili.....	16

List of Figures

Figure 1:	Percent of university students in Dili who have had sex with different partner types in the last year.....	7
Figure 3:	Percent of men who report having sex with FSW and girlfriends in the last 12 months.	8
Figure 2:	Percent of men who report having sex with a woman other than their wives in the last 12 months.	8
Figure 5:	Frequency of condom use in commercial sex.....	9
Figure 4:	Percent of unmarried & married men who report having sex with FSW in the past 12 months.	9
Figure 6:	Proportion of men who are choosing, abstinence, monogamy, condom use, and risk.....	10
Figure 7:	Proportion of survey populations with multiple risk behaviours.....	11
Figure 9:	Lubricant use among MSM at last anal sex.....	12
Figure 8:	Risk behaviour reported by MSM in the month before the survey.....	12
Figure 10:	Predicted HIV infections with and without an IDU epidemic in Jakarta, Indonesia.	13
Figure 11:	STI infection rates among FSW in Dili, East Timor, and in eight cities across Indonesia.....	15
Figure 12:	Prevalence of Herpes Simplex Virus types 1 and 2 in survey populations	17
Figure 13:	Average number of clients per week reported by sex workers in various Asian countries	19
Figure 15:	Percent of all respondents who reported STI symptoms, according to if they sought treatment.....	20
Figure 14:	Percent of respondents currently infected with STIs, and percent reporting symptoms of an STI in the last 12 months.....	20
Figure 16:	Percent of respondents referred to CCT for treatment, and % who presented for treatment.....	21
Figure 17:	Condom recognition, knowledge, possession and negotiation among FSW and MSM in Dili	22
Figure 19:	Percent giving reasons for not using condoms at last commercial sex.....	23
Figure 18:	Condom use in commercial sex among those who do and don't know that condoms prevent HIV.....	23
Figure 20:	Percent of male respondents reporting commercial sex in the last year (Taxi driver and FDTL) or anal sex in the last month (MSM)	24
Figure 22:	Percent of respondents who report participating in any HIV prevention activities in the 12 months before the survey.....	25
Figure 21:	Percent using a condom in last commercial or anal sex, according to whether or not they had participated in an HIV prevention intervention in the 12 months before the survey.	25
Figure 23:	Percent of men who used condoms at last commercial sex, according to whether or not they had seen advertisements promoting condoms for STI prevention.	26
Figure 24:	Percent of respondents who used their anonymous survey number to pick up their survey results.	27

Acronyms

AIDS	Acquired Immunodeficiency Syndrome
BCC	Behaviour Change Communication
CCT	Clinic Café Timor
FDTL	Forca Defeca Timor Leste
FHI	Family Health International
FSW	Female Sex Worker
HIV	Human Immunodeficiency Virus
HSV	Herpes Simplex Virus
IDU	Injecting Drug User(s)
MSM	Men Who Have Sex with Men
NGO	Non-Governmental Organisation
PLHA	People Living with HIV/AIDS
STI	Sexually Transmitted Infection
UNDP	United Nations Development Programme
UNICEF	United Nations Childrens Fund
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing
WHO	World Health Organisation

Executive Summary

In the early 2000s, the government of the newly-independent nation of East Timor (Timor Leste or Timor Lorosae) expressed concern about the possibility of an epidemic of HIV developing in the country. High levels of poverty and social disruption that resulted from the conflict surrounding independence, combined with the presence of several thousand peacekeepers and other international personnel, many of them from countries with high HIV prevalence, led the country to develop a national AIDS strategy.

At the time the national AIDS strategy was developed in 2002, no hard data were available to guide programme choices and help prioritise strategies. With the support of USAID, the Ministry of Health and Family Health International (FHI) collaborated with local NGOs and others on a quantitative survey of HIV, other sexually transmitted infections (STIs) and risk behaviour. The survey was conducted in late 2003 in the capital city, Dili, among female sex workers (FSW), men who have sex with men (MSM), taxi drivers and male military personnel. Respondents answered a structured questionnaire about HIV-related knowledge, sexual and drug-taking behaviour, symptoms of STIs, treatment seeking behaviour and participation in HIV prevention activities. Biological specimens were collected by trained nurses, and laboratory testing was performed in Dili and in Australia. Behavioural information was collected from university students. The survey was anonymous; participants could access results and get STI treatment by survey number.

Significant levels of risk behaviour

Sexual activity was relatively low among university students, but was high among taxi drivers and soldiers—groups chosen for the survey precisely because earlier qualitative research had shown that were likely to have high levels of risk behaviour. Over half of these male groups reported recent extramarital sex, and most of that sex was with commercial sex workers. While unmarried men were far more likely to report risky behaviour than married men, a third of those who were married also reported recent sex with a sex worker. Over half of sex workers and their clients said they never used condoms in commercial sex. Only one percent of clients said they always used condoms in commercial sex, and not a single sex worker reported always using condoms with East Timorese clients. Indeed, fully 40 percent of sex workers did not even recognise a condom when shown one. Overwhelmingly the most common reason for not using condoms by all five groups included in the survey was that condoms are simply not easily available.

Bisexual behaviour was extremely common. Over 40 percent of the men recruited into the survey because they have sex with other men also reported recent sex with women, and 12 percent of the “heterosexual” male groups and five percent of male students said they had had anal sex with another male in the last year. The overwhelming majority of sex between men is unprotected anal sex.

Injection drug use is uncommon, but four percent of MSM and three percent of male students reported having injected drugs. None of these men had lived outside East Timor—all were sexually active.

Untreated STIs in high risk groups

Among soldiers and taxi drivers, curable STIs were relatively rare. Fewer than two percent were infected with chlamydia, and gonorrhoea was half that level. Since a high proportion of these men report unprotected sex with sex workers, among whom infection rates are much higher, this probably indicates prompt treatment seeking for urethral infections.

Among sex workers and MSM, rates of gonorrhoea and chlamydia were around the 14 percent mark, and a similar percentage of women were infected with trichomonas. Virtually all the STIs among men were rectal—another indication that urethral infections are treated, but anal infections are not. The majority of sex workers reporting recent symptoms of STIs said they had neither sought treatment for the symptoms nor self-treated. However when services were made

available they seemed willing to use them. Half of the sex workers and 85 percent of the MSM who were referred to a private clinic for STI screening and treatment during the survey did seek out these services.

HIV rates are still relatively low. Three percent of sex workers and one percent of MSM tested positive for HIV, and no positive samples were found among soldiers or taxi drivers. All the HIV-positive respondents reported previous sex with foreigners, but between them they also reported having sex with 26 East Timorese partners in the last month alone. All were co-infected with the incurable Herpes simplex type 2, (HSV-2) which greatly facilitates HIV transmission. HSV-2 infection reached 60 percent among sex workers, was at half that among MSM and taxi drivers, and stood at 12 percent among soldiers.

Implications for HIV prevention and care programmes

These data point to clear directions for HIV programmes in East Timor. Head and shoulders above all other priorities is the provision of prevention services to the relatively small numbers of people with high risk behaviours. Information, condoms and lubricant must be made widely and easily accessible for those people who are—by profession or choice—engaging in non-marital anal or vaginal sex. This is not a large proportion of the population, and these services need not be universally available, but should be carefully targeted at those likely to have risky behaviour. Regular STI screening and treatment services are also needed for those most likely to be infected and least likely to seek treatment—sex workers and MSM. These must be provided somewhere friendly and confidential, and be supported by outreach services. If East Timor is to stem its HIV epidemic now, it is essential that it reaches a large proportion of the at-risk populations with these services in a short space of time. There is no room for small, uncoordinated “pilot” projects.

This survey points to a clear course of action for HIV prevention in East Timor. It is technically easy to do what needs to be done to prevent a wider HIV epidemic in East Timor, but experience in other countries suggests that it may be politically challenging. However with courage and foresight, the government and the people of East Timor and their development partners can choose to invest a small amount of resources now to prevent HIV spreading throughout the population, and so achieve a huge benefit for the country in the future. If we choose instead to ignore the evidence of risk behaviour, and fail to provide services for those who most need them, history will judge us harshly.

Key indicators

	Taxi drivers (N 210)	Soldiers (N 250)	MSM (N 110)	Sex Workers (N 100)
Average age	27	23	23	27
% with secondary education or more	64	98	85	30
% currently married	64	18	17	34
% sexually active	91	76	100	100
% with multiple partners in last year, of sexually active	50	58	60*	100
% with extramarital partners, of married	37	25	100	100
% buying sex from female sex worker in the last 12 months	41	54	20	–
Average number of sex workers in the last year, of those buying sex	5	4		
Average number of clients in last month, of those selling sex			2.3	12
% using a condom at last commercial sex [^]	17	33	14	29
% using a condom at last anal sex [^]			21	
% always using condoms in recent commercial sex ^{**}	1	1	9	0
% never using condoms in recent commercial sex ^{**}	78	54	82	59
% always using condoms in anal sex			6	
% who have heard of HIV/AIDS	84	91	86	42
% who know HIV can be prevented by condoms	42	60	63	21
% testing positive for gonorrhoea	1	0.5	14	14
% testing positive for chlamydia	2	2	13	15
% testing positive for trichomonas				16
% testing positive for syphilis/yaws	13	8	15	16
% testing positive for HSV-2	29	12	29	60
% testing positive for HIV	0	0	1	3

* Last month

[^] Last sex with East Timorese partner

^{**} All commercial sex in last year for taxi drivers and FDTL, last month for others

Background

In the early 2000s, the government of the newly-independent nation of East Timor (Timor Leste or Timor Lorosae) expressed concern about the possibility of an epidemic of HIV developing in the country. East Timor is a poor country with low levels of education and poor health service delivery. In addition, violent conflict following a referendum on independence in 1999 destroyed much of the country's infrastructure and displaced thousands of families. This set of circumstances, together with the presence of international peace keepers from countries with high HIV prevalence, led many people to draw parallels with Cambodia in the early 1990s. Many feared that East Timor may follow Cambodia's path in becoming a hot-spot for HIV infection in Asia. International organisations supporting East Timor's development efforts joined the government in expressing concern about the possibility of an impending epidemic and the public health community also voiced its concern.

By 2002, only a handful of HIV infections had been reported in the country. However HIV cases are typically very substantially under-reported, especially early in an epidemic, and the true magnitude of the problem of HIV in East Timor was not known. In addition, little was known about risk behaviours or other sexually transmitted infections that can facilitate the spread of HIV. On the one hand, the international community was raising the spectre of a Cambodia-style epidemic. On the other hand, some prominent voices denied the possibility of widespread risky sex in this conservative and deeply Catholic country. The absence of information has made it very difficult for the government to make decisions about how much of its resources should be allocated to STI and HIV prevention and care. It has been difficult, too, for organisations working in HIV prevention to understand the needs of populations at risk for HIV and therefore to plan and target their activities effectively.

In 2002, the Ministry of Health requested FHI, an HIV prevention and care organisation whose activities in East Timor are funded by the United States Agency for International Development, to carry out a survey of the levels of HIV and STI infection and associated risk behaviours among those at risk for HIV infection in East Timor.

Qualitative research identified risk behaviours

At the time, it was not even clear who was at risk for HIV in the country, so the first step was to do qualitative research to find out which risk behaviours were common, and where those behaviours were concentrated. Drawing on experience in other countries in the region, qualitative research looked for concentrations of injection drug use, commercial sex and male-male sex. Injection drug use was found to be extremely rare, and a quantitative survey of drug injectors was not feasible. It was found that the commercial sex industry in Dili was divided broadly into two groups—foreign women (largely Thai, Chinese and Vietnamese) serving foreign clients, and East Timor and Indonesian women serving mostly local but some foreign clients. Since the first group will have minimal long-term impact on the epidemic in East Timor, they were excluded from the quantitative survey. Local and Indonesian women were, for the most part, not based in clearly identifiable establishments, but work in their homes, on call to hotels, and in some public locations such as the beachfront. These findings influenced the survey design.

Throughout Asia, groups of men in mobile occupations with access to cash often form the bulk of the clientele for sex workers. Qualitative research focused on taxi drivers, inter-city bus drivers and truck drivers, as well as Battalion 1 and Battalion 2 of the armed forces, FDTL. Patterns of risk behaviour differed considerably between these groups. Truck and bus drivers reported low levels of risk, whereas extramarital and commercial sex was more of a norm among taxi drivers. The older, married men in Battalion 1 were far less likely to talk of commercial sex than the more recent recruits in Battalion 2.

Men who have sex with men were also questioned by qualitative researchers. This group appeared quite heterogeneous, including transgenders and openly homosexual men, as well as men who thought of themselves predominantly as heterosexual. Perhaps because of its diversity, this group did not have clear gathering places.

The findings of the qualitative research, which was conducted with the help of the communities in question, were used to design a quantitative survey, including sampling methods and questionnaires.

Survey objectives

The survey aimed to measure levels of HIV and other sexually transmitted infections in the populations most likely to be infected in East Timor. It was also designed to measure levels of risk behaviour, in order to assess the potential for further spread of HIV and STIs. This information was intended to be helpful to the government of East Timor as well as its local and international partners in allocating resources and planning HIV and STI prevention and care programmes appropriately. It will also be useful in monitoring and evaluating the success of these programmes, since it provides a baseline against which future levels of risk behaviour, STIs and HIV can be compared.

A secondary, but not unimportant, objective of the survey was to give people with high risk behaviour the opportunity to receive information and counselling about HIV and STIs, to get a free HIV test with counselling, and to get screened and treated for STIs if necessary. Those reporting risky behaviour were also taught how to use condoms correctly.

Finally, the survey provided an opportunity to build the capacity of government and non-government organisations to conduct routine sero-surveillance and behavioural surveillance, as well as scientific research. Training in specific technical areas was provided to survey field staff, specimen takers, counsellors, nurses, laboratory technicians and statisticians. All survey staff also received training in research ethics, and extensive information about HIV and STIs.

The survey team

This research was a collaboration between a number of institutions. Oversight of the survey was provided by the Ministry of Health of East Timor. Financial, technical and field support was provided by FHI, with funding from USAID. FHI provided all the training for field, laboratory and data processing staff and counsellors, and was also responsible for data analysis. The Statistics Office of the East Timor Ministry of Planning and Finance provided field supervisors and was responsible for all data entry, cleaning and processing. The health office of the East Timorese military, FDTL, was closely involved in planning and implementation of the survey among the military. A number of East Timorese NGOs, including Timor Hari, Etwave, and Deo Gratias, were involved as survey team members, along with individuals from the MSM community. Laboratory support was provided by East Timor's Central Laboratory in Dili, as well as the South Eastern Area Laboratory Services in Sydney, Australia and the Indonesian national reference laboratory at Cipto hospital in Jakarta. The National Hospital in Dili provided support for counselling and results feedback, while STI screening and treatment services were provided by Clinic Café Timor, a health service backed by the national coffee producers cooperative. The World Health Organisation acted as a member of the steering committee for the survey, and supported training for study staff in STI screening and treatment.

Survey design

The survey was voluntary and anonymous. No names or other personal identifiers were collected from any participant or potential participant. If a participant consented to enrol in the survey, they were assigned a unique survey number. This survey number was used to link together the results of the laboratory testing with the behavioural data. It could also be used by participants to access their HIV and syphilis test results, and to get free syphilis treatment if necessary.

Anonymity was important in encouraging survey participation in Dili, which is a city of some 52,000 people, with large social and family networks. Extensive training was provided to all survey staff in maintaining confidentiality. One of the consequences of the anonymous survey design was that it was not possible to follow up participants if they were referred for treatment or if they had positive test results but did not voluntarily present to collect those test results and get treated.

Survey populations and sample sizes

Following the qualitative research, it was decided that the survey should focus on four populations likely to have substantial levels of risk behaviour. These were taxi drivers in the capital city Dili, male FDTL personnel from Battalion 2 (stationed at Metinaro, about 45 minutes drive from Dili), men who acknowledge having sex with other men regardless of their sexual identity, and FSW of East Timorese or Indonesian nationality. For a small number of these individuals, biological samples were not available. The final sample sizes are shown in Table 1.

Table 1: Survey populations and sample sizes

	Total enrolled	Blood samples	Urine samples	Swabs*
Taxi drivers	210	208	207	Not applicable
Military	250	249	249	Not applicable
MSM	110	110	110	87
Sex workers	100	98	100	51

* Difficulties with procurement and customs regulations restricted the availability of vaginal and rectal swabs.

Sampling methods

Ideally, community-based surveys of risk behaviour and infection would always select survey participants at random from the whole population. A random sample is most likely to represent all members of any larger population; infection rates measured in a random sample can therefore be taken as representing infection rates in the whole population from which the sample is drawn.

To take a random sample, it is necessary to have a complete list of all members of a population, together with information on where they can be reached. Then researchers can select a sample at random from the whole list, and can contact those selected for inclusion in the survey. This is usually very difficult to achieve in practice. For example in Dili there is no central registry of taxi drivers, nor any special licensing system. The military do have complete lists of personnel, but these are difficult to obtain for the purposes of research, and do not reflect the frequent movement of troops between locations. Sex workers and MSM are highly stigmatised in East Timor, and sex workers do not work in fixed locations, so it is clearly not possible to enumerate them all for the purposes of drawing a sample.

More details of sampling methods are given in the full study protocol, available from the FHI office in East Timor. In summary, populations were sampled as follows:

Taxi drivers

Members of the survey team were designated each day as recruiters. They went to locations across the city and approached taxi drivers at random. They explained the survey objectives and procedures and invited taxi drivers to participate. Consenting taxi drivers came to a conveniently located central data collection point for survey enrollment. Some 83 percent of taxi drivers approached agreed to participate. Data collection took place over a two week period.

Male FDTL personnel

The survey objectives and procedures were explained to soldiers during morning roll-call. All male FDTL personnel were asked to pick a card out of a bag. The cards were either blank or marked with an appointment time. Those picking cards were asked to present themselves at a central data collection point at the specified time to learn more about the survey and to enrol if they chose. This procedure proved disruptive to the training activities that were being undertaken in Metinaro at the time. Ultimately, commanders scheduled a rota by which soldiers would come by class to learn about the survey and be offered enrollment. Most of the personnel in Metinaro during the four-day data collection period were offered enrollment in the survey. Fewer than five percent of those who were offered enrollment refused.

MSM

It is not possible to obtain a listing of all men who have sex with men. The survey design called for the use of respondent-driven sampling. This is a form of systematic snowball sampling, under which each respondent refers a fixed number of other respondents to a central data collection point for enrollment. This method proved difficult to maintain in the field, in part for ethical reasons. The survey represented the first opportunity this high-risk population had ever had to obtain quality HIV testing and confidential counselling, as well as syphilis screening and free treatment. The survey team found it difficult to turn away respondents who presented at the data collection point without a referral card, as required by the respondent-driven-sampling method. For this reason, any MSM presenting at the data collection point and wishing to enrol was enrolled in the survey. Because this method depends on people coming to the data collection point, it is not possible to calculate a refusal rate for this population. Enrollment was closed when the target sample size was reached, after approximately two weeks.

Sex workers

There are no brothels in Dili. Sex workers either meet clients in public places such as the waterfront park or in their houses. A small number, principally those serving the “high-end” of the market can be found in a handful of bars and entertainment spots on a Friday or Saturday night. A small number of “middle-men” may also arrange for sex workers to meet clients in hotels. In total, it was estimated that there were not more than 120 FSW of East Timorese or Indonesian origin working in Dili in mid 2003. The survey team included a full-time recruiter from an NGO which had in the past provided services to sex workers in Dili. This recruiter approached women known to sell sex, and invited their participation in the survey. If they were interested, transport was provided to a discreet location for data collection. Women who participated in the survey were also encouraged to invite other sex workers to participate. The survey team also went to all of Dili's night-clubs on successive weekends, and set up data collection points in the manager's office and other rooms at the back of the premises. The recruiter discreetly approached sex workers and invited participation in the survey, either on the spot or by appointment at the permanent data collection centre. Only one participant enrolled at a night club, but several accepted appointments for later participation. Although sex workers were the smallest sample, the difficulty of access to this population meant that data collection took place over six weeks in this population. Some women refused participation, but it is estimated that approximately 80 percent of all active sex workers serving local clients in Dili participated in the survey.

It must be noted that none of the sampling methods yielded truly random samples, and the results of this survey may therefore not be generalisable to wider populations. The refusal rate among taxi drivers was moderate, and those who refused did not differ in age or marital status from those who enrolled. The refusal rate among soldiers was low, and a high proportion of estimated sex workers in the city participated in the survey. This suggests that for these populations the data presented here are likely to be representative. The representativeness of the MSM sample is harder to gauge. It is likely to under represent men who consider themselves heterosexual but who sometimes have sex with other men.

Survey procedures

All participants were greeted by a supervisor at the data collection point. The supervisor explained the survey procedures in detail, and also gave each potential participant a sheet with written information about procedures. Supervisors answered any questions that participants had. The supervisor then read a consent statement to the potential respondent. In order to maintain anonymity, the supervisor asked participants for oral consent, and signed the consent statement on their behalf. This process was witnessed by one of the co-investigators. After consenting, participants were enrolled using a unique survey number. This number was attached to a questionnaire, and to the blood and urine collection tubes. It was also attached to three referral cards

which were given to participants so that they could access free STI screening and treatment as well as get counselling and their HIV and syphilis test results if they chose.

Participants were then introduced to a trained interviewer, who administered a structured, pre-coded questionnaire in a private space. After the interview, participants were introduced to one of the nursing team. A nurse of the same sex as the respondent asked detailed questions about symptoms of STIs. If any symptoms were reported, the participant was referred directly to a well-known private clinic in Dili for free screening and treatment. Since military respondents did not have easy access to the clinic, all military respondents were given a physical examination at interview by a non-military medical team, and treated immediately if necessary. After STI symptom screening, blood and urine were collected from all respondents. FSW also provided self-administered vaginal swabs, while MSM provided self-administered rectal swabs. Specimens were processed and stored as appropriate and were delivered to the Central Laboratory at the end of each day. Questionnaires were taken to the FHI office at the end of each day. When a survey population was complete, the questionnaires were transferred to the Statistics Office for data entry and editing.

After the data collection procedures were complete, the supervisor repeated information about accessing STI screening and treatment facilities, and emphasised the importance of picking up results of HIV and syphilis/yaws tests, and getting treated for syphilis/yaws if needed. Participants were thanked and given a small gift in appreciation of their participation. In addition, all FSW were treated presumptively for common sexually transmitted infections. A detailed survey protocol is available from the FHI office in East Timor.

STI and HIV testing

The Central Laboratory in Dili has received support from the World Health Organization and others in developing its diagnostic facilities. FHI provided additional support and training in the context of this survey. However the laboratory is not yet equipped to perform some of the tests necessary for the survey. For this reason, some of the tests were performed in Sydney or Jakarta. The tests performed and the specimens are listed in Table 2.

Table 2: Biological tests performed during the survey

Organism	Test	Biological Specimen	Testing site
Gonorrhoea	PCR (Amplicor)	Urine (all) Vaginal swab (women) Rectal swab (MSM)	Sydney
Chlamydia	PCR (Amplicor)	Urine (all) Vaginal swab (women) Rectal swab (MSM)	Sydney
Trichomonas	Culture (InPouch)	Vaginal swab (women)	Dili
Bacterial vaginosis	Gram stain scoring, Nugent criteria	Vaginal swab (women)	Dili
Candida infection	Gram-stained slide	Vaginal swab (women)	Dili
Syphilis	Serology (RPR and TPHA)	Blood (all)	Dili
Herpes simplex virus types 1 and 2	Serology	Blood (all)	Sydney
HIV infection (1, 2)	Determine rapid test,	Blood (all)	Dili
HIV infection (1, 2)	Genetic Systems EIA.	Blood (all)	Dili
HIV infection (1, 2)	Western Blot	Blood (Determine HIV+ ve specimens only)	Jakarta
HIV infection (1, 2)	HIV sub-typing	Blood (WB HIV+ ve specimens only)	Westmead Hospital, Australia

As Table 1 showed, many of the swab samples were missing. This is because of logistical difficulties in importing the transport medium necessary for gonorrhoea and chlamydia testing of rectal and vaginal swabs, as well as the culture medium for performing trichomonas testing.

Ethical issues

This survey was the first research involving HIV in East Timor, and also the first to focus on the highly marginalised groups of sex workers and MSM. Considerations of confidentiality led to the anonymous survey design. All survey staff, including laboratory staff, were given extensive training in research ethics and in confidentiality procedures. Extensive field supervision by the Principal Investigator and Co-Investigators paid close attention to maintaining confidentiality throughout the survey.

This survey is one of the first pieces of formal biomedical research conducted since the East Timor's independence. At the time of the survey design, the country did not yet have a formal mechanism for ethical approval of medical research. From 2002, FHI began to provide support in developing such a mechanism, including supporting training for Ministry of Health personnel in research ethics. An ad-hoc committee on research ethics was instituted, and the protocol for this survey was the first to be approved by that committee—a decision communicated in a letter from Minister of Health Dr Rui Maria de Araujo on August 11, 2003. Ethical approval was also obtained from the Protection of Human Subjects Committee of FHI and the Ethics Committee of the London School of Hygiene and Tropical Medicine.

No serious breaches of ethics were reported during or following the research.

Additional information: the student survey

In addition to the survey described here, a preliminary behavioural survey was carried out among students and two universities in Dili, under the direction of the Central Statistics Office. The survey took place at five faculties of the University of East Timor, as well as at the University of Dili. After lengthy discussions with university authorities and with the help of student leaders, a sample frame of classes with approximate student numbers was drawn up, and classes were selected randomly until the desired sample size was reached. Research teams arranged to visit classes, explain the purposes of the survey, and invite participation. There were no biological tests associated with this survey.

Students who agreed to participate sat at desks in the classroom and were each given a precoded questionnaire on which no personal identifiers were recorded. A supervisor explained the procedure, and then read each question out aloud, giving students time to fill in their answer, before moving on to the next question. The questionnaire had no skip patterns, and required every question to be answered. When the process was over each student put their questionnaire into an unmarked envelope, and put the envelope into a sealed box resembling a ballot box, in which all questionnaires were mixed together so that individual responses could not be distinguished.

It was believed that anonymous, self-completed questionnaires would allow students to answer honestly and without embarrassment. However because of the large number of students in a class and the limited opportunities for supervision, it was found during data entry that many questions (even non-sensitive questions such as year of birth) were unanswered. The survey was intended to focus on unmarried young people aged under 25. However because for practical reasons it was important to invite participation of all class members, some older people were included. These were excluded from analysis. No question about marital status was included, so it was not possible to exclude all those who were married, even though some “write in” answers made it clear that not all participants were single. Ultimately, 432 male students and 418 female students aged between 16 and 25 were included in the analysis.

Because of these limitations, the data from the students survey must be interpreted with extreme caution. However, some general observations can be made on the basis of these data, and they are included briefly in this report.

Survey results: Who is at risk for HIV in East Timor?

For HIV to spread, three things are needed: an infected person, an uninfected person, and a risk behaviour between them. Risk behaviours are those that exchange body fluids—most commonly having vaginal or anal sex, and sharing needles for example when injecting drugs. In addition, transfusion with infected blood and the exchange of body fluids around birth and during breastfeeding can transmit HIV.

There is a hierarchy of risk. Among the common risk behaviours, the most dangerous is needle-sharing. Because needles introduce the virus directly into the blood-stream, there is a very high probability that someone injecting with a needle carrying HIV-infected blood will themselves become infected. Next most dangerous is anal sex. The anus lacks natural lubricants so unless extra lubrication is used, anal sex commonly leads to tiny tears and wounds. This provides an easy entry point for HIV to get in to the blood stream. Vaginal sex is somewhat less dangerous, because there is less likelihood of damage to vaginal tissues, and therefore less likelihood that HIV can find an easy way into the body. Importantly, however, this equation changes if other, more common sexually transmitted infections such as gonorrhoea, chlamydia, syphilis or herpes are also present. These other infections greatly increase the likelihood that HIV will be transmitted during both anal and vaginal sex. And these infections, too, are transmitted through sex with partners who are not monogamous—the more partners a person has, the more likely they are to encounter one who is infected with HIV or other STIs, and to be at risk for infection themselves.

In assessing who is at risk for HIV, then, the survey started by looking for evidence of sex with multiple partners, and especially for evidence of sex with other people who may themselves have a high number of partners, for example sex workers.

It is often widely assumed that “youth” are among the groups at highest risk for HIV. The preliminary survey among close to 900 university students in Dili shows that this is something of a misperception. As Figure 1 shows, only a tiny fraction of female students report any sexual activity at all, while among male students close to three quarters are not sexually active.

Around one in seven male students in Dili report sex with sex workers, but the overwhelming majority of both males and females report no sexual risk at all

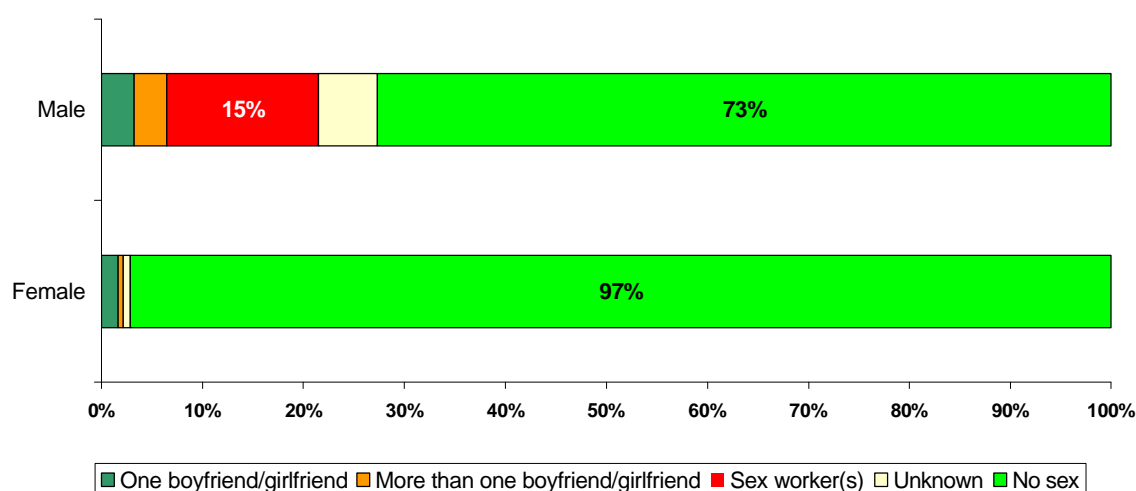


Figure 1: Percent of university students in Dili who have had sex with different partner types in the last year.

The difference between levels of sexual activity reported by men and women suggests that men may be exaggerating a bit, and that women may be underreporting their levels of sexual behaviour. But they also point to the fact, confirmed by the data, that those male students who do

choose to have sex are often buying it from sex workers. Indeed, over half of the male students who say they are having sex are having it with sex workers.

Among the adult male groups included in the full survey, far higher proportions are sexually active. Some of this is to be expected—these men are older and therefore more likely to be married. The average age of taxi drivers in the survey was 27, and the average age of soldiers was 23. Two thirds of the taxi drivers are married, compared with just 18 percent of soldiers. However a remarkably high proportion of both groups say they have sex with partners other than their wives, as shown in Figure 2.

Extramarital sex is the norm for some groups of men in East Timor

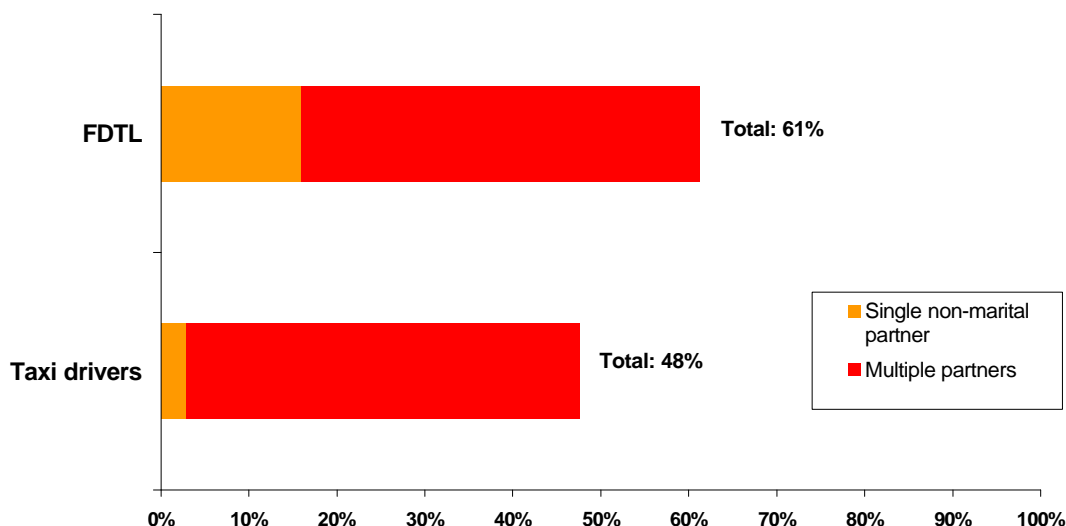


Figure 2: Percent of men who report having sex with a woman other than their wives in the last 12 months.

Not only are men having sex outside of marriage, they are often having it with more than one partner. From the point of view of STI and HIV transmission, this is important. But perhaps more important is whether these partners also have other partners. While it is possible that girlfriends have other partners, it is inevitable that sex workers do. And as Figure 3 shows, the majority of men in the survey reporting extramarital sex were, in fact, having sex with sex workers. Half of the taxi drivers included in the survey and over 60 percent of the soldiers report having sex with sex workers. But the proportion who report sex with girlfriends is also substantial.

Most extramarital sex is with sex workers, but plenty of men also pass their risk on to girlfriends

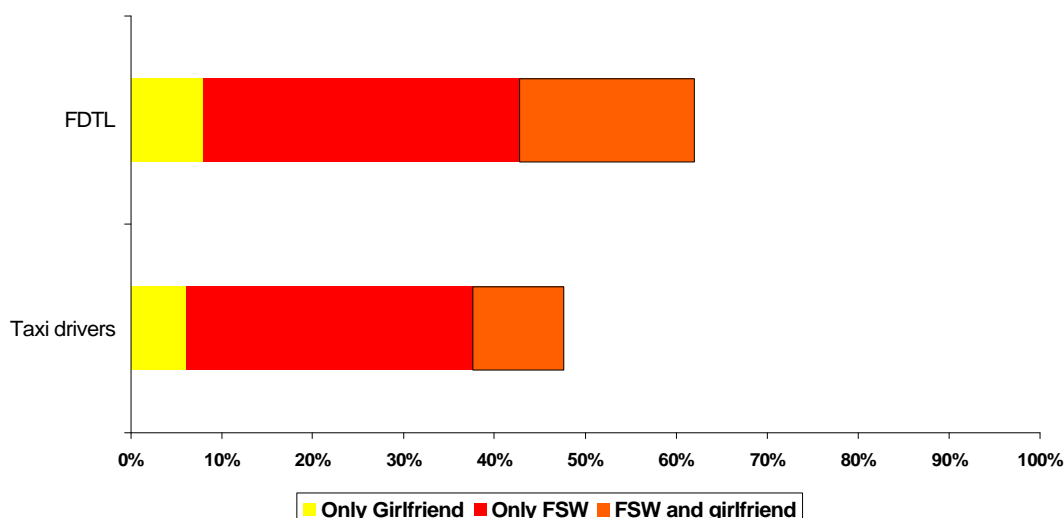


Figure 3: Percent of men who report having sex with FSW and girlfriends in the last 12 months.

Where men have sex with both sex workers and girlfriends, as many appear to be doing, they are clearly putting their girlfriends at higher risk for STIs and HIV as well. And of course this is also true of men who have sex with both sex workers and their wives. Although social norms in East Timor are strongly supportive of monogamy within marriage, Figure 4 suggests that a significant proportion of married men in some occupational groups are choosing to have sex outside of their marriages.

A higher proportion of unmarried men buy sex, but over a quarter of married men in these at-risk groups also visit sex workers

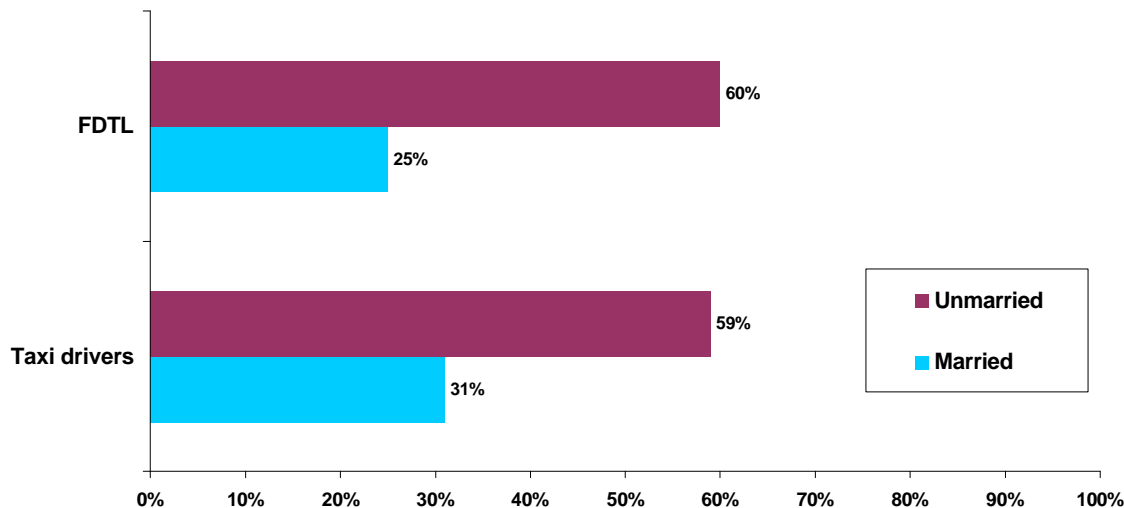


Figure 4: Percent of unmarried and married men who report having sex with sex workers in the past 12 months.

In order to protect themselves and their families from STI and HIV infection, these men should be using condoms in all extramarital sex. And yet they are clearly not doing so. Fewer than one East Timorese client in 100 reported always using a condom when having sex with a sex worker, and not one of the sex workers questioned said that she used condoms with all of her East Timorese clients in the last month. Indeed most of the sex workers and their clients said they never used a condom when selling or buying sex.

Consistent condom use in commercial sex is almost unheard of. Not one sex worker said she always uses condoms with East Timorese clients

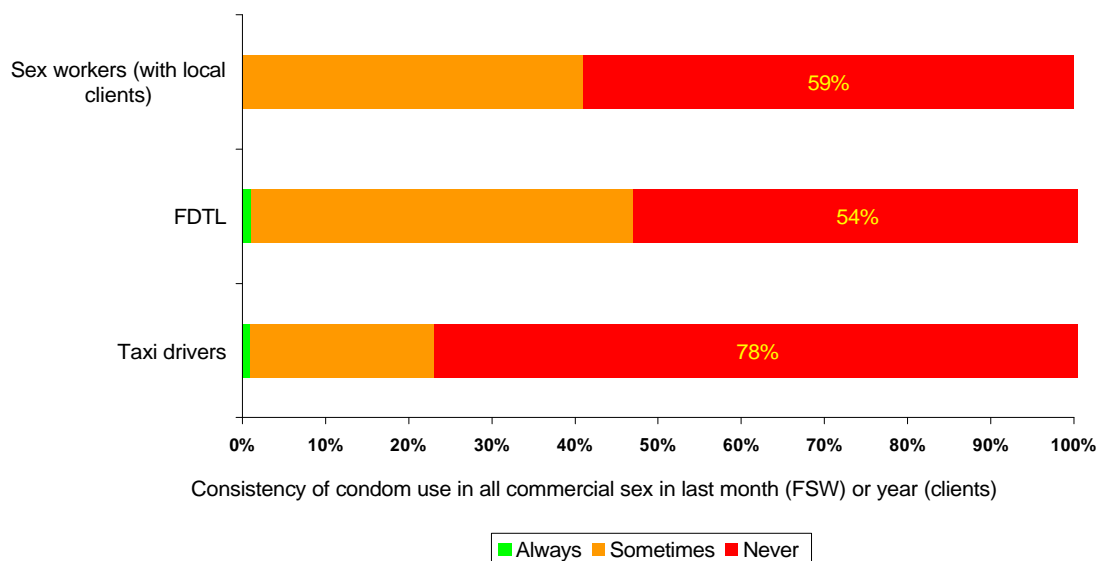


Figure 5: Frequency of condom use in commercial sex.

The ABC strategy

Many countries have adopted a strategy known as ABC in trying to slow the spread of STIs and HIV. The A stands for “Abstain”—people who do not have sex at all are not at risk for sexually transmitted infections, as long as they understand that “abstain” means no sexual activity.¹ Looking back at Figure 1, we can see that this is the strategy chosen by the majority of students in Dili, and is probably very common among unmarried young people throughout the country. The B is for “Be faithful”—in other words, have sex only with one long-term partner whose HIV and STI status is known and who you know is not having sex with anyone else. This is often a difficult choice—one can be sure of one's own behaviour, but can one always be sure of one's partner? The C is for “Condoms”—this means using a condom every time you have vaginal or anal sex with anyone who is not an HIV-negative, faithful long-term partner.

The idea is that as long as everyone chooses one of these three options, HIV and other STIs cannot spread. This means that people who do not choose to abstain, and who either choose not to be faithful or have no control over their partner's behaviour, must have access to the third option, condoms.

The survey data allow us to investigate how the ABC strategy is working among men at high risk in East Timor. Around a quarter of soldiers are choosing A, abstain. Taxi drivers are more likely to choose B, being faithful to their wives. This is because a far higher proportion of taxi drivers are married. As we know from Figure 5, hardly anyone is choosing C, condom use—we can barely see the blue line in the graph. Overall, the behaviour of choice among the men in these higher risk populations is neither A nor B nor C, but R (for Risk); in other words, a majority of soldiers and taxi drivers are having unprotected sex with non-marital partners.

The ABC strategy is not working too well. Fewer than half of soldiers or taxi drivers in Dili are choosing to Abstain, Be faithful or use Condoms

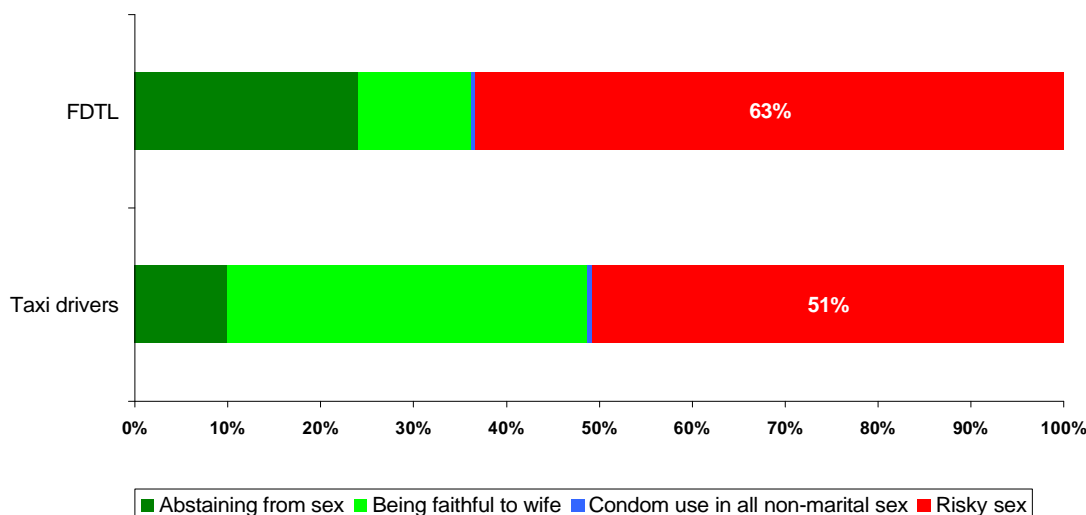


Figure 6: Proportion of men who are choosing, abstinence, monogamy, condom use, and risk.

It is important to remember that these groups were chosen for inclusion in research precisely **because** the qualitative research showed that they had unusually high levels of risk behaviour. They certainly do not represent all adult men in East Timor. But these data do illustrate the importance of making sure that specific groups of men who do not choose A or B know how important it is that they choose C, and have easy access to condoms.

1 — In the formative research, a few people mentioned that anal sex was thought of as “abstaining”, because it carries no risk for pregnancy and preserves “virginity” in women, if virginity is seen in its technical sense of maintaining an intact hymen.

Bisexual behaviour provides a “bridge” for HIV

The sex worker, taxi driver and military groups were included in the survey largely to investigate the possibility of a widespread heterosexual epidemic in East Timor. Vaginal sex is, after all, the most common path through which HIV is spread at the global level. But as mentioned earlier, it is not the riskiest behaviour. Drug injection and anal sex carry a higher risk of HIV infection, and these too were investigated in the survey.

Results show that the male groups included in the survey because they represented high risk heterosexuals also report substantial levels of anal sex with other males, principally with transvestites (known as waria). As Figure 7 shows, one in nine of the taxi drivers and soldiers reported anal sex with a waria in the last year, although only one in 100 reported sex with other “men”. Among students, sex between men was more common; overall, five percent of male students reported sex with other men. Almost all of these men in all groups also reported sex with women.

Men who self-identify as having sex with other men also very commonly have sex with women. Nearly half of the MSM group said they had also had sex with a woman in the last year, and one in five had bought sex from a female sex worker in the last month. Regardless of how these people think of themselves—as heterosexual, homosexual or transgender, they are in practice behaviourally bisexual. This means that they can act as a “bridge”, by which HIV and other STIs can pass from populations with higher risk behaviour to populations with lower risk behaviour. This is especially true if condom use is low and multiple partnerships are common in the MSM community which is interacting with the heterosexual community through bisexual behaviour. And low condom use does indeed seem to be the norm in anal sex.

There is substantial bisexual behaviour and some evidence of drug injection. These behaviours can “boost” a wider sexual epidemic.

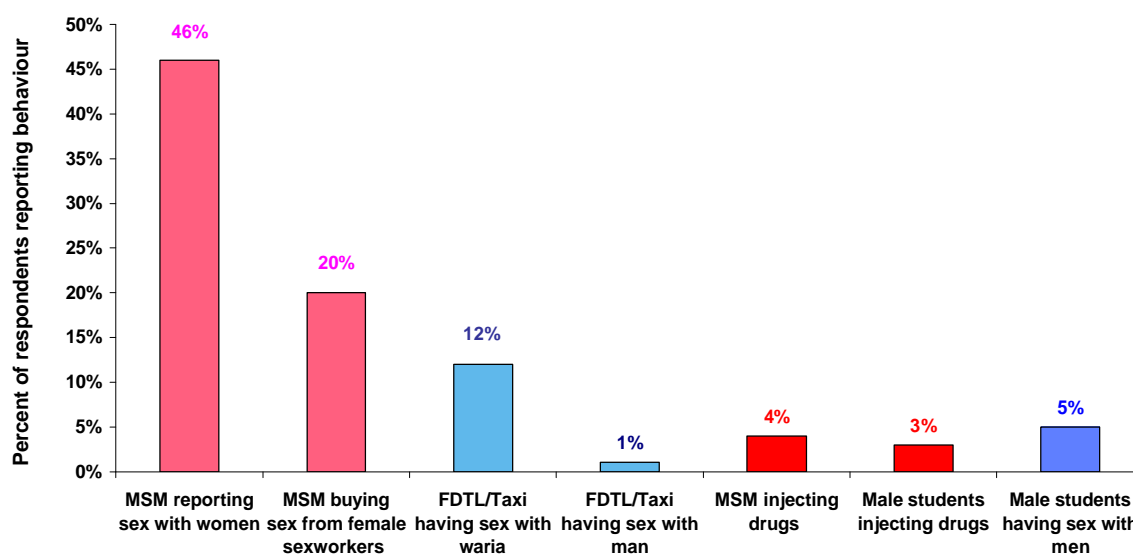


Figure 7: Proportion of survey populations with multiple risk behaviours.

Figure 8 shows the levels of risk behaviour reported by MSM included in the survey. In some social circles there is a perception that male–male sex is a “foreign” behaviour, but the data suggest that the majority of male–male sex in Dili takes place between Timorese men. Nearly three quarters of MSM reported having sex with another Timorese man in the month before the survey, compared with just 21 percent who reported sex with a foreign man. Timorese partners were slightly less likely to practice safe sex—of those with Timorese partners, 80 percent reported unprotected anal sex, compared with 70 percent of those with foreign partners.

A rather high proportion of MSM—40 percent—reported receiving money for sex, and 10 percent bought sex from another man in the last month. Again, most of this sex involved anal penetration without a condom. Close to six out of 10 MSM had more than one sex partner in the previous month, and a total of 46 percent had unprotected anal sex with more than one partner.

MSM in East Timor report very high levels of unprotected anal sex, mostly with other Timorese men

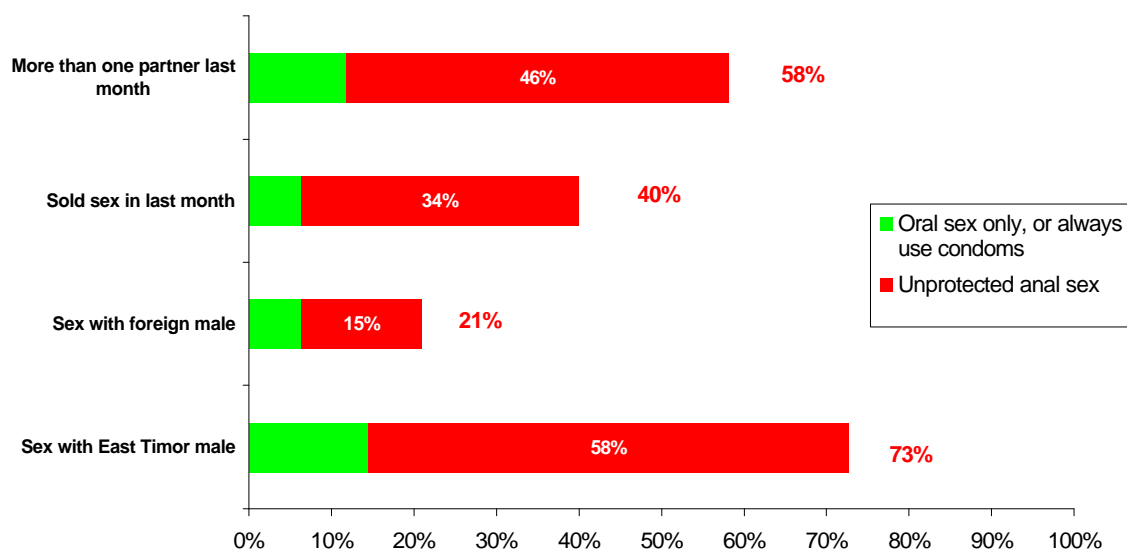


Figure 8: Risk behaviour reported by MSM in the month before the survey.

From the point of view of HIV transmission, anal sex is more dangerous than vaginal sex because it is more likely to involve tears or lesions which open a door for the virus into the body of the uninfected partner. One way of reducing this danger is to use lubricant during anal sex. The best lubricants for anal sex are water-based lubricants such as the well-known brand KY®—these can be used together with condoms without damaging the latex, which is a risk if oil-based lubricants such as Vaseline® (petroleum jelly) are used.

Only one MSM in seven reports using safe, water-based lubricant in anal sex

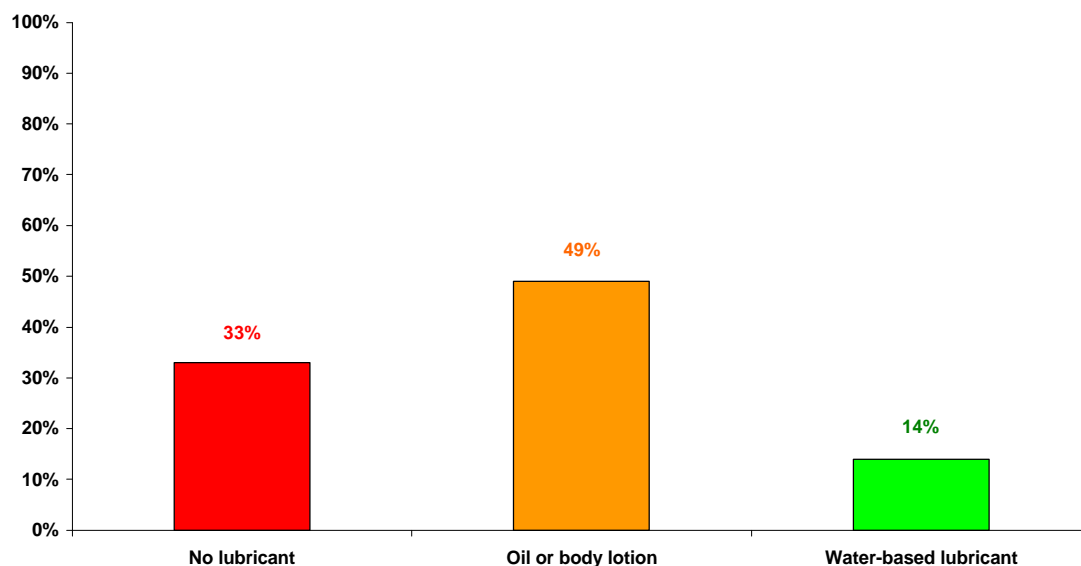


Figure 9: Lubricant use among MSM at last anal sex.

During the survey, all respondents were given “safe sex” packs consisting of condoms and a small sachet of lubricant. These packs were very well-received by MSM respondents, and many members of the MSM community have subsequently contacted the survey team asking for a permanent source of supply for lubricant sachets, which are not currently available in Dili. Providing access to affordable, conveniently packaged lubricant and condoms would be an easy first step in reducing the risk of STI and HIV transmission in anal sex.

Evidence of drug injection should ring alarm bells

Figure 7 also shows the proportion of respondents who say they have ever injected drugs. Four percent of MSM and three percent of male students say they have injected drugs. Worryingly, the majority of those who say they have injected drugs have never lived outside of East Timor, suggesting that injecting may be taking place within the country. None of the people who reported injecting drugs in the four main survey groups were infected with HIV, and the overall numbers of injectors are still small. But these data should act as a alarm bell for East Timor.

Drug injection is the fastest way of spreading HIV. In many countries in Asia, HIV prevalence among drug injectors has shot from zero to 40 or 50 percent in just two or three years. All but one of the drug injectors in the survey population here in East Timor said they were sexually active, and many reported multiple partners. Condom use is universally low and there is evidence of significant bisexual as well as heterosexual behaviour in East Timor. It is likely, then, that if an HIV epidemic driven by drug injection emerged in the country, it would spread easily into other, non-injecting populations. The case of neighbouring Indonesia serves to illustrate the importance of taking drug injection seriously right from the outset. HIV first appeared in drug injectors in Jakarta's largest treatment centre in 1999. Behavioural data showed that over 90 percent of them share injecting equipment, but no HIV prevention programmes were put in place for this population. Two years later, 40 percent of injectors were already infected with the virus. Detailed modelling work based on 10 years of data collection in the Indonesian capital shows what would have happened if this IDU epidemic had been prevented. At the start of 2004, it was estimated that there were around 33,000 people living with HIV in the Jakarta—some 60 percent of them IDU. If risk behaviour does not change, the total number of infections is expected to triple by the end of the decade, but the proportion attributable to drug injection will fall to one third.

If a third of people living with HIV in 2010 are IDU, one might logically conclude that if Jakarta had acted early to prevent an HIV epidemic among IDU, it could have reduced the size of the epidemic by a third. In fact, as Figure 10 shows, the picture is quite different. Preventing an IDU epidemic from the start would also have prevented most of the sexual epidemic—had there been no IDU epidemic at all, we would expect fewer than 3,000 HIV infections in Jakarta by 2010.

In Jakarta they started late! If they had prevented an epidemic among IDUs from the start, there would have been virtually no HIV epidemic by 2010

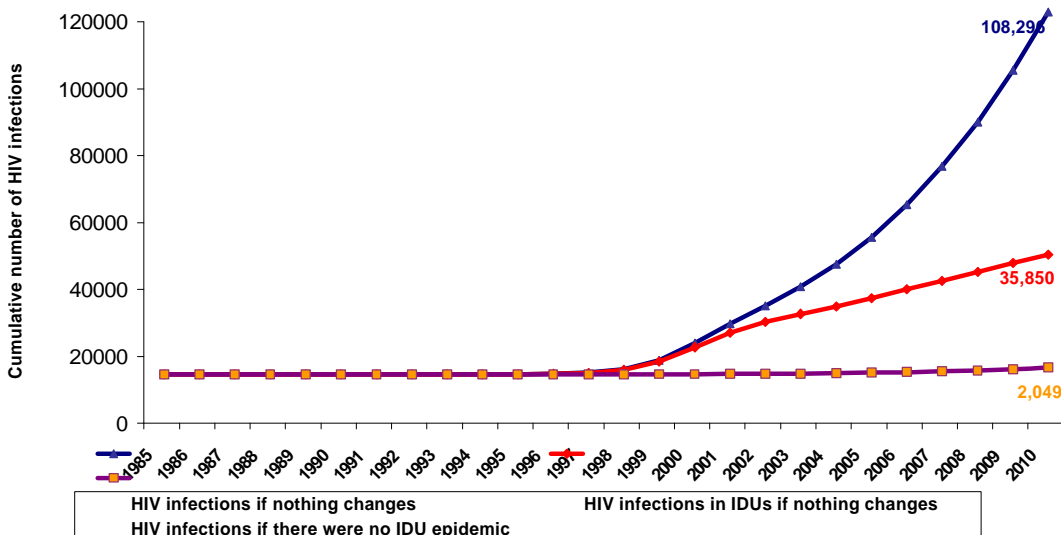


Figure 10: Predicted HIV infections with and without an IDU epidemic in Jakarta, Indonesia.

This is because injection drug use acted as a “booster” for a wider sexual epidemic. Men who were infected with HIV when sharing a needle with friends then had sex with women, including FSW, who in turn became infected with HIV. They then passed the virus on to their clients or other

partners. By this stage, transmission is no longer the direct result of drug injection, but if there had been no HIV among the drug injectors the “seed” infection would never have occurred.

This experience carries an important lesson for East Timor. Drug injection is still rare in the country, and HIV prevalence still low. New drug injectors are almost always introduced to injecting by someone who already uses drugs. So if it is possible to identify the small number of existing users and work with them to reduce the likelihood of HIV infection and to introduce a safer culture among drug users, the benefit for the overwhelming majority of East Timorese who are not drug users may be substantial in the long run.

The consequences of risk: HIV and STI infection

The preceding sections of the report have described substantial levels of risk behaviours in some populations, and have suggested that these behaviours may lead to infection with STIs, including HIV. Inevitably, this was indeed found to be the case. Table 3 shows the levels of infection recorded through laboratory testing in the survey.

Table 3: STI infection rates in survey populations.

	Gonorrhoea	Chlamydia	Syphilis/yaws	Trichomonas	HSV2	HIV
FSW (N = 100)	14.0% 14	15.0 % 14	16.0% 16	15.9% (7/44)	60.2% (59/98)	3.0% 3
MSM (N = 110)	16.1 %* (14/87)	14.9 %* (13/87)	15.5 % 17		29.1% 32	0.9% 1
Taxi drivers (N = 207)	1.0 % 2	1.9 % 4	13.0 % 27		28.9% (60/208)	0 0
Military (N = 249)	0.5 % 1	2.0 % 5	8.0 % 20		12.1% 30	0 0

*refers to rectal infections. See below for details.

These results are complex, and require some interpretation.

Gonorrhoea and chlamydia

The levels of gonorrhoea and chlamydia among the “heterosexual” male groups are very low, and there is no significant relationship between these laboratory-identified STIs and self-reported risk behaviour. This is probably largely because these STIs often produce obvious and painful symptoms in men, and men are therefore more likely to be aware of any infections and to get them treated, leading to low levels of infection at any single point in time.

Among FSW, rates of gonorrhoea and chlamydia are moderate—indeed they appear somewhat low compared with infection rates among sex workers in eight cities in neighbouring Indonesia, as Figure 11 shows.

This difference may be in part due to limitations in STI testing in the Dili survey. Both the Indonesian and the East Timor studies chose to use a very sensitive testing method known as PCR to detect gonorrhoea and chlamydia in FSW. This test can be used on a number of different specimen types, but it will pick up a higher proportion of actual infections in women if the specimens used are cervical or vaginal swabs than if the tests are performed on urine. The Dili survey intended to collect vaginal swab specimens from all female participants. However, because of extremely complex procurement and customs clearance procedures, the special transport medium needed for storing the vaginal swabs did not arrive until after the survey started, meaning that only urine specimens were available for some of the women. Performing tests on urine specimens may lead to an under-estimate of the actual levels of gonorrhoea and chlamydia infections in female participants.

The most common curable STIs are much higher in sex workers in Indonesia than in East Timor, despite better access to services in Indonesia

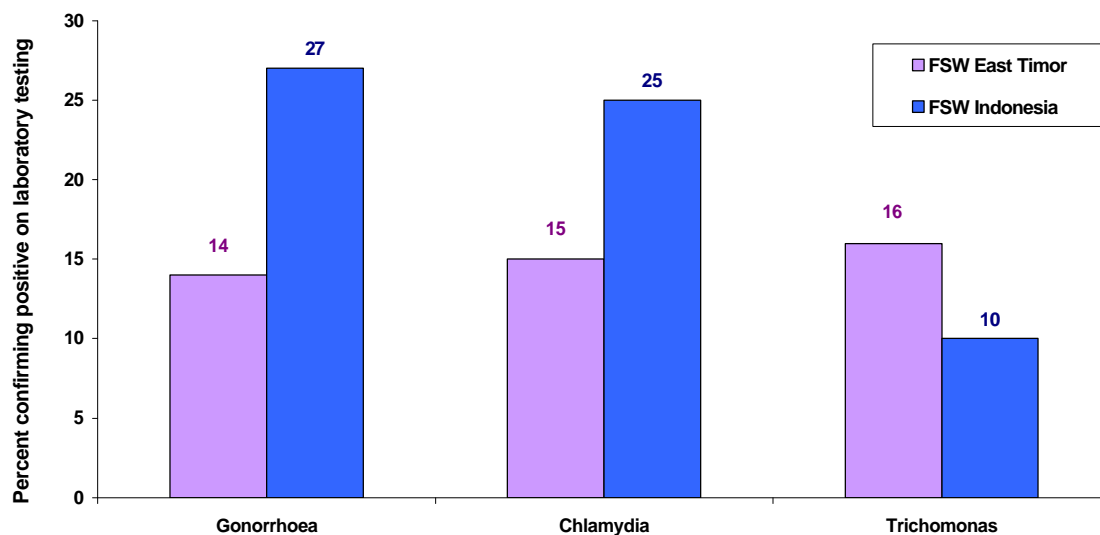


Figure 11: STI infection rates among FSW in Dili, East Timor, and in eight cities across Indonesia.

It is possible, however, to estimate the true levels of infection by comparing test results on urine and on vaginal swabs for those women where both specimens were available.

Table 4: Difference in test results between vaginal and urine samples, and estimated prevalence of gonorrhoea and chlamydia among sex workers

	Gonorrhoea	Chlamydia
Positive on vaginal swabs	10/51	7/51
Positive on urine for samples that also had swabs	4/51	5/51
Ratio that were positive vaginal: positive urine	$10/4 = 2.5$	$7/5 = 1.4$
# positive on samples where only urine available	4/49	8/49
Expected infections if vaginal swabs had been taken on urine-only samples	$4 \times 2.5 = 10/49$	$8 \times 1.4 = 11/49$
Total expected positive samples if vaginal swabs had been taken from all respondents	$10 + 10 = 20/100$	$7 + 11 = 18/100$
Total expected prevalence	20%	18%

If we apply the ratio of vaginal:urine positive samples for each of the infections where comparable samples available to those samples where only urine samples are available, we can make an estimate of the expected number of infections if we had had vaginal swabs for all participants. As Table 4 shows, this leads us to an estimate of 20% prevalence of gonorrhoea and 18% prevalence of chlamydia—substantially higher than the reported levels, but still lower than levels in neighbouring Indonesia.

MSM were asked to provide rectal swabs for PCR testing for gonorrhoea and chlamydia, but again, swabs were not available for all participants. In this case, though, the interpretation issue is different. Gonorrhoea and chlamydia are relatively site-specific infections. Broadly speaking, if they are contracted in receptive anal sex, then the infection will be detected in a rectal swab but

not in urine or a urethral swab—unless those sites are also infected separately. If they are contracted in insertive anal sex or vaginal sex, then the infection will be urethral, and will be detected in urine.

Table 5: Rectal and urethral infections among MSM in Dili.

	Gonorrhoea	Chlamydia
Positive on rectal swabs, negative on urine	12/87	13/87
Positive on urine negative on rectal swabs	1/87	0/87
Positive on both urine and rectal swabs	2/87	0/87
Positive on urine (for urine-only samples)	0/23	0/23
Total prevalence of rectal infection	16.1 % (14/87)	14.9% (13/87)
Total prevalence of urethral infection	2.7% (3/110)	0

Table 5 shows the numbers of MSM testing positive for gonorrhoea and chlamydia on rectal specimens and urine. There is clearly a huge disparity in infection rates, which almost certainly reflects differences in treatment seeking. As mentioned above, urethral infections in men tend to be symptomatic and painful, and many men with a urethral infection will therefore either buy antibiotics over the counter or go for treatment at a medical facility. Rectal infections, on the other hand, often have no symptoms except for inflammation, which is in any case frequently experienced by men who engage in receptive anal sex, especially if they do not use high quality lubricant. In the survey, only two of the men with current rectal STIs reported that they had experienced any symptoms of an anal infection at any time in the last 12 months. This lack of symptoms or symptom recognition means men with rectal infections will rarely get treated, and they will therefore be more susceptible to HIV infection as well as more likely to pass STIs on to their sex partners.

Syphilis/yaws

Syphilis is a sexually transmitted infection caused by *Treponema pallidum*. Initial infection is often accompanied by a genital ulcer that is usually not painful. Syphilis is curable, but if left untreated it can have serious health consequences. Early stage syphilis can usually be distinguished from longer-term latent infections by looking at the strength of the reaction on a test known as RPR. The higher the RPR titre, the more likely the infection is to be a recently-acquired, acute infection.

In most countries, high levels of syphilis infection are a strong indication of widespread sexual mixing and low condom use. But the test that is used for syphilis cannot distinguish between sexually transmitted syphilis and another infection, known as yaws or framboesia, which is transmitted through non-sexual contact with an infected person, usually in childhood. Yaws is an infection also caused by *Treponema pallidum* but a different strain from that which causes syphilis.

Yaws was endemic in East Timor until the 1960s. At that time, the World Health Organization launched a worldwide campaign against yaws, and infection levels were greatly reduced. However it appears that it was not wiped out in East Timor. This means that some of the positive syphilis results may actually reflect infections with yaws rather than with syphilis. Certainly the majority of positive syphilis tests are not suggestive of recent infection. Overall, 78 percent of positive syphilis results in the survey had RPR titres of 1:4 or less, suggesting latent infection or yaws. Only among FSW was there a higher proportion of high-titre syphilis—some 37 percent of syphilis among sex workers was reactive at titres of 1:8 or above, a level frequently used as a case definition of “active syphilis” in Southeast Asia.

Herpes Simplex Virus Types 1 and 2

Herpes simplex is divided into two types, HSV-1 and HSV-2. HSV-1 can be transmitted through touch, and is a very common cause of oral “cold sores”, especially among children. HSV-2 is a sexually transmitted viral infection which causes recurrent genital ulcers. It is transmitted very much more easily than HIV, and because it is incurable, acts as a good marker for high-risk sexual behaviour over a lifetime. Both types can be transmitted sexually but most ano-genital infections are caused by HSV-2

HSV-2 is a major concern for those fighting HIV, because it greatly facilitates HIV transmission. This is especially true at times when ulcers appear, as they do periodically among those infected with HSV-2. It is thought that in many parts of Africa, high levels of HSV-2 infection have been a major factor in explaining the very rapid sexual spread of HIV. Conversely, HIV-induced damage to the immune system also makes HSV ulcers recur more often, with greater severity and duration while making them less responsive to treatment.

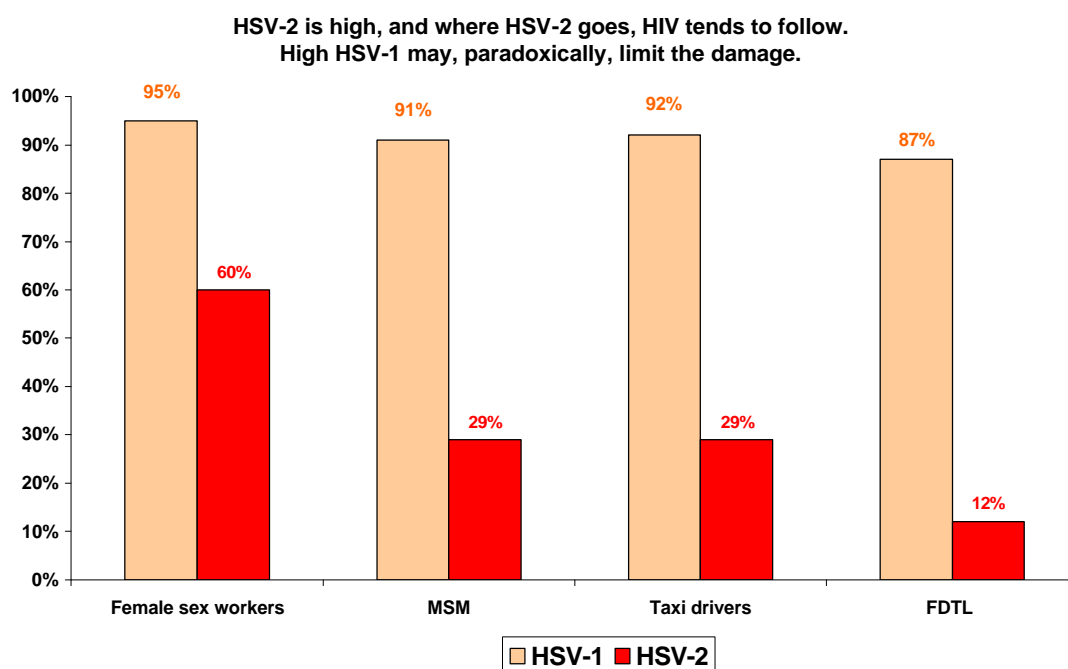


Figure 12: Prevalence of Herpes Simplex Virus types 1 and 2 in survey populations

As Figure 12 shows, HSV-1 infection is almost universal, and HSV-2 infection is high. As expected, levels of HSV-2 infection are strongly related to overall levels of risk in the survey populations. The levels of HSV-1 infection may cause discomfort to those affected by cold sores, but from the point of view of HIV transmission they may actually be rather helpful. Infection with HSV-1 in childhood can confer some immune protection against HSV-2 infection. Virtually all the respondents with HSV-2 also have HSV-1 in the survey populations, and it is probable that the resistance developed to HSV-1 reduces the frequency and duration of genital ulcers caused by HSV-2. This in turn reduces the impact that HSV-2 can have on the transmission of HIV. This may be one reason why only 16 percent of respondents infected with HSV-2 report a genital ulcer in the last year.

HIV

One of the things which sparked concern about the possibility of a major HIV epidemic in East Timor was the presence of peace-keepers and international staff from countries with high HIV prevalence. It was thought that men in these groups might introduce the virus by having sex with women in East Timor, and that it would then spread into a wider population, particularly if those women were sex workers and had many local clients.

The survey tried to investigate whether this had in fact occurred. All respondents were tested for HIV and were asked about their history of sex with foreigners. HIV prevalence among sex workers was three percent, while among MSM it was under one percent. All of those who were infected with HIV reported sex with foreigners.

It was possible to further investigate the possible source of infections by analysing the HIV-positive specimens. HIV comes in different sub-types, which have different geographic distributions. Two of the HIV positive specimens in the Dili survey were found to be sub-type G, which is common mostly in West Africa. The other two were sub-type C, which is common in Africa but which also circulates on the Indian sub-continent. The subtypes were consistent with the partnerships reported by the respondents infected.

Despite the fact that high proportions of the military and taxi drivers report unprotected sex with sex workers, no infections were recorded in those groups. It is not possible to say with any certainty from a relatively small cross-sectional survey exactly how HIV is spreading in East Timor. But the survey results strongly suggest that infections acquired by sex workers in sex with foreign partners are not yet being widely passed on into the local population.

The dissemination of this information to a wide public must be handled with care. Around 40 percent of all the soldiers, taxi drivers and sex workers who had heard of HIV and AIDS said they believed they could prevent it by avoiding sex with foreigners. These data suggest that a few years ago, that may well have been a good strategy. But now HIV is taking hold in East Timorese populations, and will be passed on within those populations. It is a sobering thought that the four East Timorese individuals who tested positive for HIV in this survey between them had sex with 26 different East Timorese individuals in the month before they were interviewed. This illustrates the risk for ongoing infection, but also raises the potential importance of providing individuals at high risk with the opportunity to learn their STI and HIV status. Strong counselling for people at highest risk can help people to encourage their sex partners to protect themselves and seek appropriate treatment if necessary.

Inevitably, unless successful prevention efforts are increased, HIV will soon begin to circulate more widely among those who have never had any direct contact with foreigners. It is important to note that all of those who tested positive for HIV reported recent, unprotected sex with a client or local partner, and all were co-infected with HSV-2, which can greatly increase the likelihood of HIV transmission. In addition, all except one tested positive for gonorrhoea, chlamydia or syphilis.

Since the survey was anonymous, it is not possible to track down individuals for prevention and care efforts. But it is clear that greater efforts in STI screening and treatment and promotion of safe behaviour are needed for all people with current risk behaviour.

With all this risk, why has HIV not exploded?

Given the levels of risk behaviour reported by the populations in the survey, it may seem surprising that HIV is still relatively contained in these populations. One factor which may help explain this in part is the frequency of risk. Although high proportions of men in these groups say they buy sex from sex workers, they do not do so very often. Those who do buy sex do so on average some four times a year, which is relatively infrequent compared with other countries.

Once again, the male groups were chosen because they were likely to have high levels of risk. It is certain that the proportion of men in the overall population who ever buy sex is far, far lower. A small proportion of the male population buying sex coupled with low frequency among those who do buy sex means that demand for commercial sex is relatively low. This is reflected in the number of clients reported by sex workers—far lower than in other countries in the region.

Low demand leads to low supply: although there are not many sex workers in Dili, they report low numbers of clients compared with other Asian countries

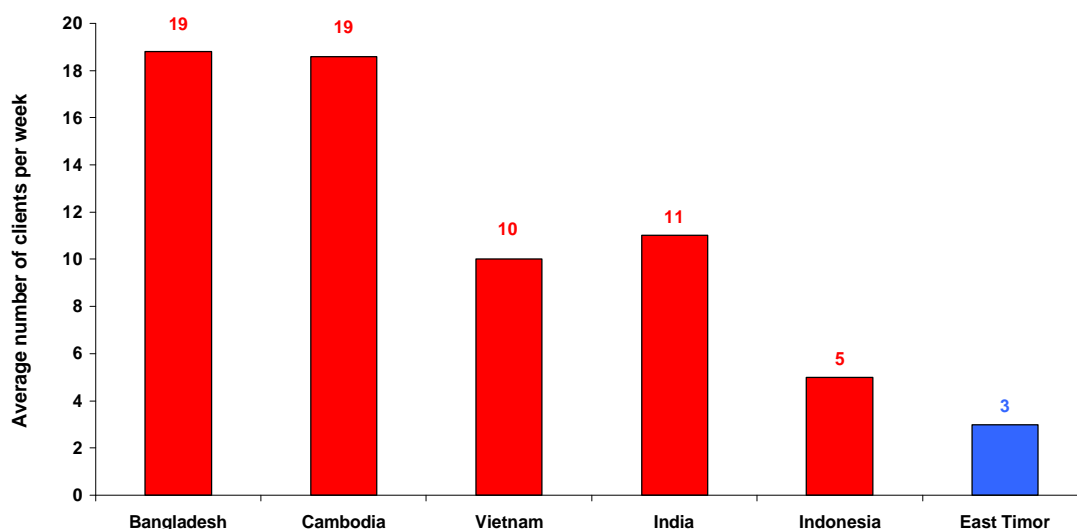


Figure 13: Average number of clients per week reported by sex workers in various Asian countries

The lower the number of clients, the lower the chance of passing on HIV, not just because there will be fewer people exposed to the virus, but also because the amount of vaginal trauma and STIs which facilitate HIV transmission is likely to be lower. Low turnover also presents an opportunity to reduce the prevalence of other STIs through regular screening and treatment—something which is difficult to do if newly-infected men go to several sex workers in a short space of time.

Keeping HIV prevalence low: the importance of targeted STI treatment

Because other STIs can facilitate HIV transmission, controlling other STIs can make an important contribution to limiting the spread of HIV. There are several important decisions to make in choosing an appropriate STI control strategy. The first is to consider how to allocate resources—will it be more effective to train people who provide services to a large proportion of the overall population, or to concentrate efforts on specialised services for those at highest risk? The second is to weigh up the costs and benefits of waiting for cases to present themselves, versus actively seeking out those at risk for infection. The third is to choose an appropriate screening and treatment strategy—should all those at high risk be treated presumptively, should they be treated on the basis of reported and observed symptoms, or it is worth performing simple laboratory tests to catch asymptomatic infections?

The data in the survey can help inform some of these choices. Firstly, the overall prevalence figures suggest that even among “high risk” heterosexual men, STI infections are relatively rare. Among men in the general population, and especially among women, they are likely to be much rarer. Training large numbers of health workers dealing with general population groups to screen for and treat STIs may be considered important in the context of “equity”. Women with reproductive tract infections that are not necessarily sexually transmitted (such as candidiasis and bacterial vaginosis) may be in need of care nation-wide. But in terms of reducing STI infections that are likely to facilitate the spread of HIV, providing training in syndromic management for workers at rural health centres is not likely to be an effective strategy. And it may not be the most efficient use of training resources, since most people who have been trained will rarely if ever see a case of STI. The question of passive treatment versus active screening is determined in large part by symptom recognition and treatment seeking behaviour. The survey data do not allow us to compare information on current symptoms and current infection, because respondents were asked whether they had experienced specific symptoms (vaginal, urethral and anal discharge, genital ulcers, pain on urination) in the 12 months prior to the survey. Among women, many symptoms may be asymptomatic. But at the very least, we would expect most men who have laboratory evidence of a curable STI at the time of the survey to report symptoms.

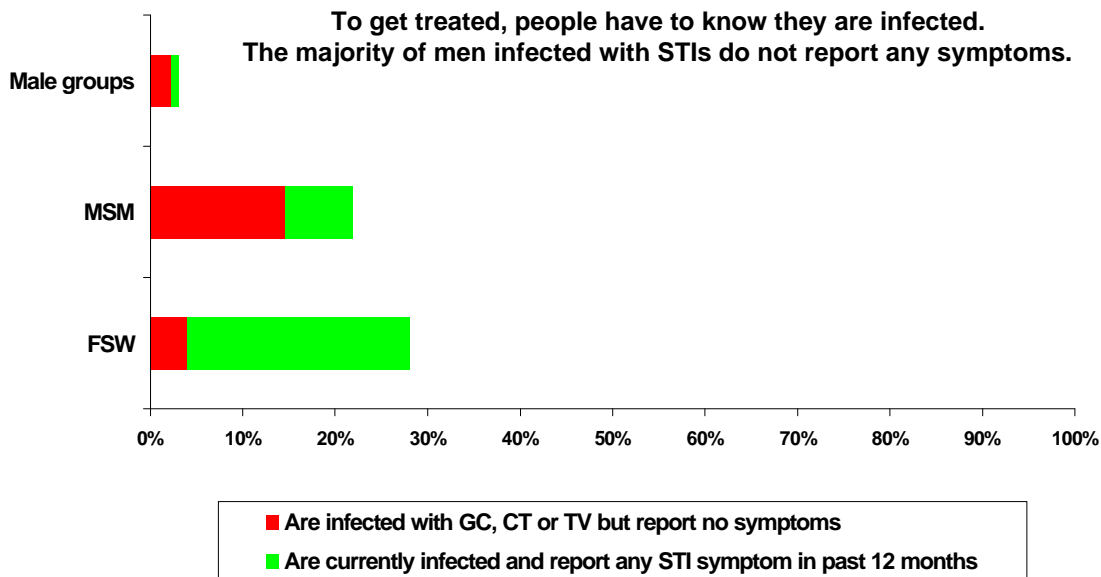


Figure 14: Percent of respondents currently infected with STIs, and % reporting symptoms of an STI in the last 12 months

As Figure 14 shows, most women who are currently infected do report symptoms at some time in the last year. Most men, however, do not, even though STIs among men are more likely to be symptomatic than STIs among women. And if men do not recognise any symptoms of STIs, they are not likely to go for treatment. For the heterosexual groups it is likely that those who test positive for STIs do so precisely because they have not recognised any symptoms and therefore have not been treated and cured. But in the case of MSM, most of the infections are actually rectal infections, so the likelihood of having symptoms—let alone recognising them—is low.

It is tempting to conclude from the evidence of Figure 14 that a passive approach to STI control would actually work better for high risk women than for men. But a closer look at the data contradict this assumption. For passive control to work, it is not enough for people to know that they have a discharge or an ulcer. They also have to recognise that those symptoms are not normal, and they have to seek out appropriate treatment. The survey asked all those who reported specific symptoms in the last year what they did about it when they experienced those symptoms. Their responses are shown in Figure 15.

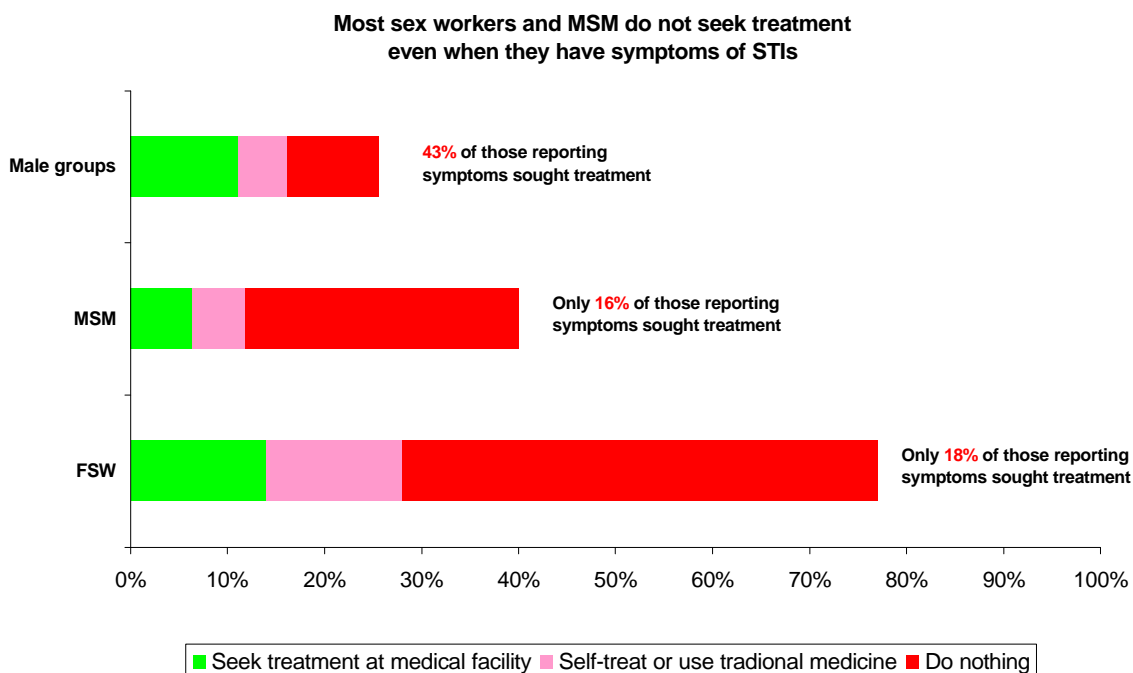


Figure 15: Percent of all respondents who reported STI symptoms, according to if they sought treatment

Suddenly, the picture looks very different. While sex workers are far more likely than the heterosexual male groups to report symptoms of STIs, they are far less likely to do anything about it. This may be in part because they experience a symptom such as discharge so frequently that they do not think of it as unusual or needing care. It may also be because sex workers are reluctant to go to medical facilities, fearing that they will be stigmatised or treated badly. MSM, too, rarely sought medical treatment even when they experienced symptoms of STIs, perhaps also because they are not aware of services which will treat them well and meet their needs.

Because the survey referred people who reported symptoms for free screening and treatment at Clinic Café Timor, it is possible to estimate the demand for STI screening and treatment services among high risk groups if such services were routinely available. Interestingly, as Figure 16 shows, MSM were most likely to present for treatment if they were referred, although the relatively low percentage who were referred reflects the limitations of using self-reported symptoms as a basis for recommending a visit to the clinic. Sex workers were less likely to go to the clinic for a check-up, perhaps in part because all of them received free treatment for common STIs when they came to the data collection point for participation in the survey. Nonetheless, close to half of the sex workers who were referred for screening and treatment actually made the journey to CCT to seek out these free services. That compares with only 16 percent who had ever previously had a check-up for STIs.

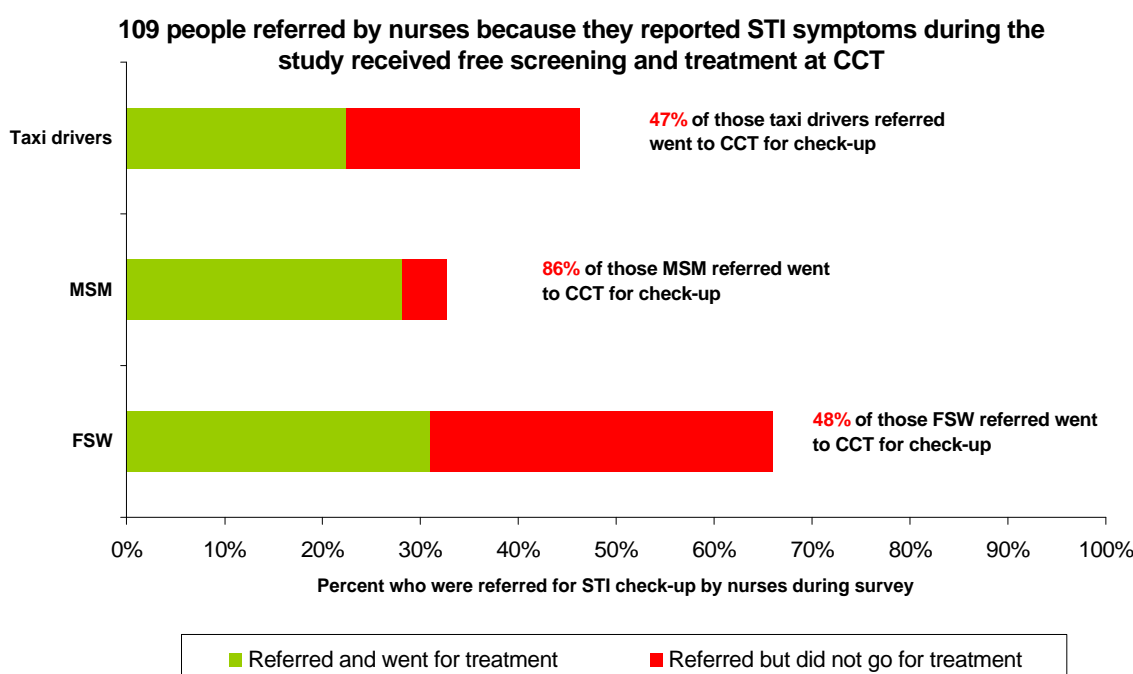


Figure 16: Percent of respondents referred to Clinic Café Timor for treatment, and percent who presented for treatment

In other words, these data suggest that if appropriate services are made available and accessible to populations at risk for HIV, they will be used. This is even more likely to be the case if there is ongoing outreach in these groups to encourage regular screening and treatment.

Cutting down the need for STI treatment: increased condom use is the key

Obviously, if more people used condoms in sex with a non-monogamous partner, there would be fewer STIs to worry about. We have seen in Figure 5 and elsewhere that condom use is very rare in East Timor, even in the highest risk sexual encounters such as commercial sex between men and women, and anal sex between men.

There are several theories about how to motivate people to use condoms. But whichever theory you base your behaviour change programmes on, a few basic criteria must be fulfilled. First peo-

ple have to know that condoms exist and what they are used for. Then they must know how to use them. Then condoms must be available. These things must be in place before one can even begin to tackle the harder issue of ensuring that people actually use them correctly and consistently in all non-marital sex.

Looking at the data in Figure 17, it seems as if these basic criteria are a long way from being fulfilled in Dili. During the research, all sex workers and MSM were shown a condom and asked if they knew what it was. Some 95% of MSM correctly identified a condom, but among sex workers—the group currently most affected by HIV and STIs—40 percent did not even recognise a condom when they were shown one. And most of those who did recognise a condom did not know what it was for. Almost eight out of 10 sex workers interviewed in Dili had no idea that a condom can prevent HIV and STIs.

Forty percent of sex workers don't even recognise a condom, and 8 out of 10 don't know they prevent HIV

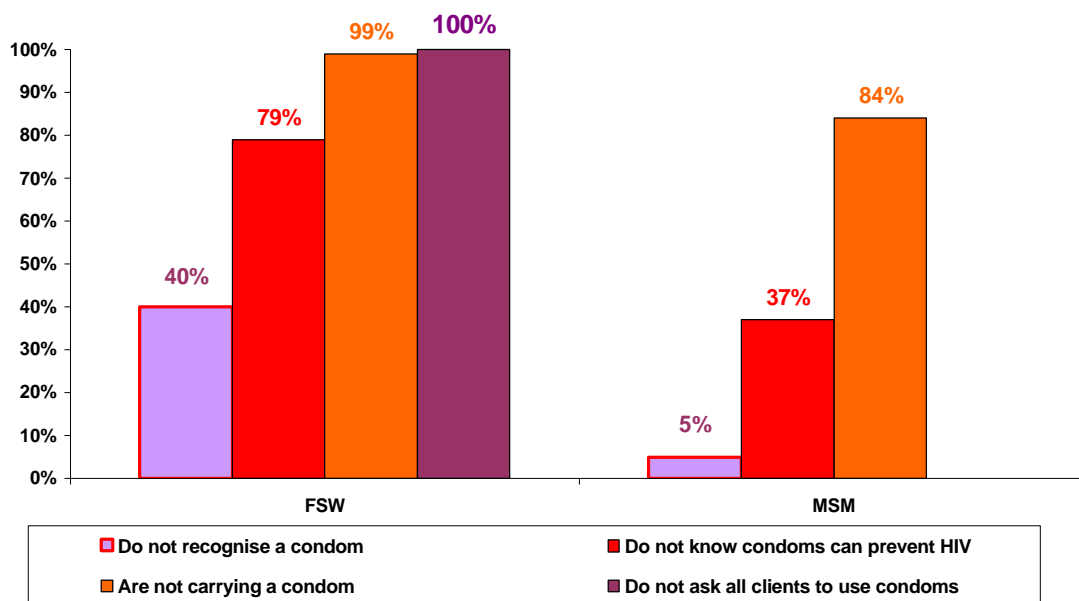


Figure 17: Condom recognition, knowledge, possession and negotiation among FSW and MSM in Dili

What's more, although most sex workers were recruited at their place of work and taken directly to the data collection point, only one was actually carrying a condom and could show it to the interviewer. This compared with 16 % of MSM. Sex workers are not carrying condoms themselves, but neither do they have high expectations of their clients. Not one of the sex workers said she asked all of her local clients to use condoms.

Given the very low levels of knowledge, it is tempting to assume that knowledge is the key: in other words to assume that if everybody at risk knew that condoms prevent HIV, then everybody would use condoms in non-marital sex. Of course if things were that simple, there would not be 50 million people throughout the world infected with this preventable virus. As Figure 18 shows, sex workers who know that condoms prevent HIV are more likely to use them. But among clients there is no significant difference in condom use between those who know that condoms prevent HIV and those who don't know—more than seven out of 10 clients who have the knowledge to protect themselves with condom use are not doing so.

Knowledge alone is not enough! People who know that condoms prevent HIV are more likely to use them, but lots of people don't use them even if they have the knowledge

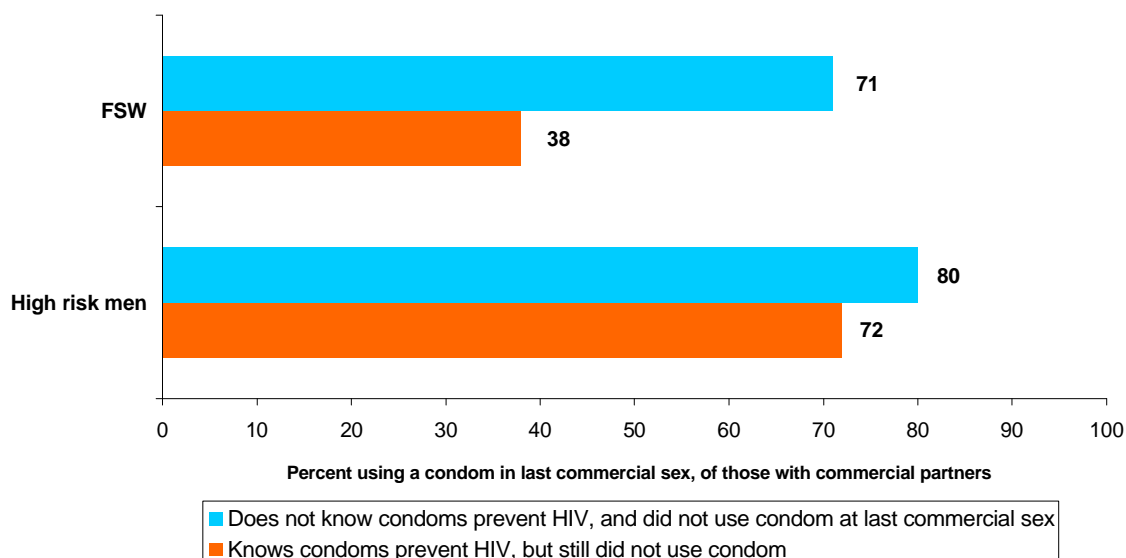


Figure 18: Condom use in commercial sex among those who do and don't know that condoms prevent HIV

As mentioned earlier, people have to know what condoms are, what they are used for, and how to use them. But they also have to have access to them. Most of those who did not use a condom at last commercial sex gave just one reason why—condoms are simply not available.

People can't use condoms if condoms are not easily available!

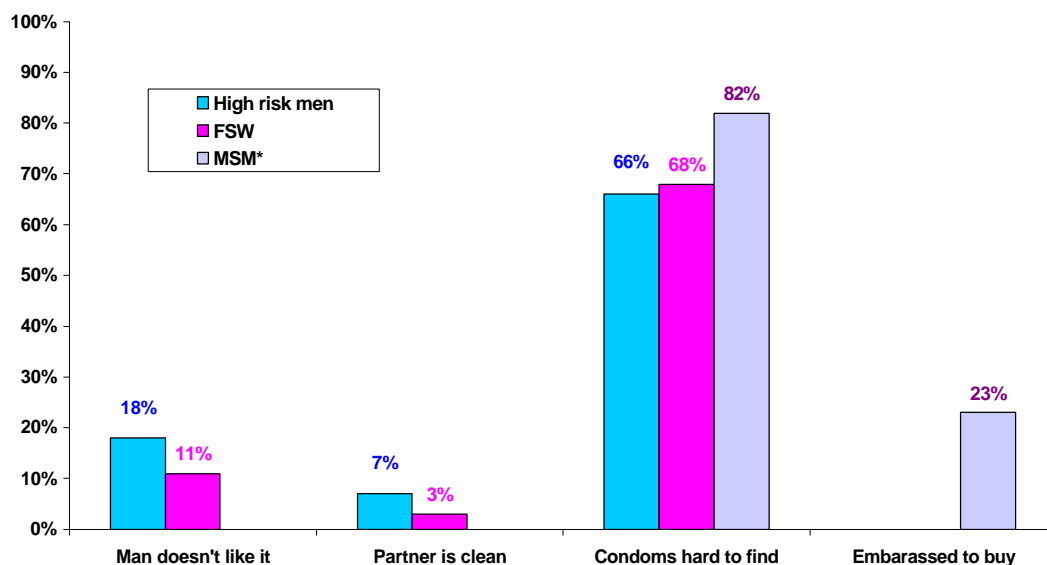


Figure 19: Percent giving various reasons for not using condoms among those not using condoms at last commercial sex (*MSM: among those who mention barriers to condom use)

There has been much debate in East Timor about widespread distribution of condoms. The survey data do not indicate the need for widespread distribution of condoms throughout the general population. They do, however, argue for much stronger efforts to make condoms available to the men and women who are having non-marital sex, either by choice or by profession.

Condom availability is a critical first step, but alone it is not enough. Men and women both have to be taught how to use condoms correctly, and women need to be taught how to negotiate their use. This may be particularly important in a context where risky sex often goes hand in hand with alcohol. Men who go out and get drunk with their friends before going to buy sex may be

unlikely to think about using a condom, but on the positive side of the equation, they may also be less likely to resist if a sex worker proposes and negotiated condom use, especially if female condoms are used when male condoms are refused. It is interesting to note that taxi drivers who reported being drunk in the last year were twice as likely to report unprotected commercial sex as those who had not been drunk—52 percent compared with 26 percent.

Can prevention programmes make a difference in high risk groups?

To reduce their risk behaviour, people need knowledge about safe behaviour, as well as the means to act on that knowledge. In the case of risky sex they need to know that unprotected sex with a non-monogamous partner carries a risk for HIV and STIs, they need to be able to choose not to have risky sex, or to protect themselves and their partners with condoms. If they choose condoms, they need to be able to get hold of the condoms easily and affordably, and they need to know how to use them correctly. In the case of women, who cannot themselves use commonly available latex condoms which are made for men, they have to have the skills to persuade their partner to use a condom. All of these things—knowledge, commodities and negotiating skills, are things that are addressed in comprehensive HIV prevention programmes for high risk groups.

The government and non-government organisations in East Timor have for some time been concerned about HIV, and some HIV prevention efforts have been made. It is difficult to measure the impact of the efforts directly. However evidence that prevention efforts can be effective can be found by comparing risk behaviour in those who have and have not participated in HIV prevention programmes.

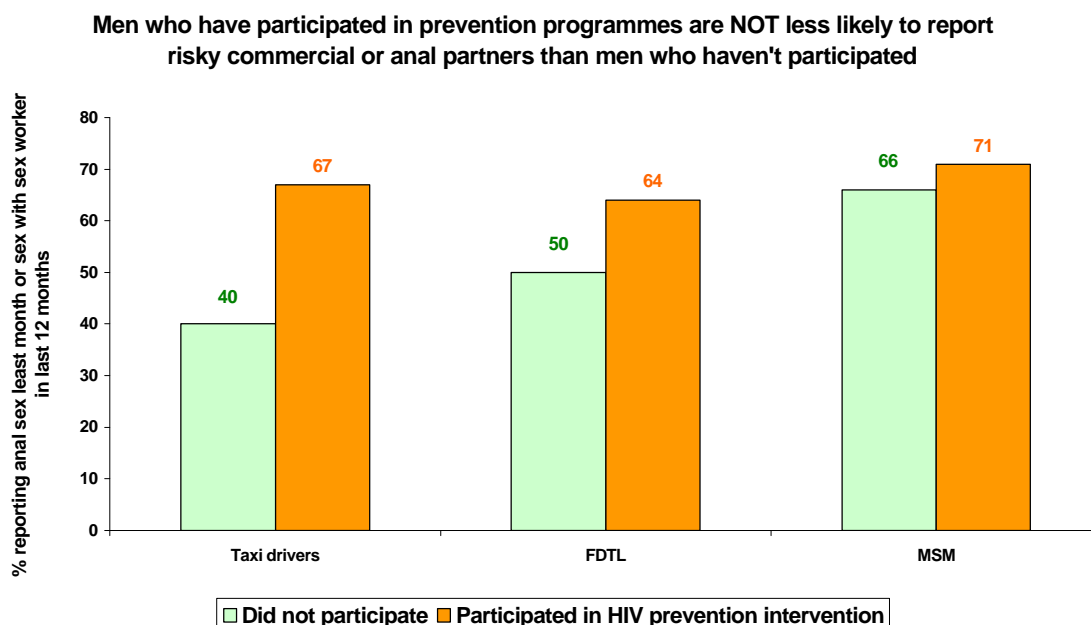


Figure 20: Percent of male respondents reporting commercial sex in the last year (Taxi driver and FDTL) or anal sex in the last month (MSM)

Figure 20 compares the proportion of men reporting risky sexual partners between those who have participated in interventions and those who have not. Contrary to initial expectations, men who have participated in HIV prevention programmes are actually **more** likely than men who have not participated to report sex with a commercial or anal partner. This does not, however, mean that HIV prevention programmes encourage risky sex. It is more likely to mean that HIV prevention programmes, such as they are, are doing a good job of reaching those at highest risk for HIV. If that is the case, we would hope to see that those participating in HIV prevention programmes are more likely to use a condom than those who don't participate. And as Figure 21 shows, that is indeed the case for most groups. (For FDTL there was not statistically significant difference in behaviour between those who participated and those who didn't.)

But in most groups they ARE more likely to use condoms with those partners

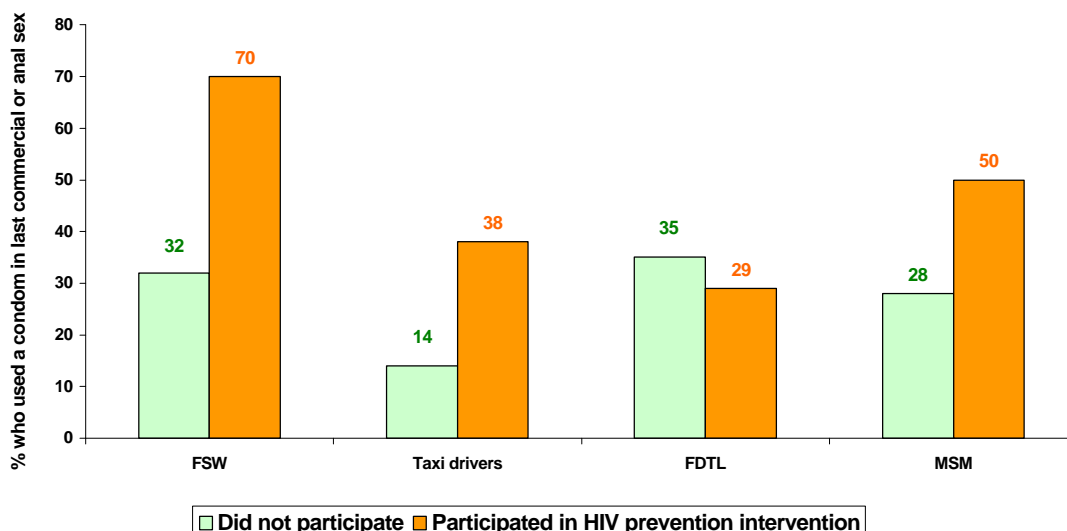


Figure 21: Percent using a condom in last commercial or anal sex, according to whether or not they had participated in an HIV prevention intervention in the 12 months before the survey.

This suggests that HIV prevention activities can be effective in lowering the risk of STI and HIV transmission for those who choose to engage in non-marital sex. And of course it means that the risk that their regular or marital partners will get infected with an STI or with HIV is also reduced. If this is the case, why is there still so much risky sex? Figure 22 provides part of the answer. While prevention programmes can reduce risk behaviour, those programmes are, for the moment, only reaching a very small fraction of those most at risk for STIs. Only one sex worker in 10 said she had ever received any information or skills training related to HIV, while among taxi drivers access to prevention services was even lower.

We have an impact on the people we reach,
but we are not reaching enough people

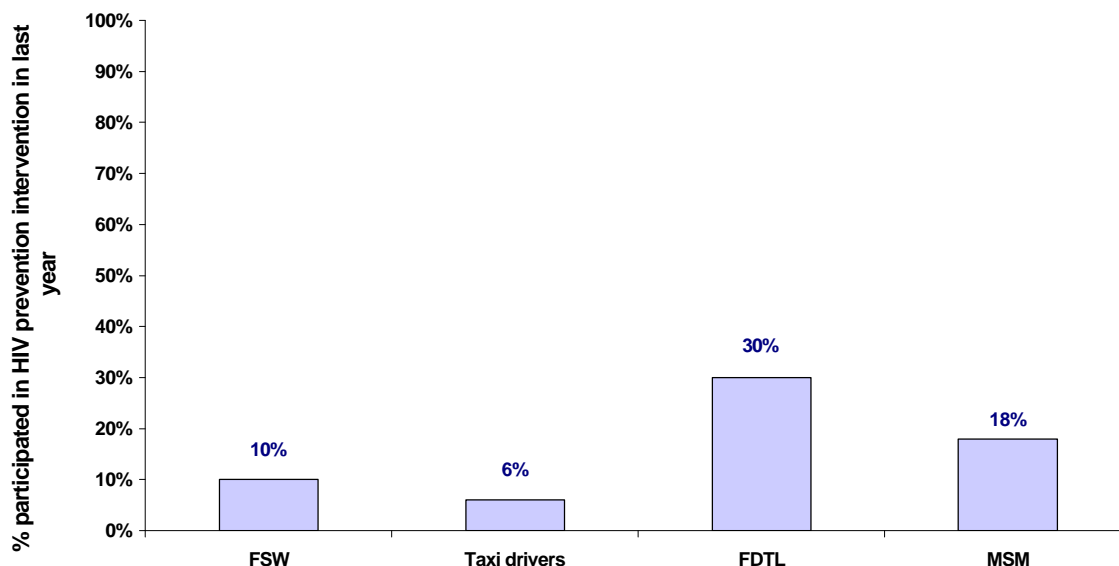


Figure 22: Percent of respondents who report participating in any HIV prevention activities in the 12 months before the survey.

It is clear that prevention programmes must be increased in order to reach a higher proportion of those most at risk. Since the population of sex workers is relatively limited in Dili (and is likely to be more limited still in other cities such as Maliana and Suai), active outreach activities linked to prevention services should be able to achieve high coverage relatively quickly. Extending the reach of prevention services for MSM should also rely on outreach, using the relatively strong social networks in the MSM community to increase access to information, condoms and lubricant, and referral to appropriate STI services for all community members. The biggest problem in terms of coverage of high risk groups is reaching clients. Only a minority of men are clients of sex workers; some of them will be concentrated in occupational groups of men who are unmarried or far from their families and who have ready access to cash, and these men may be reached in their workplaces. But others do not fall into clear occupational groupings. Because of this, programmes that aim to reach clients often use the media.

Use of the media to promote awareness of HIV and STIs, and in particular to promote condom use and other safe behaviours in those who choose to have sex outside marriage, is often initially considered controversial. This is in part because people assume that anything that appears in the media will immediately be seen by grandparents, children and many others to whom such information is not appropriate. In fact, the media are usually highly segmented. As all advertisers know, certain TV programmes, radio stations or magazines are designed for certain audiences. Advertisers of beer or cigarettes choose their media to reach a certain audience, so why not advertisers of safe sex? Media campaigns targeted at young, sexually active men who may be engaging in or considering high risk activities can be placed in media which target those same men—football or sports magazines, rock radio stations, during late-night programmes on TV, for example.

Given the reluctance to promote condoms through the media in East Timor, it was surprising that fully 86 percent of men in the survey reported having seen advertisements promoting condoms, and 61 percent identified STI and HIV prevention as a message in those advertisements. The survey team interprets this as reflecting the widespread reach of Indonesian and other foreign media in East Timor. Certainly, it reflects a far higher reach than specific HIV prevention campaigns run by NGOs or government agencies, which covered only 19 percent of men in the survey.

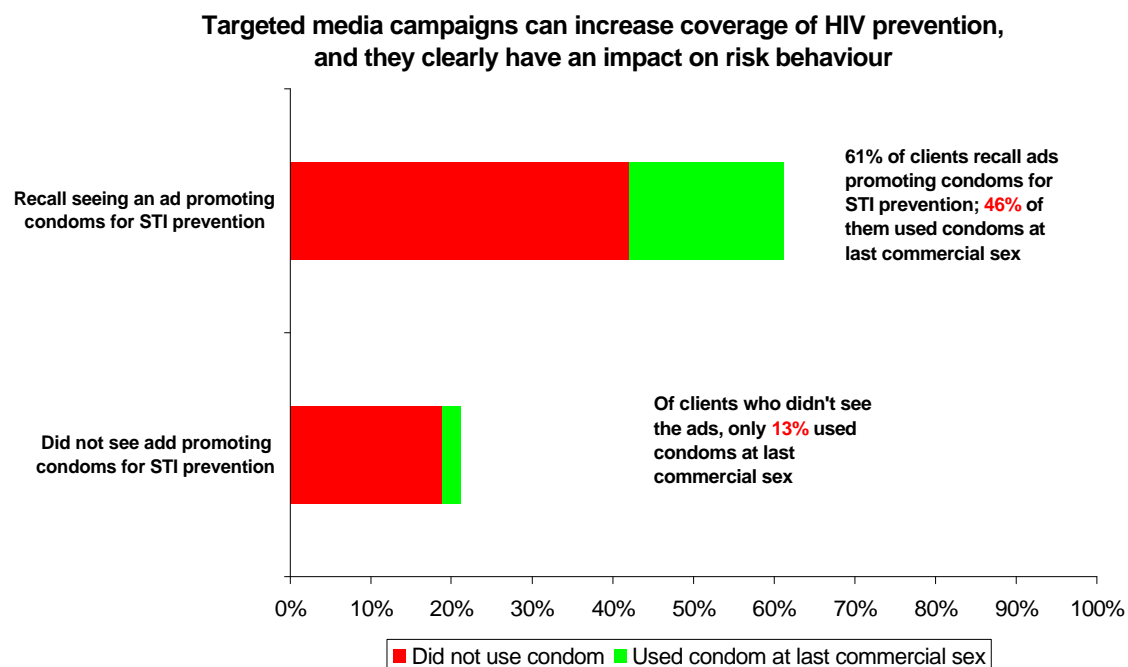


Figure 23: Percent of men who used condoms at last commercial sex, according to whether or not they had seen advertisements promoting condoms for STI prevention.

Encouragingly, those men who recalled seeing advertisements promoting condoms as a means of preventing STIs were far more likely to use a condom in commercial sex than men who had not seen such advertisements, as Figure 23 shows. This provides evidence that the use of media targeted at young men in the groups likely to be engaging in risky sex can be an effective way of reaching a high proportion of those at risk with essential information.

Demand for other prevention services: higher than expected

Although the survey was anonymous, participants could use their survey number to get the results of their HIV and syphilis/yaws tests, and to get treatment for syphilis if necessary. Participants who were referred to Clinic Café Timor because they reported symptoms could also get a free check-up and get treated for other STIs as needed. We have already seen in Figure 16 that quite high proportions of those referred for screening and treatment actually sought out those services. Figure 24 shows the proportions who picked up their survey results, and who received individual counselling about HIV and risk reduction.

Soldiers were most likely of all groups to come back for their results. This may be in part linked to convenience—counselling for soldiers was provided by an external counsellor not in any way linked to the military or any East Timorese health service, but it was made available at the health centre of the Metinaro barracks. “Peer pressure” (in its most positive sense) may also have played a part. Men were invited to come with groups of their friends to receive basic information about HIV, STIs and risk before the individual counselling took place, and word spread around the barracks that these sessions were open and informative, and that questions and discussion were welcomed.

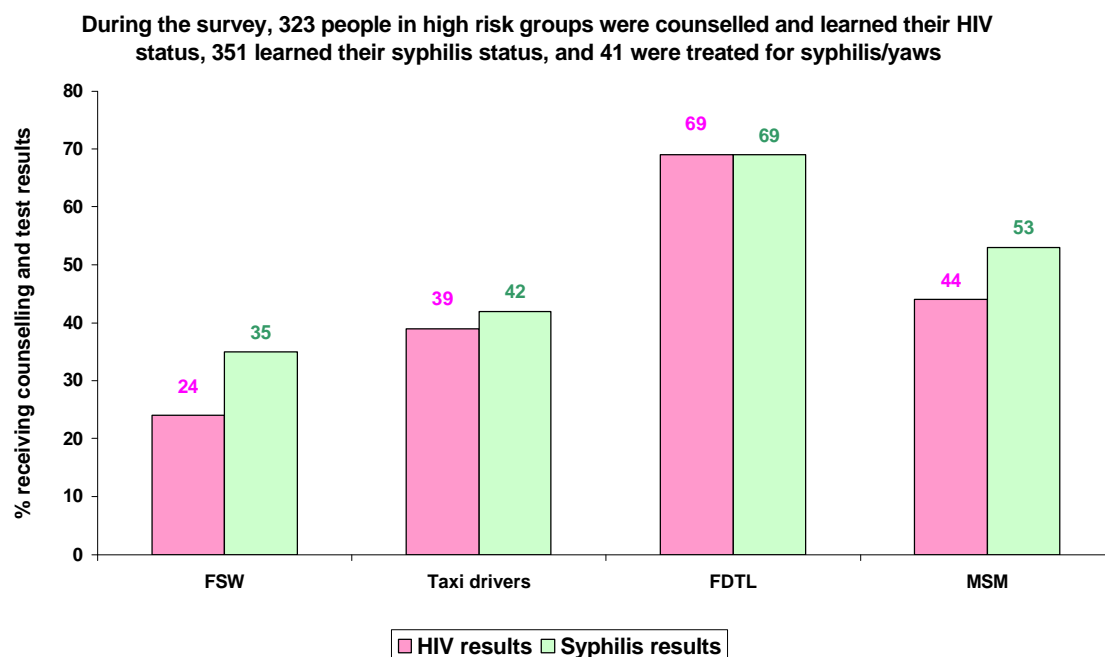


Figure 24: Percent of respondents who used their anonymous survey number to pick up their survey results.

Among other groups, return rates were significantly lower, but they were still substantially higher than is common in this type of survey. As a point of comparison, in a similar survey among MSM in Jakarta, Indonesia in 2002, only a third of respondents picked up their test results, compared with around half in Dili.

More people picked up syphilis results than HIV results. This is because syphilis results were provided six days a week at Clinic Café Timor—a well know health service which was consistently staffed. HIV results were available at Clinic Café Timor only on Saturday mornings. From Monday to Friday, respondents had to go to the Voluntary Confidential Counselling and Testing service at Dili national hospital to get HIV results. At the time of the survey, this service was

located in a very public location next to the hospital polyclinic, and its staff were often called way to do general duties at the polyclinic. The combination of erratic staffing and a perception of poor confidentiality probably reduced respondent's willingness to access their HIV test results at this service. These issues should be considered in planning the future of counselling and HIV testing services in East Timor.

The future of the HIV epidemic in East Timor: lessons from the STI survey

A single, cross-sectional survey cannot reliably be used to predict the future. However, the survey can allow us to make informed guesses about what it likely to happen, and can give strong indications of what must be done in order to influence what happens. All of these issues have been raised in this report—the lessons to be learned are summarised here.

Lesson 1: HIV and risk behaviour both exist in East Timor

In the early stages of an HIV epidemic, political, religious and community leaders in almost every country have found it easiest to ignore the threat of HIV, and sometimes even actively to deny that the sexual and drug-taking behaviours that spread it exist. Our country is different, our culture is different, our people are moral, if there is any risky behaviour it must be “imported” from somewhere else—these are the refrains which have accompanied the early stages of an HIV epidemic on all continents. They were heard in Zimbabwe, where a quarter of all adults are now infected with HIV. They were heard in the United States, where the epidemic is growing fastest among young, single women. They were heard in India, which now has the second largest number of HIV infections on earth, and in Russia, where the virus is spreading at an alarming rate. And they have been heard in East Timor, where infections have now appeared among sex workers and MSM.

On the evidence of the Dili STI survey, it is no longer possible to believe that East Timor is somehow free of risk or immune to HIV. A high proportion of men in some parts of society, and particularly young, unmarried men, routinely have sex outside of marriage, sometimes with girlfriends or mistresses, but usually with sex workers. The virus is already present among these sex partners.

Unless condom use rises in these high risk encounters, HIV will inevitably continue to spread

Lesson 2: Sex between men and women is not the only risk

Until now, attention has tended to focus on the threat of a heterosexually driven epidemic in East Timor. The survey has recorded high levels of unprotected anal sex between men, including among populations such as students, taxi driver and the military who were included on the assumption that they might have high levels of heterosexual risk.

Importantly, very high proportions of those who report any anal sex with males also report sex with females, so they form a natural “bridge” across which HIV and other STIs can cross from a population of men considered at high risk to a population of women who may consider themselves to be at lower risk.

In addition, there is some evidence of injecting drug use. Across Asia, IDUs have acted as a “booster” for a much wider heterosexual epidemic. East Timor should anticipate a likely growth in injecting drug use and should begin now to consider policies and programmes that will limit the damage associated with drug injection if it does increase.

Lesson 3: For now, the virus is concentrated among people with defined risk behaviours. Prevention efforts must be concentrated there too

Risky vaginal and anal sex is common in some populations, but it is by no means the norm throughout society. Among university students, for example, only a quarter of men and a tiny

fraction of women report any sexual activity at all. Certainly, the HIV virus and other STIs remain concentrated largely in groups that practice risky sex. If behaviour within those groups is made safer very rapidly, then there is little chance that the virus will ever spread into the wider population in any substantial way.

East Timor has many competing needs in health and development. Trained staff, including medical staff, are in short supply. This means that it is critical to use resources efficiently, even when that means appearing not to be “equitable”.

A commonly-used metaphor for HIV in its early stages is a fire in one area of the city. If we were to take the “equitable” approach, we might give everybody in the city a bucket of water to protect their house from fire. But in fact, the welfare of everyone in the city would be better protected if we brought all the water together to create a fire break around the houses that are already burning, and to put the fire out there if possible. The survey data suggest that this metaphor applies to HIV prevention in East Timor right now. We do not need to provide HIV prevention services and STI treatment services equally throughout the country. We need to provide them quickly and comprehensively to the populations who are already infected or who are likely to have sex with those who are already infected. If we can put out the fire and create a fire break here, the need to invest scarce resources to provide services to those who have no immediate risk will be much more limited.

Lesson 4: Most people at risk have no access to the basic prevention services they need: information, condoms and STI treatment

The evidence of the STI survey is that those most at risk have limited access to information about HIV, STIs and prevention methods, and virtually no access to the single most important prevention tool for those at risk: condoms. In addition, the rather high levels of untreated cervical and rectal STIs suggest that STI screening and treatment services, where they are available, are not meeting the needs of those most at risk.

The survey provides evidence that individuals at high risk for STIs and HIV are keen to use appropriate, friendly services when they are made available. Thought must be given not just to the existence of these services, but to making them easily accessible to those most in need, through outreach services, confidentiality controls, and other methods.

Lesson 5: Prevention efforts have made some difference for individuals, but their reach has been too limited to make a difference to the epidemic as a whole

Survey respondents who report being reached by prevention programmes are more likely than others to use condoms when they engage in extramarital sex, thus reducing the risk of STI and HIV transmission for themselves as well as to their wives/husbands or other partners.

However existing prevention efforts have reached only a small fraction of survey respondents. East Timor is a late-comer to the HIV epidemic, and it is also a small country with relatively limited risk populations. East Timor does not need to go through the phase of “pilot projects” or “boutique interventions” that have cost so many other countries valuable time in preventing an epidemic. The government and their development partners can get straight on with the business of reaching a high proportion of those at risk with essential prevention services.

Lesson 6: Low prevalence equals high priority

Looking at the relatively low levels of HIV prevalence in East Timor, there is a temptation to put off any concerted action. Immunization, maternal mortality, nutrition, malaria—these are all issues directly affecting large numbers of women, children and men in East Timor. Many argue that they are more deserving of funding and attention.

Certainly, there are a number of other health and development priorities which demand the attention of the East Timorese government and its partners. Virtually all of them are endemic problems—they will continue to challenge the country for years to come. The difference with HIV is that it is epidemic. Right now, it is still contained among sub-populations of limited size. These

populations require prevention services which this survey has helped to identified clearly. The services needed are technically easy to deliver. If East Timor chooses to invest in providing these services to a high proportion of these specific sub-populations now, it can prevent the disaster that has afflicted so many other countries. A small amount of appropriate investment now will translate into a large problem averted in the future. Averting a widespread HIV epidemic now means less resources needed for HIV in the future, and that in turn means that East Timor will have more resources available to invest in the long term health and development of its people.

The opportunity is too important to miss.

Acknowledgements

The Dili STI survey team

Study Investigators

Elizabeth Pisani, FHI Asia

Carlos Tilman, Health Services Delivery, Ministry of Health

Angelina Asih, Communicable Disease Control Division, Ministry of Health

Manuel Mendonca, Director, Statistics Office, Ministry of Finance & Planning

Aang Sutrisna, ASA Project, FHI Indonesia

Heather Bull, FHI, East Timor

Graham Neilsen, FHI Asia

Study Coordinators

Hari Purnomo, FHI East Timor

Rodolfo Anunciacao, FHI East Timor

Myint Zaw, FHI East Timor

Supervisors

Ricardo des Santos, Statistics Office

Lelinha, Statistics Office

Florentina dos Santos, ETWAVE

Aguia Belo Ximenes, Timor Hari

Guido Oliveria, FDTL

Rui Caravalo, FHI East Timor

Specimen Takers

Luiza Barbosa dos Santos Pereira

Nicolau Marcal

Domingos Sebastiao Moreira

Abilio Inacio

Camelia Lemos Ximenes

Recruiters and Interviewers

Mario Antonio Gomes

Maria Angelina Pereira

Eusebio Gomes

Sonia da Costa

Fransisca Soares

Hermina Talue

Antonio Joaquim Santo

Alexandre de Sousa Guterres

Paulo Armindo de Vasconsalves

Elisio Antonio da Costa

Laboratory staff

Baltazar Lopez de Sena

Augusto Mendonca

Ossvaldo Jose Pereira

Felipi do Santos

Clinic and counselling staff

Santina Gomes

Samuel Ribeiro

Maria Filomena Viana do Carmo

Cerligio da Ressurecao

Astrid

The study team would like to thank the communities involved for their participation in the survey. We would also like to thank all of the staff and management at Clinic Café Timor for their support during the study. The WHO office in East Timor gave continuous input over the course of the study, for which we are grateful. Indonesia's Central Bureau of Statistics provided training for field staff and data entry, and we especially thank Dudy Sulaiman and Munawar for their energetic work in East Timor. Many thanks also Lala and the rest of the management of Poy Cholor and Sagres restaurants.

Outside of East Timor, the staff of the SEALS and Westmead laboratories in Sydney, especially Peter Taylor, Christina Baleriola and Dominic Dwyer, provided support with procurement as well as testing. Thanks to July Kumalawati and Ninik Sukartini at Cipto Mangunkusumo Hospital in Jakarta for rapid processing of Western Blot results, and to Uli Panjaitan and Jim Johnson of the ASA programme for constant logistical and back-up support. François Crabbé of the Institute of Tropical Medicine in Antwerp provided input into an early version of the study protocol. Thanks to Judith Glynn from the London School of Hygiene and Tropical Medicine for helpful comments on the protocol. Finally, thanks to Jimmy Whitworth and Gina Dalabetta for sound advice throughout.