

## Human immunodeficiency virus infection among patients with sexually transmitted diseases attending private clinics, Miri, Sarawak

Lye MS<sup>1</sup>, Kiyu A<sup>2</sup>, Nair RC<sup>3</sup>, Faizul M<sup>4</sup>, Yeo HP<sup>5</sup>, Chan TH<sup>6</sup>, Sim CK<sup>7</sup>, Low YH<sup>7</sup>, Chin F<sup>8</sup>, Sinniah M<sup>1</sup> and Archibald C<sup>9</sup> *Institute for Medical Research, Malaysia<sup>1</sup>; Sarawak Medical Department, Malaysia<sup>2</sup>; Department of Epidemiology and Community Medicine, Faculty of Medicine, University of Ottawa, Ontario, Canada<sup>3</sup>; Divisional Medical Office, Miri, Sarawak<sup>4</sup>; Yeo Clinic, Miri, Sarawak<sup>5</sup>; Chan Clinic, Miri, Sarawak<sup>6</sup>; Sim Clinic, Miri, Sarawak<sup>7</sup>; Chin Clinic, Miri, Sarawak<sup>8</sup>; Laboratory Center for Disease Control Services, Ottawa, Canada<sup>9</sup>*

### Abstract

A study was conducted to determine the feasibility of establishing a sentinel human immunodeficiency virus (HIV) surveillance system involving patients with sexually transmitted diseases attending private clinics in Miri, Sarawak, Malaysia. Information on risk behaviours for HIV infection were also collected. A total of 73 female and 254 male patients were interviewed and tested for HIV infection. 35.6 % of the women reported working as prostitutes. The commonest diagnosis among women was gonorrhoea (15.1%) followed by syphilis (12.3%). Other diagnoses included candidiasis (8.2%), genital warts (6.8%) and herpes genitalia (4.1%). 33 (45.2%) of the 73 women had a previous history of STD of whom 11 (63.3%) have had 2 episodes of infection or more. Only 5.8% of female patients had their male partners using condoms most of the time, 65.2% hardly used condoms at all. Two hundred and fifty two (99.2%) of the male patients were heterosexual, while 2 (0.8%) were bisexual. 70.8% had more than one sex partner during the past one year. One hundred and forty seven (57.9%) said that virtually all (>95% of the time) their sex partners were prostitutes. Most men (92.9%) had sex with prostitutes in Malaysia; 3.2% also have had sex with prostitutes in Thailand or the Philippines while only 2% had sex with prostitutes in other countries. One hundred and eighty six (73.2%) of the men never used condoms, while 12.2% used condoms rarely. Only 8 (3.1%) used condoms most of the time. Having many sex partners, no condom use and sex with prostitutes were significantly correlated with a previous history of STD infection. One or 0.3% of STD patients tested positive for HIV antibodies. The study has shown that it is feasible to carry out a sentinel surveillance programme among STD patients in private clinics and provided useful baseline data for future comparisons. Sentinel surveillance of STD patients combined with the on-going surveillance of other groups with high risk behaviour (such as intravenous drug abusers) as well as of the general population (such as through antenatal testing and blood donors) will provide much needed information in monitoring trends and for designing programmes to control the spread of HIV. The high prevalence of risk behaviours justifies increased efforts in behaviour change programmes through multiagency collaboration and aggressive education campaigns.

**Key words:** epidemiology, sexually transmitted diseases, human immunodeficiency virus, sentinel surveillance

### Introduction

HIV infection has been detected in Malaysia since 1986 and has increased rapidly in recent years. By the end of 1988, the cumulative total of known infected persons was 32, with this number increasing to 877 by the end of 1990, and to over 4,980 by end of 1992. By December 1995 a total of 14,418 infections and 331 cases were reported. As of 30 June 1996, a total of 16,349 HIV infections and 448 cases were reported (Ministry of Health Malaysia, 1996).

Of the HIV infected, 83.6% were between 20-39 years of age. 76.3% were intravenous drug users, 3% were infected through heterosexual sex, 0.2% were infected through blood transfusion (before mandatory screening of blood donors ie before 1987). Although the majority of HIV positives are intravenous drug users,

sexual transmission will likely become increasingly important in the near future, as has occurred in neighbouring Thailand and Singapore (Chew *et al.*, 1992). On a world-wide basis, sexual transmission is the most important route of HIV spread, accounting for more than 90% of all reported HIV transmission (WHO, 1991a).

For a prevention and control programme, sound data is required on the extent and pattern of spread of HIV within Malaysia's groups associated with high risk behaviour, in particular, patients with other sexually transmitted diseases (STD). Sexually transmitted diseases such as gonorrhoea and diseases associated with genital ulcerations have been shown to enhance the transmission of HIV (WHO, 1989). The magnitude of infection among patients with STD, however, is not known.

Many prostitutes with STD, for example, do not attend government STD clinics but prefer private practitioners, many of whom cater to a regular clientele of prostitutes. Hence there is a considerable under-reporting of STDs and HIV infections among this particular population. In many instances, unless requested by the patient, private practitioners do not screen for HIV.

This study was conducted to determine the magnitude of the problem of HIV infection among STD patients through a sentinel surveillance mechanism in Miri, one of the 9 divisions of Sarawak, the largest state in Malaysia in terms of area. The other purpose of the study was to describe the profile of risk behaviour among these patients.

### Methods

The study population was recruited from four private clinics in Miri. Patients eligible for inclusion in the pilot study were men and women presenting during the surveillance period with concerns related to an STD over a period of 1 year. Patients who visited the clinic more than once during the study period were not eligible at those subsequent visits (the same person would not enter the study twice). Eligible patients could present themselves at the clinic with either a new STD problem, for follow up of an on-going STD problem, for an STD checkup (a routine examination) or to specifically request an HIV test. Patients who presented themselves at the clinic for reasons not related to an STD were excluded. Patient eligibility was determined by the clinic doctor.

A short schedule for eligible patients was completed by the doctor to capture information on demographic variables and selected risk behaviours. Blood samples were drawn using the following protocol: informed consent was obtained from the patient for linked testing. Each blood specimen was coded with a study number, and only the clinic doctor could match results to a particular patient. The samples were tested for HIV antibodies using the ELISA technique at the Miri Hospital, and all positives were confirmed at the Institute for Medical Research, Kuala Lumpur.

The data was analyzed with EPI-Info statistical package to determine the relationship between some demographic variables (age, ethnicity, occupation) and risk behaviours such as the number of different sex partners, condom use, previous STD history and sex with foreigners by computing the odds ratios, their confidence intervals and p-values for testing the significance of the odds ratios. The SPSS PC Package (Norusis, 1990) was used to perform logistic regression to test multiple variables simultaneously.

### Results

A total of 73 female and 254 male patients who attended the four clinics were interviewed and 252 male

and 71 female patients were tested for HIV infection. Among the 73 females 49 (67.1%) were between 20-34 years of age, while 5 (6.8%) were below 20 years of age. Of the female patients 62 (84.9%) were Malaysians, and their ethnic distribution was 33.8% Chinese, 26.8% Malays, 15.5% Iban and 23.9% other races. Twenty six (35.6%) of the women gave their occupations as prostitutes.

Among female patients, 14 (19.2%) visited the doctor for an STD checkup (a regular douching and routine examination), 5 (6.8%) for an STD follow-up (treated before by the doctor, and returned on the day of interview for follow-up treatment), and 39 (53.4%) went for a new STD problem. Fifteen (20.6%) requested an HIV test.

The commonest diagnosis among women was gonorrhoea (15.1%) followed by syphilis (12.3%). Other diagnoses included candidiasis (8.2%), genital warts (6.8%) and herpes genitalia (4.1%). Of the 73 women 33 (45.2%) had a previous history of STD of whom 11 (63.3%) have had 2 episodes of infection or more; 34 (46.6%) had 2 or more sex partners during the previous month; 20 (27.4%) of these women had 6 or more sex partners. Only 4 (5.8%) of female patients had their male partners using condoms most of the time; 65.2% of the women had male partners who rarely used condoms at all. None of the female patients admitted to intravenous drug use; 5 (6.8%) had a blood transfusion between 1978-1986. (Screening of donor blood commenced in 1987).

Odds ratios from stepwise logistic regression showed that women who have had a previous history of STD infection were now almost 4 times more likely to use condoms than those who never had any previous STD infections. (Table 1) Age and having multiple sex partners were not significantly associated with condom use at the 0.05 level.

Among the female prostitutes, 15.4% were 19 years of age or below; 80.8% were below 30 years of age; 23 (88.5%) had more than 2 partners during the previ-

Table 1. Relationship of condom use with other risk factors.

Risk Factor	Males OR (95% C.I.)	Females OR (95% C.I.)
Age ( $\geq 25$ yrs)	0.76 (0.53-1.10)	1.34 (0.65-2.73)
Multiple sex partners	0.34 (0.20-0.59)*	0.36 (0.12-1.12)
Ethnicity		
Iban	0.08 (0.01-0.76)*	13.64 (1.13-164.94)*
Malay	0.40 (0.11-1.40)	0.40 (0.06-2.96)
Chinese	0.99 (0.42-2.32)	14.29 (1.30-156.46)*
Prior history of STD	0.57 (0.37-0.86)*	3.72 (1.42-9.70)*

\*  $P = < 0.05$

ous month; 57.6% had 6 partners or more; 15.4% of the women had foreigners as sex partners; 69.2% had a previous history of STD and 44.0% had partners who hardly used condoms.

Two hundred and forty four (96.1%) of the 254 male patients were Malaysians; 45.2% were below 30 years of age, and about 4% were 19 years or below; 57.5% visited the clinics for a new STD problem, 8.3% for an STD followup, 20.1% for a routine checkup, and 14.2% went specifically for a HIV test.

The most commonly diagnosed condition was gonorrhoea (34.3%) followed by non-specific urethritis (19.7%) and genital warts (5.9%). Other diagnoses included herpes genitalia, balanitis, syphilis, genital ulcers, chancroid and candidiasis. One hundred and ninety seven (77.6%) of the male patients have had a previous history of STD; 64% have had more than one previous episode.

Two hundred and fifty two (99.2%) of the male patients were heterosexual, while 2 (0.8%) were bisexual; 70.8% had more than one sex partner during the past one year; 11.1% had more than 6 partners. One hundred and forty seven (57.9%) said that virtually all (>95% of the time) their sex partners were prostitutes. Most men (92.9%) had sex with prostitutes in Malaysia; 3.2% also have had sex with prostitutes in Thailand or the Philippines while only 2% had sex with prostitutes in other countries.

One hundred and eighty six (73.2%) of the men never used condoms, while 12.2% used condoms rarely. Only 8 (3.1%) used condoms most of the time. Men who used condoms were less likely to have multiple partners, and less likely to have had a previous history of STD (Table 1). Having many sex partners, no condom use and sex with prostitutes were significantly correlated with a previous history of STD infection (Table 2).

**Table 2. Relationship of previous history of STD with other risk factors.**

Risk Factor	Males	Females
	OR (95% C.I.)	OR (95% C.I.)
Age ( $\geq$ 25 yrs)	1.40 (0.95-2.07)	1.15 (0.60-2.20)
Multiple partners	1.52 (1.02-2.58)*	0.99 (0.40-2.44)
Ethnicity		
Iban	2.41 (0.52-11.11)	4.46 (0.44-4.81)
Malay	6.29 (1.51-26.26)*	0.69 (0.13-3.78)
Chinese	1.93 (0.60-6.18)	5.60 (0.71-43.94)
Condom use ( $<$ 5% of the time)	1.82 (1.20-2.77)*	0.30 (0.13-0.72)*
Sex with prostitutes	2.18 (1.38-3.45)*	-

\*  $P = < 0.05$

One of the male patients admitted to I.V. drug use. Five (2.0%) of the male patients had blood transfusion between 1978-1986. One (0.4%) of the samples from male patients tested positive for HIV infection.

### Discussion

The results indicated a very high prevalence of risk behaviour for HIV infection among female and male STD patients. This was evident from the fact that among the male and female patients, a large proportion (70.8% and 46.6% respectively) have had more than 2 different sex partners in the previous year and month respectively.

The female commercial sex workers in the study population tended to have multiple sex partners, past history of sexually transmitted diseases, and had clients who tended not to use condoms. These factors have been known to contribute to HIV transmission, and hence there is a high potential for spread of HIV to Malaysia's prostitute community from HIV positive male partners, and from the prostitutes to other clients. The male patients in the study behaved similarly, and 12.5% had recurrent herpetic ulcers and other genital lesions which have been shown to facilitate the transmission of HIV (Greenblatt *et al.*, 1988).

The above results compare with those found earlier in a study of STD patients in Kuala Lumpur in 1990 (Lye *et al.*, 1994). Condom use was found to be minimal in both studies. The number of different partners for both men and women in Miri, however, were much less than those in the Kuala Lumpur study. In Miri, the proportion of patients who had partners as foreigners was less than in the Kuala Lumpur study.

The overall prevalence of HIV infection among STD patients in Miri is low (1/323 or 0.3%) compared with studies elsewhere. Zekeng *et al.* (1992) tested 1161 STD clinic attendees in Yaounde, Cameroon from 1989 to 1990 and found that 2.4% were positive. Garcia-Calleja *et al.* (1992) reported the rate to be 2.5%. Harry *et al.* (1993) in Borno state in Nigeria conducted a serosurvey for HIV infection in three well-separated population centres in 1989-1990. The seroprevalence was 1.67% among STD clinic attendees and 4.24% among prostitutes. Smith *et al.* (1992) in Denmark surveyed nine Danish clinics for venereal diseases and found 0.1% of heterosexual women and 0.2% heterosexual men to be HIV positive. The prevalence rate among female intravenous drug users was 5.3%. Among homo/bisexual men, 9.3% were positive. Stary *et al.* (1991) reported that none of the prostitutes in Vienna tested for HIV in 1989 were positive; registered prostitutes had very much lower incidence of other STDs such as gonorrhoea (0.3%) and *Chlamydia trachomatis* (2.2%) compared with unregistered prostitutes. Donovan *et al.* (1990) reported 26% HIV positives among STD patients between 1984 and 1988 in Sydney, Australia. 98.9% of

the seropositives had practiced male homosexual intercourse. Worm & Kvinesdal (1990) reported a 1% seropositive rate among STD patients attending the Copenhagen outpatient Venereal Disease clinic between 1987 and 1988. The authors recommended unlinked testing rather than testing with informed consent in order to reduce selection bias.

In this study, not all eligible patients entered into the study due to the heavy patient load in two of the clinics. Linked HIV tests had to be offered in the four clinics since blood samples were not drawn routinely from STD patients at these clinics, except possibly those who requested for HIV testing. The potential problem with linked testing is that certain patients may refuse testing, thereby biasing the results; this problem was minor in our study since few of the patients who were offered linked HIV testing refused. The fact that only the doctors treating the patient knew the results and not the researchers helped to reassure patients of the anonymity of the testing.

WHO recommends that sentinel surveillance be a continuing and not a "one off" activity so that HIV surveillance data can be obtained on a consistent basis over time and place (WHO, 1991b). This study has shown that it is feasible to carry out a surveillance programme for HIV infection among STD patients in Miri, Sarawak, Malaysia, many of whom will likely be female sex workers and male clients. It has also provided useful baseline data for further development of the sentinel surveillance system, and for future comparisons. Sentinel surveillance of STD patients combined with the on-going surveillance of other groups with high risk behaviour (such as intravenous drug abusers) as well as of the general population (such as through antenatal testing and blood donors) will provide much needed information in monitoring trends and for designing programmes to control the spread of HIV. The high prevalence of risk behaviours among patients with sexually transmitted diseases justifies increased efforts in behaviour change programmes through multiagency collaboration and with emphasis on family and moral values, simultaneously targeting specific behaviour change programmes at specific groups with high risk behaviour.

#### Acknowledgments

The authors thank the Director, Institute for Medical Research for permission to publish this paper and the Director of Medical and Health Services, Sarawak for his support and the laboratory staff of the Miri Hospital and Division of Virology, Institute for Medical Research for their kind assistance and cooperation.

#### References

- Chew SK, Snodgrass I & Monteiro EHA (1992). HIV infection in Singapore: the second wave. *Epidemiology News bulletin (XVIII)* 3, 25-27.
- Donovan B, Finlayson RJ, Mutimer K, Price R, Robertson M, Nelson M, Slade M, Reece I & dalle Nogare J (1990). HIV infection in sexually transmissible disease practice in Sydney: the effects of legislation, public education and changing clinical spectrum. *International Journal of STD and AIDS* 1, 21-27.
- Garcia-Calleja JM, Mvondo JL, Zekeng L, Louis JR, Trebucq A., Salla R, Owona R & Kaptue I. (1992). A short term projection of HIV infection and AIDS cases in Cameroon. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 86, 435-437.
- Greenblatt RM, Lukehart SA, Plummer FA, Quinn TC, Critchlow CW, Ashley RL, D'Costa LJ, Ndinya-Achola JO, Corey L & Ronald AR (1988). Genital ulceration as a risk factor for human immunodeficiency virus infection. *AIDS* 2, 47-50.
- Harty TO, Ekenna O, Chikwem JO, Mohammed I, Sakwa M, Adeyera SA, Zacchariah R, Moses AE, Ola TO & Williams EE (1993). Seroepidemiology of human immunodeficiency virus infection in Borno State of Nigeria by sentinel surveillance. *Journal of Acquired Immunodeficiency Syndrome* 6, 99-103.
- Lye MS, Archibald C, Azizan A Ghazali, Low BT, Teoh BH, Sinniah M, Suleiman Che Rus, Jit Singh & Rama C Nair (1994). Patterns of risk behaviour among patients with sexually transmitted diseases and sentinel surveillance for human immunodeficiency virus in Malaysia. *International Journal of STD and AIDS* 5, 124-129.
- Ministry of Health Malaysia (1993). Monthly report on the HIV/AIDS situation in Malaysia. Epidemiology Unit, January 1993.
- Norusis MJ (1990). SPSS/PC+ 4.0 Base Manual for the IBM PC/XT/AT and PS/2. SPSS Inc.
- Smith E, Worm AM, Jepsen LV, Larsen J, Brandrup F, Veien NK & Andersen BL (1992). HIV testing and HIV surveillance of a venereological clientele in Denmark. *Ugeskr Laeger*.
- Sary A, Kopp W & Soltz-Szots J (1991). Medical health care for Viennese prostitutes. *Sex Transmissible Diseases* 18, 159-165.
- WHO (1989). *Consensus statement from consultation on sexually transmitted diseases as a risk factor for HIV transmission*, Geneva, 4-6 January 1989.
- WHO (1991a). *Global programme on AIDS. Current and future dimensions of the HIV/AIDS pandemic*. (update June 1991).
- WHO (1991b). *Global Programme on AIDS. Field guidelines for sentinel surveillance: A Manual for National AIDS Prevention and Control Programmes*. (Surveillance, forecasting and impact assessment unit, Office of research and Office of cooperation with national programmes). 7 January 1991. 2-7.
- Worm AM & Kvinesdal B (1990). Human immunodeficiency virus surveillance at a sexually transmitted disease clinic in Copenhagen. *International Journal of STD and AIDS* 1, 107-109.
- Zekeng L, Yanga D, Trebucq A, Sokal D, Salla R & Kaptue I. (1992). HIV prevalence in patients with sexually transmitted diseases in Yaounde, (Cameroon) in 1989 and 1990; necessity of an STD control programme. *Genitourin-Med* 68, 117-119.

Received 20 August 1996; revised 11 October 1996; accepted 31 October 1996.