

# HIV prevalence and risk behaviour among men who have sex with men in Vientiane Capital, Lao People's Democratic Republic, 2007

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**Background:** Men who have sex with men are at high risk for HIV infection. Here we report the results of the first assessment of HIV prevalence and risk behaviour in this group in Vientiane, Lao People's Democratic Republic.

**Methods:** Between August and September 2007, 540 men were enrolled from venues around Vientiane, using venue-day-time sampling. Men of Lao nationality, 15 years and over, reporting oral or anal sex with a man in the previous 6 months were eligible for participation. Demographic and socio-behavioural information was self-collected using hand-held computers. Oral fluid was tested for HIV infection. Logistic regression was used to evaluate risk factors for prevalent HIV infection.

**Results:** The median age of participants was 21 years; the HIV prevalence was 5.6%. Of participants, 39.6% reported exclusive attraction to men and 57.6% reported sex with women. Of those who reported having regular and nonregular sexual partner(s) in the past 3 months, consistent condom use with these partners was 14.4 and 24.2%, respectively. A total of 42.2% self-reported any sexually transmitted infection symptoms and 6.3% had previously been tested for HIV. Suicidal ideation was reported by 17.0%, which was the only variable significantly and independently associated with HIV infection in multivariate analysis.

**Conclusion:** Although the HIV prevalence is low compared with neighbouring countries in the region, men who have sex with men in Lao People's Democratic Republic are at high behavioural risk for HIV infection. To prevent a larger HIV epidemic occurrence and transmission into the broader community, higher coverage of HIV prevention interventions is required.

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## Introduction

Lao People's Democratic Republic (PDR) has a low prevalence of HIV infection in the adult population despite higher prevalence in neighbouring countries [1]. Adult HIV prevalence was estimated 0.1% in 2003 [1]. Although some data are available regarding the HIV prevalence among female sex workers in Lao PDR (ranging from 1.1–3.9% in 2004 [2]), no such data are available for men who report having sex with men. HIV epidemics among such men have been documented in Thailand, Cambodia and Vietnam [3–6], and increasing cross-border movement has raised concerns that some men may be increasingly vulnerable to HIV infection. Lao culture is generally permissive of male-to-male sex, and sex between men is believed to be relatively common – in a recent study, 18.5% of young men reported having had sex with men [7]. Urbanization and limited HIV education and services may also contribute to men's vulnerability to HIV infection [8].

Documenting the HIV prevalence and risk behaviour of men who have sex with men is essential to start HIV prevention among this population. We report the results of a cross-sectional survey of men reporting sex with other men in Vientiane during August–September 2007.

## Methods

### Sampling design

We used venue-day-time sampling (VDTS) to access and recruit participants. VDTS was successfully developed and implemented in the United States and Thailand [9,10], and establishes a set of venues where hard-to-reach populations congregate. In Vientiane, these venues typically target the general population, but some provide a niche environment for men seeking sex with other men. We identified 33 such venues, of which 27 were included for enrolment. Two of these had sex for sale. Exclusions were based upon venue safety, lack of privacy or low attendance by eligible men. None of the approached venues refused participation. Eleven young men Lao peer interviewers were trained, and assisted in VDTS procedures and data collection. The sample size of 540 was estimated based on an expected HIV prevalence of 15% or less and a 95% confidence interval (CI) of  $\pm 3\%$ .

As Lao language does not feature specific words to differentiate between sexual orientation, sexual identity and gender, these concepts could not be evaluated in this assessment. In practice, however, men are classified by their peers based on their sex and sexual role expression. Hence, participants were classified by peer interviewers into one of the four categories commonly described in Lao vernacular: effeminate gay – effeminate gender

expression, dressed like a man, receptive role in anal sex; masculine gay – male gender expression, dressed like a man, one or both roles in anal sex; straight men – male gender expression, dressed like a man, insertive role in anal sex and; transgender men – effeminate gender expression, dressed like a woman, receptive role in anal sex. To prevent oversampling of more identifiable men, sampling quotas were set for each category based on previous research of the sexuality of men in Vientiane [7,11]: 30–35% effeminate gay and transgender men; and 65–70% masculine gay and straight men.

### Data collection

Peer interviewers approached people outside the venue to determine eligibility using a hand-held computer. Men were eligible if they were Lao citizens, residents of Vientiane, aged 15 years or older and had oral or anal sex with a man in the previous 6 months. Participation was anonymous. After verbal informed consent was obtained, participants were given a hand-held computer to self-complete a questionnaire regarding demographic, behavioural and psychosocial information.

The study protocol was approved by the ethics committees of the Lao PDR, the Alfred Hospital, Melbourne, Australia and the Centers for Disease Control and Prevention Institutional Review Board, Atlanta, Georgia, USA.

### HIV testing

On completing the questionnaire, participants provided oral fluid for HIV testing using the OraSure Salivary Collection Device (OraSure Technologies, Inc., Bethlehem, Pennsylvania, USA). Specimens were tested at a 1 : 2 dilution in single wells by an enzyme immunoassay (Oral Fluid Vironostika HIV Microelisa System; Organon Teknika Corporation, Durham, North Carolina, USA) at the Center for Laboratory and Epidemiology of the Lao Ministry of Health. Positive samples were retested in duplicate and if reactive in both wells, were reported as oral fluid HIV positive. Participants received a bar-coded card to retrieve their HIV test results at a mobile clinic at the recruitment venue 1 week later and at two fixed clinics for a period of up to 3 months. All who returned were counselled, and those with a positive HIV test were referred for confirmatory testing and medical follow-up according to national guidelines.

### Statistical analysis

We used SPSS (Version 11.0.1, 2001; SPSS Inc., Chicago, Illinois, USA) and Stata (Version 9.1, 2005; Stata Corp., College Station, Texas, USA) for statistical analyses, while adjusting for VDTS. Odds ratios (OR) estimated the associations between demographic, behavioural and psychosocial factors and HIV infection, and Fisher's exact test and exact confidence limits when variables had expected cell sizes of 5 or less. For multivariate analysis, we retained variables with a *P* value less than 0.05 and common confounders (education, marital status and age).

## Results

### Demographic characteristics

Approximately 750 men were approached for participation in the study, of which 549 were screened for enrolment. Four men were ineligible, and five did not provide sufficient oral fluid for HIV testing, leaving 540 men for inclusion in this analysis. At screening, 100 (18.5%) of these men were classified as effeminate gay, 66 (12.2%) as transgender men and 374 (69.3%) as masculine gay or straight men. Men's outward sexual identity was associated with participants' reported sexual attraction and usual anal sex role ( $\chi^2 = 247.55$ ,  $P < 0.001$  and  $\chi^2 = 128.12$ ,  $P < 0.001$ , respectively, Table 1). Of participants, 270 (50.0%) were recruited from beer shops and bars, 246 (45.6%) from nightclubs and discos and 24 (4.4%) from saunas and massage parlours (Table 2). The majority of participants (60.0%) were 22 years of age or younger, 63.3% had completed secondary school and 3.5% had ever been married.

### Behaviours

Of participants, 39.6% reported exclusive attraction to men, 57.6% reported ever having had sex with a woman and 39.4% reported sex with a woman in the previous 3 months. More than one male sexual partner during the past 3 months was reported by 42.2%. Of the 452 men (84.0%) who reported anal sex with a man, 42.3% said they were usually the insertive partner and 43.8% the receptive partner.

Receipt of money or other types of compensation for sex during the past 3 months was reported by 22.0%, whereas 28.0% reported paying for sex. Of the sample, 16.3% reported to have had sex with a foreigner and 29.1% said they had been previously coerced into having sex.

Consistent condom use with regular, nonregular or foreign partners during the previous 3 months was reported by 14.4, 24.1 and 50.0% of men, respectively. About one-third of those who sold sex (32.8%) or paid for sex (33.8%) used condoms consistently.

Drinking alcohol was the norm for most men – 96.1% in the previous 3 months, whereas 58.9% had smoked tobacco and 21.1% had used illicit drugs. Of participants,

16.7% said they had ever contemplated suicide. Overall, 42.2% reported having ever had symptoms of a sexually transmitted infection (STI) (genital or anal ulcer, discharge or warts), and 81.1% reported being worried about getting HIV. However, 6.3% said they had previously been tested for HIV.

### HIV prevalence and factors associated with HIV infection

Thirty participants (5.6%) were HIV infected, of whom four (13.3%) returned for their HIV test result. In total, 86 men (15.9%) were informed about their HIV test results as part of the study. Higher HIV prevalence was recorded among those with older age, a history of marriage, receipt of money for sex, inconsistent condom use with regular partners and consistent condom use with foreign partners (Table 2). However, none of these associations were statistically significant. There was no association between frequency of venue attendance and HIV prevalence (data not shown; Fisher's exact test 0.853;  $P = 0.851$ ). Two factors – suicidal ideation (OR = 2.69, 95% CI = 1.08–6.27,  $P$  value = 0.02) and inconsistent condom use when selling sex (OR = undefined, 95% CI = 1.41–undefined,  $P$  value = 0.03) – were significantly associated with higher HIV prevalence in univariate analysis. Suicidal ideation remained significantly and independently associated with prevalent HIV infection in multivariate analysis (OR = 2.91, 95% CI = 1.26–6.72,  $P$  value = 0.01).

## Discussion

This was the first assessment of HIV prevalence and risk behaviour among men reporting sex with other men in Lao PDR. The HIV prevalence of 5.6% is the highest documented HIV prevalence of any group in the country [2]. This elevated HIV prevalence compared with the general population is consistent with data from neighbouring states [3–6].

Study findings point to a number of risk factors for ongoing and accelerated HIV transmission among men having sex with men in Lao PDR. The number of recent sex partners, the proportion practicing anal intercourse, particularly receptive anal intercourse, drug and alcohol

**Table 1. Outward sexual identity, sexual attraction and usual role in anal sex among men who have sex with men, Vientiane, Lao PDR, 2007.**

Outward sexual identity <sup>†</sup>	Sexual attraction <sup>†</sup>		Usual role in anal sex <sup>#</sup>			
	Total <i>n</i> (%)	Exclusively to men <i>n</i> (%)	Not exclusively to men <i>n</i> (%)	Insertive <i>n</i> (%)	Receptive <i>n</i> (%)	Both <i>n</i> (%)
Effeminate gay	100 (18.5)	85 (85.0)	15 (15.0)	10 (11.8)	63 (74.1)	12 (14.1)
Transgender men	66 (12.2)	63 (95.5)	3 (4.6)	2 (3.3)	54 (88.5)	5 (8.2)
Masculine gay	104 (19.3)	44 (42.3)	60 (57.7)	34 (35.8)	43 (45.3)	18 (19.0)
Straight men	270 (50)	22 (8.2)	248 (91.9)	145 (68.7)	38 (18.0)	28 (13.3)

<sup>†</sup>Total is 540.

<sup>#</sup>Total is 452.

Table 2. Prevalence and risk factors for HIV infection among men who have sex with men, Vientiane, Lao PDR, 2007.

Demographic	Characteristic Recruitment venue	Total <i>n</i> (%)	HIV-positive <i>n</i> (%)	Univariate		Multivariate	
				OR (95% CI)	<i>P</i> value	OR (95% CI)	<i>P</i> value
	Beer shop/bar	270 (50.0)	14 (5.2)	1			
	Disco/night club	246 (45.6)	15 (6.1)	1.19 (0.56–2.51)	0.65		
	Sauna/massage parlour	24 (4.4)	1 (4.2)	0.80 (0.02–5.71)	1.00		
	<b>Outward sexual identity</b>						
	Transgender	66 (12.2)	2 (3.0)	1			
	Masculine gay/straight man	374 (69.3)	21 (5.6)	1.90 (0.45–17.12)	0.55		
	Effeminate gay	100 (18.5)	7 (7.0)	2.41 (0.44–24.38)	0.32		
	<b>Age group (years)</b>						
	15–22	324 (60.0)	17 (5.3)	1		1	
	23–30	192 (35.6)	10 (5.2)	0.99 (0.44–2.21)	0.99	0.92 (0.43–1.97)	0.83
	≥31	24 (4.4)	3 (12.5)	2.58 (0.45–9.98)	0.15	3.01 (0.74–12.17)	0.12
	<b>Education</b>						
	Vocational or higher	158 (29.3)	8 (5.1)	1		1	
	Secondary	342 (63.3)	20 (5.9)	1.16 (0.50–2.70)	0.72	1.17 (0.51–2.68)	0.70
	Primary or less	40 (7.4)	2 (5.0)	0.99 (0.10–5.23)	1.00	0.82 (0.17–3.92)	0.80
	<b>Marital status</b>						
	Single	521 (96.5)	28 (5.4)	1			
	Ever married	19 (3.5)	2 (10.5)	2.07 (0.22–9.43)	0.29	1.29 (0.25–6.75)	0.76
<b>Sexual behaviours</b>	<b>Sexual attraction</b>						
	Exclusive men	214 (39.6)	15 (7.0)	1.56 (0.75–3.27)	0.24		
	Not exclusively men	326 (60.4)	15 (4.6)	1			
	<b>Sex with women (ever)</b>						
	Yes	311 (57.6)	16 (5.1)	1			
	No	229 (42.4)	14 (6.1)	1.20 (0.57–2.51)	0.63		
	<b>Sex with women (past 3 months)</b>						
	Yes	213 (39.4)	13 (6.1)	1			
	No	327 (60.6)	17 (5.2)	0.84 (0.40–1.77)	0.65		
	<b>Total number of male partners<sup>†</sup> (past 3 months)</b>						
	Zero or one	312 (57.8)	15 (4.8)	1			
	More than one	228 (42.2)	15 (6.6)	1.39 (0.67–2.91)	0.38		
	<b>Usual anal sex role (<i>n</i> = 452)</b>						
	Insertive	191 (42.2)	9 (4.7)	1			
	Receptive	198 (43.8)	13 (6.6)	1.42 (0.59–3.41)	0.43		
	Both	63 (13.9)	3 (4.8)	1.01 (0.17–4.23)	1.00		
	<b>Received money<sup>‡</sup> for sex (past 3 months)</b>						
	Yes	119 (22.0)	10 (8.4)	1.84 (0.85–4.05)	0.13		
	No	421 (78.0)	20 (4.8)	1			
	<b>Paid money<sup>‡</sup> for sex (past 3 months)</b>						
	Yes	151 (28.0)	5 (3.3)	0.50 (0.19–1.33)	0.16		
	No	389 (72.0)	25 (6.5)	1			
	<b>Sex with a foreign partner (past 3 months)</b>						
	Yes	88 (16.3)	5 (5.7)	1.03 (0.30–2.84)	1.00		
	No	452 (83.7)	25 (5.5)	1			
	<b>Sexual coercion (ever)</b>						
	Yes	157 (29.1)	10 (6.4)	1.23 (0.56–2.70)	0.60		
	No	383 (70.9)	20 (5.2)	1			
<b>Consistent condom use</b>	<b>With regular partner (past 3 months) (<i>n</i> = 188)</b>						
	Yes	27 (14.4)	1 (3.7)	1	0.70		
	No	161 (85.6)	12 (7.5)	2.09 (0.29–92.89)			
	<b>With nonregular partner (past 3 months) (<i>n</i> = 294)</b>						
	Yes	71 (24.2)	4 (5.6)	1	1.00		
	No	223 (75.9)	15 (6.7)	1.21 (0.37–5.17)			
	<b>With foreign partners (past 3 months) (<i>n</i> = 88)</b>						
	Yes	44 (50.0)	4 (9.1)	1	0.36		

Table 2 (continued)

Demographic	Characteristic	Total <i>n</i> (%)	HIV-positive <i>n</i> (%)	Univariate		Multivariate	
				OR (95% CI)	<i>P</i> value	OR (95% CI)	<i>P</i> value
	No	44 (50.0)	1 (2.3)	0.23 (0.00–2.52)			
	<b>With partners from whom money was received for sex (past 3 months) (<i>n</i> = 119)</b>						
	Yes	39 (32.8)	0 (0)	1	0.03 <sup>b</sup>		
	No	80 (67.2)	10 (12.5)	Undefined (1.41–undefined) <sup>a</sup>			
	<b>With partners to whom money was paid for sex (past 3 months) (<i>n</i> = 151)</b>						
	Yes	51 (33.8)	1 (2.0)	1			
	No	100 (76.2)	4 (4.0)	2.08 (0.20–104.60)	0.66		
<b>Alcohol, tobacco and drug use</b>	<b>Alcohol (3 months)</b>						
	Yes	519 (96.1)	29 (5.6)	1.18 (0.18–50.72)	1.00		
	No	21 (3.9)	1 (4.8)	1			
	<b>Tobacco (past 3 months)</b>						
	Yes	318 (58.9)	13 (4.1)	0.51 (0.24–1.08)	0.08		
	No	222 (41.1)	17 (7.7)	1			
	<b>Drug use (3 months)</b>						
	Yes	114 (21.1)	4 (3.5)	0.56 (0.14–1.66)	0.36		
	No	426 (78.9)	26 (6.1)	1			
<b>Suicidal ideation</b>	<b>Contemplated suicide (ever)</b>						
	Yes	90 (16.7)	10 (11.1)	2.69 (1.08–6.27) <sup>a</sup>	0.02 <sup>b</sup>	2.91 (1.26–6.72)	0.01
	No	450 (83.3)	20 (4.4)	1			
<b>Sexually transmitted infections and HIV</b>	<b>STI symptoms<sup>§</sup> (ever)</b>						
	Yes	228 (42.2)	9 (3.9)	0.57 (0.26–1.27)	0.17		
	No	312 (57.8)	21 (6.7)	1			
	<b>Worried about getting HIV<sup>b</sup></b>						
	Yes	437 (81.1)	23 (5.3)	1			
	No	102 (18.9)	7 (6.9)	1.33 (0.55–3.18)	0.53		
	<b>Had HIV test (ever)<sup>b</sup></b>						
	Yes	34 (6.3)	1 (2.9)	1			
	No	505 (93.7)	29 (5.7)	2.01 (0.31–84.56)	0.71		

CI, confidence interval; OR, odds ratio; STI, sexually transmitted infection.

<sup>a</sup>OR and upper confidence limit were not calculated as one of the categories had zero observations.

<sup>b</sup>Total does not add up to 540 due to missing values.

<sup>c</sup>Commercial and noncommercial male and transgender partners.

<sup>d</sup>Money or other types of compensation.

<sup>e</sup>Self-reported ulcer, discharge or warts in the genital-anal area.

use, frequent buying and selling of sex and history of STI in combination with low levels of consistent condom use collectively raise concerns for a growing epidemic among these men. Although the study did not assess the availability of condoms, the relatively low levels of reported condom use may point to potentially unmet HIV prevention needs of this population.

Findings from this study also illustrate the common links between this high-risk group of men and other lower risk subpopulations (i.e. women). Integrating information about the risk of anal sex into HIV prevention education for all young men (and women) may ensure coverage of men having sex with men and women who have been traditionally difficult to target for HIV prevention.

We found few statistically significant associations between demographic, behavioural and psychological characteristics and HIV prevalence, possibly due to the limited number of HIV infections found in this study. However, risk behaviours that have been found associated with HIV infection elsewhere generally had higher HIV prevalence. Furthermore, the only factor associated with HIV infection in multivariate analysis was suicidal ideation, which may point to the mental health needs of men having sex with men. Having prior knowledge of HIV status cannot explain this association, as only one HIV positive person in our study reported having been previously tested for HIV.

There were several limitations to this survey. Our sample, derived from public entertainment venues, may not be

representative of the broader population of men who have sex with men. Frequent attendees may have had a higher likelihood of being recruited, although no association was found between frequency of venue attendance and HIV status. As our data are cross sectional, the temporal relationship between risk behaviours and HIV infection could not be confirmed.

This survey documents an HIV epidemic among men who have sex with men in Vientiane. The risky behaviours exhibited by these men indicate the potential for further transmission within this group. The sexual networking with women suggests that there may be transmission of HIV to the broader community unless action is taken. High coverage of HIV prevention interventions including effective education, condom promotion, STI control and increased access to STI treatment services and HIV testing is urgently required.

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The authors' roles in the study are: S.S., field coordinator for data collection; C.P., PRINCIPAL collaborator on the study; N.C., S.M. and M.T., collaborators on the study; S.D. and T.S., field supervisor for data collection; P.L., IT supervisor for data collection; C.T., field coordinator for data collection and study consultant; M.S., coordinator and collaborator on the study; FvG., principal investigator.

## References

1. UNAIDS. 2004 Report on Global AIDS Epidemic. [http://www.unaids.org/bangkok2004/GAR2004\\_pdf/GAR2004\\_table\\_countryestimates\\_en.pdf](http://www.unaids.org/bangkok2004/GAR2004_pdf/GAR2004_table_countryestimates_en.pdf). [Accessed 24 September 24 2008]
2. Center for HIV, AIDS and STI. *Second generation surveillance 2nd round on HIV, STI and behavior, 2004*. Vientiane: Ministry of Health, Lao People's Democratic Republic; 2005.
3. Centers for Disease Control and Prevention (CDC). **HIV prevalence among populations of men who have sex with men – Thailand, 2003 and 2005**. *MMWR Morb Mortal Wkly Rep* 2006; **55**:844–848.
4. Neal JJ, Morineau G, Phalkun M, *et al*. **HIV, sexually transmitted infections and related risk behavior among Cambodian MSM [abstract MoOPB02-02]**. In: *8th International Congress on AIDS in Asia and the Pacific*; 19–23 August 2007; Colombo, Sri Lanka.
5. Nguyen TA, Nguyen HA, Le GT, Detels R. **Prevalence and risk factors associated with HIV infection among men having sex with men in Ho Chi Minh City, Vietnam**. *AIDS Behav* 2007; **12**:476–482.
6. van Griensven F, Thanprasertsuk S, Jommaroeng R, Mansergh G, Naorat S, Jenkins R, *et al*. **Evidence of a previously undocumented epidemic of HIV infection among MSM in Bangkok, Thailand**. *AIDS* 2005; **19**:521–526.
7. Toole MJ, Coghlan B, Xeuatvongsa A, Holmes WR, Pheualavong S, Chanlivong N. **Understanding male sexual behaviour in planning HIV prevention programmes: lessons from Laos, a low prevalence country**. *Sex Transm Infect* 2007; **82**:135–138.
8. UNDP. Lao PDR. <http://www.undplao.org/whatwedo/respond-hiv.php>. [Accessed 11 December 11 2007]
9. MacKellar D, Valleroy L, Karon J, Lemp G, Janssen R. **The Young Men's Survey: methods for estimating HIV seroprevalence and risk factors among young MSM**. *Public Health Rep* 1996; **111 (Suppl 1)**:138–144.
10. Mansergh G, Naorat S, Jommaroeng R, Jenkins R, Jeeyapant S, Kangamruea K, *et al*. **Adaptation of venue-day-time sampling in Southeast Asia to access MSM for HIV assessment in Bangkok**. *Field Methods* 2006; **18**:135–152.
11. Population Services International. *Second round HIV/AIDS and STIs tracking survey: katoey and their partners in the Lao PDR*. Vientiane: Population Services International; 2006.