

# Sexual Behavior Among Injection Drug Users in 3 Indonesian Cities Carries a High Potential for HIV Spread to Noninjectors

Elizabeth Pisani, MA, MSc, Dadun, MSc, Purwa K. Sucahya, MSc, Octavery Kamil, BA, and Saiful Jazan, MD, MPH

**Objective:** To establish the prevalence of injecting practices that carry a risk of HIV infection among injection drug users (IDUs) in Indonesia and to examine the risk of sexual transmission of HIV from IDUs to noninjecting populations.

**Design:** A first round of behavioral surveillance among community-recruited male IDUs in 3 cities.

**Methods:** In late 2002, IDU gathering places were mapped in 3 cities, and 650 IDUs were recruited using multiple wave sampling originating from sites systematically selected for diversity. Trained interviewers, mostly former IDUs, administered a questionnaire focusing on injecting practices, sexual behavior, and HIV-related knowledge.

**Results:** Almost all IDUs knew that HIV is transmissible through shared needles, but 85% of injectors reported using a syringe previously used by another IDU in the previous week. Over two thirds of IDUs were sexually active, 48% reported multiple partners, and 40% had bought sex from a female sex worker in the preceding 12 months. Consistent condom use was reported by 10%.

**Conclusions:** The potential for the sexual spread of HIV from IDUs to noninjectors is extremely high in Indonesia. Interventions are urgently needed to reduce high levels of needle sharing, but a focus on needle cleaning and increasing condom use among IDUs is also essential.

**Key Words:** HIV, injection drug use, sexual behavior, commercial sex, Indonesia

(*J Acquir Immune Defic Syndr* 2003;34:403–406)

Received for publication April 29, 2003; accepted July 1, 2003.

From Family Health International, Asia Regional Office, Bangkok, Thailand (Ms Pisani); University of Indonesia, Centre for Health Research, Jakarta (Mr Dadun and Mr Sucahya); Program Aksi Stop AIDS, Jakarta, Indonesia (Mr Kamil); and Subdirector of AIDS and STDs, Directorate of Communicable Disease Control and Environmental Health, Ministry of Health, Republic of Indonesia, Jakarta, Indonesia (Dr Jazan)

Financial support for strengthening the national HIV surveillance system is provided to the Government of Indonesia by the Program Aksi Stop AIDS, implemented by Family Health International, and funded by the United States Agency for International Development under cooperative agreement number 497-A-00-00-0038-00.

The opinions expressed in this paper are those of the authors and not the institutions with which they are affiliated or which provided funding.

Reprints: Elizabeth Pisani, Program Aksi Stop AIDS, Jl. Percetakan Negara 29, Jakarta 10560, Indonesia (e-mail: episani@fhi.or.id).

Copyright © 2003 by Lippincott Williams & Wilkins

For the first 2 decades of the HIV pandemic, Indonesia was relatively unaffected by the virus. HIV surveillance systems in place since the early 1990s recorded little HIV infection, even in groups at high risk such as sex workers and injection drug users (IDUs).<sup>1</sup>

Between 1999 and 2003, the national sentinel surveillance system has recorded sharp rises in HIV infection in several subpopulations. The sharpest rise has been among IDUs in the capital city, Jakarta, where the sentinel site for HIV surveillance among IDUs is located at the city's largest drug treatment hospital. No HIV infection was recorded at this site in 1996 or 1997. By 1999, 16% of injectors in anonymous sentinel surveillance were infected with the virus. That proportion rose to 41% in 2000 and to 48% in 2001.<sup>2</sup> Similar rises in HIV were recorded in a treatment program in the West Java city of Bogor. In this population, the prevalence of hepatitis C infection among IDUs has fluctuated between 80% and 90% since late 1999.<sup>3</sup> Among IDUs in prison in Bali, HIV prevalence was 52% in 2000.<sup>1</sup> Among drug users attending voluntary HIV testing sites in Jakarta in 2002 and 2003, HIV prevalence ranged from 66% to 93% (Program Aksi Stop AIDS monitoring data, personal communication, 2003).

Very rapid rises in HIV prevalence among IDU communities have been documented in many parts of Asia and the world.<sup>4,5</sup> There has been considerable debate over the extent to which these epidemics might fuel the spread of HIV in other noninjecting populations through sexual contact between injectors and noninjectors. Some assert that HIV among IDUs tends to remain largely separate from sexually driven epidemics, because drug injectors have low levels of sexual activity.<sup>6</sup> Data from Asia, however, suggest that there may be extensive interaction between drug injection and commercial sex.<sup>7</sup>

As part of the expansion of its HIV surveillance system, Indonesia's Ministry of Health has supported the development of behavioral surveillance systems. Behavioral surveillance tracks risk behavior over time and can indicate the potential for HIV to cross from one subpopulation to another because of sexual mixing between the two. This article reports on the results of the first round of behavioral surveillance among IDUs in 3 cities, examining the potential for HIV to spread sexually from IDU to non-IDU populations.

## METHODS

Cross-sectional surveys were conducted among drug injectors in 3 cities in Indonesia in late 2002: the capital city, Jakarta; the second largest city, Surabaya; and a university city, Bandung.

Members of trained survey teams, who were mostly former drug injectors, worked with current injectors and drug dealers to map the areas where injectors gather to buy or use drugs. The teams visited each of these sites, listed the number of IDUs commonly associated with each site, and identified an individual who frequented that site as an "entry point." Fewer than 10% of IDUs identified were female, a figure consistent with data from treatment and law enforcement sources.<sup>8</sup> We decided to exclude female injectors from the quantitative survey.

In Jakarta and Bandung, a 3-wave systematic referral system was used.<sup>9</sup> Twelve sites were purposefully selected to give the broadest geographic and social diversity, and the person who was the entry point for each site was contacted. This individual was asked to make contact between the survey team and 3 other injectors aged 18 years or older. Each of the consenting injectors was interviewed and asked to make contact between the survey team and a further 2 contacts. The survey team met nightly to review possible duplicates. When a duplicate referral was identified, the index respondent was asked to provide an alternate. A respondent was considered a "dead end" when that individual was unable or unwilling to refer any user who had not previously been interviewed.

The target sample size was 200 respondents. With no dead ends and no refusals, the systematic multiple wave method would yield a sample size of 252. Because refusal was lower than anticipated, the final sample sizes achieved were 210 IDUs in Jakarta and 240 in Bandung.

In Surabaya, where many fewer sites were identified, the entry point for all the identified sites was contacted and a "snowball" approach with no systematic limits on number of referrals was used. Sampling stopped when the target sample size of 200 male IDUs was achieved.

A trained interviewer, usually a former drug injector, explained the purposes of the survey and secured oral consent according to surveillance protocols approved by the Indonesian Ministry of Health and the Protection of Human Subjects Committee of Family Health International. The interviewer then administered an anonymous structured questionnaire with precoded responses.

The questionnaire, which was adapted by a bilingual researcher from questionnaires used in other Asian countries and then pretested at all sites, covered sociodemographic characteristics, injection practices, sexual behavior, HIV-related knowledge, HIV testing history and history of treatment, incarceration, and participation in HIV prevention programs.

In each city, mapping, recruitment, and data collection took place over a period of 6 weeks or less. Respondents were

given a small gift worth less than \$2 for participating in the survey.

Data were entered using Epi-Info and analyzed using Stata 7 (Stata Corporation, College Station, TX). Descriptive variables and associations between sociodemographic variables and injecting and sexual risk were analyzed separately for each city.

## RESULTS

A total of 650 male IDUs were interviewed, all but 2 of whom were heroin injectors. Overall, the population interviewed was young, with a median age of 23 years. Fewer than 5% were older than 30 years of age. The majority of respondents lived with their parents or other family members, and mean income was around 630,000 rupiah per month (\$65 at the time of the survey) compared with a national average of 430,000 rupiah per month. Some 26.9% of respondents had sought help for their addiction in the last year, although only 17.8% had sought treatment from medical services or clinics. IDUs with higher incomes were significantly more likely to have sought treatment, even after controlling for differences between cities.

Very few had ever had an HIV test. More than 60% have some misconceptions about HIV transmission, but few are in doubt about the risk of injection: 97.7% of respondents knew that HIV could be transmitted by sharing needles and injecting equipment.

There were substantial differences in sociodemographic characteristics between cities, as shown in Table 1. Injecting behavior also differed (Table 2), but overall levels of risk were high. Fully 85% of injectors reported using needles that had previously been used by someone else in the last week, and a further 7% reported loading drug solution into their own syringe from a communal syringe used by others. Needle-cleaning practices were extremely poor; only 3.3% of those who shared at last injection used bleach to clean needles between users, and 83% used ambient temperature water from a shared container to "clean" needles. Overall, only 7.1% of injectors reported not sharing any equipment that might carry a risk of HIV transmission during injection. When asked why they did not use a clean needle at last injection, 65% of those sharing said they were scared of being arrested if they went out carrying a needle. Close to 1 in 10 of the population said they had been in jail in the previous 12 months.

Table 2 also shows sexual risk behavior. Over two thirds of respondents had had sex in the 12 months before the survey, and 70% of them had multiple partners in that time. For those who were sexually active, the mean number of sex partners in the last year was 3.6. Consistent condom use with wives, girlfriends, and casual partners was below 10%. Some 40% of all IDUs surveyed reported buying sex from a sex worker in the last year, and 88% of them reported seldom or never using

**TABLE 1.** Social and Demographic Variables Among Male Injection Drug Users in 3 Indonesian Cities, 2002

	<b>Jakarta (N = 210) (n (%))</b>	<b>Surabaya (N = 200) (n (%))</b>	<b>Bandung (N = 240) (n (%))</b>	<b>All (%)</b>
Age group (y)				
18–19	27 (12.9)	16 (8.0)	23 (9.6)	10.2
20–24	120 (57.1)	98 (49.0)	187 (72.9)	62.3
25–29	44 (21.0)	73 (36.5)	30 (12.5)	22.6
30+	19 (9.1)	13 (6.5)	0	4.9
Lives with				
Parents	167 (79.5)	122 (61.0)	110 (45.8)	61.6
Relatives	21 (10.0)	48 (24.0)	81 (33.8)	23.2
Other	21 (10.0)	30 (15.0)	46 (20.0)	15.3
Mean income (rupiah/month)	767,000	702,000	441,000	627,000
Incarcerated*	42 (20.0)	9 (4.5)	10 (4.2)	9.4
In treatment*	80 (42.1)	51 (25.5)	44 (18.4)	26.9
Ever tested for HIV	18 (8.6)	2 (1.0)	2 (0.8)	3.4

\*In the 12 months prior to survey.

condoms with sex workers. In Surabaya, which has an extremely active sex industry, close to 70% of all IDUs reported unprotected sex with a sex worker last year. Married men were just as likely as single men to report commercial sex in all cities. Those who bought sex reported a mean of 3.9 different commercial partners in the previous 12 months.

Information on the injecting status of sex partners was available for wives. Only 12% of married injectors reported that their wives also injected drugs.

There was no significant association between length of time injecting drugs or frequency of injection and any measure of sexual activity, including multiple partnerships and commercial sex.

## DISCUSSION

It has been estimated that there were approximately 160,000 IDUs and 230,000 sex workers in Indonesia in 2002, with the latter serving several million men every year.<sup>8</sup> Although HIV testing was not performed as part of this survey, HIV surveillance among drug injectors in Jakarta and West Java (2 of the provinces included in this survey) indicates very rapid rises in HIV infection among IDUs since 1999. Among sex workers, prevalence has remained relatively low. Significant interaction between sex workers and drug users may change that picture.

In data collected from 3 cities, some 93% of Indonesian IDUs report risky injecting practices. These rates are similar to those reported by drug injectors in treatment in both Jakarta and West Java (Yayasan Harapan Permata Hati Kita, personal communication, 2003; Rumah Sakit Ketergantungan Obat, personal communication, 2002). They are, however, far higher than rates of sharing recorded in other Asian countries. For example, between 28% and 66% of injectors shared needles in the previous week in different cities in Bangladesh, whereas 46% of injectors shared needles in Kathmandu, Nepal.<sup>10</sup> In Vietnam, between 8% and 44% of IDUs in various cities shared needles, even over a time reference period as long as 6 months.<sup>11</sup>

It is not possible from simple survey data to determine exactly why risk behavior is so high in Indonesia. Carrying a needle can lead to arrest for drug use in the country, which is a likely obstacle to safe injecting practices. Other contributing factors are likely to be the relatively recent nature of the epi-

**TABLE 2.** Injecting Practices and Sexual Behavior Among Male and Injection Drug Users in 3 Indonesian Cities, 2002

	<b>Jakarta (n = 210)</b>	<b>Surabaya (n = 200)</b>	<b>Bandung (n = 240)</b>	<b>All (%)</b>
Injecting risk				
Mean years injecting	4.3	2.5	2.5	3.1
Average number of injections on previous day	2.0	1.1	1.0	1.3
Used needle after someone else at last injection [n (%)]	53 (25.2)	106 (53.0)	71 (29.6)	35.4
Passed on needle at last injection [n (%)]	85 (40.5)	161 (80.5)	136 (56.7)	58.8
Used needle after someone else last week [n (%)]	180 (85.7)	178 (89.0)	191 (79.6)	84.5
Sexual risk in the 12 months prior to survey [n (%)]				
Sexually active	115 (54.8)	192 (96.0)	137 (57.1)	68.3
Sex with wife or cohabiting partner	41 (19.5)	57 (28.5)	61 (25.4)	24.5
Sex with female sex worker	53 (25.3)	159 (79.5)	50 (20.8)	40.3
Sex with casual female partner	58 (28.1)	48 (24.0)	79 (32.9)	28.6
Sex with male	8 (3.8)	2 (1.0)	0	1.5
Sex with multiple partners	61 (29.1)	165 (82.5)	85 (35.4)	47.6
Unprotected commercial sex	43 (20.5)	137 (68.5)	49 (20.4)	35.2

demic (few HIV-related deaths have yet been recorded) and a background of fatalism resulting, in part, from high levels of experience with violence and overdose. In a West Java treatment center, 38% of 134 drug users reported a history of overdose and 77% reported they had a friend who had died of an overdose. In addition, 28% reported having attempted suicide, 1 in 10 had been beaten by vigilante groups, and a further 45% said they lived in fear of such beatings (Yayasan Harapan Permata Hati Kita database, personal communication, 2003). Faced with these immediate threats, the threat of HIV may seem comparatively remote to Indonesian injectors.

There is an urgent need for better access to clean needles and for the promotion of reduced sharing and effective cleaning practices. Treatment services provide an entry point for harm reduction of all types, but the data show that people with the lowest incomes are least likely to use treatment services. Treatment services for low-income IDUs are needed. Without large-scale interventions in these directions, HIV prevalence will continue to rise among IDUs in Indonesia.

Indonesian IDUs also report high levels of sexual activity with different types of partners, and they rarely use condoms. There is no evidence that length or frequency of injection is inhibiting sexual activity among these young drug users. Of particular concern are the high levels of commercial sex reported, especially in Surabaya. Surabaya is a port city, where sex workers are plentiful and cheap. Few injectors in Surabaya fall into the lowest income bracket, so a higher proportion may be more able to afford to buy both sex and drugs than in other cities. Behavioral data among female sex workers in Indonesia suggest that each of them serves up to 370 different clients a year, and sex workers in Surabaya report among the highest rates of client turnover in the country.<sup>2</sup> If a sex worker is infected with HIV by a drug-injecting client, she has the potential to spread the virus to a large number of other people. For IDUs, the risk of acquiring HIV sexually is smaller relative to the risk of infection through shared injecting equipment. Unprotected commercial sex does, however, increase their risk of infection even further.

These results come from the first round of the national behavioral surveillance system among drug users in Indonesia. They are limited in that the data are cross-sectional and not linked to HIV testing. In addition, it was not possible to draw a truly random sample from this hidden population. Every effort was made to use a systematic sampling method that would provide access to a wide variety of injecting networks. Nevertheless, it is likely that these data do not represent all injectors, and this may result in bias in either direction. Those who inject in private or as couples (who may have lower risk behaviors) may be excluded, whereas those incarcerated at the time of the survey were certainly excluded. Anecdotal reports from IDUs

released from jail indicate very high levels of needle sharing in jail.

These data have important implications for Indonesian policy makers. First, large-scale programs are needed to reduce the sharing of improperly cleaned injecting equipment. These must include legal and institutional changes that promote the availability of clean needles and remove the disincentives for injectors to carry and use clean needles. Programs should also include a scaling up of existing pilot programs for methadone substitution. IDU interventions must focus actively on reducing unprotected sex between IDUs and noninjecting partners by encouraging IDUs to use condoms consistently with all their sex partners (particularly with commercial partners) and by ensuring that condoms are always easily available to injectors.

### ACKNOWLEDGMENTS

The authors thank the staff of the Subdirector of AIDS and STDs in the Ministry of Health and all Program Aksi Stop AIDS staff who supported this behavioral surveillance as well as site supervisors Agus Setiawan and Oktorudin. Helpful comments on an earlier draft were provided by David Gordon, Jimmy Whitworth, Gambit Praptoraharjo, Penny Miller, and Wayne Wiebel. Yayasan Harapan Permata Hati Kita generously provided data collected from drug users participating in their treatment programs. Special thanks are due to respondents and to the former drug users who worked as surveillance field staff.

### REFERENCES

1. *HIV/AIDS in Indonesia: Challenges and Opportunities for Action*. Jakarta: National AIDS Control Commission; 2001.
2. *National HIV Surveillance System*. Jakarta: Directorate General of Communicable Disease Control and Environmental Health; 2003.
3. Yayasan Harapan Permata Hati Kita. *Programme Statistics, October 1999–December 2002*. Bogor: Yayasan Harapan Permata Hati Kita; 2003.
4. Rhodes T, Lowndes C, Judd A, et al. Explosive spread and high prevalence of HIV infection among injecting drug users in Togliatti City, Russia. *AIDS*. 2002;16(Suppl):F25–F31.
5. Crofts N, Reid G, Deany P. Injecting drug use and HIV infection in Asia. *AIDS*. 1998;12(Suppl B):S69–S78.
6. World Health Organization. *HIV/AIDS in Asia and the Pacific Region*. Manila: Regional Office for the Western Pacific Region; 2001.
7. Pisani E, Winnithana B. *What Drives AIDS in Asia? A Summary of Trends in Sexual and Drug-Taking Behaviour*. Bangkok: Family Health International; 2001.
8. *Estimasi HIV di Indonesia, 2002. Laporan kegiatan estimasi populasi rawan terinfeksi HIV*. Jakarta: Directorate General of Communicable Disease Control and Environmental Health; 2003.
9. Heckathorn D. Respondent-driven sampling: a new approach to the study of hidden populations. *Soc Probl*. 1997;44:174–199.
10. *HIV in Bangladesh: Is Time Running Out?* Dhaka: National AIDS/STD Programme; 2003.
11. *HIV/AIDS Behavioural Surveillance Survey, Vietnam 2000*. Hanoi: National AIDS Standing Bureau; 2001.