

---

# VALIDATION OF REPORTED RISK EXPOSURE IN PERSONS WITH NEWLY DIAGNOSED HIV INFECTION

---

Shanti Raman<sup>1,2</sup>, Robert Menzies<sup>1</sup>, Ann McDonald<sup>3</sup>, Elizabeth Griggs<sup>1</sup> and Michael Levy<sup>1</sup>

## Abstract

To validate reported risk exposure in persons with newly diagnosed HIV infection, the New South Wales Health Department in collaboration with the National Centre in HIV Epidemiology and Clinical Research commenced enhanced surveillance of HIV risk exposure in 1994. The enhanced surveillance included all new diagnoses of HIV infection, where reported mode of infection was other than male homosexual contact or vertical transmission. Of the 116 notifications of HIV followed up for 1994, 63 cases were available for analysis. Twenty cases (32%) had risk exposure categories reassigned of which nine were revised to male homosexual contact. Doctors were more likely to be satisfied with reported risk exposure in females than in males and least satisfied with the exposure category 'unknown'. Although no unusual modes of transmission of HIV were uncovered through this study, the process gives patients the opportunity to request investigation into the mode of acquiring HIV infection and may raise awareness amongst doctors of the importance of adequate contact tracing and counselling.

## Introduction

Since the initial recognition of the epidemic of infection with human immunodeficiency virus (HIV) there has been great interest in the modes of transmission of the virus. In Australia, as in most western countries, HIV infection has been attributed largely to sexual transmission of HIV between men<sup>1</sup>. Of the 18,782 cases of newly diagnosed HIV infection reported to the National Centre in HIV Epidemiology and Clinical Research (NCHECR) by 31 December 1994, male homosexual contact was the mode of transmission for more than 80% of cases with recorded exposure<sup>2</sup>. Similarly, for New South Wales up to December 31 1993, of the known risk exposure categories, male homosexual contact has accounted for 85%<sup>3</sup>. Concern about the risk of explosive spread of HIV among injecting drug users (IDU) and heterosexual spread has remained, even though prevalence of HIV among IDUs has been low<sup>4</sup>.

For the majority of notifications of HIV infection or Acquired Immunodeficiency Syndrome (AIDS), information on history of possible exposure to HIV has been elicited from the person with HIV infection by a doctor, nurse or counsellor, and may have been prone to self-reporting biases. Partly because of the perceived limitations of the accuracy of self-reported HIV expo-

sure history, there has been ongoing debate in Australia about the extent of HIV transmission through other modes, particularly heterosexual contact<sup>5</sup>. There has also been renewed interest in New South Wales in obtaining accurate exposure histories in new cases of HIV infection, following the report of patient-to-patient transmission of HIV in a doctor's surgery<sup>6,7</sup>, and the recent look-back investigation of patients potentially exposed to an HIV-infected health care worker<sup>8</sup>.

In 1994, the AIDS/Infectious Diseases Branch (AIDB) of the New South Wales Health Department, in collaboration with the NCHECR, commenced enhanced surveillance of HIV risk exposure. Included were all new diagnoses of HIV infection, where reported mode of infection was other than 'male to male sexual contact' or 'vertical transmission' (children born to HIV positive mothers). The aims of the enhanced surveillance were to ensure the collection and validation of data on HIV infection risk factors, to identify and investigate cases where the mode of transmission was unusual, and to provide an opportunity for patients to have their exposure to HIV investigated.

We report results of risk factor investigations for 1994.

## Methods

Information on cases of newly diagnosed HIV infection, including 2+2 name code (first two letters of the patient's surname and given name), sex, date of birth, current postcode of residence, and HIV exposure category, was routinely collected by the four New South Wales HIV reference laboratories and forwarded to the New South Wales Health Department. Two months following receipt of a notification of newly diagnosed HIV infection for which HIV exposure category was other than male homosexual contact or vertical transmission, the Health Department sent an exposure assessment questionnaire to the doctor involved in the patient's HIV diagnosis. The design of the questionnaire was based on that used in the pilot study of assessment of patient report of HIV exposure carried out in 1991<sup>9</sup>.

The doctor was requested to confirm available information on the patient with newly diagnosed HIV infection including their reported exposure to HIV. More detailed information was sought if the reported history of exposure to HIV was through receipt of HIV-infected blood or tissue, injecting drug use, origin in a country with a high rate of heterosexual transmission or hetero-

---

1 AIDS/Infectious Diseases Branch, New South Wales Health Department, North Sydney, New South Wales.

2 National Centre for Epidemiology and Population Health, Australian National University, Australian Capital Territory.

3 National Centre in HIV Epidemiology and Clinical Research, Darlinghurst, New South Wales.

sexual contact in Australia. The doctor was also asked if the patient would like their case investigated further.

Where the questionnaire was not returned after a period of six weeks the Health Department contacted the doctor and either a repeat questionnaire was sent or the doctor urged to fill out the questionnaire. Completed questionnaires were reviewed by the Medical Advisor (AIDB), and then forwarded to the NCHECR.

## Results

Questionnaires were sent to the diagnosing doctor for 116 new HIV diagnoses notified to the New South Wales Health Department where risk exposure was not male homosexual contact or vertical transmission. Of these, 27 (23%) were forwarded to other doctors, since the requesting doctor was unable to provide the information asked for in the questionnaire. By July 31 1995, 79 questionnaires had been returned to the New South Wales Health Department. Of these five were found to be duplicate notifications, one case was diagnosed in 1993 and therefore not part of the study, and 10 patients did not return to their doctor to collect their HIV result. This left 63 cases available for analysis. Of these, 44 (70%) were males.

Table 1 compares data on the 63 cases, by HIV exposure reported on the initial notification to that reported on the returned questionnaire. In total, 20 cases had risk exposure categories reassigned, of which nine (14%) were revised to male homosexual contact. Of the 10 cases remaining in the 'other/undetermined' category, one was a confirmed occupationally acquired case, and two (males) denied any risk factors, but expressly did not wish to have further investigation of exposure to HIV. Final revised exposure categories included some

cases where further information is required to classify exposure (Table 2).

Of the 54 questionnaires returned with risk exposure other than male homosexual contact, doctors were generally satisfied with reported risk exposure in only 33 cases (60%). Doctors were more likely to be satisfied with reported risk exposure in females (17/19, 90%) than in males (16/35, 46%) ( $p < 0.01$ ). The risk exposure category that doctors remained unsatisfied with was the 'unknown' category, which remained at 10/54 (19%, all males). Of all the responses received, only two cases wanted their HIV risk exposure further investigated. Both were followed up by the Health Department.

## Discussion

As a result of our investigation, report of exposure to HIV was reclassified in 20 cases (32%) of newly diagnosed HIV infection when risk exposure was explored in detail, including nine who were revised to male homosexual exposure. Doctors were less satisfied with exposure categories for males with heterosexual transmission and they were least satisfied with the 'unknown' category.

A recent study in Italy comparing two AIDS surveillance systems revealed that concordance of risk exposure classification between the two systems was high for male homosexual contact, low for heterosexual transmission in males and even lower among men whose risk group could not be determined<sup>10</sup>. This may be because some of the males are reluctant to reveal or identify with male homosexual contact. Since male homosexual contact remains a predominant risk factor in

**Table 1. Initial and revised HIV risk exposure categories for newly diagnosed HIV infection, excluding male homosexual contact and vertical transmission, New South Wales, 1994**

	HIV exposure category initially reported	HIV exposure reported on the returned questionnaire
Injecting drug use <sup>1</sup>	5	4
Heterosexual contact <sup>2</sup>	37	36
Receipt of blood products <sup>3</sup>	6	4
Other/undetermined <sup>4</sup>	15	10
Male homosexual <sup>5</sup>	0	9
Total	63	63

1. Exposure reported on the returned questionnaire revised from IDU to heterosexual contact for one male, from IDU to 'other/undetermined' exposure for one female, and from heterosexual contact only to heterosexual contact and IDU for one male.
2. Exposure reported on the returned questionnaire was revised from 'other/undetermined' to heterosexual contact for four cases (2 male, 2 female), from heterosexual contact and IDU to heterosexual contact for one male, from heterosexual contact to homosexual contact for three males, from heterosexual contact to 'other/undetermined' for two males and from heterosexual contact only to heterosexual contact and IDU for one male.
3. Refers only to blood products received prior to 1985. Exposure reported on the returned questionnaire was revised from receipt of blood to 'other/undetermined' for two cases.
4. Exposure reported on the returned questionnaire was revised from 'other/undetermined' to homosexual contact in six cases and heterosexual contact in four cases. Exposure was revised to 'other/undetermined' from IDU for one female, from heterosexual contact for two males and from receipt of blood products for two cases.
5. Six cases revised from 'other/undetermined' and three revised from heterosexual contact.

**Table 2. Revised exposure categories by sex, after detailed analysis of risk exposures, for newly diagnosed HIV infections excluding male homosexual contact and vertical transmission, New South Wales, 1994**

	Revised HIV exposure category		
	Male	Female	Total
<b>Injecting drug use</b>	1	0	1 <sup>1</sup>
Heterosexual	1	0	1
Not further specified	0	0	0
<b>Heterosexual contact</b>	20	16	36
Sex with ID user	0	2	2
Sex with bisexual male	-	3	3
From specified high risk country	4	5	9
Sex with person from specified high risk country	5	2	7
Sex with person with medically acquired HIV	1	0	1
Sex with HIV infected person, exposure not specified	1	3	4
Not further specified	9	1	10
<b>Occupational exposure</b>	0	1	1
<b>More information sought (receipt of blood; other)</b>	4	2	6
<b>Not known</b>	10	0	10
<b>Total</b>	35	19	54

1. Of the four cases reported as IDU on the returned questionnaire, two had inconsistent histories and one was from a country with a high rate of heterosexual transmission.

our population, education and prevention efforts should be concentrated in this area<sup>11</sup>.

In our study, exposure to HIV was most frequently attributed to heterosexual contact. In the majority of these cases the heterosexual contact was reported as occurring in a specified high risk country or due to sex with a person from a specified high risk country. This pattern of heterosexual transmission, predominantly involving people from countries with high levels of heterosexual transmission, is similar to that observed in the United Kingdom<sup>12</sup>.

One case of occupationally acquired HIV was confirmed and another possible case of occupationally acquired HIV is still being investigated. Both of these were in health care workers who sustained needlestick injuries; both cases were already being investigated at the local hospital level. From overseas studies we know that HIV infection attributable to occupational exposure is extremely uncommon<sup>13,14,15</sup>. There have been only five confirmed cases of occupationally acquired HIV in Australia, including one for 1994<sup>2</sup>. Systematic surveillance of occupational exposure in Australia, however, only commenced in 1995. This will be expanded in New South Wales in 1996, to include all hospitals able to participate.

In our study only one person had IDU confirmed as their risk exposure. This result is consistent with the low prevalence of HIV infection previously documented among IDUs in Australia, other than among those who also report male homosexual contact<sup>3</sup>, and similar to the results of the pilot study validating HIV risk exposures<sup>8</sup>. This is reassuring but should not give rise to complacency, as the high rate of hepatitis C infection among IDUs suggests that sharing of injecting

equipment and thus potential HIV transmission continues to occur<sup>16</sup>.

We faced some unavoidable problems with the implementation of the study, such as time delays and poor compliance. Collection and notification of HIV data by laboratories takes at least two months, often longer with some laboratories. Exposure information could not be obtained from 23% of the doctors who requested HIV tests. This may indicate that some doctors who request HIV tests do not undertake adequate pre-test and post-test counselling. Pre-test and post-test counselling are mandatory for HIV testing and require that a thorough history of patient risk exposures is taken, so that appropriate advice is given<sup>17</sup>. Some doctors were unable to trace patients' records from the namecode and date of birth. The need to protect patient confidentiality results in some compromise in data quality. Some doctors may have been daunted by the length and complexity of the questionnaire and some reported that they found the questionnaire confusing. Suggestions for streamlining the process and reducing time delays both at the laboratory level and at AIDB have been incorporated. The questionnaire has also been modified to improve compliance in the future.

The 57% (63/110) response rate we achieved in this study is similar to the 60% response rate achieved when this project was piloted in 1991, as a validation of patient report of exposure to HIV<sup>9</sup>. This is expected for a voluntary system with a complicated questionnaire, where the nature of the information sought is extremely sensitive. This raises the possibility of bias, however. If the majority of non respondents belonged to one group, such as IDUs, this could significantly bias the results.

The main impact of this study in reclassification of risk factors was in reducing the 'other/undetermined' category from 3.3% to 2.2% of total notifications. Although no new or unusual modes of transmission of HIV were uncovered through our study, the process gives patients the opportunity to request investigation into the mode of acquiring HIV infection. Another potential benefit of this project is to improve initial reporting by doctors of risk exposure to HIV in order to reduce the number of questionnaires to validate the report. We also expect that this project will raise awareness amongst doctors of the importance of undertaking adequate contact tracing, as well as pre-test and post-test counselling, for all patients tested for HIV.

## References

1. Kaldor J. Epidemiological pattern of HIV infection in Australia. *J Acquir Immune Defic Syndr* 1993; **6**: S1-S4.
2. National Centre in HIV Epidemiology and Clinical Research. *Australian HIV Surveillance Report* 1995; **11**: 26-28.
3. 1993 Infectious Diseases Notifications. *NSW Public Health Bulletin* 1995; **6(S-1)**: 40-41.
4. Kaldor J, Elford J, Wodak A, Crofts N, Kidd S. HIV prevalence among IDUs in Australia: a methodological review. *Drug Alcohol Rev* 1993; **12**: 175-184.
5. Chapman S. Dogma disputed: potential endemic heterosexual transmission of human immunodeficiency virus in Australia. *Aust J Public Health* 1992; **16**: 128-141.
6. Chant K, Lowe D, Rubin G, Manning W, *et al.* Patient-to-patient transmission of HIV in private surgical consulting rooms. *Lancet* 1993; **342**: 1548-1549.
7. Collignon P. Patient-to-patient transmission of HIV (letter). *Lancet* 1994; **343**: 415.
8. Bek M, Gold J, Levy M, O'Donoghue, *et al.* Investigation of patients potentially exposed to an HIV-infected health care worker. *NSW Public Health Bulletin* 1994; **5**: 83-84.
9. McDonald AM, Imrie A, Neilsen G, *et al.* Assessment of self-report in HIV surveillance: a pilot study. *Aust J Public Health* 1994; **18**: 429-432.
10. Serraino D, Franceschi S, Dal Maso L, Lepri AC, Tirelli U, Rezza G. The classification of AIDS cases: Concordance between two AIDS surveillance systems in Italy. *Am J Public Health* 1995; **85**: 1112-1114.
11. Feachem RGA. *Valuing the past ... investing in the future: Evaluation of the National HIV/AIDS Strategy 1993-94 to 1995-96.* Commonwealth Department of Human Services and Health 1995; 73-88.
12. Evans BG, Noone A, Mortimer JY, Gilbert VL, *et al.* Heterosexually acquired HIV-1 infection: cases reported in England, Wales and Northern Ireland, 1985-1991. *Communicable Disease Report* 1992; **2(R5)**: R49-R55.
13. Marcus R. Surveillance of health care workers exposed to blood from patients infected with the human immunodeficiency virus. *N Engl J Med* 1988; **319**: 1118-1123.
14. Fahey BJ, Koziol DE, Banks SM, Henderson DK. Frequency of nonparenteral occupational exposures to blood and body fluids before and after universal precautions training. *Am J Med* 1991; **90**: 145-153.
15. Chamberland ME, Petersen LR, Mumm VP, White CR, *et al.* Human immunodeficiency virus among health care workers who donate blood. *Ann Intern Med* 1994; **121**: 269-273
16. Crofts N, Hopper JL, Bowden DS, Breschkin AM, Milner R, Locarnini SA. Hepatitis C virus infection among a cohort of Victorian injecting drug users. *Med J Aust* 1993; **159**: 237-241.
17. Begley K, Goulburn L. Psychosocial issues and HIV disease. In *The AIDS Manual* (Albion Street Centre). MacLennan & Petty Pty Ltd, Sydney, 3rd Edition 1994; 136-143.