



National Centre in HIV Epidemiology and Clinical Research

Australian HIV Surveillance Report

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Monitoring resistance to antiretroviral treatments for HIV infection

In Australia, use of combination antiretroviral treatment for HIV infection has substantially slowed progression to AIDS (Correll *et al* 1998, NCHECR 2001). Survival following AIDS has also improved following the introduction and use of combination antiretroviral therapy for HIV infection (Li *et al* 2000, NCHECR 2001). However, it is now clear that there are difficulties associated with use of potent treatment regimens such as treatment complexity, adherence, tolerance, toxicities and the development of resistance.

The goal of combination antiretroviral treatment for HIV infection is to minimise viral replication. Specific drugs from three classes of agents, non-nucleoside reverse transcriptase inhibitors (NNRTI), nucleoside reverse transcriptase inhibitors (NRTI) and protease inhibitors (PI), are used in combination to inhibit specific steps in the viral replication process. However, the reverse transcriptase enzyme, employed in the production of proviral DNA from viral RNA, is highly error prone, leading to the generation of mutations or genetically distinct variants. Furthermore, the rate of viral replication is extremely high, with approximately 10^9 viral particles produced per day. In these circumstances, HIV antiretroviral treatment strongly selects among the many quasispecies acquired at infection for species that can replicate in the presence of antiretroviral agents. Sub-therapeutic concentrations and intermittent treatment may further contribute to selection of resistance.

Multidrug resistance may develop across entire classes of antiretroviral agents. The development of cross class resistance is particularly apparent within the non-nucleoside reverse transcriptase inhibitors and protease inhibitor classes and to a lesser extent in the nucleoside reverse transcriptase inhibitor class of drugs.

Resistance testing measures resistance only in the virus obtained at the time of collection of a blood sample. Resistance to drugs taken in the past may be present in the form of "archived" or latent pro-viruses, which will not be detected by currently available resistance tests. Soon after a patient discontinues a drug to which he/she has become resistant, the dominant resistant virus will be out-grown by the fitter 'wild-type' virus which is not typically associated with an improved response to therapy. Patients undergoing treatment interruption for several weeks or months would be expected to experience this reversion. If a patient recommences the original therapy, the resistant archived virus will be selected and become established as the dominant species, rapidly leading to treatment failure. It is therefore important that resistance tests used in the management of antiretroviral treatment be interpreted in light of both current and previous therapy.

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Announcements

Release of *HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2001*

The fifth annual review of available surveillance data on the occurrence of HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia, published in *HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2001*, will be released on Thursday 13 September 2001. At the same time, information on Australian AIDS diagnoses will be made publicly available through the website www.med.unsw.edu.au/nchecr. The Australian AIDS Public Access Dataset is made available to facilitate analyses of Australian AIDS data by Australian and international health professionals.

The 2001 Australian AIDS Public Access Dataset includes information on AIDS cases diagnosed by 31 December 2000 and notified to the National AIDS Registry by 31 March 2001. Analyses and interpretation of the dataset are published in *HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2001*.

National meetings

The **Australasian Society for HIV Medicine Conference 2001** will be held in Melbourne, Victoria, on 4 – 7 October 2001. Further information may be obtained from ASHM Conference Secretariat, GPO Box 2609, Sydney NSW 2001.

Telephone: 02 9241 1478
Facsimile: 02 9251 3552
E-mail: ashm@icmsaust.com.au
Website: www.ashm.org.au

The **3rd Australasian Conference on Hepatitis C** will be held in Melbourne, Victoria, on 25 – 27 March 2002. Further information may be obtained through the Secretariat, ASN, PO Box 200, Balnarring, VIC 3926.

Telephone: 03 5983 2400
E-mail: mp@asnevents.net.au
Website: www.hepc.conf.au

International meetings

The **Sixth International Congress on AIDS in Asia and the Pacific** will be held in Melbourne, Victoria, on 5 – 10 October 2001. Further information may be obtained from ICMS Pty Ltd, 84 Queensbridge Street, Southbank, VIC 3006.

Telephone: +61 3 9682 0244
Facsimile: +61 3 9682 0288
E-mail: 6icaap@icms.com.au
Website: <http://www.icms.com.au/6icaap>

The **XIV International AIDS Conference** will be held in Barcelona, Spain on 7 – 12 July 2002. Further information may be obtained from the Communications Department, XIV International AIDS Conference,

Calle Pomaret 21, 08017 Barcelona, Spain.
E-mail: kbennett@aids2002.com
Website: www.aids2002.com

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As the prevalence of resistant virus in a population increases, transmission of resistant virus is also likely to increase. Treatment naïve people with primary HIV infection are an ideal group for monitoring the prevalence of transmitted resistance. Primary HIV infection is an acute syndrome characterised by fever, headache and rash that occurs following exposure to HIV (Boyle *et al* 1993). People monitored immediately following diagnosis of primary HIV infection are unlikely to have been reinfected with other variants of HIV.

Resistance testing of 138 treatment naïve patients in Sydney with symptomatic primary HIV infection acquired in the years 1992 to 2000 indicated that high level or primary resistance to the NRTI class of drugs had declined over time (Cunningham *et al* 1998). The prevalence of primary transmitted resistance to protease inhibitors remained stable at a level which was lower than that reported in most other countries (Table 1.1). The decreasing prevalence of primary transmitted NRTI resistance may be attributed to successful treatment strategies that have resulted in undetectable viral load in an increasing percentage of people who have had antiretroviral treatment for HIV infection.

Table 1.1 Prevalence of transmitted primary drug resistance by country and class of drug resistance

| Country | Study size | Time period | Prevalence of resistance (%) | |
|----------------|------------|-------------|------------------------------|---------------------|
| | | | NRTI | PI |
| Australia | 138 | 1992 – 2000 | 15.5 (declining) | <1 |
| Canada | 81 | 1997 – 1999 | 20 | 6.5 |
| France | 156 | 1995 – 1999 | 16.6 | 2.8 |
| Italy | 68 | 1996 – 1998 | 10.3 | 5.9 |
| Switzerland | 197 | 1996 – 1999 | 6.5 (declining) | 9.25 |
| United Kingdom | 47 | 1998 – 2000 | 15 | 0 |
| USA | 394 | 1997 – 1999 | 1 to 7 (increasing) | 2 to 6 (increasing) |

The prevalence of transmitted NRTI resistance was also reported to have declined among patients with primary HIV infection seen in Switzerland whereas in the United States, the prevalence of resistance to both NRTI and PI was increasing (Weinstock *et al* 2001) (Table 1.1). In France, 16.6% of patients had primary resistance to NRTI. In Canada, 20% of patients who acquired HIV infection in 1997 – 1999 had primary NRTI resistance, 6.5% had primary resistance to protease inhibitors and 10% had multi-drug resistance. The variable prevalence of transmitted resistance documented among patients in industrialised countries may be partly attributable to differences in the selection criteria used for enrolling patients into the studies. In particular, patients with diagnosed primary HIV infection may not be representative of the population with primary HIV infection as a whole.

Resistance testing has been carried out among patients with a history of incomplete viral suppression referred to St Vincent's Hospital, in Sydney, between July 2000 and April 2001. The majority of patients had been heavily treated with antiretroviral agents and had experienced multiple virologic failures. A median of 20% of patients had evidence of primary or high level resistance to at least one nucleoside reverse transcriptase inhibitor, 4.1% had resistance to a non-nucleoside reverse transcriptase inhibitor and 17.5% had resistance to protease inhibitors.

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Antiretroviral resistance testing alone without careful assessment of treatment history and drug exposure (adherence and therapeutic drug levels) is unlikely to assist the selection or revision of an effective treatment regimen. Among patients with first line regimen failure, information provided by resistance testing is less critical due to the number of remaining treatment options. The test may become more useful after a patient has experienced a second or third regimen failure upon which the remaining drug options should be carefully selected.

Currently, there is no ongoing systematic monitoring of antiretroviral resistance among people living with HIV infection. Laboratory databases are usually designed to manage information for the purposes of clinical laboratory service provision rather than for surveillance. In October 2000, an international consultation organised by the World Health Organisation (WHO) was held to assess the feasibility of establishing a global network of collaborators to monitor the emergence of antiretroviral resistance within the framework of the WHO Global Strategy of Antimicrobial Resistance Containment. Current limitations of the use of resistance testing include the high costs and the technical difficulty with carrying out the tests, leading to variation in results between laboratories, although inter-laboratory differences in results in Australia have been reduced substantially. Nevertheless, resistance testing is recommended to help guide the choice of new antiretroviral treatment regimens following treatment failure.

Reported by

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National AIDS Registry

Table 2.1 Cases of AIDS and deaths following AIDS by sex and State/Territory in which diagnosis of AIDS was made, cumulative to 31 March 2001, and for two previous yearly intervals

Cases

| State/Territory | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|-----------------|----------------------|-----------|----------------------|-----------|-------------------------|------------|--------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total† | % |
| ACT | 0 | 1 | 1 | 0 | 87 | 9 | 96 | 1.1 |
| NSW | 98 | 13 | 64 | 11 | 4 750 | 202 | 4 964 | 57.7 |
| NT | 1 | 0 | 2 | 0 | 37 | 0 | 37 | 0.4 |
| QLD | 31 | 2 | 32 | 2 | 865 | 50 | 917 | 10.7 |
| SA | 8 | 2 | 3 | 0 | 351 | 25 | 376 | 4.4 |
| TAS | 0 | 0 | 1 | 0 | 45 | 3 | 48 | 0.5 |
| VIC | 46 | 3 | 42 | 2 | 1 699 | 73 | 1 781 | 20.7 |
| WA | 8 | 0 | 2 | 0 | 359 | 26 | 387 | 4.5 |
| Total | 192 | 21 | 147 | 15 | 8 193 | 388 | 8 606 | 100.0 |

Deaths

| State/Territory | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|-----------------|----------------------|----------|----------------------|----------|-------------------------|------------|--------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total† | % |
| ACT | 2 | 2 | 2 | 0 | 68 | 4 | 72 | 1.2 |
| NSW | 61 | 1 | 58 | 2 | 3 254 | 115 | 3 377 | 56.2 |
| NT | 0 | 0 | 0 | 0 | 24 | 0 | 24 | 0.4 |
| QLD | 11 | 2 | 13 | 1 | 582 | 33 | 617 | 10.3 |
| SA | 4 | 0 | 3 | 1 | 234 | 16 | 250 | 4.2 |
| TAS | 1 | 0 | 0 | 0 | 29 | 2 | 31 | 0.5 |
| VIC | 28 | 3 | 24 | 1 | 1 302 | 51 | 1 360 | 22.7 |
| WA | 3 | 0 | 2 | 1 | 255 | 17 | 273 | 4.5 |
| Total | 110 | 8 | 102 | 6 | 5 748 | 238 | 6 004 | 100.0 |

† Totals include 25 AIDS cases and 18 deaths following AIDS in people whose sex was reported as transgender.

Table 2.2 Incidence of AIDS per million current population¹ by sex and State/Territory of diagnosis for the two most recent yearly intervals

| State/ Territory | 1 Apr 1999 – 31 Mar 2000 | | | 1 Apr 2000 – 31 Mar 2001 | | |
|---------------------|--------------------------|------------|-------------|--------------------------|------------|------------|
| | Male | Female | Total | Male | Female | Total |
| ACT | 0.0 | 6.4 | 3.2 | 6.4 | 0.0 | 3.2 |
| NSW | 30.7 | 4.0 | 17.3 | 19.8 | 3.4 | 11.6 |
| NT | 9.8 | 0.0 | 5.2 | 19.3 | 0.0 | 10.2 |
| QLD | 17.6 | 1.1 | 9.4 | 17.9 | 1.1 | 9.5 |
| SA | 10.8 | 2.6 | 6.7 | 4.0 | 0.0 | 2.0 |
| TAS | 0.0 | 0.0 | 0.0 | 4.3 | 0.0 | 2.1 |
| VIC | 19.7 | 1.3 | 10.6 | 17.7 | 0.8 | 9.4 |
| WA | 8.5 | 0.0 | 4.3 | 2.1 | 0.0 | 1.1 |
| Total | 20.3 | 2.2 | 11.3 | 15.4 | 1.6 | 8.5 |

1 Population estimates by sex, State/Territory and calendar period from *Australian Demographic Statistics* (Australian Bureau of Statistics).

Table 2.3 Cases of AIDS and deaths following AIDS by sex and age group, cumulative to 31 March 2001, and for two previous yearly intervals

Cases¹

| Age group (years) | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|-------------------|----------------------|-----------|----------------------|-----------|-------------------------|------------|--------------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ | % |
| 0–2 | 0 | 0 | 0 | 0 | 9 | 7 | 16 | 0.2 |
| 2–12 | 0 | 0 | 0 | 0 | 20 | 9 | 29 | 0.3 |
| 0–12 | 0 | 0 | 0 | 0 | 29 | 16 | 45 | 0.5 |
| 13–19 | 2 | 0 | 0 | 0 | 27 | 4 | 31 | 0.4 |
| 20–29 | 20 | 2 | 10 | 3 | 1 344 | 99 | 1 456 | 16.9 |
| 30–39 | 83 | 11 | 57 | 8 | 3 447 | 140 | 3 595 | 41.8 |
| 40–49 | 49 | 4 | 46 | 3 | 2 293 | 65 | 2 360 | 27.4 |
| 50–59 | 32 | 2 | 21 | 0 | 794 | 31 | 827 | 9.6 |
| 60+ | 6 | 2 | 13 | 1 | 259 | 33 | 292 | 3.4 |
| Total | 192 | 21 | 147 | 15 | 8 193 | 388 | 8 606 | 100.0 |

Deaths²

| Age group (years) | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|-------------------|----------------------|----------|----------------------|----------|-------------------------|------------|--------------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ | % |
| 0–2 | 0 | 0 | 0 | 0 | 5 | 5 | 10 | 0.2 |
| 2–12 | 0 | 0 | 0 | 0 | 16 | 6 | 22 | 0.3 |
| 0–12 | 0 | 0 | 0 | 0 | 21 | 11 | 32 | 0.5 |
| 13–19 | 0 | 0 | 1 | 0 | 14 | 3 | 17 | 0.3 |
| 20–29 | 10 | 1 | 7 | 1 | 671 | 43 | 724 | 12.1 |
| 30–39 | 44 | 5 | 36 | 2 | 2 308 | 87 | 2 401 | 40.0 |
| 40–49 | 37 | 2 | 37 | 0 | 1 826 | 42 | 1 870 | 31.1 |
| 50–59 | 16 | 0 | 15 | 1 | 687 | 23 | 710 | 11.8 |
| 60+ | 3 | 0 | 6 | 2 | 221 | 29 | 250 | 4.2 |
| Total | 110 | 8 | 102 | 6 | 5 748 | 238 | 6 004 | 100.0 |

1 Cases are classified by age at diagnosis.

2 Deaths are classified by age at death.

Table 2.4 Cases of AIDS by sex and exposure category, cumulative to 31 March 2001, and for two previous yearly intervals

| Exposure category | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | % |
|---|----------------------|-----------|----------------------|-----------|-------------------------|------------|--------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total | |
| Male homosexual/ bisexual contact | 130 | – | 103 | – | 6 822 | – | 6 822 | 82.3 |
| Male homosexual/ bisexual contact and injecting drug use | 9 | – | 8 | – | 374 | – | 374 | 4.5 |
| Injecting drug use | 9 | 5 | 7 | 1 | 180 | 88 | 268 | 3.2 |
| <i>Heterosexual</i> | 4 | 5 | 4 | 0 | 116 | 68 | 184 | |
| <i>Not further specified</i> | 5 | 0 | 3 | 1 | 64 | 20 | 84 | |
| Heterosexual contact | 25 | 13 | 15 | 13 | 317 | 201 | 518 | 6.3 |
| <i>Sex with injecting drug user</i> | 0 | 3 | 0 | 1 | 7 | 21 | 28 | |
| <i>Sex with bisexual male</i> | – | 0 | – | 2 | – | 41 | 41 | |
| <i>From a high prevalence country</i> | 8 | 3 | 4 | 4 | 59 | 39 | 98 | |
| <i>Sex with person from a high prevalence country</i> | 5 | 0 | 2 | 1 | 45 | 14 | 59 | |
| <i>Sex with person with medically acquired HIV</i> | 0 | 1 | 0 | 0 | 2 | 10 | 12 | |
| <i>Sex with HIV infected person, exposure not specified</i> | 0 | 3 | 2 | 4 | 29 | 27 | 56 | |
| <i>Not further specified</i> | 12 | 3 | 7 | 1 | 175 | 49 | 224 | |
| Haemophilia/coagulation disorder | 2 | 0 | 2 | 0 | 115 | 3 | 118 | 1.4 |
| Receipt of blood/tissue | 0 | 2 | 0 | 0 | 78 | 63 | 141 | 1.7 |
| Health care setting | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0.0 |
| Total Adults/Adolescents | 175 | 20 | 135 | 14 | 7 887 | 358 | 8 245 | 99.5 |
| Children (under 13 years at AIDS diagnosis) | | | | | | | | |
| Mother with/at risk for HIV infection | 0 | 0 | 0 | 0 | 13 | 13 | 26 | 0.3 |
| Haemophilia/coagulation disorder | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0.0 |
| Receipt of blood/tissue | 0 | 0 | 0 | 0 | 11 | 3 | 14 | 0.2 |
| Total children | 0 | 0 | 0 | 0 | 29 | 16 | 45 | 0.5 |
| Sub-total | 175 | 20 | 135 | 14 | 7 916 | 374 | 8 290 | 100.0 |
| Other/undetermined ¹ | 17 | 1 | 12 | 1 | 277 | 14 | 316 | |
| Total | 192 | 21 | 147 | 15 | 8 193 | 388 | 8 606 | |

1 The 'Other/undetermined' exposure category includes 25 AIDS cases in people whose sex was reported as transgender. The category was excluded from the calculation of the percentage of cases attributed to each exposure category.

Table 2.5 Deaths following AIDS by sex and exposure category, cumulative to 31 March 2001, and for two previous yearly intervals

| Exposure category | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|---|----------------------|----------|----------------------|----------|-------------------------|------------|--------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total | % |
| Male homosexual/ bisexual contact | 79 | – | 73 | – | 4 882 | – | 4 882 | 84.1 |
| Male homosexual/ bisexual contact and injecting drug use | 7 | – | 7 | – | 262 | – | 262 | 4.5 |
| Injecting drug use | 5 | 0 | 7 | 2 | 105 | 51 | 156 | 2.7 |
| <i>Heterosexual</i> | 2 | 0 | 3 | 1 | 76 | 43 | 119 | |
| <i>Not further specified</i> | 3 | 0 | 4 | 1 | 29 | 8 | 37 | |
| Heterosexual contact | 7 | 7 | 5 | 3 | 148 | 112 | 260 | 4.5 |
| <i>Sex with injecting drug user</i> | 0 | 2 | 1 | 1 | 3 | 11 | 14 | |
| <i>Sex with bisexual male</i> | – | 0 | – | 1 | – | 28 | 28 | |
| <i>From a high prevalence country</i> | 2 | 1 | 2 | 0 | 13 | 12 | 25 | |
| <i>Sex with person from a high prevalence country</i> | 0 | 0 | 1 | 0 | 17 | 10 | 27 | |
| <i>Sex with person with medically acquired HIV</i> | 0 | 1 | 0 | 0 | 2 | 7 | 9 | |
| <i>Sex with HIV infected person, exposure not specified</i> | 0 | 0 | 0 | 0 | 22 | 14 | 36 | |
| <i>Not further specified</i> | 5 | 3 | 1 | 1 | 91 | 30 | 121 | |
| Haemophilia/coagulation disorder | 3 | 0 | 3 | 0 | 91 | 3 | 94 | 1.6 |
| Receipt of blood/tissue | 0 | 1 | 0 | 0 | 67 | 51 | 118 | 2.0 |
| Health care setting | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0.0 |
| Total Adults/Adolescents | 101 | 8 | 95 | 5 | 5 556 | 219 | 5 775 | 99.4 |
| Children (under 13 years at death following AIDS) | | | | | | | | |
| Mother with/at risk for HIV infection | 0 | 0 | 0 | 0 | 7 | 9 | 16 | 0.3 |
| Haemophilia/coagulation disorder | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0.0 |
| Receipt of blood/tissue | 0 | 0 | 0 | 0 | 11 | 2 | 13 | 0.2 |
| Total children | 0 | 0 | 0 | 0 | 21 | 11 | 32 | 0.6 |
| Sub-total | 101 | 8 | 95 | 5 | 5 577 | 230 | 5 807 | 100.0 |
| Other/undetermined ¹ | 9 | 0 | 7 | 1 | 171 | 8 | 197 | |
| Total | 110 | 8 | 102 | 6 | 5 748 | 238 | 6 004 | |

1 The 'Other/undetermined' exposure category includes 18 deaths following AIDS in people whose sex was reported as transgender. The category was excluded from the calculation of the percentage of cases attributed to each exposure category.

The National HIV Database

Table 3.1 Number of new diagnoses of HIV infection by sex¹ and State/Territory, cumulative to 31 March 2001, and for two previous yearly intervals

| State/Territory | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|--------------------------|----------------------|-----------|----------------------|-----------|-------------------------|--------------|---------------------------|-------------------|
| | Male | Female | Male | Female | Male | Female | Total | Rate ² |
| ACT | 8 | 2 | 6 | 1 | 229 | 27 | 256 | 82.2 |
| NSW ³ | 362 | 29 | 238 | 28 | 11 261 | 640 | 12 164 | 187.6 |
| NT | 5 | 1 | 1 | 1 | 109 | 10 | 119 | 60.7 |
| QLD | 119 | 20 | 87 | 14 | 2 093 | 169 | 2 269 | 63.4 |
| SA | 23 | 3 | 22 | 3 | 702 | 64 | 766 | 51.1 |
| TAS | 2 | 1 | 2 | 0 | 80 | 5 | 85 | 18.1 |
| VIC ⁴ | 143 | 13 | 145 | 21 | 4 050 | 233 | 4 322 | 90.4 |
| WA | 32 | 9 | 28 | 4 | 946 | 123 | 1 075 | 56.8 |
| Total⁵ | 694 | 78 | 529 | 72 | 19 470 | 1 271 | 21 056⁶ | 109.6 |

1 Forty nine people (21 NSW, 7 QLD, 15 VIC and 6 WA) whose sex was reported as transgender are included in the total columns of Tables 3.1 – 3.3

2 Rate per one hundred thousand current population. Population estimates by sex, State/Territory and calendar interval from *Australian Demographic Statistics* (Australian Bureau of Statistics).

3 Cumulative total for NSW includes 242 people whose sex was not reported.

4 Cumulative total for VIC includes 24 people whose sex was not reported.

5 Cumulative total for Australia includes 266 people whose sex was not reported.

6 Estimated number of new diagnoses of HIV infection, adjusted for multiple reports, was 18 250 (range 17 800 to 18 700). Reference: Law MG, McDonald AM and Kaldor JM. Estimation of cumulative HIV incidence in Australia, based on national case reporting. *Aust NZ J Public Health* 1996; 20: 215 – 217

Table 3.2 Number of new diagnoses of HIV infection for which exposure category was reported, by sex and exposure category, cumulative to 31 March 2001, and for two previous yearly intervals

| Exposure category | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | % |
|---|----------------------|-----------|----------------------|-----------|-------------------------|--------------|---------------------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ | |
| Male homosexual/ bisexual contact | 461 | – | 362 | – | 13 436 | – | 13 436 | 77.8 |
| Male homosexual/ bisexual contact and injecting drug use | 34 | – | 22 | – | 682 | – | 682 | 4.0 |
| Injecting drug use | 30 | 5 | 21 | 3 | 579 | 181 | 767 | 4.4 |
| <i>Heterosexual</i> | 19 | 5 | 14 | 3 | 215 | 130 | 346 | |
| <i>Not further specified</i> | 11 | 0 | 7 | 0 | 364 | 51 | 421 | |
| Heterosexual contact | 92 | 70 | 70 | 65 | 980 | 798 | 1 781 | 10.3 |
| <i>Sex with injecting drug user</i> | 1 | 4 | 0 | 6 | 31 | 90 | 121 | |
| <i>Sex with bisexual male</i> | – | 9 | – | 3 | – | 110 | 110 | |
| <i>From a high prevalence country</i> | 30 | 21 | 21 | 28 | 178 | 185 | 364 | |
| <i>Sex with person from a high prevalence country</i> | 24 | 15 | 25 | 13 | 164 | 91 | 255 | |
| <i>Sex with person with medically acquired HIV</i> | 0 | 2 | 0 | 0 | 5 | 16 | 21 | |
| <i>Sex with HIV infected person, exposure not specified</i> | 6 | 8 | 3 | 9 | 56 | 121 | 178 | |
| <i>Not further specified</i> | 31 | 11 | 21 | 6 | 546 | 185 | 732 | |
| Haemophilia/coagulation disorder | 1 | 0 | 0 | 0 | 227 | 4 | 231 | 1.3 |
| Receipt of blood/tissue | 0 | 0 | 0 | 0 | 103 | 102 | 205 | 1.2 |
| Health care setting ² | 0 | 0 | 0 | 0 | 3 | 8 | 11 | 0.1 |
| Total Adults/Adolescents¹ | 618 | 75 | 475 | 68 | 16 010 | 1 093 | 17 113 | 99.1 |
| Children (under 13 years at HIV diagnosis) | | | | | | | | |
| Mother with/at risk for HIV infection | 0 | 1 | 2 | 1 | 39 | 27 | 66 | 0.4 |
| Haemophilia/coagulation disorder | 1 | 0 | 0 | 0 | 67 | 0 | 67 | 0.4 |
| Receipt of blood/tissue | 0 | 1 | 0 | 0 | 13 | 8 | 21 | 0.1 |
| Total children | 1 | 2 | 2 | 1 | 119 | 35 | 154 | 0.9 |
| Sub-total | 619 | 77 | 477 | 69 | 16 129 | 1 128 | 17 267 | 100.0 |
| Other/undetermined ³ | 75 | 1 | 52 | 3 | 3 341 | 143 | 3 789 | |
| Total¹ | 694 | 78 | 529 | 72 | 19 470 | 1 271 | 21 056⁴ | |

1 Total column includes people whose sex was not reported.

2 'Health care setting' includes 5 cases of occupationally acquired HIV infection and 4 cases of HIV transmission in surgical rooms.

3 The 'Other/undetermined' exposure category includes 3 771 adults/adolescents and 18 children. Forty nine people whose sex was reported as transgender were included in the 'Other/undetermined' category. The 'Other/undetermined' category was excluded from the calculation of the percentage of cases attributed to each exposure category.

4 See footnote Table 3.1

Table 3.3 Number of new diagnoses of HIV infection by sex and age group, cumulative to 31 March 2001, and for two previous yearly intervals

| Age group (years) | 1 Apr 99 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | Cumulative to 31 Mar 01 | | | |
|--------------------------|----------------------|-----------|----------------------|-----------|-------------------------|--------------|--------------------|--------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ | % |
| 0–2 | 0 | 1 | 1 | 1 | 43 | 18 | 62 | 0.3 |
| 3–12 | 3 | 1 | 1 | 0 | 91 | 19 | 110 | 0.5 |
| 0–12 | 3 | 2 | 2 | 1 | 134 | 37 | 172 | 0.8 |
| 13–19 | 5 | 5 | 6 | 1 | 414 | 83 | 506 | 2.4 |
| 20–29 | 167 | 29 | 123 | 30 | 6 601 | 521 | 7 240 | 34.4 |
| 30–39 | 289 | 26 | 223 | 29 | 7 216 | 356 | 7 678 | 36.5 |
| 40–49 | 133 | 10 | 100 | 9 | 3 408 | 136 | 3 590 | 17.0 |
| 50–59 | 67 | 2 | 55 | 0 | 1 146 | 49 | 1 207 | 5.7 |
| 60+ | 25 | 3 | 17 | 2 | 380 | 58 | 440 | 2.1 |
| Not reported | 5 | 1 | 3 | 0 | 171 | 31 | 223 | 1.1 |
| Total¹ | 694 | 78 | 529 | 72 | 19 470 | 1 271 | 21 056 | 100.0 |

1 See footnotes Table 3.2

Table 3.4 Number of new diagnoses of HIV infection in the year 1 April 2000 to 31 March 2001 for which an HIV seroconversion illness was diagnosed or the date of a prior negative test was within one year of diagnosis of HIV infection, by sex and State/Territory and for two six month intervals of HIV diagnosis

| State/Territory | 1 Apr 00 – 30 Sep 00 | | 1 Oct 00 – 31 Mar 01 | | 1 Apr 00 – 31 Mar 01 | | |
|--------------------------|----------------------|----------|----------------------|----------|----------------------|-----------|--------------------|
| | Male | Female | Male | Female | Male | Female | Total ³ |
| ACT | 4 | 0 | 0 | 0 | 4 | 0 | 4 |
| NSW ¹ | 42 | 1 | 30 | 2 | 72 | 3 | 76 |
| NT | 0 | 0 | 1 | 1 | 1 | 1 | 2 |
| QLD | 9 | 0 | 16 | 2 | 25 | 2 | 27 |
| SA | 3 | 1 | 2 | 0 | 5 | 1 | 6 |
| TAS | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| VIC | 29 | 2 | 31 | 1 | 60 | 3 | 63 |
| WA ² | 6 | 0 | 5 | 0 | 11 | 0 | 12 |
| Total³ | 93 | 4 | 86 | 6 | 179 | 10 | 191 |

1 Total includes one person whose sex was not reported.

2 Total includes one person whose sex was reported as transgender.

3 Total includes one person whose sex was reported as transgender and one person whose sex was not reported.

Table 3.5 Number of new diagnoses of HIV infection in the year 1 April 2000 to 31 March 2001 for which an HIV seroconversion illness was diagnosed or the date of a prior negative test was within one year of diagnosis of HIV infection, by sex and exposure category and for two six month intervals of HIV diagnosis

| Exposure category | 1 Apr 00 – 30 Sep 00 | | 1 Oct 00 – 31 Mar 00 | | 1 Apr 00 – 31 Mar 01 | | |
|--|----------------------|----------|----------------------|----------|----------------------|-----------|--------------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ |
| Male homosexual/ bisexual contact | 78 | – | 77 | – | 155 | – | 155 |
| Male homosexual/bisexual contact and injecting drug use | 3 | – | 0 | – | 3 | – | 3 |
| Injecting drug use (female and heterosexual male) | 2 | 1 | 4 | 1 | 6 | 2 | 9 |
| Heterosexual contact | 7 | 3 | 4 | 5 | 11 | 8 | 20 |
| Health care setting | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other/undetermined | 3 | 0 | 1 | 0 | 4 | 0 | 4 |
| Total¹ | 93 | 4 | 86 | 6 | 179 | 10 | 191 |

1 Totals include one person whose sex was reported as transgender and one person whose sex was not reported.

Table 3.6 Number of new diagnoses of HIV infection in the year 1 April 2000 to 31 March 2001 for which an HIV seroconversion illness was diagnosed or the date of a prior negative test was within one year of diagnosis of HIV infection, by sex and age group and for two six month intervals of HIV diagnosis

| Age Group (years) | 1 Apr 00 – 30 Sep 00 | | 1 Oct 00 – 31 Mar 01 | | 1 Apr 00 – 31 Mar 01 | | |
|--------------------------|----------------------|----------|----------------------|----------|----------------------|-----------|--------------------|
| | Male | Female | Male | Female | Male | Female | Total ¹ |
| 13–19 | 3 | 0 | 2 | 0 | 5 | 0 | 5 |
| 20–29 | 23 | 3 | 27 | 3 | 50 | 6 | 56 |
| 30–39 | 48 | 1 | 31 | 3 | 79 | 4 | 84 |
| 40–49 | 11 | 0 | 18 | 0 | 29 | 0 | 29 |
| 50–59 | 8 | 0 | 6 | 0 | 14 | 0 | 14 |
| 60+ | 0 | 0 | 2 | 0 | 2 | 0 | 2 |
| Not reported | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total¹ | 93 | 4 | 86 | 6 | 179 | 10 | 191 |

1 Totals include one person whose sex was reported as transgender and one person whose sex was not reported.

Sentinel surveillance of HIV infection in sexual health clinics

Table 4.1 Number of people seen, number of people tested for HIV antibody and number of people newly diagnosed with HIV infection, by sex and sexual health clinic, during the quarter 1 January to 31 March 2001

| Sexual health clinic | Seen at Clinic | | Tested for HIV antibody | | Newly diagnosed with HIV infection | | |
|--|----------------|--------------|-------------------------|--------------|------------------------------------|----------|-----------|
| | Male | Female | Male | Female | Male | Female | Total |
| Sydney Sexual Health Centre, NSW | 1 467 | 1 073 | 587 | 401 | 5 | 1 | 6 |
| Livingstone Road Sexual Health Centre, Marrickville, NSW | 340 | 364 | 157 | 156 | 0 | 0 | 0 |
| Brisbane Sexual Health Clinic, QLD | 964 | 742 | 328 | 247 | 0 | 0 | 0 |
| Gold Coast Sexual Health Clinic, QLD | 410 | 514 | 139 | 184 | 2 | 0 | 2 |
| Clinic 275, Adelaide, SA | 1 046 | 638 | 671 | 410 | 1 | 1 | 2 |
| Melbourne Sexual Health Centre, VIC | 1 758 | 1 472 | 1 062 | 1 047 | 11 | 3 | 14 |
| Total | 5 985 | 4 803 | 2 944 | 2 445 | 19 | 5 | 24 |

Table 4.2 Number of people seen who had a *previous negative HIV antibody test*, percent retested for HIV antibody and number (percent) newly diagnosed with HIV infection, by sex and exposure category, during the quarter 1 January to 31 March 2001

| Exposure category | Previous negative HIV antibody test | | % retested for HIV antibody | | Newly diagnosed with HIV infection | | | % |
|---|-------------------------------------|--------------|-----------------------------|-------------|------------------------------------|----------|----------|------------|
| | Male | Female | Male | Female | Male | Female | Total | |
| Male homosexual/bisexual contact | 564 | – | 77.0 | – | 6 | – | 6 | 1.4 |
| Male homosexual/bisexual contact and injecting drug use | 59 | – | 66.1 | – | 1 | – | 1 | 2.6 |
| Injecting drug use (female and heterosexual male) | 150 | 125 | 62.7 | 57.6 | 0 | 0 | 0 | 0.0 |
| Heterosexual contact | 1 321 | 1 373 | 61.2 | 58.7 | 0 | 1 | 1 | 0.06 |
| <i>outside Australia</i> | 116 | 70 | 75.0 | 74.3 | 0 | 1 | 1 | 0.7 |
| <i>within Australia only</i> | 1 205 | 1 303 | 59.9 | 57.7 | 0 | 0 | 0 | 0.0 |
| Sex worker | – | 356 | – | 79.5 | – | 0 | 0 | 0.0 |
| Sex worker and injecting drug use | – | 36 | – | 69.4 | – | 0 | 0 | 0.0 |
| Other/undetermined | 72 | 100 | 78.6 | 75.0 | 1 | 0 | 1 | 0.7 |
| Total | 2 166 | 1 990 | 66.8 | 63.3 | 8 | 1 | 9 | 0.3 |

Table 4.3 Number of people seen with *no previous HIV antibody test*, percent tested for HIV antibody for the first time, and number (percent) newly diagnosed with HIV infection, by sex and exposure category, during the quarter 1 January to 31 March 2001

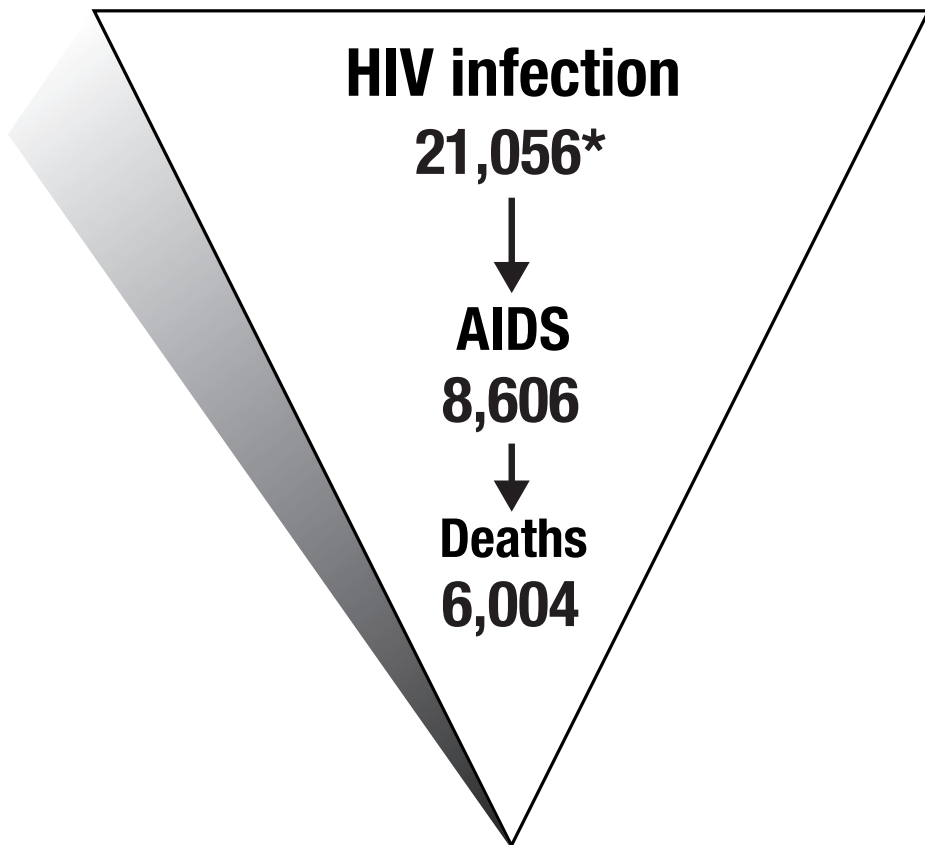
| Exposure category | No previous HIV antibody test | | % tested for HIV antibody | | Newly diagnosed with HIV infection | | | |
|--|-------------------------------|--------------|---------------------------|-------------|------------------------------------|----------|-----------|------------|
| | Male | Female | Male | Female | Male | Female | Total | % |
| Male homosexual/ bisexual contact | 751 | – | 40.7 | – | 8 | – | 8 | 2.6 |
| Male homosexual/bisexual contact and injecting drug use | 41 | – | 46.3 | – | 0 | – | 0 | 0.0 |
| Injecting drug use (female and heterosexual male) | 114 | 100 | 57.0 | 51.0 | 0 | 0 | 0 | 0.0 |
| Heterosexual contact | 1 977 | 2 127 | 47.9 | 43.3 | 1 | 3 | 4 | 0.2 |
| <i>outside Australia</i> | 111 | 110 | 63.1 | 62.7 | 1 | 2 | 3 | 2.2 |
| <i>within Australia only</i> | 1 866 | 2 017 | 46.9 | 42.2 | 0 | 1 | 1 | 0.06 |
| Sex worker | – | 93 | – | 66.7 | – | 0 | 0 | 0.0 |
| Sex worker and injecting drug use | – | 34 | – | 47.1 | – | 0 | 0 | 0.0 |
| Other/undetermined | 457 | 407 | 35.2 | 33.4 | 2 | 1 | 3 | 1.0 |
| Total | 3 340 | 2 761 | 44.8 | 43.0 | 11 | 4 | 15 | 0.6 |

Table 4.4 Number of people seen, number of people tested for HIV antibody and number of people newly diagnosed with HIV infection, by sex and age group, during the quarter 1 January to 31 March 2001

| Age group (years) | Seen at Clinic | | Tested for HIV antibody | | Newly diagnosed with HIV infection | | |
|-------------------|----------------|--------------|-------------------------|--------------|------------------------------------|----------|-----------|
| | Male | Female | Male | Female | Male | Female | Total |
| 13–19 | 184 | 438 | 102 | 187 | 0 | 0 | 0 |
| 20–29 | 2 156 | 2 523 | 1 213 | 1 277 | 8 | 4 | 12 |
| 30–39 | 1 983 | 1 205 | 973 | 634 | 5 | 0 | 5 |
| 40–49 | 871 | 449 | 387 | 262 | 6 | 0 | 6 |
| 50–59 | 585 | 153 | 190 | 73 | 0 | 0 | 0 |
| 60+ | 206 | 34 | 79 | 11 | 0 | 0 | 0 |
| Not reported | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| Total | 5 985 | 4 803 | 2 944 | 2 445 | 19 | 5 | 24 |

The HIV epidemic in Australia

A cumulative profile to 31 March 2001



* Estimated number of new diagnoses of HIV infection, adjusted for multiple reports, was 18,250 (range 17,800 to 18,700) cumulative to 31 March 2001.



Diagnoses in the first quarter

1 January – 31 March

- a total of 101 diagnoses of HIV infection, 27 diagnoses of AIDS and 13 deaths following AIDS were reported, by 30 June 2001, to have occurred in the first quarter of 2001
- following adjustment for reporting delay, the estimated numbers of AIDS diagnoses and deaths following AIDS occurring in the first quarter of 2001 were 45 and 25
- in comparison, 220 diagnoses of HIV infection, 76 diagnoses of AIDS and 32 deaths following AIDS were reported, by 30 June 2001, to have occurred in the first quarter of 2000

New HIV infection

During the first quarter of 2001, 32 cases were reported as having newly acquired HIV infection identified by a negative test within the 12 months prior to diagnosis or the diagnosis of HIV seroconversion illness. A history of heterosexual contact with a partner from a high prevalence country was reported in 3 (9.4%) cases.

Diagnoses in the year to 31 March 2001

- 604 diagnoses of HIV infection
- 163 diagnoses of AIDS
- 108 deaths following AIDS were reported by 30 June 2001

HIV diagnoses

People diagnosed with HIV infection in the year to 31 March 2001 had an average age of 36 years and 1.2% was in the age group 13 – 19 years

- 87.6% were male, 11.9% were female and sex was reported as transgender for 0.5% of cases
- of 68 cases of HIV infection in adult/adolescent women, newly diagnosed in the year to 31 March 2001 for which exposure to HIV was recorded, a history of heterosexual contact, either in a high prevalence country or with a partner from a high prevalence country, was reported in 60.3%.

Total diagnoses to 31 March 2001

- 21,056 diagnoses of HIV infection
- 18,250 diagnoses of HIV infection following adjustment for multiple reporting
- 8,606 diagnoses of AIDS
- 6,004 deaths following AIDS were reported by 30 June 2001

HIV testing in sexual health clinics

Six sexual health clinics in Adelaide, Brisbane, Gold Coast, Melbourne and Sydney tested 5,389 people in the quarter 1 January – 31 March 2001 who were not previously known to have HIV infection

- of 2,683 people reported as having been tested for the first time, 15 (0.6%) were found to have HIV infection
- of 2,706 people reported as having been retested following a previous negative test, 9 (0.3%) were found to have HIV infection
- of 52 women who reported a history of heterosexual contact overseas, and who were retested following a previous negative test, 1 (1.9%) was newly diagnosed with HIV infection

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Australian HIV Surveillance Report

National Centre in HIV Epidemiology and Clinical Research

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NOTES

The National AIDS Registry is maintained by NCHECR on behalf of the National HIV Surveillance Committee, which consists of representatives from NCHECR, and the Health Departments of each State and Territory and the Commonwealth of Australia. The Registry is based on reports from doctors who diagnose AIDS, made to the Health Department in the State/Territory of diagnosis. Date of birth and a name code (first two letters of first and last name) are used to minimise duplicate registration, while maintaining confidentiality.

The National HIV Database is maintained by NCHECR on behalf of the National HIV Surveillance Committee. It is based on reports of new diagnoses of HIV infection from HIV Reference Laboratories (ACT, NSW, TAS, VIC), or from a combination of Reference Laboratory and diagnosing doctors (NT, QLD, SA, WA). In order to avoid counting the same case more than once, only diagnoses which are determined to be new by the diagnosing laboratory or doctor are reported for the purposes of national surveillance.

Sentinel surveillance is carried out by six sexual health clinics in five Australian cities, which send quarterly reports on HIV antibody testing to NCHECR. Tabulations from the National AIDS Registry, the National HIV Database and Sentinel HIV Surveillance in sexual health clinics are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information.

Abbreviations: HIV is the human immunodeficiency virus, and unless otherwise specified, refers to HIV-1 only. AIDS is the acquired immunodeficiency syndrome and STI stands for sexually transmissible infection. Specified countries are those of sub-Saharan Africa and the Caribbean, where transmission of HIV is believed to be predominantly heterosexual. The Australian States and Territories are: Australian Capital Territory (ACT), New South Wales (NSW), Northern Territory (NT), Queensland (QLD), South Australia (SA), Tasmania (TAS), Victoria (VIC) and Western Australia (WA). NCHECR is the National Centre in HIV Epidemiology and Clinical Research.

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State/Territory publications of surveillance data, available through the Internet, are listed below:

| | |
|---|--|
| NSW Public Health Bulletin | www.health.nsw.gov.au/public-health/phb/phb.html |
| The Northern Territory Disease Control Bulletin | www.nt.gov.au/nths/public/cdc/bulletin.htm |
| Sexually Transmitted Diseases in South Australia | www.stdservices.on.net/publications |
| Victorian Infectious Diseases Bulletin | www.dhs.vic.gov.au/phd/vidb/ |
| Disease Watch | www.public.health.wa.gov.au/ |

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