

analyse this new situation. In the meantime, prevention has been intensified to avoid any relaxation of safe-sex practices, by seeking more attractive ways to disseminate the message, so as to reawaken the interest of the homosexual population in general and the youngest segment in particular.

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Increasing incidence of HIV infections among young gay and bisexual men in Vancouver

Since the beginning of the HIV epidemic in north America, the majority of HIV infections have occurred among men who engage in sexual relations with other men. As the HIV epidemic enters its third decade, gay and bisexual men continue to have among the highest rates of HIV infection. Previous studies [1,2] have highlighted the decline in the incidence of HIV and risk behaviour among gay and bisexual men. However, several studies [3,4] have suggested that young gay and bisexual men continue to engage in unprotected sexual behaviours and are at continued risk of HIV infection. Recent reports in the media [5–9] and research literature [10,11] have indicated an increase in the incidence of HIV among gay and bisexual individuals in many of the world's major cities. The purpose of this study was to determine trends in HIV incidence using data from a prospective cohort of young gay and bisexual men.

The Vanguard Project is a prospective study of gay and bisexual men aged 15–30 years, living in the greater Vancouver region. These men were recruited through outreach, clinics, and physicians' offices. To be eligible for this longitudinal study, the participants must have not previously tested positive for HIV and must have self-identified as gay or bisexual or have had sex with other men. Vanguard participants have completed a self-administered questionnaire and undergone HIV antibody testing on an annual basis since May 1995.

References

1. Batter V, and the European Study Group. **Trends in HIV seroprevalence among patients with sexually transmitted diseases in 17 European sentinel networks, 1990–1996.** *AIDS* 2000, **14**: 871–880.
2. Del Romero J, Castilla J, García S, *et al.* **Evolución de la prevalencia de infección por el virus de la inmunodeficiencia humana en un colectivo de varones homo/bisexuales (1986–1995).** *Med Clin (Barc)* 1997, **110**:209–212.
3. Van der Heyden JHA, Catchpole MA, Paget WJ, Stroobant A, and the European Study Group. **Trends in gonorrhoea in nine western European countries, 1991–6.** *Sex Transm Infect* 2000, **76**: 110–116.
4. Dodds JP, Nardone A, Mercey DE, Johnson AM. **Increase in high risk sexual behaviour among homosexual men, London 1996–8: cross-sectional, questionnaire study.** *BMJ* 2000, **320**: 1510–1511.
5. Grulich A. **HIV risk behaviour in gay men: on the rise? Monitoring risk behaviour and incidence of infection is essential.** *BMJ* 2000, **320**:1487–1488.
6. Suligoi B, Giuliani M, Galai N, Balducci M, and the STD Surveillance Working Group. **HIV incidence among repeat HIV testers with sexually transmitted diseases in Italy.** *AIDS* 1999, **13**:845–850.
7. Kellogg T, McFarland W, Katz M. **Recent increases in HIV seroconversion among repeat anonymous testers in San Francisco.** *AIDS* 1999, **13**:2303–2304.

The incidence of HIV was calculated per annum as the number of new infections divided by the total person-time under observation for each calendar year from study inception to December 2000. Person-time was calculated as the interval between enrolment and the most recent follow-up visit for individuals who did not seroconvert. For individuals who became HIV positive, person-time was calculated as the interval between enrolment and the first visit at which an HIV-positive test result was detected. Ninety-five per cent confidence intervals (CI) for the incidence estimates were calculated on the basis of Poisson distribution.

As of 31 December 2000, 668 men had completed at least one questionnaire and two HIV tests. Table 1 provides a summary of HIV incidence in the cohort by year since its inception in 1995. As shown here 26 HIV infections were prospectively observed over the follow-up period (mean follow-up 2.87 years), resulting in an overall incidence rate of 1.4 per 100 person-years (PY; 95% CI 0.8–1.9). Among participants who reported injection drug use, the incidence rate was higher (3.9/100 PY) than among those participants who did not report the use of injection drugs (1.0/100 PY). A significant increase in new HIV infections was observed between 1995–1999 and 2000 within the entire cohort. This remained true when participants who had injected drugs were excluded from the analysis ($P < 0.05$). Among men who had never injected drugs, the rate of new infections increased from 0.6 per 100 PY in 1995–99 (95% CI 0.2–1.0) to 3.7 per 100 PY in the year 2000 (95% CI 1.0–6.5).

Table 1. Incidence of HIV infection among gay and bisexual men^a enrolled in the Vanguard Project, by calendar year and category.

Year	All participants (n = 668)		Non-injection drug users (n = 590)		Injection drug users (n = 76)	
	New infections	Rate (95% CI)	New infections	Rate (95% CI)	New infections	Rate (95% CI)
1995	1	1.9 (0.0–5.7)	1	2.1 (0.0–6.1)	0	–
1996	4	1.3 (0.0–2.6)	3	1.1 (0.0–2.3)	1	4.1 (0.0–12.1)
1997	4	0.9 (0.0–1.8)	1	0.2 (0.0–0.7)	3	9.4 (0.0–20.1)
1998	5	1.1 (0.1–2.0)	4	0.9 (0.0–1.9)	0	–
1999	1	0.2 (0.0–0.7)	1	0.3 (0.0–0.8)	0	–
2000	11	5.0 (2.1–8.0)	7	3.7 (1.0–6.5)	3	9.6 (0.0–20.6)
1995–99	15	0.9 (0.4–1.3)	10	0.6 (0.2–1.0)	4	2.7 (0.1–5.3)
All years	26	1.4 (0.8–1.9)	17	1.0 (0.5–1.4)	7	3.9 (1.0–6.8)

CI, Confidence interval.

^aData regarding injection drug use were unavailable for two seroconverters, who were only identified through anonymous database linkage.

The observed increase in incidence in our cohort corroborates previous reports from other major cities [6–12]. Furthermore, the upturn in the incidence of HIV is consistent with increased rates of rectal gonorrhoea and sexual risk behaviour reported among gay and bisexual men [13]. Overall, such studies suggest the need for continued vigilant surveillance and further investigation of the determinants of seroconversion, in order to assist with the efforts to stabilize or decrease seroincidence in this population of men.

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References

1. Kingsley LA, Zhou SY, Bacellar H, *et al.* Temporal trends in human immunodeficiency virus type 1 seroconversion 1984–1989: a report from the Multicenter AIDS Cohort Study (MACS). *Am J Epidemiol* 1991, **134**:331–339.
2. van Griensven GJP, De Vroome EMM, Goudsmit J, Coutinho RA. Changes in sexual behaviour and the fall in incidence of HIV infection among homosexual men. *BMJ* 1989, **298**:218–221.
3. Hays RB, Kegeles SM, Coates TJ. High HIV risk-taking among young gay men. *AIDS* 1990, **4**:901–907.
4. Strathdee SA, Hogg RS, Martindale SL, *et al.* Determinants of sexual risk-taking among young HIV-negative gay and bisexual men. *J Acquired Immune Defic Syndr Human Retrovirol* 1998, **19**:61–66.
5. Quinn A. HIV cases double in gay capital. *The Gazette* 3 July 2000.
6. Russell SF. HIV rate surges: alarming incidence of new infections raises fears of scourge to come. *San Francisco Chronicle* 30 June 2000.
7. Quinn J. HIV rate rising among gay men. *Toronto Star* 4 July 2000.
8. Song J. Studies see increasing risk by gay men: three local surveys prove particularly alarming to scientists who fear a resurgence of AIDS. *Los Angeles Times* 17 February 2001.
9. Torassa U. San Francisco's HIV infection rate doubles. *San Francisco Chronicle* 24 January 2001.
10. Dodds JP, Nardone A, Mercey DE, Johnson AM. Increase in high risk sexual behaviour among homosexual men, London 1996–8: cross sectional, questionnaire study. *BMJ* 2000, **320**:1510–1511.
11. Kellogg T, McFarland W, Katz M. Recent increases in HIV seroconversions among repeat anonymous testers in San Francisco. *AIDS* 1999, **13**:2303–2304.
12. Brown D. High HIV rates seen in young Studies also note 'prevention fatigue' in older infected people. *Washington Post* 7 February 2001.
13. Centers for Disease Control and Prevention. Increases in unsafe sex and rectal gonorrhoea among men who have sex with men – San Francisco, California, 1994–1997. *MMWR* 1999, **48**: 45–48.