

## ARTICLE LINKS:

[References \(5\)](#) | [View full-size inline images](#)

AIDS: Volume 16(18)6 December 2002pp 2502-2503

## No increase in HIV incidence in a cohort of men who have sex with men in Montréal: too early to conclude? [CORRESPONDENCE]

Boily, Marie-Claude<sup>a</sup>; Bastos, Francisco Inácio<sup>b</sup>; Mâsse, Benoît<sup>c</sup>
<sup>a</sup>Division of STD and Prevention, Center for Disease Control, Atlanta, GA, USA; <sup>b</sup>Oswaldo Cruz Foundation, Rio de Janeiro, Brazil; and <sup>c</sup>SHARP, Fred Hutchinson Cancer Institute, Seattle, WA, USA.

Received: 24 May 2002; accepted: 10 June 2002.

One of us (B.M.) recently co-authored a research letter describing data from a cohort study of men who have sex with men (MSM) in Montréal [1]. In the light of new results from a mathematical modelling study [2,3], we briefly examined previous findings from a new perspective. The authors concluded that the modest increase in sexual behaviour and the declining HIV incidence among MSM in Montréal, compared with Toronto and Vancouver, is probably a result of the prevention programmes of local MSM/HIV community organizations [1]. We would like to highlight the difficulty in interpreting longitudinal trends and assessing the effectiveness of prevention programmes in the absence of controlled evaluation.

First, the evidence for the direction of the HIV incidence trend with time is statistically weak. Given that only 17 seroconversions were observed, the likelihood of a true increase in incidence among the cohort over the 4.4 year period is relatively high [HIV incidence (SE) in 1996-1997, 1998, 1999, 2000-2001 is, respectively, 0.76 (0.40), 0.65 (0.29), 0.58 (0.25), 0.34 (0.20)], and therefore cannot be ruled out. Furthermore, the higher HIV infection rates during the early follow-up visits (HIV incidence of 0.68 for the first three follow-up visits compared with 0.40 for visits 4 to 8), the high loss to follow-up (attrition of approximately 20 and 50% after 1 year and 4 years of follow-up, respectively), and the self-selection of cohort participants may have altered the representativeness of the cohort vis-à-vis the Montréal gay community. Given the high rate of attrition and the possible selection bias, it is not known whether the gonorrhoea and syphilis trends in men reported in the letter [1] also apply to the cohort participants.

Second, it is important to take the complex dynamics of HIV transmission and sexual behaviour into account in our interpretation, especially in the era of highly active antiretroviral therapy (HAART) [2,3]. The predicted impact [2,3] of the natural transmission dynamics of HIV/AIDS on sexual behaviour and gonorrhoea can be summarized as follows. Initially, when HIV spreads in a population, AIDS differentially depletes the higher sexually active risk population (through deaths or severe illness). Gradually, it becomes more difficult for those individuals who still want to engage in risky sexual activity to find partners and they may be forced to discontinue their high-risk sexual practices. The overall population level risk behaviour may thus decrease. After the introduction of HAART, the opposite effect may occur. At the individual level, HAART restores the quality of life of AIDS patients who can resume full sexual activity, it lengthens the incubation period and the survival of HIV/AIDS patients, and it potentially decreases the infectiousness of HIV-positive individuals. At the population level, these effects favour the renewal of the high-risk population. The increased availability of high-risk partners also enables those individuals who non-volitionally reduced their risky activities slowly to resume risky sex. As a result, population-level risk behaviours and heterogeneity slowly increase over time after the introduction of HAART independent of disease/treatment status. These changes in behaviour, which are sufficient to induce a significant increase in gonorrhoea rates (sometimes up to 25% over 5 years [2,3]), may or may not be followed by an increase in HIV incidence. Indeed, increases in high-risk behaviour and sexually transmitted infection (STI) rates are positively correlated with treatment coverage and efficacy. In other words, by reducing HIV transmission, better treatment efficacy and coverage increase the likelihood of observing an increase in high-risk behaviour and STI rates over time.

The difficulty in interpreting behavioural trends with time and between populations lies in the difficulty of disentangling between different plausible causes for the observed changes in high-risk behaviour. Indeed, the

population-level effect of HAART on behaviour and STI over time may vary between populations. First, upward trends predominantly occur if HAART is introduced at the mature stage of the HIV epidemic [2,3]. They are also more pronounced and rapid in populations characterized by high AIDS differential mortality, highly sexually heterogeneous, fast population renewal/replenishment, high treatment and compliance levels and less effective prevention.

In summary, the likelihood of a more effective prevention in Montréal cannot be rejected or ascertained *a priori*. The HIV dynamics of the MSM community in Montréal may have differed initially from Toronto or Vancouver. For example, the renewal of the MSM community in Montreal may be slower than in the other two cities. If the HIV epidemic in Montréal has unravelled at a slower pace or with a time lag compared with Vancouver or Toronto, then HAART may have been introduced at a slightly less mature stage of the HIV epidemic, thus explaining the slower increase in high-risk behaviours. Indeed, data from surveys directly carried out among MSM found a higher prevalence of HIV in Toronto (27-57%) and Vancouver (23-36%) than in Montréal (20-25%) in the early years of the epidemic [4,5].

The impact of increases in sexual behaviour and STI on HIV incidence in the HAART era is very complex to predict. As the authors mentioned, rightly so, bacterial STI and HIV incidence do not always vary in synchrony. To maximize prevention, it is therefore very important to continue research to distinguish between the different determinants of changes in behaviour, to understand the dynamics of sexual behaviour and the impact of HAART on HIV.

## References

1. Remis RS, Alary M, Otis J, *et al.* **No increase in HIV incidence observed in a cohort of men who have sex with other men in Montreal.** *AIDS* 2002, **16**:1183-1184.  
[Fulltext Link] [CrossRef] [Context Link]
  2. Boily MC, Bastos FI, Godin G, Hogben M. The putative impact of HAART on individual sexual behavior. In: XIVth International AIDS Conference. Barcelona, 7-12 July 2002 [Abstract WePeD6240].  
[Context Link]
  3. Boily MC, Mâsse B, Desai K. **The impact of HIV antiretroviral therapy (ART) on STD trends with time [Abstract T113].** Berlin: International Society of STD Research; 2002.  
[Context Link]
  4. HIV infection increases among MSM in Canada. [http://www.hc-sc.gc.ca/hpb/lcdc/bah/epi/msm\\_e.html](http://www.hc-sc.gc.ca/hpb/lcdc/bah/epi/msm_e.html)  
May 2001.  
[Context Link]
  5. Myers T, Godin G, Calzavara L, *et al.* *The Canadian Survey of Gay and Bisexual Men and HIV Infection: Men's Survey.* Ottawa, Ontario: The National AIDS Clearing House (Catalogue ISBN 0-921906-14-5); 1993.  
[Context Link]
- © 2002 Lippincott Williams & Wilkins, Inc.

---

Copyright © 2007, Lippincott Williams & Wilkins. All rights reserved.

Published by Lippincott Williams & Wilkins.

[Copyright/Disclaimer Notice](#) • [Privacy Policy](#)

 [Subscribe to our RSS feed](#)