

Trends in sexual risk behaviour and HIV incidence among MSM in North America

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Background

Men who have sex with men (MSM) continue to be the population most at risk during the HIV epidemic in Canada and the United States. In 1996, MSM accounted for only about 37% of new HIV infections in Canada, an all-time low. Since then, the rate has increased, reaching nearly 45 per cent in 2005. Currently, MSM continue to be the group most affected in Canada, accounting for an estimated 68.1% of all HIV infections^[1]. While there has been a significant decrease in incidence following the start of the epidemic, several studies have noted an increase in HIV incidence among MSM began around the year 2000^[2]. This trend is reflected in several high income countries outside Canada and the United States, including the Netherlands^[3], France^[4], and the United Kingdom^[5].

Historically, HIV incidence within MSM populations has decreased steadily even before the availability of highly-active anti-retroviral therapy (HAART) in 1996. There is a noted decrease in risky sexual behaviours, such as unprotected anal intercourse (UAI) with partners of unknown serostatus. Condom usage also became more frequent. The changes in risk behaviour trends were reflected in the decrease of HIV incidence. Given the recent increase in HIV incidence, it is possible that there has been a resurgence of UAI behaviour among MSM. UAI is reported quite often by MSM, with HIV+ MSM generally reporting more frequent or recent UAI activity.

Methodology

Inclusion criteria:

Peer-reviewed English language literature from January 1, 1980 to Dec. 31, 2009 were obtained using a MEDLINE search on HIV incidence and sexual risk behaviours among MSM. To best reflect the general population, all studies within North America (Canada and the United States) are included. There has been little to no association found between risk behaviours and macro-social factors, such as socio-economic status or education^[1], thus we will include all MSM data regardless of social strata.

MSM who are also injecting drugs users were excluded since the focus of the literature search was on sexual risk behaviour.

Data synthesis

Incidence trends were constructed by extracting HIV incidence data from eligible studies that were stratified by time and by pre-and post-HAART (post HAART era defined as 1996-present). Risk behaviour trends were similarly constructed. Data on HIV incidence and UAI were summarised using ANOVA. Trend lines were fitted using a quadratic fit line using SPSS 17. Pearson's correlations were also calculated using SPSS 17.

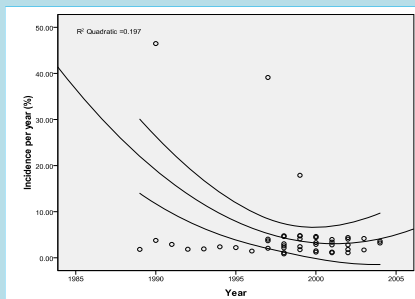


Figure 1 Incidence of HIV in North America

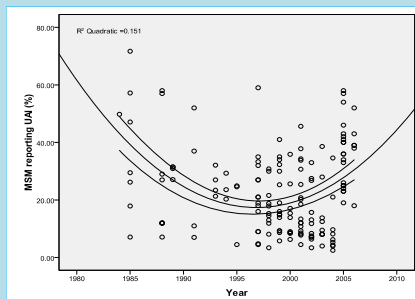


Figure 2 UAI in North America

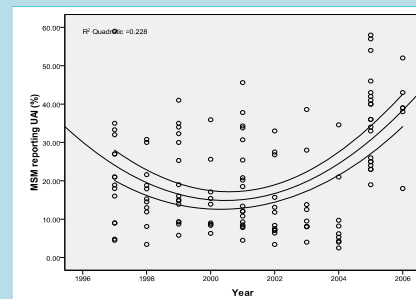


Figure 3 UAI in North America (post-HAART)

Results

HIV incidence

Our data indicate that HIV incidence (Fig. 1) in North America is rising among MSM populations ($p < 0.05$). HIV incidence decreased initially, but has been increasing since approximately the year 2000.

Trends in UAI behaviour

Several studies reported incidence and risk behaviour data over multiple years. The proportion of MSM reporting UAI (Fig. 2) has increased with time ($p < 0.001$). This trend was also reflected in the post-HAART era (Fig. 3) ($p < 0.001$). The period of UAI increase (approximately 1997) appears to precede the period of increase in HIV incidence.

Correlation between incidence and UAI

There was a very weak correlation between overall HIV incidence and UAI ($r = 0.068$, $\text{sig} = 0.652$).

There was a weak positive correlation between post-HAART HIV incidence and post-HAART UAI ($r = 0.311$, $\text{sig} = 0.057$) (Fig. 4).

Conclusion

Using ANOVA reveals a significantly increasing trend in UAI and post-HAART UAI in North America. While HIV incidence continues to increase in North America among MSM populations, there is little correlation between increasing UAI and HIV incidence.

UAI continues to be an important factor in the increasing incidence of HIV in North America among MSM; however, data suggests there are other factors to consider.

Further analyses on other sexual risk behaviours, including recreational non-injection drug use, extreme sexual risk behaviours (e.g. Rimming, fisting), lower risk behaviours and individual pre-cognitions and behavioural intentions may provide further insight into this trend.

Our findings point to continued need for prevention of sexual risk behaviour among MSM, as well as the need to consider factors which influence sexual risk behaviour, such as psychosocial stressors.

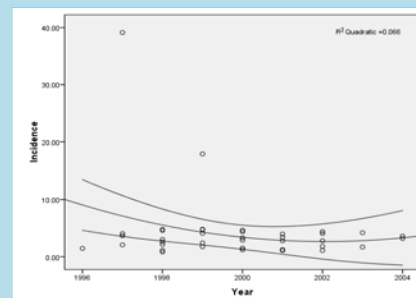


Figure 4 Correlation between UAI and Incidence (post-HAART)

References

- [1] Public Health Agency of Canada (2007). HIV/AIDS Epi Updates 2007. [2] Hogg RS, Weber AE, Chan K, Martindale S, Cook D, Miller ML, Crab KJ. Increasing incidence of HIV infections among young gay and bisexual men in Vancouver. *AIDS*, 15(10), 1321-1322. [3] Dukers HTM, Spaargaren J, Geskus RB, Beijnen J, Coutinho RA & Fennema-Notestine C (2002). HIV incidence on the increase among homosexual men attending an Amsterdam sexually transmitted disease clinic: using a novel approach for detecting recent infections. *AIDS*, 16, F19-24. [4] Le Vu S, Le Strat L, Cazain F, Pillonel J, Brunet S, Bousquet V, Semaille C, Meyer L, Barin F, Desenclos J-C (2010). Population-based HIV incidence in France, 2003 to 2006. [5] Chadborn TR, Baster K, Delpech VC, Sablin CA, Sinka K, Rice BD, Evans BG (2005). No time to wait: how many HIV-infected homosexual men are diagnosed late and consequently die? (England and Wales, 1993-2002). *AIDS*, 19, 513-520.