

Increasing role of young MSM to HIV spread and renewal



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Background

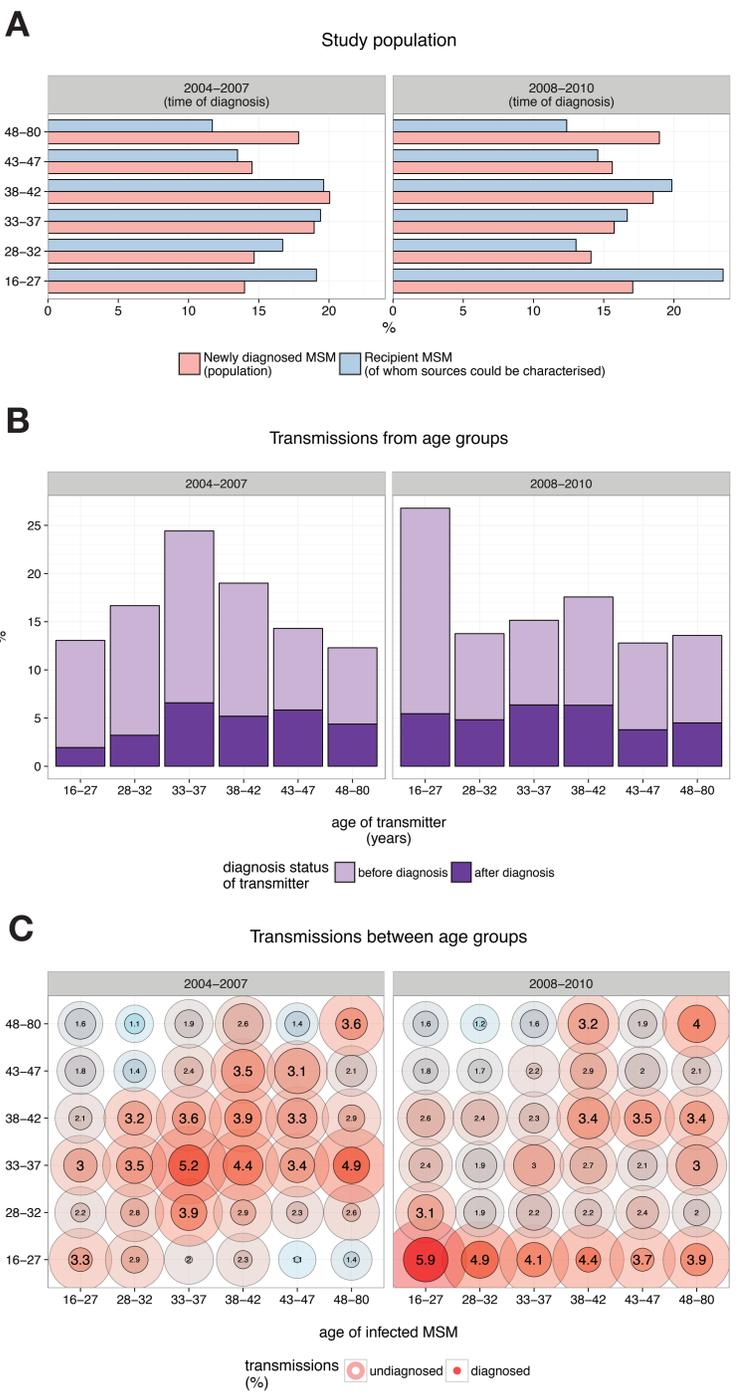
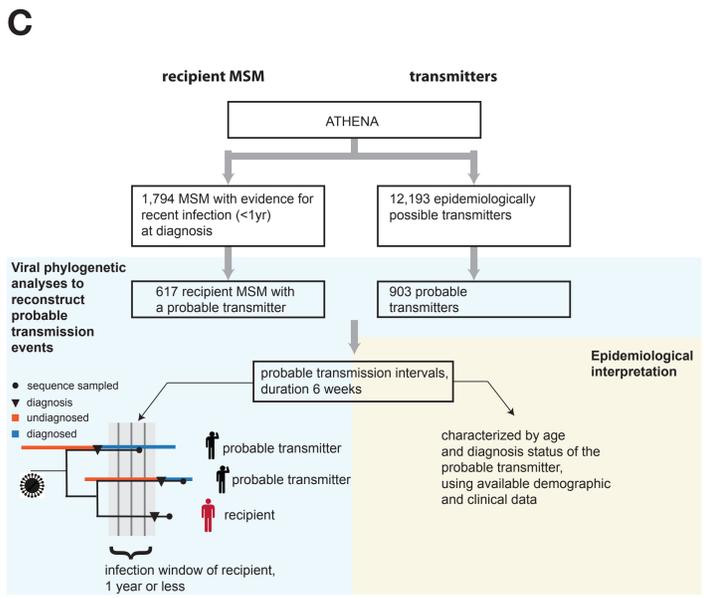
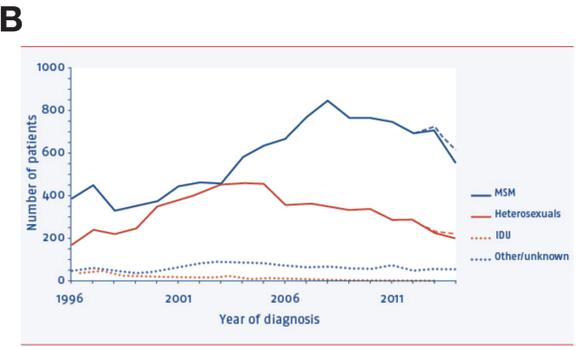
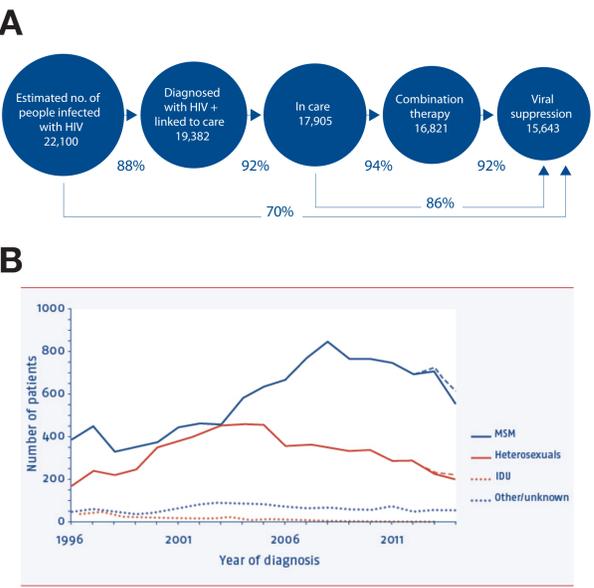
In the Netherlands, HIV treatment and care is provided in one of 27 HIV treatment centres (top right). In 2014, 69% of new diagnoses were in men who have sex with men, and <6% had unknown mode of transmission⁶. In the same year, the Netherlands was close to achieving the UNAIDS 90-90-90 targets (figure 1A)⁷. However, the annual number of new diagnoses amongst MSM has remained high (figure 1B)⁸, with 71% [66%-73%] estimated to originate from undiagnosed men⁹. The age at diagnosis among MSM increased from 37 years in 1996 to 41 years in 2014⁶. This challenges the perception that young, high-risk MSM are the predominant source of infection in high income countries.

Objectives

- To estimate the proportion of transmissions among MSM by age and diagnosis status.

Methods

- Nearly all HIV diagnosed men and women are enrolled in the open, opt-out ATHENA cohort. 1,794 MSM were confirmed to have been infected in the year before diagnosis, and 58% of those had a viral sequence sampled. Through viral phylogenetic analyses, we identified 903 probable transmitters to 617 recently infected recipient MSMX (figure 1C)⁹.
- Demographic and clinical data from the ATHENA cohort were used to characterize these transmission events by age and diagnosis status. Statistical modelling adjusted for sampling and censoring biases⁹.
- Limited sequence coverage required us to restrict this multivariate analysis to 509 transmission events between 2004 and 2010; stratified into the time periods 2004-2007 (274 recipients) and 2008-2010 (235 recipients).



Results

- The group of recipient MSM whose transmission events could be characterized differed by age from the newly diagnosed MSM as shown in figure 2A. Results were adjusted for these differences in the analysis and study populations, leading to estimates different to those reported in the abstract.
- Figure 2B shows that the estimated proportion of transmissions from young men aged <28 years increased substantially from 2004-2007 to 2008-2010, with most of these transmissions originating from undiagnosed young MSM.
- Figure 2C shows the estimated proportion of transmissions between age groups (text), illustrating also the contribution from diagnosed men (inner circle) and undiagnosed men (outer ring). Transmissions were not concentrated within age groups. Further, transmission dynamics appear to have shifted substantially over calendar time. Men aged <28 years continued to be infected from older men, and transmitted increasingly amongst peers as well as older men.

Conclusions

- Young men appear to be increasingly linked within the MSM epidemic in the Netherlands and appear to infect relatively more older men than previously. The increasing age at diagnosis is a consequence of complex and changing transmission dynamics by age.
- Sensitivity analyses to validate the estimated increase in transmissions from men aged < 28 years are on-going.

References and author affiliations

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Figure 2. (A) Study population by age group. Young MSM were overrepresented among those MSM whose sources could be characterized. (B) Proportions of transmissions from age groups to the 509 recipient MSM. (C) Proportion of transmissions between age groups.



Figure 1. (A) Cascade of care in the Netherlands. (B) New HIV diagnoses per year. (C) Methods chart.