

Estimating the Size of the Undiagnosed HIV Population in the Netherlands by Disease Stage

Ard van Sighem¹, Fumiyo Nakagawa², Daniela Bezemer¹, Daniela De Angelis³, Eline Op de Coul⁴, Matthias Egger⁵, Frank de Wolf⁶, Christophe Fraser⁶, Andrew Phillips²

¹Stichting HIV Monitoring, Amsterdam, NL; ²University College London, London; ³MRC Biostatistics Unit, Cambridge, UK; ⁴National Institute for Public Health and the Environment, Bilthoven, NL; ⁵Institute for Social and Preventive Medicine, Bern, CH; ⁶Imperial College School of Medicine, London, UK

Background

- Previous studies showed that a large proportion of HIV-infected individuals in the Netherlands are unaware of their HIV infection^{1,2}.
- However, recent estimates of the size of this group are not available.
- We sought to estimate the number and proportion of undiagnosed individuals stratified by risk group and by CD4 cell count stratum.

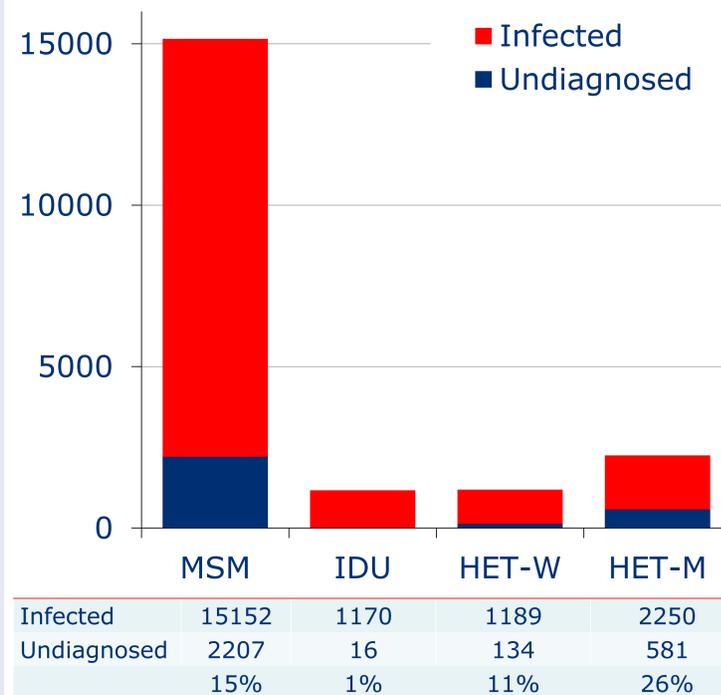
Methods

- We used a newly developed adaptation of a back-calculation method by Sweeting *et al*³.
- The method describes disease progression in the absence of antiretroviral treatment from infection to HIV diagnosis or onset of AIDS through stages of CD4 counts.
- Rates of progression between CD4 stages are based on data from untreated HIV-infected patients in the CASCADE collaboration⁴.
- By fitting to observed data from the ATHENA national observational cohort we can simultaneously estimate
 - number of annual new HIV infections since the start of the epidemic in 1980.
 - CD4 stratum-specific diagnosis rates.
- Data items include
 - annual number of new HIV diagnoses
 - annual total number of AIDS cases
 - annual number of HIV/AIDS diagnoses
 - CD4 cell counts at diagnosis

Results

- Cumulative 19,671 infections by the end of 2011.
- In 2011 there were 767 new infections of which 642 (84%) in men who have sex with men (MSM).
- 2938 (15%) of all infections were still undiagnosed.

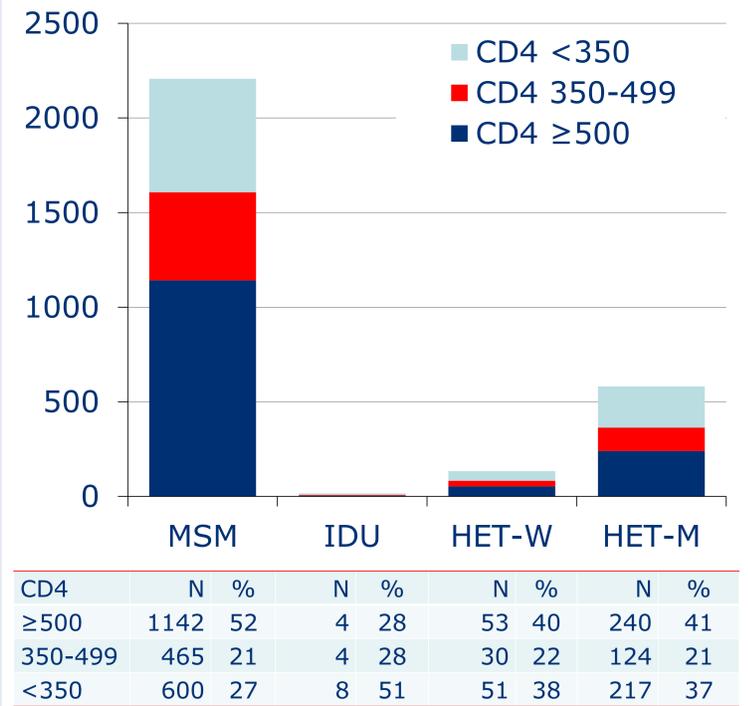
Figure 1: Cumulative number of HIV infections in the Netherlands by risk group by the end of 2011. MSM: men who have sex with men; IDU: injection drug users; HET-W: heterosexual women, Dutch origin; HET-M: heterosexual men, Dutch origin.



References

- ¹Bezemer *et al*, *Epidemics* 2010, 2:66-79.
²Van Veen *et al*, *AIDS* 2011; 25:229-237.
³Sweeting *et al*, *Stat Med* 2005, 24:3991-4007.
⁴Lodi *et al*, *CID* 2011, 53:817-825.

Figure 2: Total number of HIV infections still undiagnosed by the end of 2011 stratified by CD4 count. MSM: men who have sex with men; IDU: injection drug users; HET-W: heterosexual women, Dutch origin; HET-M: heterosexual men, Dutch origin.



Conclusions

- Although MSM form the largest group of HIV-infected individuals unaware of their infection, the estimated CD4 distribution suggests that approximately half of them are in an early stage of infection and have been infected only recently.
- Approximately 30% of the undiagnosed individuals are already in immediate need of treatment.
- This proportion is even higher in groups other than MSM although absolute numbers of undiagnosed individuals in these groups are much smaller.

Contact

Ard van Sighem
 Stichting HIV Monitoring
 E: a.i.vansighem@amc.uva.nl
 T: +31205666781
 www.hiv-monitoring.nl