

Estimating the number of people living with HIV/AIDS in the Netherlands



Stichting HIV Monitoring
Meibergdreef 9
1105 AZ Amsterdam, the Netherlands
phone/fax: +31-20-5666781/5669189
email: a.i.vansighem@amc.uva.nl

Ard van Sighem¹, Christophe Fraser², Daniela Bezemer¹, Geoff Garnett², Frank de Wolf^{1,2}

¹Stichting HIV Monitoring, Amsterdam, NL; ²Imperial College School of Medicine, London, UK

Background

- In their 2008 report, UNAIDS estimated that the number of people living with HIV or AIDS (PLWHA) in the Netherlands in 2007 amounted to 18,000 with estimates ranging between 10,000 and 32,000.
- This number heavily relies on not always reliable estimates of risk group sizes and HIV prevalences.
- We used an alternative method that was able to estimate the number of PLWHA without using estimates on group size and HIV prevalence.

Methods

- A mathematical model based on Bezemer *et al.* (AIDS 2008) was used to describe HIV transmission amongst men having sex with men (MSM), and amongst patients infected via heterosexual contact or unknown transmission routes ("heterosexuals").
- By estimating changes in transmission rates, diagnosis rates, and immigration patterns needed to explain observed data on HIV and AIDS diagnoses, the model was able to estimate the annual number of infections and the number of PLWHA.

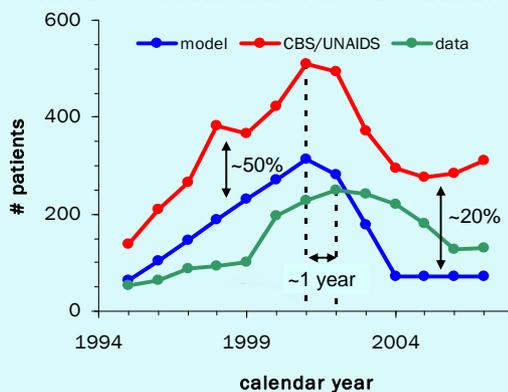
Longitudinal data on HIV and AIDS diagnoses

- Patients diagnosed up to 2007 were selected from the ATHENA database which includes data of 98% of all HIV-infected patients seen in clinical care in the Netherlands.
- 13,371 (92.6%) HIV-1-infected patients were selected out of 14,432 diagnosed classified according to region of infection

country of infection	N	MSM		heterosexual	
		N	%	N	%
the Netherlands	6697	86.3	2521	45.0	
Sub-Saharan Africa	58	0.8	2096	37.4	
other countries	1009	13.0	989	17.6	
total	7765	58.1	5606	42.2	

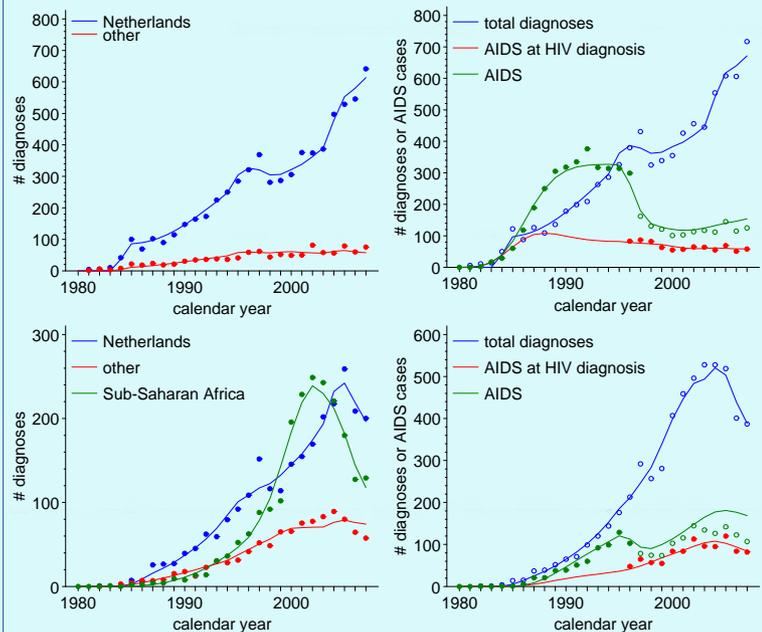
Sub-Saharan population

- Import of infections from Sub-Saharan Africa was modelled based on the estimated import using per country data on HIV prevalences (UNAIDS) and number of immigrants (CBS).
- The number of observed diagnoses amongst Sub-Saharan Africans peaked ~1 year later than the estimated number of imported infections.
- Our model estimated that only 20-50% of the infections from Sub-Saharan Africa would be diagnosed, thus underestimating the number of HIV-infected individuals from Sub-Saharan Africa.



HIV and AIDS diagnoses

Annual number of diagnoses and AIDS cases for MSM (upper plots) and for those infected via heterosexual contact or unknown transmission routes (lower plots); lines: model fit; dots: data used in the fit; open circles: data not used in the fit.



Population estimate

- According to the model, the total number of PLWHA at the end of 2007 was 14,223, including 8358 (60.0%) MSM and 5866 (40.0%) heterosexuals.
- 18.7% were still unaware of their infection.

	total		unaware of infection	
	N	%	N	%
MSM				
total	8358	60.0	1698	20.3
Netherlands	7340	60.0	1563	21.3
other	1017	13.0	135	13.3
heterosexuals				
total	5866	40.0	960	16.4
Netherlands	2738	46.7	521	19.0
sub-Saharan Africa	2083	35.5	244	11.7
other	1045	17.8	195	18.7
total	14,223	100.0	2658	18.7

Conclusions & discussion

- Our transmission model estimates a smaller HIV-infected population than UNAIDS and Van Veen *et al.* (poster 24).
- The actual population size will ~15,000 as our estimate was based on 92.6% of the diagnosed population.
- The validity of the model depends on registration of *all* known HIV-infected patients in the SHM database.
- A limitation is that the model assumes that all HIV-infected patients will be tested sooner or later, which is likely not to be true for migrants who temporarily reside in the Netherlands.