

A medical care career approach to model HIV/AIDS incidence and prevalence in Switzerland 1980-2010 combining cohort and surveillance data

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Objectives: There is a lack of models connecting surveillance data with data from cohort studies. Surveillance systems provide the total number of new HIV infections, AIDS diagnoses and deaths in a given region, but rarely account for immigration/emigration. Further, they may not capture the proportion of people living with HIV/AIDS (PLWHA) in medical care and are unable to ascertain the number of people unaware of their HIV infection. On the other hand, cohort studies allow to closely follow the medical care career but have the shortcoming of under-coverage, i.e. not all PLWHA participate.

Methods: Using data from the Swiss HIV Cohort Study (SHCS) we developed a medical care career model that also estimates the coverage, i.e. the annual proportion of all people living with HIV or AIDS in Switzerland that participate in the SHCS. The main parameters of the model were: year of HIV infection, survival and emigration rate, lag-time distribution between infection and HIV diagnosis/entry in medical care, cohort study coverage.

Results: The medical care career model generally fitted well with a range of surveillance data of Switzerland. Between 1997 and 2010 about 51 to 55 percent of all PLWHA in Switzerland participated in the SHCS. For 2009 we estimated between 2% (IDU) and 15% (MSM) of people unaware of their HIV infection. The model also revealed that since 2008 the surveillance data were up to 45% incomplete with respect to the number of deaths after AIDS diagnoses. Further, over the last decade, only about 75% of HIV diagnoses of non-Swiss MSM were reported to the Swiss surveillance system which may be due to immigration without confirmatory HIV testing in Switzerland.

Conclusion: It was feasible to develop a medical care career model of HIV/AIDS with cohort data that in turn revealed shortcomings of the surveillance system.