

Longitudinal trends of recent HIV-1 infections among newly diagnosed individuals in Slovenia (1986-2012) determined using baseline CD4 and HIV viral load measurements and BED assay

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Objectives: Annual proportions of recent infections (RI) among newly diagnosed HIV-1 infected individuals in Slovenia during 27 years (1986-2012) were determined using an algorithm consisting of routine baseline CD4 and HIV viral load measurements and the Aware BED EIA HIV-1 Incidence Test (BED test).

Methods: The study included the highest coverage of individuals diagnosed with HIV during the entire duration of an HIV epidemic in a given country/region (71%). Out of 416 patients, 170 (40.9%) had a baseline CD4 cell count less than 200 cells/mm³ and/or HIV-1 viral load less than 400 copies/ml and were characterized as having long-standing infection (LSI) without further BED testing. The remaining 246 patients were additionally tested using the BED test.

Results: Overall, 23% (97/416) of the patients were labeled RI and 77% (319/416) LSI. The characteristics significantly associated with RI were: younger age at time of diagnosis ($p=0.0004$), acute retroviral syndrome ($p<0.0001$), CDC class A ($p<0.0001$), CDC class other than C ($p<0.0001$), no AIDS defining illnesses ($p<0.0001$), HIV test performed in the past ($p=0.0008$), a higher viral load ($p=0.0108$) and a higher CD4 cell count ($p<0.0001$). An interesting trend in the proportion of RI was observed over the years, with a peak in 2005 (47% of RI) and the lowest point in the 2008 (12%) in parallel with a rise in the numbers of new HIV diagnoses (Figure 1).

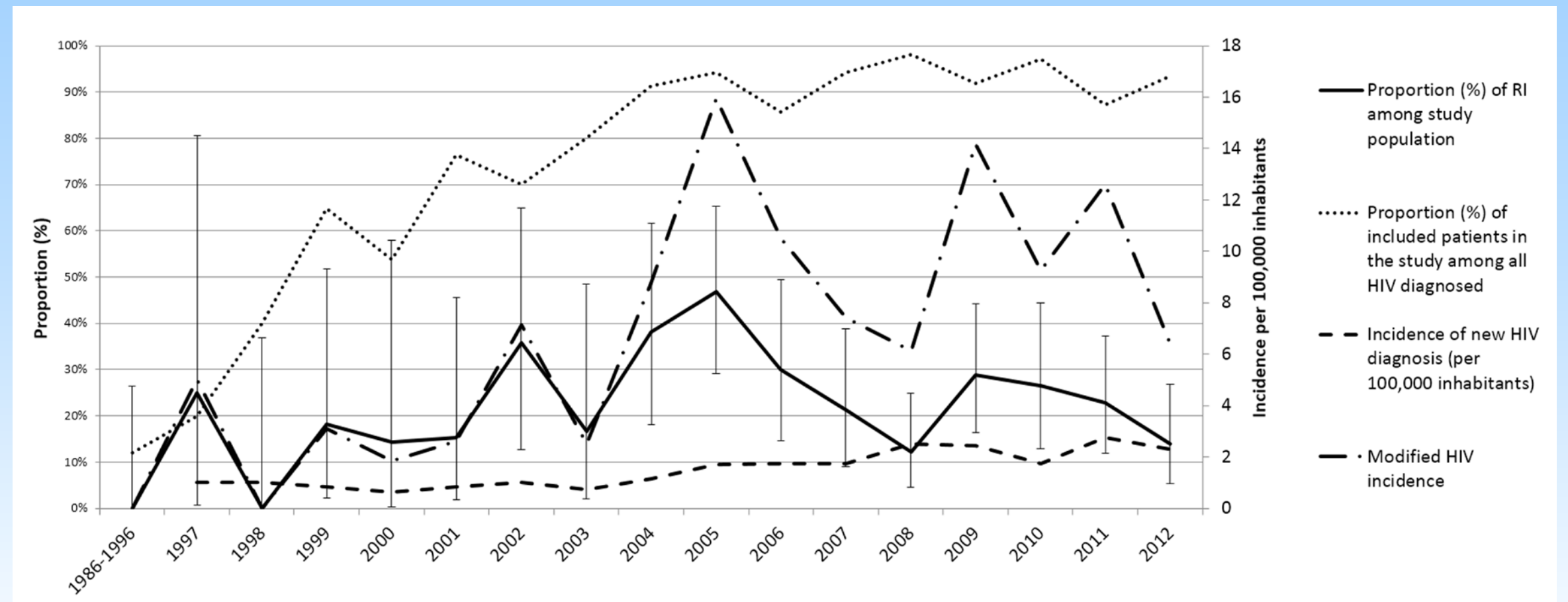


Figure 1. Solid line: Longitudinal trends of HIV incidence during 27 years (1986-2012) in Slovenia determined by measuring annual proportions of recent infections among newly diagnosed persons infected with HIV-1, using an HIV incidence algorithm consisting of routine baseline CD4 cell count and HIV viral load measurements and additional BED testing and corresponding 95% confidence intervals (Fisher exact test). Results from patients diagnosed from 1986-1996 are depicted together, due to the small numbers. **Dashed line:** Incidence of new HIV diagnoses per 100,000 inhabitants. **Dotted line:** Coverage of newly diagnosed HIV patients in a given year included in the study. **Dashed-dotted line:** Modified incidence obtained by multiplying the proportion of recent infections with the incidence of new HIV diagnoses per 100,000 inhabitants.

Conclusion: In this longitudinal study across almost three decades, in which by far the highest coverage of individuals diagnosed with HIV during an entire duration of an HIV epidemic in a given country/region was studied (71%), some interesting time trends in the annual proportions of RI among newly diagnosed HIV-1 infected individuals were identified and significant characteristics associated with RI determined, mostly in connection with earlier linkage to the care of individuals defined as RI. This study could help promote the idea of introducing organized regular periodic (e.g., annual) HIV incidence monitoring in Central/Eastern Europe using a reliable, simple and affordable test algorithm consisting of routine baseline CD4 and HIV viral load measurements and additional BED testing in the subset of newly diagnosed patients.

