# AIDS is still there: Decreasing incidence but stable absolute number of new AIDS diagnoses among cART treated HIV infected patients

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## Background

Since the introduction of combination antiretroviral treatment (cART), mortality rates and incidence of AIDS amongst HIV-infected individuals have been in a steady decline whilst the incidence of serious non-AIDS diseases has been increasing..

## Objective

To report on trends over time in the incidence of AIDS and serious non-AIDS diseases since 1996 among cART treated patients in the Netherlands.

## Methods

### Patients

- HIV-1 infected patients aged 16 years
- cART started between 1 July 1996 and 31 December 2009.

### Outcome

- Number and Incidence of first new AIDS defining events and serious non-AIDS defining events after initiation of cART.
- Non-AIDS defining events included: liver disease (fibrosis, cirrhosis or hepatocellular carcinoma), renal insufficiency (chronic or acute), diabetes mellitus, myocardial infarction, cerebrovascular accident, osteoporosis and non-AIDS malignancies.

### Statistical analysis

The incidence of serious non-AIDS events was calculated from the start of routine data collection of the event under question. Reported 95% confidence intervals (CI) are based on the Poisson distribution.

## Results

- During 80,331 person-years of follow up in 13013 patients, 1782 AIDS diagnoses (incidence of 24.7 per 1000 person-years, 95% CI 23.5-25.8) and 1212 serious non-AIDS diagnoses (22.4 per 1000 person-years, 95% CI 21.2-23.7) were recorded.

| | Latest CD4 cell count (cells/mm³) | Diagnoses | PY | Incidence/ 1000 PY (95% CI) |
|---|---|---|---|---|
| Any AIDS | <50 | 424 | 724 | 585.4 (531.0-643.9) |
| | 50 - 200 | 560 | 6336 | 88.4 (81.2-96.0) |
| | 200 - 350 | 344 | 14096 | 24.4 (21.9-27.1) |
| | 350 - 500 | 195 | 17163 | 11.4 (9.8-13.1) |
| | ≥500 | 187 | 32375 | 5.8 (5.0-6.7) |
| Any serious non-AIDS–defining disease | <50 | 58 | 523 | 110.8 (84.1-143.3) |
| | 50 - 200 | 205 | 4151 | 49.4 (42.9-56.6) |
| | 200 - 350 | 272 | 10327 | 26.3 (23.3-29.7) |
| | 350 - 500 | 246 | 13336 | 18.4 (16.2-20.9) |
| | ≥500 | 424 | 24982 | 17.0 (15.4-18.7) |

**Table 1.** Incidence per 1000 person-years (PY) of newly diagnosed, routinely collected, non-AIDS-defining disease and any AIDS-defining disease per the latest CD4 cell count after the start of cART.

- Incidence of both AIDS and serious non-AIDS diseases decreased with higher latest CD4 cell counts.
- The association of higher latest CD4 cell counts with lower incidence of disease is much stronger for AIDS than non-AIDS diseases.
- Incidence of non-AIDS events, 19.4 per 1000 person-years (95% CI 18.1-20.6) were higher than that of AIDS 11.4 per 1000 person-years (10.6-12.3) when CD4 cell counts are ≥200 cells/mm³ (p<0.0001).

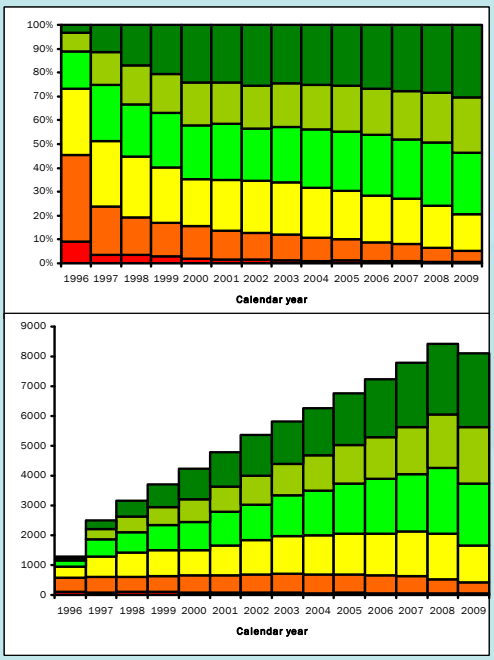


**Figure 1:** Last available CD4 cell count in each calendar year after the start of cART. The top plot shows the percentage and the bottom plot the number of patients. For each patient, the last available CD4 cell count after the start of cART between July and December of each year was selected.

- **Figure 1** shows that the proportion of patients at risk for AIDS (CD4 cell counts <200 cells/mm³) among treated patients in each calendar year decreased from 24% in 1997 to 6% in 2008 (p<0.0001). In other words the proportion of treated patients with medium-high CD4 cells has increased over time.
- However, the absolute number of patients with at high risk of AIDS (CD4 cell counts <200 cells/mm³) remained stable at 650-700 patients in each year.

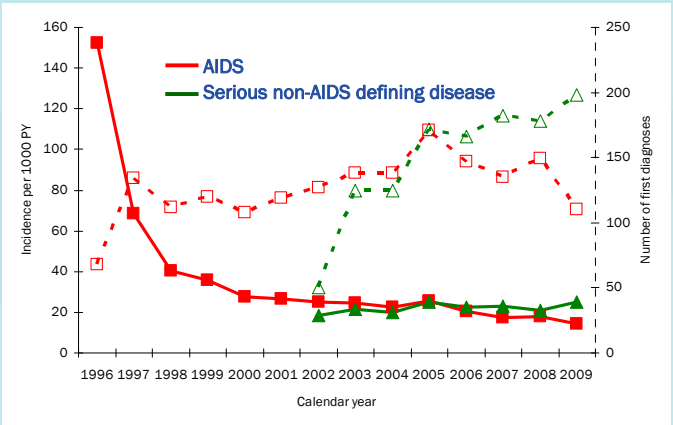


**Figure 2:** Incidence per 1000 person years of follow-up (solid lines) and number of diagnoses (dashed lines) of a first new AIDS diagnosis (red line) and first serious non-AIDS–defining disease (green line) after the start of cART per calendar year.

- The annual incidence of serious non-AIDS events showed an increasing incidence over time from 18.4 per 1000 person-years in 2002 to 25.3 in 2009
- In contrast, the incidence of AIDS decreased (from 40.6 in 1998 to 14.1 in 2009).
- However, the number of new AIDS diagnoses between 2005 and 2008 remained stable at 120-140 per year.

## Conclusion

To further reduce mortality and morbidity in HIV infected patients, risk factors for non-AIDS diseases will need to be addressed. The incidence of AIDS has declined steadily over time but obscures that the number of patients newly diagnosed with AIDS and patients with low CD4 cell counts have been stable over time. The stable number of AIDS diagnoses and patients with low CD4 cell counts over time shows that there is scope for improving the rate of HIV testing in groups at high risk for infection.