Improvements in all cause mortality across Europe 2002-2007 and regional differences in incidence of deaths from AIDS and non-AIDS

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Introduction

• Previous studies have documented improvements in survival after introduction of cART\textsuperscript{1-3}
• Uptake of cART in Eastern Europe remains low\textsuperscript{4} and trends in mortality in Eastern Europe not well described
• cART regimens have improved over time\textsuperscript{5} and fewer patients live with low CD\textsubscript{4} counts
• Increasing trend of mortality from non-AIDS associated causes\textsuperscript{6}


EuroSIDA
Aims

• Determine changes in mortality 2002 – 2007
  ➢ AIDS mortality
  ➢ Non AIDS mortality

• Compare regions of Europe
The EuroSIDA study

- Longitudinal cohort study initiated in 1994 of 16599 HIV-infected patients from 103 centres in 35 countries across Europe, Israel and Argentina
- Study collects wide range of clinical and demographic data (see www.cphiv.dk).
Methods

- Patients with prospective follow-up after 1 January 2002
- Baseline – later of 1 January 2002 or recruitment to study
- Follow-up censored on 1 January 2008
- Incidence rates of AIDS and non-AIDS mortality
- Poisson regression to investigate trends over time and differences between regions
<table>
<thead>
<tr>
<th>Characteristics of 10799 patients</th>
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<tbody>
<tr>
<td><strong>N (%)</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>IDU</td>
</tr>
<tr>
<td>AIDS</td>
</tr>
<tr>
<td>VL &lt; 500</td>
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<tr>
<td><strong>Median</strong></td>
</tr>
<tr>
<td>CD4 nadir</td>
</tr>
<tr>
<td>CD4</td>
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<tr>
<td>Age</td>
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<td>Baseline</td>
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</tbody>
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Initiation of cART at or before baseline

Proportion of patients ever exposed to cART at baseline

CD4 count at baseline

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Summary of Events

789 deaths
44,671 PYFU
IR 1.77 (1.64 – 1.89)

251 AIDS deaths
IR 0.56 (0.49 – 0.63)

538 non-AIDS deaths
IR 1.20 (1.10 – 1.31)
All cause mortality 2002-2007

Adjusted* 7% reduction per year (95% CI 3–10%)

Deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>137</td>
<td>125</td>
<td>151</td>
<td>147</td>
<td>120</td>
<td>109</td>
</tr>
</tbody>
</table>

Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

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All cause mortality 2002-2007
Stratified by region

Adjusted annual decline (7%) similar across regions, \( P=0.28 \)

Each year of follow-up 2002-2007 is separate point
All cause mortality 2002-2007
Stratified by region

Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

EuroSIDA
Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

EuroSIDA
Mortality 2002-2007
Stratified by cause of death

Adjusted* 19% reduction per year (95% CI 13–25%)

Adjusted* 8% reduction per year (95% CI 3–13%)

Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

EuroSIDA
Mortality 2002-2007
Stratified by cause of death

Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

EuroSIDA
Mortality 2002-2007
Stratified by cause of death

Adjusted Incidence rate ratio (95% CI)

Adjusted for gender, ethnic origin, HIV exposure group, age, CD4 nadir, hepatitis B and C status*, AIDS diagnosis*, CD4* and viral load*, starting any antiretrovirals*, starting cART* and anaemia* (*time-updated).

EuroSIDA
Summary

• Significant decrease in all-cause mortality since 2002 in all regions of Europe
• Considerable variability between countries within regions and between regions
• AIDS remains significant contributor to mortality in central East and Eastern Europe
• Deaths from non-AIDS particularly prevalent in northern Europe
Discussion

• Concern that regional differences in AIDS mortality persist; low use of cART in Eastern Europe remains of concern
  ➔ Health care indexes will be used to try and further explain increased AIDS mortality in Central East and Eastern Europe compared to other regions

• Further analysis of non-AIDS mortality required
  ➔ Why is the rate higher in North?
  ➔ Are health care indexes useful for non-AIDS mortality
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