Persistent disparities in meeting WHO/UNAIDS targets for ART coverage and ART-induced HIV-RNA suppression across Europe

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Background

• Health disparities exist across Europe in HIV¹
• Increasing interest in comparing quality of care across countries
• International comparisons hampered by differences in data collection²
• Varying definitions of steps in the continuum of care complicate international comparisons²
• EuroSIDA’s study design allows direct comparison between clinics

Aims

• Characterize country-specific levels of
  ▪ Proportion on ART among those in care
  ▪ Proportion virologically suppressed among those on ART

• Monitor temporal trends
Methods

• Patients included from all EuroSIDA clinics
• A priori defined 3 different time periods
  - 2004/05 (1st Jan’ 04 – 31st Dec ‘05)
  - 2009/10 (1st Jan’ 09 – 31st Dec ‘10)
  - 2014/15 (1st Jan’ 14 – 31st Dec ‘15)
Definitions

• **In care in the time period assessed**
  ▪ Under active follow-up in the period, irrespective of clinic visit interval

• **On ART among those in care**
  ▪ Any ≥3 antiretrovirals at the latest clinic visit in the period

• **Virologically suppressed among those on ART**
  ▪ Among those on ART, most recent HIV-RNA <500 copies/mL in the period, if available
  ▪ In care, but no HIV-RNA measurement in time period assessed, considered unsuppressed (missing = failure)
Regions

- **Western Europe (WE):** Austria, Belgium, France, Germany, Luxembourg, Switzerland
- **Southern Europe (SE):** Greece, Israel, Italy, Portugal, Spain, Argentina
- **Northern Europe (NE):** Denmark, Finland, Iceland*, Ireland, Netherlands, Norway, Sweden, United Kingdom.
- **East Central Europe (EC):** Bosnia-Herzegovina*, Croatia*, Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia*, Slovenia*.
- **Eastern Europe (EE):** Belarus, Estonia, Georgia*, Latvia, Lithuania, Russia, Ukraine.

* only included in 2014/15 cohort, ¤ only included in 2004/05 cohort
Statistical analyses

• Unadjusted country-specific and region-specific estimates of:
  □ Proportion on ART among those in care
  □ Proportion virologically suppressed among those on ART
Statistical analyses

• Logistic regression with generalized estimating equations to monitor trends over time

• Adjusted for
  ▪ Gender
  ▪ Current age
  ▪ Risk group
  ▪ CD4 cell count at first visit
  ▪ Current HBV-status
  ▪ Current HCV-status
<table>
<thead>
<tr>
<th></th>
<th>2004/05</th>
<th>2009/10</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of clinics included</td>
<td>98</td>
<td>102</td>
<td>105</td>
</tr>
<tr>
<td>Number of countries included</td>
<td>31</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Total number of patients included</td>
<td>8,978</td>
<td>10,463</td>
<td>11,975</td>
</tr>
<tr>
<td><strong>Gender, n (% of total)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6,688 (74.5)</td>
<td>7,539 (72.1)</td>
<td>8,649 (72.2)</td>
</tr>
<tr>
<td>Female</td>
<td>2,290 (25.5)</td>
<td>2,924 (27.9)</td>
<td>3,326 (27.8)</td>
</tr>
<tr>
<td><strong>Age, median (IQR)</strong></td>
<td>40.8 (35.4, 47.7)</td>
<td>39.2 (32.4, 45.9)</td>
<td>37.8 (30.2, 44.5)</td>
</tr>
<tr>
<td><strong>Mode of infection, n (% of total)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSM</td>
<td>3,761 (41.9)</td>
<td>4,260 (40.7)</td>
<td>4,571 (38.2)</td>
</tr>
<tr>
<td>IDU</td>
<td>2,090 (23.3)</td>
<td>2,138 (20.4)</td>
<td>2,744 (22.9)</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>2,556 (28.5)</td>
<td>3,352 (32.0)</td>
<td>3,808 (31.8)</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>571 (6.4)</td>
<td>713 (6.8)</td>
<td>852 (7.1)</td>
</tr>
</tbody>
</table>
Temporal change in proportion on ART among those in care

Proportion on ART among those in care (%)

- **Region**: West, South, North, East Central, East, Overall

<table>
<thead>
<tr>
<th>Region</th>
<th>2004/05</th>
<th>2009/10</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>71.7</td>
<td>79.6</td>
<td>82.4</td>
</tr>
<tr>
<td>South</td>
<td>75.2</td>
<td>82.8</td>
<td>80.2</td>
</tr>
<tr>
<td>North</td>
<td>77.4</td>
<td>89.2</td>
<td>88.1</td>
</tr>
<tr>
<td>East Central</td>
<td>64.1</td>
<td>79.0</td>
<td>85.7</td>
</tr>
<tr>
<td>East</td>
<td>49.1</td>
<td>73.7</td>
<td>68.0</td>
</tr>
<tr>
<td>Overall</td>
<td>78.2</td>
<td>82.4</td>
<td></td>
</tr>
</tbody>
</table>
Temporal change in proportion virologically suppressed* among those on ART

* Suppressed = <500 copies/mL
Country-specific proportions of people on ART and virologically suppressed

Proportion virologically suppressed among those on ART (%)

Proportion on ART among those in care (%)

West
South
North
East Central
East

 Bubble size, number of people:

Suppressed = <500 copies/mL

2004/05
Country-specific proportions of people on ART and virologically suppressed

2009/10

Proportion virologically suppressed among those on ART (%)

Proportion on ART among those in care (%)

Bubble size, number of people:

Suppressed = <500 copies/mL
Country-specific proportions of people on ART and virologically suppressed

2014/15

- Proportion virologically suppressed among those on ART (%)
- Proportion on ART among those in care (%)

Bubble size, number of people:
- 100
- 1000

Suppressed = <500 copies/mL
Country-specific proportions of people on ART and virologically suppressed

2014/15

Proportion virologically suppressed among those on ART (%)

Proportion on ART among those in care (%)

Bubble size, number of people:

100 1000

Suppressed = <500 copies/mL
Country-specific proportions of people on ART and virologically suppressed

2014/15

Proportion virologically suppressed among those on ART (%)

Proportion on ART among those in care (%)

Bubble size, number of people:

Suppressed = <500copies/mL

West
South
North
East Central
East
Country-specific proportions of people on ART and virologically suppressed

2014/15

Proportion virologically suppressed among those on ART (%)

Proportion on ART among those in care (%)

Bubble size, number of people:

100 1000

Suppressed = <500copies/mL

West
South
North
East Central
East
Country-specific proportions of people on ART and virologically suppressed

2014/15

Proportion virologically suppressed among those on ART (%) vs. Proportion on ART among those in care (%)

- West
- South
- North
- East Central
- East

Bubble size, number of people:

100 iterations

Suppressed = <500 copies/mL
Adjusted* odds ratio (aOR) of being on ART over time

p interaction <0.001

* Adjusted for current age, gender, risk group, CD4 at first visit, current HBV-status, current HCV-status)
Adjusted* odds ratio (aOR) of being virologically suppressed over time

* Adjusted for current age, gender, risk group, CD4 at first visit, current HBV-status, current HCV-status

Suppresses = <500 copies/mL
Odds ratio of being on ART in 2014/15 by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Odds Ratio (95% CI)</th>
<th>Adjusted*</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>0.86 (0.76, 0.97)</td>
<td>0.97</td>
</tr>
<tr>
<td>South</td>
<td>1.56 (1.40, 1.75)</td>
<td>1.55</td>
</tr>
<tr>
<td>North</td>
<td>1.27 (1.11, 1.45)</td>
<td>1.27</td>
</tr>
<tr>
<td>East Central</td>
<td>1.69 (1.49, 1.92)</td>
<td>1.69</td>
</tr>
<tr>
<td>East</td>
<td>0.58 (0.48, 0.69)</td>
<td>0.92</td>
</tr>
</tbody>
</table>

* Adjusted for current age, gender, risk group, CD4 at first visit, current HBV-status, current HCV-status
Odds ratio of being virologically suppressed among those on ART in 2014/15 by region

Odds ratio of virologically suppressed among those on ART (95%CI) (log2)

Region

West
South
North
East Central
East

Unadjusted
Adjusted*

Adjusted for current age, gender, risk group, CD4 at first visit, current HBV-status, current HCV-status)

Suppressed = <500 copies/mL
**Odds ratio of being virologically suppressed among those on ART in 2014/15 by region**

**All**

n = 9,861 patients

**Sensitivity analysis, excluding those with missing HIV-RNA**

n = 8,999 patients

*Adjusted for current age, gender, risk group, CD4 at first visit, current HBV-status, current HCV-status*
Strengths

• Access to data from large number of countries
• Data from countries without national registries
• Access to complete data on ART-coverage
• Standardized data collection allows direct comparison between countries
• Possibility of comparing temporal trends
Discussion

- EuroSIDA participants not necessarily representative of HIV care and management in the whole country
- "On ART among those in care" rather than among those diagnosed. Allows direct comparison of clinic performance without the impact of variation in linkage to care
- Not an adherence to guidelines study. Goal of virological suppression remains unchanged
Conclusions

- Overall increase in
  - Proportion on ART among those in care
  - Proportion virologically suppressed among those on ART
- Large variation across Europe, Israel and Argentina
- Level and rate of improvement varied between countries and regions
Perspectives

- Identify potential gaps in HIV care and management to explore underlying reasons
- We offer a method to assess two HIV quality of care parameters in a cohort
- EuroSIDA will continue surveillance
- Wish to use and expand existing infrastructure