Annual 2010 Survey on ARV Use and Trends in Implementation of WHO 2010 ART Recommendations

Presented by F. Renaud-Théry

WHO & UNAIDS Annual Consultation With Pharmaceutical Companies – Global Forecasts of Antiretroviral Demand 2011-2012
Geneva, 9&10 December 2010 (version 15 February 2011)
An expanding survey

- 2006: 1st survey
  - 23 countries
  - data on 0.8 millions of patients = 53% of all patients on ART in LMIC as of Dec. 2006

- 2010: 4th survey
  - 76 countries and 94% of patients on ART
  - Data on ARV use by December 2009
  - Trends in ARV use over 4 years
  - Situation on adoption of WHO 2010 recommendations by countries
97.5% adults receiving first-line regimens with more than half using d4T (60%) and NVP (60%)
In first line, tenofovir was used with EFV (55%) or NVP (44%) and a majority with FTC (70%).

Source: WHO survey 2010 on ARV use, December 2010
Only 2.5% adults on second-line with 47% using ZDV, 32% TDF and a vast majority LPV/r (92%)

Source: WHO survey 2010 on ARV use, October, 2010
1st line regimen - Children LMI countries (except America region)

96.9% children receiving first-line regimens with more than half using d4T (64%) and NVP (60%)

Source: WHO survey 2010 on ARV use, December 2010
2nd line regimen - Children LMI countries (except America region)

Only 3.1% children on second-line with 42% using ZDV, 40% ABC and a vast majority LPV/r (80%)

Source: WHO survey 2010 on ARV use, October, 2010
Proportion of patients receiving d4T, ZDV and TDF in 1st line in a subset of 17 countries*, 2006-2009

Source: WHO survey 2010 on ARV use, October, 2010 - * Burkina Faso, Burundi, Cambodia, Cameroon, Côte d'Ivoire, Ethiopia, India, Kenya, Lesotho, Namibia, Nigeria, Rwanda, Swaziland, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe
MARKET DYNAMIC – LMI countries (except America region)

Proportion of patients receiving 1st and 2\textsuperscript{nd} line regimen in a subset of 17 countries*, 2006-2009

Source: WHO survey 2010 on ARV use, October, 2010 - * Burkina Faso, Burundi, Cambodia, Cameroon, Côte d’Ivoire, Ethiopia, India, Kenya, Lesotho, Namibia, Nigeria, Rwanda, Swaziland, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe
### Proportion of Adults on second line in 2009

Regional average for countries in the survey

<table>
<thead>
<tr>
<th>Region</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Pacific</td>
<td>3.3</td>
</tr>
<tr>
<td>South East Asia</td>
<td>0.6</td>
</tr>
<tr>
<td>Americas</td>
<td>11.7</td>
</tr>
<tr>
<td>Europe</td>
<td>9.0</td>
</tr>
<tr>
<td>Eastern Med</td>
<td>4.6</td>
</tr>
<tr>
<td>Africa</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Many countries have already adopted WHO new recommendations

Criteria eligibility - In 2010, among 52 countries with available data

- 47 countries are adopting a CD4 threshold \( \leq 350 \text{cells/mm}^3 \) for ART initiation in their national guidelines

  - 42 countries for all patients: Angola, Benin, Burkina Faso*, Cameroon, CAR, Cape Verde, Chad, China, Congo, Côte d'Ivoire, Eritrea, Gabon, Gambia, Ghana, Guinea, Indonesia, Iran, Kenya, Lesotho Malawi, Mali, Morocco, Moldova, Namibia, Nigeria, Pakistan, PNG, Saudi Arabia*, Sierra Leone, Rwanda*, Romania, Sao Tome, Seychelles*, Senegal, Sudan, Swaziland, Tanzania, Togo, Ukraine, Viet Nam, Zambia, Zimbabwe

  - 3 countries for pregnant women: Botswana (other patients CD4 \( \leq 250 \)), South Africa (other patients CD4 \( \leq 250 \)), DRC

  - 2 countries are planning the adoption in 2011: Burundi, Djibouti

- 5 countries are in process of decision (by end 2010): Equatorial Guinea, Ethiopia, India, Mozambique, Uganda

( * GL already revised in 2009)

Source: WHO survey 2010 on ARV use, December 2010
Many countries have already adopted WHO new recommendations

Regimen choice - In 2010, among 52 countries with available data:

- 38 countries are phasing out from d4T to AZT or TDF containing regimen*

  ➢ 33 countries already started: Angola, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, CAR, Chad, China, Comoros, Côte d'Ivoire, Congo, Djibouti, Eritrea, Ethiopia, Ghana, Indonesia (TDF), Kenya, Lesotho*, Liberia, Madagascar, Morocco, Moldova, Mozambique (AZT), Namibia, Rwanda, Senegal, Seychelles, South Africa*, Sudan, Togo, Uganda, Ukraine

  ➢ 3 countries are developing a phase out plan: Swaziland, Tanzania, Zimbabwe

  ➢ 2 countries have future plans: Cambodia (2013), Malawi (2011 - TDF)

- 5 countries are in process of decision (by end 2010): India, Iran, Mali, Pakistan, PNG

- 5 Countries with no specific plan: Equatorial Guinea, Niger, Sao Tome, RDC, Viet Nam

- 2 Countries with no specific plan but already a minority of patients on d4T: Nigeria and Zambia

  * Approaches vary among the 33 countries from slow to faster phasing out for patients already on d4T:
    → maintaining existing patients on d4T when no failure (Lesotho, South Africa),
    → reducing procurement of d4T (China),
    → no new procurement of d4T (Burundi, Togo, Ukraine)

But all countries starting naive ART patients with new AZT or TDF containing regimen

Source: WHO survey 2010 on ARV use, October, 2010
Future ARV Regimens: a fragmented market

Two strategies for phasing out d4T in existing patients: substitution for toxicity or by target year (by 2011 to 2013)

<table>
<thead>
<tr>
<th>Replace d4T based on toxicity</th>
<th>Replace d4T by target year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDF-preferred</td>
<td>TDF-preferred</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Botswana</td>
</tr>
<tr>
<td>Kenya</td>
<td>Cameroon</td>
</tr>
<tr>
<td>Lesotho</td>
<td>Malawi</td>
</tr>
<tr>
<td>South Africa</td>
<td>Namibia</td>
</tr>
<tr>
<td></td>
<td>Nigeria</td>
</tr>
<tr>
<td></td>
<td>Rwanda</td>
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<tr>
<td></td>
<td>Zambia</td>
</tr>
<tr>
<td></td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>36%</td>
<td>23%</td>
</tr>
<tr>
<td>TDF-preferred</td>
<td>AZT-preferred</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Côte d'Ivoire</td>
</tr>
<tr>
<td></td>
<td>India</td>
</tr>
<tr>
<td></td>
<td>Thailand</td>
</tr>
<tr>
<td></td>
<td>Uganda</td>
</tr>
<tr>
<td>3%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: WHO survey 2010 on ARV use, October, 2010
Future ARV Regimens: a fragmented market

No new patients on d4T with a majority initiated with TDF in adults

<table>
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<th>AZT-preferred</th>
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<tr>
<td>Botswana</td>
<td>Côte d'Ivoire</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Zimbabwe</td>
<td></td>
</tr>
</tbody>
</table>

59%  

Source: WHO survey 2010 on ARV use, October, 2010
MAIN ASSUMPTIONS

Replace d4T by substitution for toxicity: (Source: HIV/ATC)
- 1st year: 15% of patients on d4T
- 2nd year: 10%
- 3rd year: 10%
- 4th year: stable at 35%

Replace d4T by target year*
- 25% each year 2010 to 2013

Distribution in new patients*
- TDF AZT d4T 70:25:5
- AZT TDF d4T 70:25:5

Source: WHO & UNAIDS Forecasting Working Group Meeting, October 2010
MAIN ASSUMPTIONS

Switch to 2nd line (Source: HIV/ATC)
- Articulation with 1st line regimen in change of NRTI:
  → d4T and AZT to TDF
  → TDF to AZT
- 10% Hep B co-infection: TDF +AZT (quadri-therapy)
- 5% ABC/ddI and 5% d4T/3TC
- 100% PIs (97% LPV/r)
Projections by 2012 in countries replacing d4T by TDF in first line

<table>
<thead>
<tr>
<th>Year</th>
<th>TDF</th>
<th>AZT</th>
<th>d4T</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 Substit</td>
<td>60</td>
<td>32</td>
<td>8</td>
</tr>
<tr>
<td>2012 Target</td>
<td>43</td>
<td>32</td>
<td>53</td>
</tr>
<tr>
<td>2012 New patients</td>
<td>70</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

- TDF: Tenovir Disoproxil Fumarate
- AZT: Zidovudine
- d4T: Stavudine
Projection by 2012 in countries replacing d4T by AZT in first line

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<td>2012 Target</td>
<td>8</td>
<td>77</td>
<td>15</td>
</tr>
<tr>
<td>2012 New</td>
<td>8</td>
<td>70</td>
<td>5</td>
</tr>
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Target year TDF
Most countries are adopting WHO 2010 recommendations

- Among 52 countries who provided information
  - 30 countries have revised their guidelines in 2010
  - 8 countries are planning the revisions for 2011 or 2012

more than 72% of children on ART

- ABC preferred first line in South Africa, Rwanda and Kenya (35% of children)

- LPV/r in first line in infants in Botswana, India, Kenya, South Africa (41% of children)

Source: WHO survey on ARV use and WHO & UNAIDS Forecasting Working Group Meeting, October 2010
MAIN ASSUMPTIONS

- Slow phase out of d4T by management of adverse reaction
  20% each year
  Less toxicity reported in children
  Prescribers maintaining d4T as long as child is doing well
  Fewer substitution options available

- Initiation of LPV/r in infants (15%)
  infants account for 25% of all new initiations
  a majority of infants will be using LPV/r (60-70%)

- Distribution in new patients
  AZT d4T ABC 60:20:20
  NVP EFV LPV/r 55:30:15

Source: HIV/ATC
MAIN ASSUMPTIONS

Switch to 2nd line (Source: HIV/ATC)

- Articulation with 1st line regimen in change of NRTI:
  → d4T or AZT > 8 years to ABC or TDF
  → 100% d4T or AZT < 8 years to ABC
  → 100% ABC < or > 8 years to AZT
- 60% children will use 3TC as preferred option in WHO recommendations and 40% will use ddI
- 100% LPV/r

Source: HIV/ATC
Projection by 2012 of first line NRTI in children

- **ABC**: 6 patients in 2009, 14 patients in 2012 existing patients, 20 patients in 2012 new patients
- **AZT**: 30 patients in 2009, 60 patients in 2012 existing patients, 60 patients in 2012 new patients
- **d4T**: 64 patients in 2009, 26 patients in 2012 existing patients, 20 patients in 2012 new patients