Challenges in sub Saharan Africa

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Africa is huge

• 20.4 percent of the global land area

• 55 countries

• 1.1 billion people which accounts for 15% of the world's human population

• 25,000,000 of the estimated 35,000,000 HIV infected persons live in sub Saharan Africa
Global HIV/AIDS Prevalence Rate = 0.8%

NOTES: Data are estimates. Prevalence rates include adults ages 15-49. The estimate for Sudan represents data for South Sudan. An estimate was not provided for Sudan.
While HIV was successfully treated in Europe and the United States, there was almost no uptake in resource limited settings such as sub Saharan Africa.
Loss in Life expectancy in several African countries

UMAEDS - 1 December 1999

Aimed to boost efforts to provide access to antiretroviral drugs that have saved hundreds of thousands of lives in Europe and the US to the growing number of people with HIV/AIDS in low and middle income countries who need them.

Joep Lange the then president of the IAS:

“if we can get cold Coca Cola and beer to every remote corner of Africa, it should not be impossible to do the same with drugs”
Impressive achievements have been reached!
Massive roll out of Therapy

- African Region
- Region of the Americas
- South-East Asia Region
- European Region
- Eastern Mediterranean Region
- Western Pacific Region
HIV treatment saves lives!

PEPFAR only averted about 1.1 million deaths in Africa

UNAIDS special report: Celebrating 50 Years of African Unity
Decline of HIV-infection rate

- Globally a decline of 20% in new HIV-1 infections is observed
- Incidence rates of 2012 are comparable to 2001 specifically in sub-Saharan Africa

The changing epidemiology of HIV in 2013
Beyrer et al. Curr Opin HIV AIDS 2013, 8:306–310
Still there are major challenges to be faced
Estimated HIV treatment cascade for sub-Saharan Africa, 2012
CHALLENGE 1: Increase testing

With 1.8 million new infections a disproportional burden of HIV disease globally remains concentrated in Africa.
CHALLENGE 2: adapt risk behaviour

Caprisa 004

HIV infection rates in the tenofovir and placebo gel groups: Kaplan-Meier survival probability

<table>
<thead>
<tr>
<th>Months of follow-up</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative HIV endpoints</td>
<td>37</td>
<td>65</td>
<td>88</td>
<td>97</td>
<td>98</td>
</tr>
<tr>
<td>Cumulative women-years</td>
<td>432</td>
<td>833</td>
<td>1143</td>
<td>1305</td>
<td>1341</td>
</tr>
<tr>
<td>HIV incidence rates (Tenofovir vs Placebo)</td>
<td>6.0 vs 11.2</td>
<td>5.2 vs 10.5</td>
<td>5.3 vs 10.2</td>
<td>5.6 vs 9.4</td>
<td>5.6 vs 9.1</td>
</tr>
<tr>
<td>Effectiveness (p-value)</td>
<td>47% (0.009)</td>
<td>50% (0.007)</td>
<td>47% (0.004)</td>
<td>40% (0.013)</td>
<td>39% (0.017)</td>
</tr>
</tbody>
</table>

WTF? Despite condoms, counselling....
CHALLENGE 3: better understanding HIV transmission networks

“...Young people in the US report riskier sexual behaviors than young people in SA, despite the much higher prevalence of HIV infection in SA. Factors above and beyond sexual behavior likely play a key role in the ongoing transmission of HIV in South African youth,”
CHALLENGE 4: further increase access to drugs

Number of people eligible for antiretroviral therapy in low- and middle-income countries based on the epidemic and response status at the end of 2012

- 2010 Guidelines: 15.9 million
- 2013 Guidelines: 28.6 million

Updated fig 1.23 (Global update on HIV treatment 2013: results, impact and opportunities: WHO report in partnership with UNICEF and UNAIDS, page 41).
WHO treatment guidelines in 2013

- Principle of equality
- Test and treat

Important Changes
- Start treatment for those with cD4 <500 patients (prioritize the ones with CD4 <200)
- Start treatment in discordant couples
Virological follow-up of adult patients in antiretroviral treatment programmes in sub-Saharan Africa: a systematic review

Roos E Barth, Maarten F Schim van der Loeff, Rob Schuurman, Andy I M Hoepelman, Annemarie M J Wensing

Following large-scale roll-out of antiretroviral therapy in sub-Saharan Africa, the non-clinical efficacy of antiretroviral therapy has received little attention. We aimed to systematically review virological efficacy and drug-resistance outcomes of programmes of antiretroviral therapy in sub-Saharan Africa. 89 studies with heterogeneous design, definitions, and methods were identified. Overall, in on-treatment analysis, 10,351 (78%) of 13,288 patients showed virological suppression after 6 months of antiretroviral therapy, 7,413 (76%) of 9,794 after 12 months, and 3,840 (67%) of 5,690 after 24 months. Long-term virological data are scarce. Genotyping results were available for patients with virological failure (HIV-1 RNA greater than 1000 copies per mL). Most patients (839 of 849; 99%) were infected with a non-B HIV-1 subtype. However, drug-resistance patterns were largely similar to those in subtype B. Resistance profiles were associated with the antiretroviral drugs commonly used: the lamivudine-associated M184V mutation was most common, followed by K103N which is associated with non-nucleoside reverse transcriptase inhibitors. Thymidine-analogue mutations and the K65R mutation were less common. First-line antiretroviral therapy regimens used in sub-Saharan Africa are effective. Profiles of drug resistance suggest that a second-line treatment regimen based on protease inhibitors, with a backbone of nucleoside reverse transcriptase inhibitors, is a reasonable option for patients with HIV in sub-Saharan Africa who experience first-line treatment failure.
Estimated HIV treatment cascade for sub-Saharan Africa, 2012

Source: UNAIDS ACCESS TO ANTIRETROVIRAL THERAPY IN AFRICA STATUS REPORT ON PROGRESS TOWARDS THE 2015 TARGETS
Accumulation of resistance in treated individuals during prolonged failure

Barth, Aitken et al. Antiviral therapy 2012
Predicted viral drug susceptibility

Barth et al. IDRW 2010
CHALLENGE 5: extend VL testing

250 patients therapy failure 1st and 2nd-line (20%) in rural South-Africa. Resistance in DBS from patients with rebound > 1000 cp at 6m viral load test

WHO 2013: Viral load is recommended as the preferred monitoring approach to diagnose and confirm treatment failure. If not available use CD4/Clinical symptoms.
EWI as alternative monitoring strategy

Use of early warning indicators, for instance:

- Percentage of adults and children known to be alive and on treatment 12 months after initiation of ART
- Percentage of patients who picked up prescribed antiretroviral (ARV) drugs on-time (cross-sectional)
- Of note some roll-out programmes had to deal with over 70 indicators for different donors
HIV-1 baseline drug resistance in sub-Saharan Africa after rollout of ART

CHALLENGE 6: Lenient criteria for failure

Drug resistance in relation to WHO defined failure criteria

- Cohort definition of virological failure (HIV-RNA>1000)
- WHO-defined Immunological failure
- Presence of drug resistance
Patient retention in antiretroviral therapy programs up to three years on treatment in sub-Saharan Africa, 2007–2009: systematic review

• Mainly Mortality and LTFU
• 7% of all patients who initiated care transferred to another facility
• Predictors:
  • Low CD4 count
  • Less females in cohort
CHALLENGE 8: Integration of health care

• Programmatic Health care
• Often separate facilities for HIV-care
• Life long treatment: Aging of the HIV-infected individuals
• Co-morbidity: DM
• Resistance: individuals treatment
The estimated annual need by 2015 is between US$ 22-24 billion if we assume current available therapy indeed will continue to be active.......
Conclusion

Major successes have been booked to fight the sub Saharan african epidemic

Numerous essential Challenges need to be overcome to gain control

Alternative solutions (Cheaper Drugs, Cure?) are urgently needed

Meanwhile integration of Health care, access to ART, viral load monitoring and resistance testing should be improved