Controlling the HIV Epidemic;

Perspectives on turning Aspiration to Reality

Prof. David Serwadda
Makerere University School of Public Health
- Aspiration/ hope
- The tools to achieve our Aspiration
- The Reality
Health centers full of patients sick with HIV

Symptomatic treatment (if available) and prayers

Death was inevitable

Stigmatization
Behavior Change
- Reduce/one sexual partner
- Regular use of condoms

- Abstinence

- Symptomatic treatment of STI

- Testing and Counseling
Aspiration

-Our hopes
-Our dreams
The AIDS ACTVIST WERE THE FIRST GROUPS TO ARTICULATE OUR HOPES (1981-)

- End stigmatization and discrimination of HIV positive individuals HIV
- Uphold Human Rights
- Access to drugs
- Demand investment in HIV research and care
UN declarations of HIV/AIDS

- June 2001 Declaration of commitment on HIV/AIDS
  *Global Crisis-Global Action*
  ‘Reduction of HIV prevalence among young people (15-24) by 25% in hard countries by 2005’

- June 2006 Political Declaration on HIV/AIDS

- June 2011 Intensifying our effort to eliminate HIV/AIDS
UN Global efforts

- Provide a consensus on the Political commitment of leaders in the comprehensive responsive to HIV - Political commitment

- Create an organization which can better coordinate HIV response – UNAIDS - 1994

- Provide a funding mechanism support HIV Prevention and care effort- Global Fund - 2002
Currently UNAIDS has 10 goals

- Reduce sexual transmission by 50% by 2015
- Eliminate New HIV infections among children by 2015
- Eliminating Stigma and Discrimination against HIV +
- 15 million people with HIV put on ARV by 2015
VISION

ZERO NEW HIV INFECTIONS.
ZERO DISCRIMINATION.
ZERO AIDS-RELATED DEATHS.

UNAIDS 2012
Tools available to Achieve our Aspiration
Clinical trial evidence for preventing sexual HIV transmission

<table>
<thead>
<tr>
<th>Study</th>
<th>Effect size (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment for prevention</td>
<td>96% (73; 99)</td>
</tr>
<tr>
<td>(Africa, Asia, America’s)</td>
<td></td>
</tr>
<tr>
<td>PrEP for discordant couples</td>
<td>73% (49; 85)</td>
</tr>
<tr>
<td>(Partners PrEP)</td>
<td></td>
</tr>
<tr>
<td>PrEP for heterosexuals</td>
<td>63% (21; 48)</td>
</tr>
<tr>
<td>(Botswana TDF2)</td>
<td></td>
</tr>
<tr>
<td>Medical male circumcision</td>
<td>54% (38; 66)</td>
</tr>
<tr>
<td>(Orange Farm, Rakai, Kisumu)</td>
<td></td>
</tr>
<tr>
<td>PrEP for MSMs</td>
<td>44% (15; 63)</td>
</tr>
<tr>
<td>(America’s, Thailand, South Africa)</td>
<td></td>
</tr>
<tr>
<td>STD treatment</td>
<td>42% (21; 58)</td>
</tr>
<tr>
<td>(Mwanza)</td>
<td></td>
</tr>
<tr>
<td>Microbicide</td>
<td>39% (6; 60)</td>
</tr>
<tr>
<td>(CAPRISA 004 tenofovir gel)</td>
<td></td>
</tr>
<tr>
<td>HIV Vaccine</td>
<td>31% (1; 51)</td>
</tr>
<tr>
<td>(Thai RV144)</td>
<td></td>
</tr>
</tbody>
</table>
Impact of Modelling

What ever your views on Mathematical modeling........

The enthusiasm/ excitement generated by these models illustrating the possible impact, ART can have on the HIV epidemic, has been huge in generating interest in the possibilities......
Proportion reduction in incidence:
Coverage: 80%, retention: 85%, CD4 < 350

Proportion reduction in incidence in year 2020
coverage: 80%, retention: 85%, eligibility: CD4 < 350

Propotion reduction in incidence

bendavid
cambiano
eaton
emod
fraser
granich
hontelez
johnson
long
pretorius
stover
The Economist, June 4, 2011

INSIDE THIS WEEK: TECHNOLOGY QUARTERLY

The trap for Turkey
Wall Street’s plumbing problem
Lady Gaga, Mother Teresa and profits
Brazil’s boiling economy
The farce that is FIFA

The end of AIDS?

How 5 million lives have been saved, and a plague could now be defeated
Care
Vancouver 1996
“One World One Hope”

- Efficacy of triple therapy on treatment of AIDS
- Protease inhibitors
- Use of viral load in monitoring treatment
- Drugs were expensive - ($24,000 per year)

HOPE AND EXCITEMENT
Global March for HIV/AIDS treatment

Desperate demand to reduce drug prices

Skepticism of whether ARV drugs could be correctly take and managed in resource limited settings

How will cost be meet
PEPFAR 2003–

- **Real Game changer**
  
  - **2003-2008** – $15 Billion
    - 1.2 million put on ARV
    - 1.1 million death averted
  
  - **2009-** GHI $51 Billion over 6 years
International disbursements and Domestic Investments
Sub Saharan Africa

Source: OECD CRS May 2014, UNAIDS estimates 2014
Reality....

- HIV epidemic is not simple
- Scaling up
- Funding
- Politician, politics....
Emerging and reemerging key populations.

Concentrated HIV sub-epidemics in generalized epidemic settings

- MSM
- IV drugs users
- Fisher folks
- Commercial sex workers

- Overlapping sexual networks
- Lack of assess to prevention and care services
Sources of Infection in Rakai are Diverse


- 39% of transmissions occurred within household
- 40% of transmissions were from extra-household partners.
  - 62% (95% CI: 55-70%) were partners from outside the community.
- 21% of transmission were from unknown contacts/sources.
- No transmission if partner was on ART.

- CHP has to cover extended populations: How far??
Spatial dynamics of HIV in Rakai

46 communities in Rakai Community Cohort Study
Adults report partners from throughout Rakai and Uganda
CHP in one area may not control the epidemic
Coverage; Africa

Prevention and treatment
Number of MMC conducted per year in priority countries (Sgaier et al PLoS Med 2014)

Figure 2. Scale-up of voluntary medical male circumcision program and coverage in 14 priority countries, aggregate, 2008-2013. Number of circumcisions completed each year in millions. Source of 2008–2012 data is the WHO 2012 VMMC report [38], 2013 numbers have been estimated using data from PEPFAR and the Bill & Melinda Gates Foundation. *CAGR, compound annual growth rate, calculated based on the average proportional growth each year. CAGR \( (t_o, t_n) = \left( \frac{V(t_n)}{V(t_o)} \right)^{1/(t_n - t_o)} - 1 \), where \( V(t_o) \) is the start value and \( V(t_n) \) is the finish value and \( t_n - t_o \) is the number of years.

doi:10.1371/journal.pmed.1001641.g002
Male Circumcision: Progress and Targets in Africa as of March 2012

Experts hope to circumcise more than 20 million men in 14 African countries by 2015, to reduce their risk of HIV infection.

Circles show the number of circumcisions needed to reach 80 percent goal.

Wedges show circumcisions done as of March 2012.

Priority countries with AVAC advocacy partners.

Source: PEPFAR Male Circumcision Technical Working Group.
ART coverage in Sub-Saharan Africa
UNAIDS Status Report on Progress to 2015 Targets

- 21.2 million eligible for ART at CD4 <500 in 2013
- 7.6 million Africans receiving ART (36%), Dec 2012

FIG. 2
Regional gaps in access to antiretroviral therapy, Africa, 2012 - 2013

- 59% Eastern and Southern Africa
- 79% Western and Central Africa
- 89% North Africa
- 66% Global average gap

Source: UNAIDS 2012 estimates
Note: Based on numbers receiving treatment as of December 2012 and estimated numbers of people eligible as of December 2013 under the 2013 WHO HIV treatment guidelines
Estimated HIV treatment cascade, sub-Saharan Africa, 2012

- 100% of people living with HIV (15 years and older)
- 49% of people living with HIV who know their status
- 68% of people living with HIV receiving antiretroviral therapy
- 72% of people living with HIV with suppressed viral load

Sources:
1. UNAIDS 2012 estimates.
As of 2014: on ART now ~40%
HIV prevalence (%) and incidence /100 py, RCCS Communities, Survey rounds; 1-15, 1994-2013

- Care & treatment program and MC RCTs (2004)

Prevalence
Incidence
Despite availability of free services, not all ART eligible individuals go for services

- Stigma
- *Perceived good health (individual still feels healthy)*
- Long distance to the HIV clinics/high transport costs
- Fear of life-long medication and side effects
- Belief in spiritual healing
- Lack of time to go to the clinic—busy work schedules
- Long lines at clinics and quality of services

*Access of services by early adapters*
Community mobilization and multimedia campaign

- Goals:
  - *Demedicalize* CHP and reposition it as stylish and desirable for the modern man and woman
  - Stimulate open discussion within couples and communities

**Approach**

* Radio, posters
* **Stylish Events**
  - Village organizing committees
  - Stylish Van visits each community
  - On site services next to Van
  - Community games and infotainment linked to CHP
Inadequate Health Systems

- **Health workers**
  - Few health worker in rural health centres
  - No. Of HIV positive clients needing care increasing every years

- **Laboratory and Theatre**

**Procumbent and logistics**
- stocks out are a problem

- Lack of availability of reliable data for M&E
CHP targets and numbers of clients on ART increasing
Funding flatlined

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral HIV/AIDS:</td>
<td>$6,867</td>
<td>$6,527 million</td>
</tr>
</tbody>
</table>

**Bilateral funds for CHP**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral HIV/AIDS Programs¹</td>
<td>1,643</td>
<td>2,263</td>
<td>2,654</td>
<td>3,699</td>
<td>5,028</td>
<td>5,503</td>
<td>5,574</td>
<td>5,440</td>
<td>5,083</td>
<td>4,726</td>
<td>41,613</td>
<td>*</td>
<td>4,855</td>
</tr>
<tr>
<td>Global Fund</td>
<td>547</td>
<td>347</td>
<td>545</td>
<td>724</td>
<td>840</td>
<td>1,000</td>
<td>1,050</td>
<td>1,046</td>
<td>1,300</td>
<td>1,569</td>
<td>8,968</td>
<td>*</td>
<td>1,350</td>
</tr>
<tr>
<td>Bilateral TB Programs</td>
<td>87</td>
<td>94</td>
<td>91</td>
<td>95</td>
<td>163</td>
<td>177</td>
<td>243</td>
<td>239</td>
<td>256</td>
<td>233</td>
<td>1,678</td>
<td>*</td>
<td>191</td>
</tr>
<tr>
<td><strong>TOTAL PEPFAR (w/o Malaria)</strong></td>
<td>2,277</td>
<td>2,704</td>
<td>3,290</td>
<td>4,518</td>
<td>6,031</td>
<td>6,680</td>
<td>6,867</td>
<td>6,725</td>
<td>6,639</td>
<td>6,527</td>
<td>52,258</td>
<td>*</td>
<td>6,396</td>
</tr>
</tbody>
</table>
Future of HIV/AIDS in Africa
Institute of Medicine report 2011

Panel a. Numbers of people
- Total number on ART
- Number of adults with unmet need for ART

Panel b. Infections and deaths
- New HIV infections
- Number living with HIV/AIDS
- Number AIDS deaths

Panel c. Expenditures
- Total cost of ART
- Cost of second-line as portion of total

Panel d. Affordability
- ART % Pub HE
- ART % Total HE

Enrolling 30% of unmet need each year, stronger prevention
Another challenge...

Uganda’s president signs anti-gay bill
Possible solutions
Africa’s Economy

The Economist Dec 3-9 2011

- Cost of these intervention are huge
- Africa’s GDP is however projected to keep growing 5-6% for some years to come
- Shared responsibility with good leadership and Governance is our hope
- Africa need/should own, scale up and sustain the HIV RESPONSE
In summary; The road ahead….

- A long sustained increase in resources will be needed to control the HIV epidemic and realize our aspiration.
- Local resources need to be mobilized to realize this.
- Health system improvement will be critical.
- Investigate in HIV prevention research.
- Leadership will always be important.
Acknowledgements

All the study participants

- Williams. B - WHO
  - Montaner J – British Columbia Ceter
  - Eaton Jeffery – Imperial College London
- Cate Hankins – formerly UNAIDS
- Rakai Helth Science Program
- Institute of Medicine, Washington