ROLLING OUT ANTIRETROVIRAL THERAPY OF HIV IN SUB-SAHARAN AFRICA

EXPERIENCE AT THE INFECTIOUS DISEASES INSTITUTE
KAMPALA UGANDA

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Disclosure

Dr Taylor has served on an advisory board for Gilead Sciences
Objectives

- A review of the evidence base for use of antiretroviral therapy in the treatment and prevention of HIV
- Barriers to use of antiretroviral therapy in low income countries
- Potential role of North American clinicians in supporting low income countries, without necessarily providing direct patient care
- Creation of the Academic Alliance for AIDS Care and Prevention in Africa
Life at risk. Hope restored.

The Lazarus Effect

Premieres Monday, May 24 9PM HBO
Prognosis in HIV-1 Infection Predicted by the Quantity of Virus in Plasma

John W. Mellors,* Charles R. Rinaldo Jr., Phalguni Gupta, Roseanne M. White, John A. Todd, Lawrence A. Kingsley

The relation between viremia and clinical outcome in individuals infected with human immunodeficiency virus-type 1 (HIV-1) has important implications for therapeutic research and clinical care. HIV-1 RNA in plasma was quantified with a branched-DNA signal amplification assay as a measure of viral load in a cohort of 180 seropositive men studied for more than 10 years. The risk of acquired immunodeficiency syndrome (AIDS) and death in study subjects, including those with normal numbers of CD4+ T cells, was directly related to plasma viral load at study entry. Plasma viral load was a better predictor of progression to AIDS and death than was the number of CD4+ T cells.
Antiretroviral Therapy (ART)

■ Prolongs life of all PLWHIV
   - Even those with high CD4 count
     ■ High income countries (START – NEJM 2015)
     ■ Low income countries (Temprano – Cote D’Ivore - NEJM 2015)

■ Reduces transmission:
   ■ (Largely) Eliminates Mother to Child Transmission

   ■ (Largely) Eliminates Pos to Neg sexual transmission (discordant couples)
     - HPTN 052, NEJM 2011 (96% reduction in transmission)

   ■ (Largely) Eliminates acquisition by HIV (-) (PrEP)
     - iPrex, PartnersPrEP, TDF2, IPERGAY etc
       ■ 60-90% reduction in HIV incidence

   - Potential for population level reduction transmission (*Treatment as Prevention* - *TasP*)
   - Together with other social/biomedical interventions (such as ABC, male circumcision...) prospect of HIV-free world
Antiretroviral Therapy
Sub-Saharan Africa - 2000

Pfizer approaches a group of North American ID academics with a proposal to provide fluconazole free of charge to SSA

Leads to creation of Academic Alliance for AIDS Care and Prevention in Africa

- Annual meeting in South Africa: estimates ~ 7000 on ART in all of SSA
- Initial attempt by WHO to scale up ART, launched in 2003
  - At baseline 400K on treatment
- 1.3 million on treatment by Dec 2005
Barriers to ART in Resource Limited Settings

- Drugs (cost)
- Adherence?
  - Supply gaps
- Lab Infrastructure
- Trained Human Resource
Access to Antiretrovirals

- Generics
- Donors, especially PEPFAR
- Discounted Brand Name ARV’s
Generics – off patent license

- Provides market based competition to high cost brand name agents
- Limited range of agents available
Discounted Brand Name ARV’s
Viv Healthcare welcomes the FDA’s Tentative Approval of the first generic dolutegravir from Aurobindo Pharma

22 Sept 2016, Hyderabad, India

Aurobindo Pharma receives USFDA tentative approval for Dolutegravir, allowing the product to be launched in the PEPFAR market
Donors - PEPFAR

- Founded in 2003 by US Congress to provide African countries antiretroviral drugs (brand name) and other HIV interventions
- To date, US$72 billion funding provided
- 2017: 11.5 million patients on treatment

George W. Bush: PEPFAR saves millions of lives in Africa. Keep it fully funded
Lab Infrastructure

HIV specific testing
- CD4 to assess immunologic status
  - Still useful to assess urgency of ART and investigation of symptoms
- Quantitative HIV RNA (‘viral load’) to assess effectiveness of ART
- Genotypic Antiretroviral Resistance Testing (GART) for salvage of virologic failure

Surrogate
- Clinical assessment , Total Lymphocyte Count
- Increased clinical assessment frequency
  - Clinical failure, falling CD4 count
    - Occurs late and allows extensive resistance to develop
- Salvage algorithms
Access to HIV Viral Load assessed during 2015-2016 in 7 African countries

- All had increased access
- Kenya, Botswana, South Africa, >75% of patients had had >/= 1 viral load
- In 4 countries, <25% had had at least 1 viral load
Antiretroviral Treatment Algorithms for Low Income Settings

- ‘stripped down’ protocols for antiretroviral therapy using a ‘public health’ approach ie standard one-size-fits-all algorithms using few regimens
- Limited lab monitoring
Uganda

- Population 37,579,000
  - 48% < age 15; 4% over age 60
  - 15% live urban areas
  - Total fertility rate (per woman) 5.9
- Annual GDP/capita US$2,100
- 4 medical schools
  - 8 physicians/100,000
- HIV: (2015) 7.1% adult pop, (1.5 million)
  - 31,000 annual incident cases (down from 91,000)
Academic Alliance For AIDS Care and Prevention in Africa

- Founded in 2001 as a collaboration between North American and Ugandan physicians
- Initial funding US$50 million from Pfizer. Transitioned to Accordia Global Health Foundation
- Developed Infectious Diseases Institute – Makerere University Kampala Uganda (2004)
  - Transitioned to local leadership
Infectious Diseases Institute
Makerere University
Kampala Uganda

- Clinical Services – ambulatory HIV care
- American College of Pathologists accredited laboratory
- Clinical and Translational Research
- Training
  - Basic HIV care
  - Advanced HIV Research
  - Later expanded to lab training, non HIV care eg malaria, TB
Trained Health Care Providers

- Through 2016 IDI has trained 13,000 healthcare providers from 28 African countries
  - Clinicians
  - Pharmacists
  - Lab technicians
  - Research associates

Table 1

<table>
<thead>
<tr>
<th>African country</th>
<th>No. professionals trained</th>
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<tr>
<td>Angola</td>
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<td>Benin</td>
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<td>Burkina Faso</td>
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<td>Sierra Leone</td>
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<tr>
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<td>Zambia</td>
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<tr>
<td>Zimbabwe</td>
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<td>Total</td>
<td>1,510</td>
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*The Infectious Disease Institute building, which now houses the flagship training and care programs of the AA, was built in 2004. The AA is a collaborative, African-based and African-led approach to build health care infrastructure to address human resource needs in health care.*
Estimated numbers of people receiving antiretroviral therapy globally and by WHO Region and percentage coverage globally, 2000–2015

Source: Global AIDS Response Progress Reporting (UNAIDS/UNICEF/WHO) and UNAIDS/WHO estimates.
THE TREATMENT TARGET

90% diagnosed
90% on treatment
90% virally suppressed
The Infectious Diseases Institute

This building was built by Pfizer Inc for Makerere University, to implement and execute the vision and programs of the Academic Alliance for AIDS Care and Prevention in Africa to build capacity to fight infectious diseases, and was dedicated to the people of Africa on October 20, 2004 by His Excellency Yoweri K. Museveni, President of the Republic of Uganda and Henry A. McKinnell, Jr., Chairman and CEO of Pfizer Inc.

The Founding Members of the Alliance

Nelson K. Sewankambo and Merle A. Sande, co-directors

Jerrold Ellner
Moses R. Kamya
Elly T. Katabira
Harriet Mayanja-Kizza
Edward K. Mbidde
Roy D. Mugerwa

Phillipa Musoke
Thomas Quinn
Allan Ronald
Michael Scheld
David Serwadda
Fred Wabwire-Mangen

First Director of the IDI

Keith McAdam
Order of presentation

- Definition and features of an Opportunistic infection
- Aetiology, Clinical presentation, Diagnosis and management of OIs by systems
- Prevention of OIs
Mulago Hospital and Makerere University Campus
Dr. Bbaale
Large urban HIV clinic in Kampala

6 physicians, 5 pharmacists, 12 nurses
200 HIV+ patients daily
20 children HIV+ daily
10 pregnant HIV+ daily
TB diagnosis 5/day
Malaria diagnosis 10/day
HIV COUPLE TESTING BROUGHT US CLOSER.

Call Toll Free 0800 290 600 for more information.
You mean you are not CIRCUMCISED!

Stand Proud. Get Circumcised.

For more information about Safe Male Circumcision visit the nearest health facility where you see the SMC sign or call the National Health Hotline on 081-333-5353.
September 2009
Then riots in Kampala.....

2 days of disturbances

~20 people died
1967 Detroit Disturbance
Trivia Question

■ What happened in 1964 in Detroit, Michigan, USA, that was one of the most important events in the global HIV epidemic?
Jerome Horowitz, Ph.D.
Michigan Cancer Foundation

- 1919 – 2012
- Synthesized AZT, ddC and stavudine (d4T)
- No royalty ever received
1964

- Development was shelved after it proved biologically inert in mice
- Pharmacokinetics determined for 30 gram mouse
- Then all was quiet

for 10 years...
Chemical structure of AZT
Graduating Ceremony

Argentina 1
Tanzania 1
Zambia 2
Sudan 1
Nigeria 7
Uganda 13
For the Class President...
Lake Victoria
Thank You