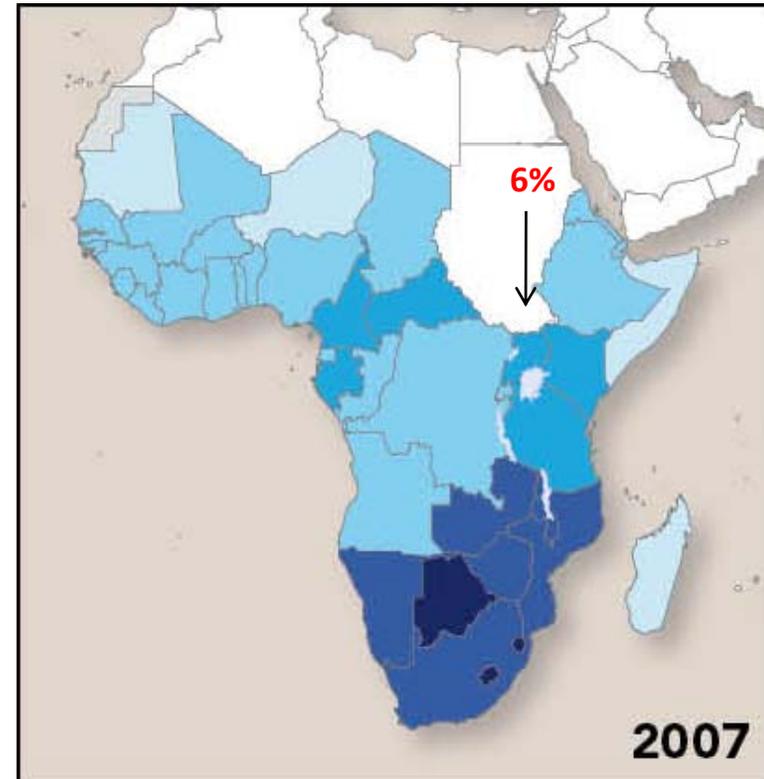
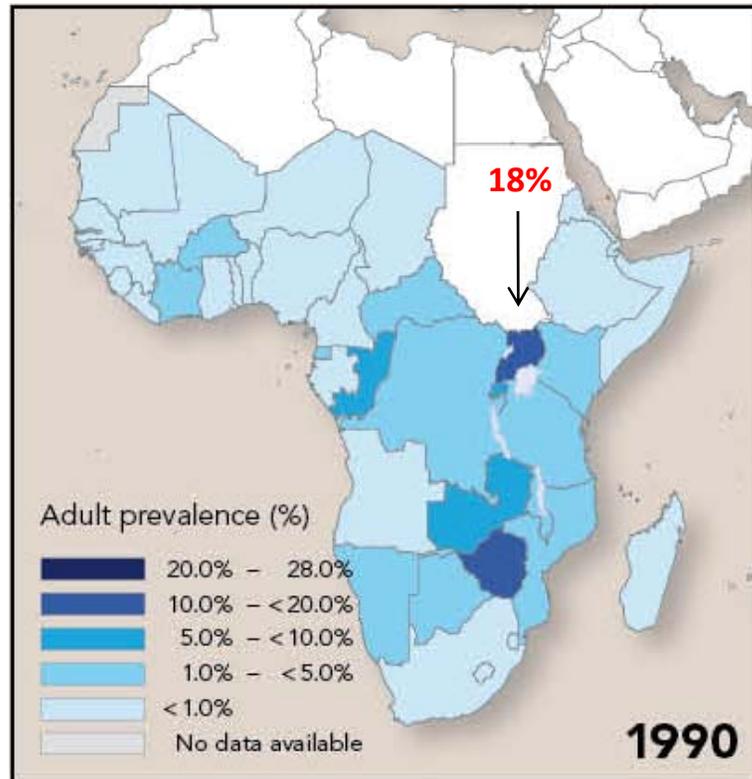


**SCIENCE AND TECHNOLOGY AS  
A DEVELOPMENT STRATEGY:  
UGANDA AND THE SEARCH FOR AN AIDS VACCINE**

**Dr. David Kihumuro Apuuli  
Director General  
Uganda AIDS Commission  
Kampala, Uganda**

**Ottawa, Ontario, Canada  
October 2009**

# “The Ugandan Miracle”



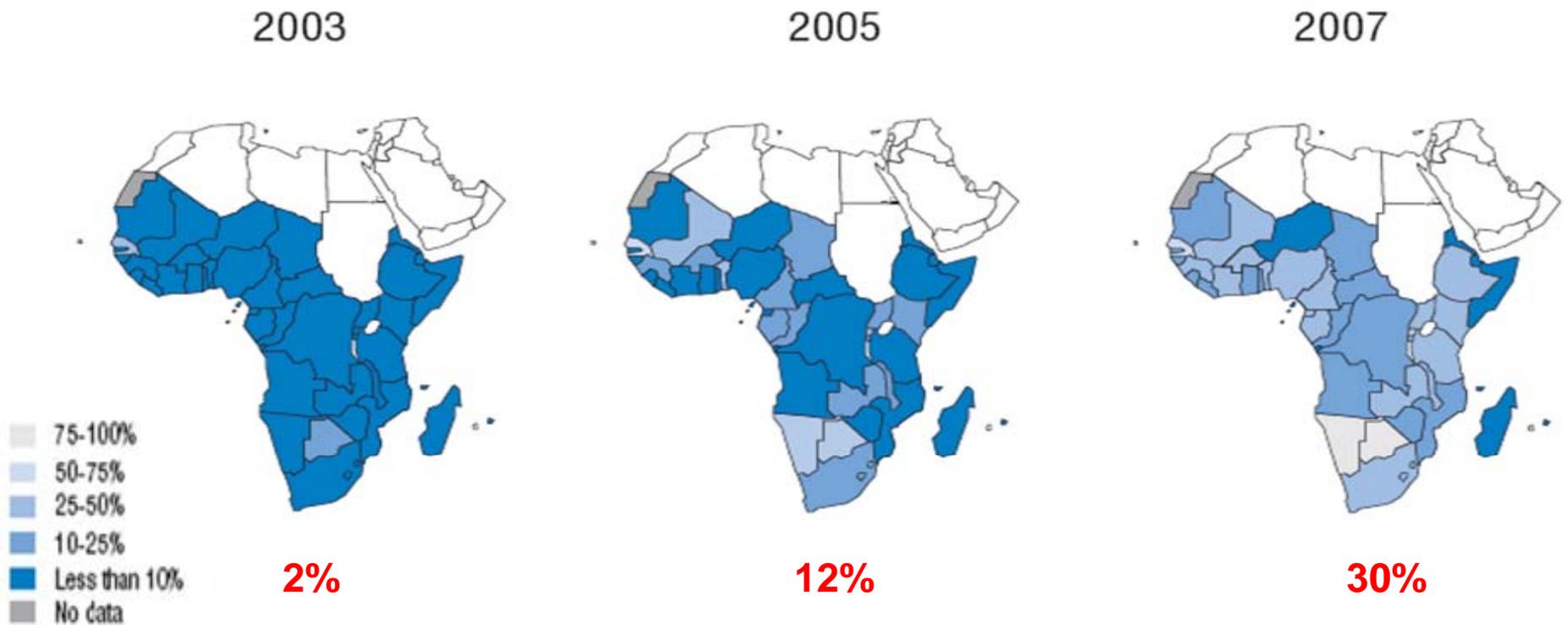
- Uganda’s comprehensive response to the epidemic led to a decline in adult HIV prevalence from 18% to 6%, where it has hovered since.

# The Impact of AIDS in Uganda



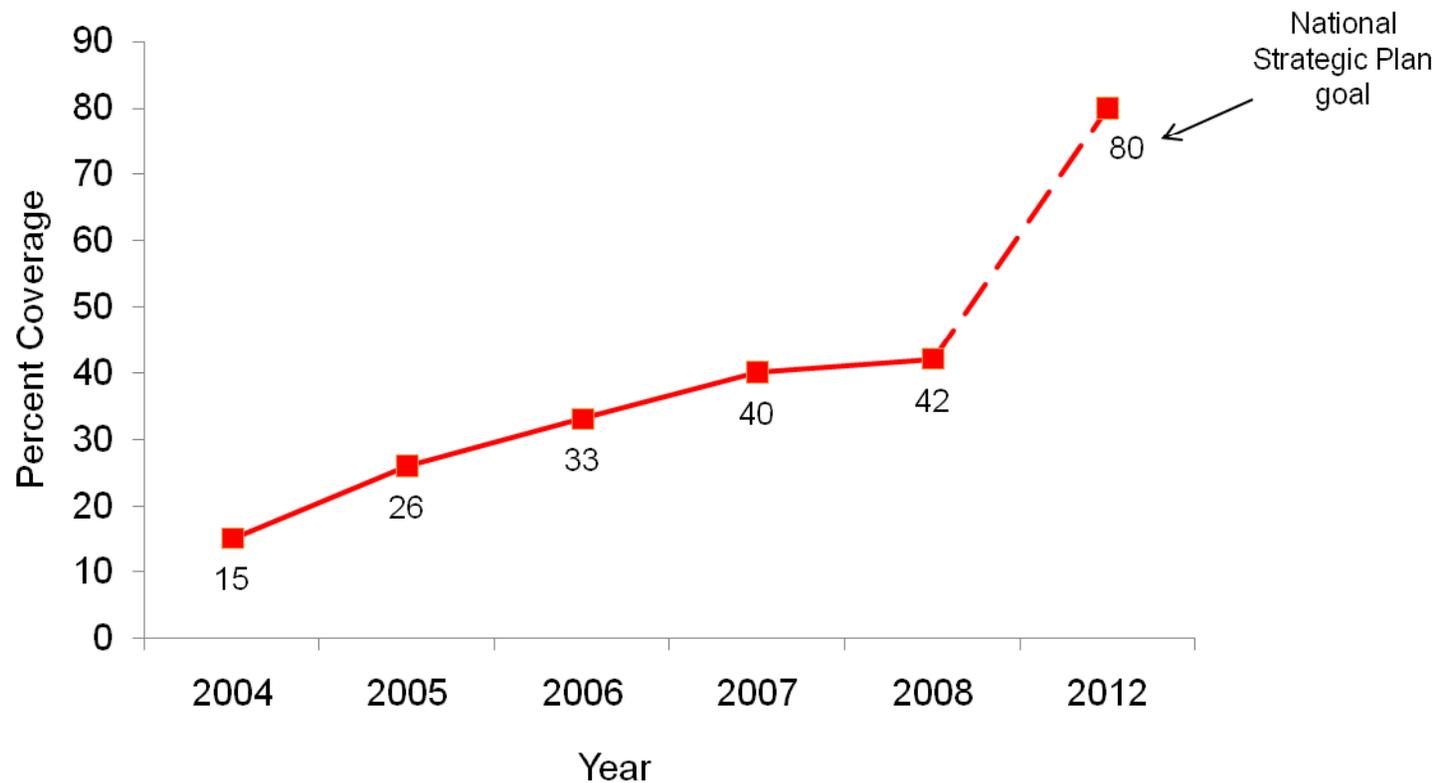
- The AIDS epidemic in Uganda is generalized and severe; adult prevalence at 6% and no longer decreasing.
- Approximately 1.2 million children are orphans as a result of the HIV epidemic
- There were an estimated 77,000 AIDS related deaths in 2007
- 1.3% of national GDP is lost annually due to HIV

# ARV Coverage in sub-Saharan Africa



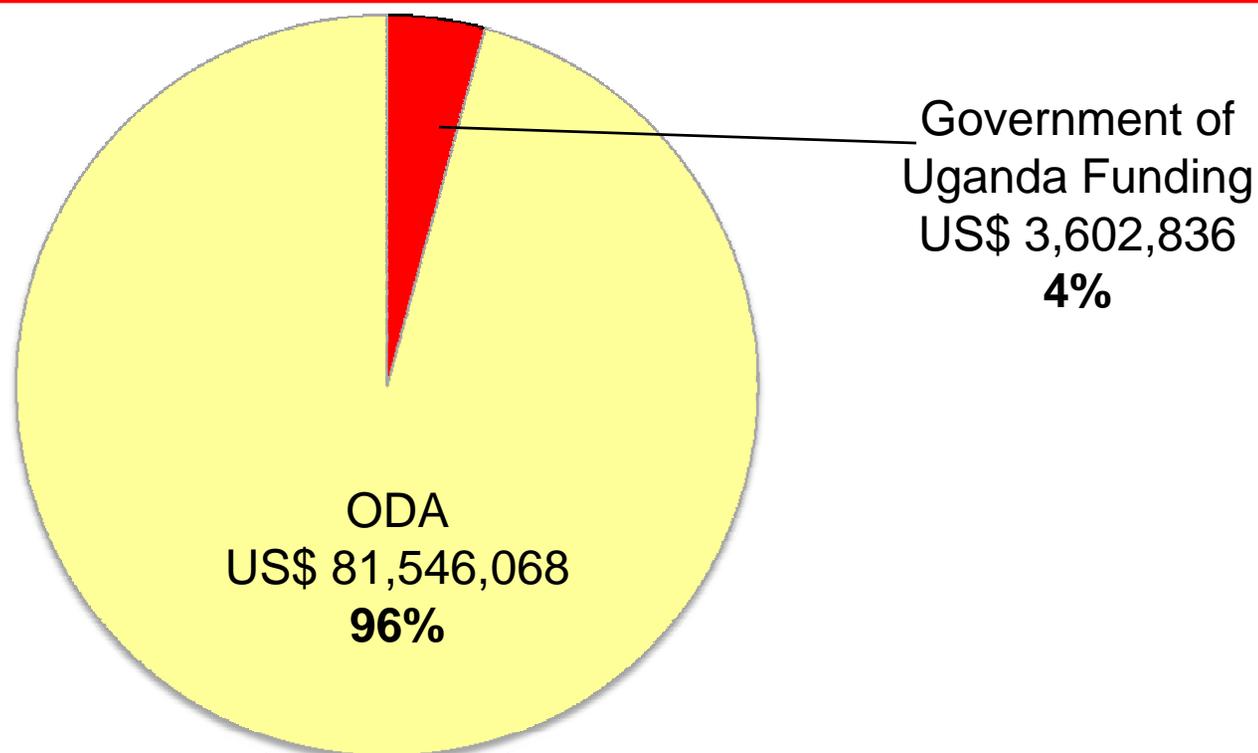
- ARV provision in sub-Saharan Africa increased from an average 2% in 2003 to 30% in 2007.

# Estimated ARV Coverage in Uganda



- Uganda's ARV coverage is above the average (31%) for low- and middle-income countries, but reaching the NSP coverage goal (80%) for 2012 will require a massive increase, and is increasingly unlikely.

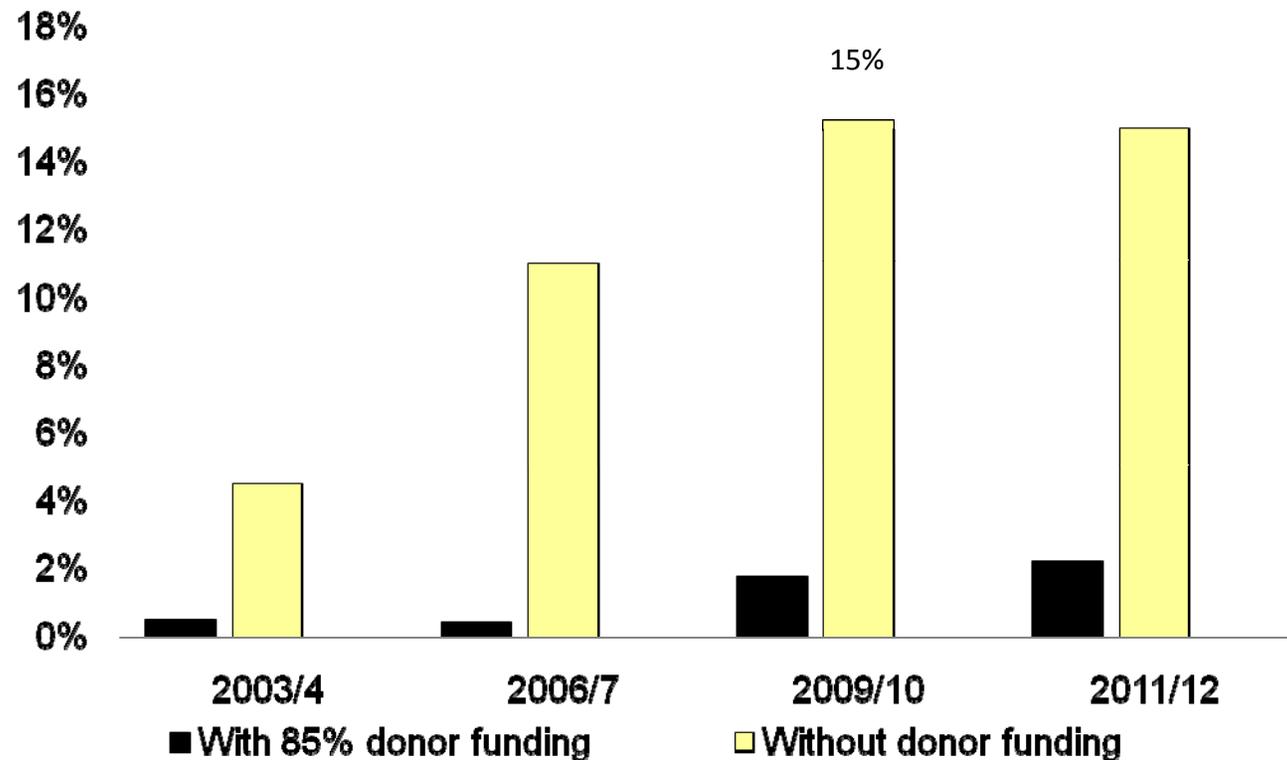
# Uganda's Dependence on Donor Funding (ODA)



- Treatment and care makes up the largest portion of annual HIV-related spending in Uganda.
- In 2005, US\$ 59,230,952 was spent in Uganda on ART alone.
- Uganda is almost entirely dependent on ODA to fund its AIDS treatment and care programs, creating a dependency on donor governments that inhibits its autonomy.

# Cost of ARVs in Uganda without Donor Funding

Uganda Government Spending on HIV/AIDS Programs  
(% Domestic Revenues)



- Without donor funding for HIV/AIDS programs, Uganda would have to increase spending up to 15% of domestic revenues to maintain the current level of treatment and care.

# The Long-Term Cost of ART is Unsustainable



- Globally, the number of people requiring ART is projected to exceed 55 million by 2030.
- Today, fewer than 4 million people are being treated with ART globally.
- The Global Fund is facing a funding gap of US \$4 billion dollars for 2010.
- ART provision on a global scale is unsustainable.
- A comprehensive approach, including new prevention technologies such as an AIDS vaccine, is necessary to make ART sustainable over the long term and to end the pandemic.

# Putting Prevention Back on the Agenda



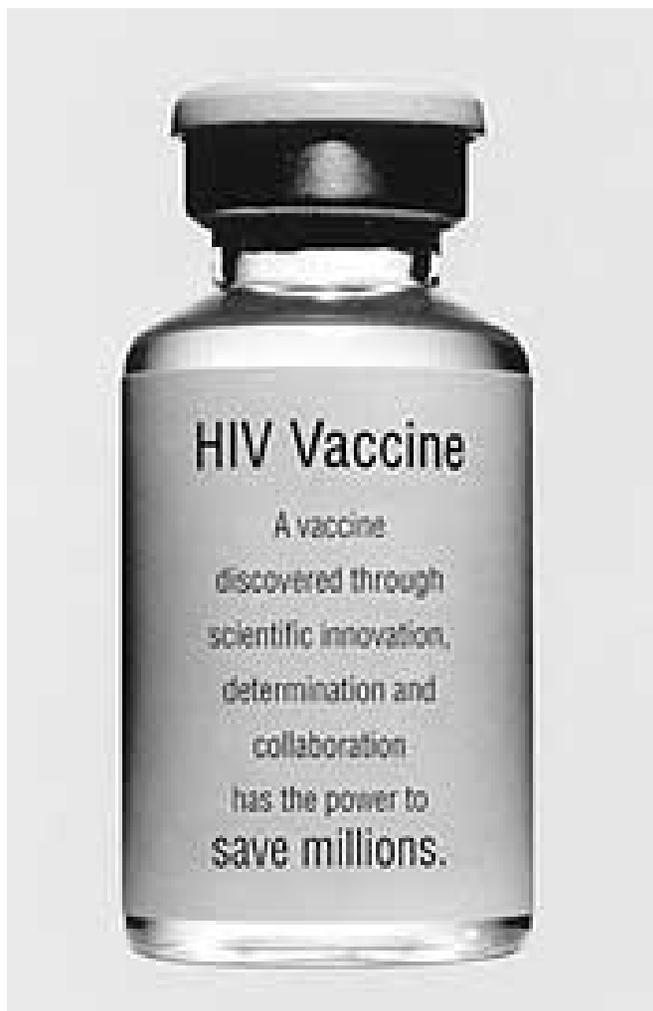
*“We must not forget: for every two people who start antiretroviral treatment, five are newly infected with HIV.*

*To break this vicious circle, there is only one solution—to stop new HIV infections.*

*Prevention must become our watchword, the banner we raise in this critical stage of the response.”*

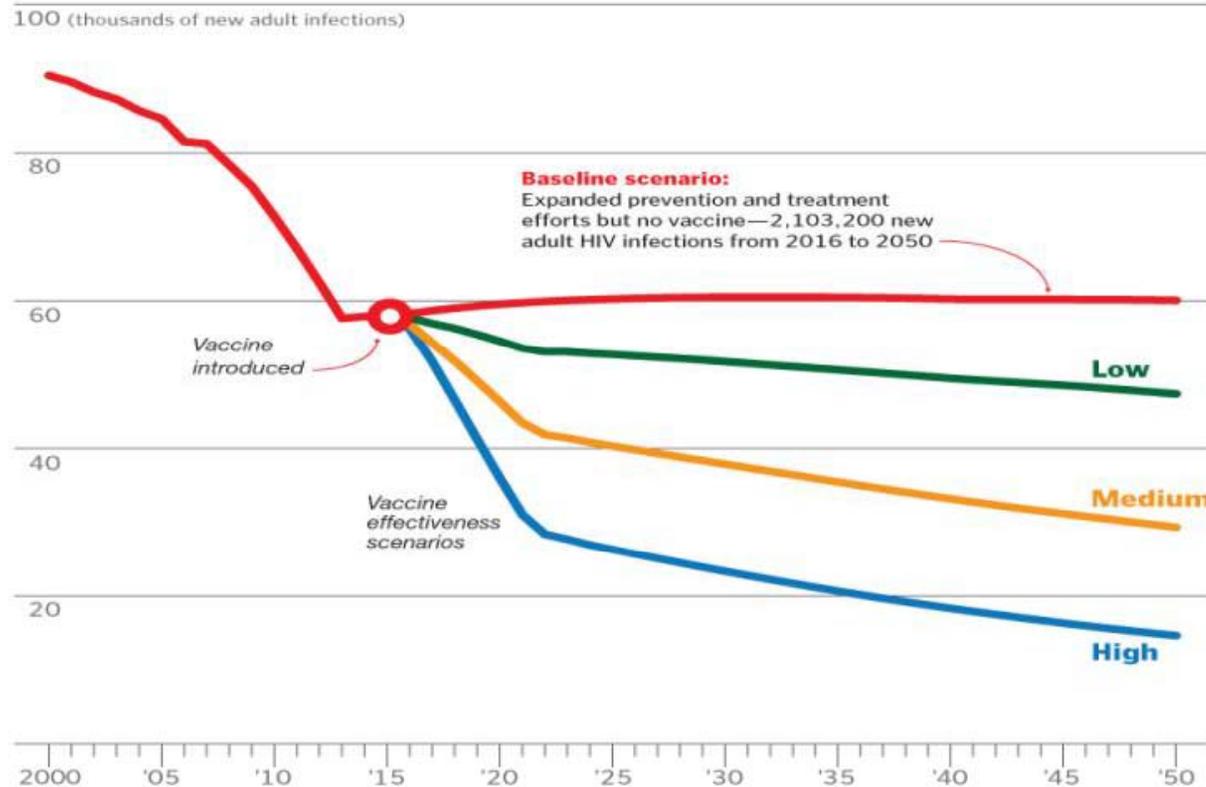
*Michel Sidibé, Executive Director, UNAIDS, 2009*

# AIDS Vaccines as Part of a Comprehensive Response



- Important HIV interventions exist: condoms, female condoms, adult male circumcision...but more are needed.
- A wide range of prevention options including an AIDS vaccine will be necessary to end the spread of AIDS.
- Vaccines are among the most powerful and cost-effective public health tools.
- Only with the introduction of a vaccine has a disease ever been eradicated.
- Vaccines are discreet, empowering tools for women.

# Potential Impact of an AIDS Vaccine in Uganda



- Even a partially effective vaccine given to a small percentage of the population could have major impact on the AIDS epidemic in Uganda.

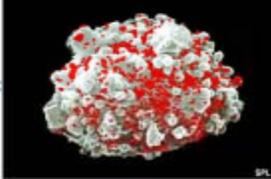
# The State of the AIDS Vaccine R&D Field

## Antibody Project

### STEP Trial Cancellation

**Merck abandons HIV vaccine trials**

International drug company Merck has halted trials on an HIV vaccine that was regarded as one of the most promising in the fight against Aids.



Merck stopped testing the vaccine after it was judged to be ineffective.

The vaccine was loaded with copies of three HIV genes.

In trials, the vaccine failed to prevent HIV infections among volunteers who were at risk of catching the virus, including gay men and sex workers.

Merck had previously expressed high hopes for the drug, which it spent 10 years developing.

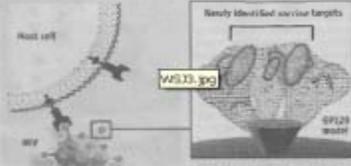
September 2007

**New Antibodies to HIV Found**

BY GAUTAM NAIK

**Gaining a Foothold Against HIV**

By studying antibodies, scientists have identified structures on the AIDS virus that may help in the development of a vaccine.



The structures are part of surface proteins called gp120, which help HIV latch onto and infect cells.

Source: Science Research for Aids

### Thai Prime-Boost Trial

**For First Time, AIDS Vaccine Shows Some Success**

By DONALD G. McNEIL, Jr.  
Published: September 24, 2009

Scientists said Thursday that a new AIDS vaccine, the first ever declared to protect a significant minority of humans against the disease, would be studied to answer two fundamental questions: why it worked in some people but not in others, and why those infected despite vaccination got no benefit at all.



The vaccine — known as RV 144, a combination of two genetically engineered vaccines, neither of which had worked before in humans — was declared a qualified success after a six-year clinical trial on more than 16,000 volunteers in Thailand. Those who were vaccinated became infected at a

September 2009

- Period of intensified focus on basic research following STEP trial cancellation
- Recent advances in AIDS vaccine R&D: Antibody Project, RV144 (Thai Trial)
- This is an exciting time for AIDS vaccine research; it's time to redouble our efforts in R+D

# IAVI's Antibody Project: North-South Collaboration in Action



- >1,800 Blood samples collected at linked trial sites across the globe, processed in London and tested for neutralizing antibodies in the US and Switzerland.
- From these samples 2 new, potent, broadly neutralizing antibodies were identified, the first such discovery in a decade, that represent new approaches for vaccine development.

# Uganda Virus Research Institute: A Critical Partner in IAVI's Antibody Project



- Uganda Virus Research Institute (UVRI) Lab and Clinic in Entebbe, Uganda contributed to the Antibody Project effort as a clinical trial site where blood samples were collected.
- UVRI is engaged in multiple Phase I AIDS vaccine trials
- Affiliated field sites are being used for clinical studies in preparation for future HIV vaccine efficacy trials
- Now an accredited reference lab.

# Science and Technology Collaboration: A Strategic Development Tool



- North-South collaboration in science and technology facilitates knowledge transfer
- Educates and enriches the next generation of African scientists and empowers them to take a leadership role in global health challenges
- Builds physical capacity and bolsters the scientific independence of developing countries where research takes place

# Science and Technology: A Development Strategy for Uganda



- AIDS is not just a public health crisis, but a threat to Uganda's autonomy and future development.
- Uganda must assume a larger role and greater leadership in the fight against AIDS, including engaging in research and development in new prevention technologies such as an AIDS vaccine.
- Collaborative initiatives in science and technology that build research capacity and infrastructure, encourage knowledge transfer, work against 'brain drain', and empower African scientists will be critical.
- We must continue to work together as a global community of researchers and activists to develop new HIV prevention technologies such as an AIDS vaccine in order to end the spread of HIV. The future of Uganda depends on it.

# Thank You

The Uganda Impact Modeling Project was a collaborative effort involving:



The Futures Institute



The International AIDS Vaccine Initiative



Makerere University



The Uganda AIDS Commission



The Uganda Virus Research Institute

uvri

Uganda Virus

Research Institute

IAVI is generously supported by:

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*And many other generous individuals from around the world*

*As of June 2009*