

# Ending AIDS in Africa:

Reflections from the Clinic,

Field

and Classroom



Professor Kwasi Torpey MBChB PhD MPH FGCP FWACP

# Outline

- Introduction
- Origin of HIV
- HIV treatment in Ghana and Africa
- Vertical / (Mother to child) transmission
- HIV and health
- Future directions
- Conclusion



—

The Journey  
So Far.....



# The Journey So Far.....



UNIVERSITY OF GHANA

SCHOOL OF PUBLIC HEALTH

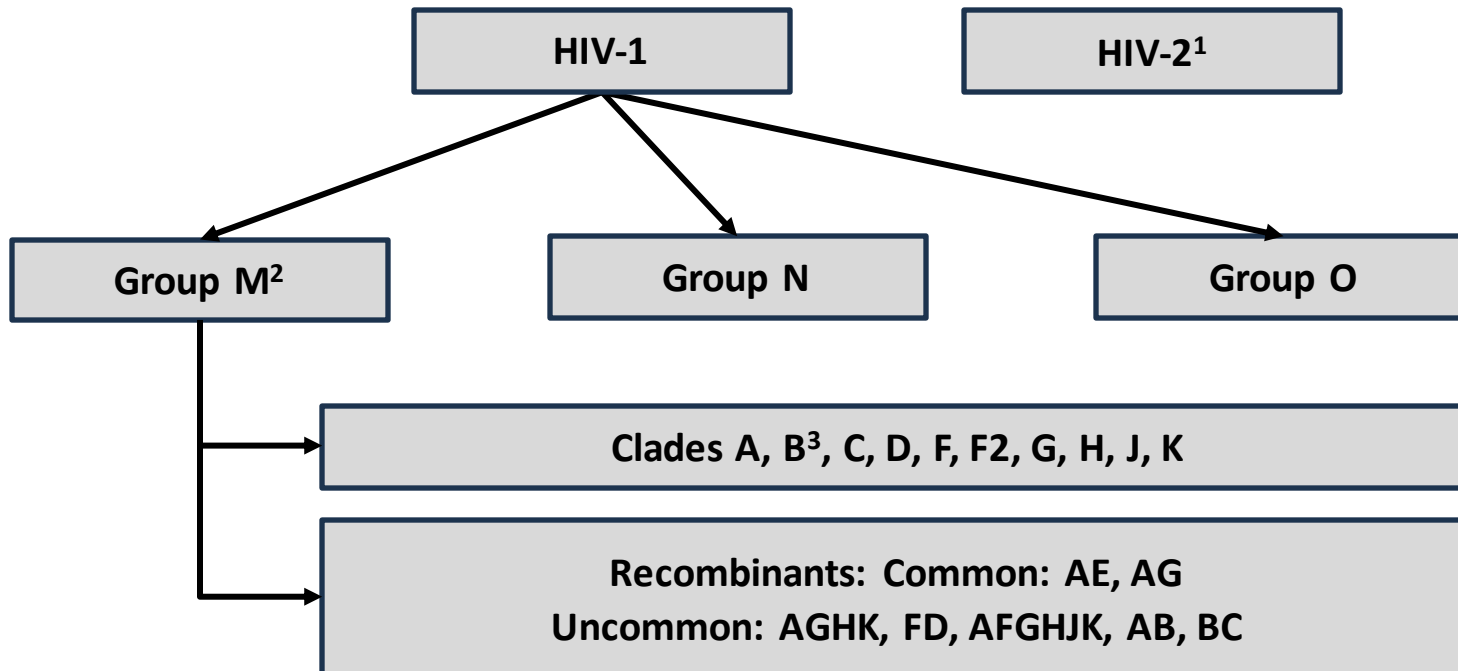
# Prof Peter Lamptey



# Prof. Robert Colebunders



# Classification of HIV



1. HIV-1 most common, but HIV-2 now circulating outside West Africa
2. Most infections due to group M viruses
3. Clade B: common in USA, Europe
4. Clade C: Common in East and South Africa. Commonest globally

# Progenitor of HIV



## HIV 1



*Pan troglodytes*



*Cercocebus atys*



*Cercopithecus albogularis*



*Cercopithecus lhoesti*

SIVcol



*Colobus guereza*

## HIV 2

Sooty mangabey



UNIVERSITY OF GHANA

SCHOOL OF PUBLIC HEALTH

# First documented case of HIV



# Second documented case of HIV



University of Kinshasa



# UNAIDS 2022



# West Africa



Nigeria

1.3%

Ghana

1.7%

Cote D'Ivoire

1.9%



# Central Africa

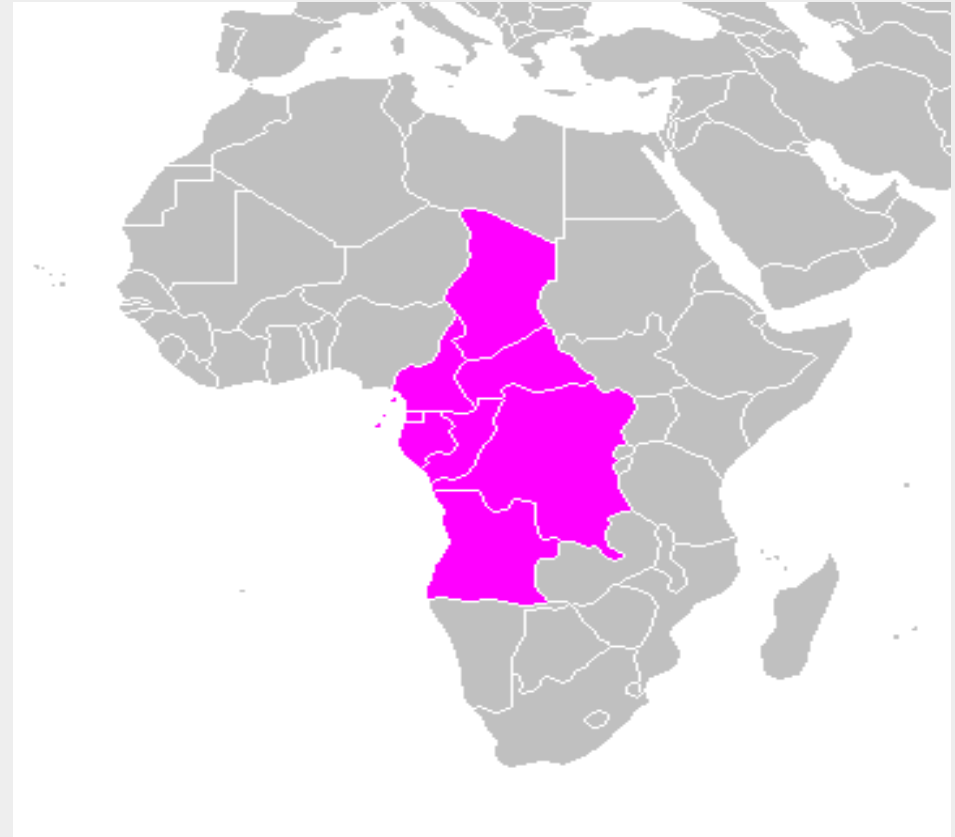


Cameroon

2.9%

DR Congo

0.7%



# East Africa



**Kenya**

**4%**

**Tanzania**

**4.5%**

**Uganda**

**5.2%**



# Southern Africa



Zambia	10.8%
Botswana	18.0%
South Africa	18.3%
Lesotho	20.9%
Eswatini	27.9%



# START Project



**St. Martin de Porres Hospital, Agomanya**



# Normal CD4+ T Lymphocyte Levels in HIV Seronegative Individuals in the Manya/Yilo Krobo Communities in the Eastern Region of Ghana

WILLIAM AMPOFO,<sup>1</sup> KWASI TORPEY,<sup>2</sup> Y.D. MUKADI,<sup>2</sup> KWADWO KORAM,<sup>1</sup>  
KISTEN NOLAN,<sup>2</sup> RICHARD AMENYAH,<sup>2</sup> EKOW KAITOO,<sup>3</sup> PHYLLIS ANTWI,<sup>4</sup>  
DAVID OFORI-ADJEL,<sup>1</sup> and PETER LAMPTEY<sup>2</sup>

Volume 19, Number 2, 2006  
© Mary Ann Liebert, Inc.  
Pp. 260–266

Normal CD4+ T Lymphocyte Levels in HIV Seronegative  
Individuals in the Manya/Yilo Krobo Communities in the  
Eastern Region of Ghana

WILLIAM AMPOFO,<sup>1</sup> KWASI TORPEY,<sup>2</sup> Y.D. MUKADI,<sup>2</sup> KWADWO KORAM,<sup>1</sup>  
KISTEN NOLAN,<sup>2</sup> RICHARD AMENYAH,<sup>2</sup> EKOW KAITOO,<sup>3</sup> PHYLLIS ANTWI,<sup>4</sup>  
DAVID OFORI-ADJEL,<sup>1</sup> and PETER LAMPTEY<sup>2</sup>

## ABSTRACT

The goal of this study was to determine the normal levels of CD4+ T lymphocytes in healthy individuals who were HIV seronegative in the Manya and Yilo Krobo Districts of Ghana's Eastern Region. This enabled comparisons with normal CD4 count ranges established by the World Health Organization (WHO). The study population consisted of 249 HIV-seronegative clients from a mobile free Voluntary Counseling and Testing (VCT) service in communities of the two districts during a one-month period. The mean CD4 count of these individuals was 1067 cells/ $\mu$ l with women demonstrating higher baseline CD4 counts than men. This study found a WHO comparable HIV seronegative baseline CD4 count as well as gender-based differences in the CD4 count and CD4/CD8 ratio. Establishment of the adult baseline for the country provides important demographic data and indicates the appropriateness of current global treatment guidelines with regards to CD4 levels in Ghana.

## INTRODUCTION

MULTIPLE STUDIES of healthy, HIV negative people in various African countries report, on average, high CD4 cell T-lymphocyte counts. The CD4 cell T-lymphocyte is the cellular marker of choice in tracking the progress of HIV disease on an individual as well as in the population. CD4 counts show less variation over time in healthy adult individuals than in children (3). In the past decade, the "CD4 T cell count" has gained significant application over measurements of HIV viral load and other immune-related indicators (such as HIV antibodies and antigens). It has become the "single most im-

portant laboratory finding taken into consideration when recommendations are made regarding antiretroviral therapy (ART) in resource constrained settings (27, 19).

Original ART treatment guidelines set CD4 count benchmarks based on industrialized European and North American population data from the 1990s. However, past research has demonstrated country-based differences of CD4 ranges. The CD4 and related CD8 counts of immunocompromised patients are usually discussed in comparison to an established baseline of healthy individuals. This baseline may be subject to change from country to country given health, gender and economically related disparities. About 58% of the 20 million population in

<sup>1</sup>Noguchi Memorial Institute for Medical Research, Ghana.

<sup>2</sup>Family Health International, Arlington, Virginia.

<sup>3</sup>Aku Government Hospital, Manya Krobo District, Ghana.

<sup>4</sup>School of Public Health, University of Ghana, Ghana.



# Key highlights of HIV treatment in Ghana



## High Prevalence of Unique Recombinant Forms of HIV-1 in Ghana: Molecular Epidemiology From an Antiretroviral Resistance Study

*Elena Delgado, PhD,\* William Kwabena Ampofo, PhD, BSc,† María Sierra, PhD,\* Kwasi Torpey, MBChB, MPH,‡ Lucía Pérez-Álvarez, MD, PhD,\* Evelyn Yayra Bonney, MPhil, BSc,† Ya Diul Mukadi, MD, MPH,§ Margaret Lartey, MBChB,¶ Charles Nyarko, MD,|| Richard Noamesi Amenyah, MBChB, MPH,‡ Michael M. Thomson, MD, PhD,\* and Rafael Nájera, MD, PhD\**

ORIGINAL RESEARCH ARTICLE

Initiating antiretroviral treatment in a resource-constrained setting: does clinical staging effectively identify patients in need?

**K Torpey** MD MPH\*, **M Lartey** MD FWACP†, **R Amenyah** MD MPH‡, **N A Addo** MD MPH§, **J Obeng-Baah** MD\*\*, **Y Rahman** BSc††, **C Suzuki** PhD‡‡, **Y D Mukadi** MD MPH‡‡ and **R Colebunders** MD PhD§§



UNIVERSITY OF GHANA  
SCHOOL OF PUBLIC HEALTH

# Addressing HR challenges in expanding HIV treatment



OPEN ACCESS Freely available online

Mwai GW et al. *Journal of the International AIDS Society* 2013, **16**:18586

<http://www.jiasociety.org/index.php/jias/article/view/18586> | <http://dx.doi.org/10.7448/IAS.16.1.18586>



## Review article

# Role and outcomes of community health workers in HIV care in sub-Saharan Africa: a systematic review

Grace W Mwai<sup>5,1</sup>, Gitau Mburu<sup>2,3</sup>, Kwasi Torpey<sup>4</sup>, Peter Frost<sup>1</sup>, Nathan Ford<sup>5</sup> and Janet Seeley<sup>6,7</sup>  
Dimpungwe<sup>7</sup>, Mushota Kabaso<sup>4</sup> and Catherine Thompson<sup>4</sup>



UNIVERSITY OF GHANA  
SCHOOL OF PUBLIC HEALTH

# Community HIV treatment





Oladele I A et al. *Journal of the International AIDS Society* 2018, **21**:e25108  
<http://onlinelibrary.wiley.com/doi/10.1002/jia2.25108/full> | <https://doi.org/10.1002/jia2.25108>



## RESEARCH ARTICLE

# Bridging the HIV treatment gap in Nigeria: examining community antiretroviral treatment models

Edward A Oladele<sup>1</sup> , Okikiolu A Badejo<sup>1,2</sup> , Christopher Obanubi<sup>1</sup>, Emeka F Okechukwu<sup>3</sup>, Ezekiel James<sup>3</sup>, Golden Owionda<sup>4</sup>, Onuche I Omeh<sup>5</sup>, Moyosola Abass<sup>6</sup>, Olubunmi R Ngedu-Momoh<sup>7</sup>, Norma Ojehomon<sup>8</sup>, Dorothy Oquas<sup>9</sup>, Satish Raj-Pandey<sup>1</sup>, I ladiva Khamofu<sup>9</sup> and Kwasi Torpey<sup>10</sup>

**Corresponding author:** Okikiolu Abimbola Badejo, Sint Rochestraat 34 SAOZ, Antwerp 2000, Belgium. Tel: +324655275952. [okikiolubadejo@gmail.com](mailto:okikiolubadejo@gmail.com)

are important in the design of community antiretroviral treatment delivery.

**Keywords:** community based, antiretroviral therapy, Universal Access, community models, local government areas, HIV positive.

Additional Supporting Information may be found online in the Supporting Information tab for this article.

Received 17 April 2017; Accepted 26 March 2018

Copyright © 2018 The Author. Journal of the International AIDS Society published by John Wiley & Sons Ltd on behalf of the International AIDS Society. This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

### 1 | INTRODUCTION

Globally, 36.7 million people were living with HIV by the end of 2015, and sub-Saharan Africa (SSA) accounted for 70% of this burden [1]. Despite the disproportionate burden, less than 60% of the people living with HIV in SSA have access to antiretroviral therapy (ART) [1]. Access to ART for everyone who requires it is central to the attainment of the global goal of eliminating HIV. The conventional model in SSA of providing access to ART through healthcare facilities has been

inadequate to achieve required treatment coverage [2,3]. As the world strives to achieve the ambitious treatment targets set forth by the joint United Nations Programme on HIV/AIDS (UNAIDS) [4] to eliminate the disease, alternate HIV care delivery models are becoming more relevant [4]. One such model is community ART delivery.

Community ART (commART) refers to various modalities of decentralizing HIV related care and treatment outside of health facilities. The modalities vary based on adaptations to local contexts and needs [4]. The main thrust of commART is on engaging



UNIVERSITY OF GHANA  
SCHOOL OF PUBLIC HEALTH

# Addressing challenges of same day initiation of HIV treatment: The adherence calendar



## Ongoing adherence support schedule for all new ART & PMTCT clients

### Month 1

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Week 1							Home visit by Case Manager
Week 2							Day 14 Group clinic visit
Week 3						Call/home visit by Case Manager	Day 21
Week 4	Day 22 SMS messaging for adherence reinforcement	Day 23 Phone call by Pharmacist to assess for ADR/adherence	Day 24	Day 25	Day 26	Day 27	Day 28 Month 2 appointment reminder by Case Manager

- Test and Start and same day initiation = less time to prepare clients
- Data review showed greatest loss from care occurs in first month

# Mother to child transmission of HIV



In utero



At birth



During  
breastfeeding



# HIV in Infants



OPEN ACCESS Freely available online



## Analysis of HIV Early Infant Diagnosis Data to Estimate Rates of Perinatal HIV Transmission in Zambia

Kwasi Torpey<sup>1\*</sup>, Justin Mandala<sup>1</sup>, Prisca Kasonde<sup>1</sup>, Gail Bryan-Mofya<sup>2</sup>, Maximillian Bweupe<sup>3</sup>, Jonathan Mukundu<sup>1</sup>, Chilunjeimba<sup>1</sup>, Catherine Mwale<sup>1</sup>, Hilary Lumano<sup>2</sup>, Michael Welsh<sup>1</sup>

1 FHI 360, Durham, North Carolina, United States of America, 2 Management Sciences for Health, Cambridge, Massachusetts, United States of America, 3 Ministry of Health Zambia, Lusaka, Zambia

gains made in controlling child mortality in African countries with high HIV seroprevalence. HIV infection accounts for more than 20% of child deaths in southern Africa compared with approximately 3% globally [2].

This threat has been recognized by the international community, which has spurred advocacy, political and financial responses to reduce – and ultimately eliminate – MTCT. Indeed in recent

provided with antiretroviral drugs.

However, in order to compare progress across different PMTCT approaches and to mount a coordinated response, there is need to move beyond process indicators and measure PMTCT outcomes. Many approaches – with their advantages and limitations – have been suggested to measure outcomes of PMTCT [4,5]. One of the indicators proposed to measure



# Seroconversion in Pregnant women



Journal of the International Association of Providers of AIDS Care



[J Int Assoc Provid AIDS Care](#). 2019 Jan-Dec; 18: 2325958218823530.

PMCID: PMC6748466

Published online 2019 Jan 28. doi: [10.1177/2325958218823530](https://doi.org/10.1177/2325958218823530)

PMID: [30798664](https://pubmed.ncbi.nlm.nih.gov/30798664/)

HIV Retesting of HIV-Negative Pregnant Women in the Context of Prevention of Mother-to-Child Transmission of HIV in Primary Health Centers in Rural Zambia: What Did We Learn?

[Justin Mandala](#), MD, MPH,<sup>1</sup> [Prisca Kasonde](#), MD, MMed, MPH,<sup>2</sup> [Titilope Badru](#), MSc,<sup>3</sup> [Rebecca Dirks](#), MA, BA,<sup>1</sup> and [Kwasi Torpey](#), MD, PhD, MPH, FGCP<sup>1,4</sup>



# Vertical Transmission



RESEARCH ARTICLE

## Playing the Catch-Up Game: Accelerating the Scale-Up of Prevention of Mother-To-Child Transmission of HIV (PMTCT) Services to Eliminate New Pediatric HIV Infection in Nigeria

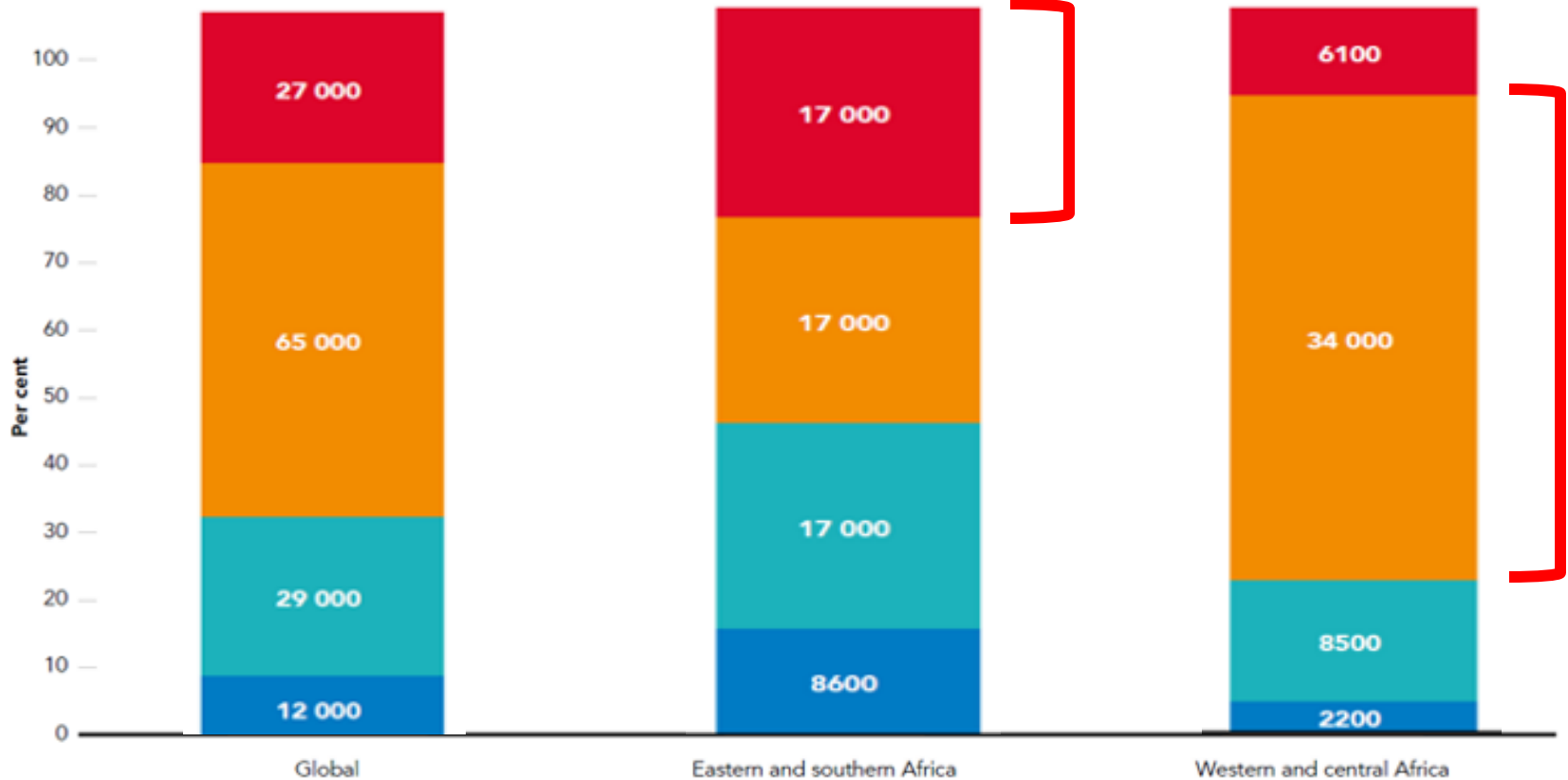
Edward Adekola Oladele<sup>1\*</sup>, Hadiza Khamofu<sup>1</sup>, Seun Asala<sup>1</sup>, Mariya Saleh<sup>1</sup>, Uche Ralph-Opara<sup>1</sup>, Charles Nwosisi<sup>1</sup>, Chukwuma Anyaike<sup>2</sup>, Catherine Gana<sup>1</sup>, Oluwasanmi Adedokun<sup>1</sup>, Rebecca Dirks<sup>3</sup>, Olufunsho Adebayo<sup>1</sup>, Modupe Oduwole<sup>4</sup>, Justin Mandala<sup>3</sup>, Kwasi Torpey<sup>1,5</sup>

<https://doi.org/10.1371/journal.pone.0169342.g001>

PMTCT has witnessed a 152% increase in these eight states between October 2013 and October 2014.



# Source of new infections in children (UNAIDS 2023)



- Mother acquired HIV during pregnancy or breastfeeding
- Mother did not receive antiretroviral therapy during pregnancy or breastfeeding
- Mother did not continue antiretroviral treatment during pregnancy or breastfeeding
- Mother was on antiretroviral treatment but did not achieve viral suppression

# Botswana achieves silver status



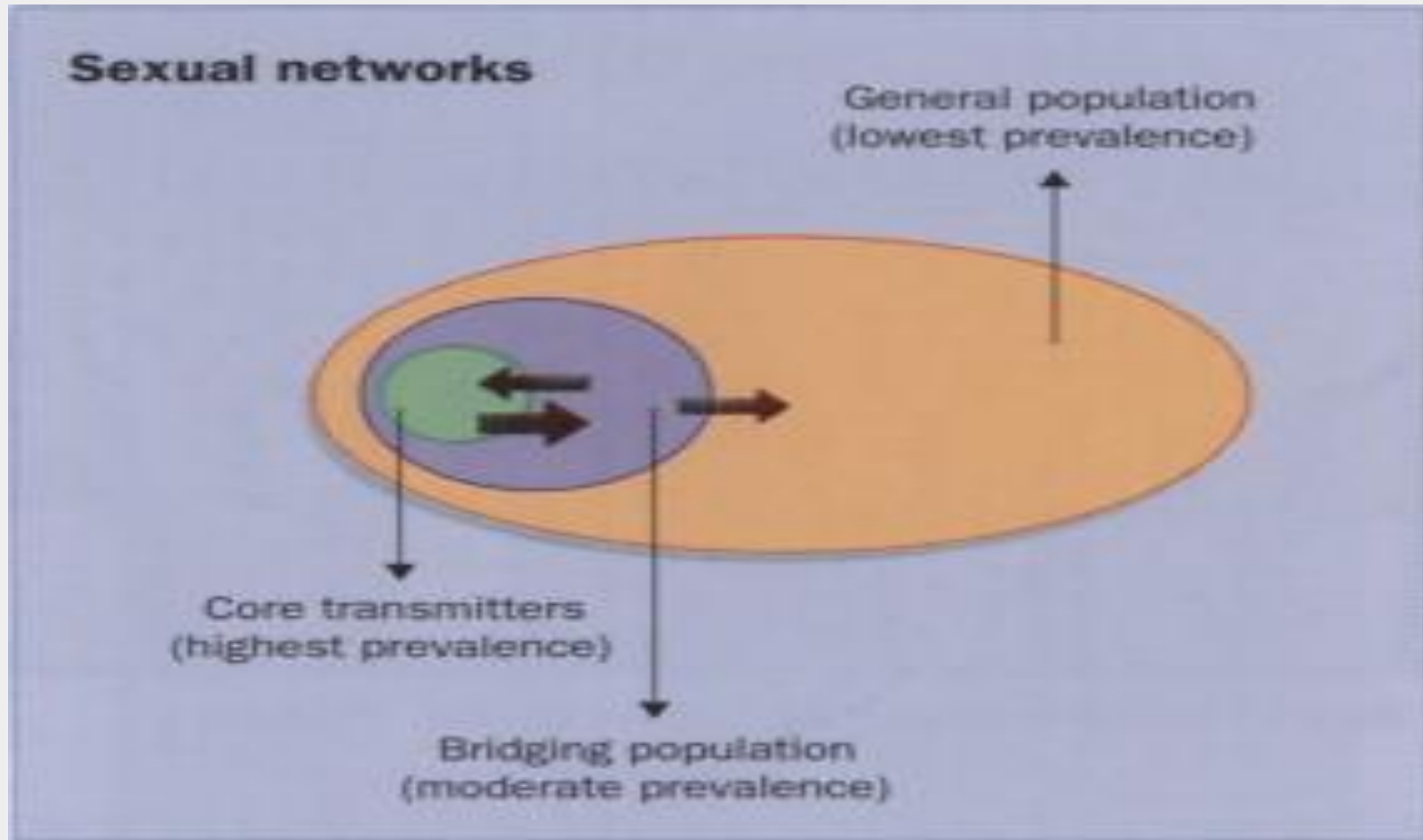
Let's eliminate HIV in children



# HIV Testing



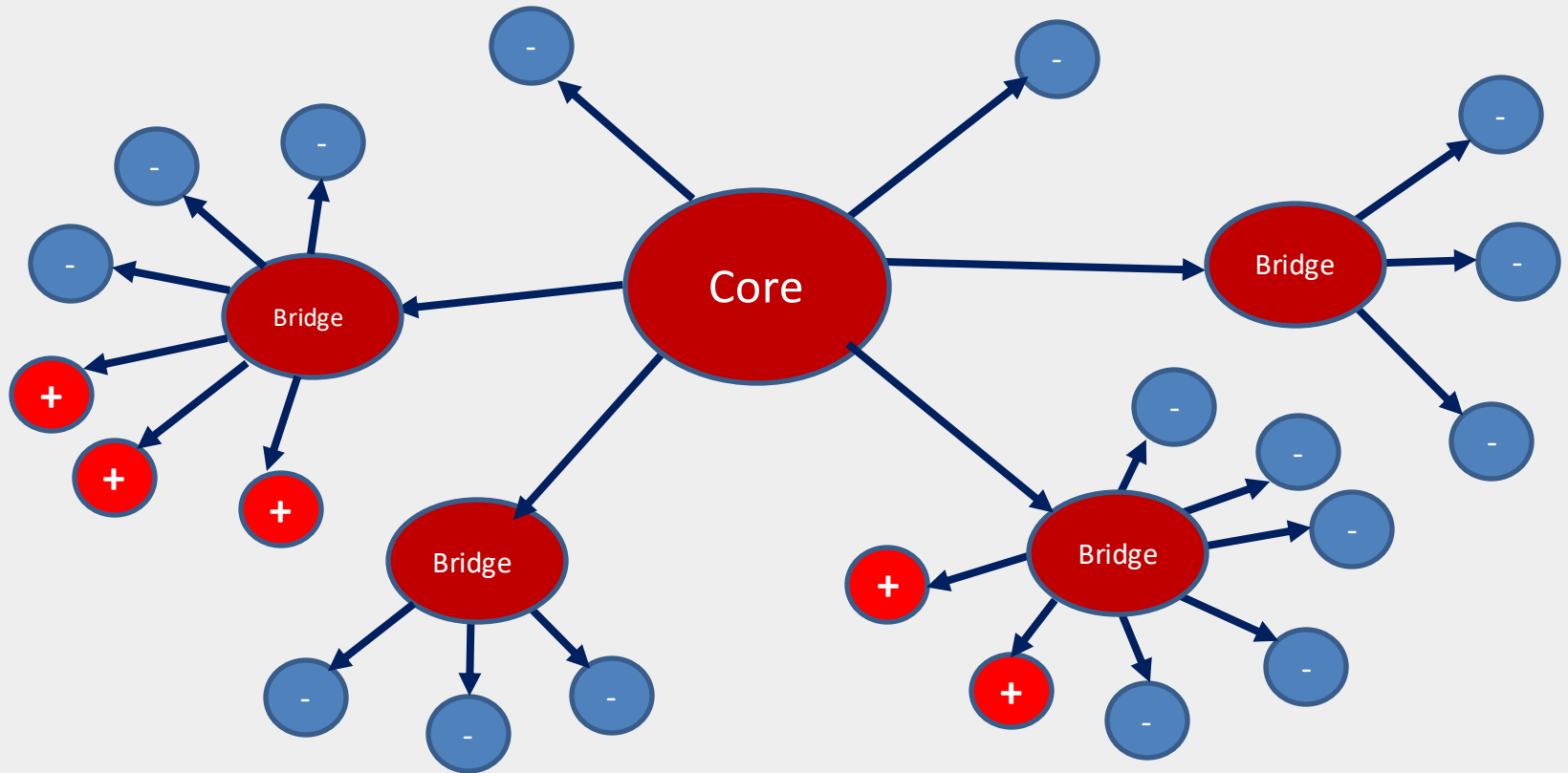
# Key populations and access to health services



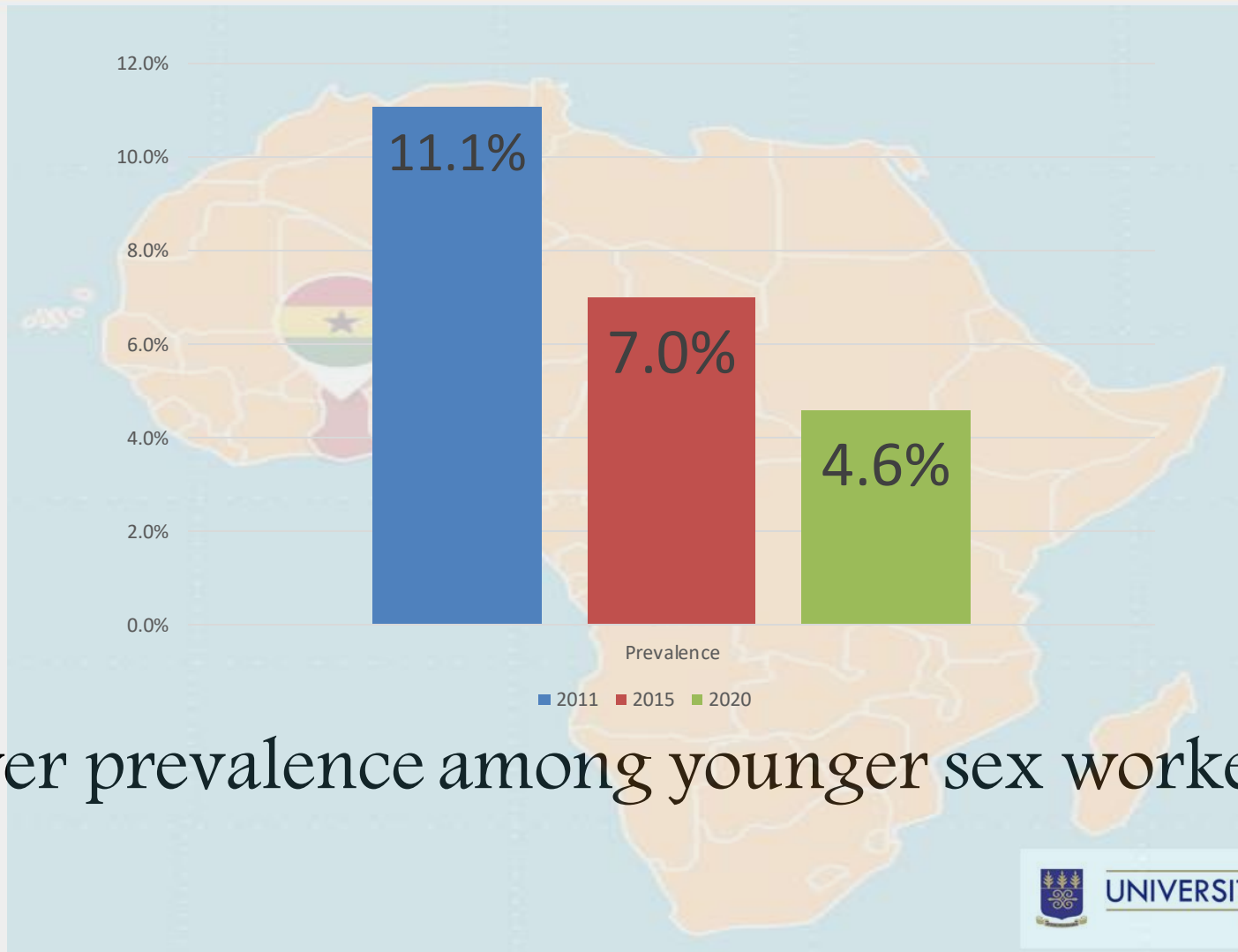
Ward Cates and Gina Dalabetta. The staying power of STIs. Lancet 1999



# Sexual networks: Core to General Population



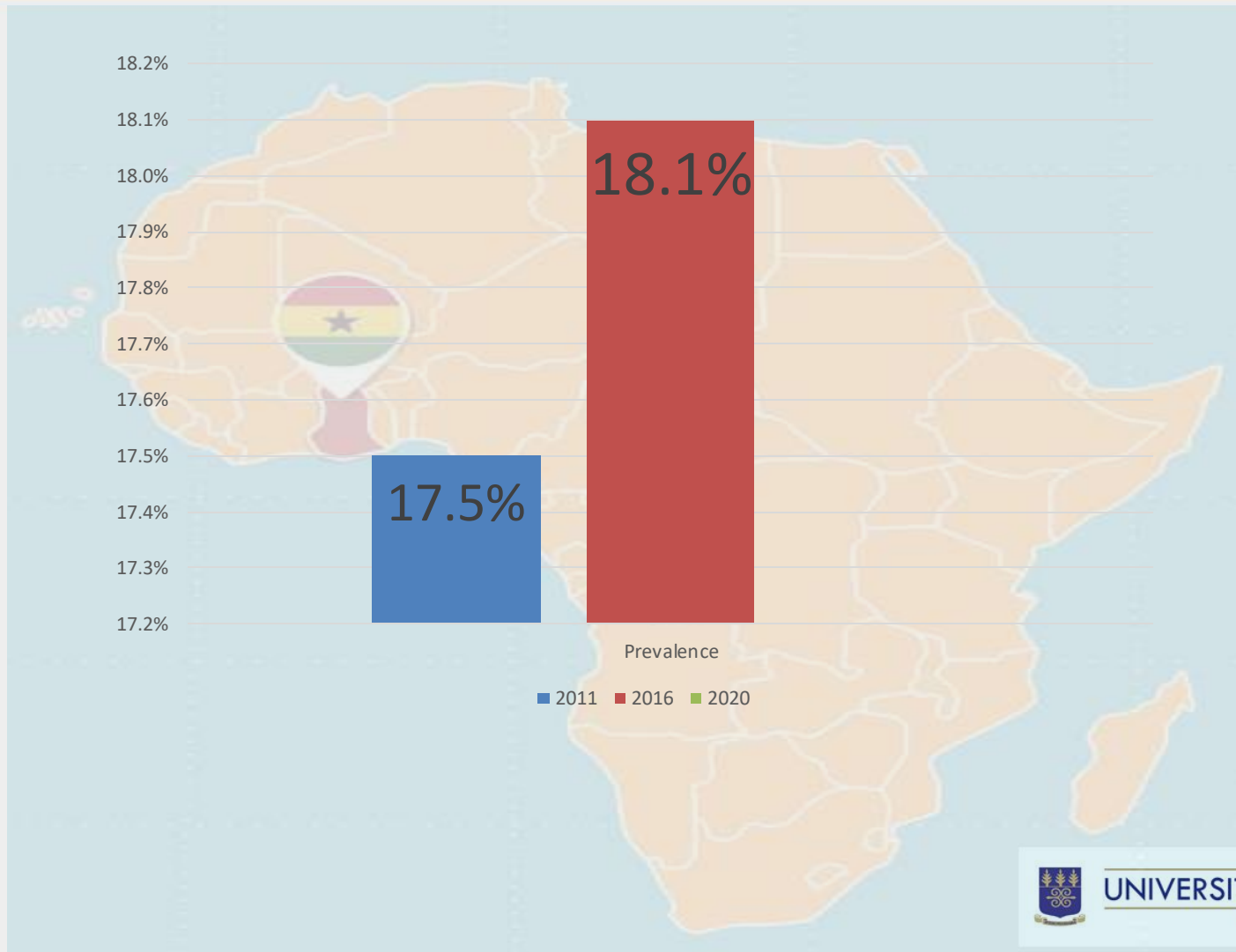
# The Female sex worker story in Ghana



- Lower prevalence among younger sex workers



# MSM in Ghana



# Drugs commonly used among PWIDs



**Cocaine**

**Heroin**

**Tramadol**

**Pethidine**





REPUBLIC OF GHANA

**THE ONE THOUSAND AND NINETEENTH**

**ACT**

**OF THE PARLIAMENT OF THE REPUBLIC OF GHANA**

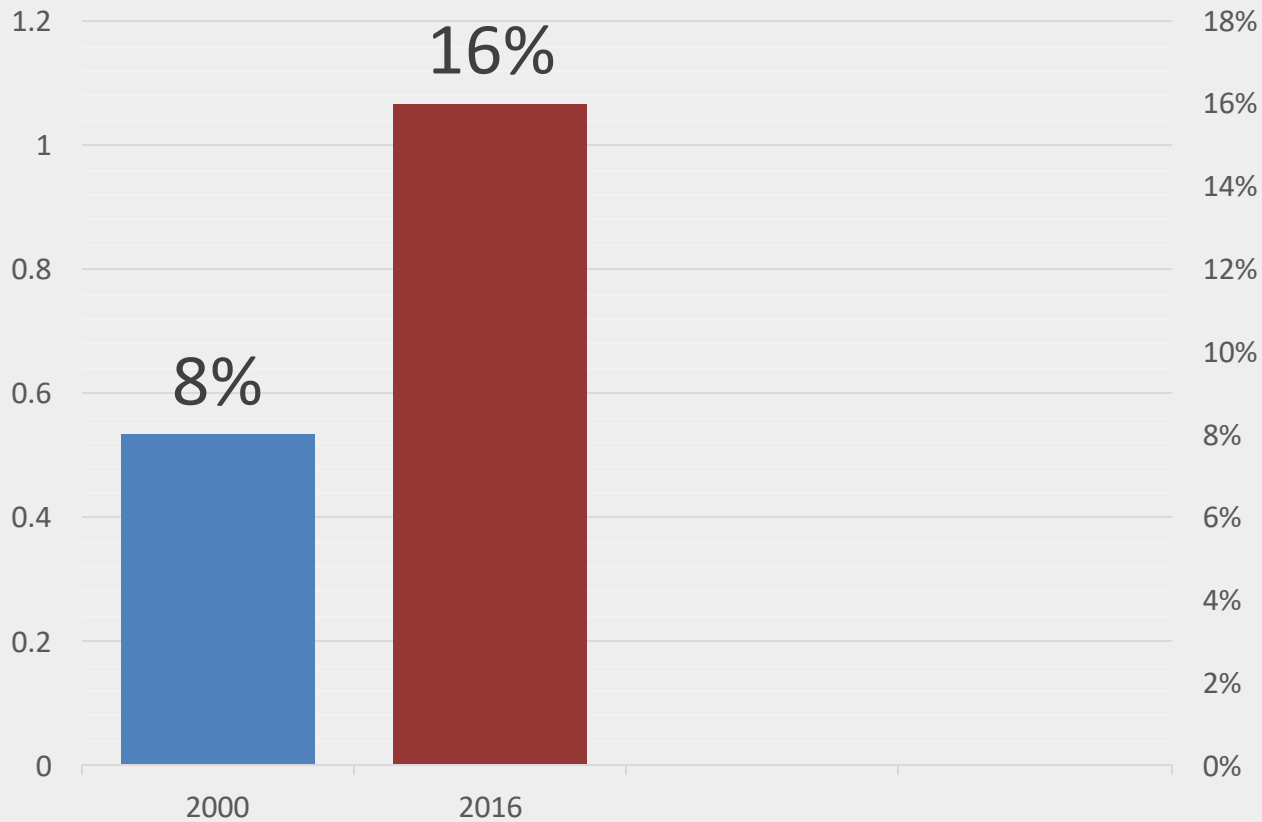
**ENTITLED**

**NARCOTICS CONTROL COMMISSION ACT, 2020**

# HIV and Aging in Africa



# HIV and Aging Globally



# HIV and Healthy Aging in Africa – Maputo 2023



UNIVERSITY OF GHANA

SCHOOL OF PUBLIC HEALTH

# Building blocks of health systems



## SYSTEM BUILDING BLOCKS



## OVERALL GOALS / OUTCOMES



**THE SIX BUILDING BLOCKS OF A HEALTH SYSTEM: AIMS AND DESIRABLE ATTRIBUTES**



# Future directions



# The way forward

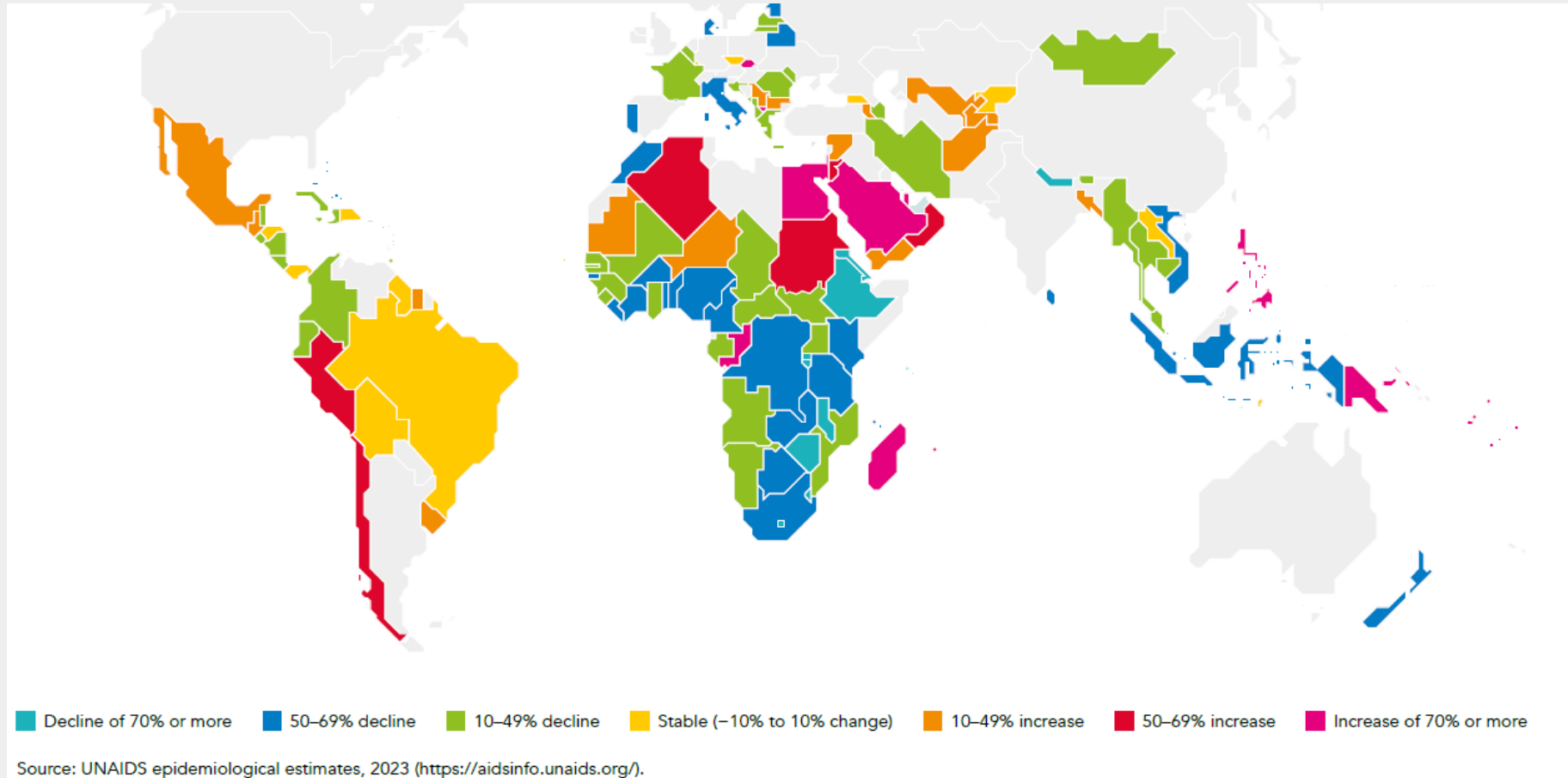




# Ending the HIV epidemic



# HIV decline in sub-Saharan Africa

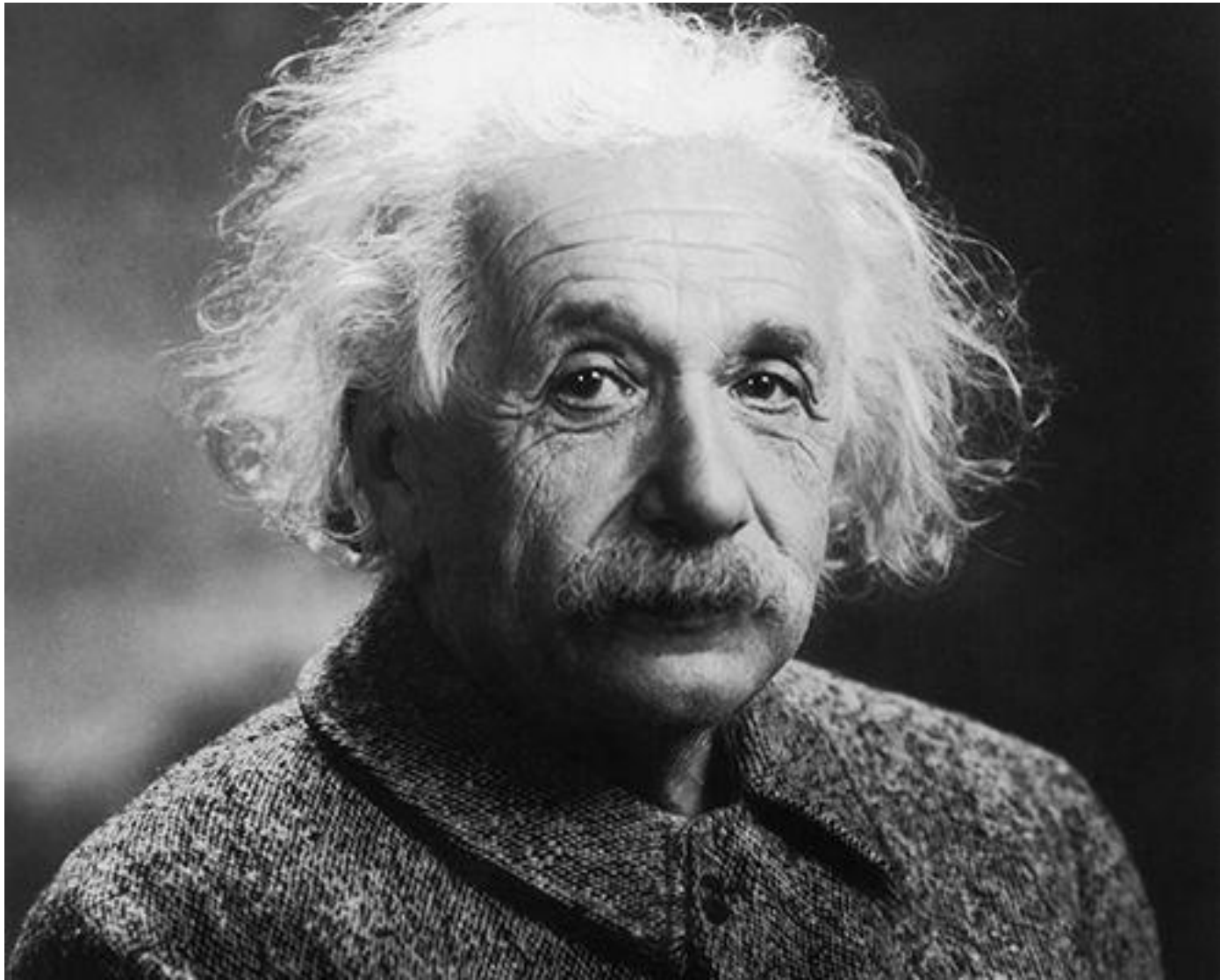


# HIV decline in sub-Saharan Africa



Decline of 70% or more    50–69% decline    10–49% decline    Stable (–10% to 10% change)    10–49% increase    50–69% increase    Increase of 70% or more

Source: UNAIDS epidemiological estimates, 2023 (<https://aidsinfo.unaids.org/>).



*“We can not solve our problems with the same level of thinking that created them.”*

# Acknowledgements









# Collaborators





22<sup>ND</sup>  
**ICASA**  
INTERNATIONAL CONFERENCE  
ON AIDS AND STIs IN AFRICA  
4 - 9 December 2023  
Rainbow Towers, Harare, Zimbabwe

**THEME:** AIDS IS NOT OVER: Address inequalities, accelerate inclusion and innovation  
Le SIDA est toujours là : Eliminons Les inégalités, accélérons l'inclusion et l'innovation.

CONFERENCE DATE: 4<sup>TH</sup> - 9<sup>TH</sup> DECEMBER 2023

REGULAR REGISTRATION: 1<sup>ST</sup> JUNE - 31<sup>ST</sup> AUGUST 2023, 23.59 GMT

EXHIBITION BOOKING: 1<sup>ST</sup> MARCH - 31<sup>ST</sup> AUGUST 2023



For more information, visit: <http://icasa2023.saafrica.org>



UNIVERSITY OF GHANA  
SCHOOL OF PUBLIC HEALTH

**Thank You**



**UNIVERSITY OF GHANA**  
SCHOOL OF PUBLIC HEALTH