



**ACHIEVING 90:90:90:**

**A GLOBAL GAME CHANGER FOR PUBLIC HEALTH**

*Stefano Vella MD*

*Istituto Superiore di Sanità - Rome - Italy*



# ACHIEVING 90:90:90: A GLOBAL GAME CHANGER FOR PUBLIC HEALTH

- *The Goal*
- *The Tools*
- *Addressing the barriers*
- *From Durban to Durban*


Open Working Group proposal for

# Sustainable Development Goals



## **Goal #3 - Ensure healthy lives and promote well-being for all at all ages**

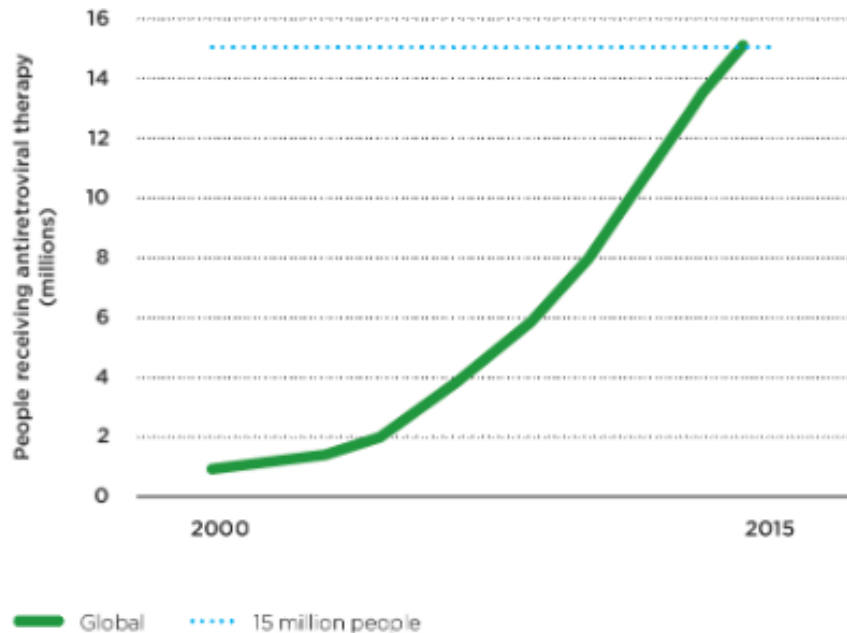
- ✓ **By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births**
- ✓ **By 2030, end preventable deaths of newborns and children under 5 years of age**
- ✓ **By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases**
- ✓ **By 2030, reduce by one third premature mortality from non-communicable diseases**
- ✓ **By 2030, through prevention and treatment promote mental health and well being**
- ✓ **By 2030, ensure universal access to sexual and reproductive health-care services.**

MAKE **END**  
 **AIDS**  
**20** by **30**

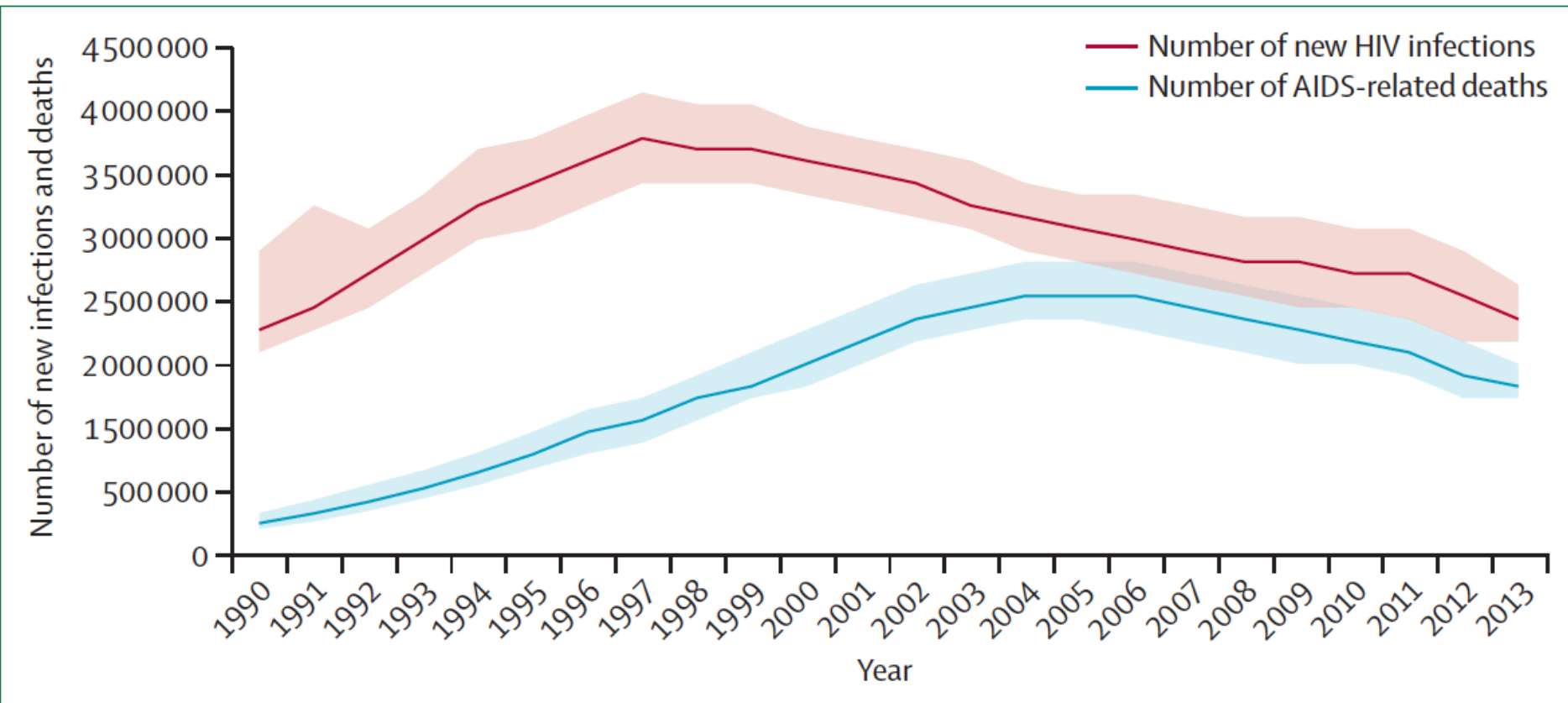
GOAL NO. 1 IN POST 2015 DEVELOPMENT AGENDA

# 2015 an amazing target achieved

Number of people receiving antiretroviral therapy, 2000–2015



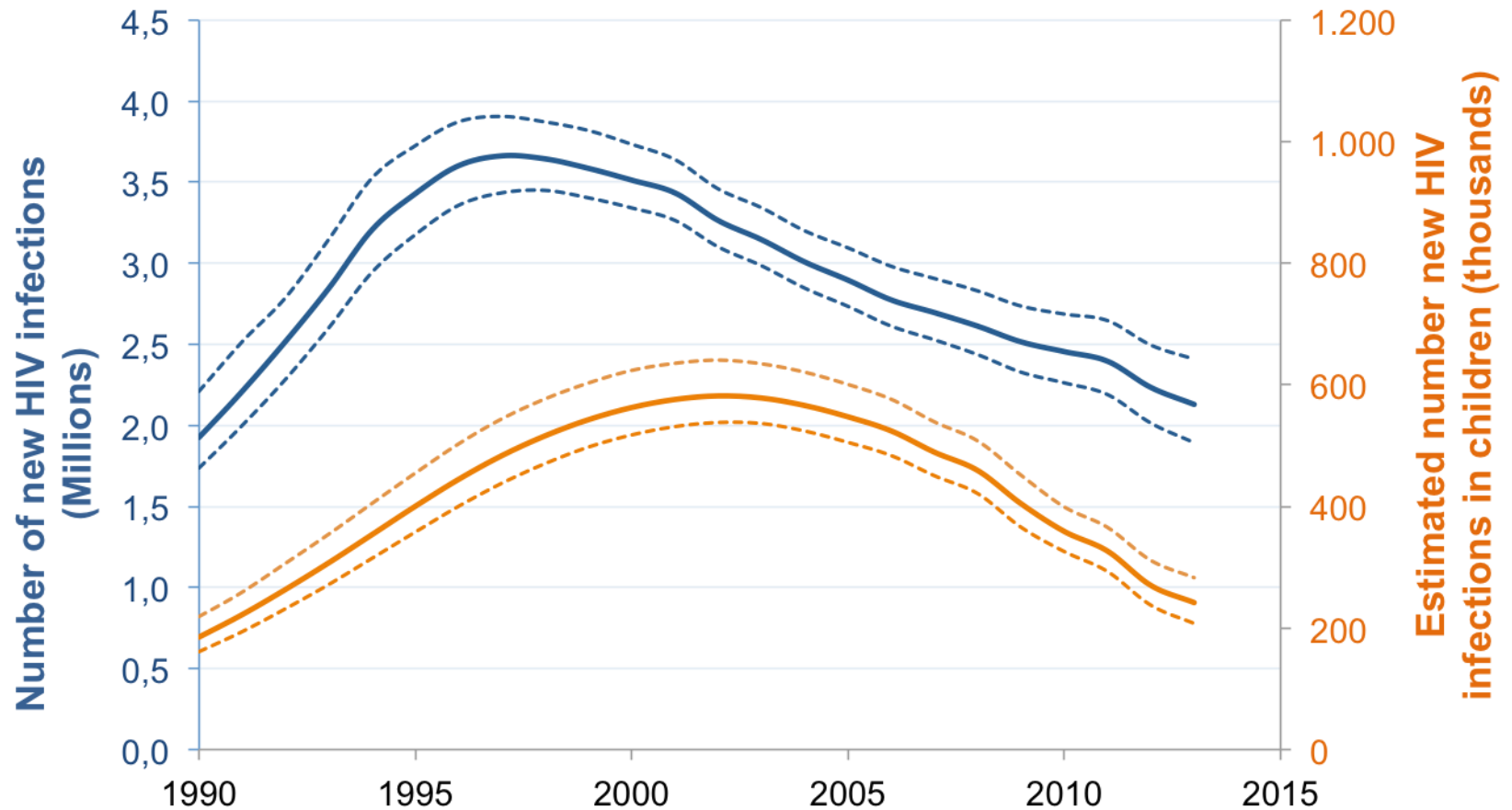
# GLOBAL MORTALITY AND INCIDENCE DECREASED....



**Figure 1: Estimated global number of new HIV infections and deaths from AIDS, 1990–2013**

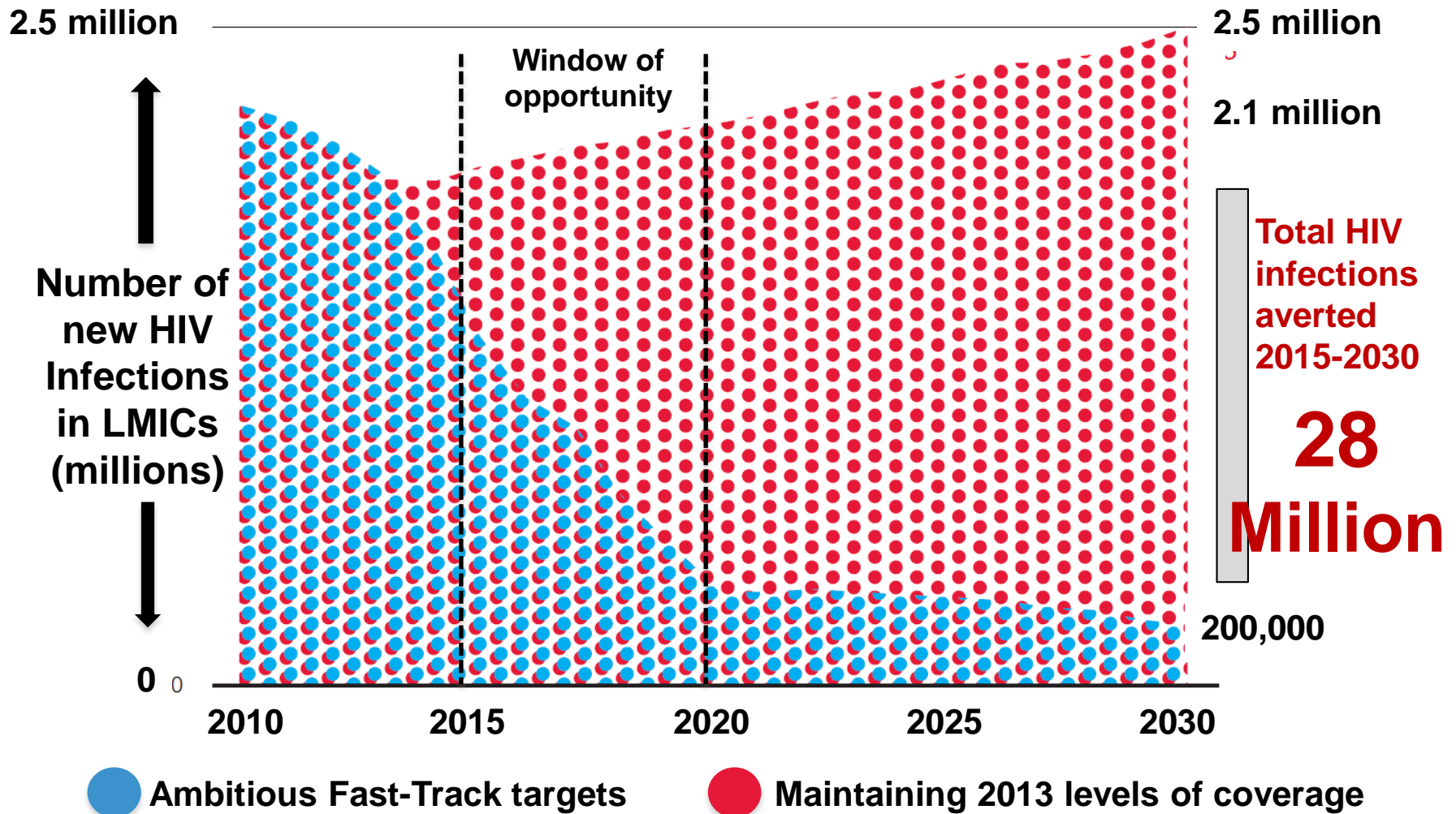
Source: UNAIDS 2013 global fact sheet.<sup>13</sup> Shaded areas indicate uncertainty bounds.

**...however, the global number of new HIV infections in adults and children is still unacceptably high**



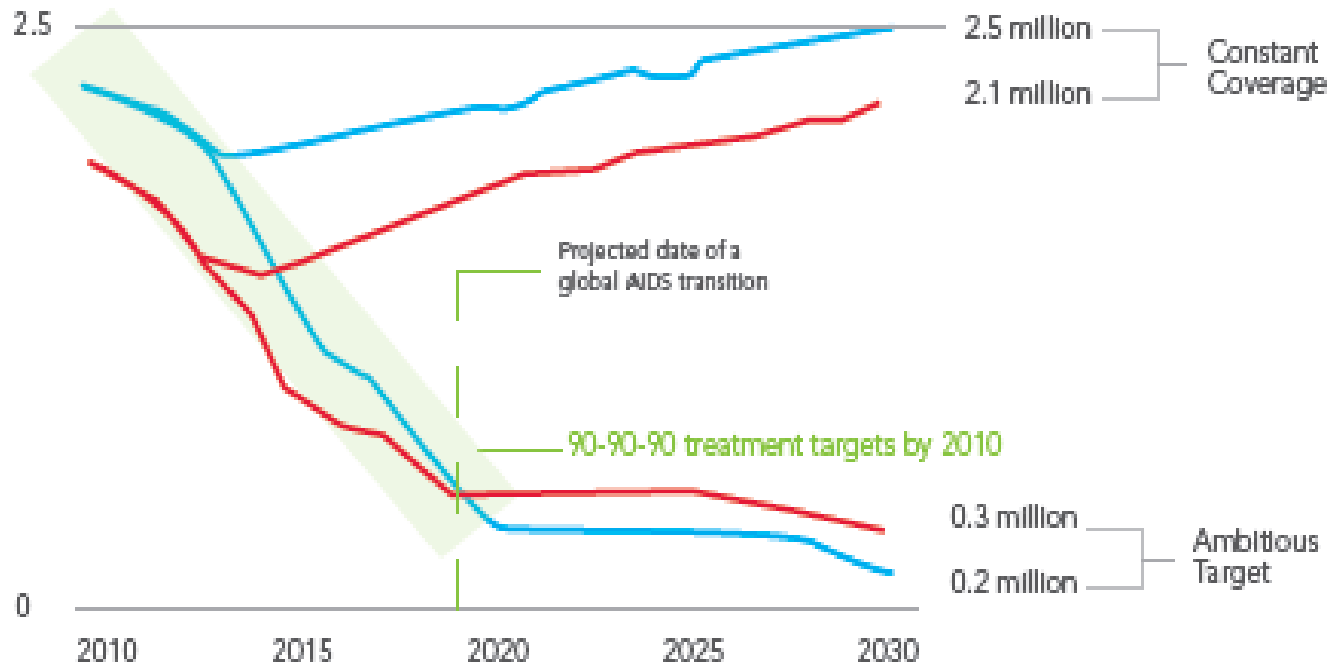


# “The AIDS response is at a crucial juncture, both in its immediate trajectory and its sustainability...”



Source: Adapted from UNAIDS Fast-track Report

# For clear, HIV epidemic will rebound without change in coverage by 2020



AIDS transition: low mortality but lower HIV infections  
 Decrease of HIV new infections: 60% due to ART

— AIDS-related Deaths  
 — New HIV Infection

# ACHIEVING 90:90:90: A GLOBAL GAME CHANGER FOR PUBLIC HEALTH

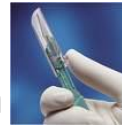
- *The Goal*
- *The Tools*
- *Addressing the barriers*
- *From Durban to Durban*



## Needle Exchange

Drucker E, AIDS 1998

## Male circumcision



Auvert B, PloS Med 2005  
Gray R, Lancet 2007  
Bailey R, Lancet 2007

## Treatment of STIs



Grosskurth H, Lancet 2000



## Microbicides for women

Abdool Karim Q, Science 2010

## Female Condoms



## Male Condoms



## Oral pre-exposure prophylaxis



Grant R, NEJM 2010 (MSM)  
Baeten J, NEJM 2012 (Couples)  
Thigpen M, NEJM 2012 (Heterosexuals)  
Choopanya K, Lancet 2013 (IDU)

## HIV Counselling and Testing



Coates T, Lancet 2000  
Sweat M, Lancet 2011

## Opioid substitution therapy

Mathers BM, Lancet 2010

## Treatment for prevention



Cohen M, NEJM, 2011  
Donnell D, Lancet 2010  
Tanser, Science 2013

## Behavioural Intervention



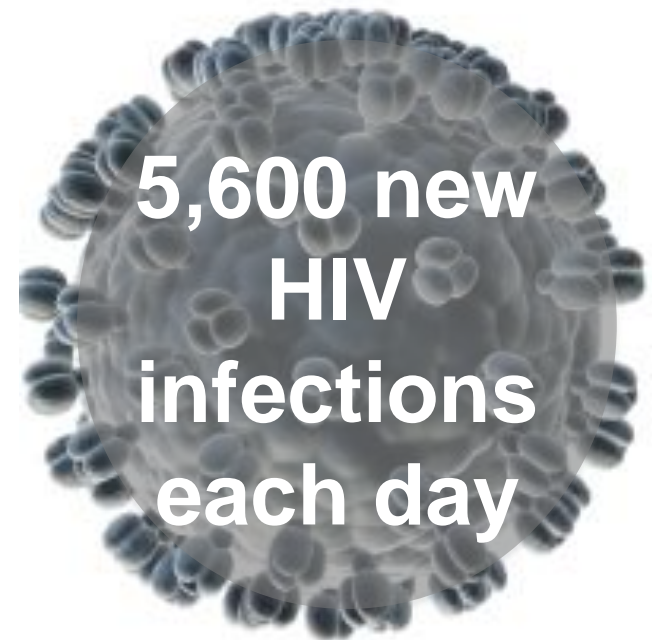
# Despite impressive progress with prevention, the spread of HIV has yet to be controlled!

In 2014, worldwide there were:

1.2 million HIV deaths

**36.9 million living with HIV**

2.0 million new infections



# Stigma: Major impediment to HIV prevention and treatment



## Stigma impedes AIDS prevention

Medical advances cannot help those who deny they are at risk of HIV and avoid HIV tests. **Salim S. Abdool Karim** describes how such attitudes may be overcome.

nature

### 5 things I fear



# New Prevention Technologies gives hope

- PrEP works (when used)
  - New meds and dosing regimens for oral PrEP may improve uptake, ↓cost
- Circumcision is highly effective
- Microbicides
  - Rectal gels may offer new anal protection
  - Rings may offer MPT opportunities
- Harm reduction for IDU works, and shall be implemented
- Vaccine may be closer than thought just a couple of years ago

Continent-wide climate impacts  
on bumblebees pp. 125 & 177

Hiding deadly nuclear  
waste in a deep hole p. 132

Making the grade on  
robot jumping p. 161

# Science

AAAS

*Toward an  
HIV vaccine*



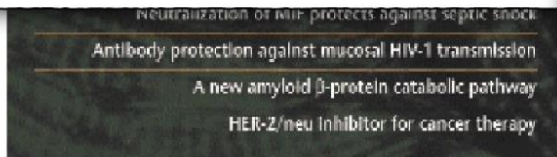


# Passive Transfer of Neutralizing Antibodies for Prevention of SHIV Infection



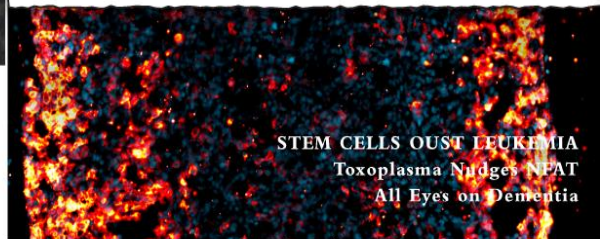
## Protection of Macaques against Vaginal Transmission of a Pathogenic HIV-1/SIV Chimeric Virus by Passive Infusion of Neutralizing Antibodies

JR Mascola, SS Frankel, DL Birx, MG Lewis, et al.



## Passive Transfer of Modest Titers of Potent and Broadly Neutralizing Anti-HIV Monoclonal Antibodies Block SHIV Infection in Macaques

M Shingai, DR Burton, MC Nussenzweig, MA Martin, Y Nishimura, et al.



## Highly Potent HIV-Specific Antibody Neutralization in vitro Translates into Effective Protection against Mucosal SHIV Challenge in vivo

B Moldt, DI Watkins, P Poignard, DR Burton, et al.

Published online June 18, 2015

# Science

## **HIV-1 Neutralizing Antibodies Induced by Native-Like Envelope Trimers**

RW Sanders, H Dean, DR Burton, JP Moore, et al.

- Stabilized form of native trimer stimulated autologous NAb production in rabbits and non-human primates

nature  
structural &  
molecular biology

June 22, 2015

## **Crystal Structure, Conformational Fixation, and Entry-related Interactions of Mature Ligand-free HIV-1 Env**

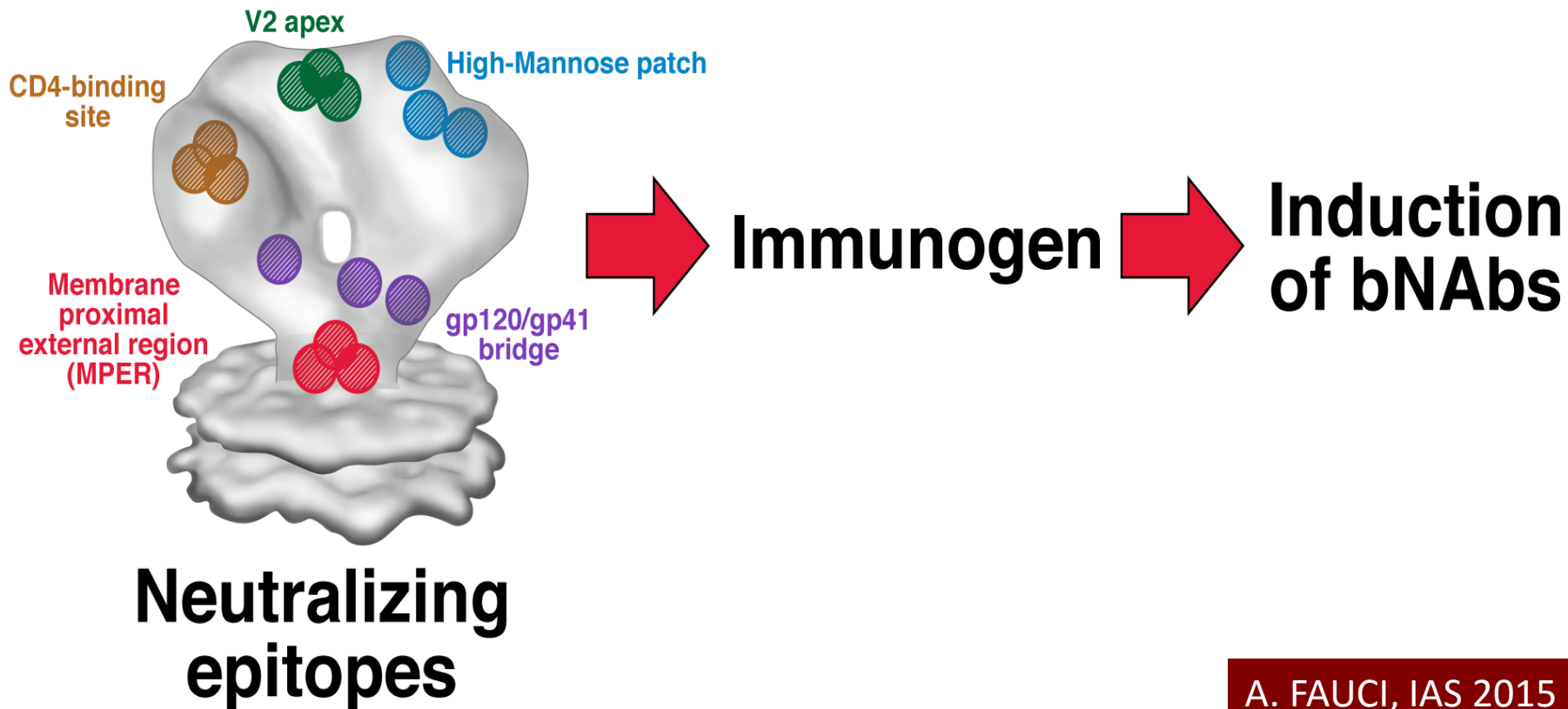
YD Kwon, M Pancera, P Acharya, IS Georgiev, JR Mascola, PD Kwong, et al.

- Unliganded HIV-1 envelope trimer, capable of binding broadly neutralizing antibodies
- Characterized and fixed in pre-fusion, closed conformation
- Potential utility as vaccine immunogen

A. FAUCI, IAS 2015

# Fundamental Challenge in HIV Vaccinology: Convert Neutralizing Epitopes to Immunogens Inducing bNAbs

---



*One day it may complement TASP  
However, an HIV vaccine is not there, yet.*

.

*So, lets focus on what we have  
and which we know it works*



**Needle Exchange**  
Drucker E, AIDS 1998

**Male circumcision**  
Auvert B, PloS Med 2005  
Gray R, Lancet 2007  
Bailey R, Lancet 2007



**Treatment of STIs**  
Grosskurth H, Lancet 2000



**Microbicides for women**  
Abdool Karim Q, Science 2010



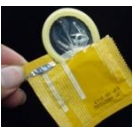
**Female Condoms**



**Oral pre-exposure prophylaxis**  
Grant R, NEJM 2010 (MSM)  
Baeten J, NEJM 2012 (Couples)  
Thigpen M, NEJM 2012 (Heterosexuals)  
Choopanya K, Lancet 2013 (IDU)



**Male Condoms**



**HIV Counselling and Testing**  
Coates T, Lancet 2000  
Sweat M, Lancet 2011



**Opioid substitution therapy**  
Mathers BM, Lancet 2010



**Treatment for prevention**  
Cohen M, NEJM, 2011  
Donnell D, Lancet 2010  
Tanser, Science 2013



**Behavioural Intervention**



Note: PMTCT, Screening transfusions, Universal precautions, etc. have not been included



The  
New England  
Journal of Medicine

Established in 1812 as THE NEW ENGLAND JOURNAL OF MEDICINE AND SURGERY

Volume 365

August 11, 2011

Number 6

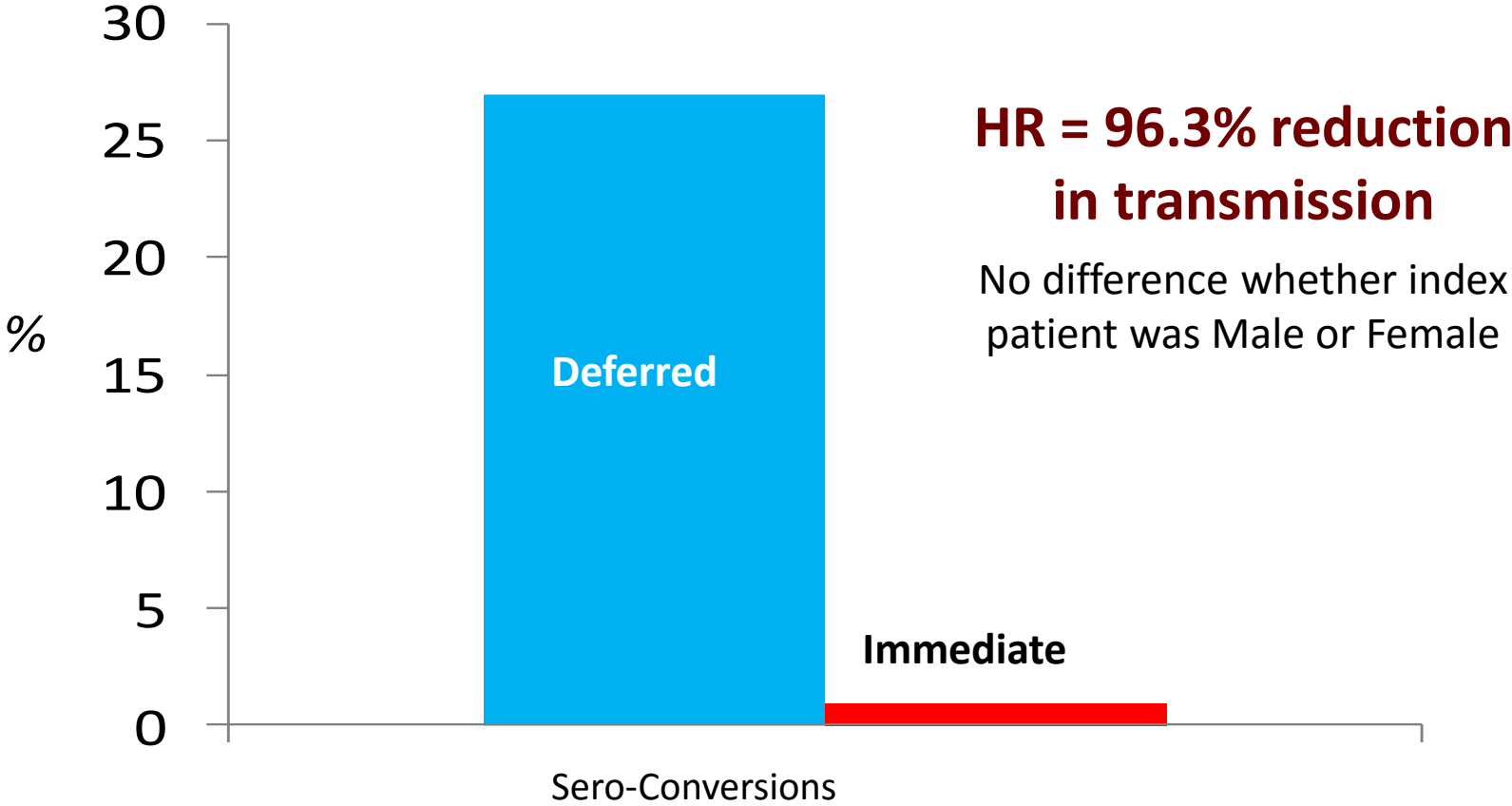
# Prevention of HIV-1 Infection with Early Antiretroviral Therapy

**HPTN 052** Study Team

- 1,763 HIV-serodiscordant couples in 9 countries
- 96% reduction in HIV transmission when ART started in HIV-infected partner at CD4 count of 350-550 compared to <250

# HPTN 052: treatment as prevention

Immediate vs. Delayed ART in Sero-Discordant Couples



Shape: Cohen MS, et al. IAS 2011. Abst MOAX0102, Cohen MS, et al. N Engl J Med. 2011

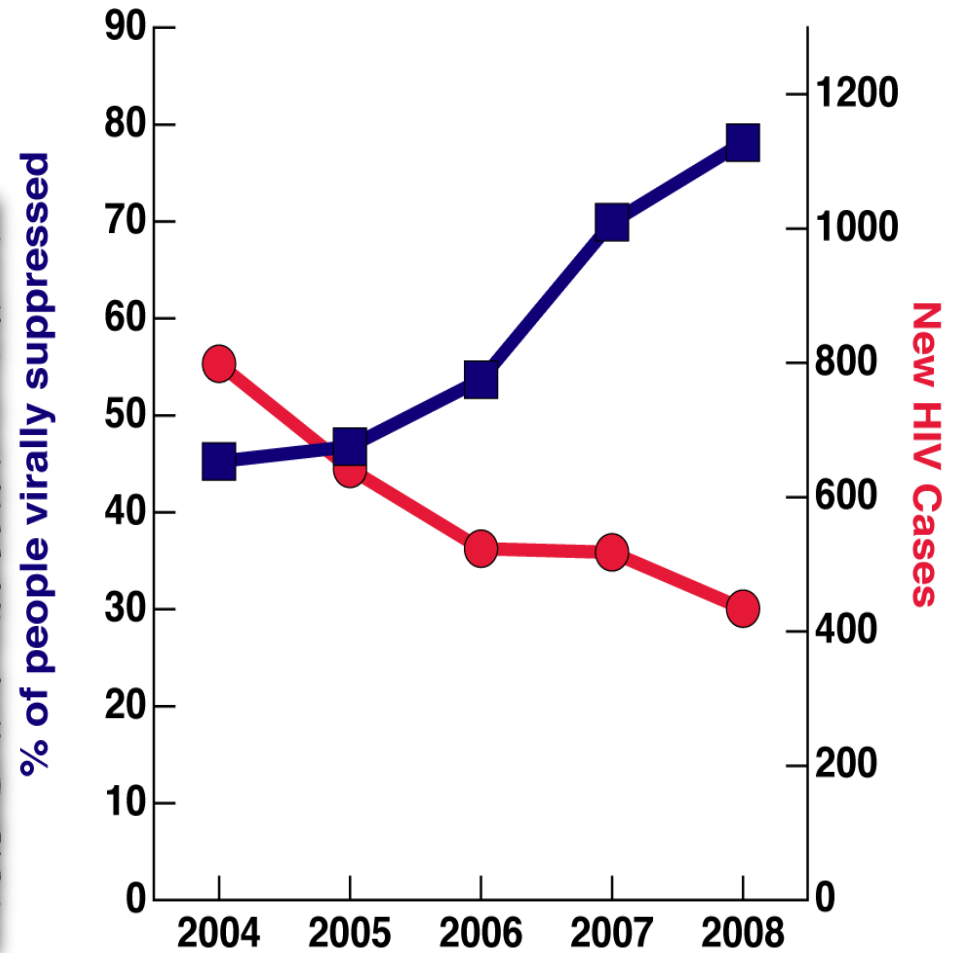
# Treatment as Prevention in San Francisco

June 10, 2010

**PLOS** ONE A peer-reviewed, open access journal

## Decreases in Community Viral Load Are Accompanied by Reductions in New HIV Infections in San Francisco

M Das, PL Chu, GN Colfax, et al.



■ When viral suppression rose from 45 to 78%, HIV incidence fell by 45%



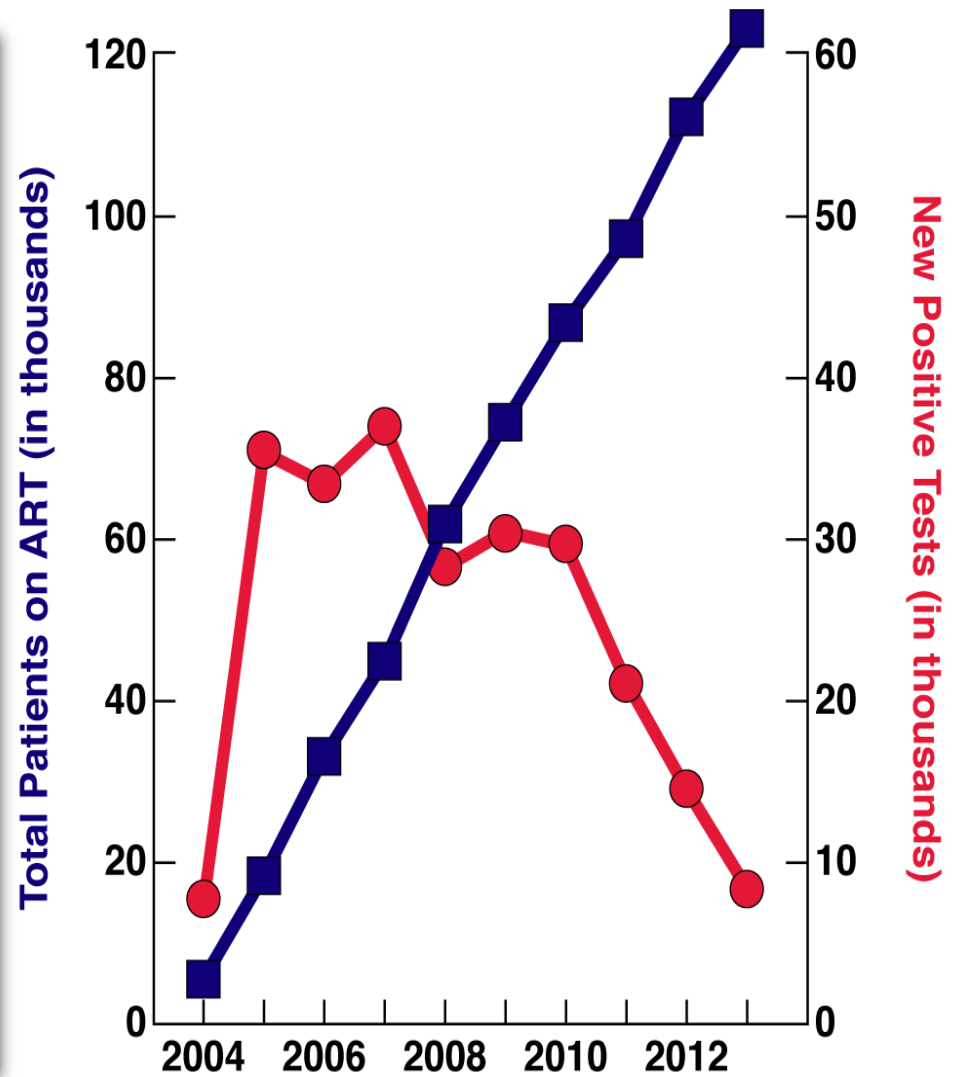
# Treatment as Prevention in Rwanda



February 2015

## Nationwide Evaluation of Antiretroviral Therapy Coverage on Prevention in Rwanda: A Multisectional Time-Trend Analysis

S Kanters, S Nsanzimana, T Barnighausen, JSG Montaner, et al.



■ Every 10% increase in ART coverage associated with a 6% decrease in HIV incidence

# Treatment as Prevention in British Columbia

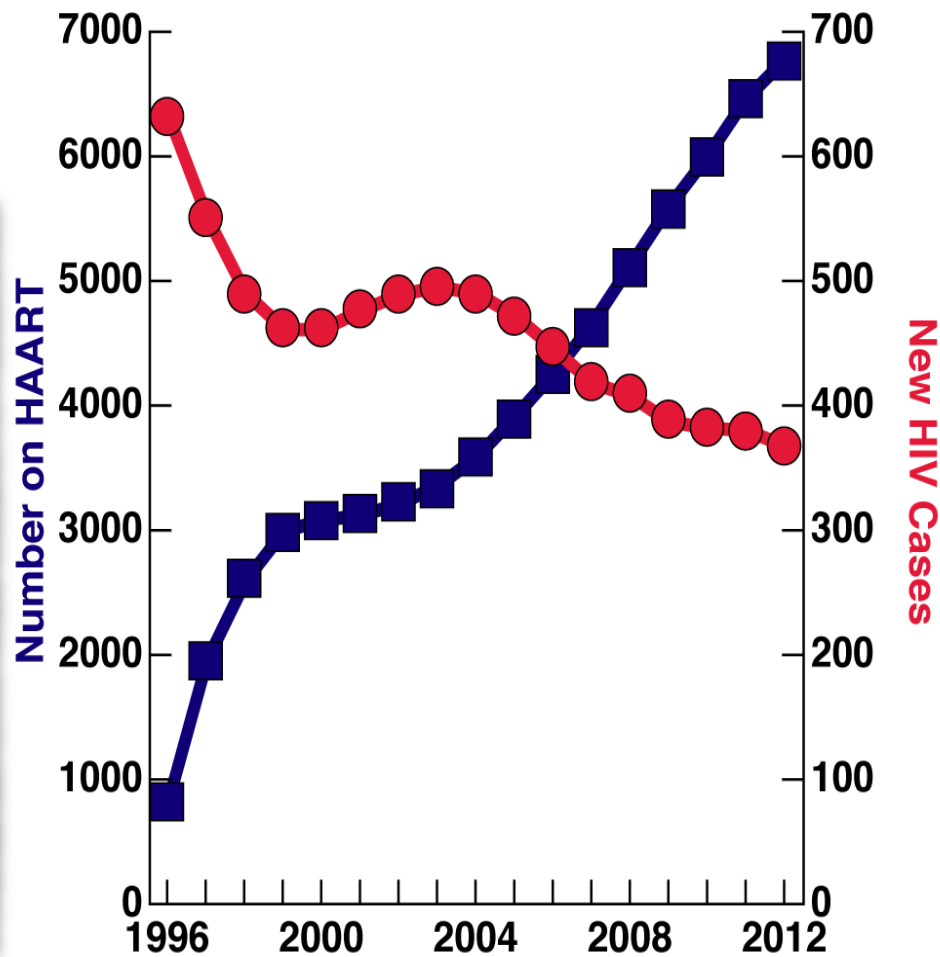
February 12, 2014

**PLOS** ONE | A peer-reviewed, open access journal

RESEARCH ARTICLE

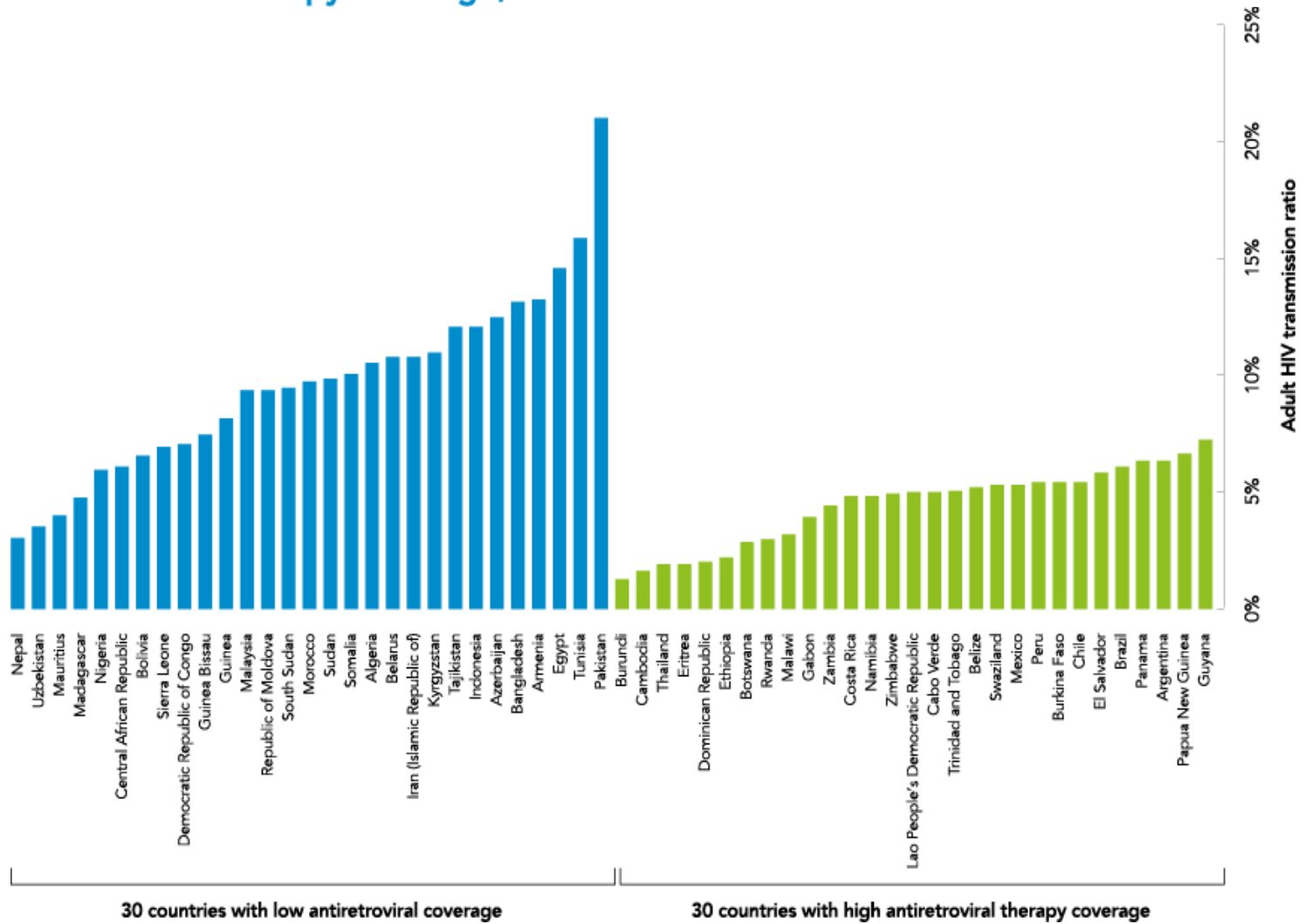
**Expansion of HAART Coverage Is Associated with Sustained Decreases in HIV/AIDS Morbidity, Mortality and HIV Transmission: The “HIV Treatment as Prevention” Experience in a Canadian Setting**

JSG Montaner, VD Lima, P Kendall, et al.



■ When ART coverage rose from 11 to 57%, HIV incidence fell by 42%

# Adult HIV transmission rate in low- and middle-income countries with high and low antiretroviral therapy coverage, 2013



# 90 90 90: THE UNAIDS STRATEGY TO FURTHER CURB THE HIV EPIDEMIC

based on expanded access to treatment and on the “treatment as prevention” concept

**90%**

**of all people  
living with HIV  
will know their  
HIV status**

**90%**

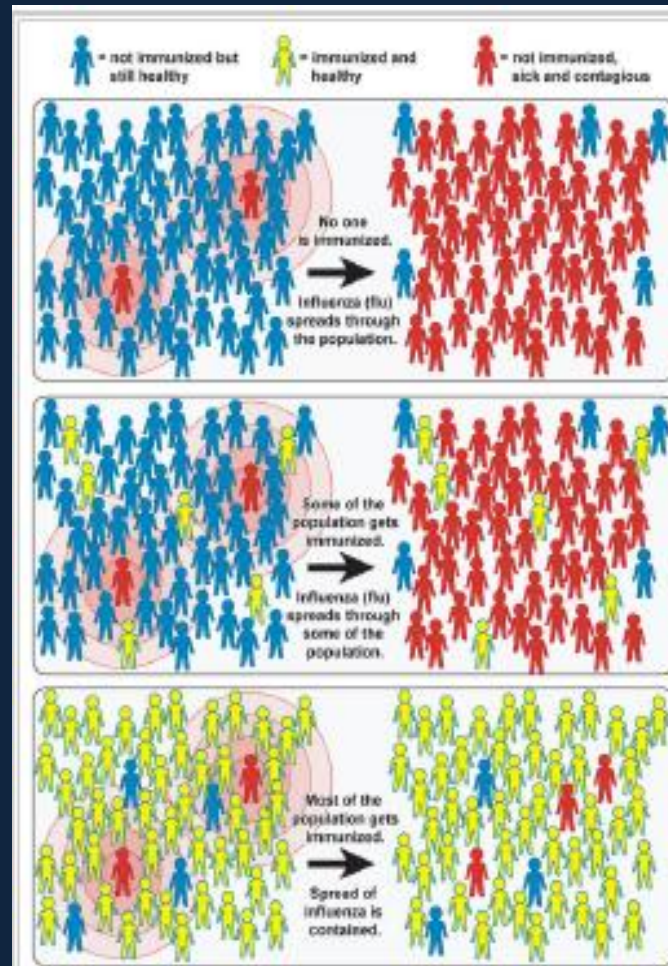
**of all people  
diagnosed with  
HIV will receive  
sustained  
antiretroviral  
therapy.**

**90%**

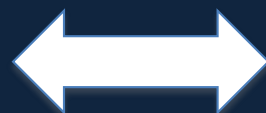
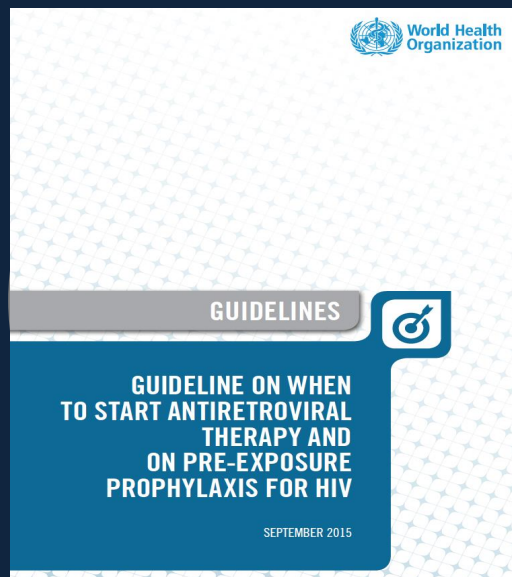
**of all people  
receiving  
antiretroviral  
therapy will have  
durable  
suppression.**

Zero new HIV infections.  
Zero discrimination.  
Zero AIDS-related deaths.

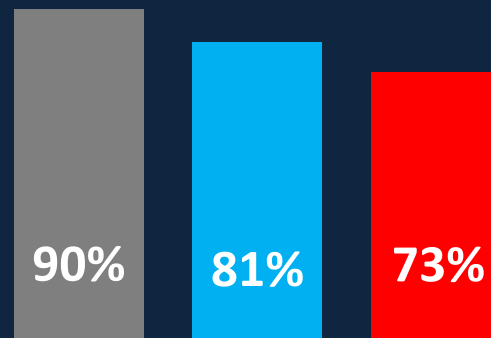
# The “herd immunity” vaccine concept (which is usually applied to **susceptibles** to a virus) now applied to HIV **transmitters**



# THE NEW WHO ELIGIBILITY CRITERIA AND THE UNAIDS 90 90 90 TARGETS ARE CONVERGING ELEMENTS OF THE SAME GOAL: ENDING AIDS BY 2030



## UNAIDS FAST TRACK 90-90-90 STRATEGY



**By combining the personal health benefit (reducing HIV mortality & morbidity) with the Public Health benefit (reducing transmission) they foster universal access to care and treatment, provide operational advantage, and contribute to global equity**

**New eligibility criteria: treatment  
can be started irrespective of CD4**

GUIDELINES



**GUIDELINE ON WHEN  
TO START ANTIRETROVIRAL  
THERAPY AND  
ON PRE-EXPOSURE  
PROPHYLAXIS FOR HIV**

SEPTEMBER 2015

### 4.3.1 When to start ART in adults (>19 years old)

#### Recommendation

- ART should be initiated in all adults living with HIV regardless of WHO clinical stage and at any CD4 cell count (strong recommendation, moderate-quality evidence).

As a priority, ART should be initiated in all adults with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and adults with CD4 count  $\leq 350$  cells/mm<sup>3</sup> (strong recommendation, moderate-quality evidence).

Source:

Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV Geneva: World Health Organization 2015.

(<http://www.who.int/hiv/pub/guidelines/earlyrelease-arv/en/>).

Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection Recommendations for a public health approach Geneva: World Health Organization, 2013. (<http://www.who.int/hiv/pub/guidelines/arv2013/download/en/>)



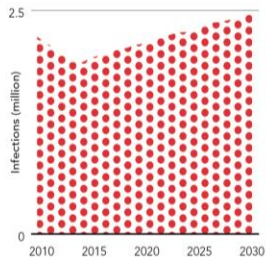
# The Fast-Track

**NO SCALE-UP**—maintain 2013 coverage levels

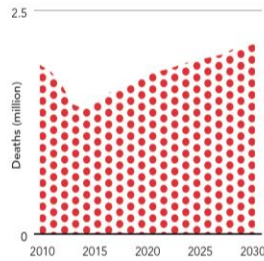


**RAPID SCALE-UP**—achieve ambitious targets

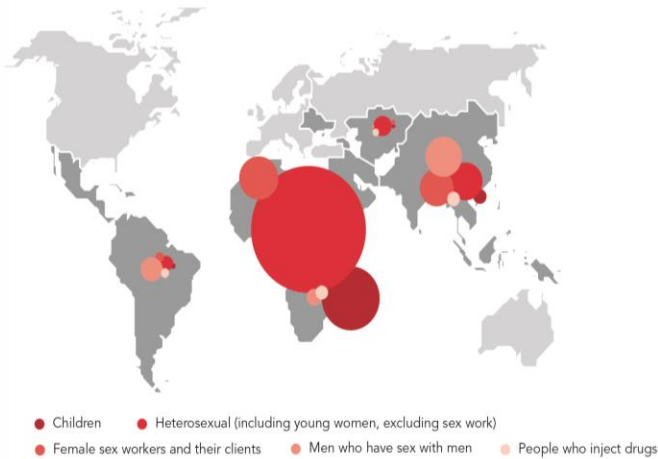
**New HIV infections in low- and middle-income countries (millions)**



**AIDS-related deaths in low- and middle-income countries (millions)**



**New HIV infections in different population groups, low- and middle-income countries, 2030**



**MAJOR BENEFITS:**

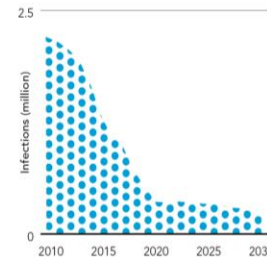
**21 MILLION**  
AIDS-related deaths averted by 2030

**28 MILLION**  
HIV infections averted by 2030

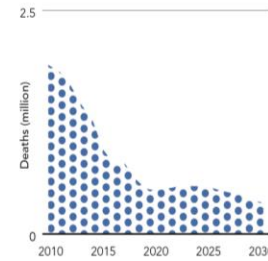
**5.9 MILLION**  
infections among children averted by 2030

**15-FOLD**  
return on HIV investments

**New HIV infections in low- and middle-income countries (millions)**



**AIDS-related deaths in low- and middle-income countries (millions)**



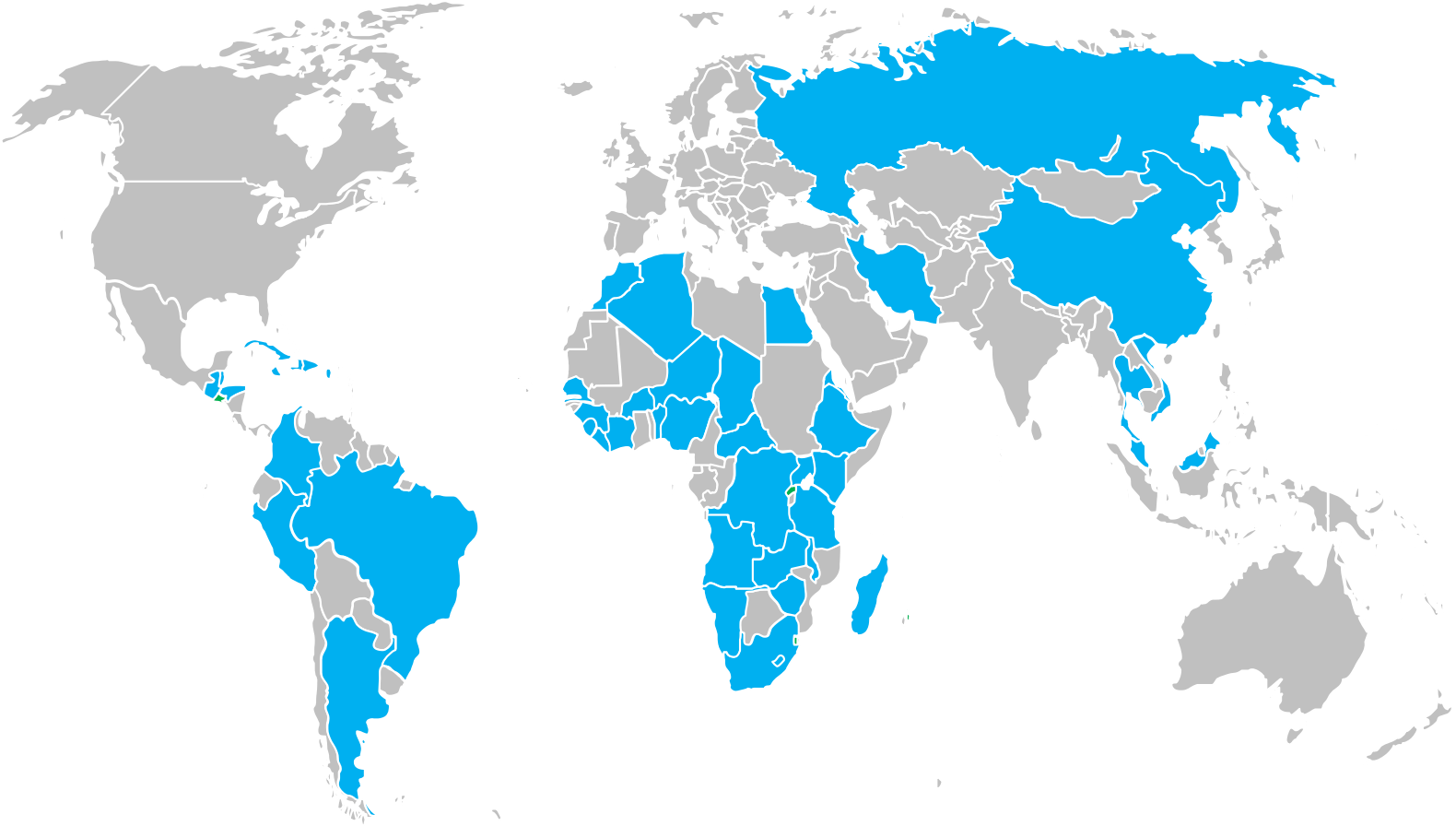
**New HIV infections in different population groups, low- and middle-income countries, 2030**



**2030** Without scale-up, the AIDS epidemic will continue to outrun the response, increasing the long-term need for HIV treatment and increasing future costs.

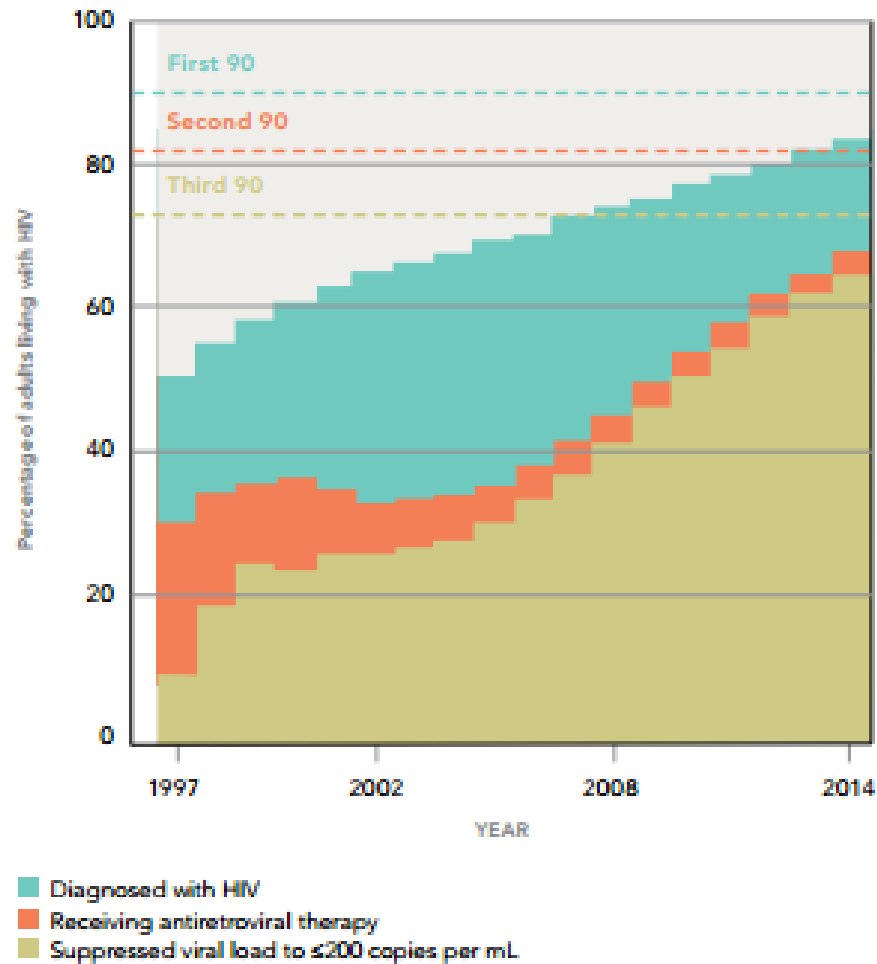
Rapid scale-up of essential HIV prevention and treatment approaches will enable the response to outpace the epidemic. **2030**

# Endorsement of the 90-90-90 treatment target



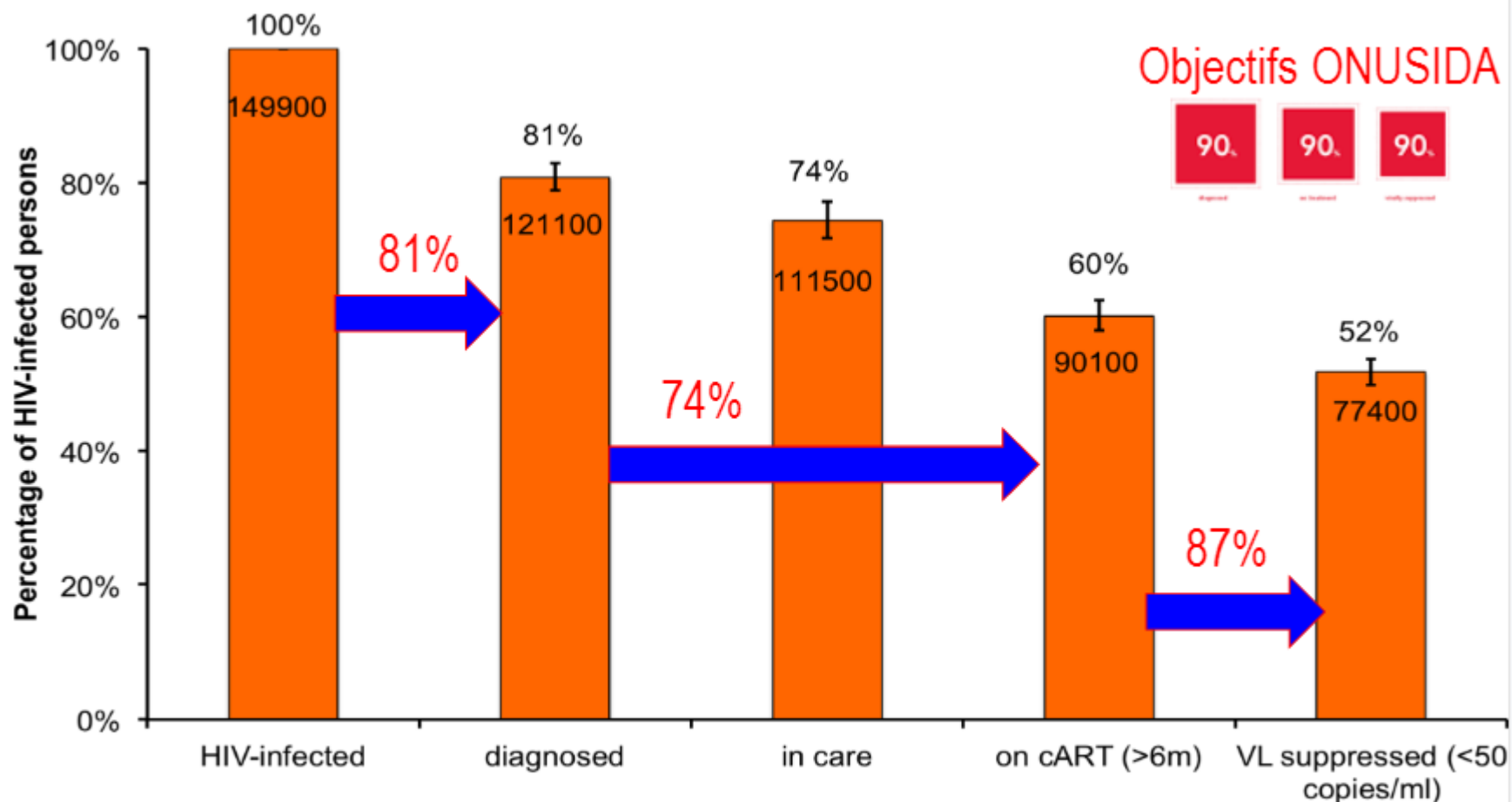
 Adopted 90-90-90

## Cascade of care in British Columbia, Canada, by fiscal year, 1997–2014



Source: British Columbia Centre for Excellence in HIV/AIDS Drug Treatment Program database (for antiretroviral use, viral load and CD4 count) and administrative data (ex. Medical Services Plan billings; hospitalization data from the Discharge Abstract Database).

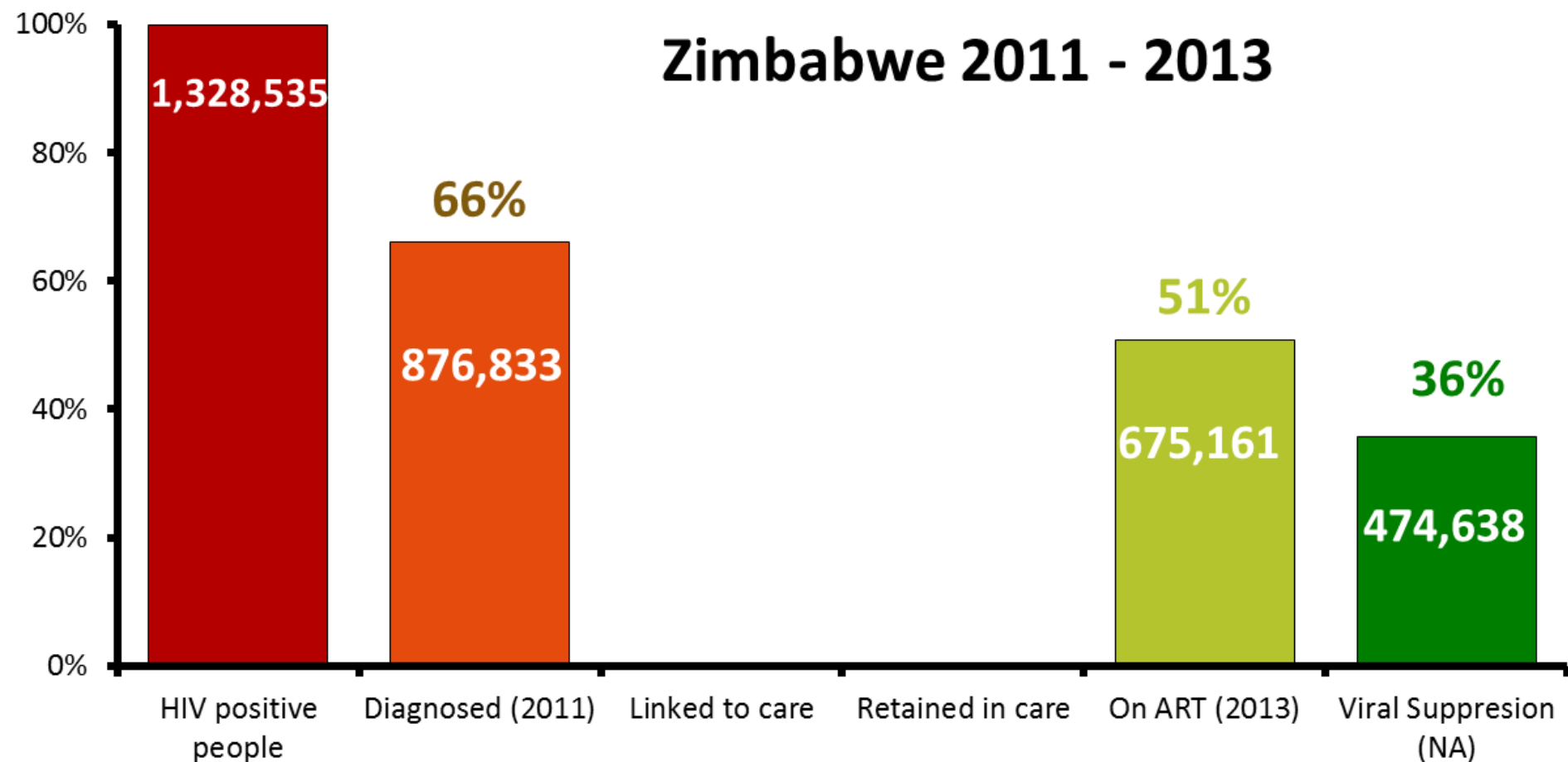
# FRANCE



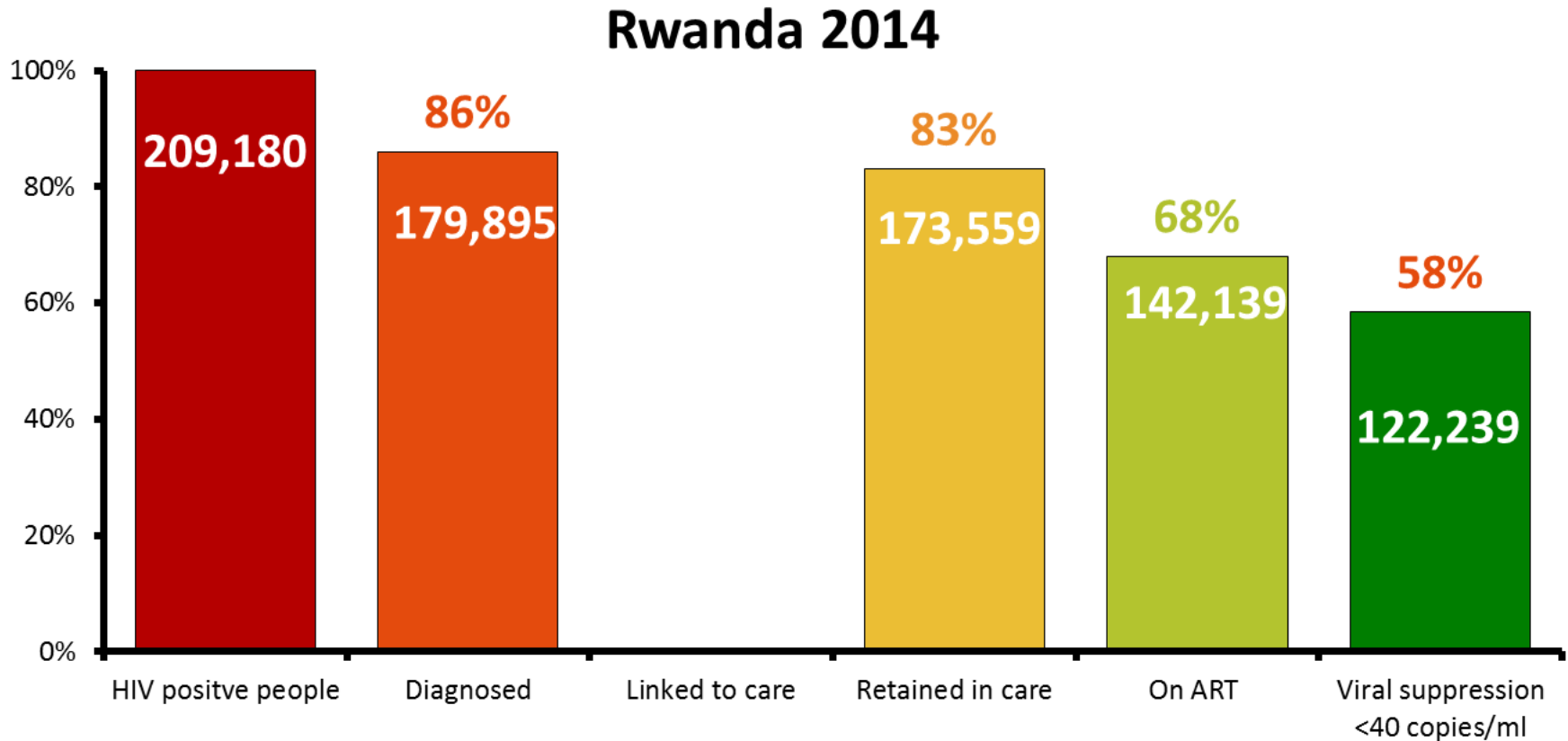
Supervie V. & Costagliola D. The spectrum of engagement in HIV care in France: strengths and gaps. *20th Conference on Retroviruses and Opportunistic Infections*. Atlanta, USA: March 2013. Abstract #: 1030.

# Cascade of HIV care – Zimbabwe 2014

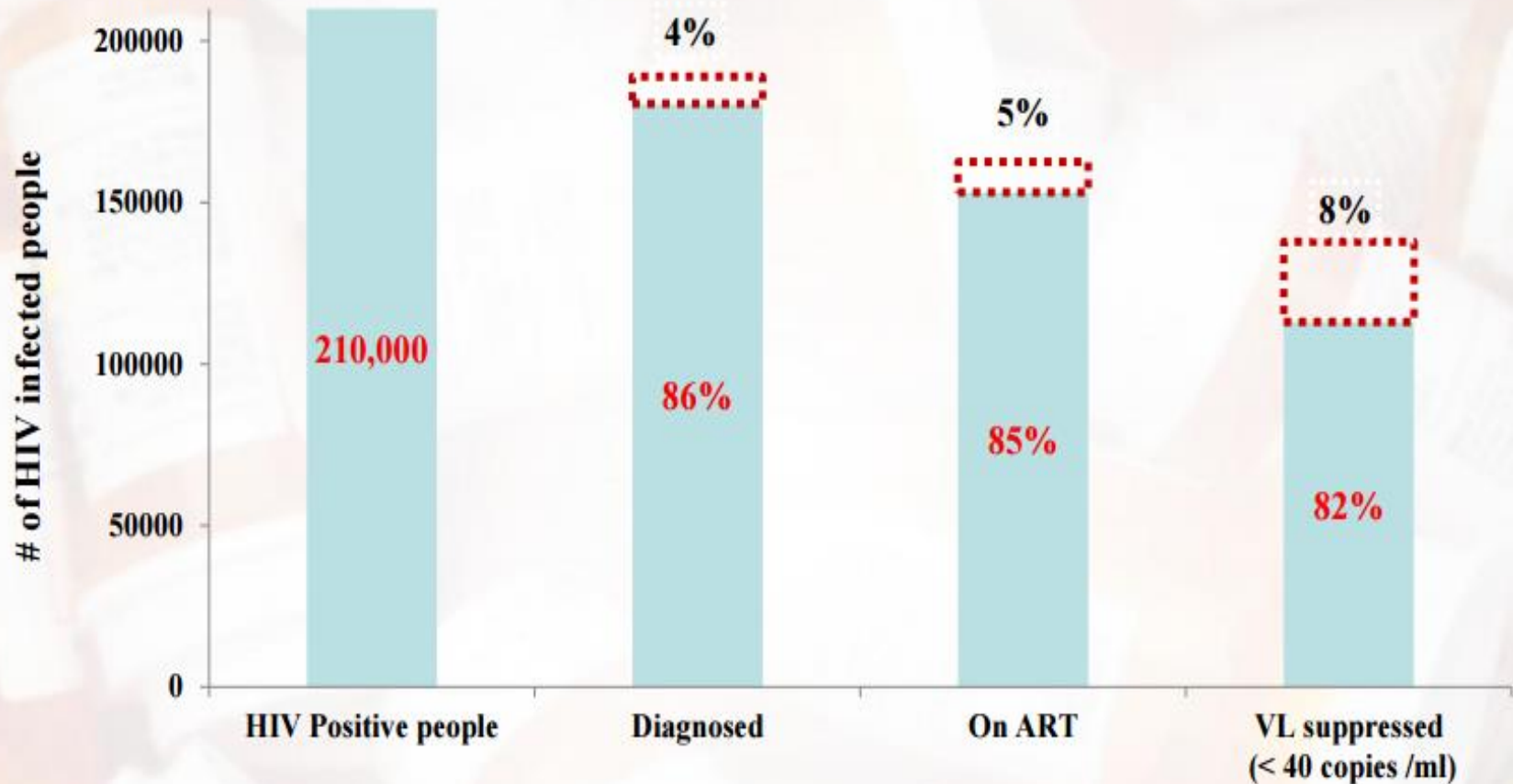
## Zimbabwe 2011 - 2013



# Cascade of HIV care – Rwanda 2014



# Rwanda's Progress Towards 90-90-90

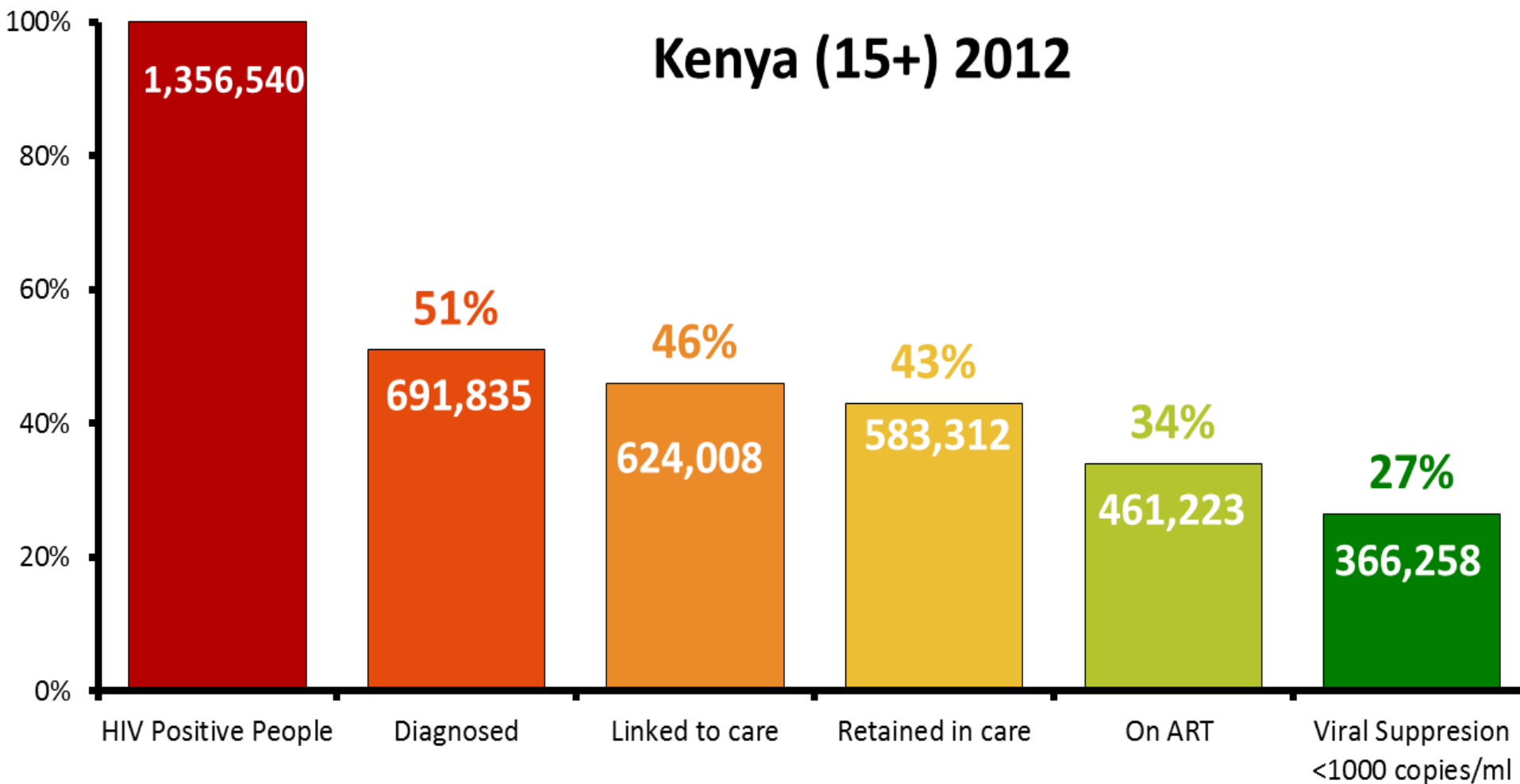


<sup>1</sup> Nsanzimana et al, *The Lancet HIV* feb 2015

<sup>2</sup> Drug Resistance Monitoring in selected sites, 2013

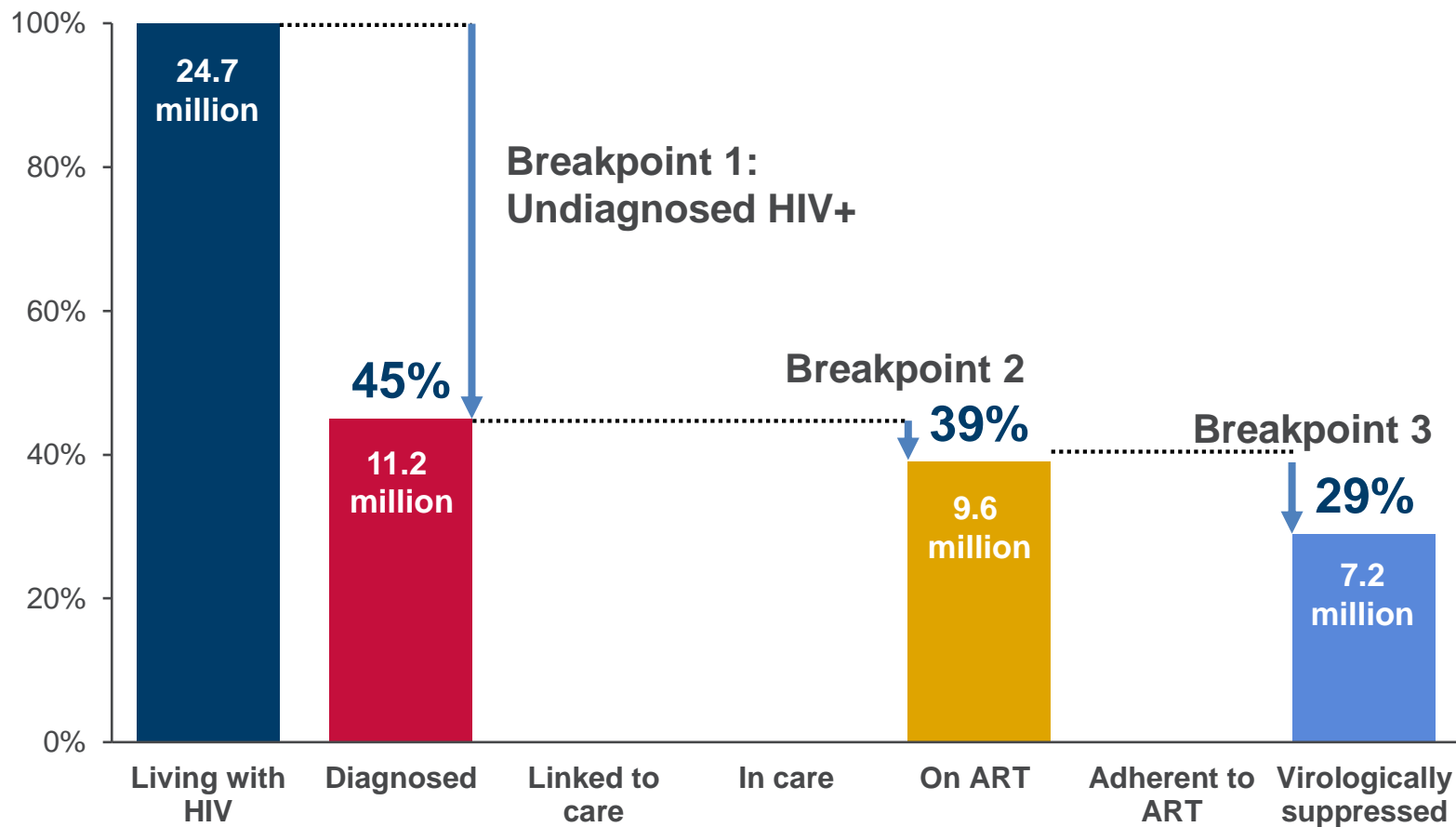
<sup>3</sup> HMIS, June 2015

# Cascade of HIV care – Kenya 2012 (+15)





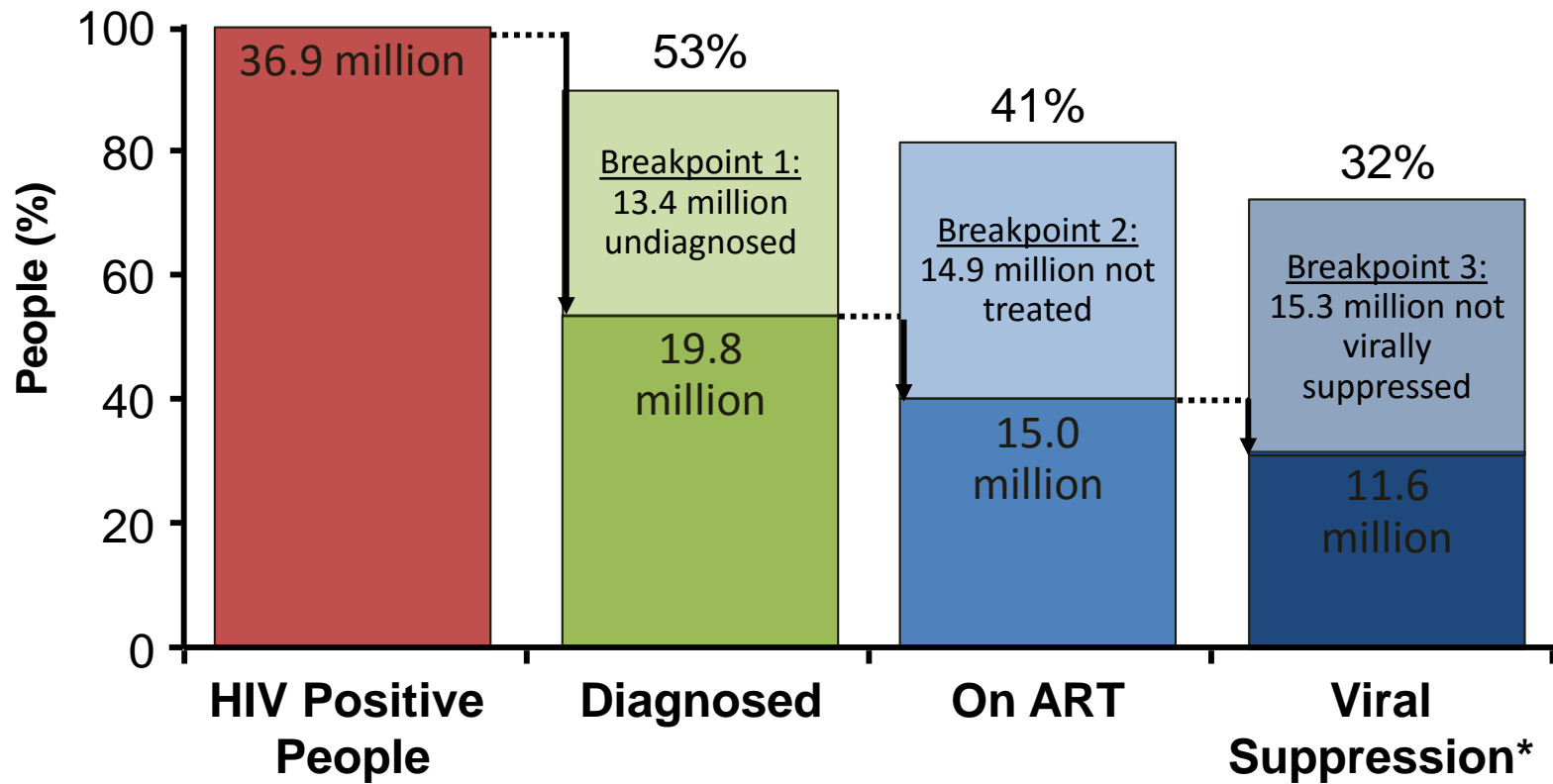
# Cascade of HIV care – Sub-Saharan Africa



# ACHIEVING 90:90:90: A GLOBAL GAME CHANGER FOR PUBLIC HEALTH

- *The Goal*
- *The Tools*
- *Addressing the barriers*
- *From Durban to Durban*

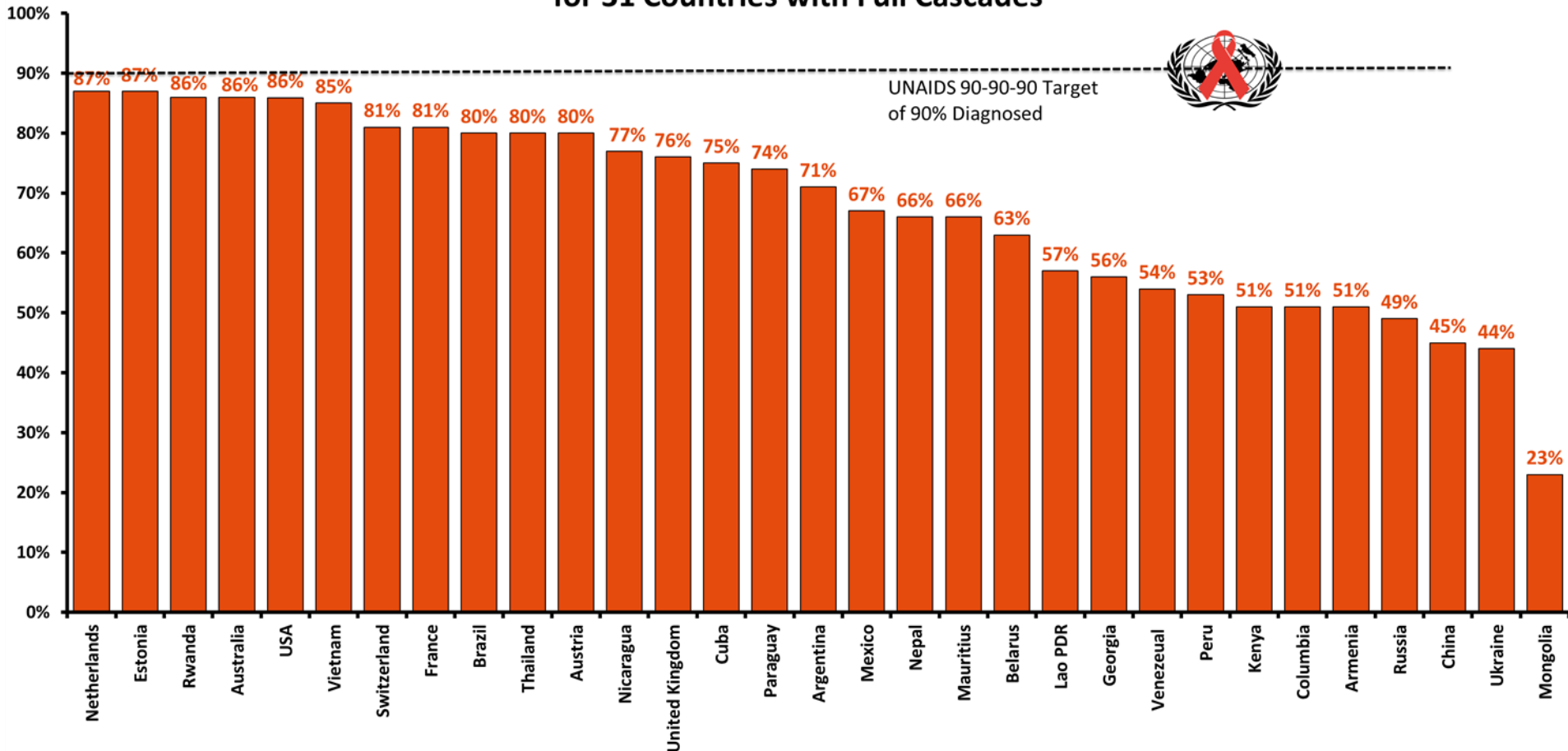
# UNAIDS 90-90-90: the gaps



\*HIV-1 RNA < 1000 copies/mL.

# 1<sup>st</sup> 90 – 90% diagnosis for Full cascades

Percentage of Total HIV Positive People Receiving Diagnosis  
for 31 Countries with Full Cascades

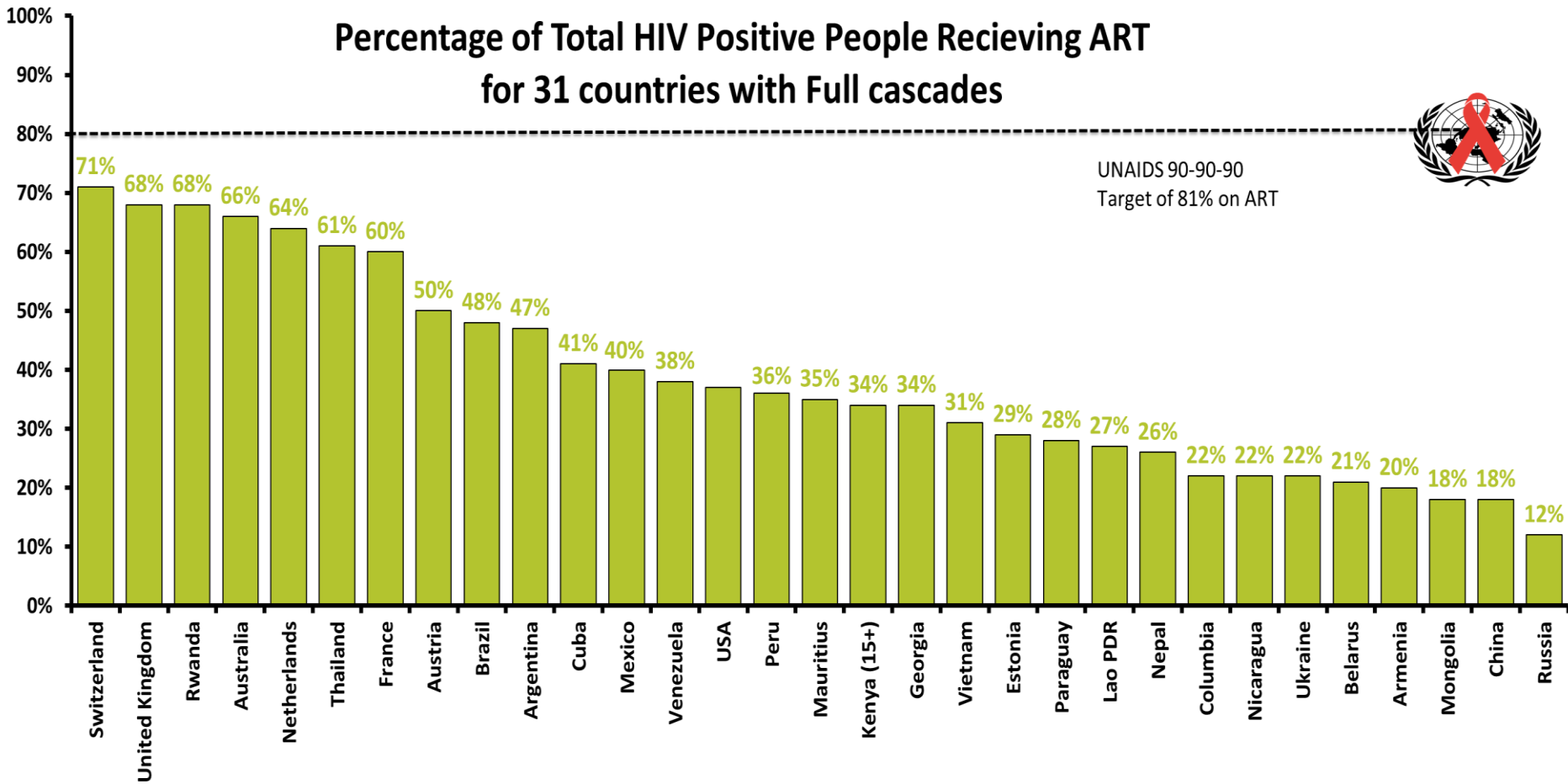


# 2<sup>nd</sup> 90 – 81% on ART for 31 Full cascades

## Percentage of Total HIV Positive People Receiving ART for 31 countries with Full cascades

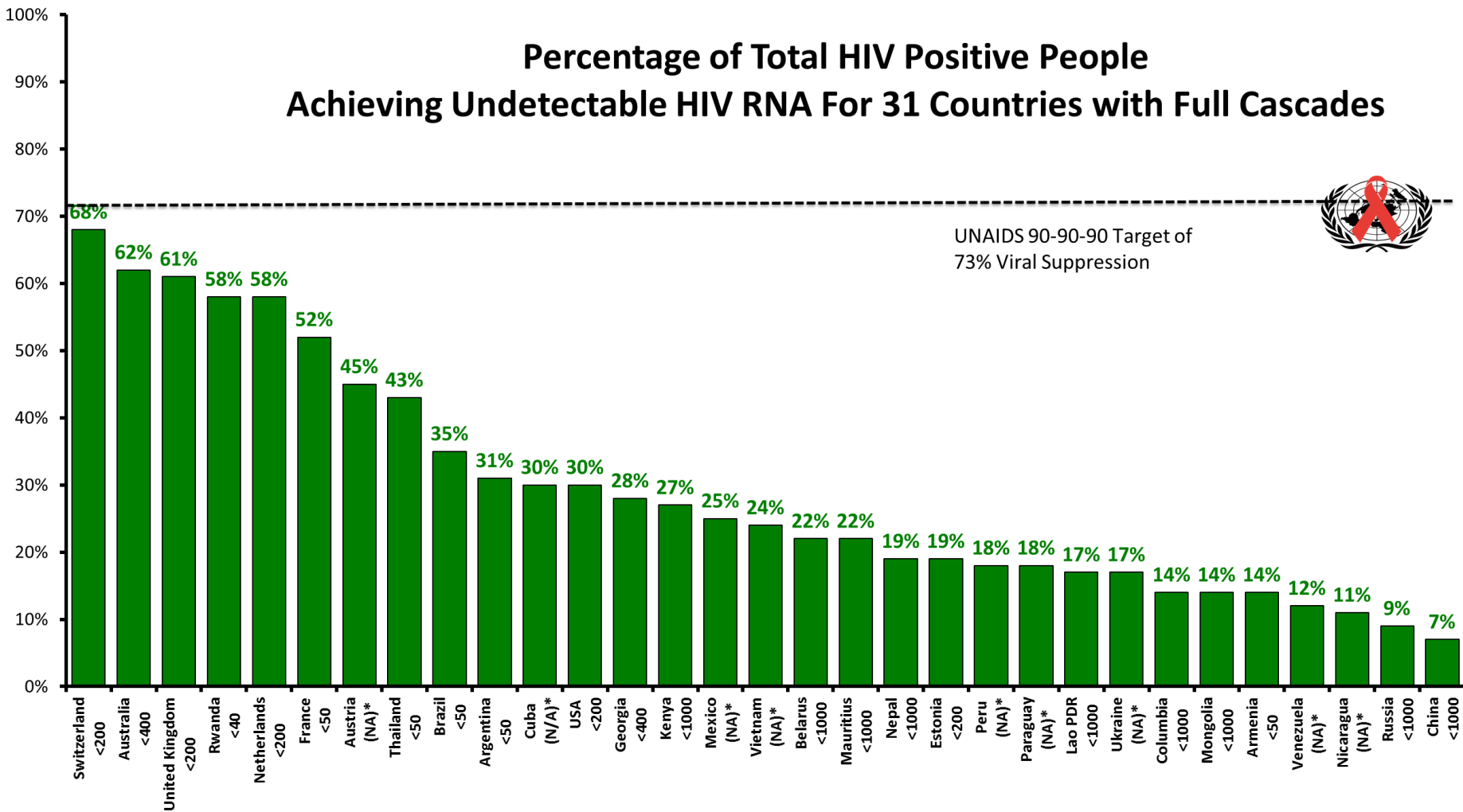


UNAIDS 90-90-90  
Target of 81% on ART



# 3<sup>rd</sup> 90 – 73% achieving viral suppression for 31 Full cascades

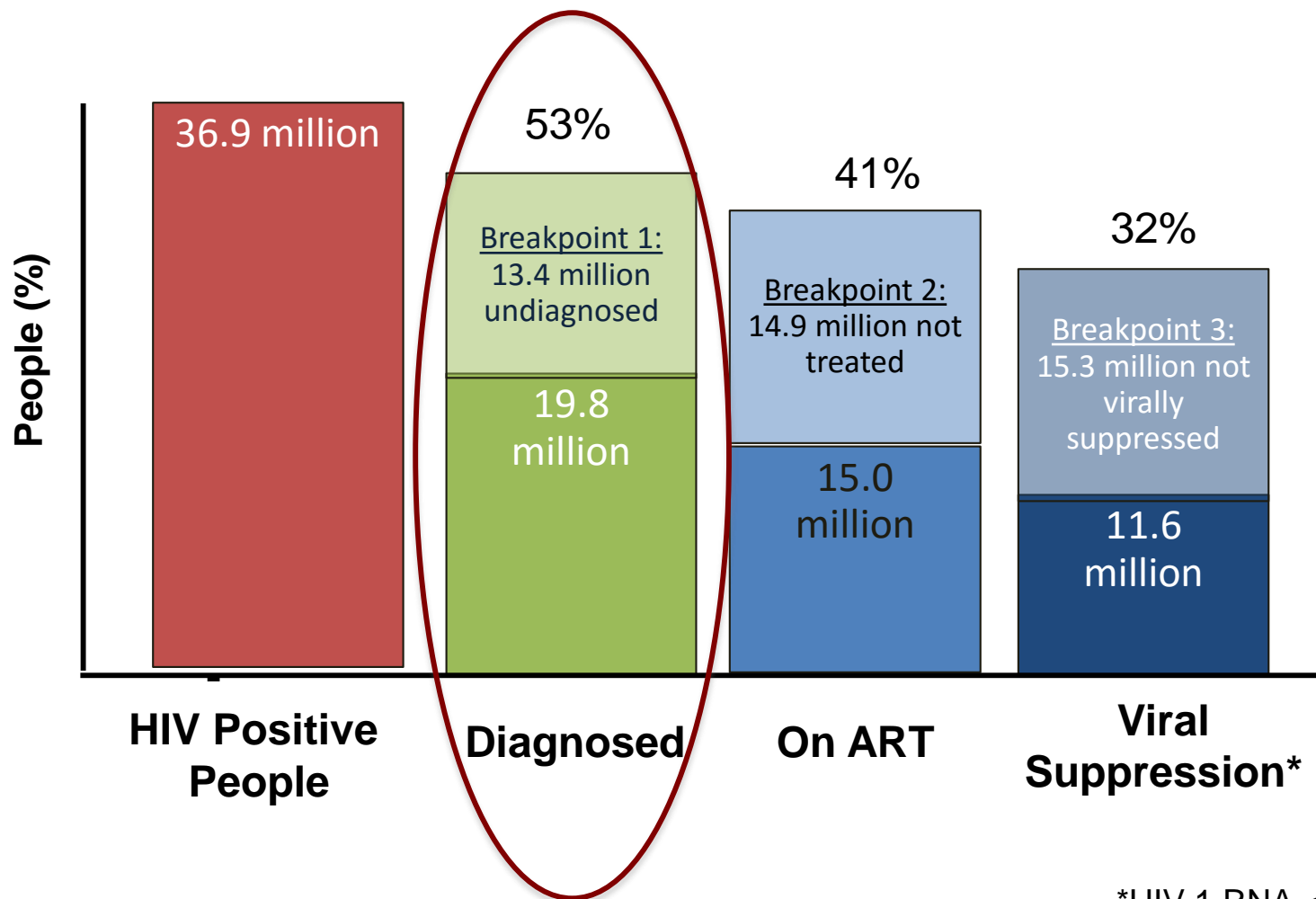
Percentage of Total HIV Positive People Achieving Undetectable HIV RNA For 31 Countries with Full Cascades



# ACHIEVING 90:90:90: A GLOBAL GAME CHANGER FOR PUBLIC HEALTH

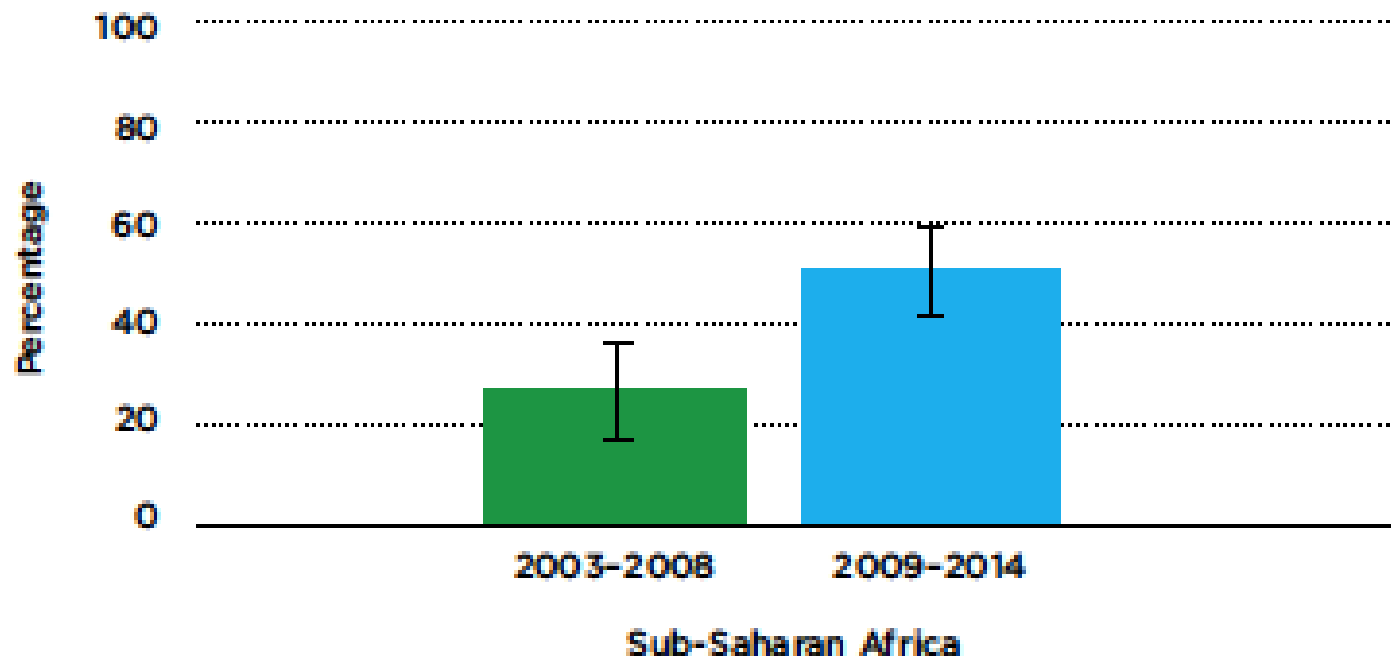
- *Addressing the barriers*
  - *HIV testing*
  - *Late presentation*
  - *Low ART coverage*
  - *Retention in care*
  - *Retention in ART*
  - *Financing*
  - *Human rights*
  - *Stigma*

# The first “90”





## Awareness of HIV status among people aged 15–49 living with HIV in sub-Saharan Africa



Source: Analysis based on DHS and the South African National HIV Prevalence Surveys.



**KNOW YOUR**

**HIV STATUS**



**17.1 million people  
living with HIV do not  
know their HIV status**

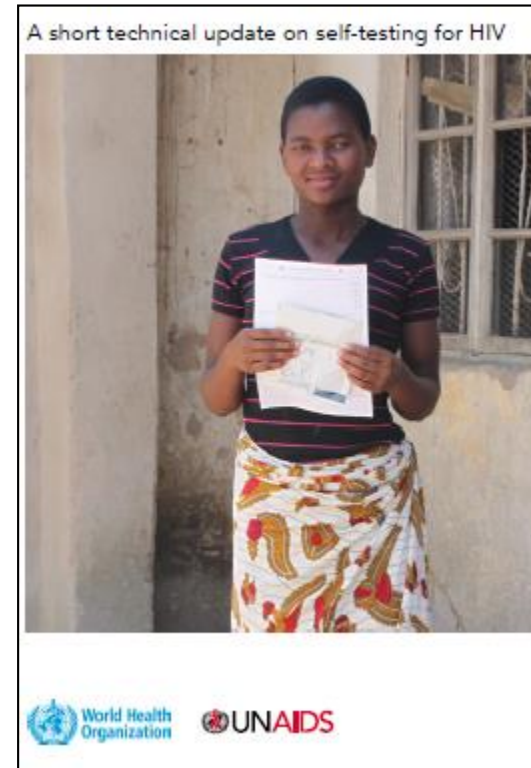
# Testing challenges

- Policies and laws
- Stigma and discrimination
- Delivery



# A way forward: HIV self-testing

- Available since 1990s
- UNAIDS policy since 2004
- Private non-medical affair
- Convenience and comfort with instant robust results
- Circumvent barriers
- Preferred modality
- heterosexual men, young people, health workers in high prevalence settings, and key populations



# A very sensitive issue: identify and treat acute HIV infection, which is responsible for a high proportion of HIV transmission events



## The HIV treatment cascade in acutely infected people: informing global guidelines

Sarah E. Rutstein<sup>a,b,\*</sup>, Christopher J. Sellers<sup>b,\*</sup>, Jintanat Ananworanich<sup>c,d</sup>, and Myron S. Cohen<sup>a,e</sup>

### Purpose of review

Acute and early HIV (AHI) is a pivotal time during HIV infection, yet there remain major shortfalls in diagnosis, linkage to care, and antiretroviral therapy (ART) initiation during AHI. We introduce an AHI-specific cascade, review recent evidence pertaining to the unique challenges of AHI, and discuss strategies for improving individual and public health outcomes.

### Recent findings

Presentation during AHI is common. Expanding use of fourth-generation testing and pooled nucleic acid amplification testing has led to improved AHI detection in resource-wealthy settings. Technologies capable of AHI diagnosis are rare in resource-limited settings; further development of point-of-care devices and utilization of targeted screening is needed. Rapid ART initiation during AHI limits reservoir seeding, preserves immunity, and prevents transmission. Reporting of AHI cascade outcomes is limited, but new evidence suggests that impressive rates of diagnosis, linkage to care, rapid ART initiation, and viral suppression can be achieved.

### Summary

With advancements in AHI diagnostics and strong evidence for the therapeutic and prevention benefits of ART initiated during AHI, improving AHI cascade outcomes is both crucial and feasible. HIV guidelines should recommend diagnostic algorithms capable of detecting AHI and prescribe rapid, universal ART initiation during AHI.

### Keywords

acute HIV infection, guidelines, HIV cascade, HIV diagnostics, linkage to care

## INTRODUCTION

Acute HIV is a very brief but critical phase of HIV infection. Historically, acute HIV infection has been defined as lasting only until the emergence of HIV-specific antibodies [1], because lack of antibodies in the presence of viral RNA was used as an operational definition of the stage of disease. However, as antibody tests have become ever more sensitive and many patients have been followed from infection onward [2], it is wiser to consider acute and early HIV infection as a package (sometimes referred to as 'primary infection'), because clearly the important events that transpire after infection extend for a longer time than required for antibodies to form [3]. The exact time at which acute and early infection should be considered as 'established' infection has not been resolved. However, the transmission risk associated with acute and early infection lasts at least 4 months [4].

Acute HIV infection and early HIV infection (hereafter referred to as AHI) are associated with

extremely high viral loads, seeding of viral reservoirs, and a disproportionate contribution to onward HIV transmission. Failure to diagnose and treat persons with AHI has significant individual and public health implications. Responding to these

<sup>a</sup>Department of Health Policy and Management, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA, <sup>b</sup>Division of Infectious Diseases, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA, <sup>c</sup>U.S. Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, <sup>d</sup>Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, Maryland and <sup>e</sup>Department of Epidemiology, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA

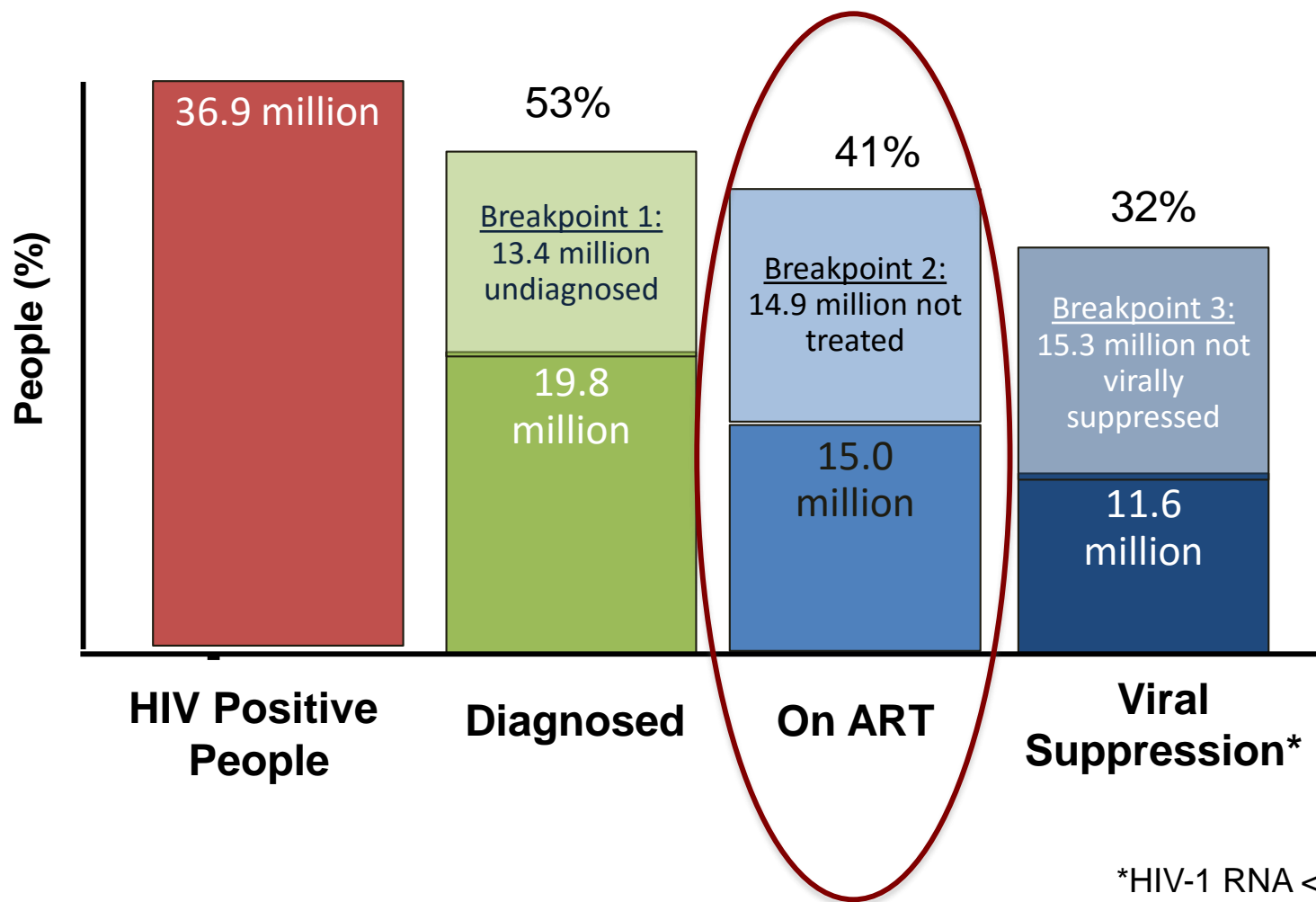
Correspondence to Sarah E. Rutstein, PhD, Department of Health Policy and Management, CB #7411, University of North Carolina at Chapel Hill Chapel Hill, NC 27599-7411, USA. Tel: +1 206 419 8151; fax: +1 919 966 6961; e-mail: sarah\_rutstein@med.unc.edu

\*Sarah E. Rutstein and Christopher J. Sellers contributed equally to the writing of this article.

Cur Opin HIV AIDS 2015, 10:395–402

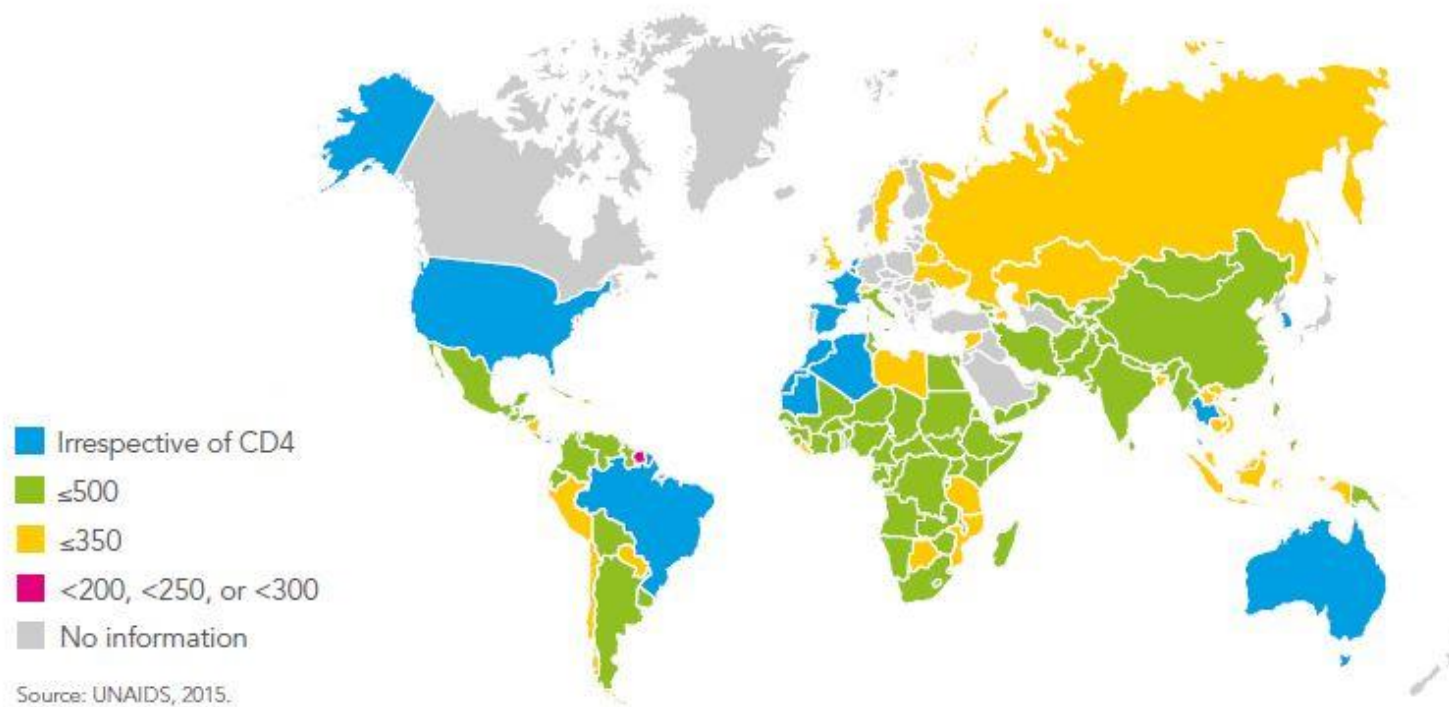
DOI:10.1097/COH.0000000000000193

# The second “90”



\*HIV-1 RNA < 1000 copies/mL.

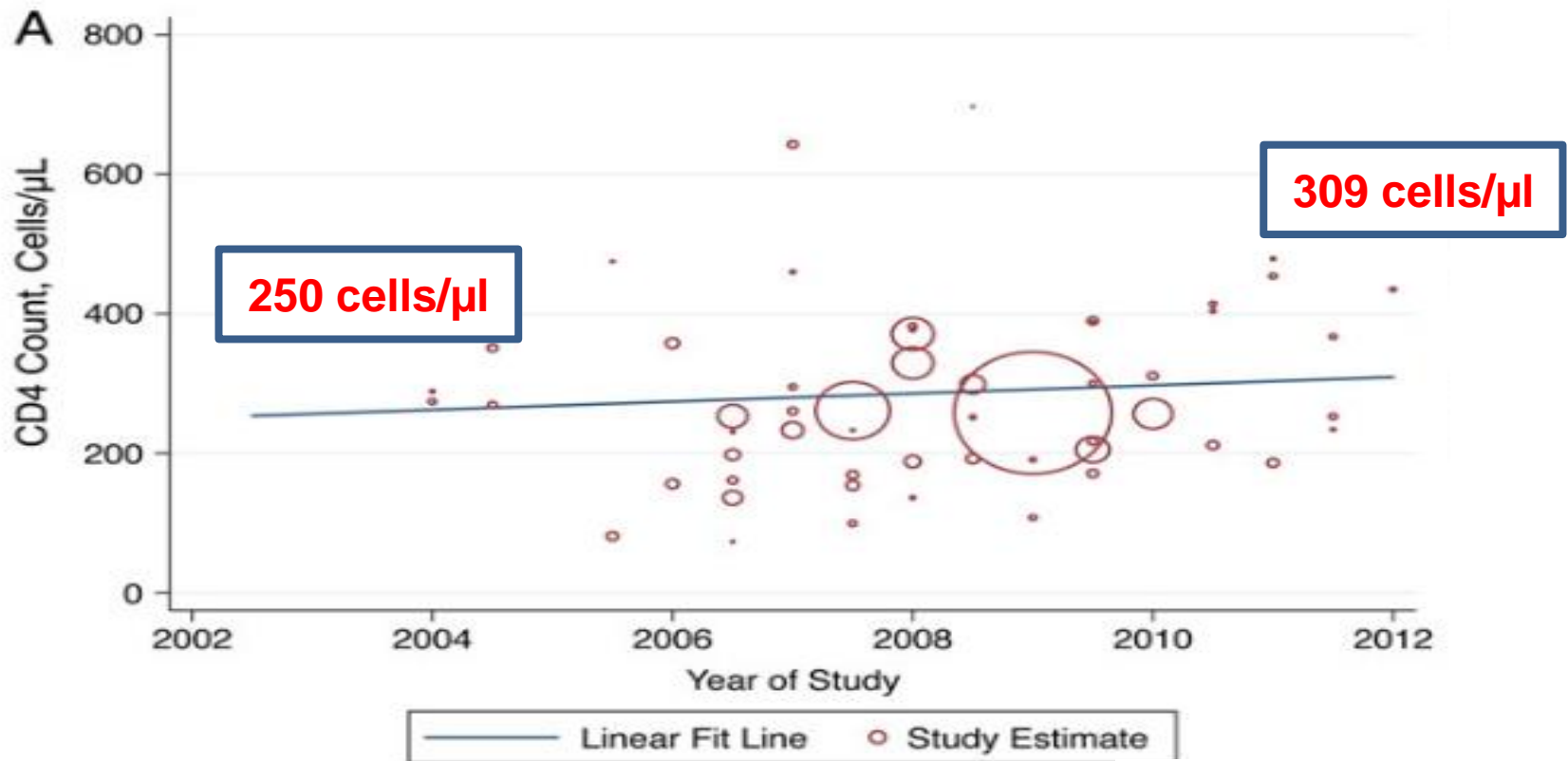
# National policies regarding initiation of ART (May 2015)



\* CD4 cells are key players in the body's immune system that are progressively depleted by HIV infection. Clinicians monitor HIV-related immune deterioration by measuring the number of CD4 cells in a cubic millilitres of plasma.

# Late presentation

Trends in CD4 Count at Presentation to Care and Treatment Initiation in Sub-Saharan Africa, 2002–2013: A Meta-analysis

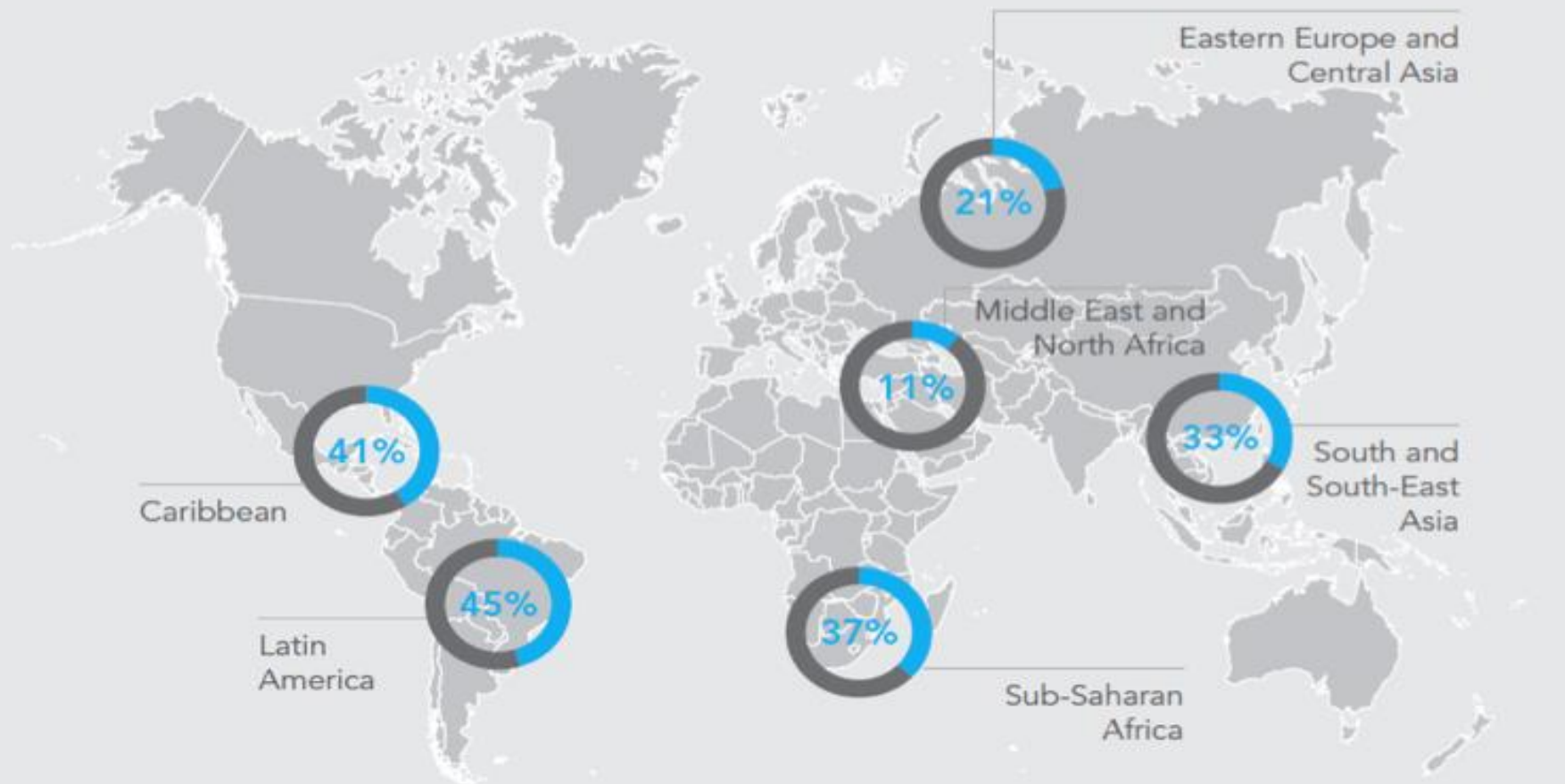




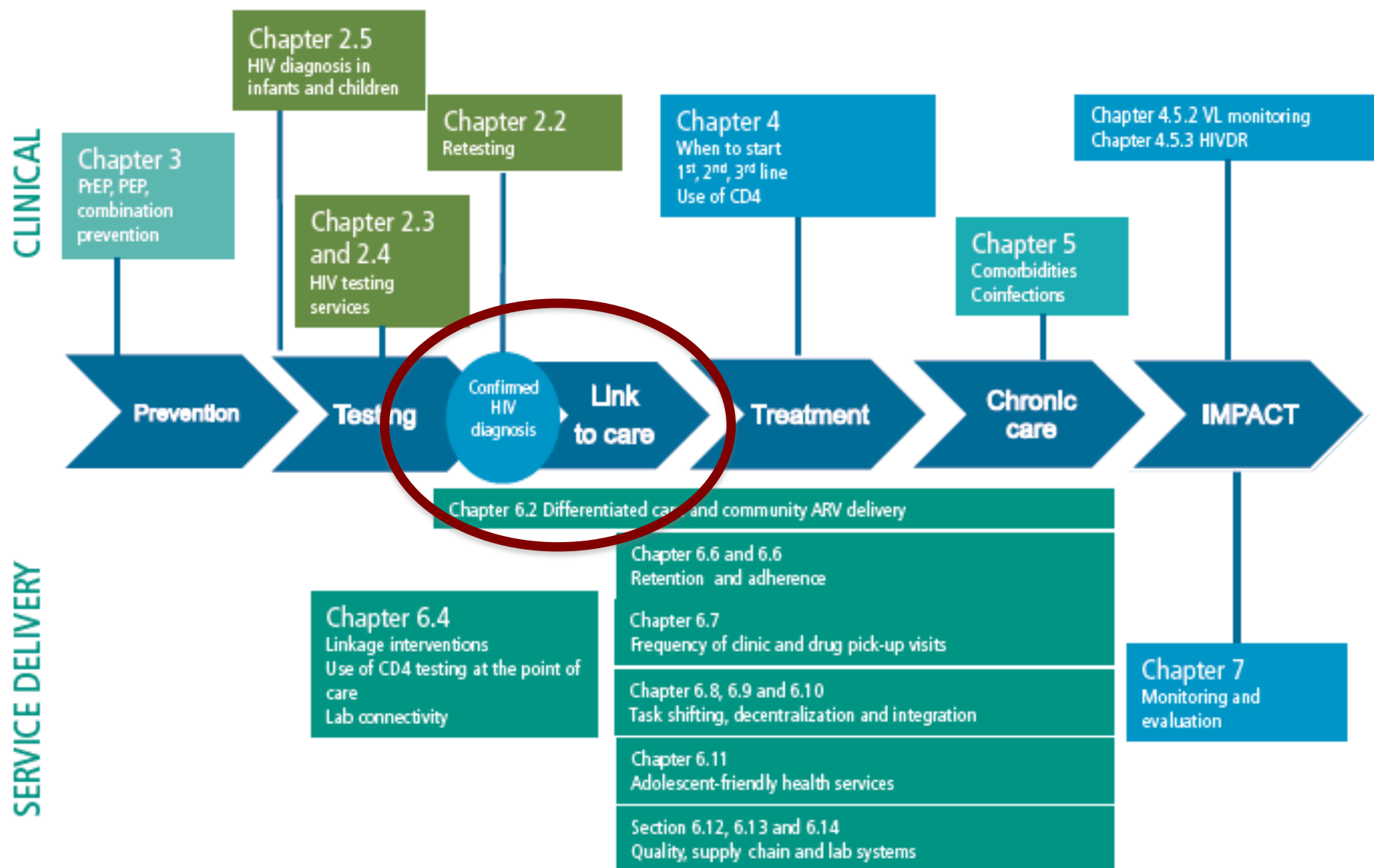
# Antiretroviral treatment coverage is still very low in many regions

■ Total ART coverage

■ Gap



**Fig.1. Guidance across the continuum of HIV testing, prevention, treatment and care in the updated *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection***

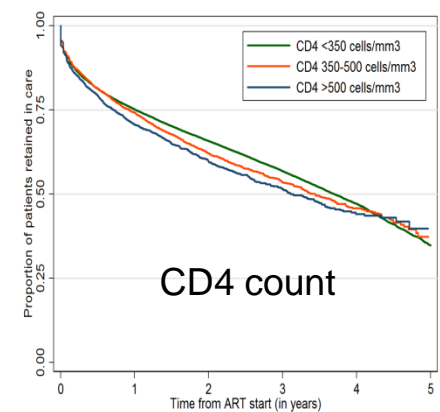
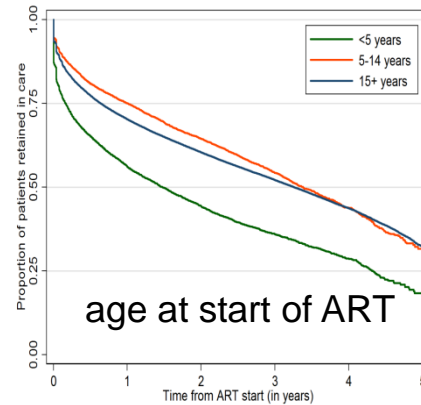
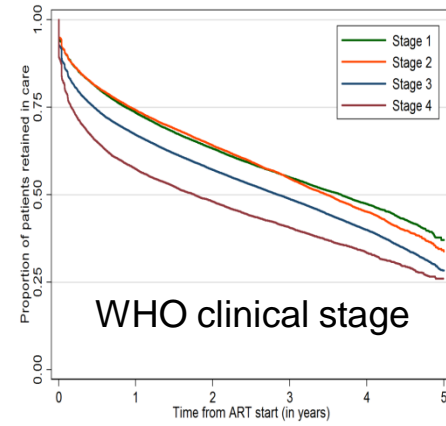
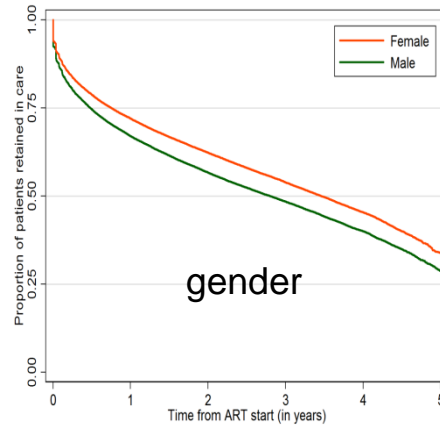
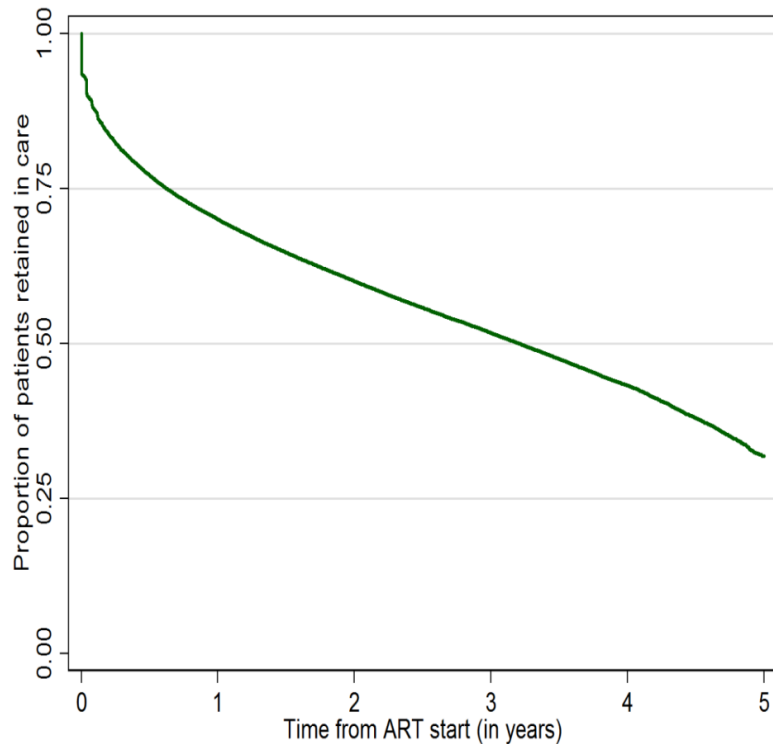


Starting patients on ART is just the first step....

.....retaining people in therapy and keep the virus fully suppressed (for years) is far more complicated....

# Retention in HIV care programmes

**Global analysis of retention in care in initial HIV care and treatment program in the leDEA regions (41 countries)**





SIMPLIFY THE  
WAY I GET ARVs  
I AM TIRED OF  
WALKING

The new ART eligibility criteria will increase the proportion of asymptomatic patients in ART programs. As they are still well, these patients may perceive no short-term benefit from entering treatment, with consequent ART cessation, especially in the face of onerous ART procurement or regimens with persistent side effects.



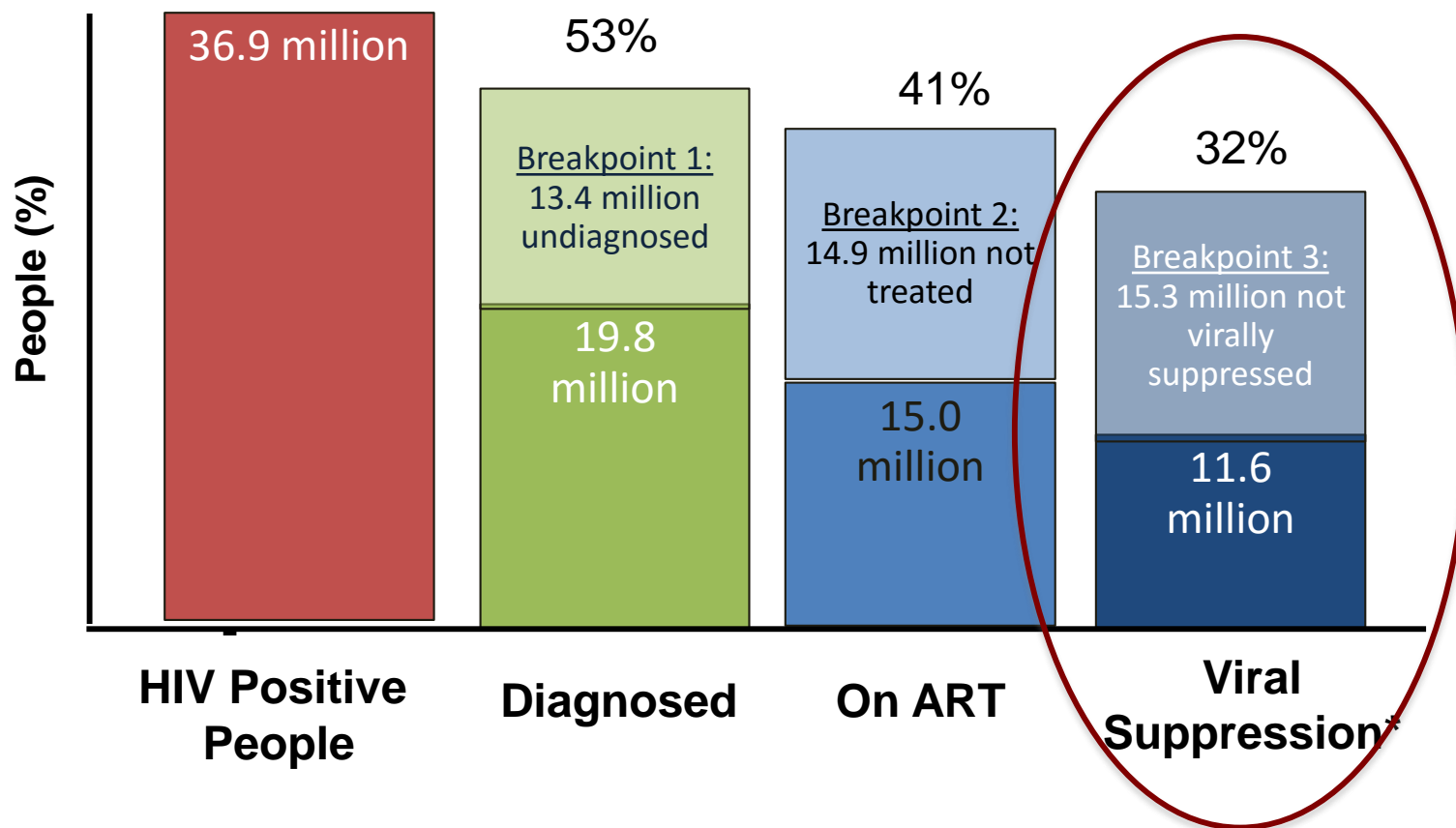
“ Why shall I take this pill every day if I am feeling well “ ?

“ Yes, I stopped my medication because I feel better and think I am cured”

## **Innovative models of HIV care are needed**

Simplification of ART delivery, at least for asymptomatic and clinically stable patients, through full community-based care models, including motivational counseling and HIV infection literacy programs run by trained community health workers.

# The third “90”



\*HIV-1 RNA < 1000 copies/mL.



## To retain patients in ART we definitely need innovative models of care but we may also need more tolerable regimens

ART Optimization Strategy	Tolerability	Resistance	Convenience	PW, TB, children	Cost Reduction	What actions are needed?	Considered for 2015 WHO guidelines review?
Low dose EFV	✓	?	✓	?	✓	<ul style="list-style-type: none"> <li>pK studies (PW &amp; TB)</li> </ul>	✓
Low dose DRV/r (as FDC)	✓	?	✓	?	✓	<ul style="list-style-type: none"> <li>pK studies (titration of best DRV:RTV ratio)</li> <li>RCT (comparative trials: standard vs low dose)</li> </ul>	✓
DTG	✓	✓	✓	?	✓	<ul style="list-style-type: none"> <li>Studies in PW, TB &amp; children</li> <li>Comparative trials (TDF/TAF in 1<sup>st</sup> line)</li> <li>RCT (DRV/r + DTG in 2<sup>nd</sup> line)</li> </ul>	✓
TAF	✓	?	✓	?	✓	<ul style="list-style-type: none"> <li>Comparative trials using DTG</li> <li>Studies in PW, TB &amp; children</li> </ul>	✗
Long-acting formulation	✓	?	✓	✓	✓	<ul style="list-style-type: none"> <li>Phase II/III studies (treatment &amp; prevention trials)</li> </ul> <p>WHO Think Tank Meeting on Drug Optimization 2013</p>	✗

# WHO goes in the right direction.....

**Table 4.1: First-line ART regimens for adults, adolescents, children and pregnant/breastfeeding women**

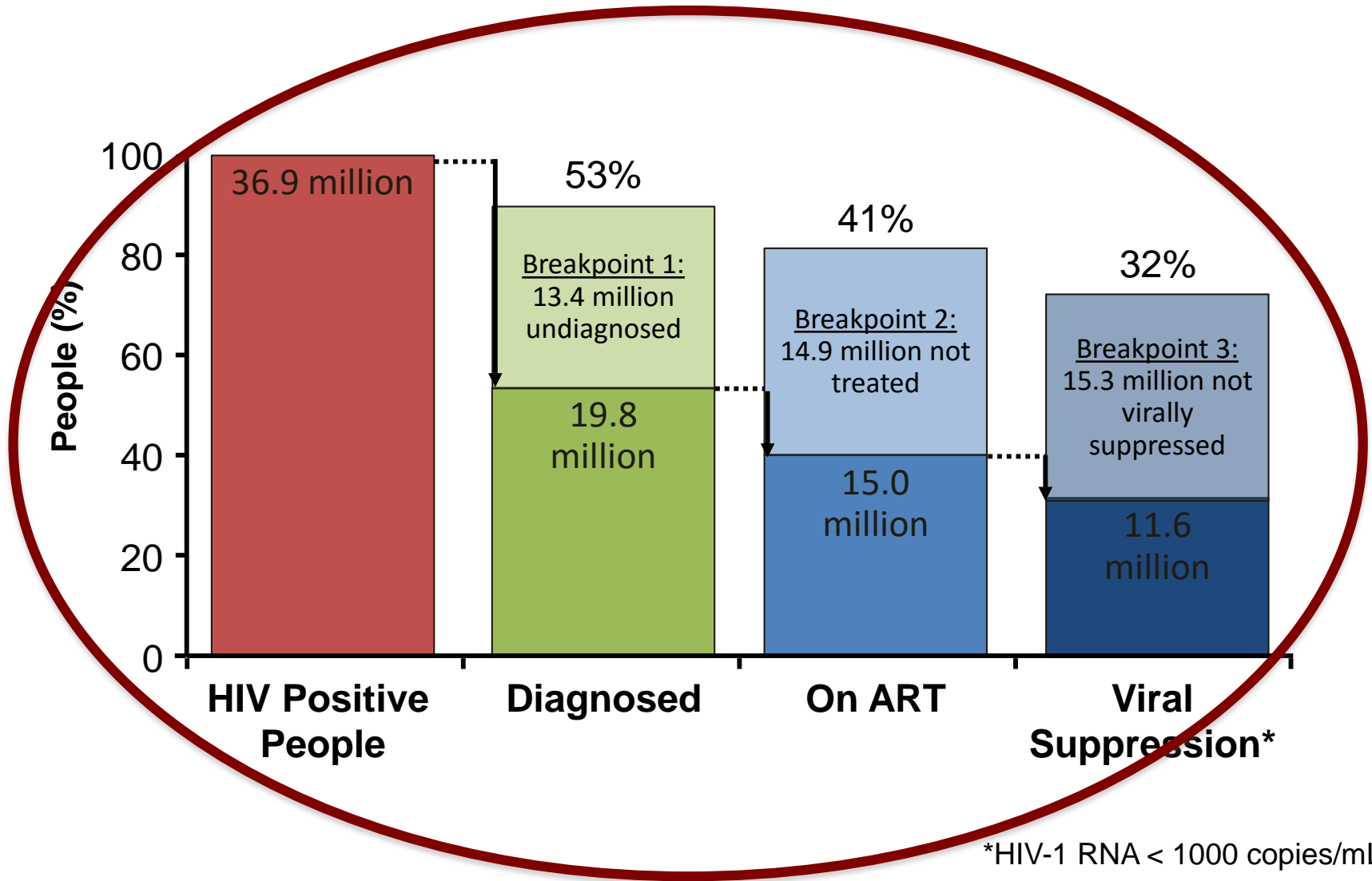
First-line ART	Preferred first-line regimens	Alternative first-line regimens <sup>a,b</sup>
Adults and adolescents	TDF + 3TC (or FTC) + EFV	AZT + 3TC + EFV (or NVP) TDF + 3TC (or FTC) + DTG <sup>c</sup> TDF + 3TC (or FTC) + EFV <sub>400</sub> <sup>c,d</sup> TDF + 3TC (or FTC) + NVP
Pregnant/breastfeeding women	TDF + 3TC (or FTC) + EFV	AZT + 3TC + EFV (or NVP) TDF + 3TC (or FTC) + NVP
Children 3 years to less than 10 years	ABC + 3TC + EFV	ABC + 3TC + NVP AZT + 3TC + EFV (or NVP) TDF + 3TC (or FTC) + EFV (or NVP)

# ***ART RETENTION TRIAL***

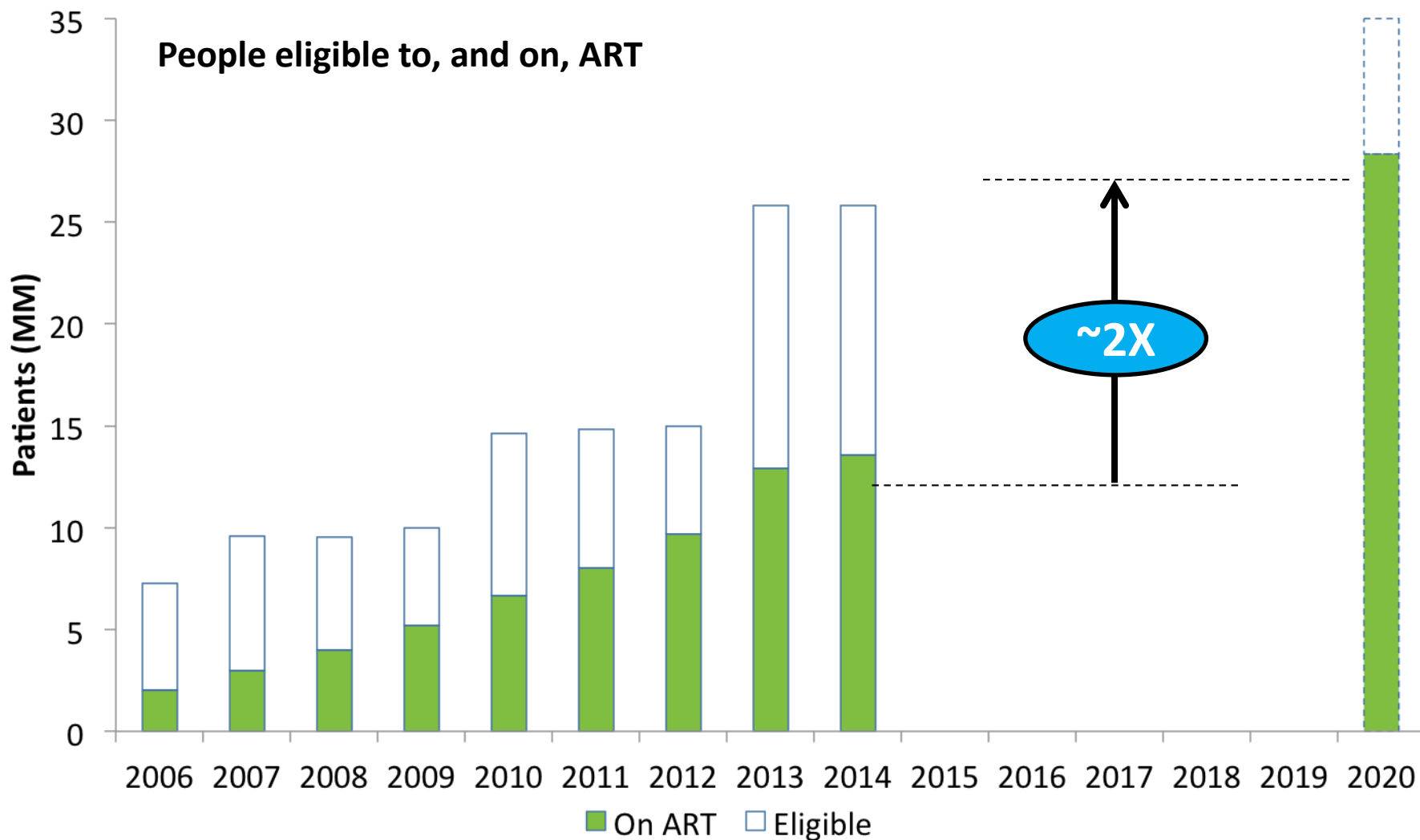
***Improving retention in care and adherence to ART of asymptomatic HIV+ patients: a factorial, randomized trial exploring the interaction of two interventions: a community-based HIV-care model combined with a more tolerable first line regimen. (SA, Zimbabwe, Zambia, Rwanda, Ethiopia, UK, Italy)***

	<b>Facility-based Care</b>	<b>Community-based Care</b>	<b>Main effect</b>
<b>EFV-based regimen</b>	Interaction effect: 65%	Interaction effect: 75%	EFV-based regimen: 70%
<b>DTG-based regimen</b>	Interaction effect: 75%	Interaction effect: <b>90%</b>	DTG-based regimen : 82,5%
Main effect	Facility- based care: 70%	Community-based care: 82,5%	

# ADDRESSING “OVERARCHING” BARRIERS



# The next target: almost doubling the number of people on ART



# FINANCING

---

## **1 THE AIDS RESPONSE STILL REMAINS DONOR DEPENDENT IN MANY COUNTRIES**

HIV continues to remain more donor dependent than other health programmes, although HIV expenditure constitutes only a small fraction of total health expenditure across all income groups. Programmes for key populations continue to be mainly funded through international donors, which makes their sustainability questionable once the donors withdraw.

## **2 SIGNIFICANT FINANCIAL GAPS AT THE COUNTRY LEVEL ARE MADE WORSE BY INEFFICIENT SPENDING**

Despite considerable amounts of funding for HIV over the past 15 years, important financial gaps remain in all low- and middle-income countries, with the problem made worse by inefficient allocation and implementation of resources. Across the board, HIV responses remain uneven—variations of unit costs can be observed not only between regions and types of epidemic but also within the same country.

## **3 FUNDING FOR CIVIL SOCIETY ORGANIZATIONS IS BEING ROLLED BACK**

Many civil society organizations are reporting cutbacks in the funding available for core functions such as advocacy, accountability, mobilization, networking and community delivery of services. When current health systems are insufficient for an effective and efficient response, funding of civil society and community organizations is needed more than ever.

## **4 GLOBALLY, AN ADDITIONAL US\$ 8-12 BILLION NEEDS TO BE AVAILABLE ANNUALLY BY 2020**

Increasing funding for treatment is crucial to achieving the goal of ending the AIDS epidemic as a public health threat. Globally, an additional US\$ 8–12 billion needs to be available annually by 2020. Equally important is the need for increased funding for comprehensive programmes for key populations in order to improve access to testing, treatment outcomes, retention in antiretroviral therapy and HIV prevention. Highly efficient use of the resources is a must.

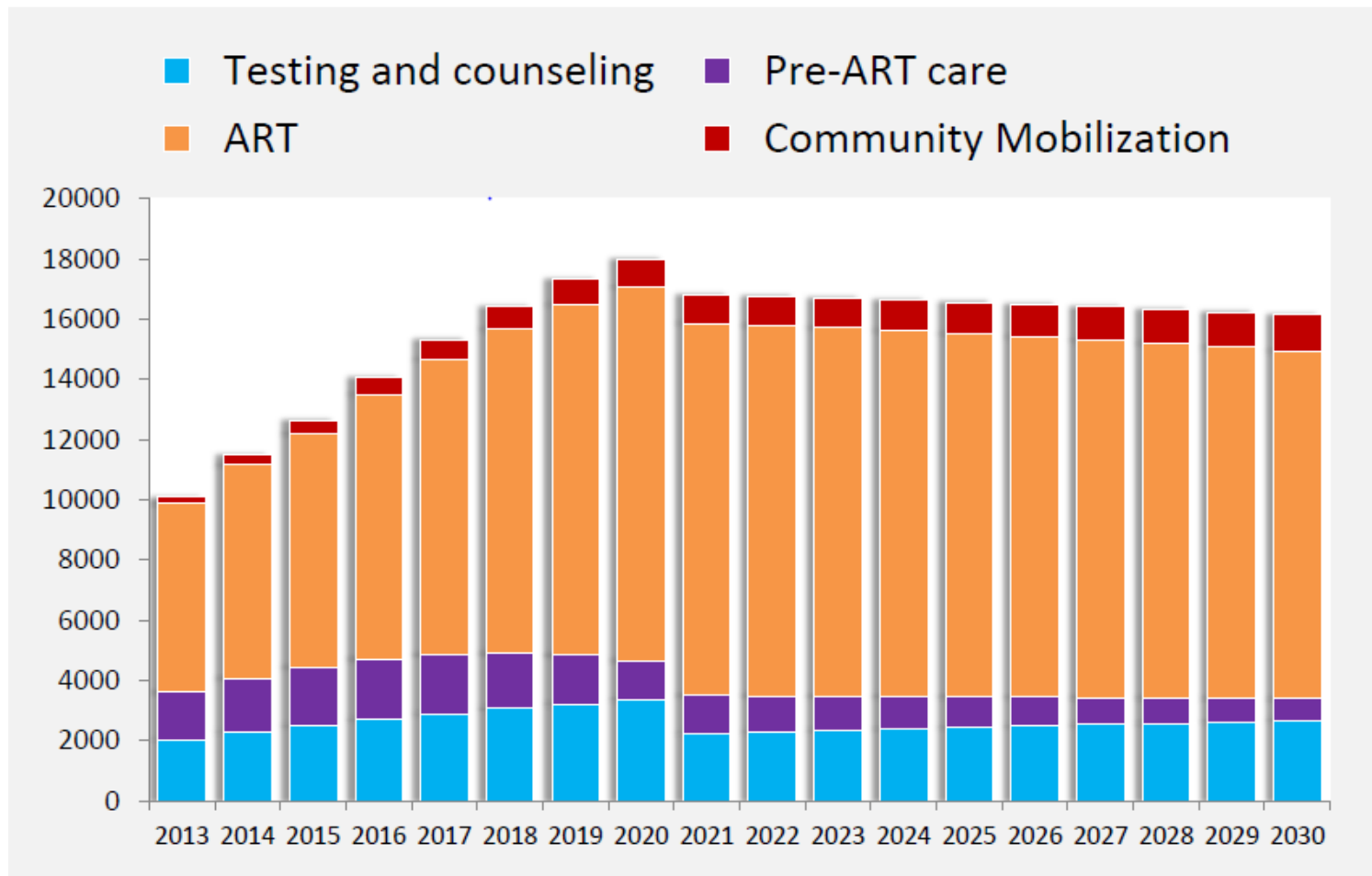
## **5 RESOURCES ARE NOT ALWAYS ALLOCATED TO PLACES AND POPULATIONS WHERE THEY WILL MAKE THE MOST IMPACT**

Resources are not always allocated to places and populations where they will make the most impact, and any move towards better allocative efficiency requires careful political negotiations and a full consideration of equity and human rights. The unprecedented funding for the HIV response has generated a vast amount of data, tools, analysis and strategic information about locations and populations, but that does not always translate into policy shifts or changes in how business is done.

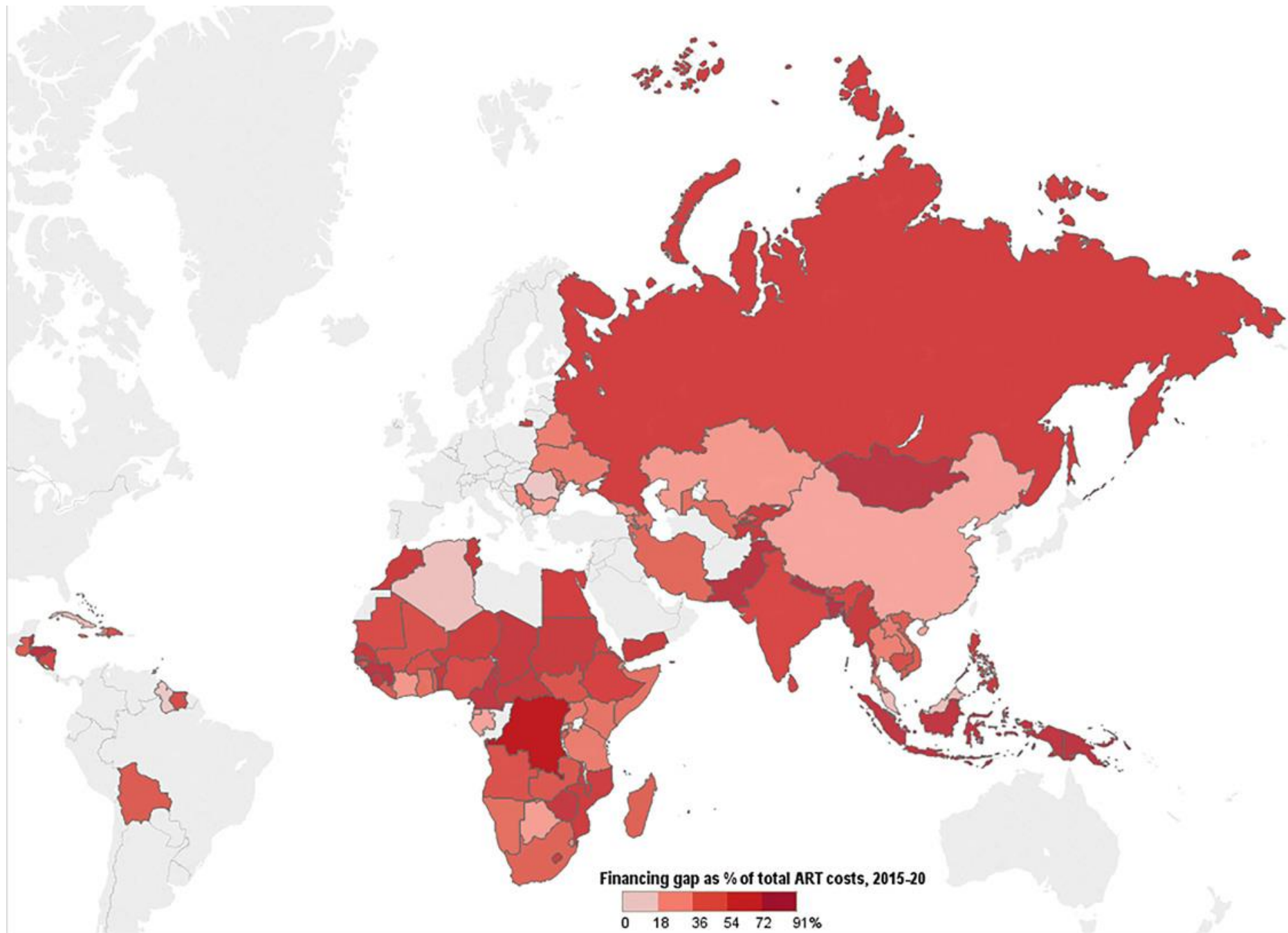
## Moving towards end of AIDS: main results and new ambitious targets...

Key parameters	2005	2015	2020	2030
New HIV infections	3 million	2 million	500,000	200,000
AIDS-associated deaths	2.4 million	1.2 million	500,000	400,000
PLHIV accessing ART	1.5 million	15 million	30 million	ALL
Investments for global HIV response (US\$)	7 billion	20 billion	32 billion	29 billion

# Resource Needs for Treatment, Care and Support US\$ Million







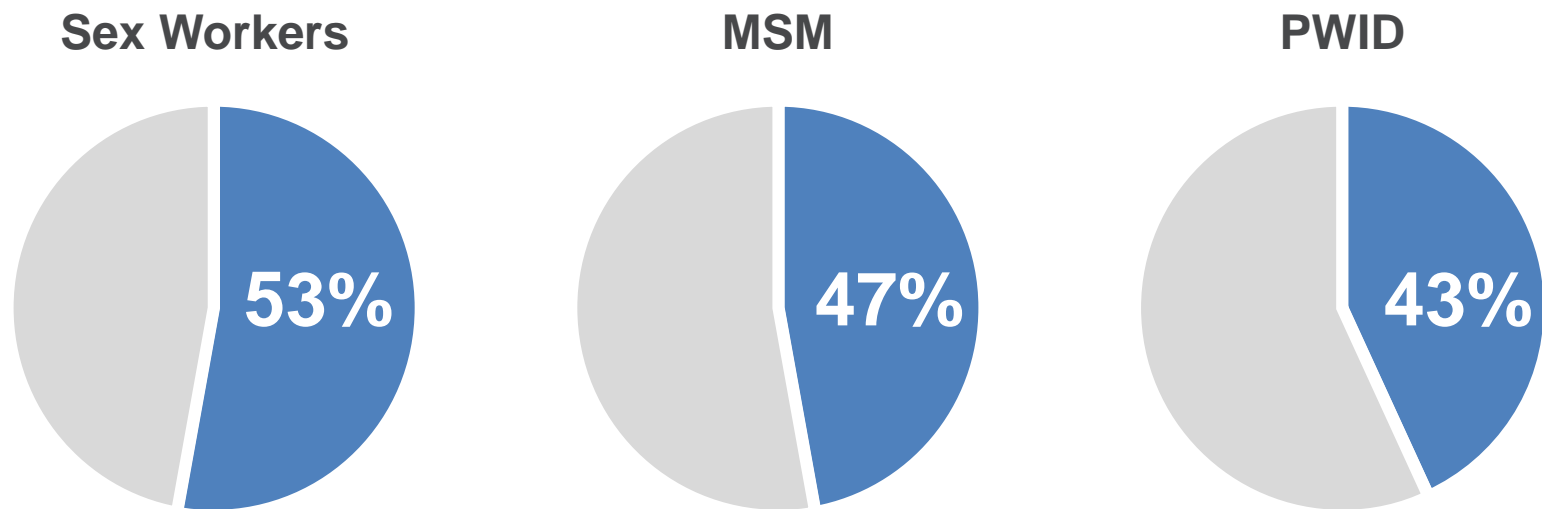
# The next barrier: Political commitment

- To avoid global investments shifting elsewhere, we definitely need to **revitalise community mobilisation and the HIV/AIDS transformative partnership model** we used in the past decades.
- We need to make clear to world leaders that we are definitely **not close to the solution**, that without political support to the HIV/AIDS community the window of opportunity which science has opened will be missed, and that the AIDS epidemic is set to grow again **without strong continued financial support** for country programmes.

# The next barrier: Human Rights not respected everywhere

- To avoid global investments shifting elsewhere, we definitely need to **revitalise community mobilisation and the HIV/AIDS transformative partnership model** we used in the past decades.
- We also need to make clear to world leaders that we are definitely **not close to the solution**, that without political support to the HIV/AIDS community the window of opportunity which science has opened will be missed, and that the AIDS epidemic is set to grow again **without strong continued financial support** for country programmes.
- **And without human-rights-based decriminalising approaches targeting key populations.**

# Discriminatory Laws and Policies



**■ Percentage countries whose laws, regulations, or policies can hinder service provision for key populations**

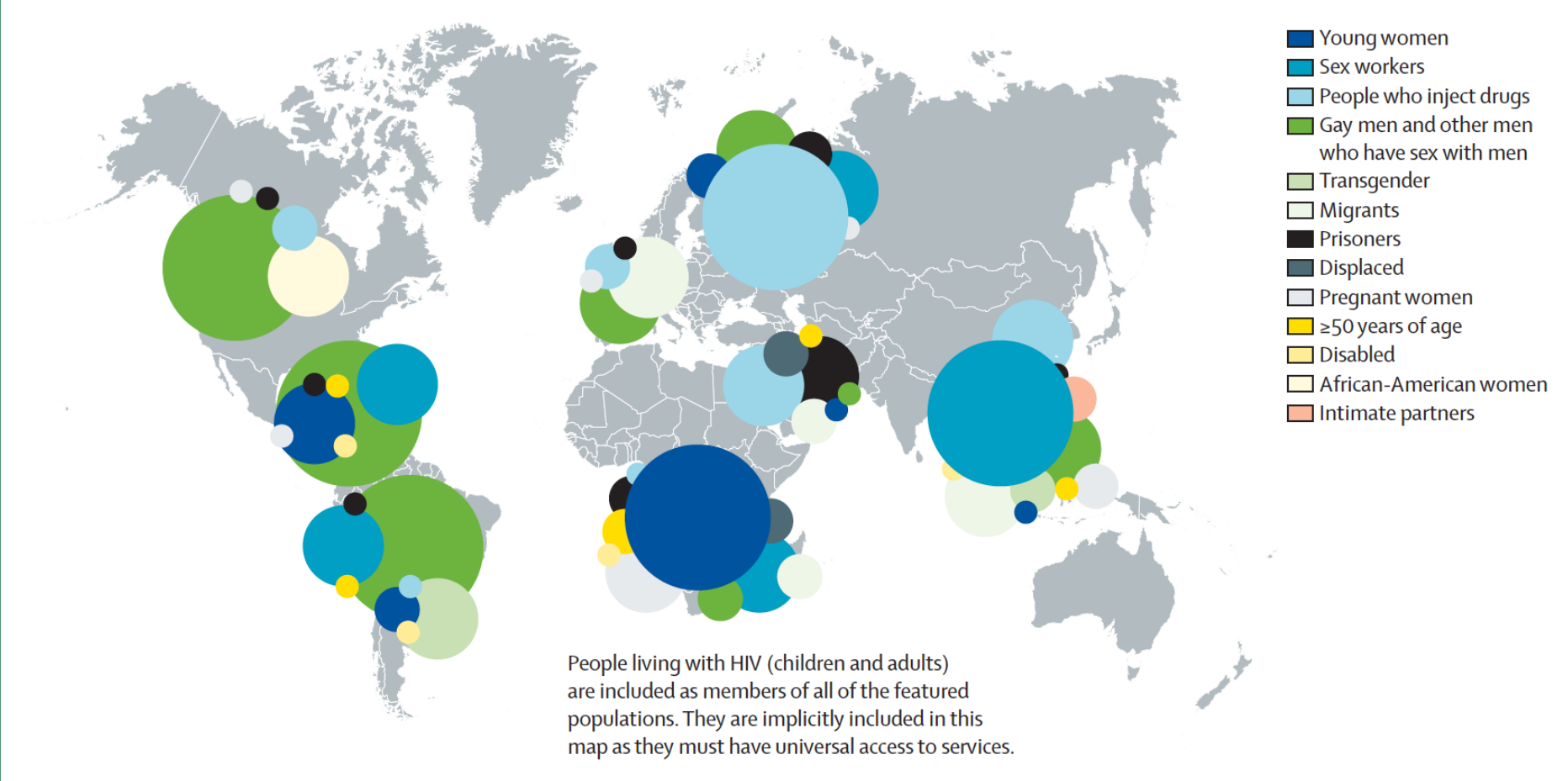
MSM, men who have sex with men; PWID, people who inject drugs

Source: GARPR 2013 – “Countries reporting existence of laws, regulations or policies that can pose obstacles to effective HIV prevention, treatment, care and support services for key populations”

# KAP...

- People who use drugs
- Men having sex with men
- Women having sex with women
- Transgender people
- Sex workers
- Incarcerated people
- Displaced people, refugees
- Migrants
- .....

# Diversity of HIV epidemics: interventions shall be targeted



**Figure 4: The importance of location and population**  
Source: The Gap Report.<sup>4</sup>

# 90/90/90 at a glance

Target component	What it means?	What was achieved until now?	How can it be improved ? (key issues)
<b>The “1<sup>st</sup> 90”</b>	90% of all PLHIV diagnosed	Approximately 50% of all PLHIV	<ul style="list-style-type: none"> <li>• Early diagnosis (focus on key populations, adolescents, young men)</li> <li>• Innovative testing strategies</li> <li>• Reduce stigma//discrimination</li> </ul>
<b>The “2<sup>nd</sup> 90”</b>	90% of all diagnosed PLHIV on ART (81% of all PLHIV)	Approximately 40% of all PLHIV	<ul style="list-style-type: none"> <li>• Early ART initiation (ART for all with prioritization)</li> <li>• Linkage to care</li> <li>• Retention support (care packages)</li> <li>• Treatment optimization (new regimens)</li> <li>• Reduce stigma//discrimination</li> </ul>
<b>The “3<sup>rd</sup> 90”</b>	90% of all PLHIV on ART with suppressed VL (73% of all PLHIV)	Approximately a 30% of all PLHIV*	<ul style="list-style-type: none"> <li>• Early detection of treatment failure (expanded access to VL testing)</li> <li>• Retention support (adherence/social/community)</li> <li>• Treatment optimization (new regimens &amp; maintenance strategies)</li> <li>• Reduce stigma//discrimination</li> </ul>

\* McMahon J. et al." *Bulletin of the World Health Organization* 91.5 (2013): 377-385.

# 90 90 90 – Conclusions

- Treatment as Prevention is definitely part of the solution
- The 90 90 90 targets are achievable
- The whole treatment cascade shall be supported.
- Prevention strategies shall be put in place (both behavioral and biomedical)
- Existing barriers shall be addressed:
  - Expand testing through innovative strategies
  - Stigma is properly addressed
  - Innovative models of caring HIV as a lifelong disease are implemented
  - Community involvement is extended (and supported)
  - The focusing is on Key Affected Populations
  - Donor support expands
  - Governments tackle stigma, discrimination and protect human rights
  - Research on better medicines, and towards a vaccine and a cure shall continues to make progress



# ACHIEVING 90:90:90: A GLOBAL GAME CHANGER FOR PUBLIC HEALTH

- *The Goal*
- *The Tools*
- *Addressing the barriers*
- ***From Durban to Durban***

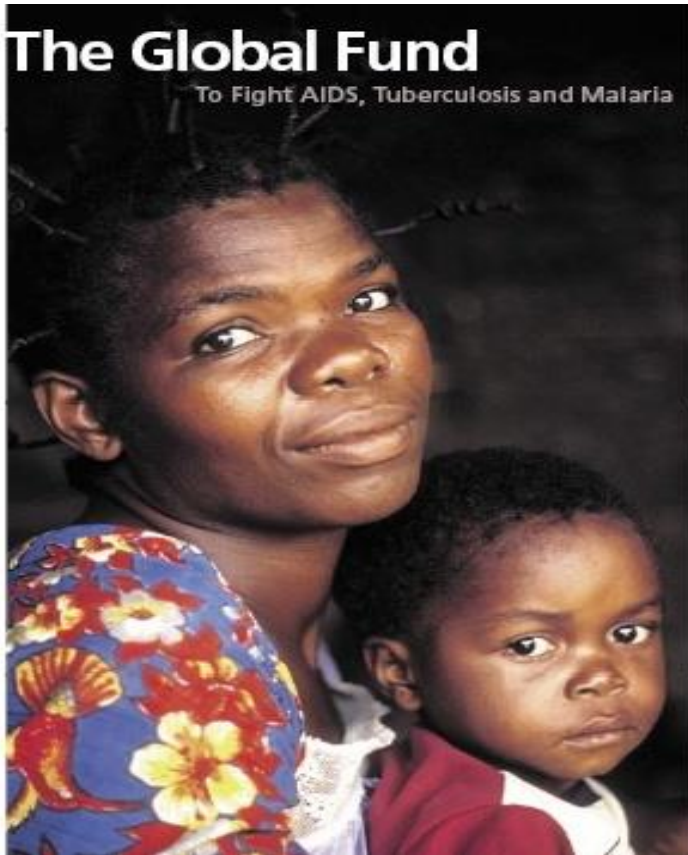


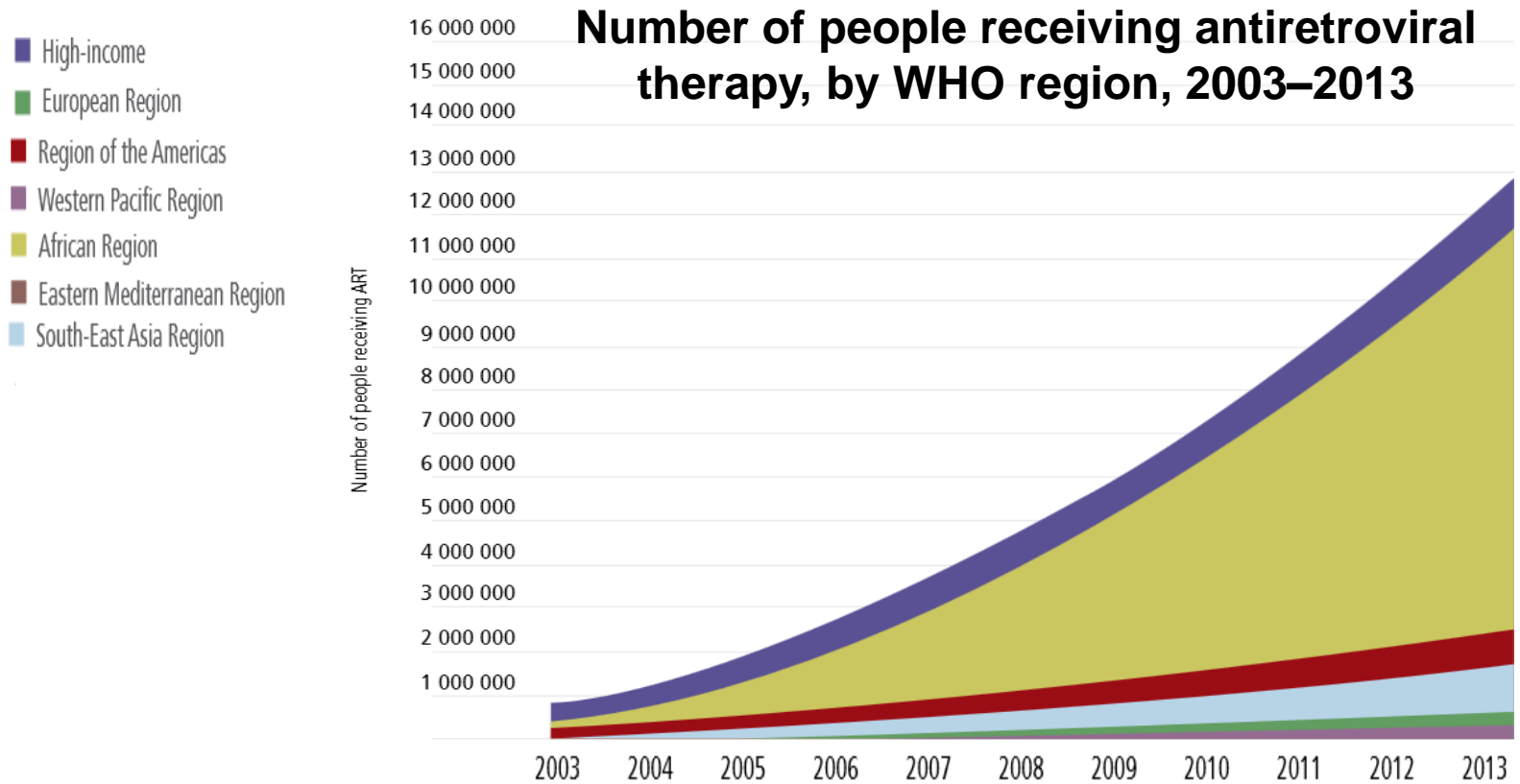
XIII INTERNATIONAL  
**AIDS**  
CONFERENCE  
**DURBAN**  
SOUTH AFRICA



# The Global Fund

To Fight AIDS, Tuberculosis and Malaria





**Number of people receiving ART globally rose from ~2 million in 2005 to ~15 million in 2015**

# From Durban to Durban

**From the XIII International AIDS Conference in  
2000 to the 2016 Durban conference**

*From universal access  
to treatment and care....  
....to ending the HIV epidemic.*

# From Durban to Durban



# Thanks

- Badara Samb
- Anton Pozniak
- Marco Vitoria
- Ethiopian local partners
- The local HIV community
- The operational research group of my Institution