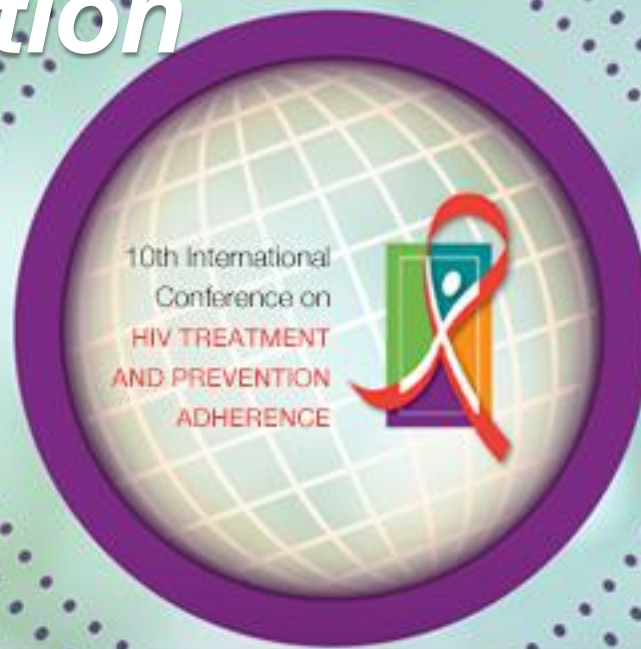


Implementation science:



Identifying real-world strategies to optimize the HIV care continuum

Gary S. Reiter, MD & Andrew Kaplan, MD - Memorial Lecture

Quarraisha Abdool Karim, PhD

Associate Scientific Director: CAPRISA

Professor in Clinical Epidemiology, Columbia University

Gary S. Reiter, MD & Andrew Kaplan, MD

- Drs Gary Reiter and Andy Kaplan were front line clinicians who focused on under-served populations
- Dr Reiter practiced in Springfield, Massachusetts, with several IDU patients - he was a major force in advocating for harm reduction
- Dr Kaplan, from the University of North Carolina was actively involved in developing treatment programs for poor, mostly black, AIDS patients
- Deeply honoured to deliver this lecture as a tribute to such compassionate “*doctor’s doctors*”, as Ken Mayer described these two great clinicians

Overview

- HIV care and the global epidemic
- The HIV Care Continuum:
... gaps & challenges
- Strategies to optimize implementation of the HIV care continuum –
...from “leaky” cascades to improved models of care
- Conclusion

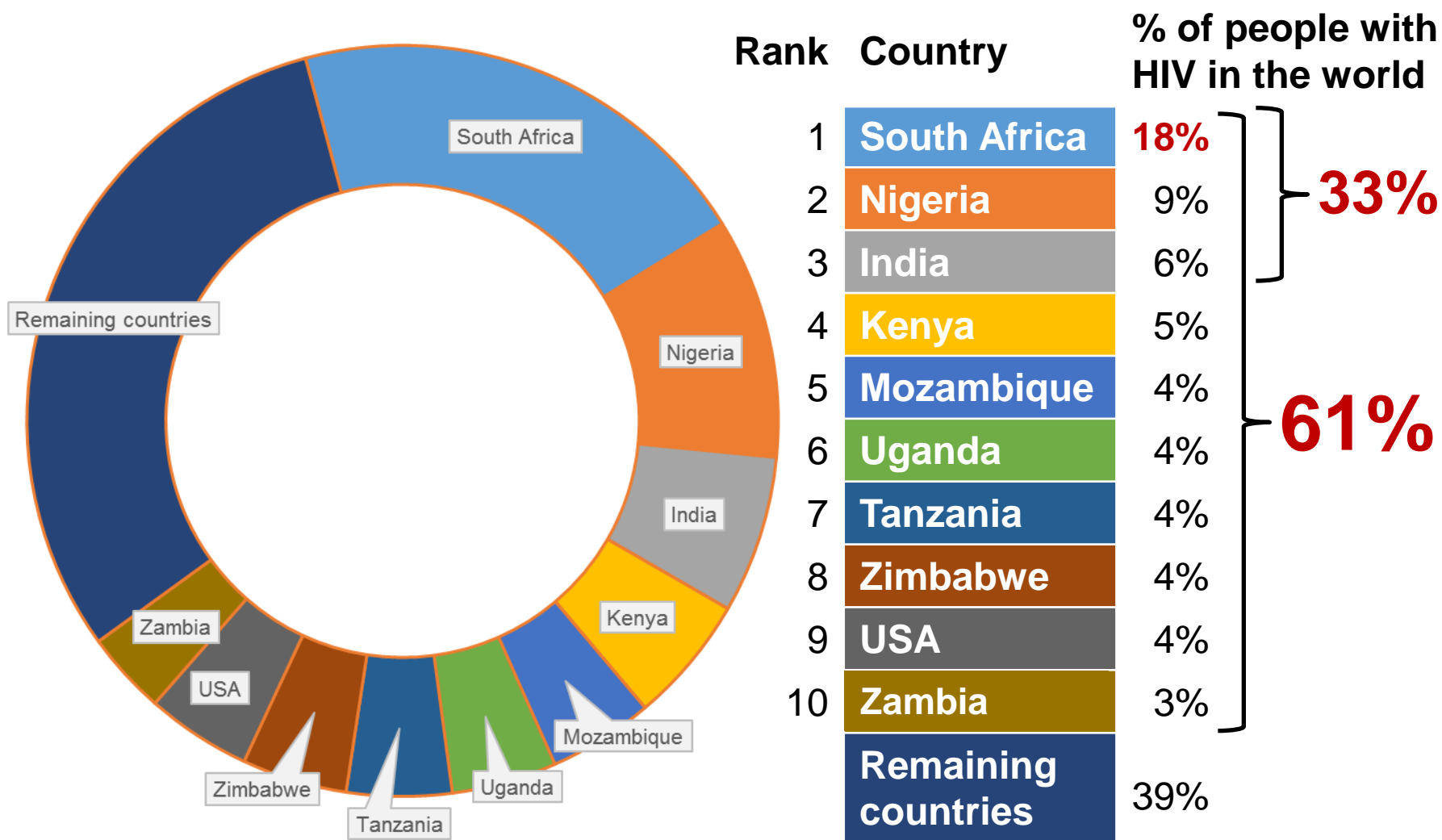
In 2013, worldwide there were:

1.5 million HIV deaths

35 million living with HIV

2.1 million new infections

Top 10 countries: People living with HIV



Increasing number eligible for ART: Progressing to test-and-treat

Estimated millions of people eligible for ART in LMIC in 2012:

11 m

15 m

17.6 m

28.6 m

33 m

1

**CD4 \leq
200**

Recommended
Since 2003

2

**CD4 \leq
350**

Recommended
since 2010

3

**CD4 \leq
350
+
TB/HIV
HBV/HIV**

WE
ARE
HERE

4

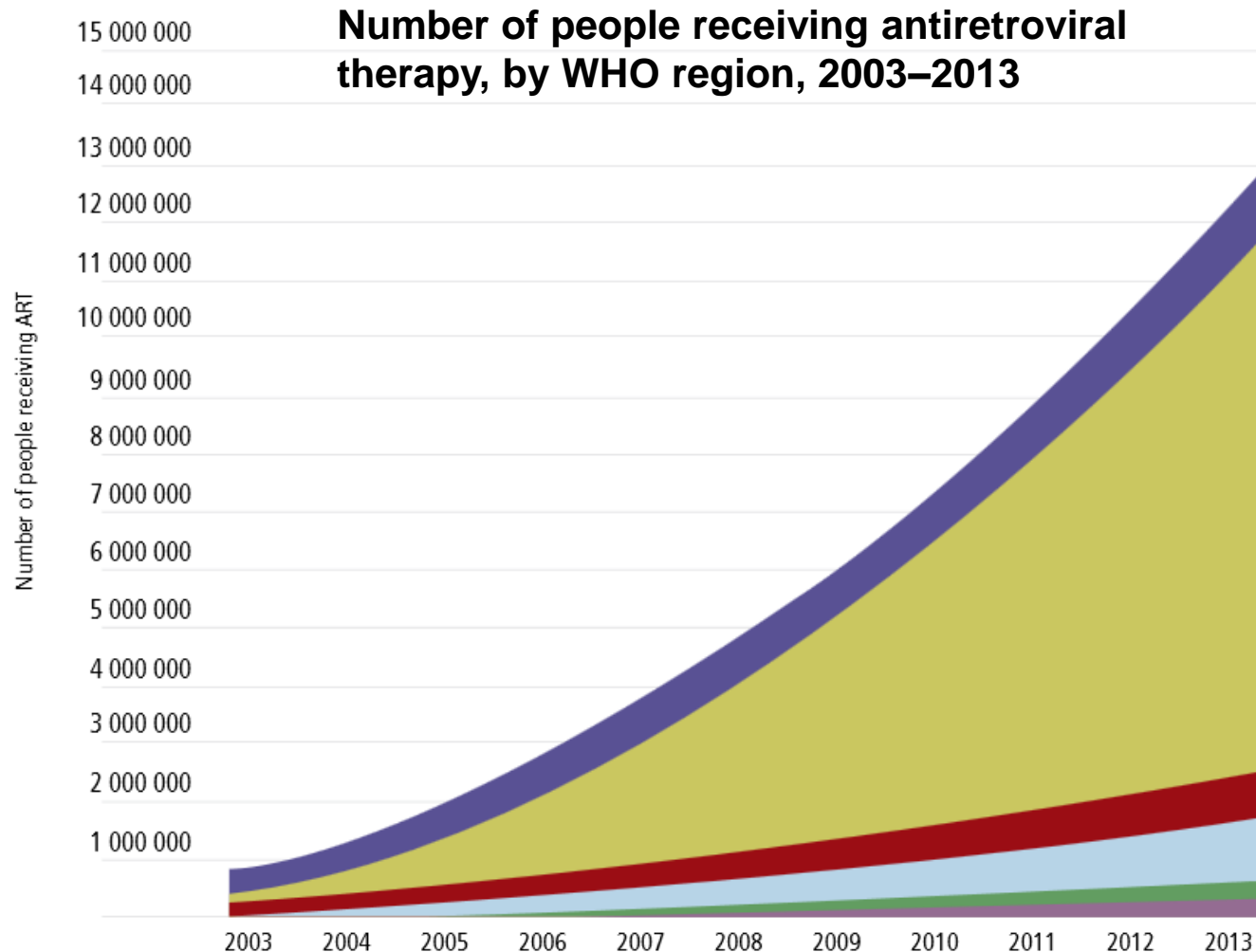
**CD4 \leq
500
+
TB/HIV
HBV/HIV**

5

**All HIV+
“Test &
treat”**

Initiate ART regardless of CD4 count for:
Serodiscordant couples, Pregnant women & Children < 5

Globally - great progress on increasing ART coverage...



Great progress on increasing ART coverage...

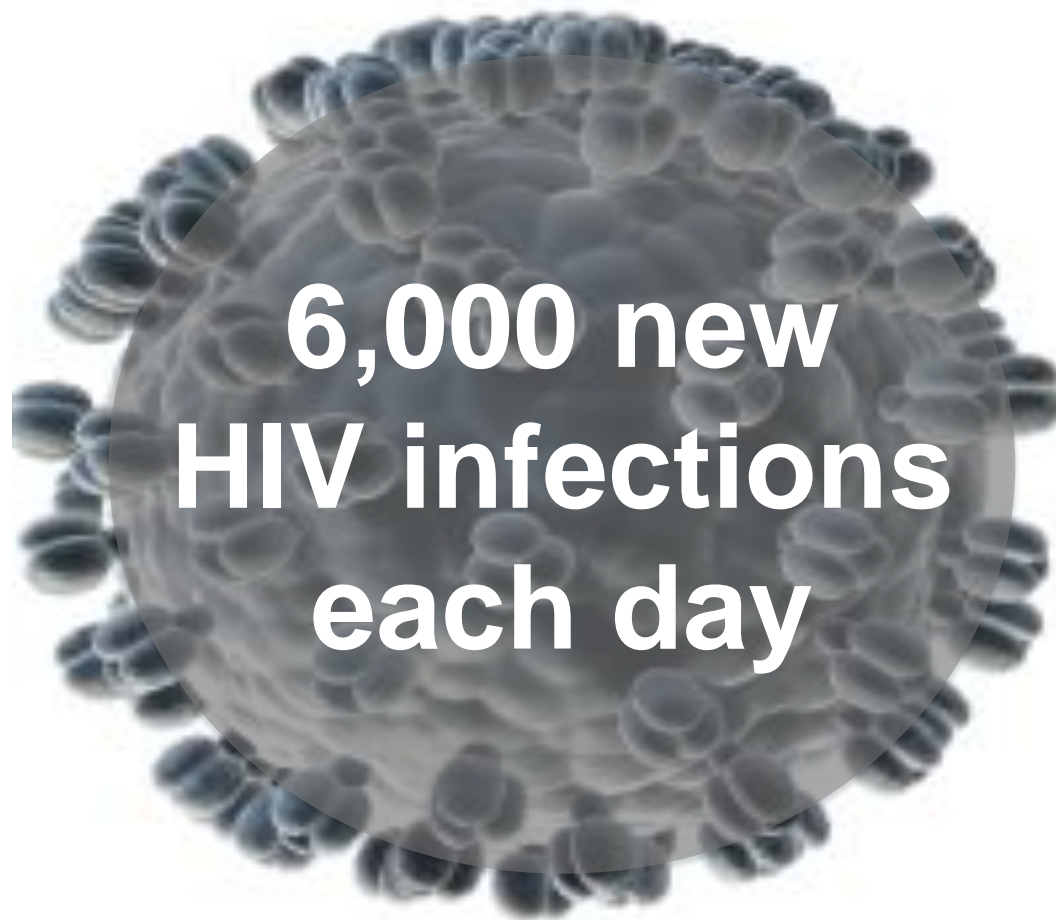
**People receiving ART globally rose from
~2 million in 2005 to ~13 million in 2013**

...but

**35 million people are living with HIV
At 15 million on ART, we are still below 50%**

**Much has been done –
but even more still needs to be done!**

And even more challenging...

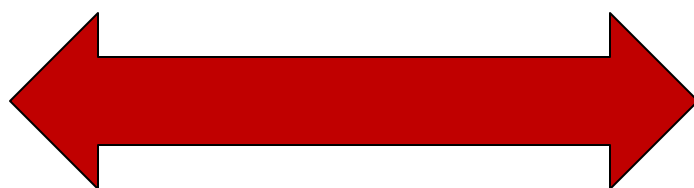


**6,000 new
HIV infections
each day**

HIV Care Continuum



**Not in
care**

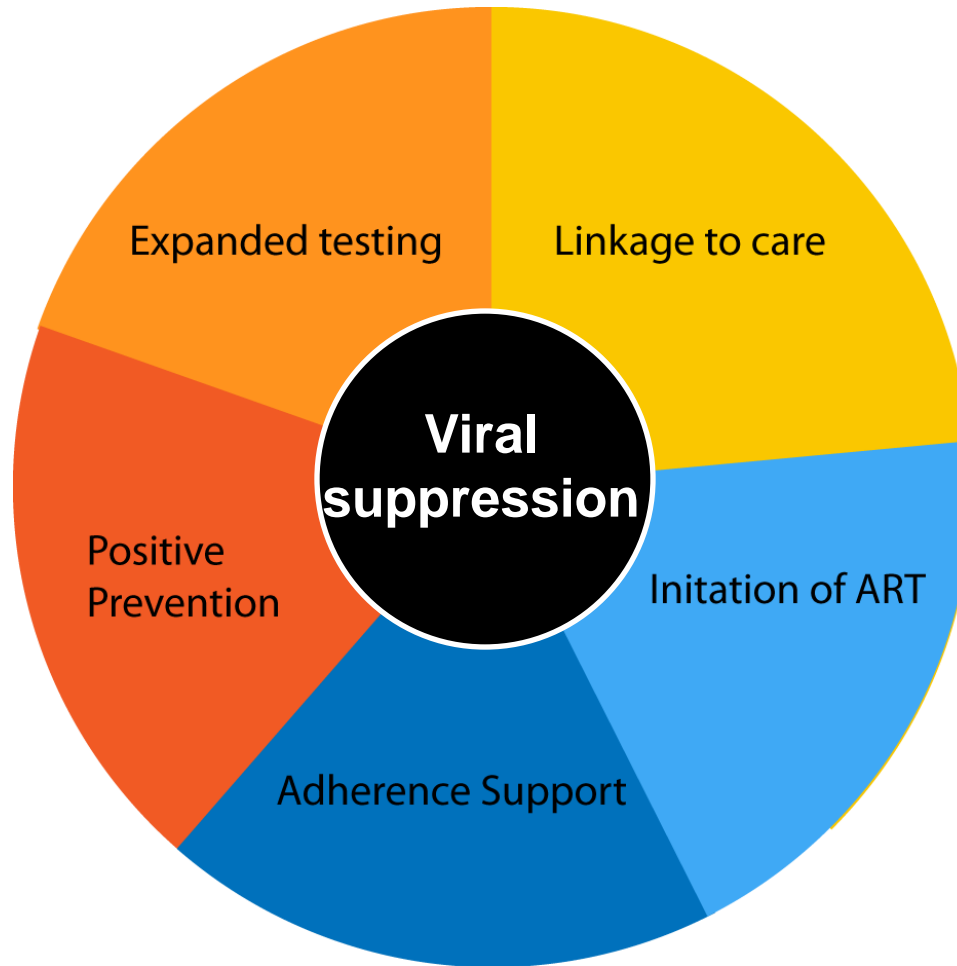


**Fully engaged
in care**

Source: U.S. DHHS: <https://www.aids.gov/federal-resources/policies/care-continuum/>



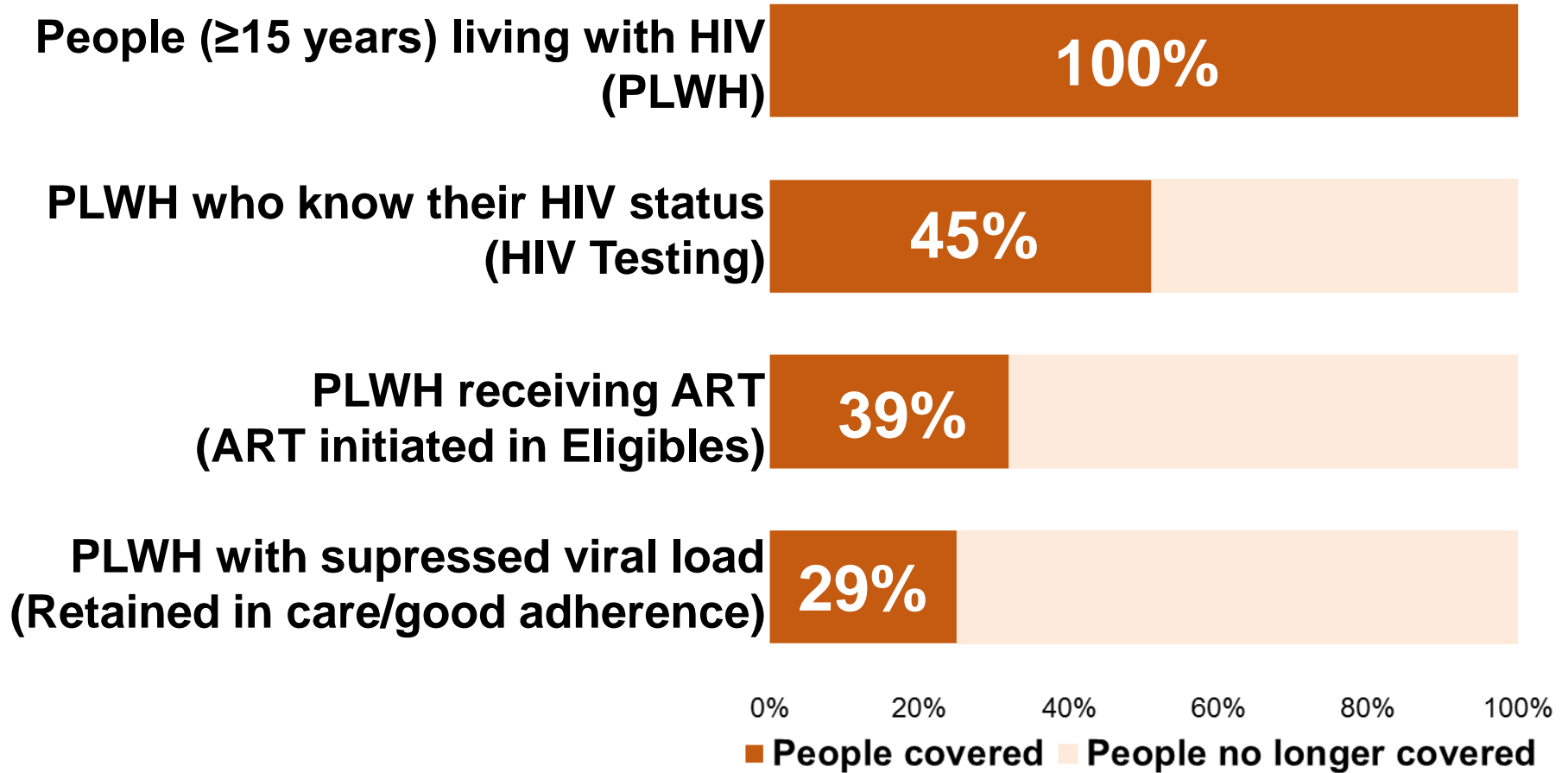
Goal of the HIV care continuum: Maximal viral suppression



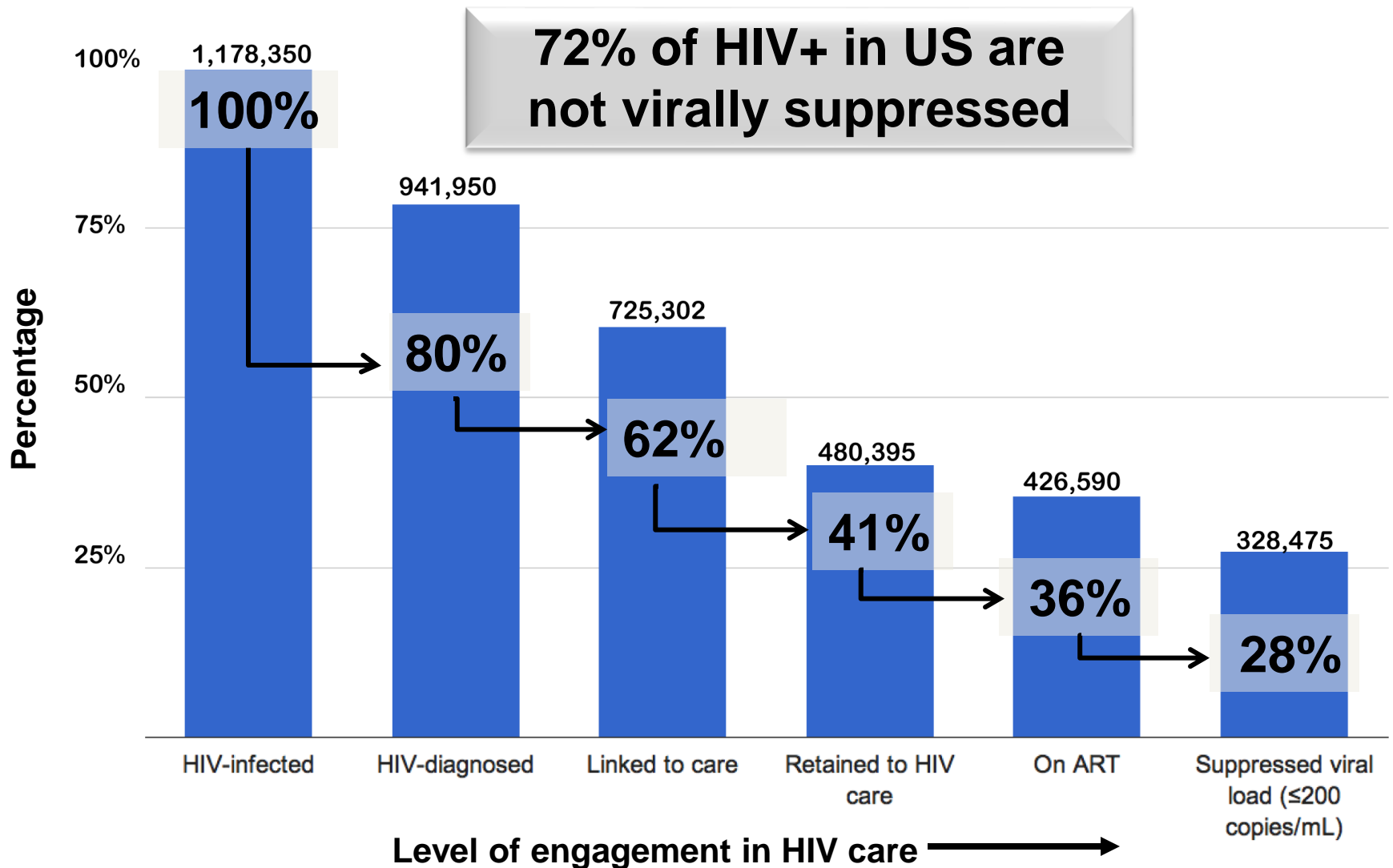
UNAIDS Target: 73% viral suppression

HIV care continuum: sub-Saharan Africa

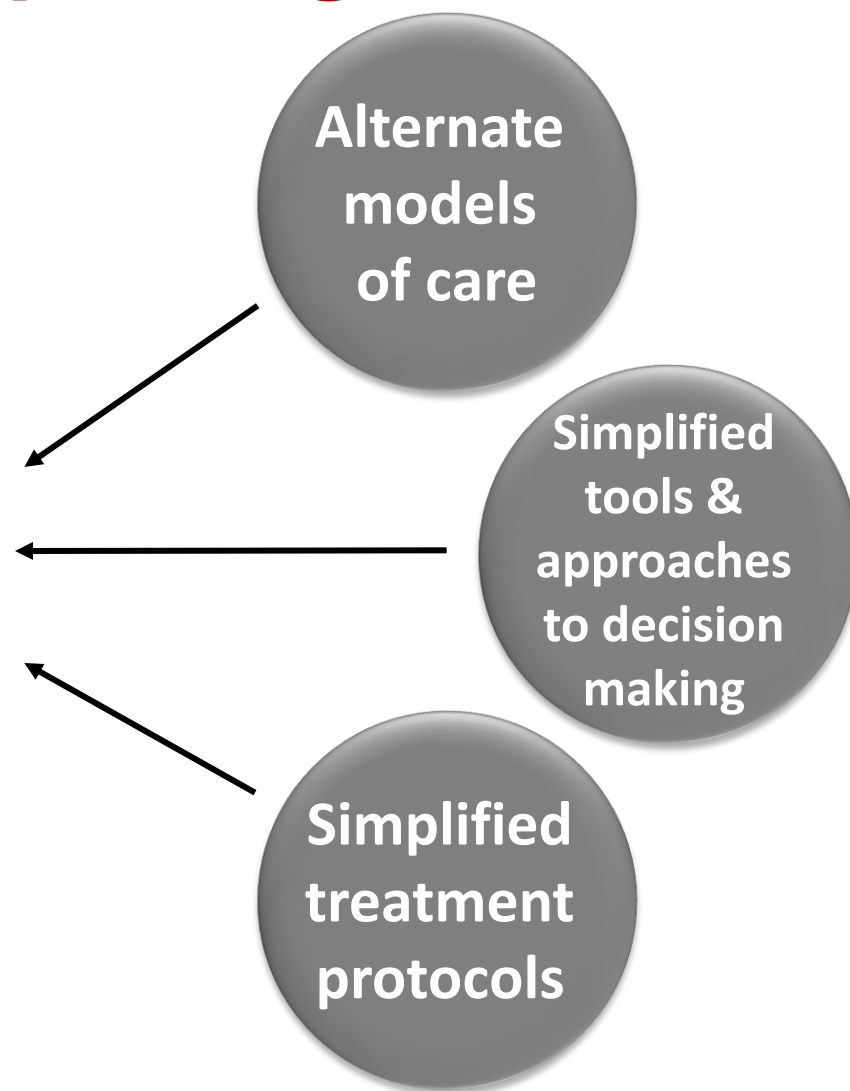
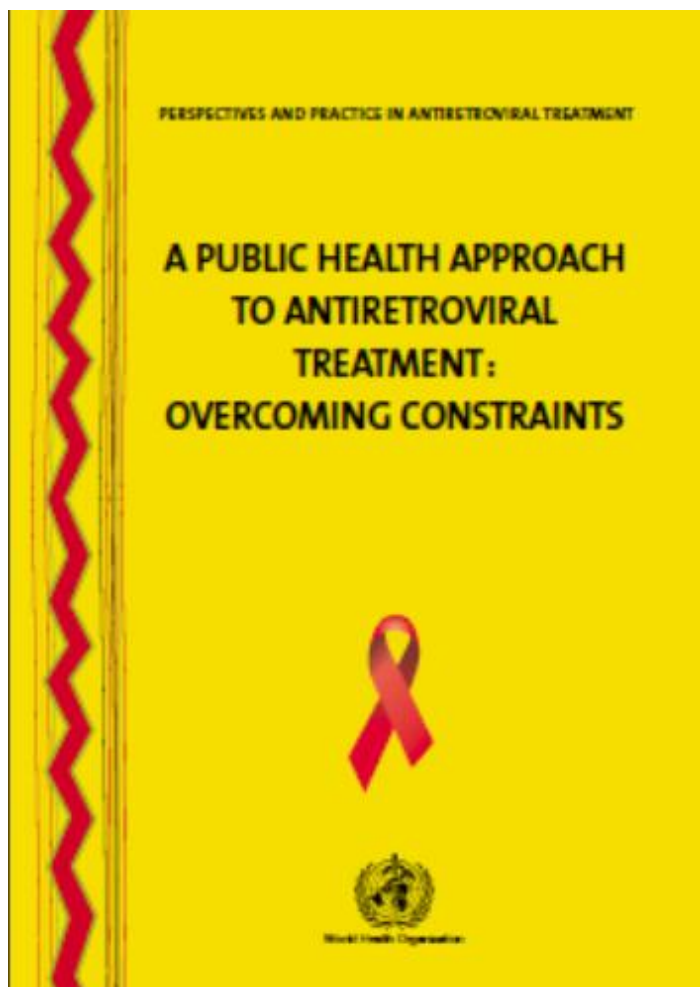
71% of HIV+ in Africa are not virally suppressed



HIV Care Continuum in the US



WHO advice on improving HIV care



Improving the HIV Care Continuum



**Not in
care**



**Fully engaged
in care**

Impacting the HIV care continuum with Implementation Science

- Implementation science is *research to promote the integration of research findings and evidence into healthcare policy and practice*
- The intent of implementation science is to:
 - investigate & address **major bottlenecks** (eg. social, behavioral, management) impeding effective implementation,
 - test **new approaches** to improve health programming, &
 - determine a **causal relationship** between the intervention and its impact.
- Below I draw upon 4 examples of implementation science to identify real-world strategies to help optimize each of the 5 key steps in the HIV care continuum

Strategies to promote: “Know your HIV status”



HIV Self Testing



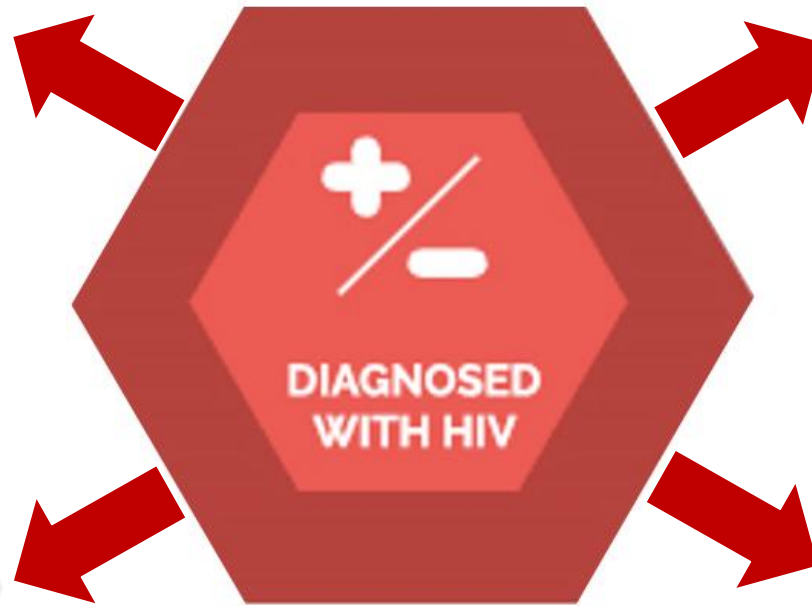
Peer support



Home Based HIV VCT



User-friendly HIV tests





HIV self-testing practices among Health Care Workers: feasibility and options for accelerating HIV testing services in Ethiopia

Bekana Kebede¹, Tatek Abate², Desalew Mekonnen³

¹Department of Health Services Management, Institute of Public Health, University of Gondar, Ethiopia, ² Department of Midwifery, College of Medicine and Health Sciences, University of Gondar, Ethiopia, ³Department of Medicine, College of Medicine and Health Sciences, University of Gondar, Ethiopia

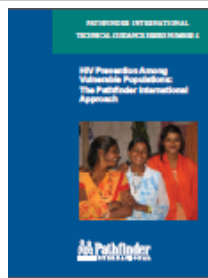
70.5% accepted self-testing



Increasing Uptake of HIV Testing and Counseling Among the Poorest in Sub-Saharan Countries Through Home-based service provision

Stéphane Helleringer, Hans-Peter Kohler, Jemima A. Frimpong, James Mkandawire

87% men & 89% women accept HTC



Technical Guidance Series Number 6 HIV Prevention Among Vulnerable Populations: The Pathfinder International Approach

Carlos Laudari, MD, MPH
Director, Pathfinder do Brasil Association

Peer support reduces fear & stigma



Introducing rapid oral-fluid HIV testing among high risk populations in Shandong, China: feasibility and challenges

Gifty Marley¹, Dianmin Kang², Erin C Wilson³, Tao Huang², Yuesheng Qian², Xiufang Li⁴, Xiaorun Tao², Guoyong Wang², Huanmiao Xun¹ and Wei Ma^{1*}

> 70% accept oral fluid test

Improving linkage to care for HIV+



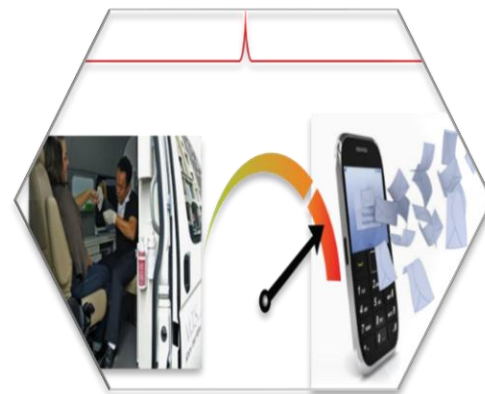
Call centre approach



**Point of care
CD4 test**



**Quality improvement
interventions**



**Text messages &
non-cash incentives**

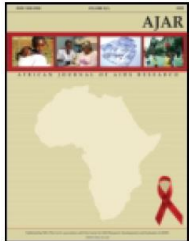




Using a call center to encourage linkage to care following mobile HIV counseling and testing

Michiel Adriaan van Zyl^a, Leslie Lauren Brown^a & Kathryn Pahl^b

**Call centre
↑ linkage
to care**



Patient and provider perspectives on improving the linkage of HIV-positive pregnant women to long-term HIV care and treatment in eastern Uganda

Haneefa Saleem¹, Robert Kyeyagali² and Sarah Smith Lutaaya³

QI ↑ linkage in pregnancy



Effect of point-of-care CD4 cell count tests on retention of patients and rates of antiretroviral therapy initiation in sub-Saharan African countries: a systematic review protocol

Garumma Tolu Feyissa MPH^{1,3} & Tariku Dejene Demissie MSc^{2,3}

PoC CD4 ↑ care



A combination strategy for enhancing linkage to and retention in HIV care among adults newly diagnosed with HIV in Mozambique: study protocol for a site-randomized implementation science study

Batya Elul^{1,2*}, Maria Lahuerta^{1,2}, Fatima Abacassamo³, Matthew R Lamb^{1,2}, Laurence Ahoua⁴, Margaret L Maria Tomo³, Deborah Horowitz⁵, Roberta Sutton¹, Antonio Mussa⁴, Danielle Gurr¹ and Ilesh Jani⁶

**Text messages, non-cash incentives +
other ↑ linkage to care**

Strengthening engagement in care, ART initiation & retention in care



Family involvement



Addressing psycho-social barriers



Home-based HCT



Cellphones in youth



Family Matters: Co-enrollment of Family Members Into Care Is Associated With Improved Outcomes for HIV-Infected Women Initiating Antiretroviral Therapy

Landon Myer, MBChB, PhD,*† Elaine J. Abrams, MD,‡§ Yuan Zhang, MS, MSc,¶
Wafaa M. El-Sadr, MD, MPH,‡ and Rosalind J. Carter, PhD,¶

Family involvement had 5-fold lower loss from care



Successful antiretroviral therapy delivery and retention in care among asymptomatic individuals with high CD4⁺ T-cell counts above 350 cells/μl in rural Uganda

Vivek Jain^{a,b}, Dathan M. Byonanebye^b, Gideon Amanyire^{b,c},
Dalsone Kwarisiima^{b,c}, Doug Black^{a,b}, Jane Kabami^b,
Gabriel Chamie^{a,b}, Tamara D. Clark^{a,b}, James F. Rooney^d,
Edwin D. Charlebois^{b,e}, Moses R. Kamya^{b,e}, David A. Hooper^{b,e},
the SEARCH Collaboration

Addressing psycho-social barriers ↑ initiation & retention



Initiation of antiretroviral therapy and viral suppression after home HIV testing and counselling in KwaZulu-Natal, South Africa, and Mbarara district, Uganda: a prospective, observational intervention study

Ruanne V Barnabas, Heidi van Rooyen, Elioda Tumwesigye, Pamela M Murnane, Jared M Baeten, Hilton Humphries, Bosco Turyamugemura,
Philip Joseph, Meighan Krows, James P Hughes, Connie Celum

Engagement in care high from home HCT



The Use of Cell Phone Support for Non-adherent HIV-Infected Youth and Young Adults: An Initial Randomized and Controlled Intervention Trial

Marvin E. Belzer • Sylvie Naar-King • Johanna Olson •
Sarah Thornton • Shoshana Y. Kahana • Aditya H. Gaur • Leslie F. Clark •
The Adolescent Medicine Trials Network for HIV/AIDS Interventions

Cellphones ↑ adherence in youth

High adherence for viral suppression



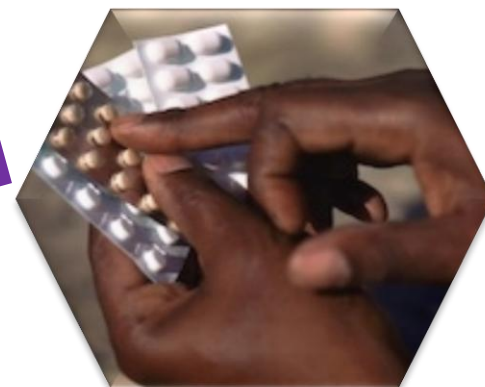
**Adherence
support groups**



**Lower Pill Burden,
FDCs & no stockouts**



**Service Quality
Interventions**



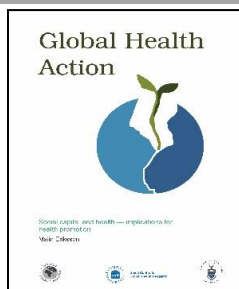
**Illustrated medicines
information**



Effectiveness of Patient Adherence Groups as a Model of Care for Stable Patients on Antiretroviral Therapy in Khayelitsha, Cape Town, South Africa

Miguel Angel Luque-Fernandez^{1,2,3}, Gilles Van Cutsem^{1,2}, Eric Goemaere^{1,2}, Katherine Hilder¹, Michael Schomaker¹, Nompumelelo Mantangana³, Shaheed Mathee³, Vuyiseka Dubulana⁴, Ntombi M. Nkomo⁵, Miguel A. Hernán^{6,7}, Andrew Boule¹

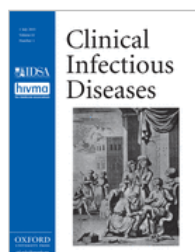
Support groups improve adherence



Improving adherence to antiretroviral treatment in Uganda with a low-resource facility-based intervention

Celestino Obua^{1*}, Joshua Kayiwa², Paul V. Nantulya³, Hudson Balidawa⁵, John Chalker⁶, Dennis M. M. Rolf Wahlstrom³

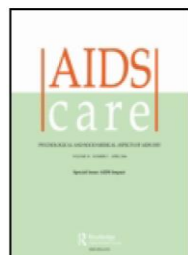
Service quality improvement improves adherence



Lower Pill Burden and Once-Daily Antiretroviral Treatment Regimens for HIV Infection: A Meta-Analysis of Randomized Controlled Trials

Jean B. Nachega^{1,2,3,4,a}, Jean-Jacques Parienti^{5,6,a}, Olalekan A. Uthman^{7,8,9}, Robert Gross^{10,11}, D. Joel E. Gallant¹², Michael J. Mugavero¹³, Edward J. Mills¹⁴, and Thomas P. Giordano¹⁵

FDCs improve adherence



Simple, illustrated medicines information improves ARV knowledge and patient self-efficacy in limited literacy South African HIV patients

R. Dowse^{a*}, K. Barford^a and S.H. Browne^b

Medicine info ↑ patient self-efficacy

A call to science:

More research for policy & implementation nature

OPINION

NATURE|Vol 463|11 February 2010

AIDS research must link to local policy

HIV research in South Africa is world class. To halt the country's epidemic, scientists need to shift focus from global problems to priorities at home, say **Salim Abdool Karim** and **Quarraisha Abdool Karim**.

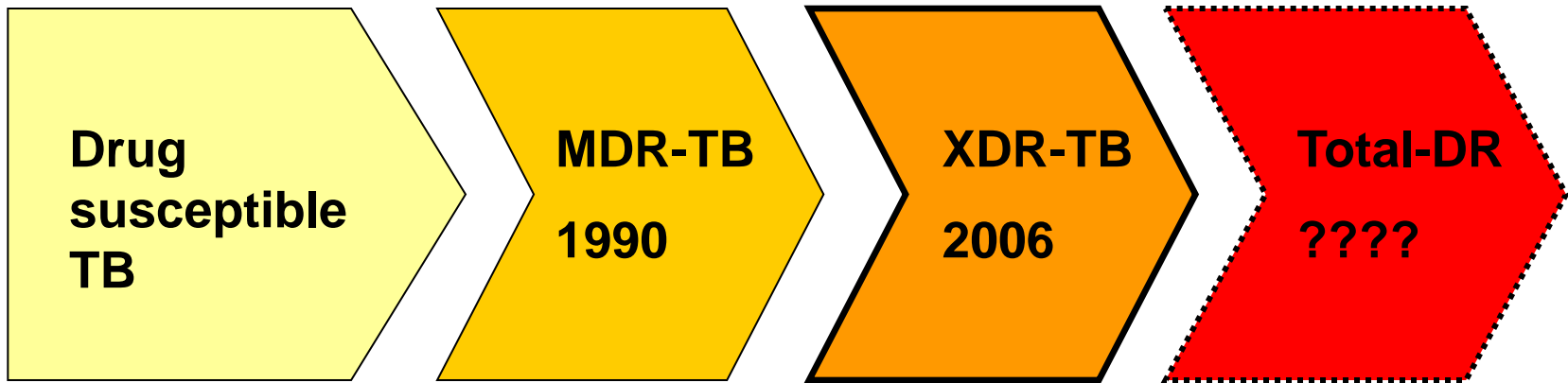
Despite being Africa's scientific powerhouse, 16 years on from the end of apartheid South Africa has failed to make the most of its well-established clinical and research infrastructure and its rich tradition of scientific excellence in curbing the HIV epidemic. More than one in ten South Africans are infected; 17% of all people living with HIV are in South Africa, even though it has only 0.7% of the world's population; and the rates at which people are catching the virus and dying from AIDS are unacceptably high (see graph,



D. FARRELL-FILE/AP

Adherence is critical !!!

Look at: The March of Tuberculosis Resistance



Susceptible TB

TB that is totally susceptible or has limited resistance manageable with 4 drug regimen

Multi-drug Resistance

Resistant to 2 key TB drugs – INH and Rifampin

Treatable with 2nd line drugs

Extensively drug-resistant

Resistance to 2nd line drugs

Treatment options seriously restricted

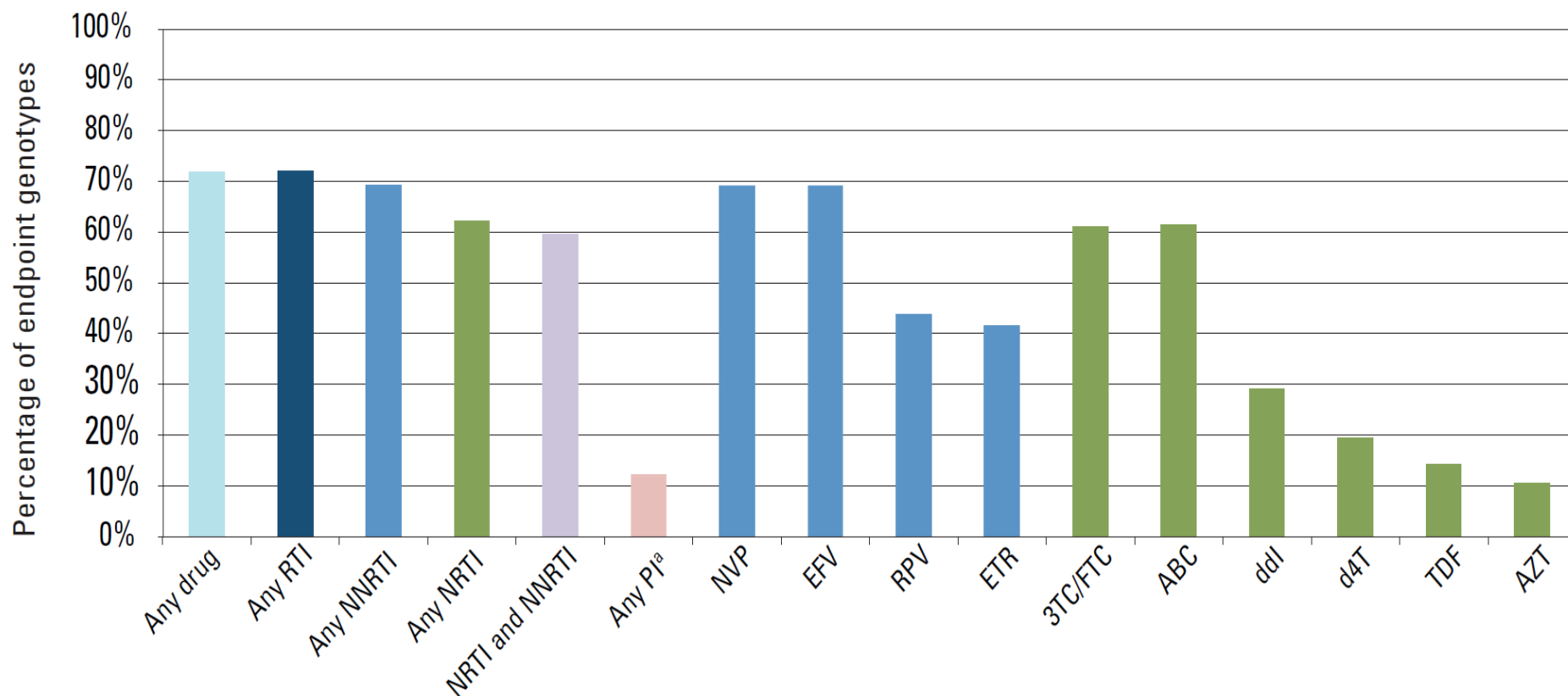
Totally drug-resistant

Resistance to all available drugs

No treatment options

Early evidence of the looming problem:

HIV drug resistance among people with treatment failure at 12 months



Stigma: Major impediment to care



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



Overall, 3 main challenges remain

How to increase HIV testing?

How to link HIV+ patients to care?

How to maintain high adherence?

UNAIDS targets (by 2020) of

90 – 90 - 90

- 90% of all people living with HIV **know their HIV status**
- 90% of all HIV+ people are **on ART**
- 90% of all people on ART will have **viral suppression**



Acknowledgements

Salim Abdool Karim, Kogieleum Naidoo & Tshana Watkins
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- US Centers for Disease Control and Prevention (CDC)
- South African Department of Science and Technology (DST)
- MACAIDS Fund (via Tides Foundation)
- Medical Research Council (MRC)
- National Research Foundation (NRF)
- Gilead Sciences (tenofovir API)
- ViiV (cabotegravir)
- CONRAD

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