



Leaving No One Behind: The Future of HIV Epidemic Control

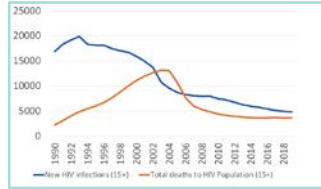
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Associate Professor of Medicine in Epidemiology
Columbia University

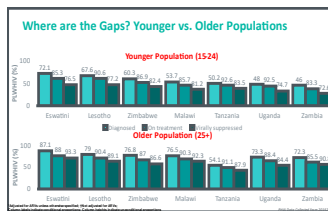
CQUIN 6th Annual Meeting
December 6 – 9, 2022 | Durban, South Africa



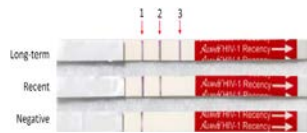
Key Takeaways



Evolution of HIV epidemic, measuring epidemic control



Focusing on the gaps: men, young adults, KPs



Innovations in HIV surveillance: reactivity testing

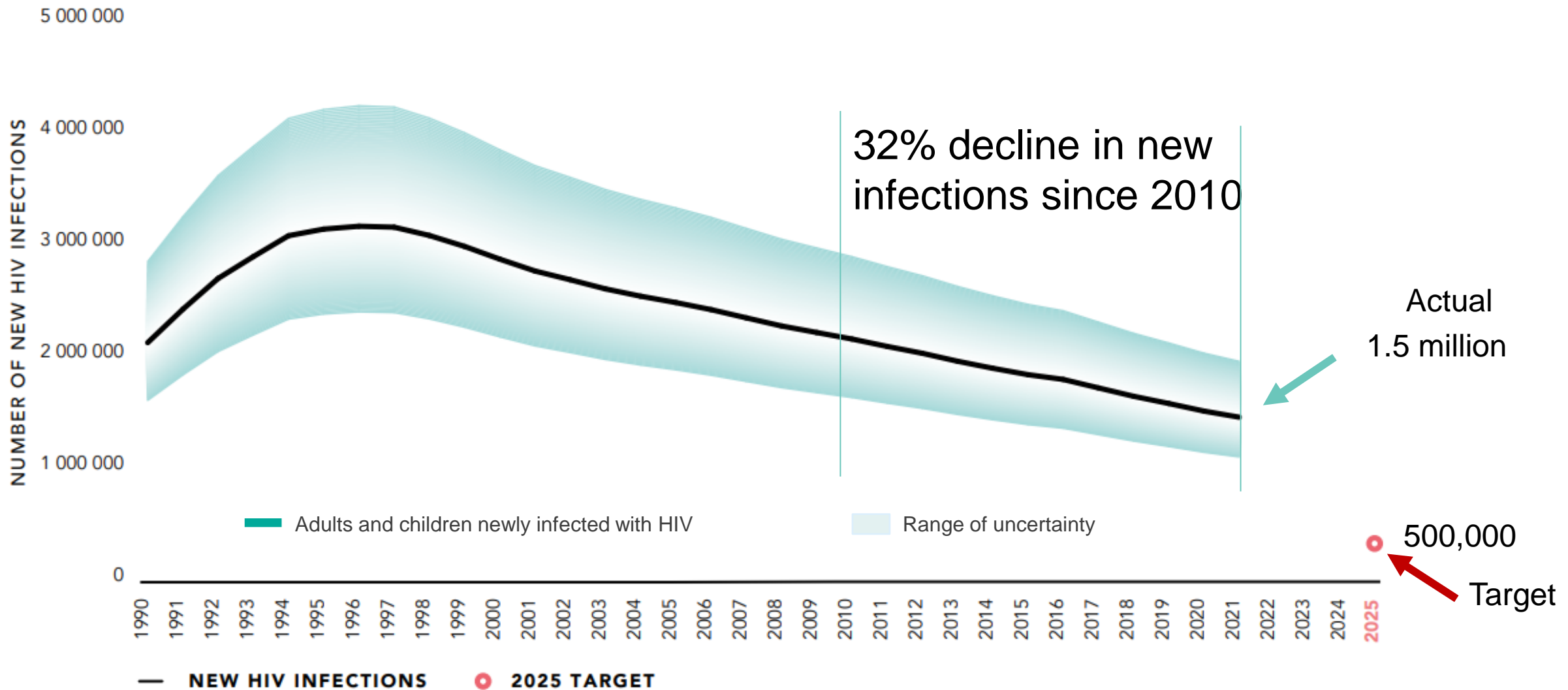


Innovations in differentiated service delivery models of testing, prevention and treatment



Leaving no one behind: equity

Adults and children newly infected with HIV | 1990–2021



What Does Epidemic Control Look Like?

Progress toward Targets

percentage achieved of predetermined targets:
e.g., 95% HIV awareness, 95% ARV coverage & 95% viral suppression

Absolute Rate

absolute rates of HIV incidence or AIDS related mortality: <1/1,000 adults per year, or <1/10,000 adults per year

Incidence-Prevalence Ratio

e.g., < 3 new infections : 100 PLWH/year

Incidence-Mortality Ratio <1

$$\frac{\text{total \# new HIV infections/year}}{\text{total \# deaths (all causes) among PLWH/year}} < 1$$

Percentage Reduction

$$\frac{[\text{New infections, 2010} - \text{New infections, 2020}]}{[\text{New infections, 2010}]} \times 100\%$$

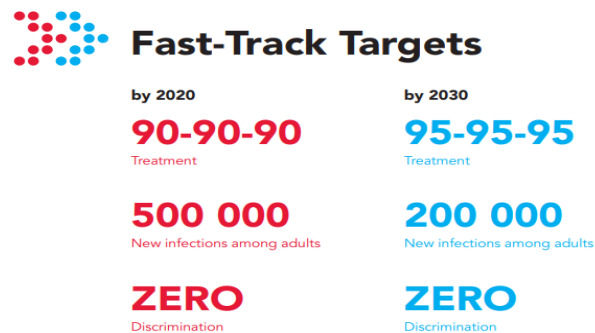
Defining Epidemic Control

UNAIDS' Fast-Track strategy to end the AIDS epidemic by 2030 (95-95-95)

Progress toward targets



New HIV infection target & zero discrimination target



CDC's "Ending the HIV Epidemic in the US"

Percentage Reduction

Reduction in new HIV infections in the United States by 75% in five years and by 90% in ten years



PEPFAR Vision 2025

Incidence-Mortality Ratio

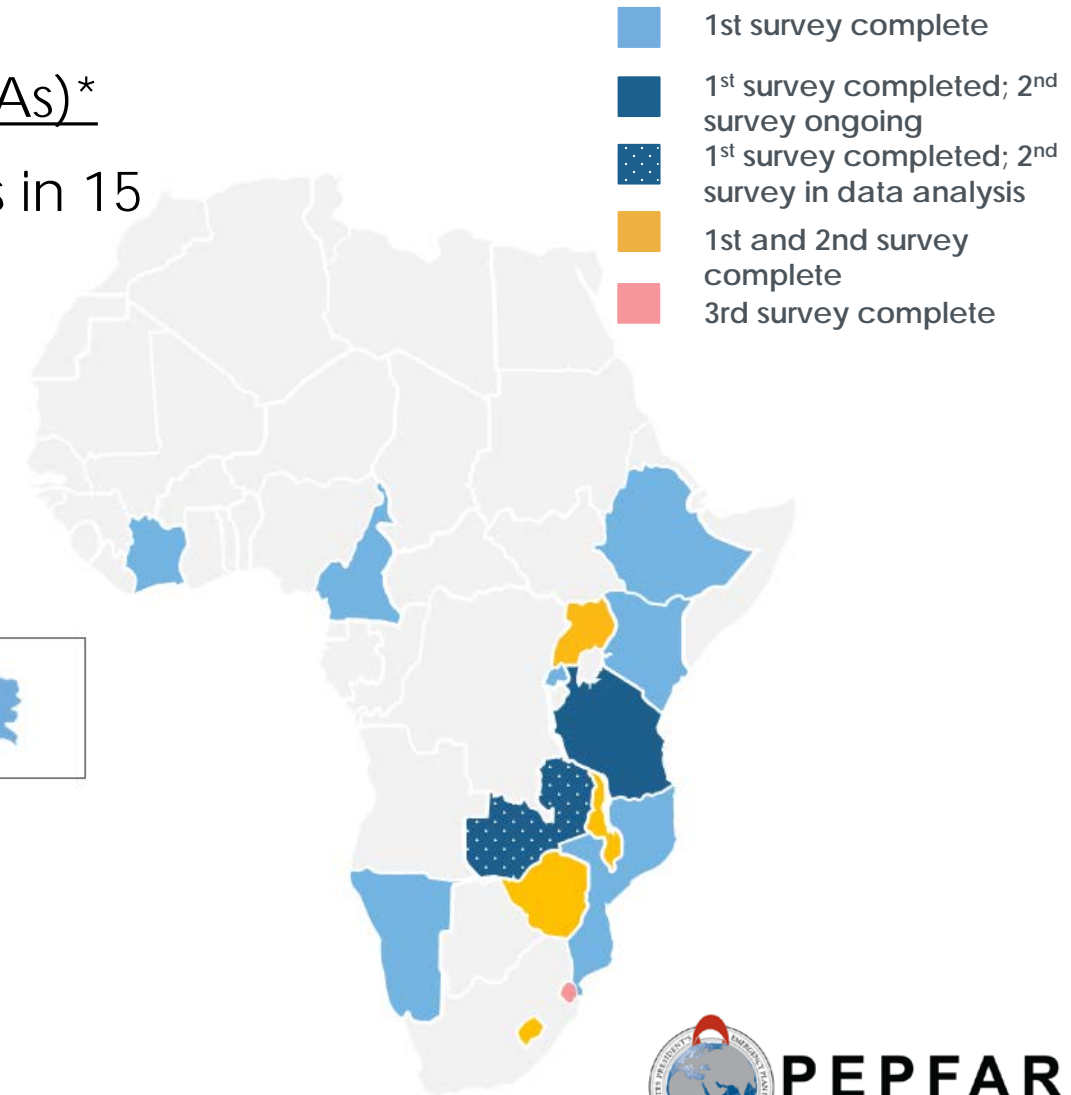
Total # new HIV infections **less than** total # deaths from all causes among HIV-positive individuals

Development of the Next PEPFAR Strategy: Vision 2025

PHIA Project: *Measuring Progress Toward Targets*

Population-based Impact Assessments (PHIAs)*

- Data collection completed for 21 surveys in 15 countries (22nd survey ongoing)
- 20 summary sheets released
- 16 final reports released
- Public datasets available for 13 surveys



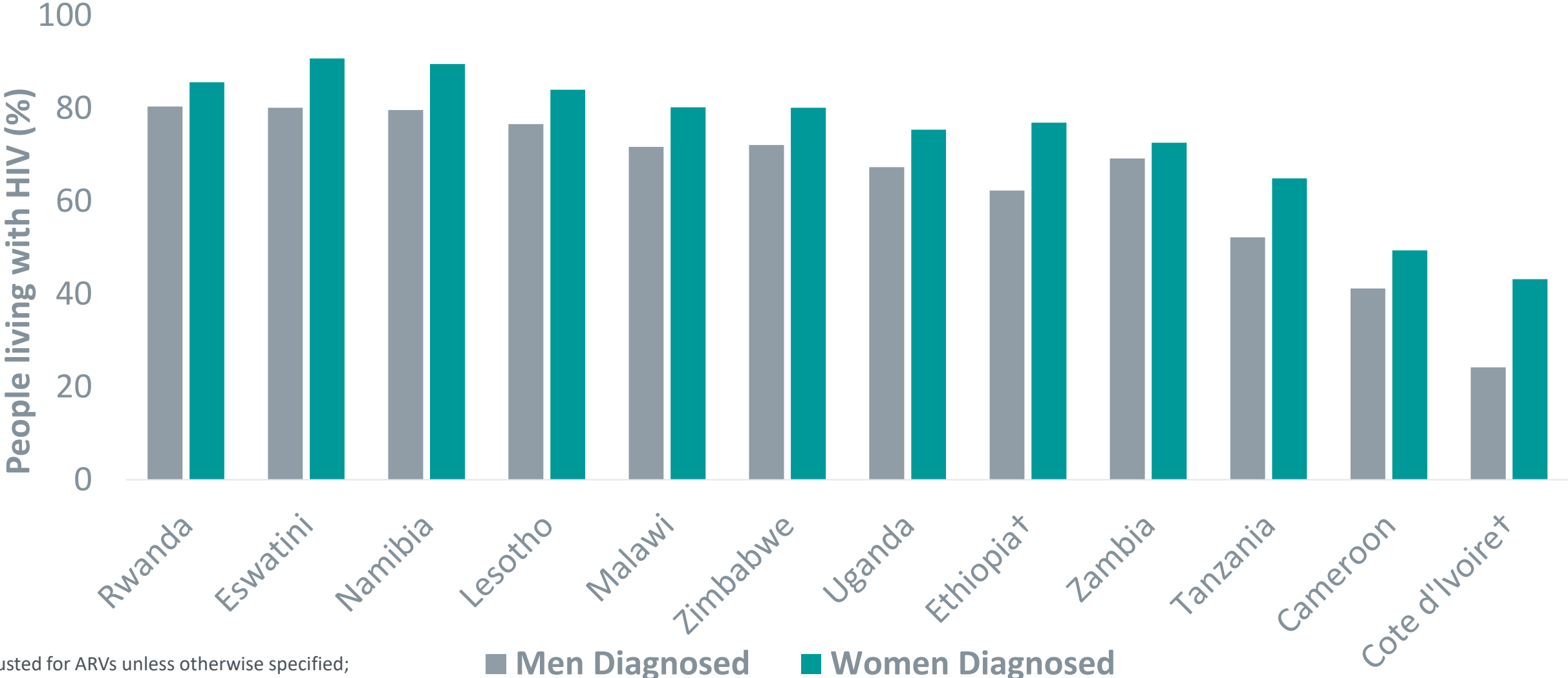
phia.icap.columbia.edu



*Including releases from World AIDS Day 2022

Progress toward targets

Men Lag Behind Women in Awareness of HIV+ Diagnosis

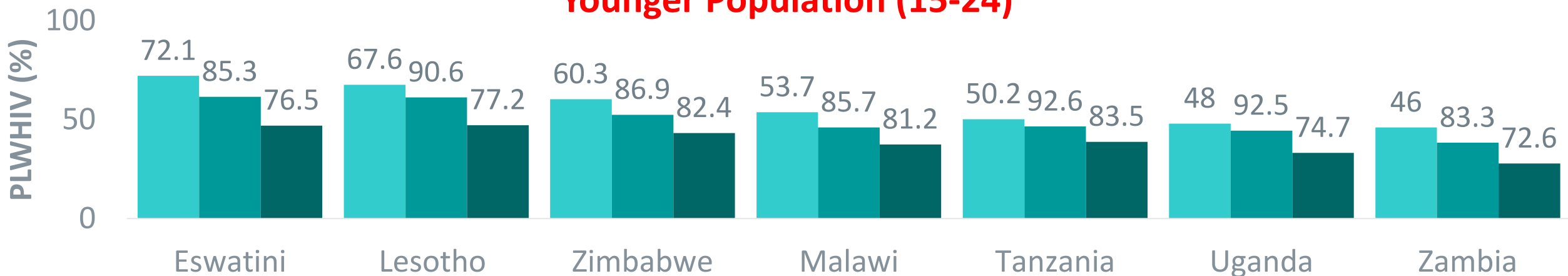


*adjusted for ARVs unless otherwise specified;
†not adjusted for ARVs

Progress toward targets

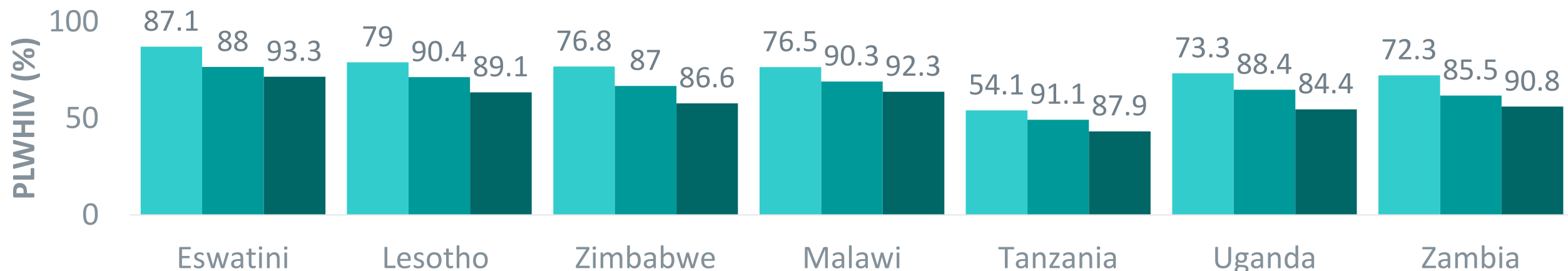
HIV Care Cascade, Younger vs. Older Populations

Younger Population (15-24)



■ Diagnosed ■ On treatment ■ Virally suppressed

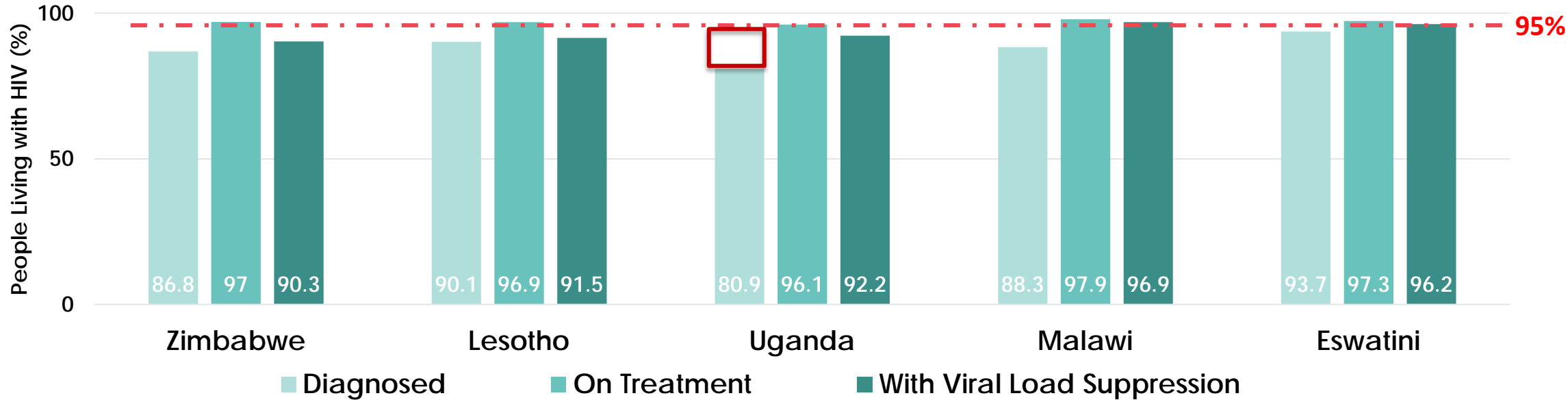
Older Population (25+)



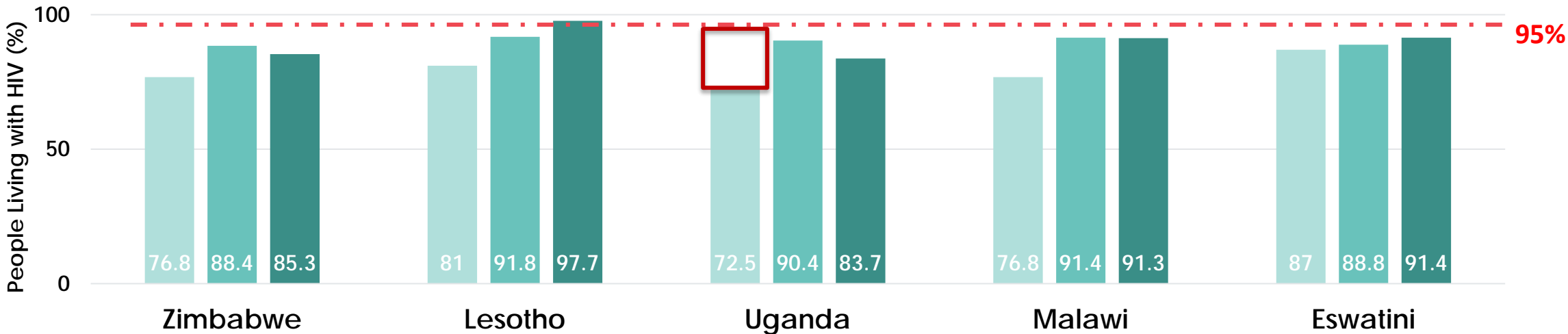
*Adjusted for ARVs unless otherwise specified; †Not adjusted for ARVs;
Column labels indicate conditional proportions; Column heights indicate unconditional proportions

PHIA 2

PHIA2 vs PHIA1 UNAIDS 95-95-95*: First 95 remains a gap (Knowledge of HIV-Positive Status)

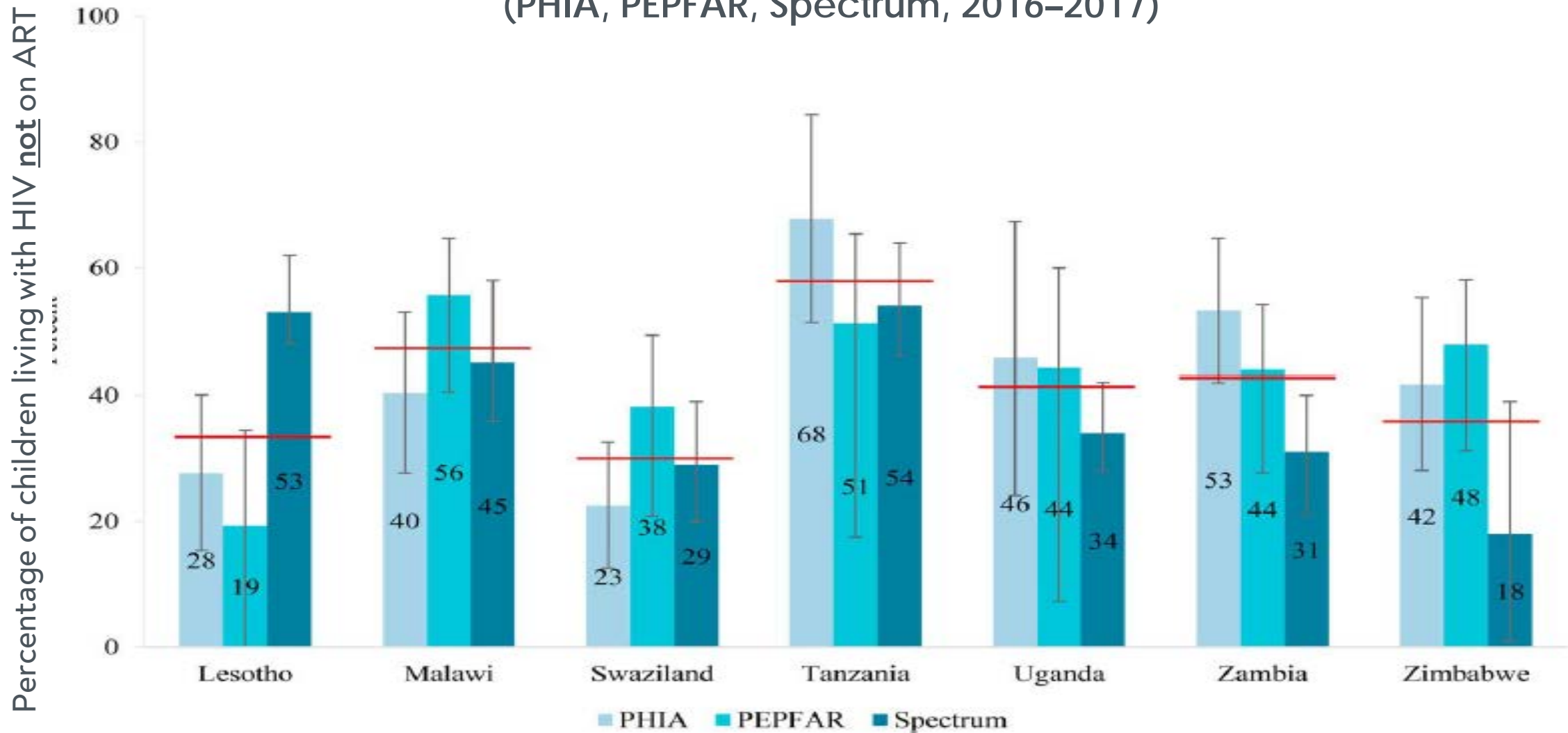


PHIA 1



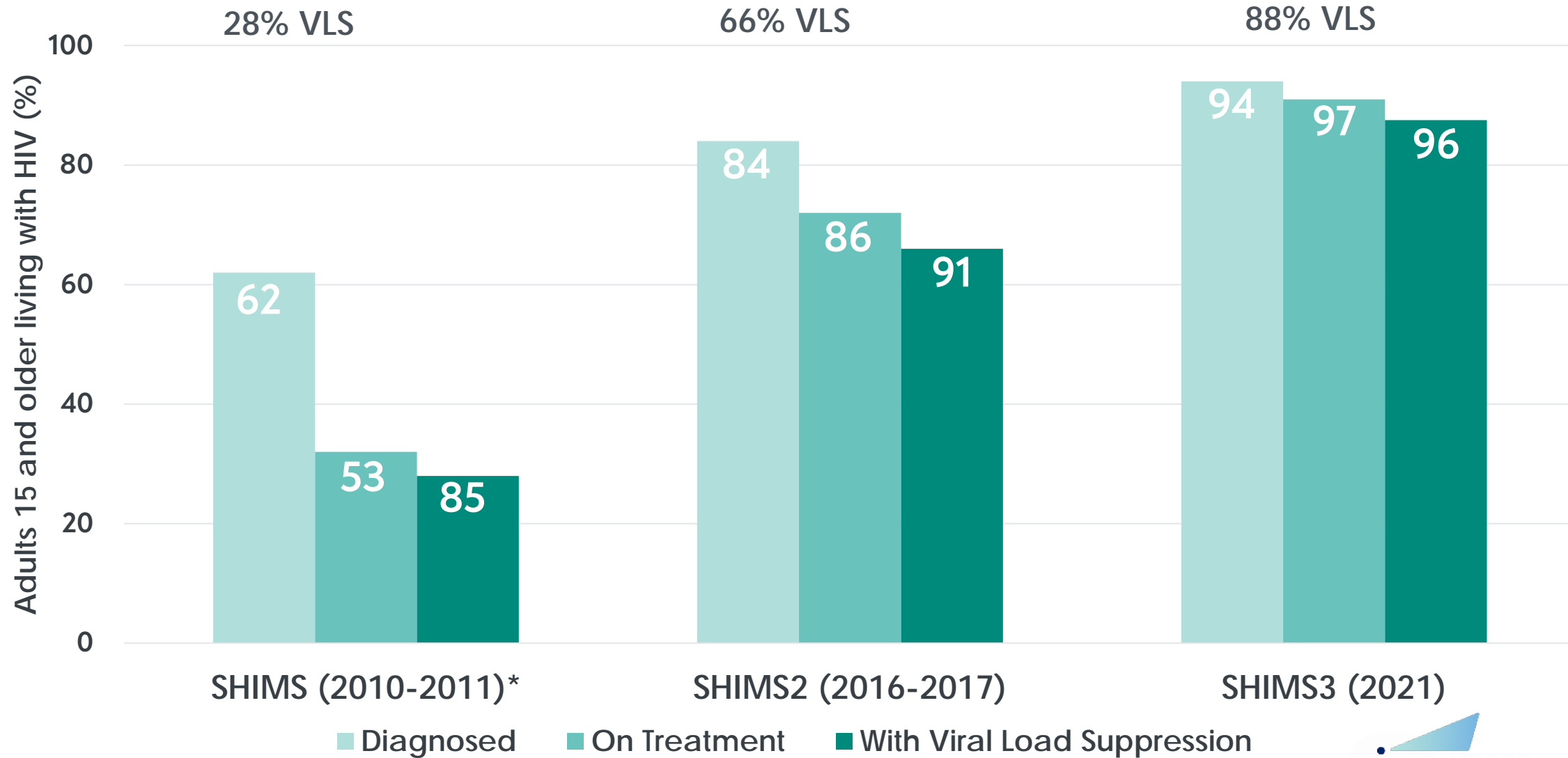
Gaps in Pediatric Progress

48% of children (0–14 years) living with HIV in 7 countries were not on ART (PHIA, PEPFAR, Spectrum, 2016–2017)



— Average treatment coverage gap across PHIA, PEPFAR and Spectrum estimates

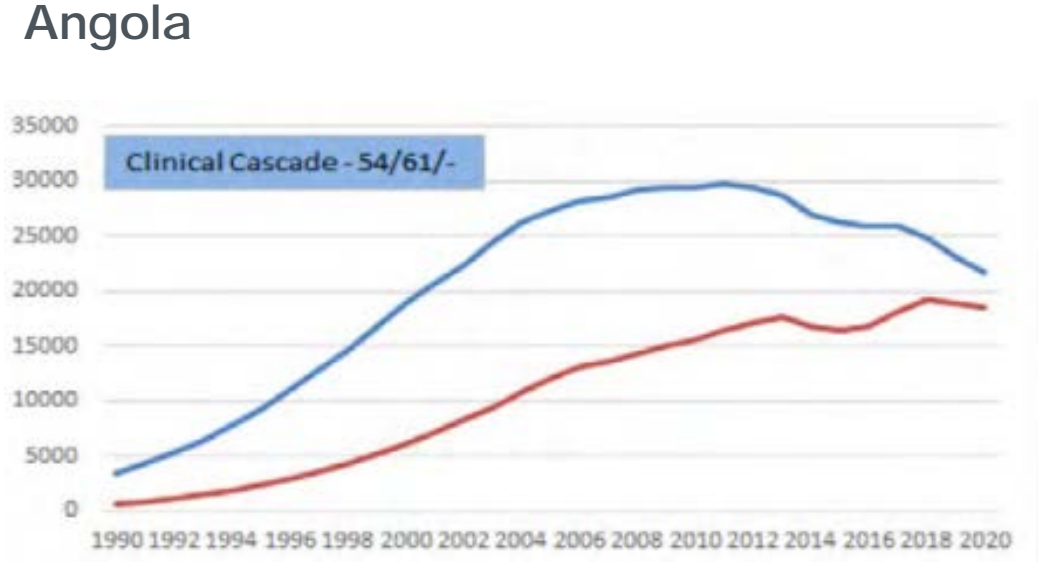
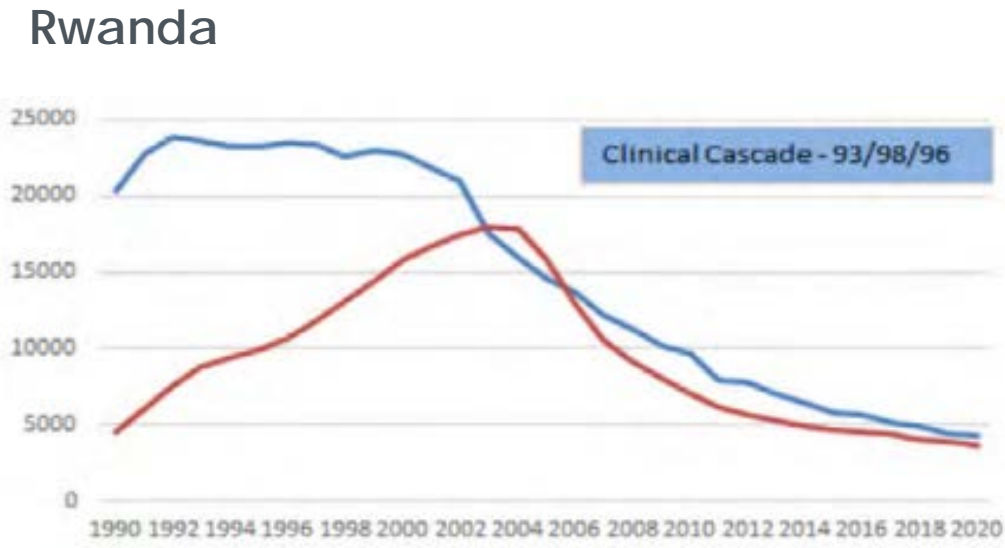
Progress Toward Targets: HIV Care Cascade, 2011 to 2021, Eswatini



*SHIMS 2010 included adults 18-49 y; SHIMS2 and SHIMS 3 included adults 15 y and older

Epidemic Trajectory Examples: *Incidence-Mortality Ratio*

Changes in New Infections and All-Cause Mortality in Adults (15+) in Select PEPFAR-Supported Countries



 New HIV Infections

 Total Deaths to HIV Population

Source: PEPFAR 2022 Annual Report to Congress

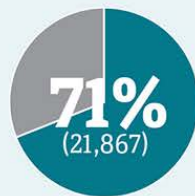


Ending the HIV Epidemic (EHE) in the US

2019 initiative: Diagnose, Treat, Prevent, and Respond

Using the *percentage reduction approach*, the initiative calls for a **75% decrease** in new HIV diagnoses in 5 years and a **90% decrease** in 10 years

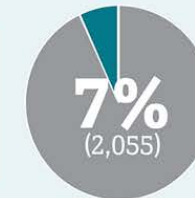
There were **30,635 new HIV diagnoses*** in the US and dependent areas in 2020. Of those:



were among gay, bisexual, and other men who reported male-to-male sexual contact[†]



were among people who reported heterosexual contact



were among people who inject drugs

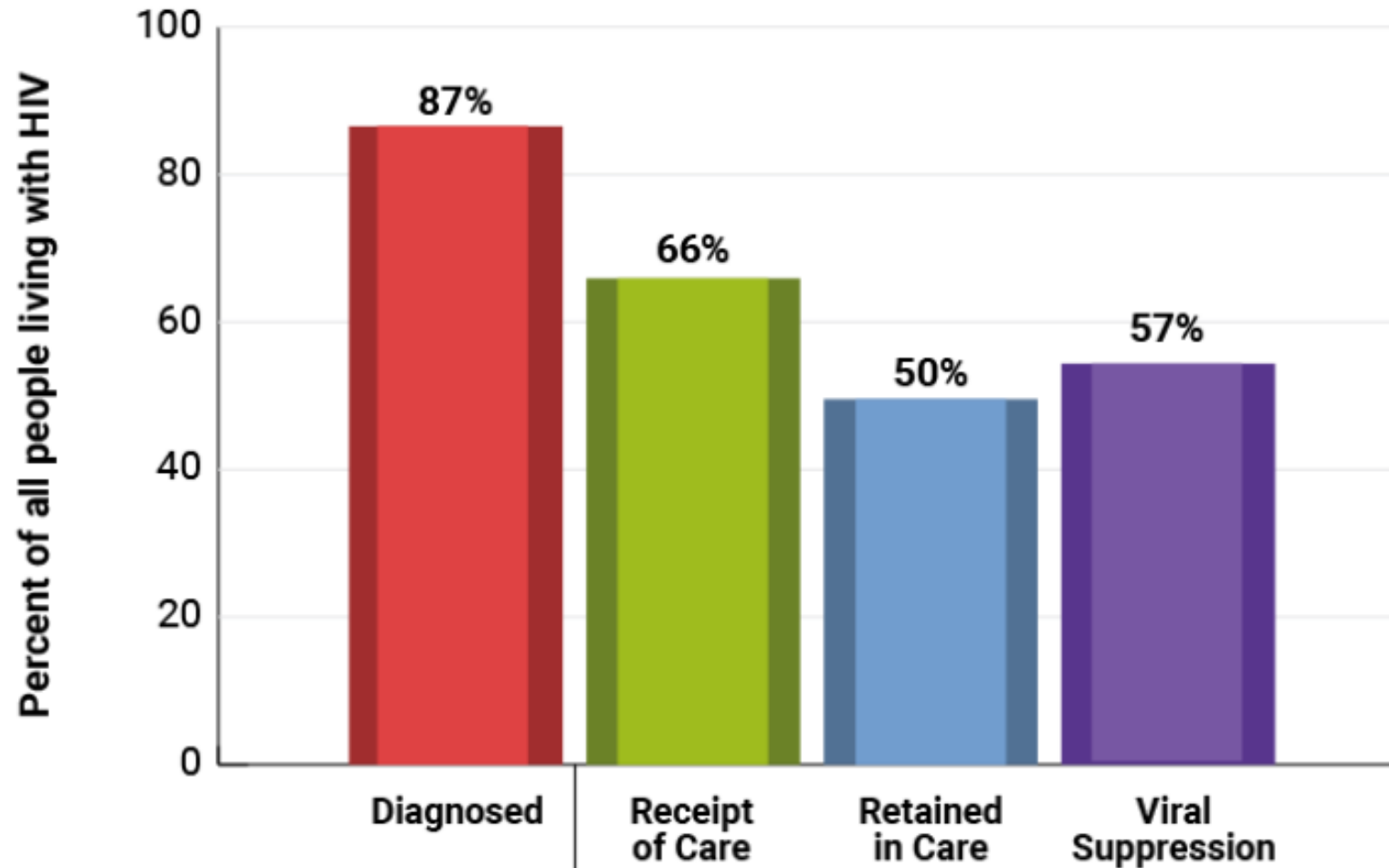
Data for 2020 should be interpreted with caution due to the impact of the COVID-19 pandemic on access to HIV testing, care-related services, and case surveillance activities in state and local jurisdictions.

*Among people aged 13 and older.

[†]Includes infections attributed to male-to-male sexual contact and injection drug use (men who reported both risk factors).



HIV Epidemic Control in USA, 2019 *Progress toward targets*

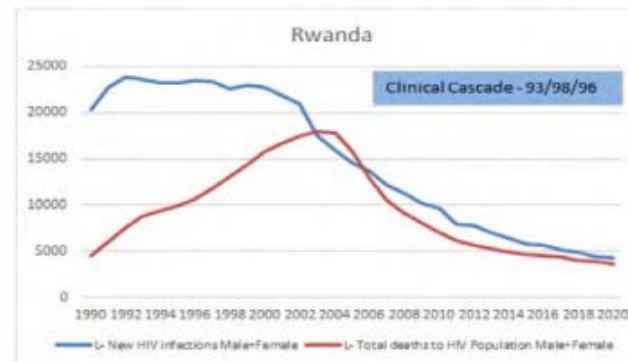
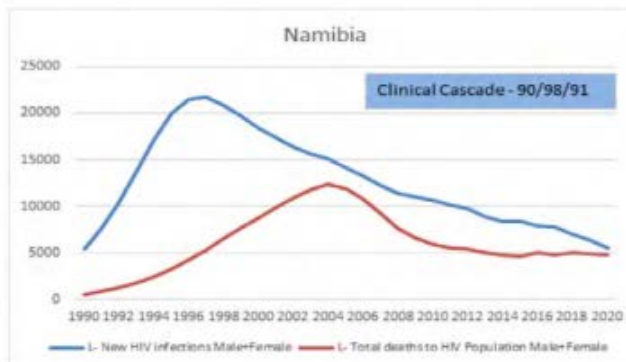
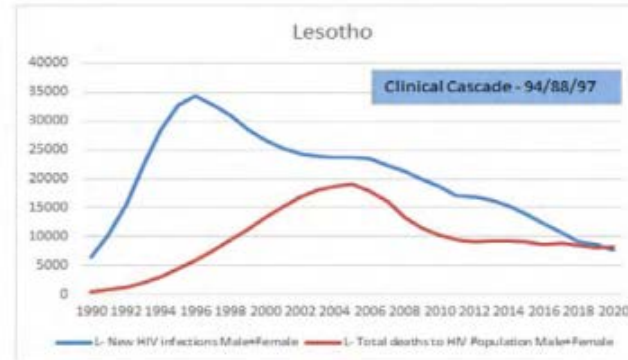
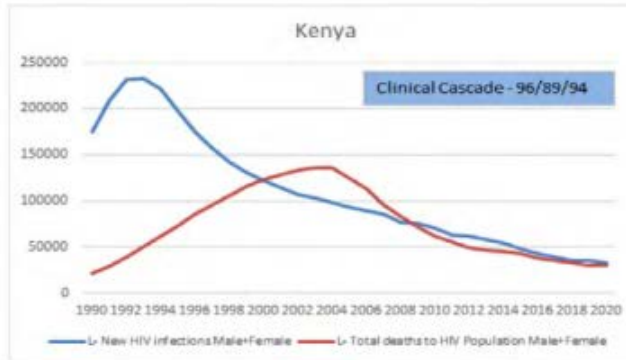
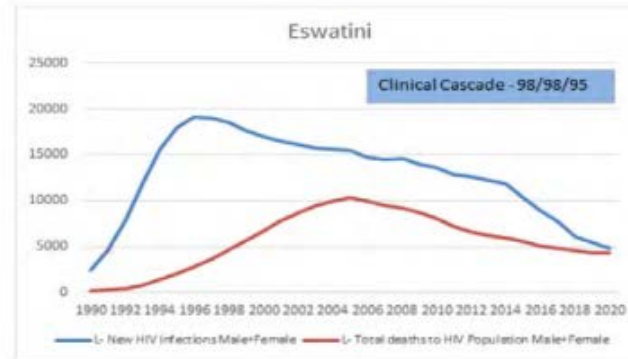
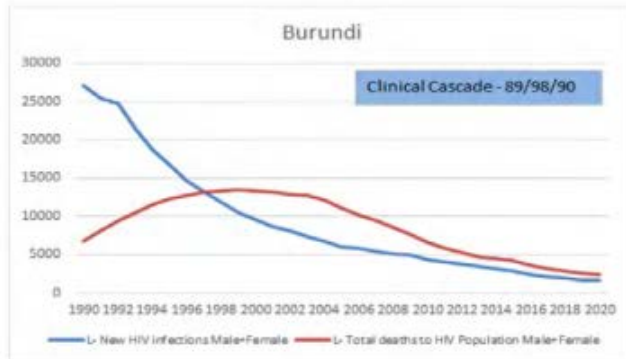


Linked to Care:



of persons with diagnosed HIV infection were linked to care within 1 month of diagnosis

Preparing for the Future



Garnett GP. *Journal of the International AIDS Society* 2021, 24(53):e25727
<http://onlinelibrary.wiley.com/doi/10.1002/jia2.25727/full> | <https://doi.org/10.1002/jia2.25727>



COMMENTARY

Reductions in HIV incidence are likely to increase the importance of key population programmes for HIV control in sub-Saharan Africa

Geoff P Garnett

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In 2021, key populations (MSM, PWID, and TGW) and their sexual partners accounted for 70% of HIV infections globally:

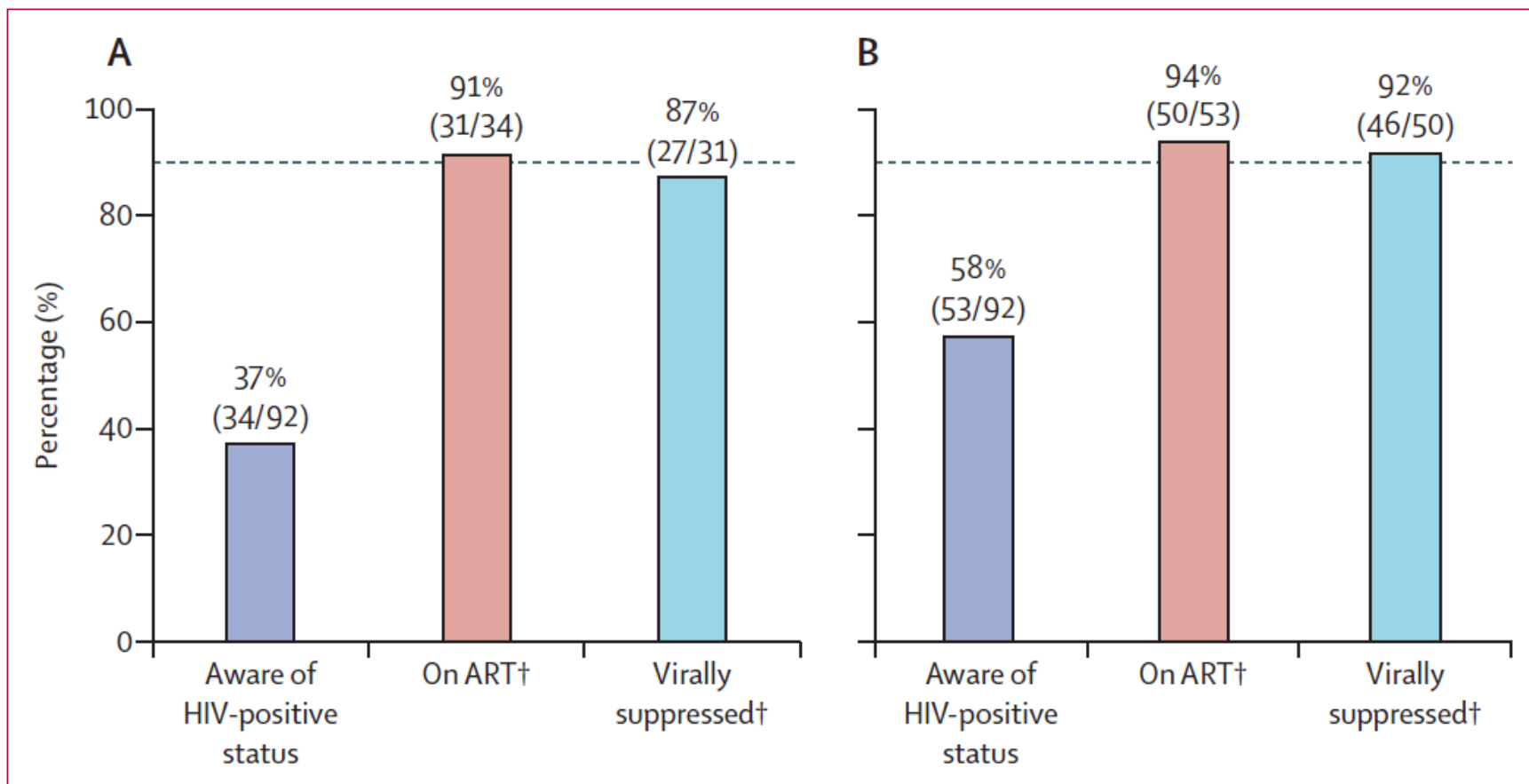
- 94% of new HIV infections outside of sub-Saharan Africa.
- 51% of new HIV infections in sub-Saharan Africa.

HIV Care Cascade Among Transgender Women and Gender Queer Individuals Biobehavioral Survey Using Respondent-driven Sampling, Zimbabwe, 2019

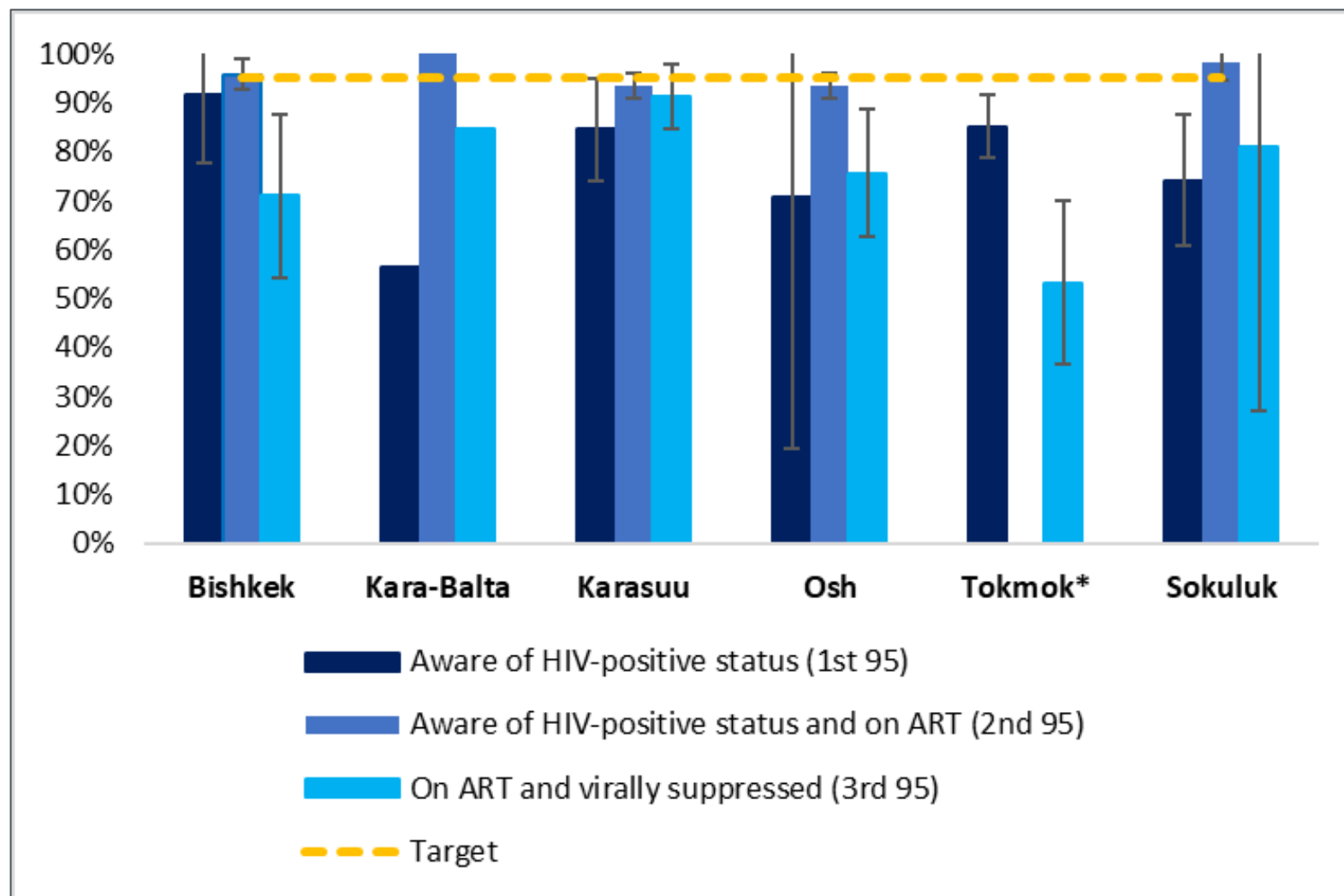
Progress towards 90–90–90 targets

(A) self-reported HIV and ART status

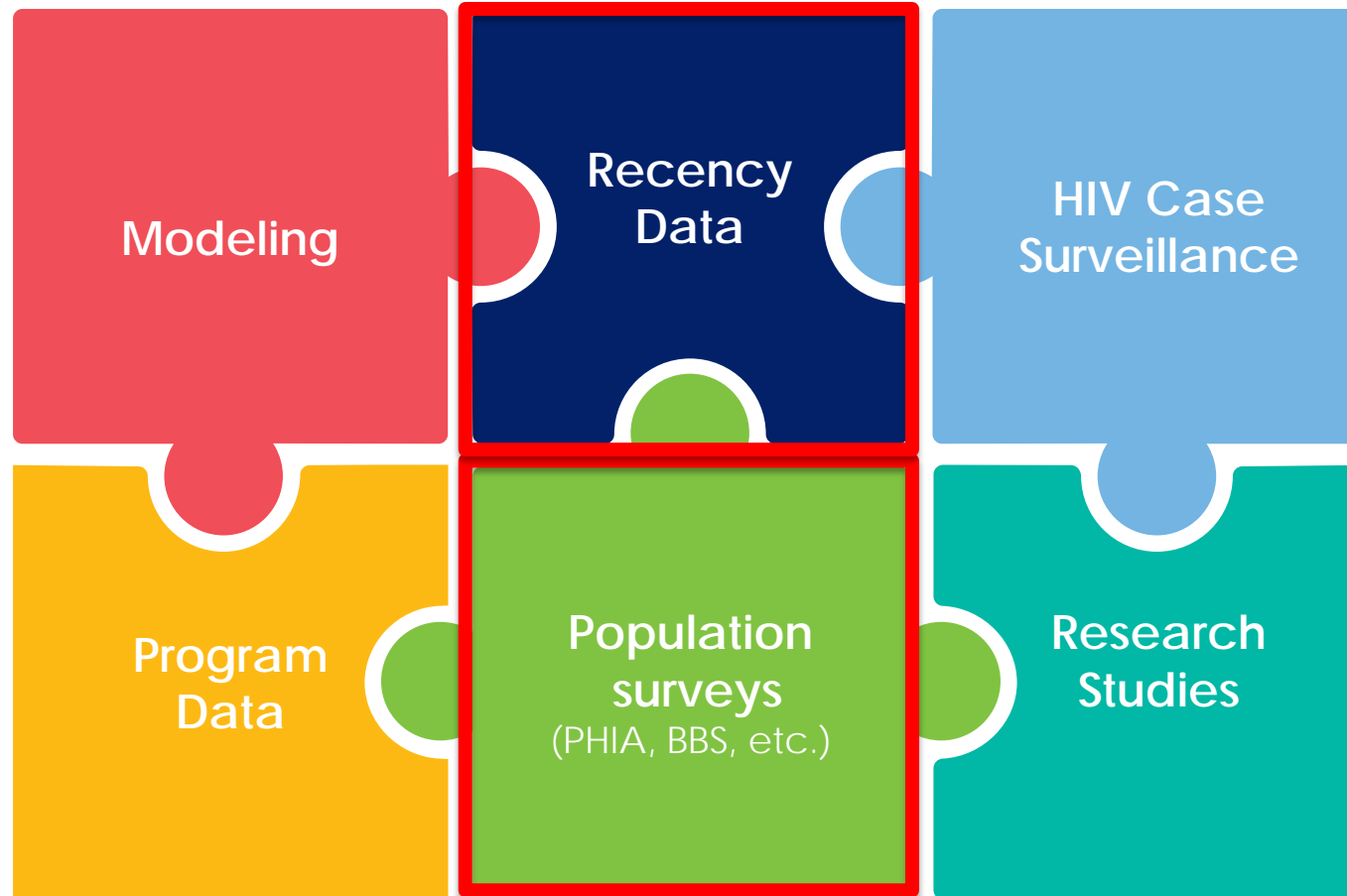
(B) after viral load recategorization*



HIV Prevalence and Care Cascade Among People Who Inject Drugs, Biobehavioral Survey, Kyrgyz Republic, 2021 (N=985)

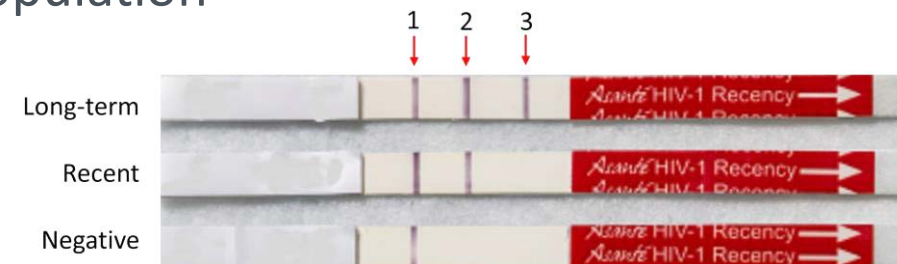


Finding the Gaps in Epidemic Control



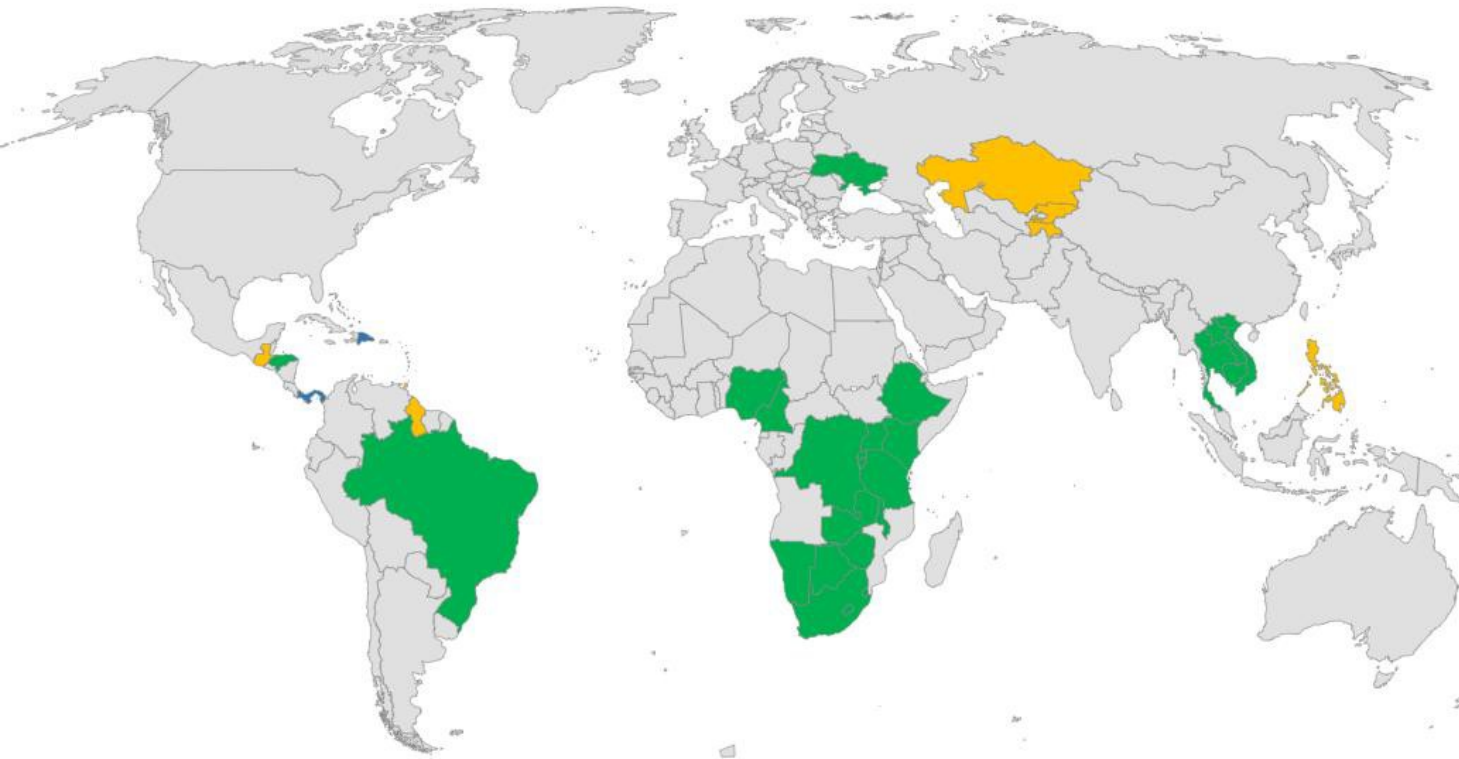
HIV Surveillance: What Is Recency Testing?

- Innovations in HIV antibody testing used for PLWH who are newly diagnosed
 - New diagnosis \neq new infection
 - Recency tests help differentiate between recent (past 12 mo) and long-term infection
 - Rapid Test for Recent Infection (RTRI)
 - Recent Infection Testing Algorithm (RITA): RTRI recent **AND** HIV RNA >1000 c/mL
 - **Population level patterns and temporal trends help guide programs**
- Not useful for generating HIV incidence estimates (denominator not representative)
- Recency testing will not identify all recent infections
 - Variability in Ab response and maturation in a population
 - Variability, however, is random



33 countries have recent infection surveillance

■ Implementing ■ Training ■ Preparing



TRACE: Tracking with Recency Assays to Control the Epidemic (2018)

EHRIS: Eswatini HIV Recent Infection Surveillance (2019)

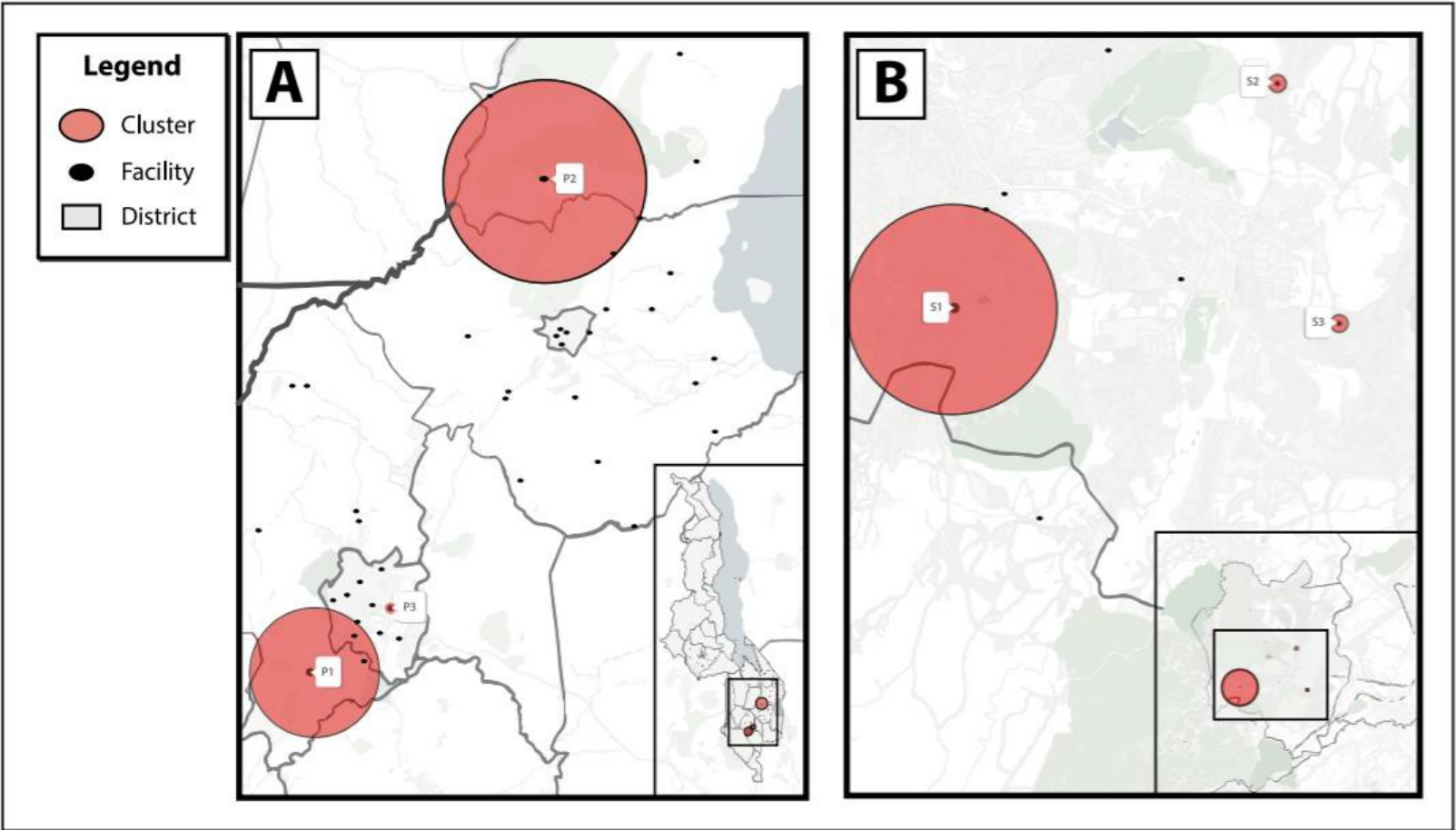
What is the global status of PEPFAR recent infection surveillance programs?

11% of 1.8 million adults (15+) with a new HIV diagnosis in PEPFAR programs received RTRI testing (Jan-Dec 2021)

~ **2-4%** of newly diagnosed with complete RITA testing data had evidence of a recent infection

data.pepfar.gov

FIGURE. Geospatial transmission hotspots of recent HIV infection among health facilities implementing recent HIV infection surveillance in (A) five districts in Malawi and (B) Blantyre district, Malawi* — October 2019–March 2020



Response to Service Gaps in Geospatial Transmission Areas of Recent Infection: Malawi

Service gaps assessed in the 3 transmission areas in Malawi

→ condom distribution & enhanced testing

* The primary analysis (A) in five districts (Blantyre, Lilongwe, Machinga, Mangochi, and Zomba) in Malawi with a 20-km (12.4-mi) maximum cluster radius identified three HIV transmission hotspots (P1 = Blantyre, P2 = Machinga and Zomba, P3 = Blantyre [one facility]); a secondary analysis (B) focused on Blantyre district alone with a 5-km (3.1-mi) maximum cluster radius identified three additional HIV transmission hotspots (S1, S2, S3 = all Blantyre district).

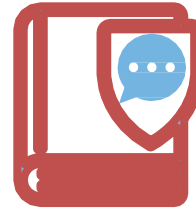
Event-driven PrEP for men;
Discreet packaging/new labels



All entry points
Flexible hours



PrEP
Communication
Strategy



2022: Examples of Additional PrEP Resources



PrEP training
included
recency
testers/HCWs



PrEP Ambassadors for
AGYW, KP, pregnant &
breastfeeding women

PrEP/Prevention Program

**~40 sites in Eswatini
with more recent
infections received
additional PrEP
resources**



PEPFAR Scientific Advisory Board – Recency Recommendations

https://www.state.gov/wp-content/uploads/2022/11/SAB-Recency-Testing-and-Prevention_Final.pdf

Examples of Key Questions from the SAB:

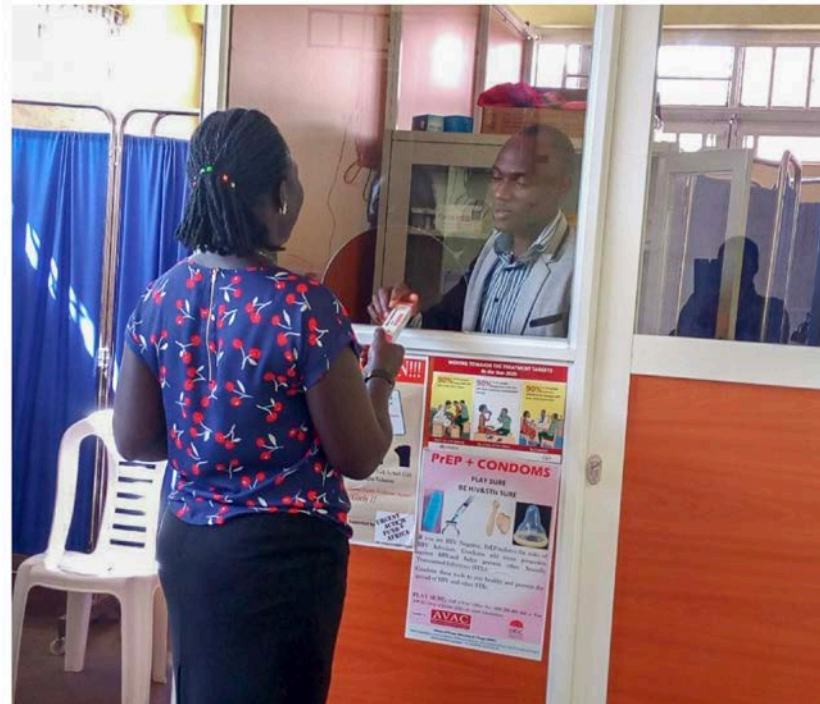
- Do current assays provide actionable public health response information not otherwise discernable?
- Do prevention interventions using recency data contribute to incidence reduction longitudinally? Is this seen among those not using recency testing?
- Is value seen in both high and low incidence settings?
- Is value seen in generalized epidemics or key-population epidemics or both?

Return of results: SAB recommends that PEPFAR “counsel against the return of results to the individual. “

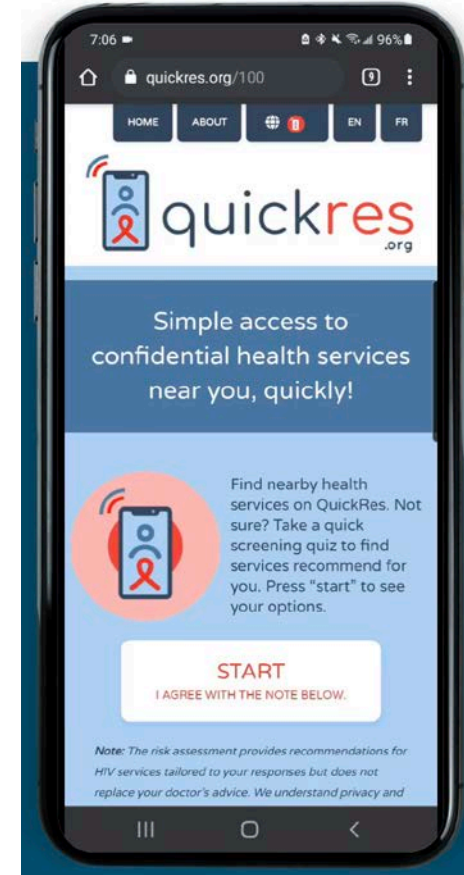
Surveillance: “The characterization of newly identified HIV infections as recent is likely be valuable for HIV surveillance, particularly in key population driven pandemics.”

What is Differentiated Service Delivery?





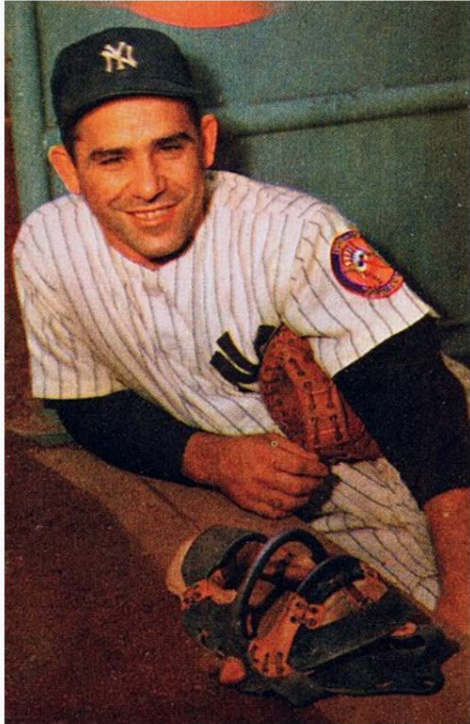
A drop-in centre operated by the Alliance of Women Advocating for Change in Uganda supplies sex workers with information, education and communication materials, condoms and lubricants. Photo: Alliance of Women Advocating for Change.





The NEW ENGLAND JOURNAL of MEDICINE

Perspective
DECEMBER 1, 2022



Berra with the New York Yankees in 1953

It Ain't Over Till It's Over . . . but It's Never Over — Emerging and Reemerging Infectious Diseases

Anthony S. Fauci, M.D.

**“Trying to
predicting the
future is a
discouraging and
hazardous
occupation.”**

-Arthur C. Clarke

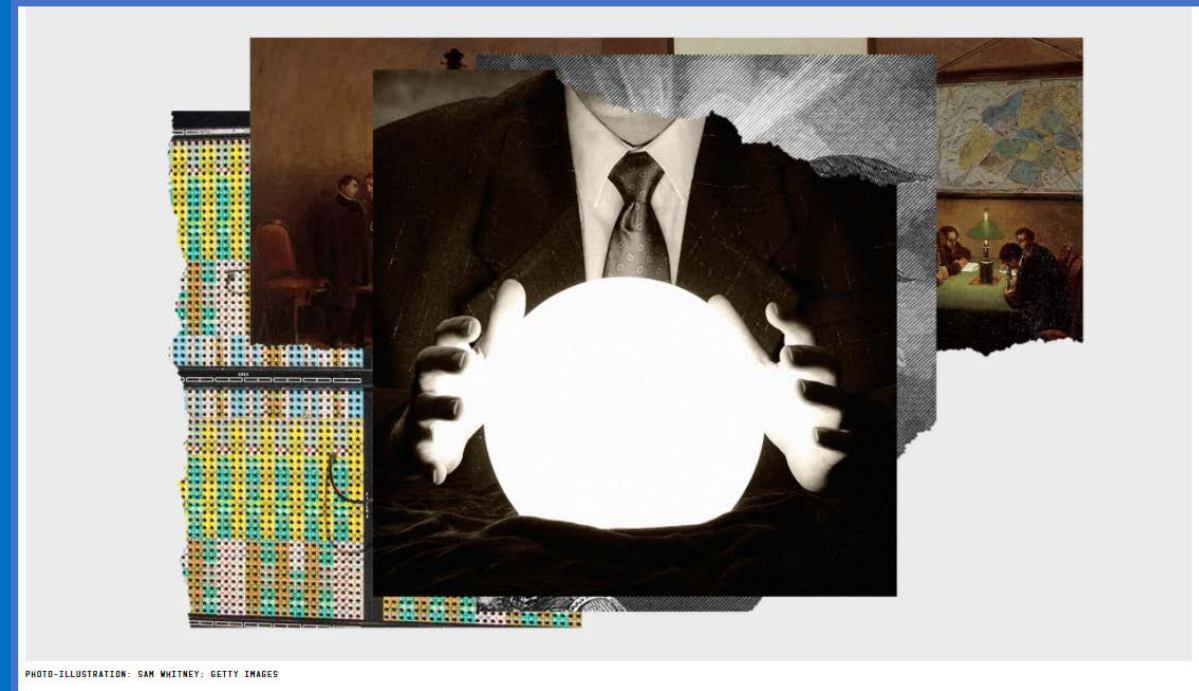


PHOTO-ILLUSTRATION: SAM WHITNEY; GETTY IMAGES

Thank you!

