Georgian Implementation Science Fogarty Training (GIFT) Program : Ilia State University and Yale University
Accelerating Impact: Immersive Summer Bootcamp in Implementation Science and Biostatistics

11 July, 2024

Expanding the HIV care cascade: Using implementation science to incorporate NCDs and related consequences

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Global Virus Network

Yale SCHOOL OF PUBLIC HEALTH

Outline: Global HIV-NCDs and I.S. research

1. **UNAIDS 2021 and 2022 estimates**
2. Treatment as Prevention (TasP): 95-95-95
   - Address the discrepancy between mortality and incidence
3. Implementing PMTCT and effective care for children living with HIV: Zambia, Nigeria, Mozambique
   - Address the relatively poor pediatric outcomes vs. adults
4. Scaling-up cervical cancer programs within HIV programs: Zambia and India
   - Higher risk among women living with HIV has been appreciated since 1989

Global estimates for adults and children

People living w/ HIV (2021)	**38.4 million**	[33.9 M.–43.8 M.]
(2022)	**39.0 million**	[33.1 M.–45.7 M.]
New HIV infections (2021)	**1.5 million**	[1.1 M.–2.0 M.]
(2022)	**1.3 million**	[1.0 M.–1.7 M.]
Deaths due to AIDS (2021)	**650 000**	[510 000–860 000]
(2022)	630 000	[480 000–880 000]

Joint United Nations Programme on HIV/AIDS
UNAIDS

Key populations

Globally, median HIV prevalence among the adult population (ages 15-49) was 0.7%.

Median prevalence high among key populations (2022 WHO/UNAIDS est.):

- 2.5% among sex workers
- 7.5%: men who have sex with men (MSM) & 10.3%: transgender persons
- 5.0% among people who inject drugs (PWID)
- 1.4% among people in prisons.

- Every week in 2022, 4000 adolescent girls and young women (AGWY) aged 15–24 years became infected with HIV, with 3100 (78%) in sub-Saharan Africa
  - Prevalence exceeds 40% among women of childbearing age near age 30 in parts of KwaZulu-Natal, South Africa
  - Yet only 42% of districts with high HIV incidence in sub-Saharan Africa had dedicated HIV prevention programs for AGYW in 2021.

World Health Organization

Joint United Nations Programme on HIV/AIDS
UNAIDS

Global estimates for children (<15 years)

Children living w/ HIV (2021) **1.7 million** [1.3 M. - 2.1 M.]

(2022) **1.5 million** [1.2 M. - 2.1 M.]

New HIV infections (2021) **160 000** [110 000–230 000]

(2022) **130 000** [90 000–210 000]

Deaths due to AIDS (2021) **98 000** [67 000–140 000]

(2022) **84 000** [56 000–120 000]

Joint United Nations Programme on HIV/AIDS
UNAIDS

Access to antiretroviral therapy 2023 report

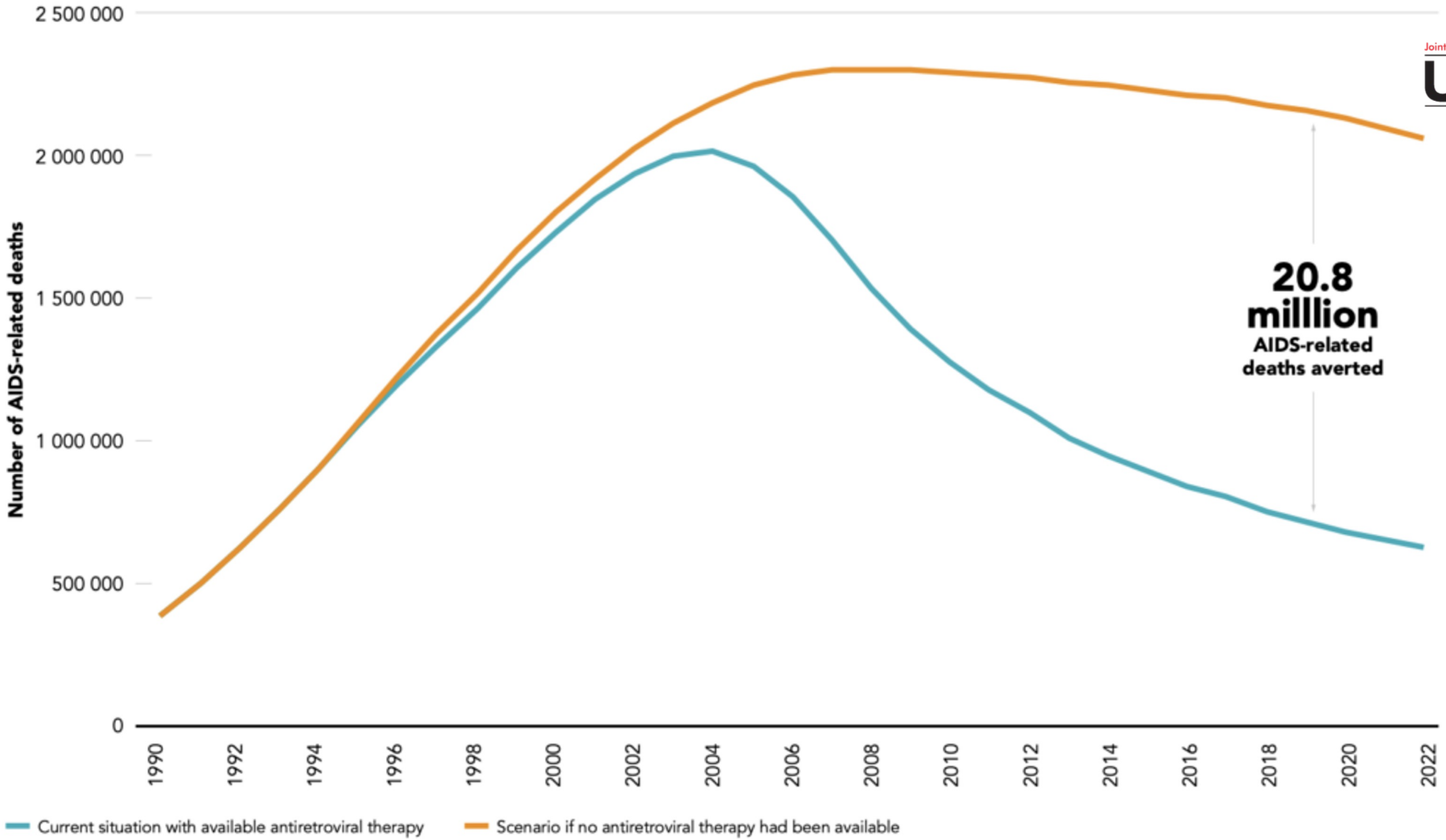
- 29.8 million of the 39 M. [33.1 M.–45.7 M.] people living with HIV globally are receiving treatment.
- An additional 1.6 million people received HIV treatment in each year: 2020, 2021 and 2022.
- Persons are living longer with HIV!

REF: *The Path That Ends AIDS: 2023 UNAIDS Global AIDS Update*

Joint United Nations Programme on HIV/AIDS
UNAIDS

HIV treatment averted almost 21 million AIDS-related deaths between 1996 and 2022

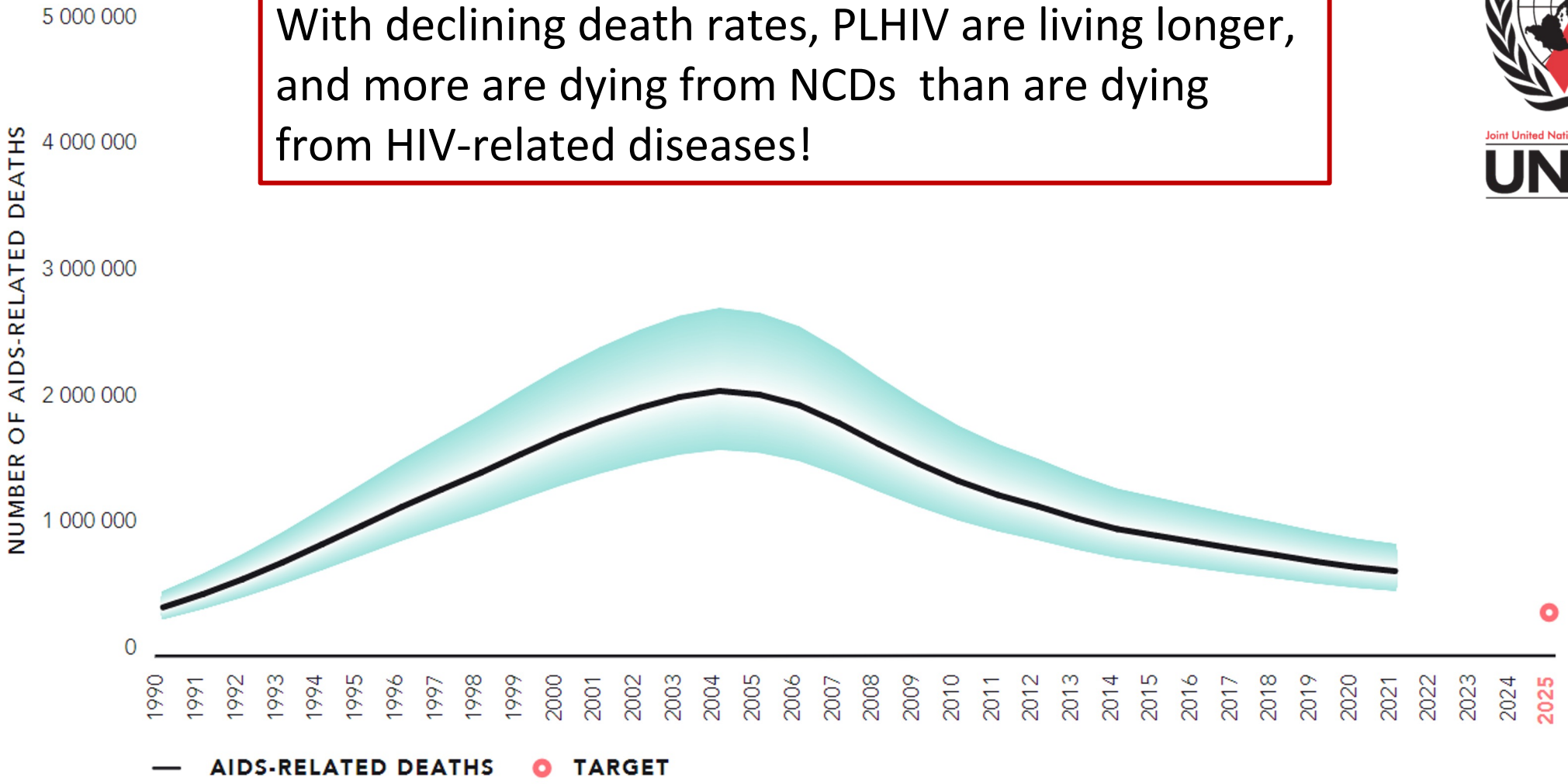
Figure 0.1 Number of AIDS-related deaths: current situation versus scenario without available antiretroviral therapy, 1990–2022



Joint United Nations Programme on HIV/AIDS
UNAIDS

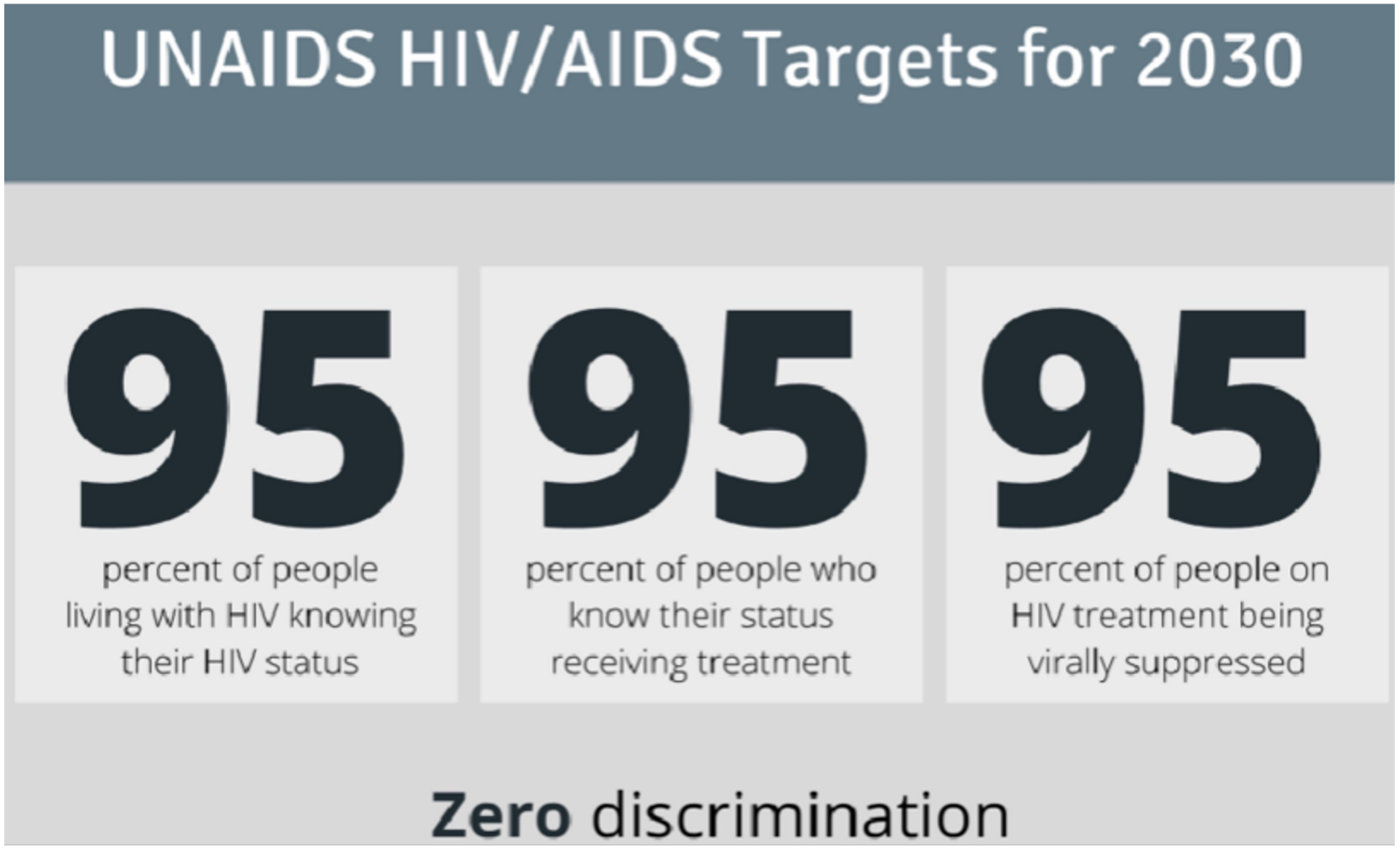
FIG. 1.02a. Number of AIDS-related deaths, global, 1990–2021, and 2025 target

With declining death rates, PLHIV are living longer, and more are dying from NCDs than are dying from HIV-related diseases!



Source: UNAIDS epidemiological estimates, 2022 (https://aidsinfo.unaids.org/).

2. HIV Treatment as Prevention



- Can we achieve high enough testing, linkage to care, and viral suppression to reduce community HIV transmission?
- TasP study in South Africa; HPTN 071 (PopART) in South Africa and Zambia

Global HIV epidemic and I.S. research

1. UNAIDS 2021 estimates
2. **Treatment as Prevention (TasP): 95-95-95**
   - **Address the discrepancy between mortality and incidence**
3. Implementing PMTCT and effective care for children living with HIV: Zambia, Nigeria, Mozambique
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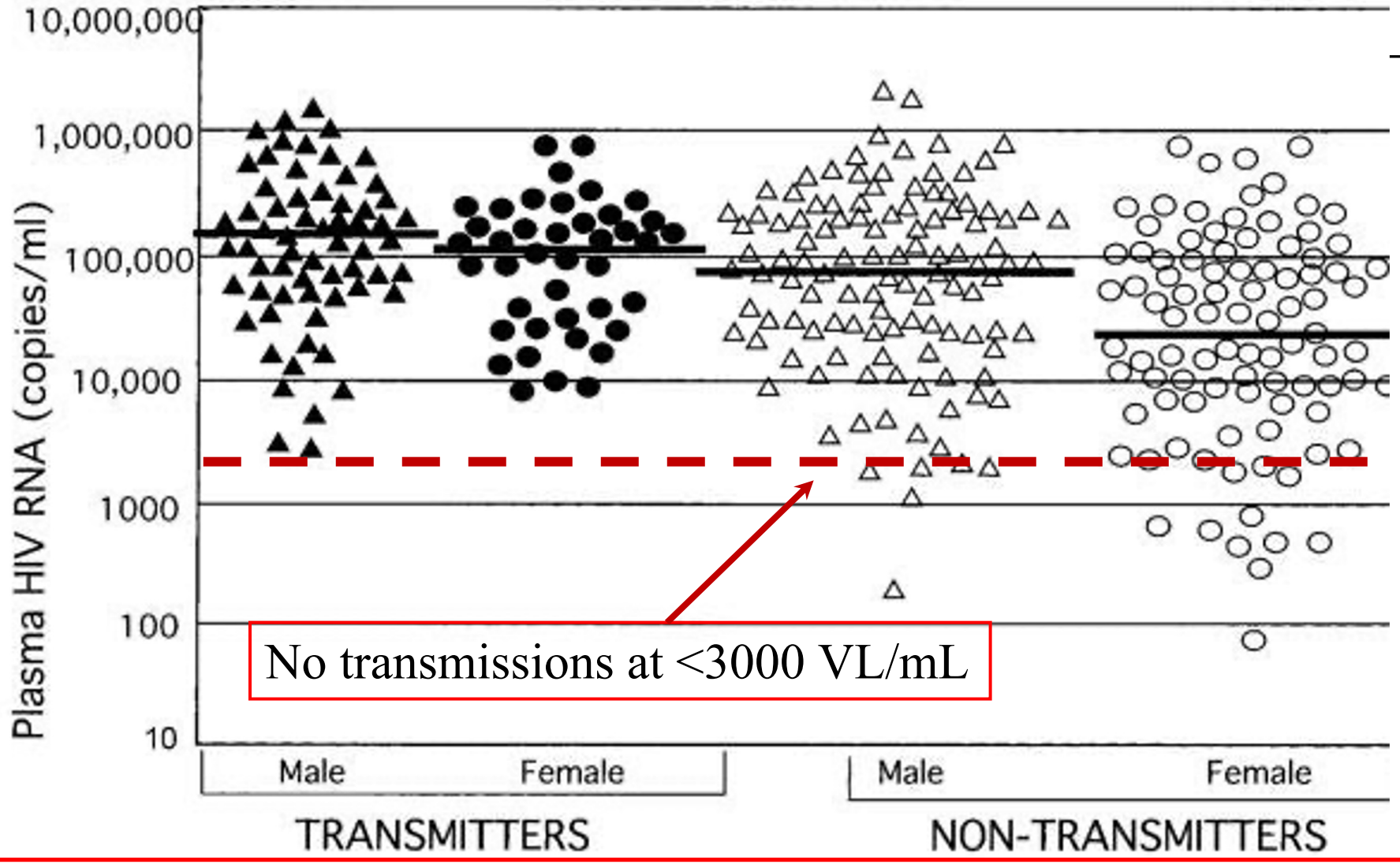
4. Scaling-up cervical cancer programs within HIV programs: Zambia and India
   - Higher risk appreciated since 1989

"Treatment as prevention" (TasP)?

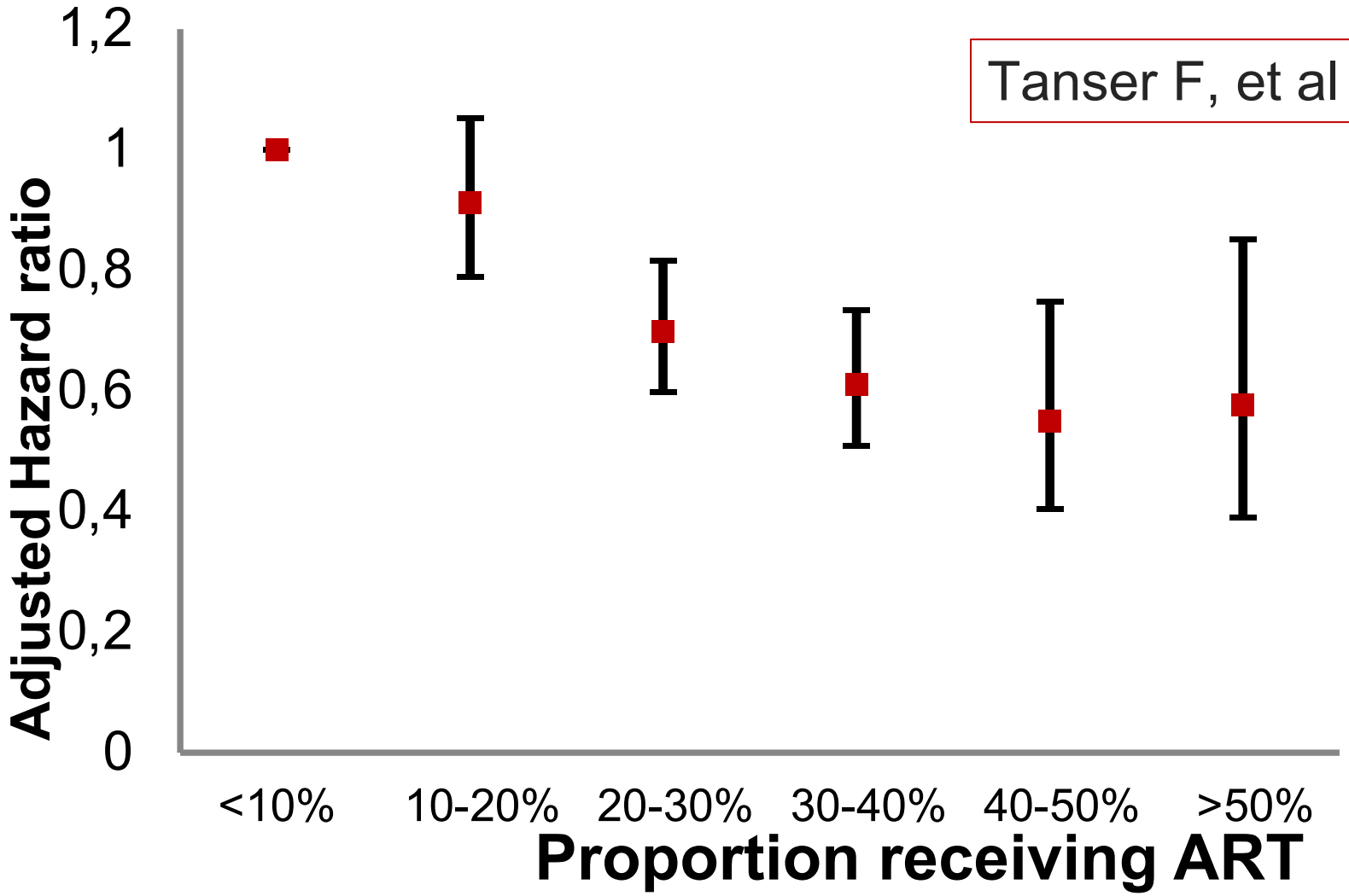
- Similar to the concept of prevention of mother to child transmission
  - treat one person to prevent transmission to another
- Lower VL in an infected partner correlates with far lower transmission to sexual partners
  - Observational: Quinn et al (*NEJM* 2000) and Fideli et al (*AIDS Res Hum Retrovir* 2001) ; TasP effect in South Africa (Tanser F, et al, Science 2013) and China (Jia Z, et al.,*Lancet* 2013)
  - Randomized controlled trial: HPTN 052 (Cohen et al, *NEJM* 2011 & 2016)

Zambian discordant couples (linked tx only)



REF: Fideli U, Allen S, Musonda R, *et al.* *AIDS Res Hum Retrovir* 2001;
Same result as Quinn TC, *et al.* *N Engl J Med* 2000 from Uganda.

Population-level impact of increasing ART coverage



Tanser F, et al *Science* **2013**

Science
AAAS

Observational TasP Effects Seen in China: Effectiveness in real-world settings

Infected partner not on ART: Incidence rate of 2.6 per 100 py in 14,805 couples

Infected partner on ART: Incidence rate of 1.3 per 100 py in 24,057 couples

HRadj = 0.74 (95%CI: 0.65–0.84), suggesting a 26% relative reduction in HIV transmission

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Study: Jia Z, et al. *Lancet* 2013;382:1195-203

Editorial: Vermund SH. *Lancet* 2013;382:1159-61

HPTN 052:
Stable Heterosexual Couples

Cohen MS, et al. *N Engl J Med* 2016

Phase 3 study

Americas, African, Asian sites

Stable, healthy, sexually active, serodiscordant couples

CD4 350-550 cells/mm^3

Status of Participants

Enrolled (1763 enrolled)

Remained in trial

2011 (n=1702)

2015 (n=1536)

Delayed ART
CD4 ≤250 cells/mm^3

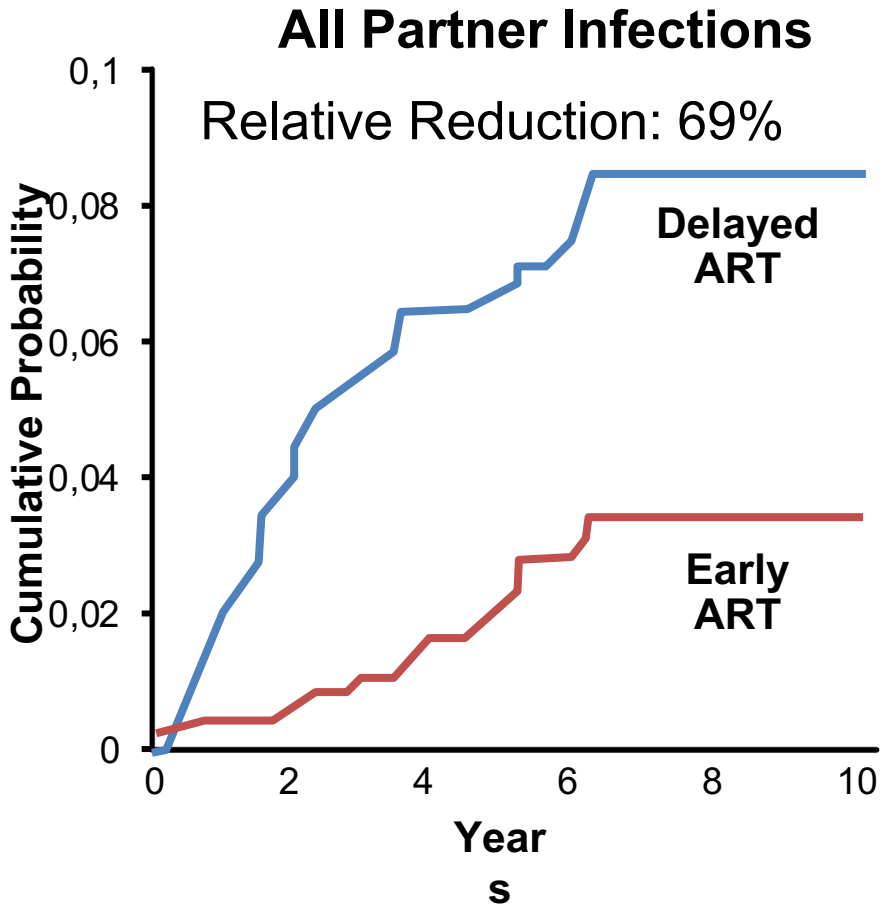
Similar baseline demographic characteristics and sexual history/behavior in both arms and between HIV-negative partner and HIV-positive, treatment naïve index patient

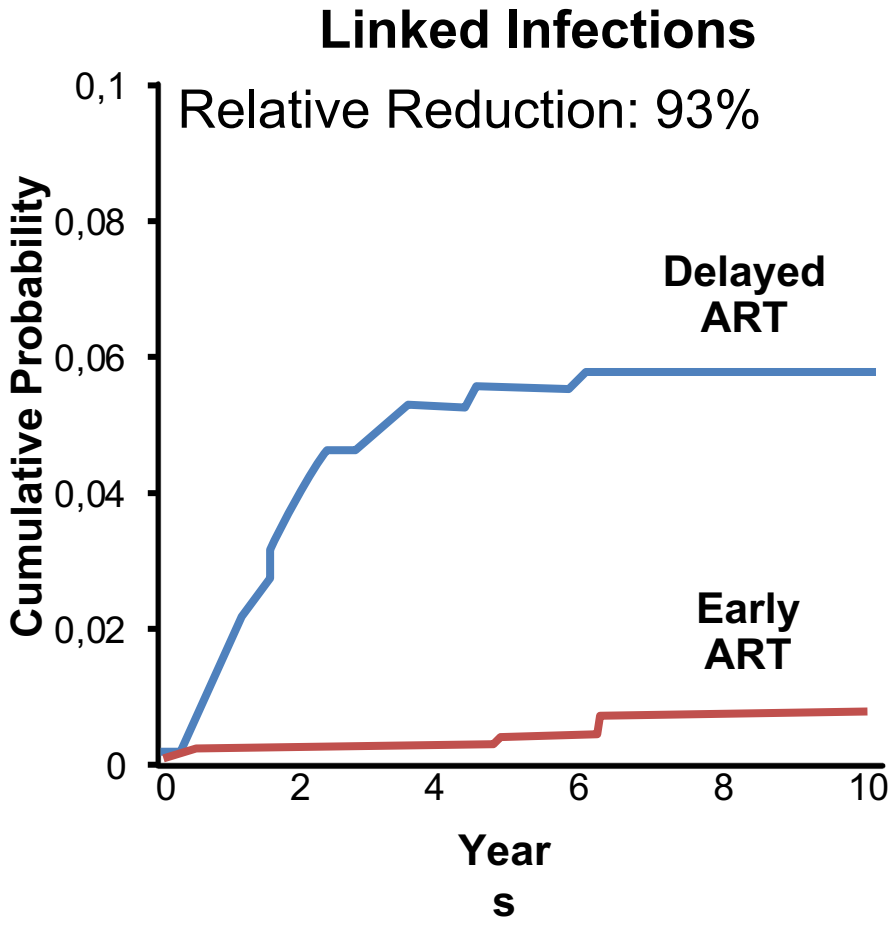
Early ART
CD4 350 to 550 cells/mm^3

Primary Transmission Endpoint

- Transmission
  - Virologically linked transmission events

HPTN 052: HIV Prevention in Stable Heterosexual Couples





*NO TRANSMISSION OCCURRED WHEN HIV+ PARTNER WAS VIROLOGICALLY SUPPRESSED

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Cohen MS, et al. *N Engl J Med.* 2016

The large I.S. studies with HIV endpoints

ANRS TasP
SEARCH
BCPP
HPTN 071 (PopART)

ANRS 12249 TasP

REVIEW

- Tanser F, et al. *Curr HIV/AIDS Rep* 2020;17(2):97-108

RESULTS

- Fiorentino M, et al. *AIDS Behav* 2021;25(4):1306-1322
- **Larmarange J, et al. *J Int AIDS Soc* 2018; 21 Suppl 4:e25128**
- Iwuji CC, et al. *Lancet HIV* 2018; 5(3):e116-e125.

- 80% life-time risk of acquiring HIV in KwaZulu-Natal

Trial procedures

Homestead identification
(GPS)

Homestead visit every 6 months

1. Head of household verbal consent
2. Registration of individuals

Homestead procedures

1. Household assets questions
2. Individual questionnaire
3. DBS sample, rapid HIV test
4. TasP card

TasP clinic

- One per cluster (45 min walk max)
- HIV care and treatment according to arm
- Study questionnaires

HIV +

HIV -

Referral to TasP clinics

Repeat HIV test 6 mths later

ANRS 12249 TasP: HIV incidence comparison

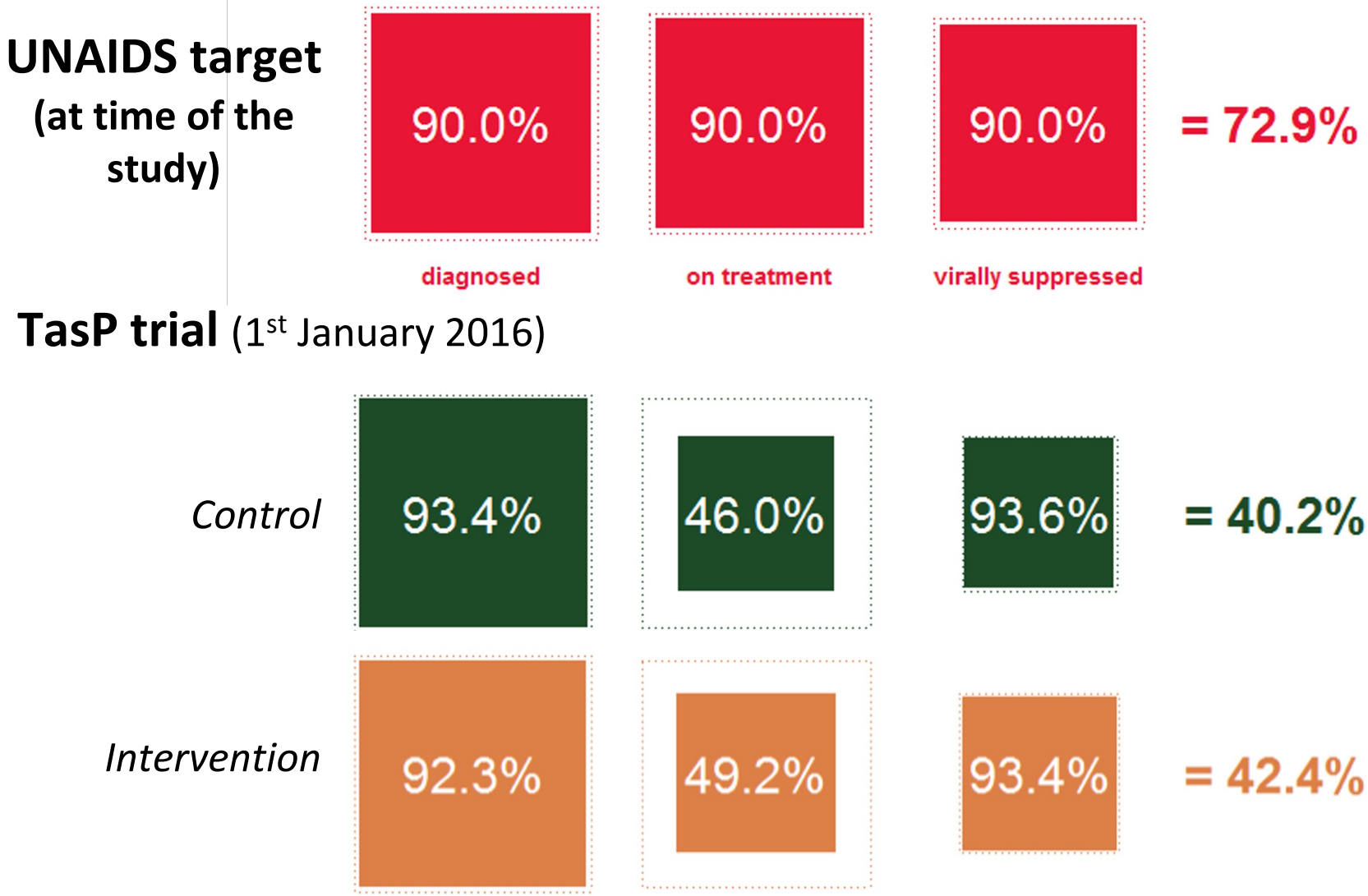
	# of HIV+ DBS tests	Person-years	Incidence for 100 PY	95% CI
Control	268	11,787	**2.27**	2.00-2.55
Intervention	227	10,646	**2.13**	1.85-2.41
TOTAL	495	22,434	2.21	2.01-2.40

Adjusted risk ratio*

	aRR	95% CI	P-value
Intervention vs control	0.95	0.79-1.14	0.58

** Estimated with Poisson regression, adjusted on sex, age, change in national ART guidelines, baseline cluster HIV prevalence and ART coverage*

ANRS 12249 TasP - Estimated cascade of care



SEARCH (Sustainable East Africa Research in Community Health)

SEARCH Hypothesis: HIV "test and treat" with universal ART using a multi-disease, patient- centered care model would reduce new HIV infections and improve community health compared to a country guideline approach

Study Design: Pair-matched, community randomized study of 32 rural communities

Study Population:Age ≥ 15 years

- Comprehensive baseline census with biometric identifier

32 communities, of up to 10,000 persons each ~150,395 person study

Havlir DV, et al. HIV Testing and Treatment with the Use of a Community Health Approach in Rural Africa. *N Engl J Med* 2019;381:219-229

Uganda West N=10; East N=10

Kenya N=12

Summary

SEARCH
SUSTAINABLE EAST AFRICA RESEARCH IN COMMUNITY HEALTH

Community health approach (patient- centered, multi-disease model) increased population-level HIV suppression from 42% to 79% (intervention)-compared to control (68%) at 3 years

Improved Community Health Reduced HIV incidence

- ↓ 21% HIV mortality
- ↓ 59% HIV/TB yr 3 annual incidence
- ↑ 26% HT control

- ↓ 32% Annual HIV incidence within arm
- ↔ Cumulative HIV incidence between arms*

Explanation? SEARCH intervention

*Explanation? Active control

Hypothesis: Community health approach with patient-centered, multi-disease model would reduce HIV and improve community health compared to SOC with baseline HIV testing

Intervention: Baseline + annual health fair, Universal ART, Streamlined HIV care

Control: Baseline health fair; ART by 2010,2013,2015 WHO guidelines

Impact of prevention and treatment interventions on population HIV incidence: Primary results of Botswana Combination Prevention Project (BCPP / Ya Tsie)

M.J. Makhema, K. Wirth, M. Pretorius Holme, et al, M. Essex, S. Lockman

Participating Institutions: Harvard T.H. Chan School of Public Health, Botswana-Harvard AIDS Institute Partnership (BHP), Centers for Disease Control and Prevention (CDC), Botswana Ministry of Health (MOH)

Funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the Office of the Global AIDS Coordinator (OGAC)

Sponsored through the U.S. Centers for Disease Control and Prevention (CDC)

Primary Results: HIV Incidence in the Intervention vs. Standard of Care Arms

57 participants in the intervention arm (annualized HIV incidence: 0.59%) and 90 in the standard of care arm (annualized HIV incidence: 0.92%) acquired HIV.

Analysis	Incidence Ratio	95% CI	2-sided p-value
Primary analysis (permutation test, pair-specific Cox PHM), unadjusted	0.69		0.09
Analysis to obtain 95% CI (standard pair-stratified Cox PHM), unadjusted	0.65	0.46-0.90	0.01
Primary analysis, adjusted*	0.62		0.04
Analysis to obtain 95% CI, adjusted*	**0.70**	**0.50-0.99**	**0.04**

* Covariates in adjusted analyses: sex, age, education, marital status, concurrent sexual partners, alcohol during last sex

Results of main analyses are consistent, and indicate at least 30% reduction in HIV incidence associated with the intervention

HPTN
HIV Prevention
Trials Network

PopART
HPTN 071

HPTN 071 (PopART) Study:

Population Effects of Antiretroviral Therapy to Reduce HIV Transmission (PopART)

REVIEWS

- Simwinga M, et al. Curr HIV/AIDS Rep 2016;13(4):194-201.

RESULTS

- Viljoen L, et al. Health Policy Plan 2021;36(6):881-890
- Thomas R, et al. Lancet Glob Health 2021;9(5):e668-80
- Floyd S,et al. PLoS Med 2020;17(4):e1003067
- **Hayes RJ, et al. N Engl J Med. 2019;381(3):207-218.**
- Cori A, et al. *PLoS One* 2014; 9(1):e84511

Original Trial Design

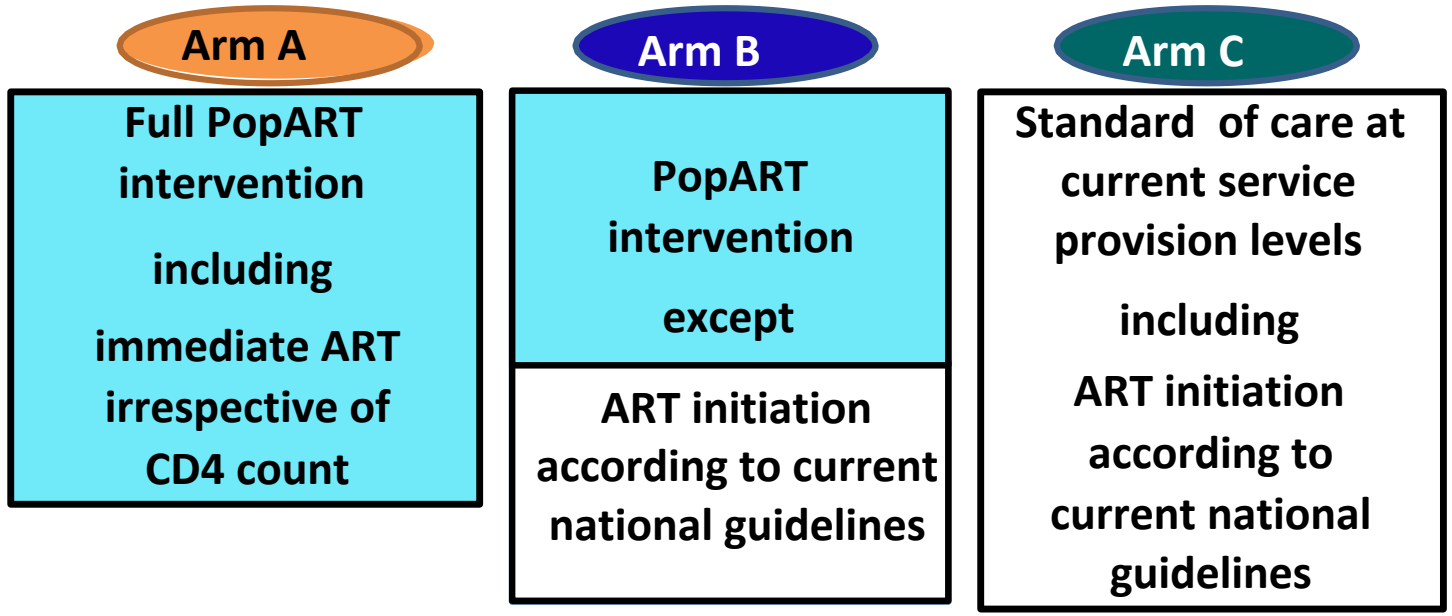
PopART intervention package

- Annual rounds of Home Based Voluntary HIV Testing by Community HIV-care Providers (CHiPs)
- Health promotion, Active Referral and/or Retention in Care support by CHiPs for the following:
  - Voluntary Medical Male Circumcision (VMMC)
  - Prevention of Mother to Child Transmission
  - HIV treatment and care for all PLHIV
  - Promotion of sexual health and TB services
  - Condom provision
- ART irrespective of CD4+ cell count or immune-status provided at the local health centre in Arm A

PopART
HPTN 071

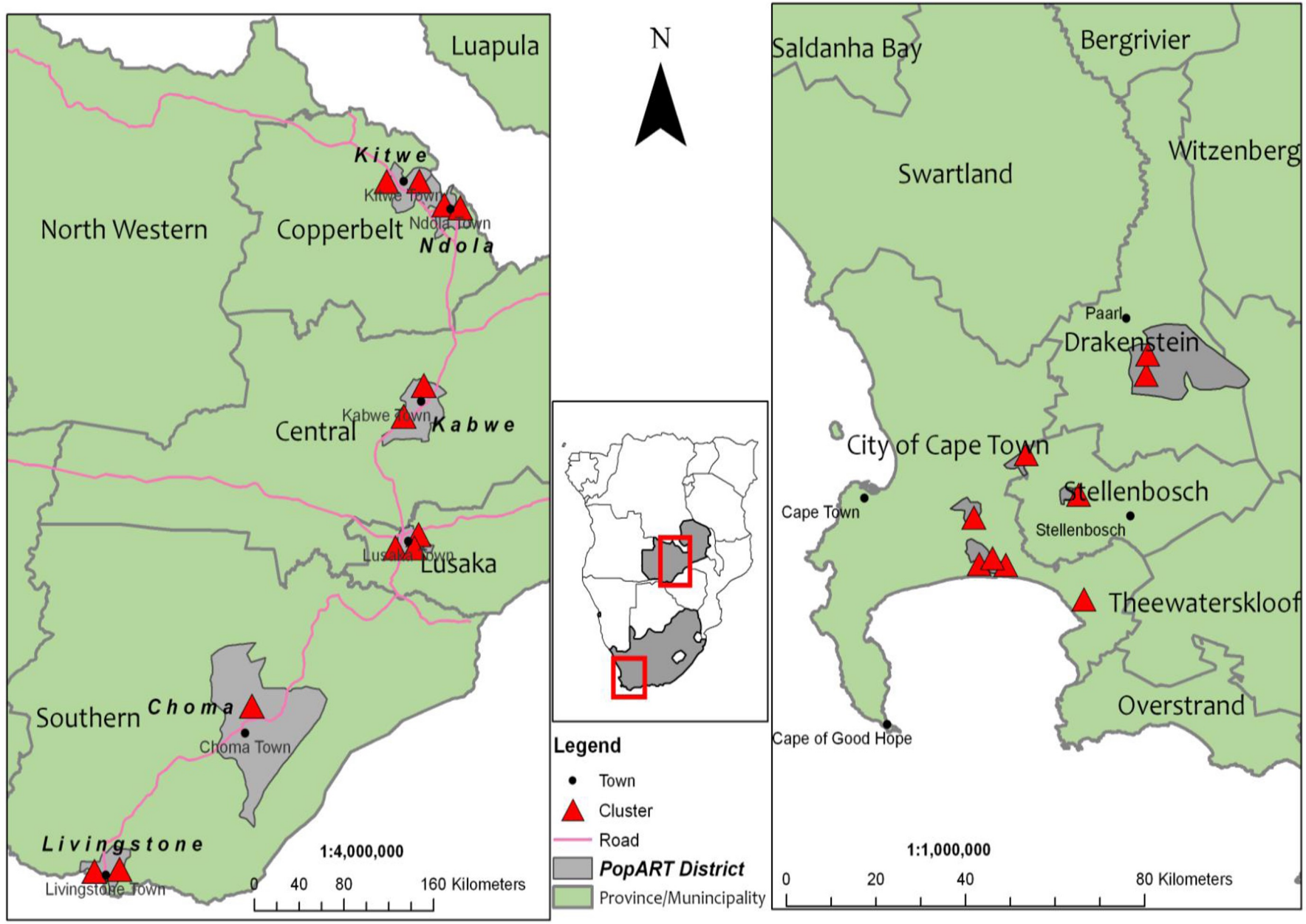
Study Design

~ 1 million population



2,500 random sample from each community (aged 18-44) *Population Cohort* (N=52,500)

Followed up annually for 36 months


Luapula
North Western
Copperbelt
Kitwe
Kitwe Town
Ndola Town
Ndola
Central
Kabwe Town
Kabwe
Lusaka Town
Lusaka
Southern
Choma
Choma Town
Livingstone
Livingstone Town
1:4,000,000
0 40 80 160 Kilometers
N
Legend
Town
Cluster
Road
PopART District
Province/Municipality
Saldanha Bay
Bergrivier
Swartland
Witzenberg
Paarl
Drakenstein
City of Cape Town
Cape Town
Stellenbosch
Stellenbosch
Theewaterskloof
Overstrand
Cape of Good Hope
1:1,000,000
0 20 40 80 Kilometers

Primary Objective

- Measure the impact of the PopART intervention package on new HIV cases
  - –Arm A vs Arm C
  - –Arm B vs Arm C

HPTN
HIV Prevention
Trials Network

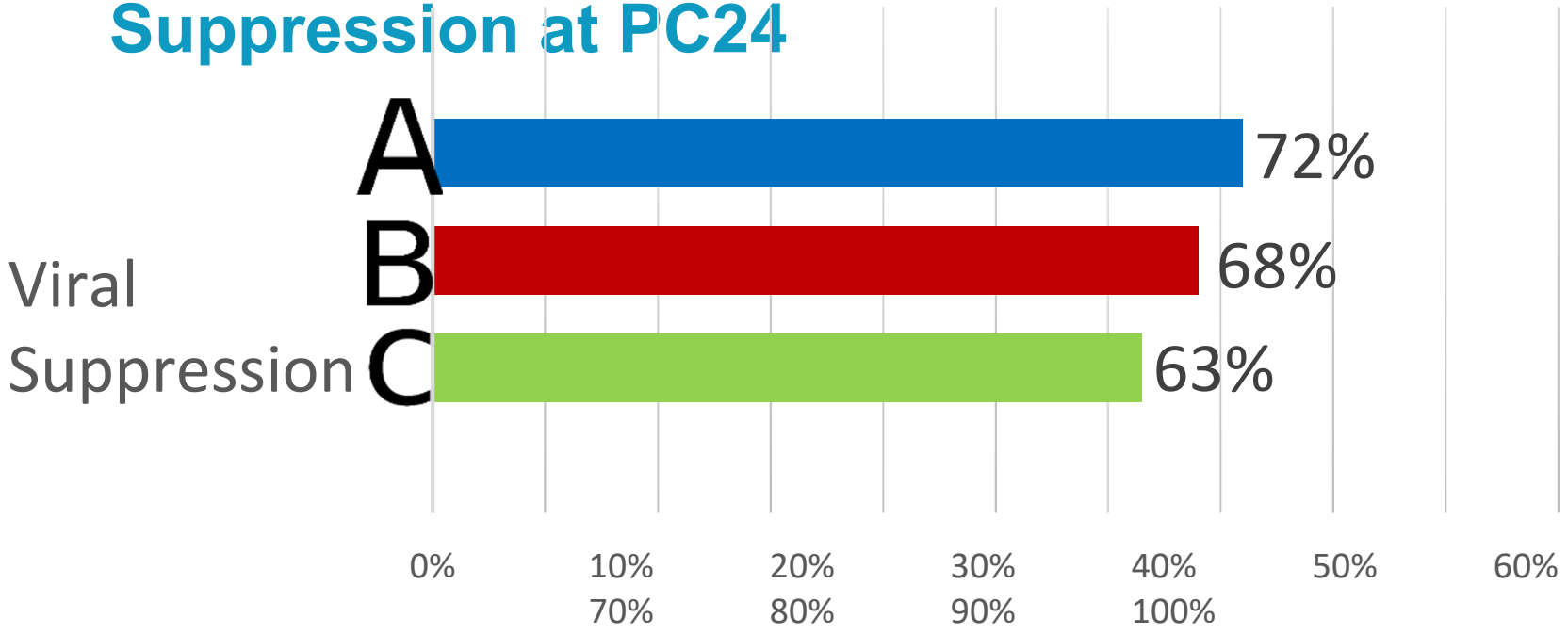
PopART
HPTN 071

Primary analysis: Incidence in

	Arm A	Arm B	Arm C
HIV Incidence (geometric mean of community incidence rates)	198/12,990 (1.45%)	157/14,149 (1.06%)	198/12,563 (1.55%)
Adj. Rate Ratio (95% CI)	0.93 (0.74, 1.18)	0.70 (0.55, 0.88)	1
Incidence compared to Arm C	7% reduction	30% reduction	
P value	0.51	0.006	

Adjusted for age category, sex and baseline community HIV prevalence.
Reported numbers include imputation for PC12 and PC24 missed visits

Primary Analysis: Viral Suppression at PC24



WHY? - I

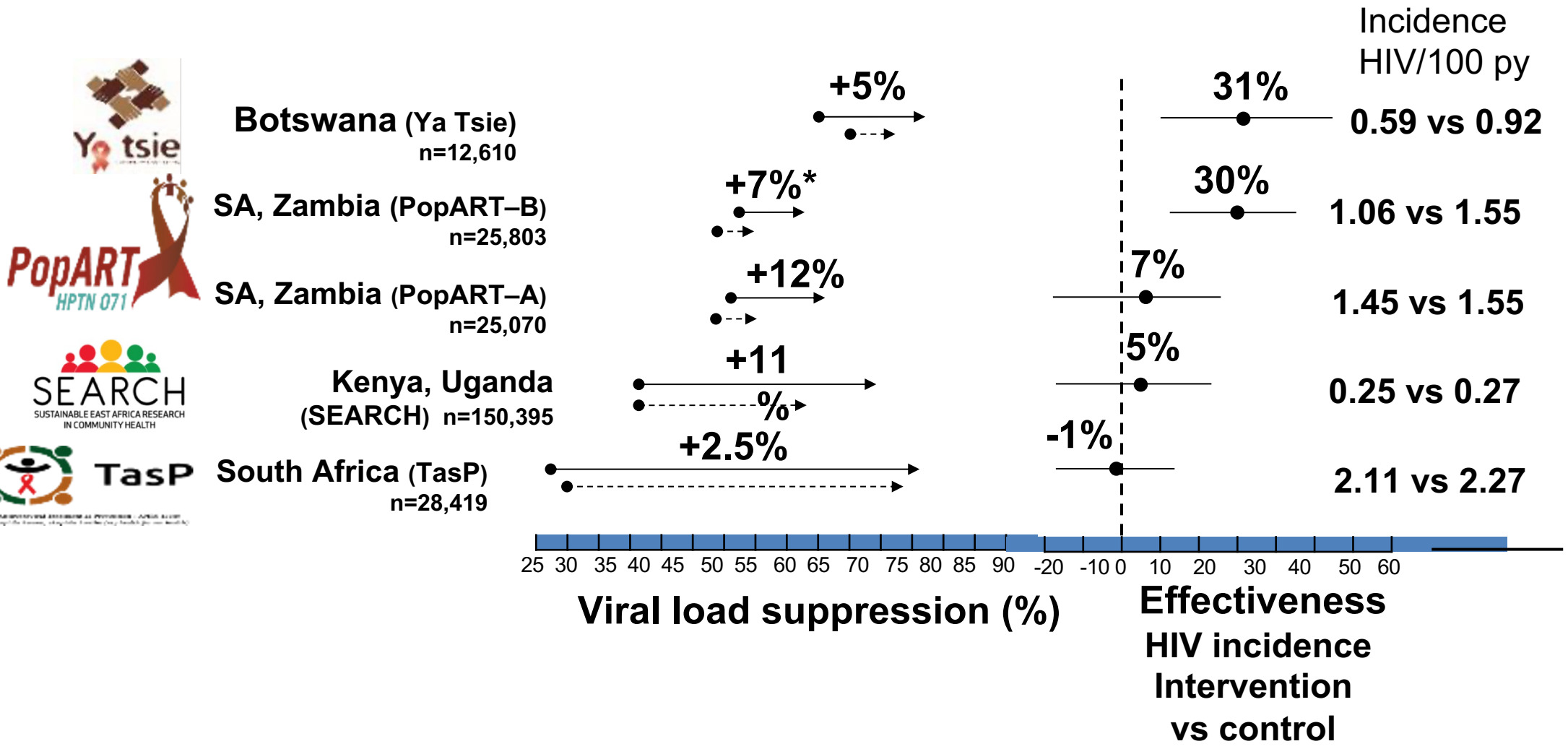
- Community randomization in non-homogeneous environment; Arm A and B differences due to chance?
  - Their combined difference with Arm C approximately a 20% reduction in incidence
- Community randomization imbalance post-randomization?
  - e.g., 38% of Arm B participants living with HIV were already on ART at baseline vs. 31-32% in the other arms

WHY? - II

- "Last unreached 25%" responsible for a disproportionate number of transmissions?
- Time to deploy the interventions, short time to evaluate
  - 3-year study duration not long enough to fully observe the effect of the intervention?

- REF: Brault MA, Spiegelman D, Hargreaves J, Nash D, Vermund SH. *JAIDS* 2019; 82 Suppl 2:S104-S112.

Community-based cluster-randomized control trials of universal test-and-treat strategies



Modified from: Abdool Karim SS. *N Engl J Med* 2019; 381(3):286-8

Global HIV epidemic and I.S. research

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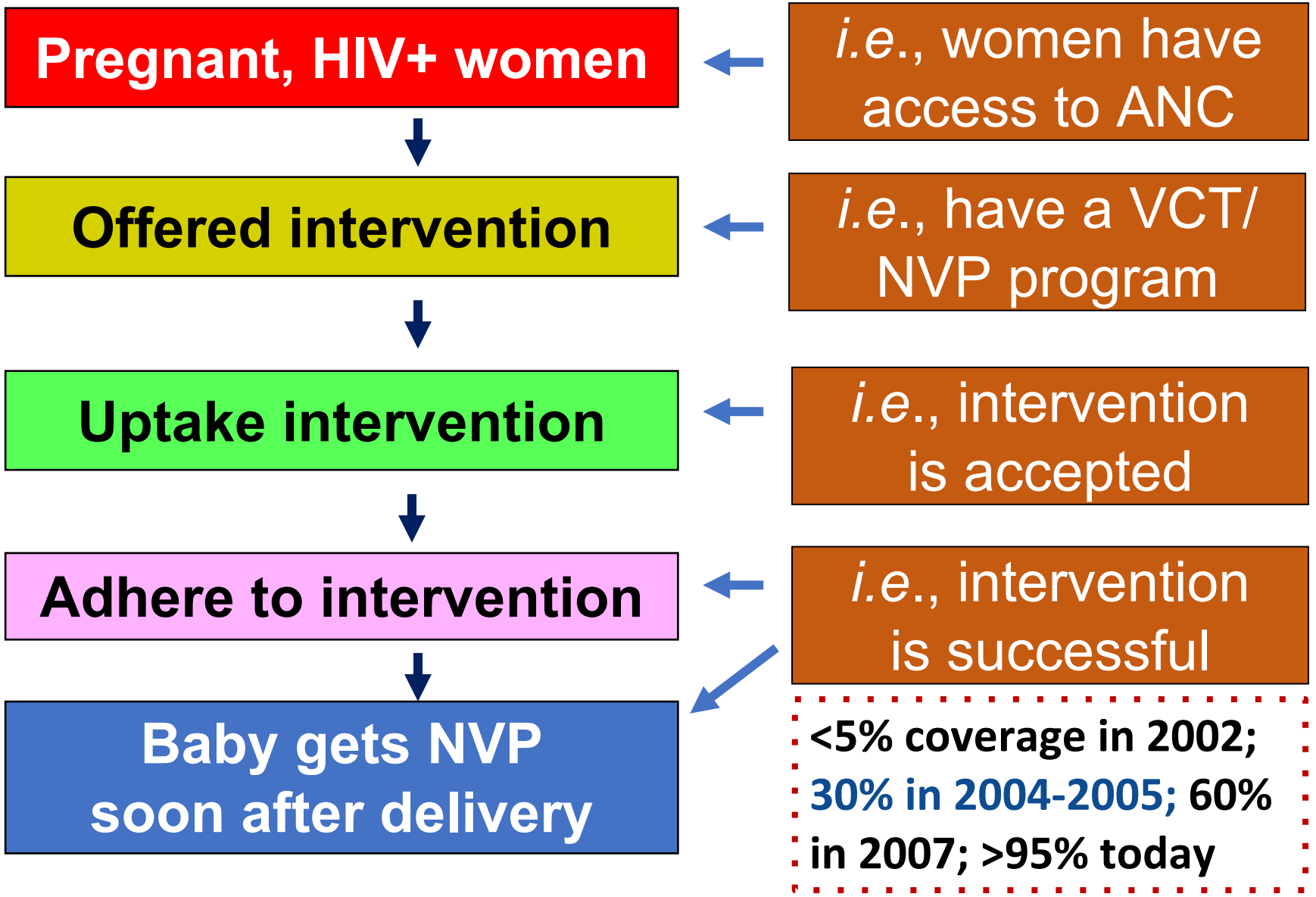
   - Higher risk appreciated since 1989

The "cascade" of HIV care for a pregnant women and her infant



Stringer JS, Rouse DJ, et al. *JAIDS* 2000
Stringer JS, *Am J Public Health* 2002
Sinkala M, Stout JP, *Lancet* 2001
Stringer JS, Sinkala M, *AIDS* 2003
Stringer JS, Sinkala M, *Lancet* 2003
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Stringer JS, Sinkala M, *AIDS* 2004
Kuhn L, Kasonde P, *Clin Infect Dis* 2005
Stringer JS, Sinkala M, *AIDS* 2005
Banda Y, *Trop Med Int Health* 2007
Chi BH, Sinkala M, *AIDS* 2007
Potter D, Goldenberg RL, *JAIDS* 2008
Kuhn L, Aldrovandi G, *NEJM* 2008
Carlucci JG, Kamanga A, *JAIDS* 2008
Megazzini KM, Chintu N, *JAIDS* 2009
Kapina M, Reid C, *Sex Transm Dis* 2009
Mwinga K, Vermund, *BMC Pediatr* 2009
Megazzini KM, Sinkala M, *AIDS* 2010
Kancheya NG, *Med J Zambia* 2010
Chi BH, *Am J Epidemiol* 2010

11 years of work, strong community ties

Vermund SH, Sidat M, Weil LF, Tique JA, Moon TD, Ciampa PJ. Transitioning HIV care and treatment programs in southern Africa to full local management. *AIDS* 2012;26(10):1303-10.

Bringing HIV care to rural Mozambique

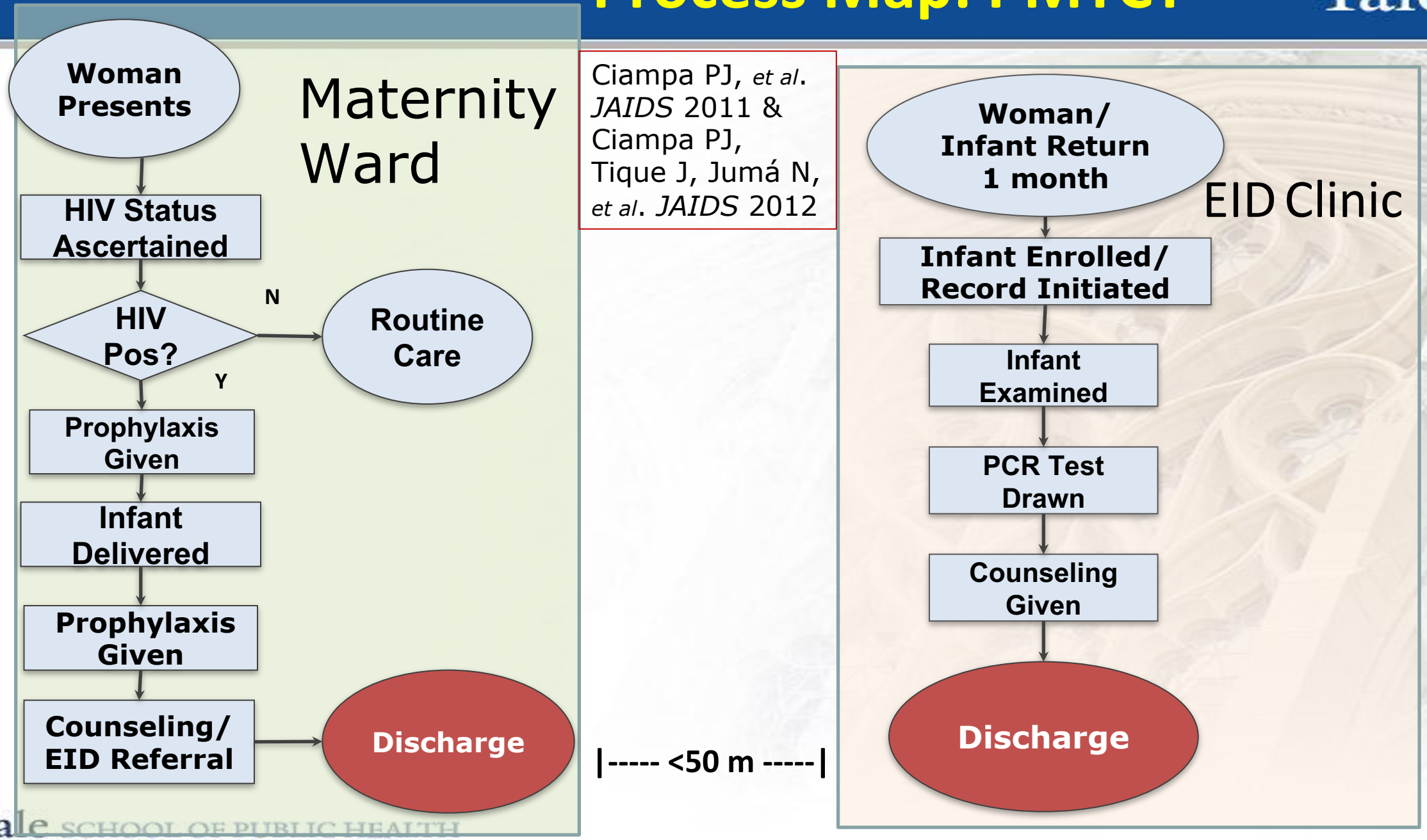
Yale

- Infant retention poor (care cascade analysis), limiting early infant diagnosis (EID) in rural northcentral Zambézia Province, Mozambique
  - Only 25% all HIV-exposed infants were brought for an initial visit for testing
  - 49% all HIV-infected mothers were retained in HIV-related care

REF: Cook RE, Ciampa PJ, Sidat M, *et al*. *JAIDS* 2011

Process Map: PMTCT

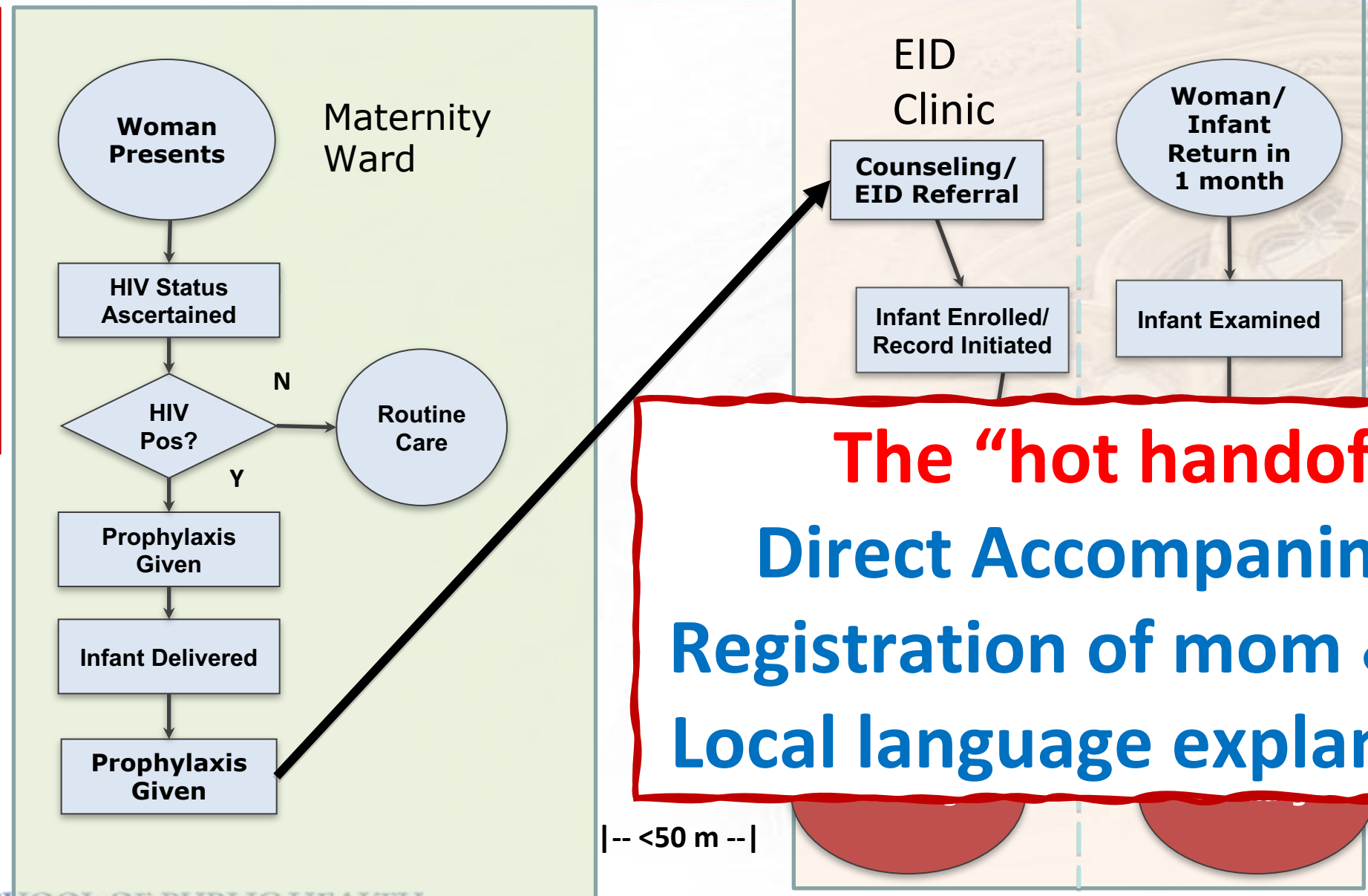
Yale



Process Map: PMTCT Enhanced Referral

Yale

Ciampa PJ, *et al*. *JAIDS* 2011 & Ciampa PJ, Tique J, Jumá N *et al*. *JAIDS* 2012



The "hot handoff"

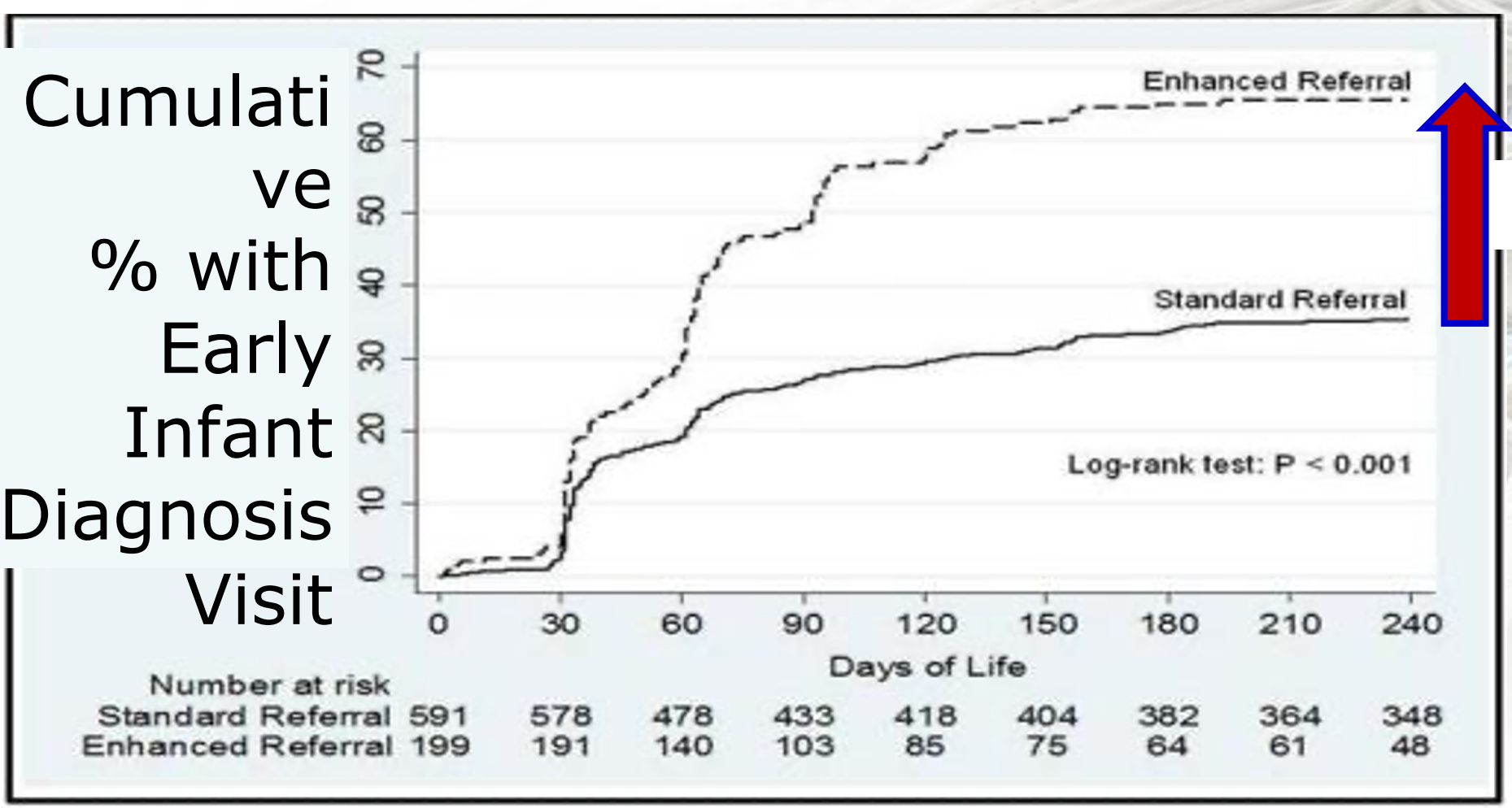
Direct Accompaniment

Registration of mom & baby

Local language explanations

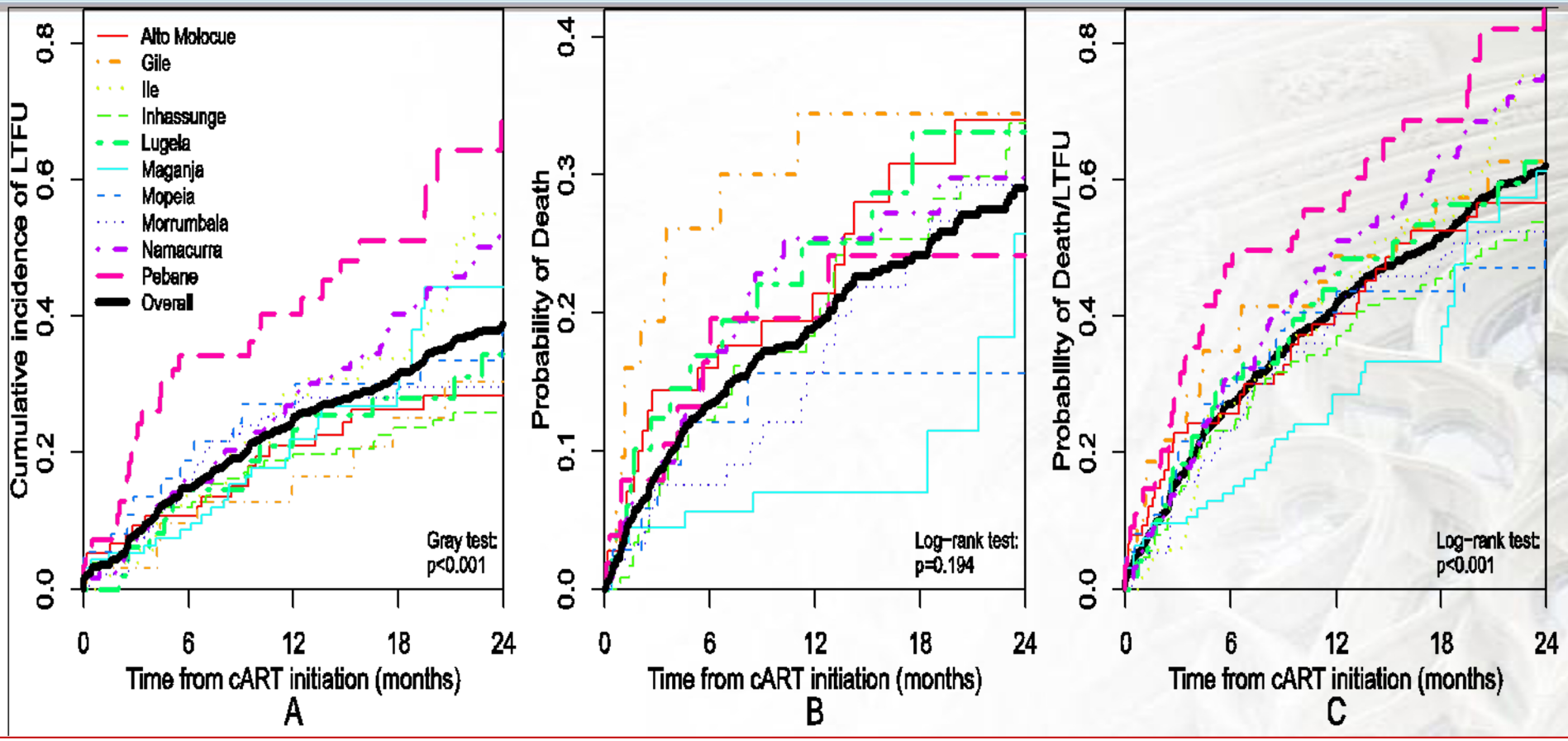
Implementation Science/QI Research Impact

- N= 791 women/infants in Zambézia Province, Mozambique
  - REFs: Ciampa PJ, *et al*. *JAIDS* 2011 and Ciampa PJ, Tique J, Jumá N, *et al*. *JAIDS* 2012



The toughest environment: Remote rural Mozambique

Yale



PEPFAR-supported

HIV+ children: 61% Dead or LTFU by 24 months in 2012-2013. Massive improvements subsequently.

Vermund SH, Blevins M, Moon TD, José E, *et al.* **Poor clinical outcomes for HIV infected children**…. *PLOS ONE* 2014

Rose ES, Blevins M, González-Calvo L, *et al.* **Determinants of undernutrition among children**… *BMC Nutr* 2015

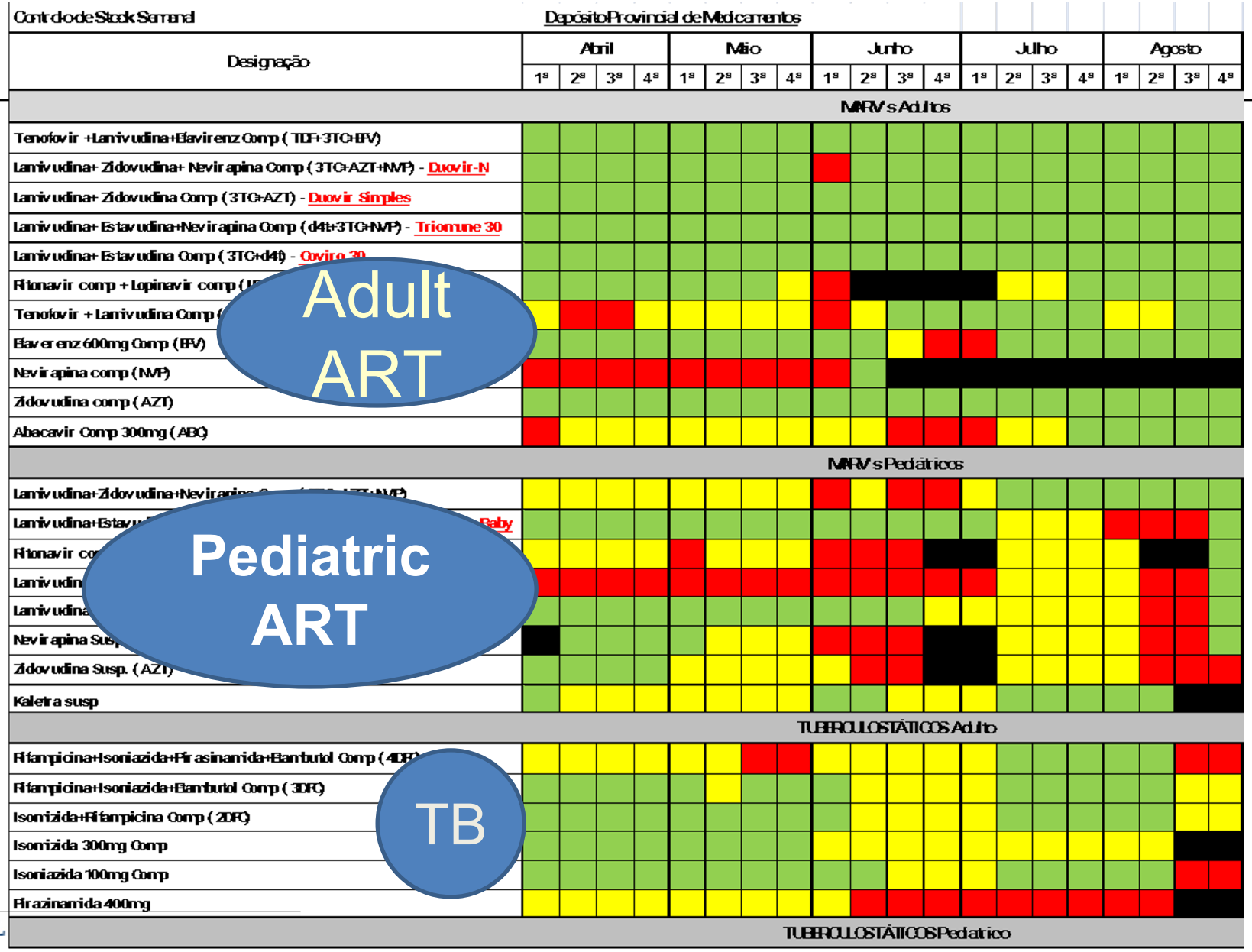
Audet CM, Blevins M, Chire YM, Aliyu M, Vaz LM, *et al.* **Engagement of men in antenatal care services**… *AIDS Behav* 2016

Carlucci JG, Liu Y, *et al.* **Attrition of HIV-exposed infants from early infant diagnosis services, LMICs**…*J Int AIDS Soc* 2018

Carlucci JG, Liu Y, Clouse K, Vermund SH. **Attrition of HIV-positive children from HIV services in LMICs.** *AIDS* 2019

Ahonkhai AA, *et al.* Wester CW. **Poor retention & care-related sex disparities … youth living w/ HIV** … *PLOS ONE* 2021

Pharmacy Stock-outs



Bravo MP, et al. *AIDS Res Hum Retroviruses* 2020

Community RCT of bundled services for PMTCT

Yale

Integrated prevention of mother-to-child HIV transmission services, antiretroviral therapy initiation, and maternal and infant retention in care in rural north-central Nigeria: a cluster-randomised controlled trial

Muktar H Aliyu, Meridith Blevins, Carolyn M Audet, Marcia Kalish, Usman I Gebi, Obinna Onwujekwe, Mary Lou Lindegren, Bryan E Shepherd, C William Wester, Sten H Vermund

1. Mothers/infants clinic appts on same day & clinic
2. Labs and ART in same clinic
3. Task shifting; nurses to CHWs
4. Male engagement & community outreach

	**Arm 1 (Intervention) N=141**	**Arm 2 (Control/SOC) N=133**
Alive at 12 weeks	86.0%	74.9%
HIV+ at 12 weeks	**2.4%**	**7.3%**

Intervention arm infants were 74% less likely to acquire HIV (RR = 0.26, 95%CI: 0.08-0.85), adjusting for maternal age, education, travel time to facility, employment, maternal ethnicity, & time of HIV diagnosis.

Aliyu M, *et al. Lancet HIV* 2016; 3(5):e202-11

Global HIV epidemic and I.S. research

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1. UNAIDS 2021 estimates
2. Treatment as Prevention (TasP): 95-95-95
   - Address the discrepancy between mortality and incidence
3. Implementing PMTCT and effective care for children living with HIV: Zambia, Nigeria, Mozambique
   - Address the relatively poor pediatric outcomes vs. adults
4. **Scaling-up cervical cancer programs within HIV programs: Zambia and India**
   - **Higher risk appreciated since 1989**

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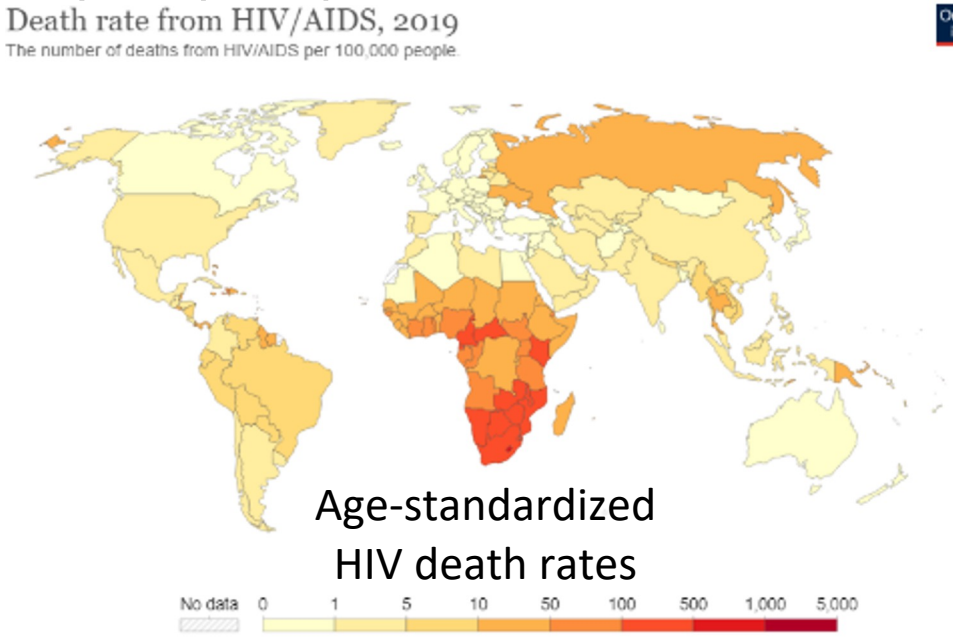
HIV/AIDS & Cervical Cancer: Intersecting Global Epidemics

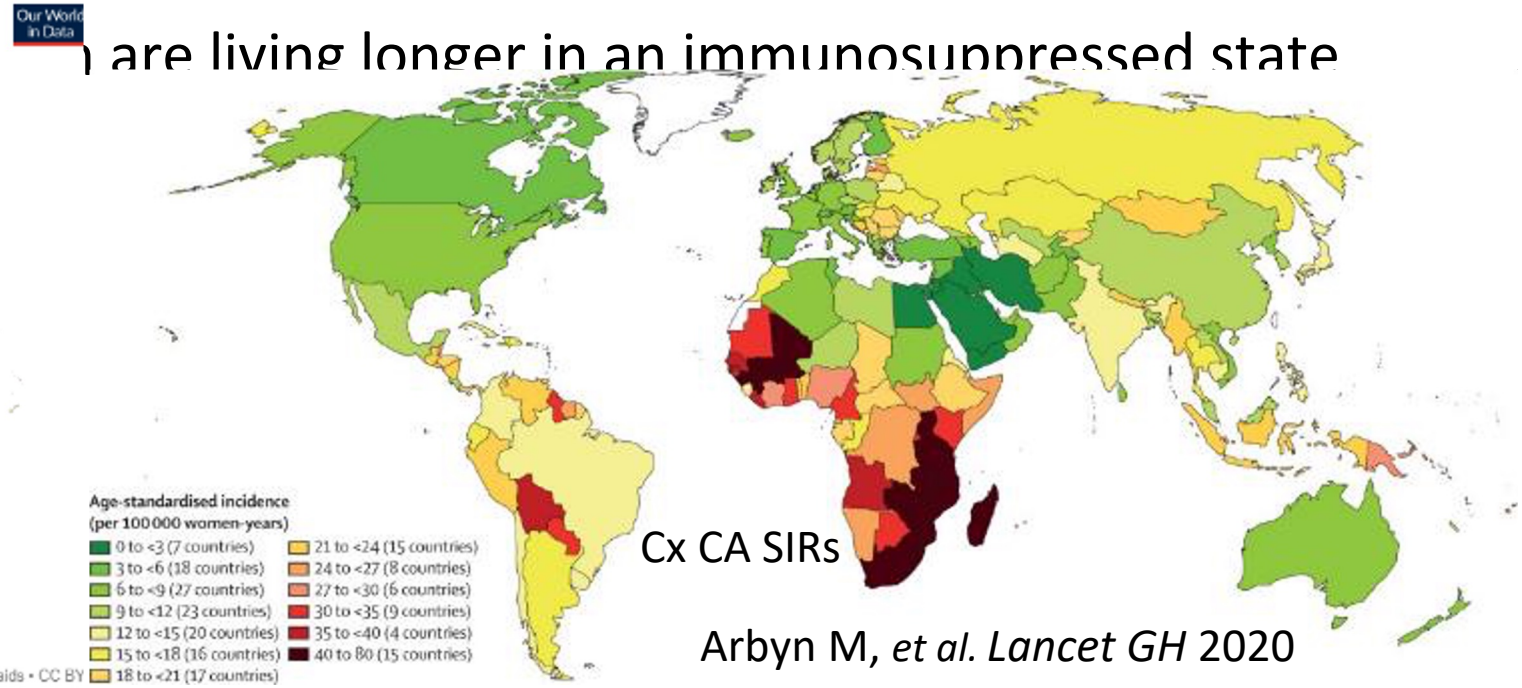
HIV/AIDS (UNAIDS 2022) incidence: 4000 people/day (incl. 1100 aged 15 to 24 years)

- With current trends, 1.2 million new HIV infected in 2025—x3 the 2025 target (370,000)



Age-standardized HIV death rates

IHME, Global Burden of Disease, 2019

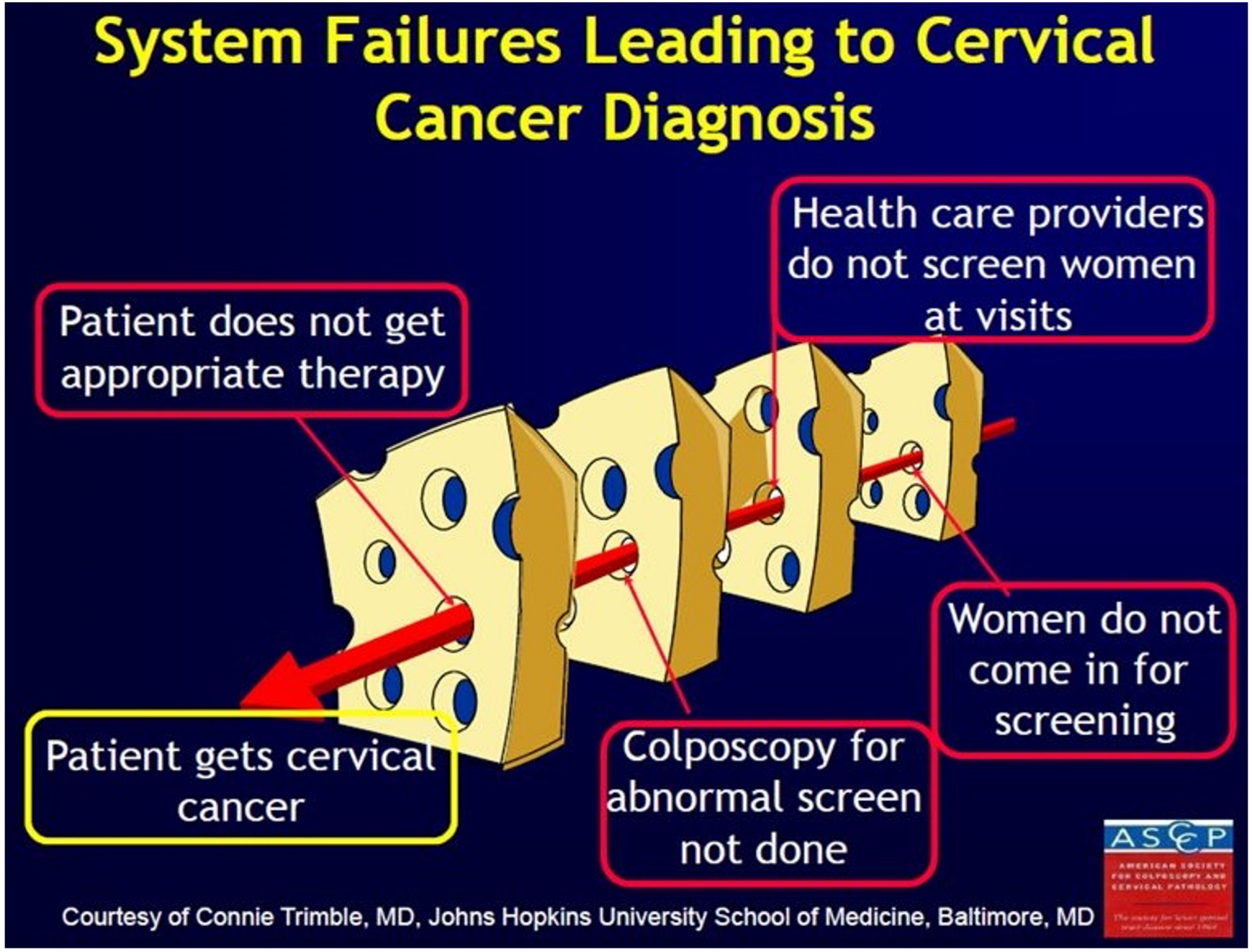


Cx CA SIRs

Arbyn M, *et al. Lancet GH* 2020

Cervical cancer (2020, WHO) w/ 604,000 new cases; 342,000 deaths; 90% in LMICs

- Ranks #1 or 2 of women's CA in LMICs; HIV+ women have x6 times incidence of Cx CA



Perfect I.S. challenge

We know:

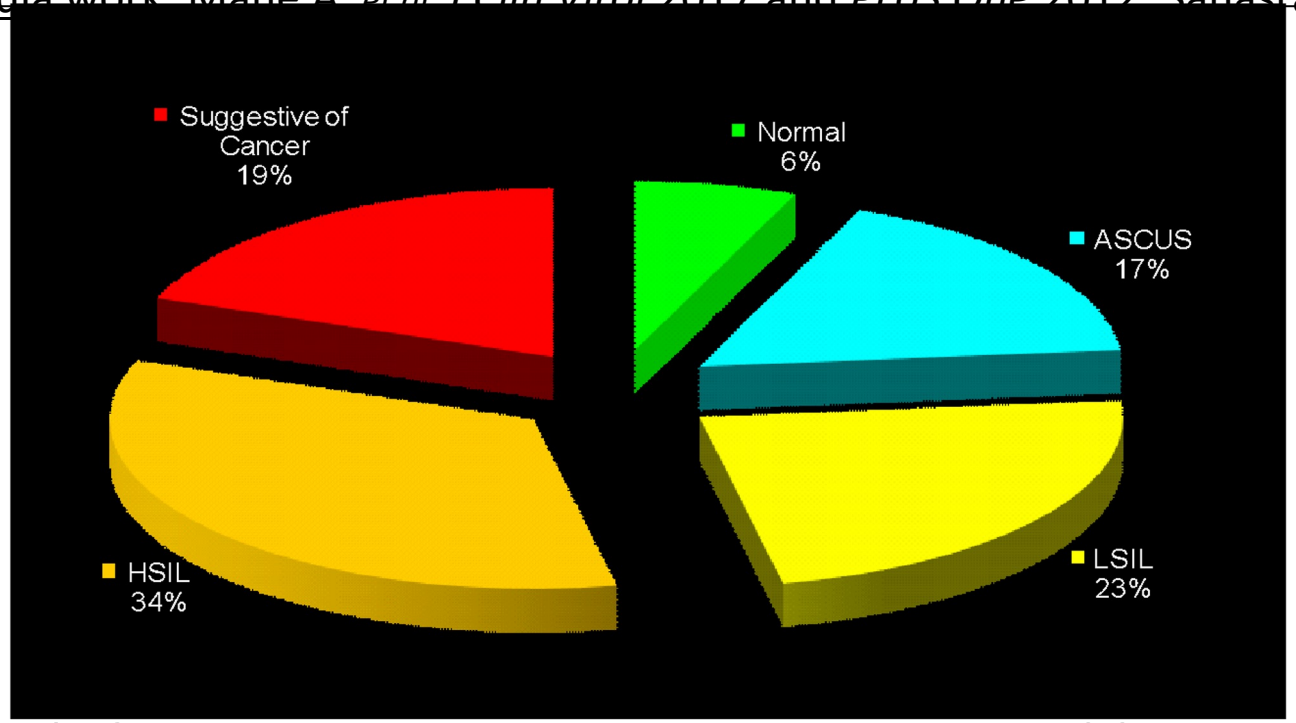
- The cause
- How to prevent
- Target populations
- Program needs

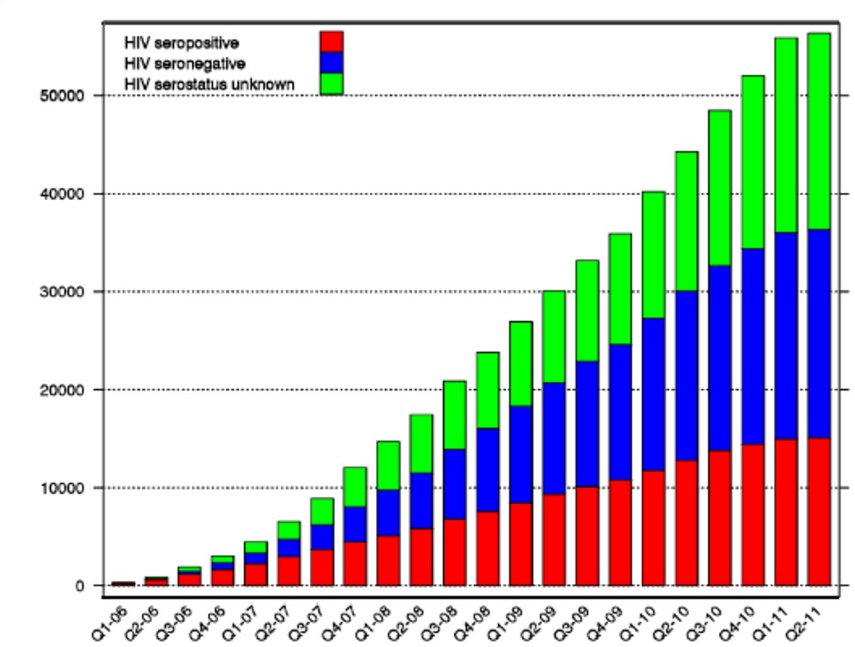
We do <u>not</u> know:

- How to scale up, given resource constraints
- How to integrate fully with existing health systems, e.g., HIV clinical services, community engagement

Problem recognition, program development, evaluation, and scale-up

Parham GP, *et al.* **Prevalence and predictors of SIL of the cervix in HIV-infected women in Lusaka, Zambia.** *Gynecol Oncol* 2006
Kapambwe S, *et al*. **Implementation and Operational Research…"Screen-and-Treat" Integrated w/ HIV/AIDS Care**… *JAIDS* 2015
Early US work: Feingold AR, *et al*. *AIDS* 1990; Vermund SH, *et al*. *Am J Obstet Gynecol* 1991; Klein RS, *et al*. *J Infect Dis* 1994.
India work: Mane A, *et al*. *J Clin Virol* 2017 and *PLoS One* 2012; Sahasrabuddhe VV, *et al*. *PLoS One* 2010 and *Int J Cancer* 2012

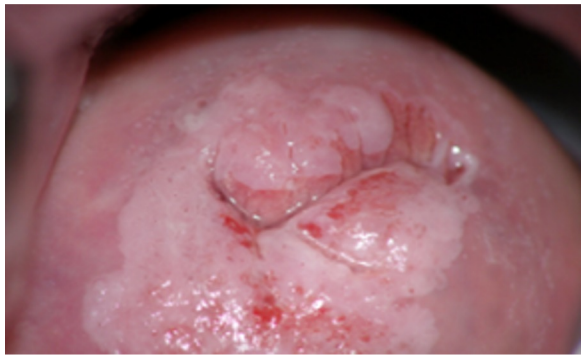




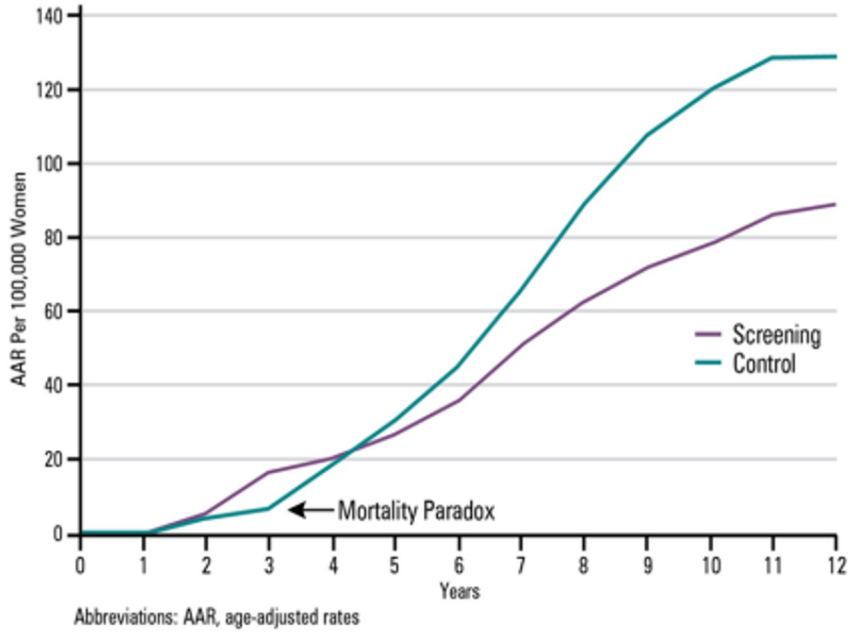
- 150 HIV+ Zambian women median age 36 years (range 23-49) and median CD4+ count 165/μL screened withThinPrep Pap Test & HPV by Roche Linear Array PCR (left figure)
- Broadening program acceptability in the general population (right figure) with continuous quality improvements in VIA-based screening and care through rigorous QA/QC

Improving screening in low-resource settings

Visual inspection with acetic acid (VIA)



Nurse in Zambia taking a digital photograph of the cervix after VIA



RCT evidence of a long-term mortality benefit of VIA-screening

(Data from NCI-funded Tata Memorial Hospital-Mumbai, India trial; ASCO 2013)

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Improving screening for HIV+ women in low-resource settings
VIA vs. routinely-conducted conventional cervical cytology in Pune, India

	Sensitivity	*Specificity*	*PPV*	*NPV*
Disease positive threshold CIN2+ *(Disease prevalence: 50/303 = 16.50%)*				
VIA	**80.0%**	**82.6%**	47.6%	95.4%
	(66.3-90.0)	(77.4-87.1)	(36.6-58.9)	(91.8-97.8)
Cytology (ASC-US+ cutoff)	60.5%	59.6%	22.4%	88.7%
	(44.4-75.0)	(52.9-66.1)	(15.2-31.1)	(82.5-93.3)
Cytology (LSIL+ cutoff)	60.5%	64.6%	24.8%	89.4%
	(44.4-75.0)	(57.9-70.8)	(16.9-34.1)	(83.6-93.7)
Cytology (HSIL+ cutoff)	20.9%	96.0%	50.0%	86.3%
	(10.0-36.0)	(92.5-98.1)	(26.0-74.0)	(81.4-90.3)
Disease positive threshold CIN2+ with presence of carcinogenic HPV *(Disease prevalence 31/303 = 10.23%)*				
VIA	**83.9%**	**78.7%**	31.0%	97.7%
	(66.3-94.6)	(73.3-83.4)	(21.3-42.0)	(94.8-99.3)
Cytology (ASC-US+ cutoff)	71.4%	59.7%	17.2%	94.7%
	(51.3-86.8)	(53.1-66.0)	(10.9-25.4)	(89.8-97.7)
Cytology (LSIL+ cutoff)	71.4%	64.3%	19.1%	95.0%
	(51.3-86.8)	(57.9-70.4)	(12.0-27.9)	(90.4-97.8)
Cytology (HSIL+ cutoff)	25.0%	95.4%	38.9%	91.5%
	(10.7-44.9)	(91.9-97.7)	(17.3-64.3)	(87.4-94.7)

Sahasrabuddhe VV *et al. Intern J Cancer* 2012

Utilizing HIV/AIDS care program infrastructure to implement cervical cancer prevention in Zambia

Cervical Cancer Prevention Program in Zambia

A public sector-academic partnership

- Zambian Ministry of Health
- University Teaching Hospital
- University of Zambia School of Medicine
- Centre for Infectious Disease Research in Zambia
- UAB, UNC, NCI, Vanderbilt/Yale, CDC-IUHPE (International Union for Health Promotion & Education)
- □ screening/care in 2004 (Lusaka pilot) to all provinces of the country at scale by 2024

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Sept. 13, 2011: Launch of the **Pink Ribbon Red Ribbon®** Initiative Dr. Groesbeck Parham with Dr. Anthony Fauci, Ambassador Eric Goosby, Dr. Beatrice Wiafe Addai, and the moderator (George W. Bush Institute, Komen Global Alliance, & UNAIDS)

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PLoS MEDICINE

Health in Action

Advancing Cervical Cancer Prevention Initiatives in Resource-Constrained Settings: Insights from the Cervical Cancer Prevention Program in Zambia

Mulindi H. Mwanahamuntu[1,2], Vikrant V. Sahasrabuddhe[3], Sharon Kapambwe[1,2], Krista S. Pfaendler[4], Carla Chibwesha[1,5], Gracilia Mkumba[1,2], Victor Mudenda[2], Michael L. Hicks[6], Sten H. Vermund[3], Jeffrey S. A. Stringer[1,5], Groesbeck P. Parham[1,2,5]*

***PLoS Med* 2011;8(5):e1001032.**

BLIC HEALTH

CONCLUSION: How can implementation science accelerate infectious disease discovery-to-practice?

- We want to innovate (discovery and efficacy) and see our contributions **make a societal impact**
  - I.S. seeks real-world effectiveness and scale-up of preventive, diagnostic, and therapeutic innovations
  - Reduce the 17 years from efficacy to implementation*

*Morris ZS, *et al*. **The answer is 17 years, what is the question: understanding time lags in translational research.** *J R Soc Med* 2011

accelerate infectious disease discovery-to-practice?

- **With excellent I.S. research and <u>partnerships</u>**, we can reach those in need, address co-morbidities and social determinants, aid in adherence and retention, and promulgate best practices
  - Hospitals and health systems; public health departments, Federally Qualified Health Centers (FQHCs) in the U.S.
  - Work with social and behavioral scientists, policy experts, communities, policymakers, and advocates

Conclusion: I.S. to improve programs!

The care cascade concept helps make implementation science research manageable and applicable to both community and clinical sides of healthcare quality.

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