AIDS 2022
29 July – 2 August

International Workshop on HIV & Pediatrics 2022

IAS 2022 & Pediatric HIV Workshop

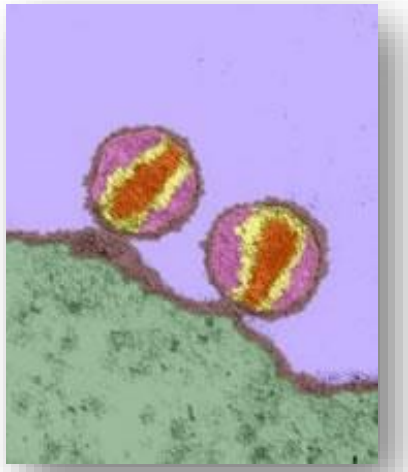
Selected PMTCT, Pediatric, Adolescent, and Maternal/Adult Abstracts

Lynne M. Mofenson MD

8/17/2022

unicef

Update on Epidemiology of Pediatric HIV 2022



UNAIDS

International Workshop on HIV & Pediatrics 2022

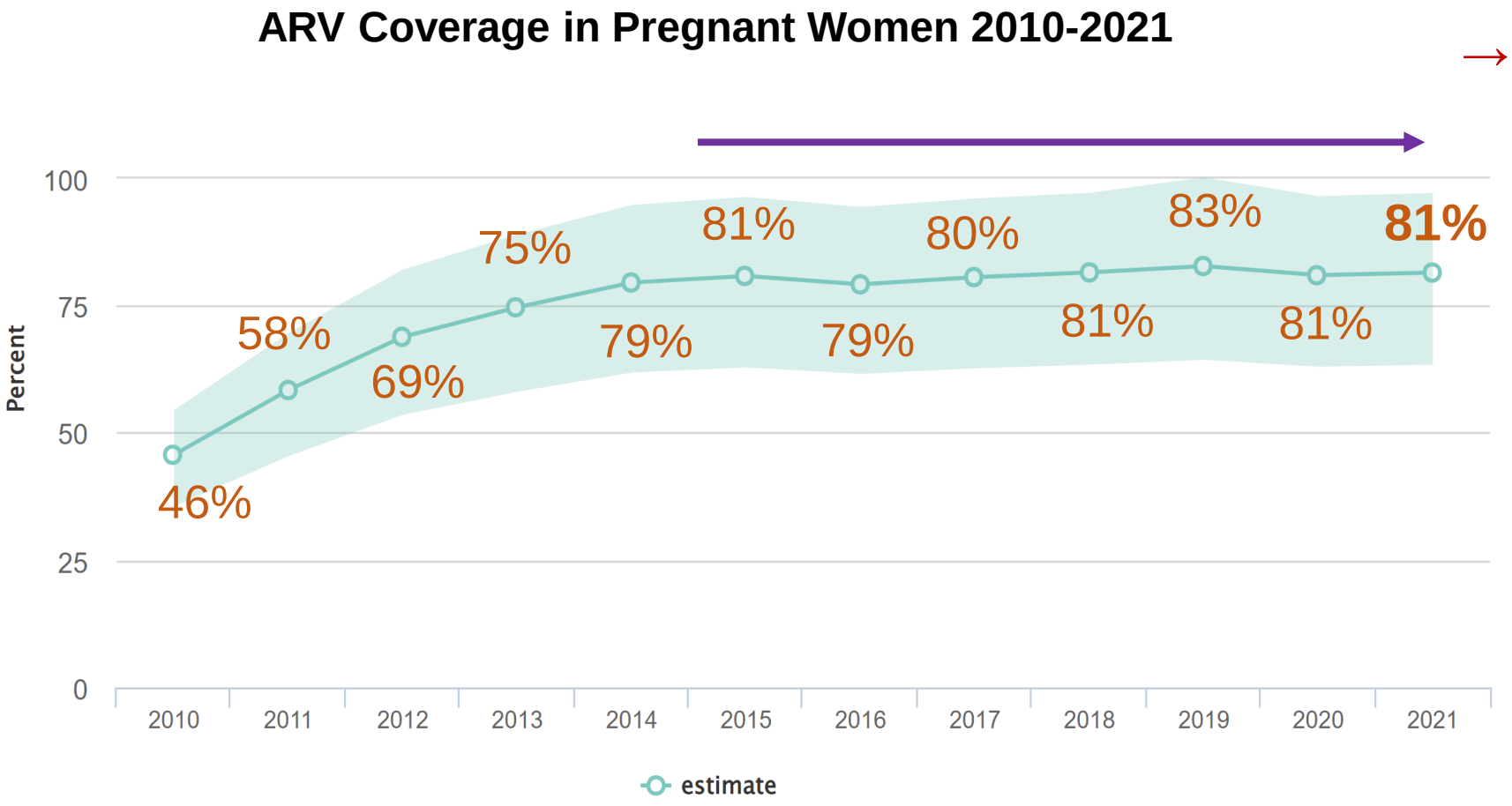
Invited Speaker

Mary Mahy, ScD, MHSc

UNAIDS, Switzerland

ART Coverage in Pregnant Women Was 81% in 2021 – A Slight Decline Since Peak of 83% in 2019

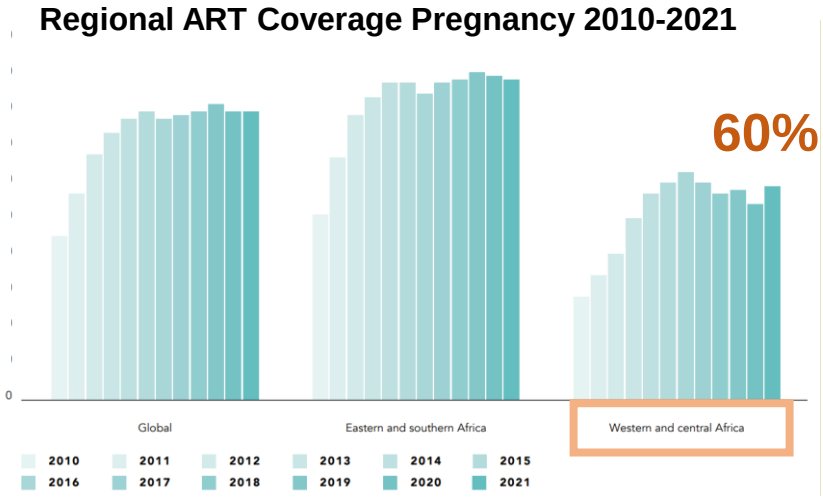
Maternal ART Globally, 2010-2021



→ **81% of pregnant women with HIV received ART** in 2021.

→ **No meaningful increase in pregnant women ART coverage since 2014!**

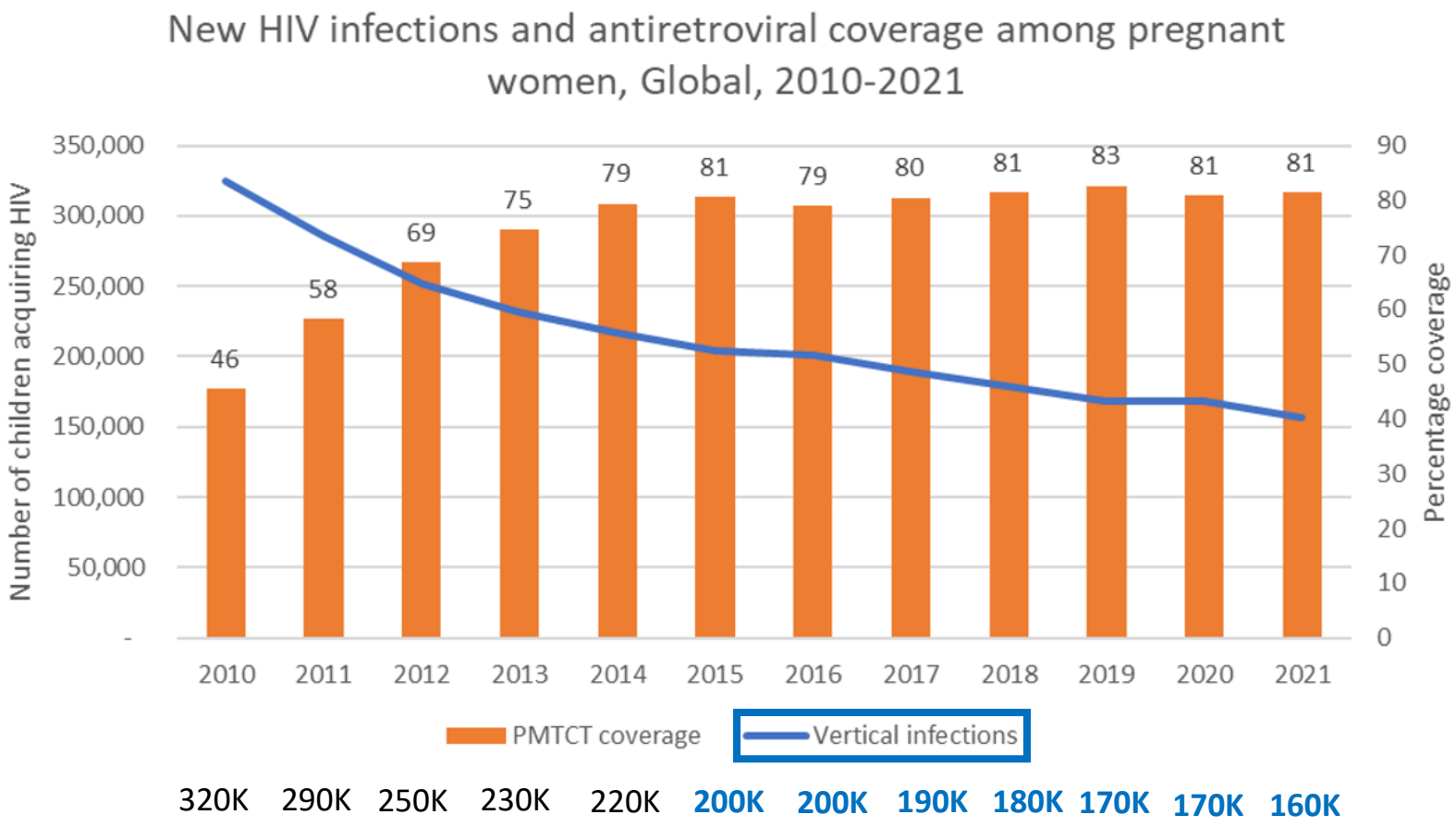
Regional differences: West/ Central Africa coverage **only 60% 2021**; 43% of pregnant women <u>not</u> on ART from this region



Source: UNAIDS epidemiological estimates 2022: *aidsinfo.unaids.org*

Minimal Decline in **New Pediatric Infections** in 2021

Maternal ART and **New Infections in Children** Globally, 2010-2021



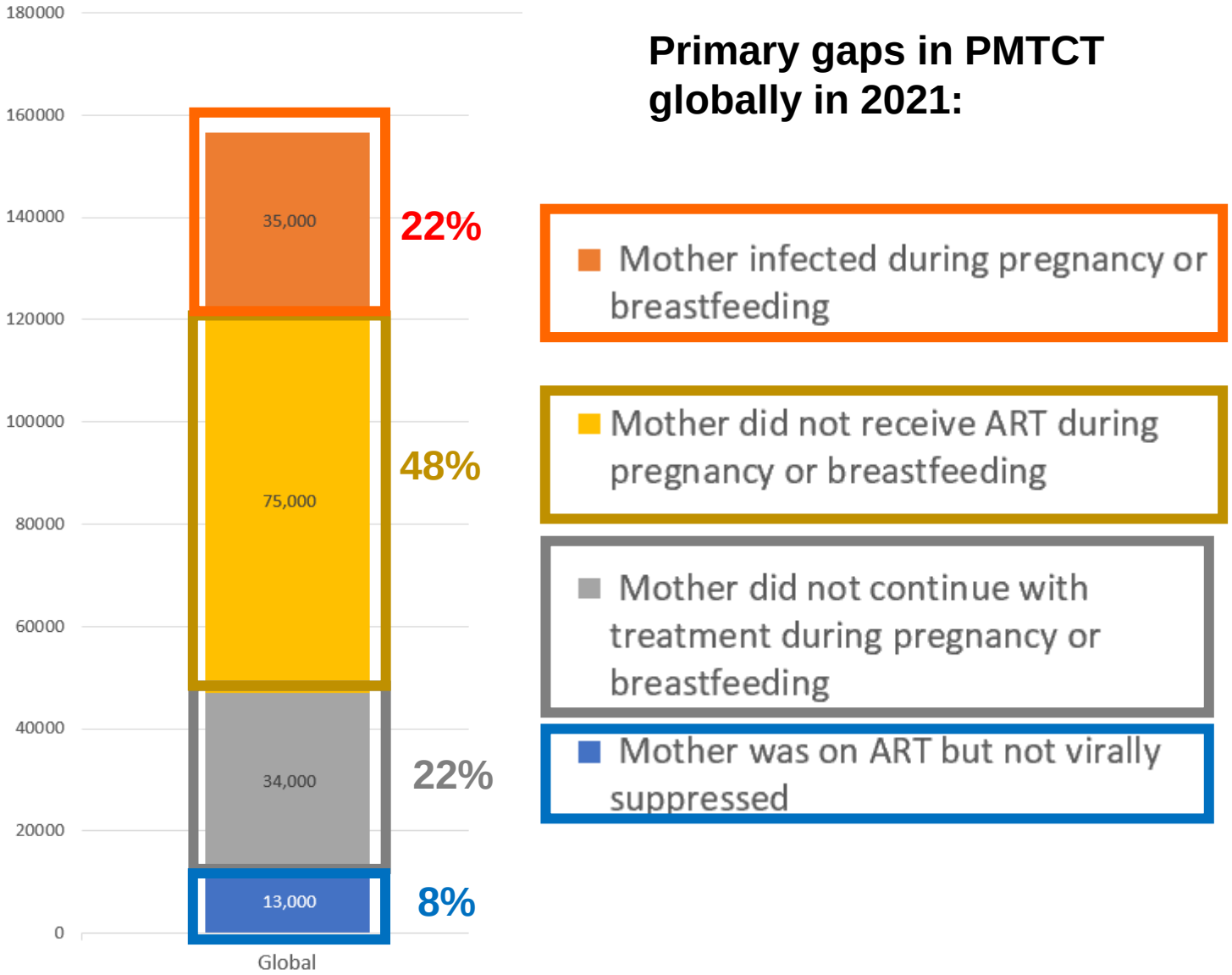
→ **160,000 new pediatric HIV infections** estimated in 20201

→ Minimal change in new infections since 2015 – **either no change or only 10,000 decline/year**

→ If assume only 10,000 decline/year, will take **14 years** (2035) to meet our **2020** target of 20,000 new infections

Source: UNAIDS epidemiological estimates 2022: *aidsinfo.unaids.org*

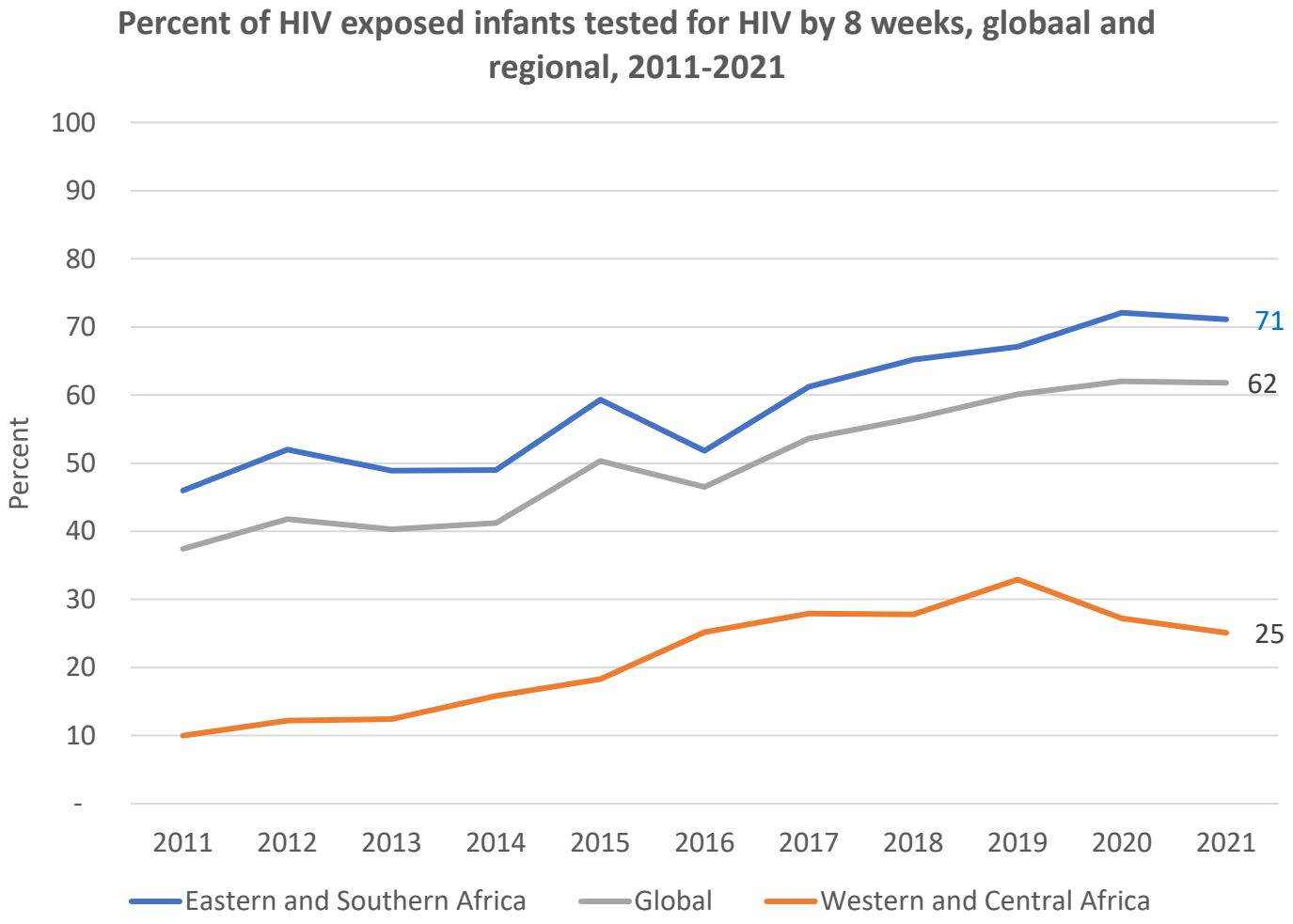
Causes of New Child Infections Globally 2021



Source: UNAIDS epidemiological estimates 2022: *aidsinfo.unaids.org*

- Globally 75,000 new child infections still occur because **pregnant women are not diagnosed and started on treatment**
- Regional (and country) differences:
  - Almost half of those **not receiving treatment** are in **west/central Africa**
  - Over half of the **incident infections** that lead to vertical transmission are in **east/southern Africa**

Early Infant Diagnosis Declined Slightly Globally from 63% in 2020 to 62% in 2021



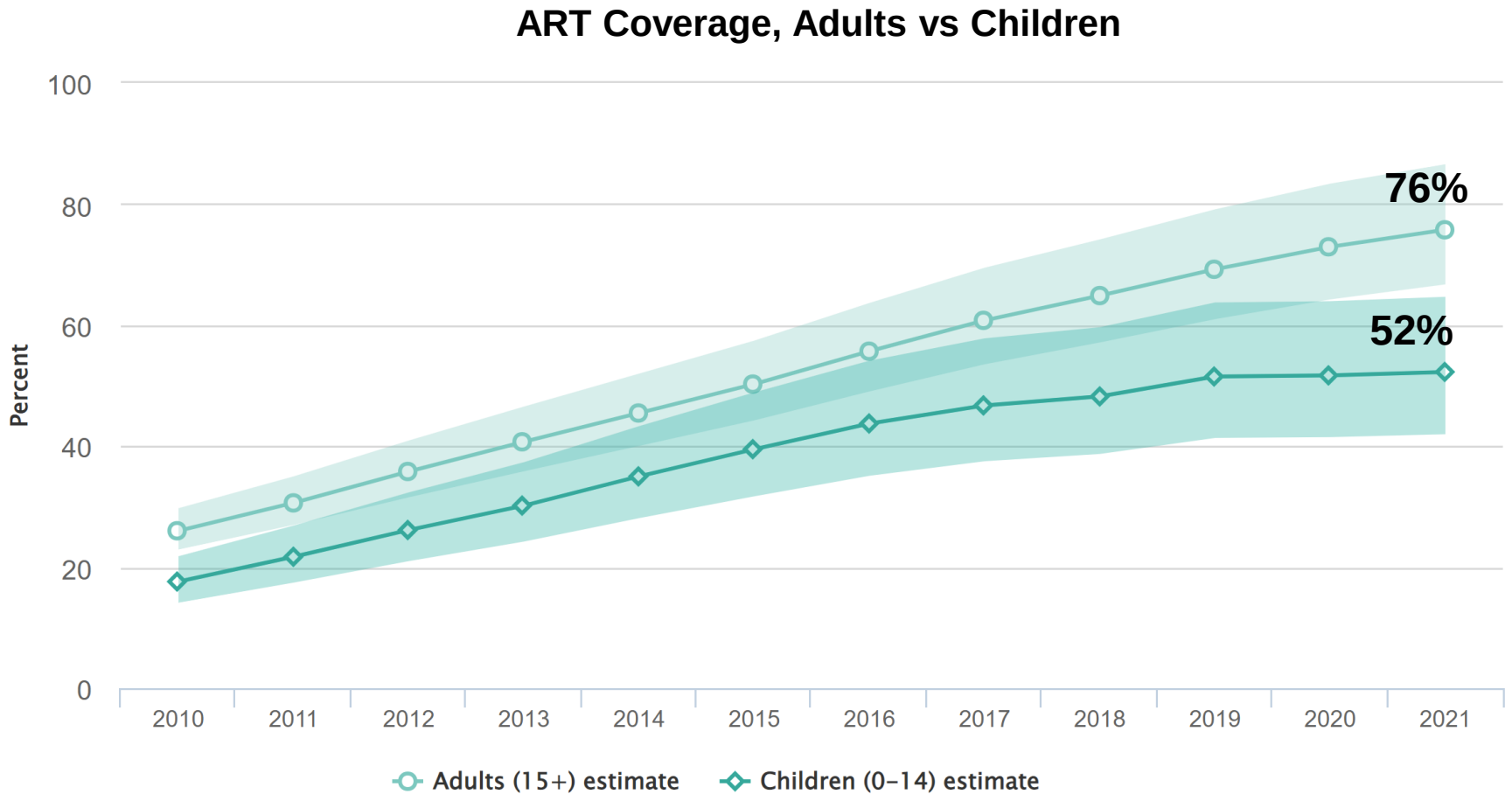
→ **Globally, 62% of infants had EID by 8 week in 2021**, a **slight decrease** from 63% in 2020

→ **EID in west/central Africa remains at 25%,** having actually **decreased** between 2019 and 2020

→ **EID in east/southern Africa is 71%**, but this is a **slight decrease** from 74% in 2020

ART Coverage in Children in 2021 Has Not Improved; Consistently Lower ART Coverage in Children vs Adults

- ART coverage in children 0-14 years **remain 52%**, consistently lower than in adults which increased to 76% from 74% in 2020 .

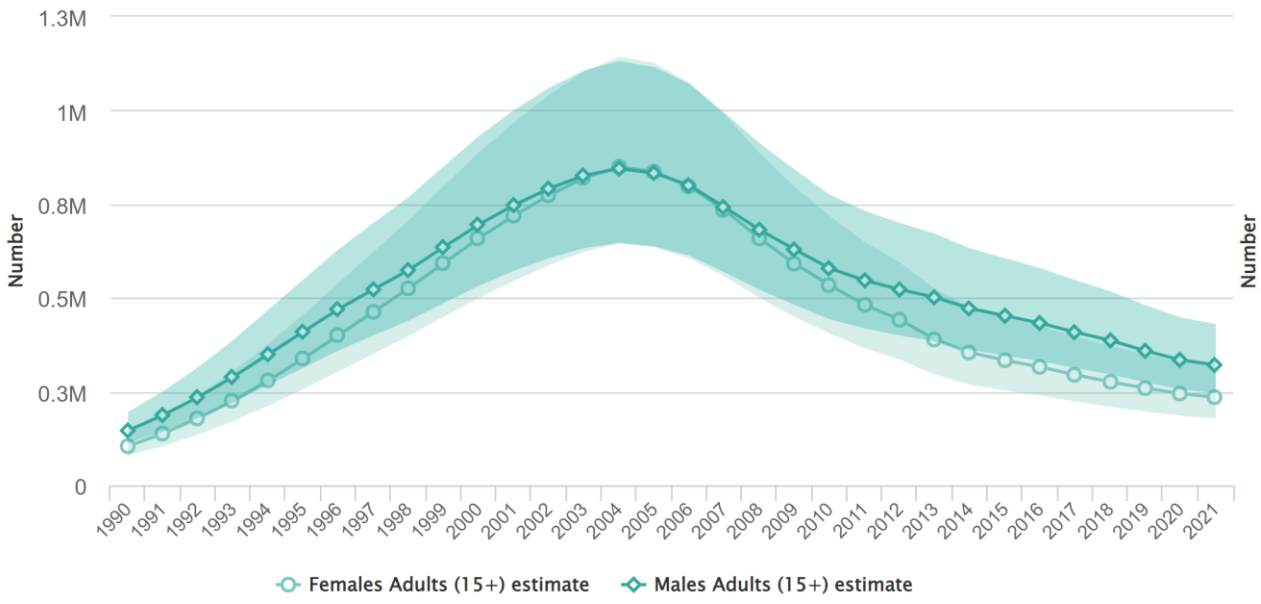


- 60% of children <u>not</u> on ART are **aged 5-14 years**
- EID is not enough; need for home-testing and/or self-testing to identify older children living with HIV

Despite New, More Potent ARV Availability, Decline in Deaths Among Young People Age15-24 Years Has Slowed

- AIDS-related mortality in adults continues to **decrease**, higher in **males** than females
- AIDS-related mortality in young people has **minimal decline** since 2013, higher in **females** than males

AIDS-Related Deaths in Adults ≥15 Years by Sex



AIDS-Related Deaths in Young People 15-24 Years by Sex

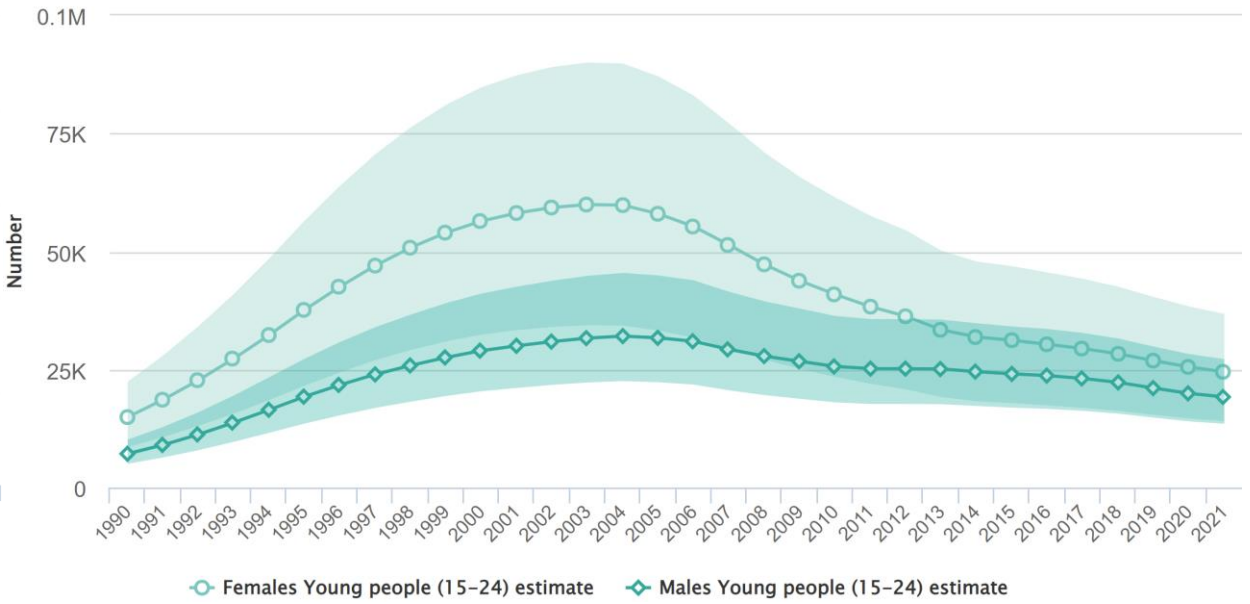
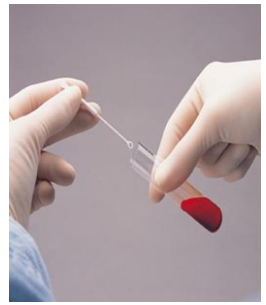


Photo credit: Paul Jeffrey, World Council of Churches

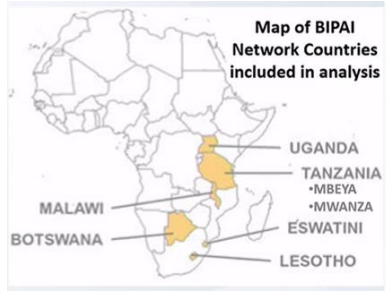
Pediatric ART Optimization, DTG Transition & VL Implementation Data



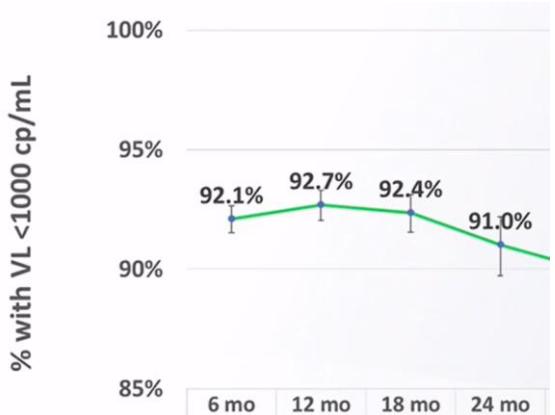
Good Viral Suppression on Children on DTG ART in Africa

Bacha J et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 4; AIDS 2022 Abs.OAB0202

- Retrospective review from 7 BIPAI sites in 6 countries on 11,799 enrolled in care and prescribed DTG ART
  - Majority ≥10 years (3% 0-<5; 18% 5-<10; 40% 10-<15; 40% 15-<20)
  - Most ART-experienced (naïve 21%; switch NNRTI 44%; switch PI 34%; 3rd line 1%); **95% virally suppressed (<1000) at baseline before DTG**
  - Mean FU on DTG ART 22.4 months (SD 12.4 months); VL results ranged from 6-60 months post DTG ART – however, sample size at >24 mo FU limited (only show results to 24 mo)



Viral suppression on DTG over time



	6 mo	12 mo	18 mo	24 mo
All CALHIV all CALHIV	92.1%	92.7%	92.4%	91.0%
# with VL<1000	8120	5917	4177	1888
Total with VL result	8816	6383	4522	2074

- No real difference in suppression by sex, age group, or NRTI backbone

Viral suppression on DTG with Single Drug Substitution in 210 Children NOT Suppressed at Baseline by NRTI Backbone

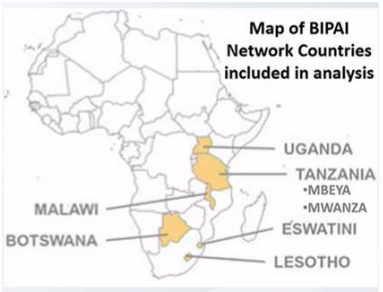
	VLS rate after SDS with DTG by chronological VL test among previously unsuppressed cohort			
Cohort of CALHIV (n, %)	First post-DTG VL	Second post-DTG VL	Third post-DTG VL	Fourth post-DTG VL
All CALHIV (n=210, 5.5%)	79.9% (115/144)	78.8% (67/85)	79.1% (34/43)	80.0% (16/20)
ABC-based SDS (n=141, 6.4%)	80.0% (76/95)	79.3% (46/58)	76.7% (23/30)	78.6% (11/14)
AZT-based SDS (n=18, 3.6%)	83.3% (10/12)	100% (8/8)	75.0% (3/4)	100% (1/1)
TDF-based SDS (n-51, 4.6%)	78.4% (29/37)	68.4% (13/19)	88.9% (8/9)	80.0% (4/5)

- Limited numbers but suppression in ~80% maintained over time, no difference by NRTI backbone

Shifting from PI-Based ART to DTG-ART Achieves and Maintains Viral Suppression

Bacha J et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 21; AIDS 2022 Ab)AB0203

- Retrospective review from 7 BIPAI sites in 6 countries on 1,475 children enrolled in care and optimized from **PI- to DTG**-based ART
  - Median age 14.0 year (range 3.6-19.9 years)
  - Time on PI (72% LPV/r, 28% ATV/r) ART prior to switch to DTG 9.8 years
  - Suppression (VL <1,000) on **PI ART 88.9%**



- FU on DTG 212 days (7-1017 days); **post-DTG VL suppression 89.8%,** with no difference by PI
- 118 youth were **unsuppressed on PI**; **68% suppressed after switch to DTG**

Cohort	Added VLS among previously unsuppressed (n=118 with pre and post-DTG VL)		
	VLS on DTG	Total on DTG	VLS rate post DTG
All	80	118	67.8%

	Females	Males	p-value
VLS on PI-based ART	**86.4%** (451/522)	92.7% (548/591)	<0.001
VLS on DTG-based ART	**87.2%** (574/658)	90.4% (722/799)	0.05

	15-19yo	10-14yo	p-value
VLS on PI-based ART	**86.9%** (432/497)	91.4% (361/395)	0.03
VLS on DTG-based ART	**85.5%** (538/629)	90.1% (465/516)	0.02

	15-19yo	5-9yo	p-value
VLS on PI-based ART	**86.9%** (432/497)	94.0% (203/216)	<0.01
VLS on DTG-based ART	**85.5%** (538/629)	93.5% (257/275)	<0.01

- VL suppression was lower for <u>both</u> PI and DTG ART in **females and adolescents 15-19 years**

→Switch from PI to DTG ART effective at maintaining and achieving viral suppression.

→Continued attention to support females and older adolescents needed.

Transition to DTG-Based ART is Associated with Sex and Viral Load Access in West African Children and Adolescents

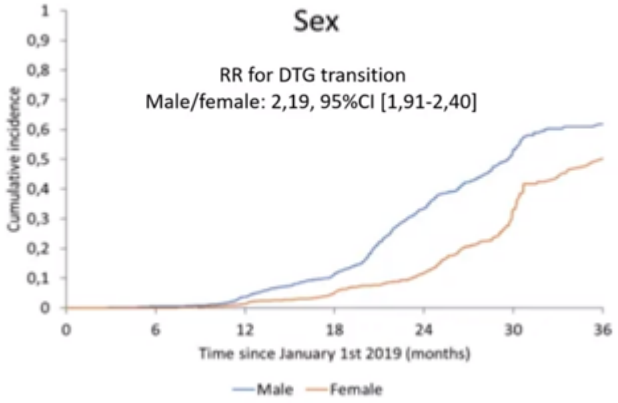
Desmonde S et al. International Pediatric HIV Workshop, Montreal Jul 2022, Abs. 22

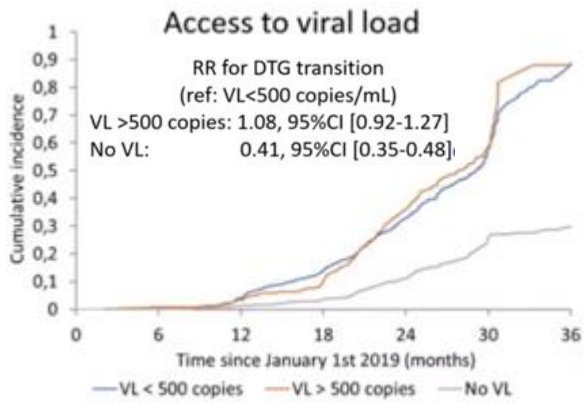
- Evaluated transition to DTG-based ART among 2,787 children/youth aged 0-24 years on ART with ≥1 visit since 2019 in 7 clinics contributing to the pediatric IeDEA West African cohort.

	Overall
At baseline	2 787
Female, %	47
Age at ART initiation, median [IQR]	5.5 years [1.9-8.3]
ART initiation <2015, %	59
NNRTIs as 1st line, %	74
At the last visit	
Age ≥10 years, %	72
On 1st line ART, %	47
Access to viral load, %	63
Undetectable (<500 copies/mL), %	70

Transition to DTG Since 2019

	M12 (Dec 31st 2019)	M24 (Dec 31st 2020)	M30 (June 30th 2021)
CIF (%)	2. 6	23.2	43.8
Confidence interval 95%	[2.0 – 3.2]	[21.5 – 24.9]	[41.2 – 46.2]



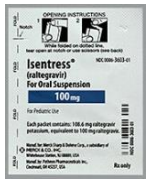


Factors Associated with DTG Transition

(N = 2787)	Adjusted Relative Risk for DTG access	95% Confidence Interval	P-value
Site			*<0.0001*
CePReF	1	-	
CHU Cocody	0.40	[0.32-0.50]	
CHU Yopougon	0.84	[0.68-1.05]	
Bénin	0.77	[0.59-1.00]	
Mali	0.54	[0.45-0.65]	
Ghana	1.03	[0.79-1.34]	
Togo	0	-	
Sex Male/Female	2.16	[1.89 – 2.48]	*<0.0001*
Viral load			*<0.0001*
VL ≤ 500 copies	1	-	
VL > 500 copies	1.03	[0.87-1.21]	
No VL access	0.66	[0.56-0.78]	
Age			*<0.0001*
< 5 years	1	-	
5 – 9 years	9.81	[2.41-39.86]	
> 10 years	23.25	[5.78-93.46]	
2nd line vs 1st line or ART naive	16.85	[11.64-24.64]	*<0.0001*

→Slow transition to DTG; 44% by June 2021.

→Access to DTG associated with male sex (pregnancy concern?); access to VL testing; age >5 yrs (later DTG formulation availability for <5 yrs) and being on 2nd line ART.

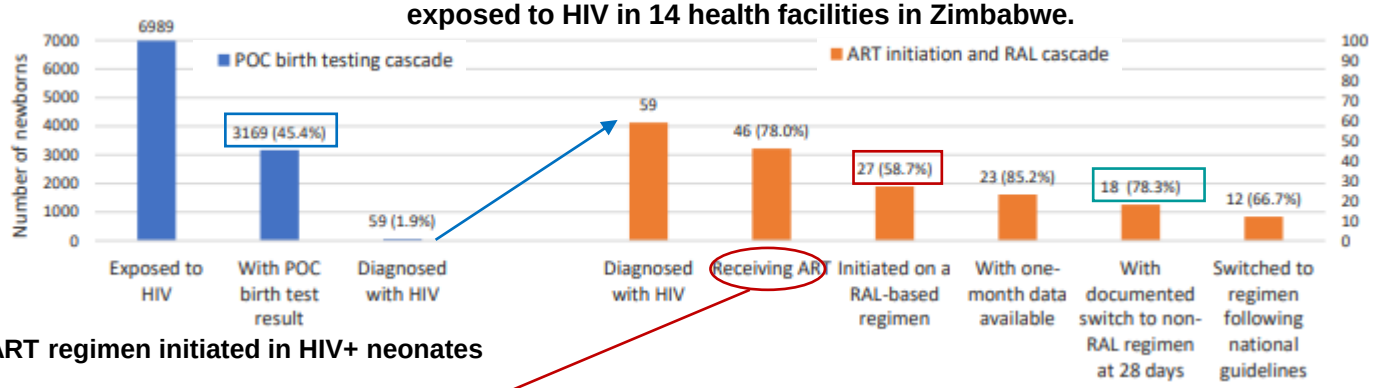


Uptake of RAL Granules in Newborns Diagnosed with HIV in Zimbabwe During COVID-19 Pandemic

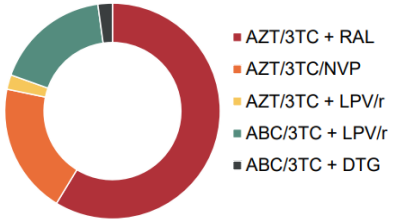
Denoend-Ndam L et al. AIDS 2022, Montreal, Canada, Abs. EPB203

- RAL granules introduced in 14 health facilities with capacity for POC HIV birth testing in Zimbabwe; HCW were trained on RAL use and caregiver counseling on preparation/administration of RAL.
- Study population included **all infants exposed to HIV born at project sites from June 2020- June 2021**

Point-of-care birth testing, ART initiation, and RAL treatment cascade; N=6989 neonates exposed to HIV in 14 health facilities in Zimbabwe.



ART regimen initiated in HIV+ neonates



58.7% of neonates initiated on ART received RAL-based regimens

13 Infants NOT initiated on ART

- AZT/3TC **out of stock** 4
- **No record** available 4
- Transferred for ART start another facility 2
- **Died** day birth before start 1
- Mother **disappeared** before start 1
- **Pharmacy closed** 1

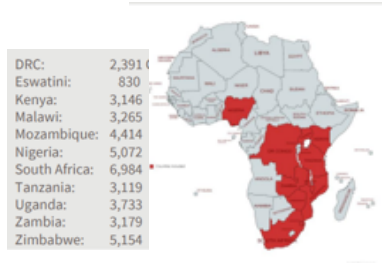
- 59% infants started on RAL ART; started earlier than those starting other ART regimens (4 vs 6 d)
- Day 28 (when switch to non-RAL ART recommended) available for 85% of 27 started on RAL – 18 (78%) switched to non-RAL ART as recommended
- Weight check for dosing did not appear to be done often (7 d, 37%; 28 d, 22%)

→ Lower than expected birth testing uptake and RAL usage observed
  - Inconsistent supply chain POC EID testing cartridges, RAL granules, ped AZT/3TC
  - Shortage of trained healthcare workers due to strikes and high staff turnover
  - Documentation gaps of data points not recorded or not maintained in registers

→ Need to address **health systems gaps for supply chain; staffing (training, retention, mentorship, supervision);** and **ability to track newborns and maintain documentation** of weight and RAL dosing

Viral Load Coverage in HIV+ Children Age <5 Years in USAID-Supported Facilities in 11 Countries, 2019-2021

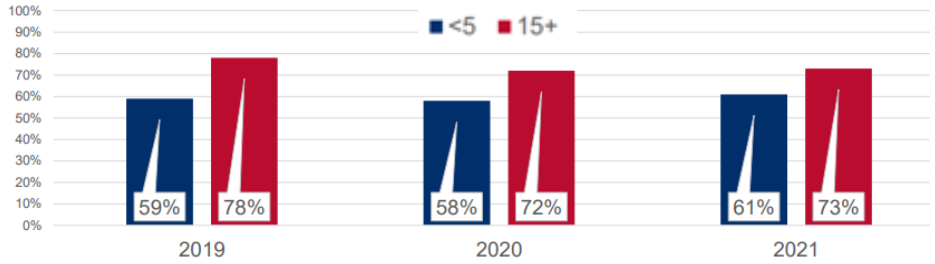
Frost K et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 19



- Evaluated viral load testing in >40,000 HIV+ children age <5 years in 2019, 2020 and 2021 in 11 countries with >500 children on ART at USAID-supported sites at middle 2021 (and hence eligible for VL testing by end 2021).

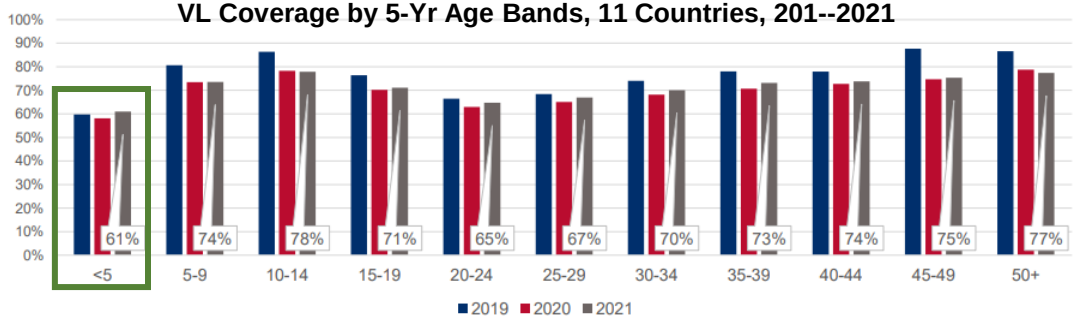
COVERAGE LOWER IN CHILDREN AGE <5 YR THAN ADULTS IN ALL 3 YEARS

VL Coverage in Children Age <5 Yr vs Adults 15+ Yr, 11 Countries, 2019-2021



COVERAGE LOWER IN CHILDREN AGE <5 YR THAN ALL OTHER AGE GRPS

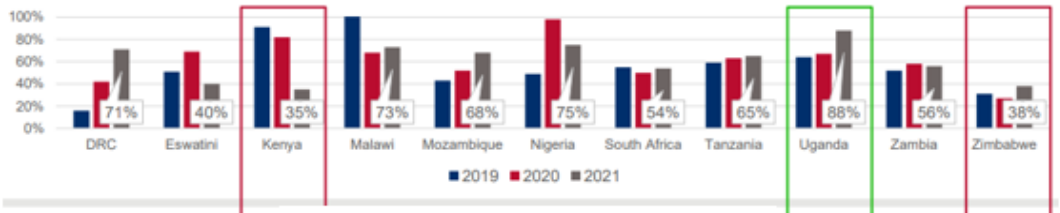
VL Coverage by 5-Yr Age Bands, 11 Countries, 201--2021



COVERAGE BY COUNTRY AND AGE SHOW SIGNIFICANT VARIATION

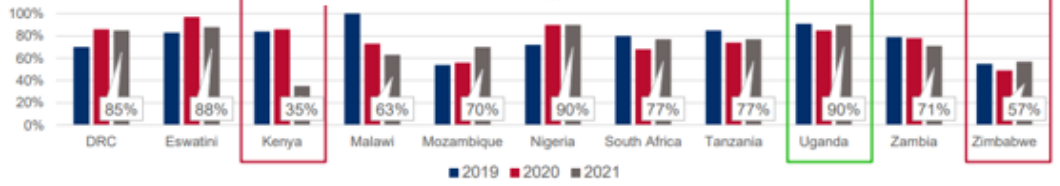
VL Coverage in Children by Country and Year

Children Age <5 Yr, 2019-2021



VL Coverage in Adults by Country and Year

Adults Age ≥15 Yr, 2019-2021



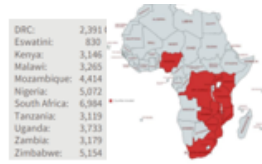
**Malawi results for children & adults in 2019 exceeded 100% due to inability to deduplicate clients in LMIS.*

General VL Testing Barriers Identified in Countries:

- **Patient factors** including reduced clinic attendance due to COVID, distance/transport/poverty/stigma, poor treatment literacy re: VL monitoring
- **Health facility performance challenges** such as missed opportunities for testing, form completion errors, phlebotomy errors; staffing
- **Specimen transport problems** such as fuel cost, security issues, COVID disruption
- **Shortages & stock-out** reagents, other VL commodities
- **Lab challenges** such as equip malfunction; staff shortages; power outages; sample backlog
- **Information systems issues** such as problems with lab/clinic interface; internet downtime; data lost; lack data entry EMR

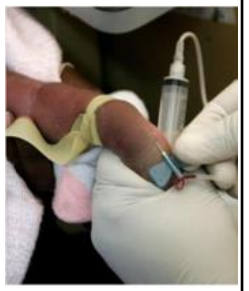
Examples of Country Facilitators of VL Testing in Children

Frost K et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 19



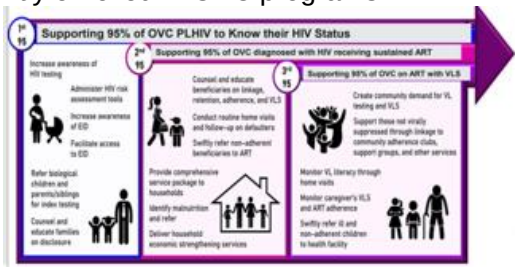
Community VL Sample Collection Helps Improve Access

- COVID led to rapid expansion of community and home-based services, including community VL sample collection
- VL sample collection is done via home visits and visits to other community locations
- Samples (blood or DBS) collected by clinical staff, CHW or OVC providers



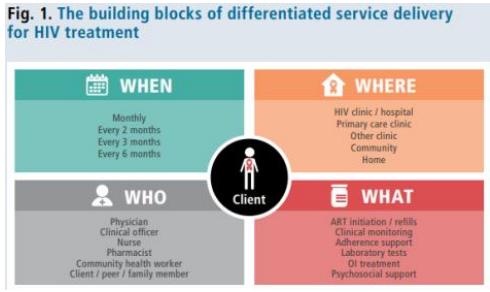
OVC Case Managers & Other Community Workers Help to Reduce Patient Barriers and Improve Access

- ~70% (range 28-91%) of CLHIV <5 yr on ART in these 11 countries are currently enrolled in OVC programs
- OVC services continue to evolve with stronger facility-community integration and services



Optimize Family-Centered DSD and MMD Models to Improve Access and Convenience

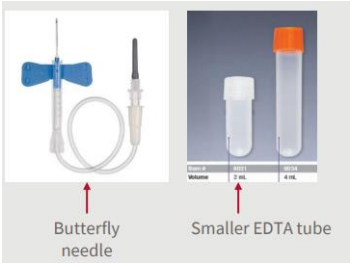
- COVID led to rapid expansion DSD and MMD models including in children
- Family-centered DSD models including VL testing implemented in Kenya[1], Nigeria[2], South Africa[3], showing improved coverage and viral suppression children

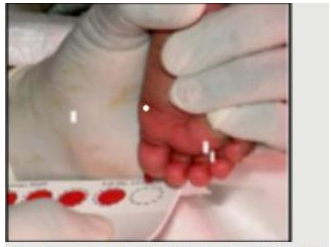


1. Ogiti, D., et al. Impact of a family-centered care model on viral suppression among HIV-infected children in Migori, Kenya. IAS 2021
2. Yakuba, T., et al. Differentiated Service Delivery Model to Increase Access to HIV-1 RNA Viral Load Testing in Four States in Nigeria, IAS 2021
3. Tsondai, P., et al. Retention and viral suppression outcomes of patients enrolled in family ART adherence clubs in Cape Town, South Africa, IAS 2017

Simplify Pediatric Sample Collection with Better Phlebotomy Supplies and/or DBS

- **Pediatric phlebotomy supplies** for venous blood collection (≥4 countries): butterfly needles and small EDTA tubes
- **DBS sample collection** (≥8 countries): easier to collect than venous samples in infants, young children





Job Aid: Preparation and Packaging of Dried Blood Spot (DBS) Samples for Pediatric HIV Diagnosis or Viral Load Testing, Global Health Supply Chain

Point-of-Care Testing to Reduce Turn-Around Time For Results

- Several countries have been rolling out POC VL testing for pregnant/BF women and now extending to children – at least 10 countries plan to implement in 2023
- POC VL requires venous blood (not DBS) so plans need to include pediatric phlebotomy supplies when implementing

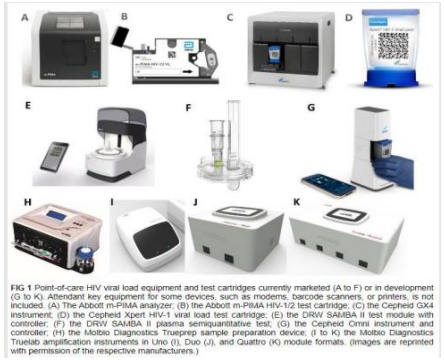


FIG 1 Point-of-care HIV viral load equipment and test cartridges currently marketed (A to F) or in development (G to K). Attendant key equipment for some devices, such as modems, barcode scanners, or printers, is not included. (A) The Abbott m-PIMA analyzer; (B) the Abbott m-PIMA HIV-1/2 test cartridge; (C) the Cepheid GX4 instrument; (D) the Cepheid Xpert HIV-1 viral load test cartridge; (E) the DRW SAMBA II test module with controller; (F) the DRW SAMBA II plasma semiquantitative test; (G) the Cepheid Omni instrument and controller; (H) the Molbio Diagnostics Truepreп sample preparation device; (I to K) the Molbio Diagnostics Truelab amplification instruments in Uno (I), Duo (J), and Quattro (K) module formats. (Images are reprinted with permission of the respective manufacturers.)

→ Despite increased risk of morbidity & mortality, **children age <5 years are substantially less likely than adults to receive VL testing**.

→ There are several **promising strategies** being tested to improve VL testing among young children

→ **Tracking of the speed, coverage and fidelity of the scale-up** of these key interventions is critical to access success and impact.

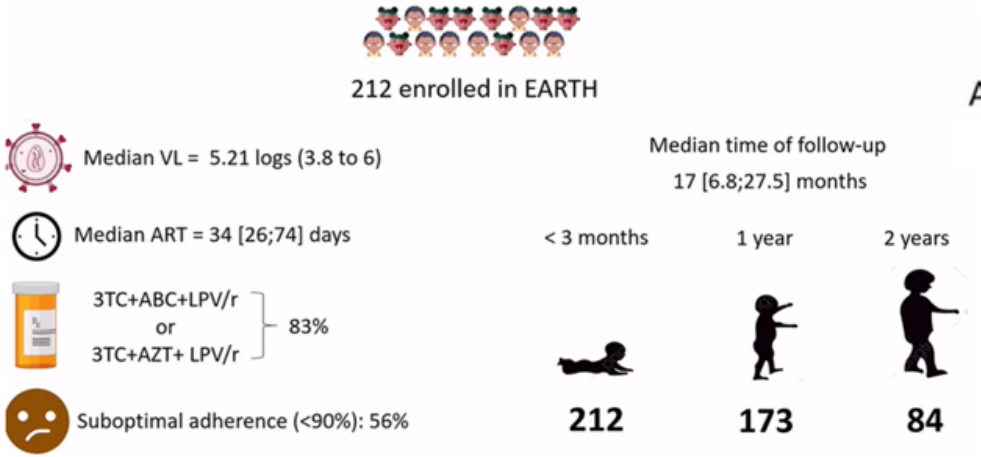
Photo credit: Paul Jeffrey, World Council of Churches

Pediatric HIV Disease Course in the ART Era

Mortality in African Infants Starting ART at Age <3 Months

Brehin C . International Pediatric HIV Workshop, Montreal July 2022, Abs.15; AIDS 2022 Abs.OAB0205

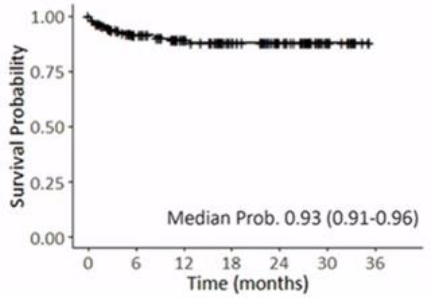
- EARTH-EPIICAL cohort of 212HIV+ infants started on ART age <3 months in Mozambique, Mali and South Africa, being followed to age 4



23 patients (10.8%) died
At a median of 2.5 [0.6;6.8] months
74% in the first 6 months

➢ **Probability of death:**

- **at 1 year = 11%** (CI95%,6 to 15)
- **at 2 years = 12%** (CI95%,7 to 17)

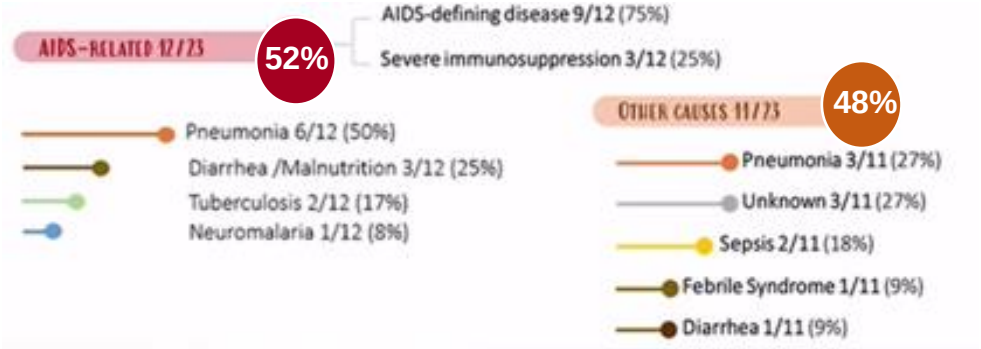


Excess of mortality compared to baseline mortality = **7%**

Due to **AIDS-related causes = 5.7%**

Due to **non-AIDS related causes = 1.4%**

	South Africa n=123 Baseline 2,7/100 LB			Mozambique n=79 5,5/100 LB			Mali n=10 6/100 LB			All n=212 3,8/100 LB		
	Deaths	%	Excess	Deaths	%	Excess	Deaths	%	Excess	Deaths	%	Excess
All	7	5,7	3%	14	17,7	12.2%	2	20	14%	23	10,8	7%
No AIDS	3	2,4	-0.3%	8	10,1	4.6%	0	0,0	0%	11	5,2	1,4%
AIDS	4	3.3	3.3%	6	7,6	7.6%	2	20,0	14%	12	5,7	5.7%



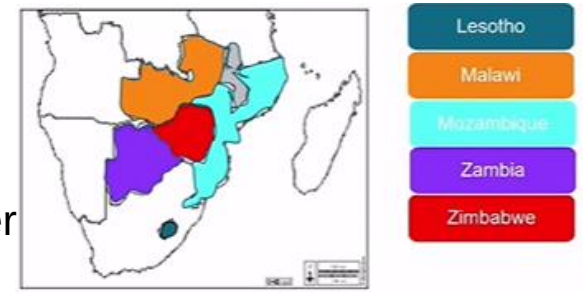
		Estimate (95% CI)	p-value
Longitudinal model			
Time on ART		-0.008 (-0.01-(-0.004))	$2.1 \cdot 10^{-4}$
ART regimen			
	3TC+ABC/AZT+NVP	5.29 (0.36-8.24)	0.007
	3TC+AZT+LPVr	-3.84 (-8.0-0.70)	0.063
Survival model			
Baseline Viral load		AIDS-related cause, 1.47 (0.87-3.74)	0.290
		Other cause, 4.34 (1.84-20.7)	0.026
Baseline Weight-for-age		AIDS-related cause, 1.22 (0.78-1.71)	0.353
		Other cause, 1.07 (0.70-2.12)	0.792
Age at diagnosis		AIDS-related cause, 1.01 (0.99-1.01)	0.411
		Other cause, 0.99 (0.95-1.00)	0.276
Association CD4		AIDS-related cause, 0.9 (0.86-0.98)	0.046
		Other cause, 1.09 (1.02-1.15)	0.003

Mortality in Children and Youth on ART Who Are Lost-to-Follow-Up in Southern Africa: Linkage vs Tracing

Nyakato P et al. AIDS 2022, Montreal, Canada, Abs.OAC0304

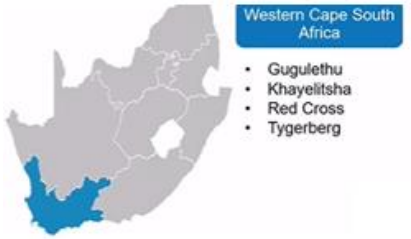
- Used data from tracing and linkage studies in Southern Africa to correct mortality for LTFU in children receiving ART
  - LTFU: No visit for >180 d and no recorded death or transfer
  - True LTFU: Traced/linked & not found or known deceased

Tracing Cohort



All children 0-24 years who started ART 2004-2017 at IeDEA sites

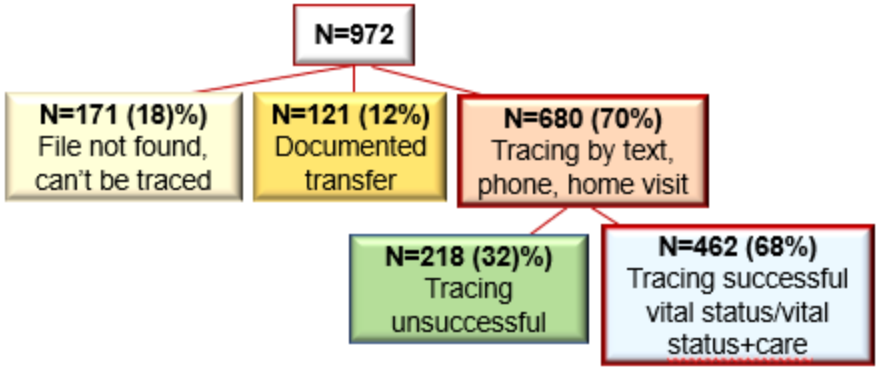
Linkage Cohort



EMR at 4 health facilities in W Cape; children 0-14 starting ART 2004-2015

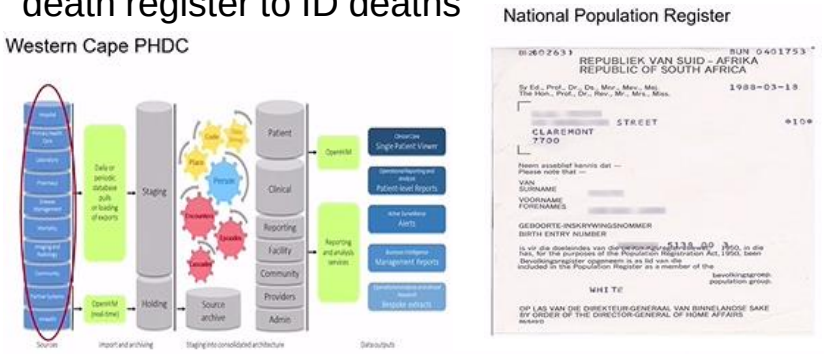
Tracing Cohort

Tracing done on stratified random sample of clinic participants



Linkage Cohort

Unique patient IDs used to assess if a patient lost at one site has any linkage to another; National death register to ID deaths



- 1,459 recorded as LTFU
- Of these, 72% could be linked
- Of these, 898 (85%) vital status ascertained

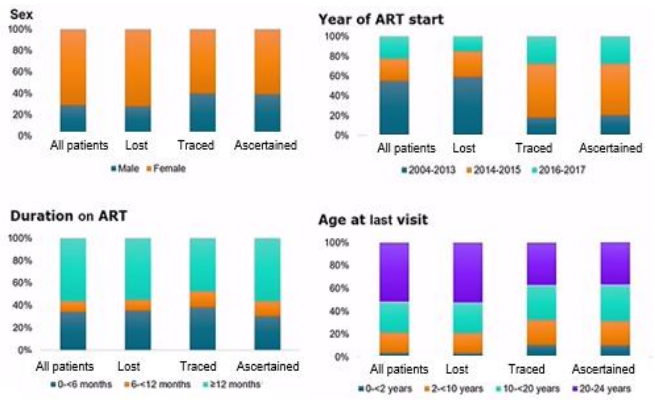
Logistic and GAM models predicted probability of being included in tracing sample and found by tracer

Inverse probability weights assumes that those found represent all of whom were traced & not found/ traced; patients not lost given weight of 1

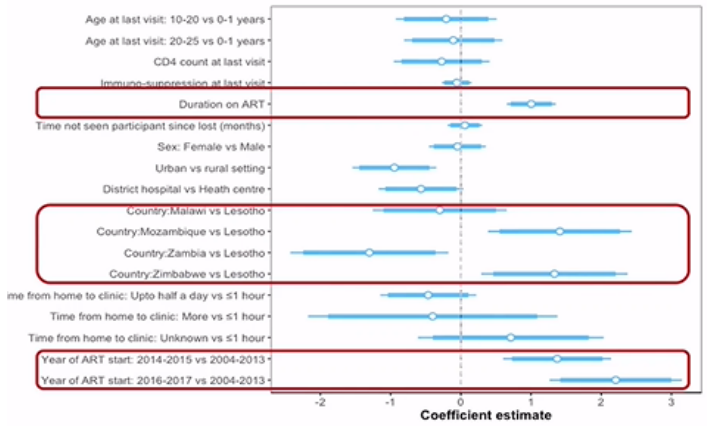
Mortality in Children and Youth on ART Who Are Lost-to-Follow-Up in Southern Africa: Linkage vs Tracing

Nyakato P et al. AIDS 2022, Montreal, Canada, Abs.OAC0304

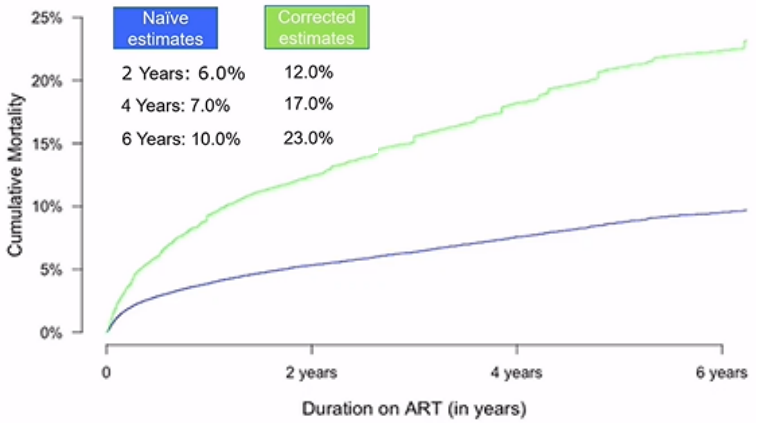
Tracing Cohort Pt Characteristics



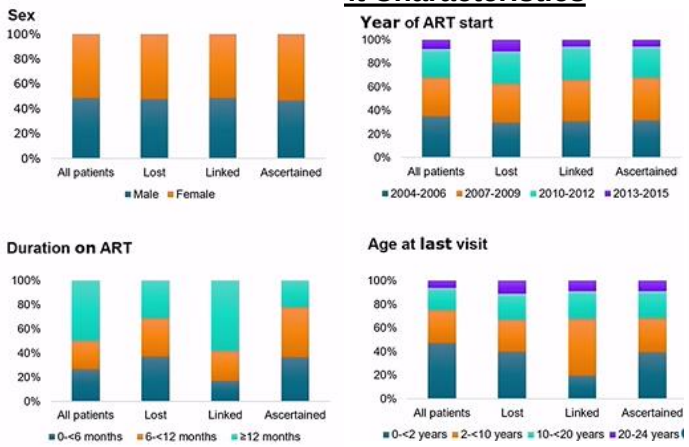
Factors Associated with Successful Tracing



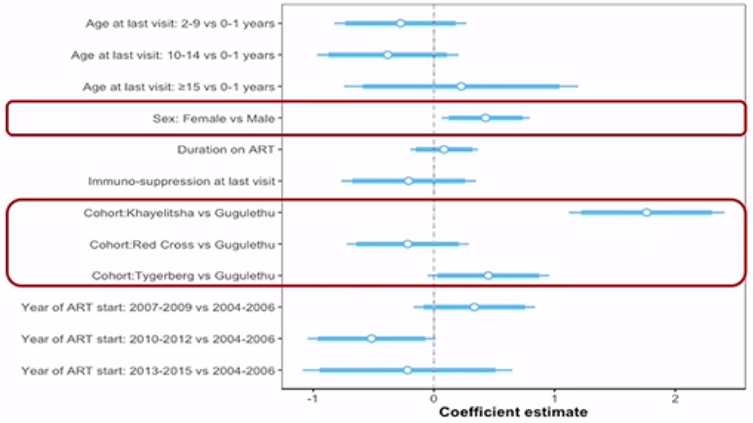
Tracing: Naïve and Corrected Cumulative Mortality Estimates



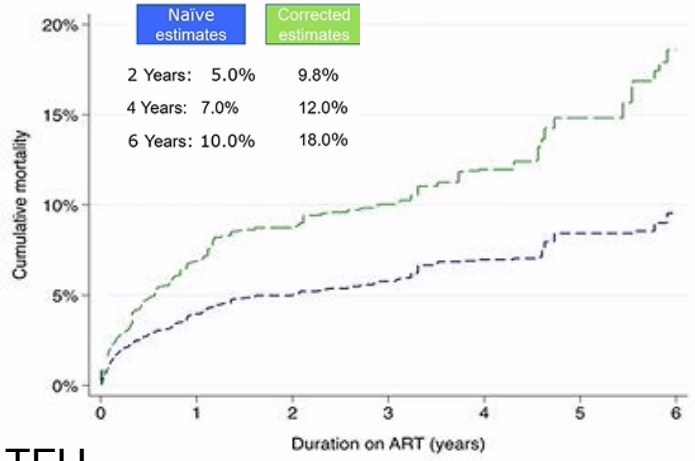
Linkage Cohort Patient Characteristics



Factors Associated with Successful Linkage



Linkage: Naïve and Corrected Cumulative Mortality Estimates

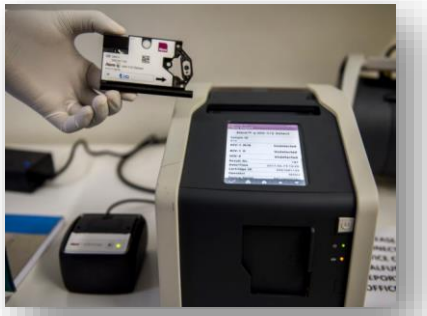


→ **Mortality was 2-2.5 times higher** with additional outcomes in those LTFU

→ Linkage and tracing results were **similar**

→ Program level **mortality in HIV+ children is underestimated** without additional ascertainment

HIV Testing and Case Finding

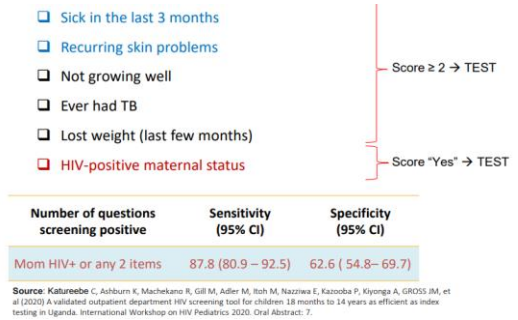


National Implementation of Validated Pediatric HIV Testing Eligibility Screening Tool and Expansion of Index Testing, Uganda

Mabirizi D et al. International Pediatric HIV Workshop, Montreal July 2022, Abs.16

- Analyzed HIV testing data for 3,283 PEPFAR-supported sites in Uganda, pre-HRAT (2019) and post-HRAT+expanded index testing (2021) to explore changes in testing in children age 1-14 yrs; number needed to test (NNT) to identify one new child with HIV calculated

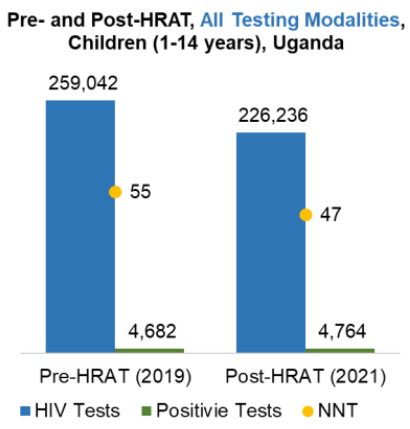
Pediatric HIV Risk Assessment Tool (HRAT)



Source: Katureebe C, Ashburn K, Machekano R, Gill M, Adler M, Itoh M, Nazziwa E, Kazooba P, Kiyonga A, GROSS JM, et al (2020) A validated outpatient department HIV screening tool for children 18 months to 14 years as efficient as index testing in Uganda. International Workshop on HIV Pediatrics 2020. Oral Abstract: 7.

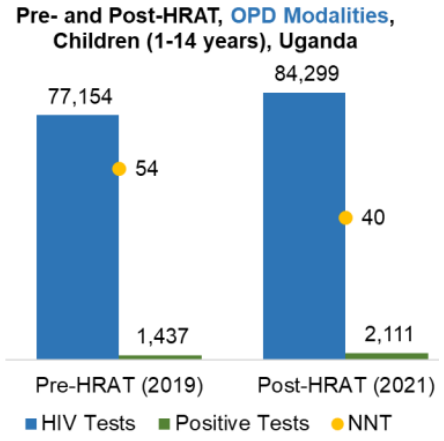
All Testing Modalities

→Ped testing ↓ by 13%
→HIV diagnosis ↑ 1.8%
→NNT ↓ from 55 to 47



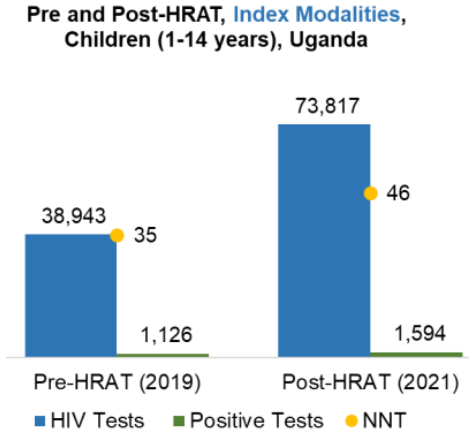
Outpatient Testing

→Ped testing ↓ by 8.5
→HIV diagnosis ↑ 46.9%
→NNT ↓ from 54 to 40



Index Testing

→Ped testing ↑ by 89.6%
→HIV diagnosis ↑ 41.6%
→NNT ↑ from 35 to 46



→Use of validated HRAT and ↑ index testing can ↑ pediatric HIV testing and case identification among children with the highest risk, especially in high volume, low HIV prevalence settings

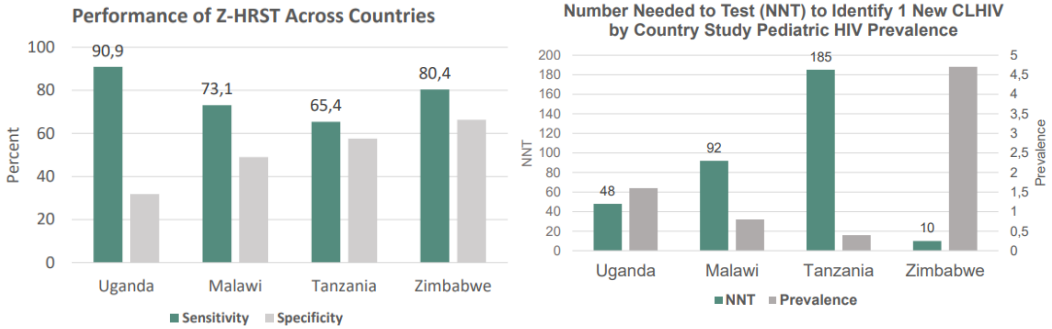
→Use of HRAT resulted in significant reduction in NNT, making OPD testing slightly more efficient than ped index testing (NNT 40 vs 46)

Pediatric HIV Risk Screening Tool Evaluation in Uganda, Tanzania, Malawi

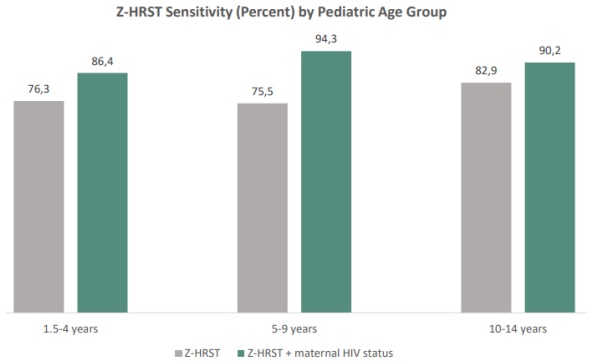
Elizabeth Glaser Pediatric AIDS Foundation
Fighting for an AIDS-free generation

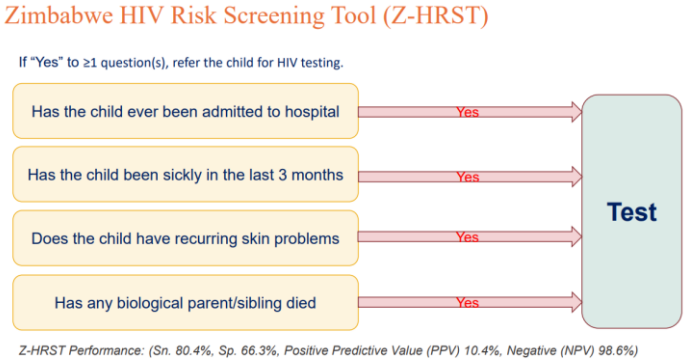
Machekano R et al. International Pediatric HIV Workshop, Montreal July 2022, Abs.17

- Evaluated performance of Zimbabwe HIV Risk Screening Tool (Z-HRST) in Uganda (n=3482, **1.6% HIV+**), Tanzania (n=14,812, **0.4% HIV+**) and Malawi (n=9245, **0.8% HIV+**); evaluate alternative tools selected through machine-learning approaches (training set and validation set data)
  - Testing performance varied between countries



  - Including maternal HIV status ↑ sensitivity





- Selected optimal tool based on 3 questions:
  1. Child had growth problems (adolescents: Child sickly in last 3 months)
  2. >1 biologic parent/sibling HIV+ (or unknown status)
  3. Recurring skin problems

	Z-HRST	Alternative Tool	Alternative tool (Uganda validation sample, n= 11339)
Sensitivity	76.4 (69.4 - 82.5)	80.0 (44.4 – 97.5)	97.4 (92.6 – 99.5)
Specificity	51.5 (50.9 - 52.1)	74.2 (72.2 – 76.2)	50.3 (49.3 – 51.2)
NNT	99 (84 - 118)	59 (31 – 143)	50 (42 – 63)

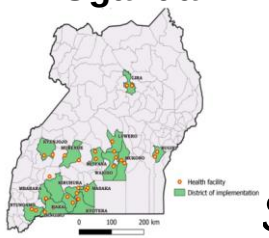
- However, tool had poor discrimination for older adolescents (15-19 yrs)

→Variable sensitivity of tool based on HIV prevalence in country

→Tool more beneficial for ID in children <15 yr than adolescents

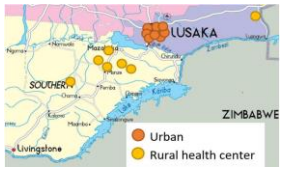
→Performance was better in OPD than in community settings

Uganda



Caregiver-Assisted Oral HIV Screening of Children Age 18 Months-14 Years, Uganda and Zambia

Zambia



Stecker CC et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 18

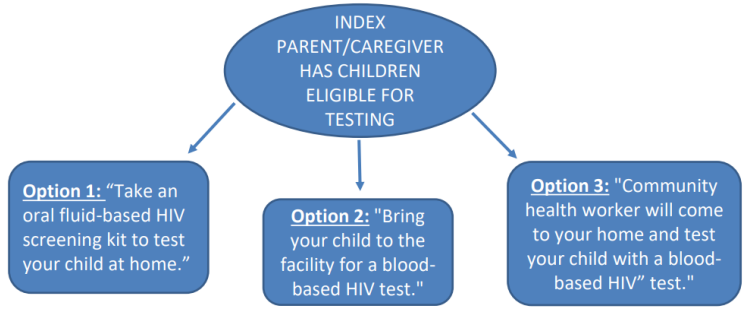
- Evaluated acceptability, feasibility and effectiveness of implementing caregiver-assisted oral fluid-based HIV screening for children as part of index testing for HIV+ adults in cross-sectional cluster sampling design, 32 facilities in 16 districts Uganda, 15 facilities in 2 provinces Zambia

Inclusion criteria:

Adult index parents/caregivers:
- All HIV-positive adults including HIV-positive women and HIV-positive men
- At least 18 years old or emancipated minors (15-17 years of age)
- With eligible children

Eligible children:
- All biological children (of an adult index case) 18 months – 14 years of age with an unknown HIV status, where the biological mother's status is positive, unknown or deceased.

non-biological children living in the same household

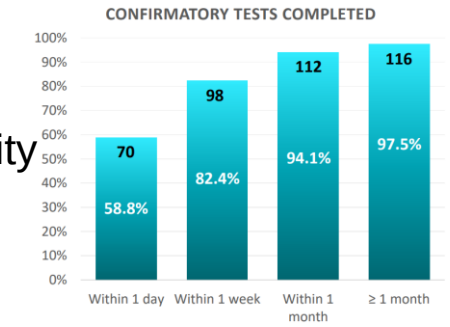


Acceptability

- 96.8% (3931/4059) of eligible index parents/caregivers accepted oral test kits
- 7593 test kits sent home; 97.6% (7413) children tested and returned results

Feasibility

- 1.6% (119 children) had reactive oral test kit result
- 97.5% (116 children) completed blood-based testing at facility
- ↓ need for facility-based testing by 98.4%



Effectiveness

- 43/116 (37.1%) of children confirmed HIV+
- 97.7% (42/43) children had same-day ART initiation
- 0.4% of children had minor reaction to oral test kit

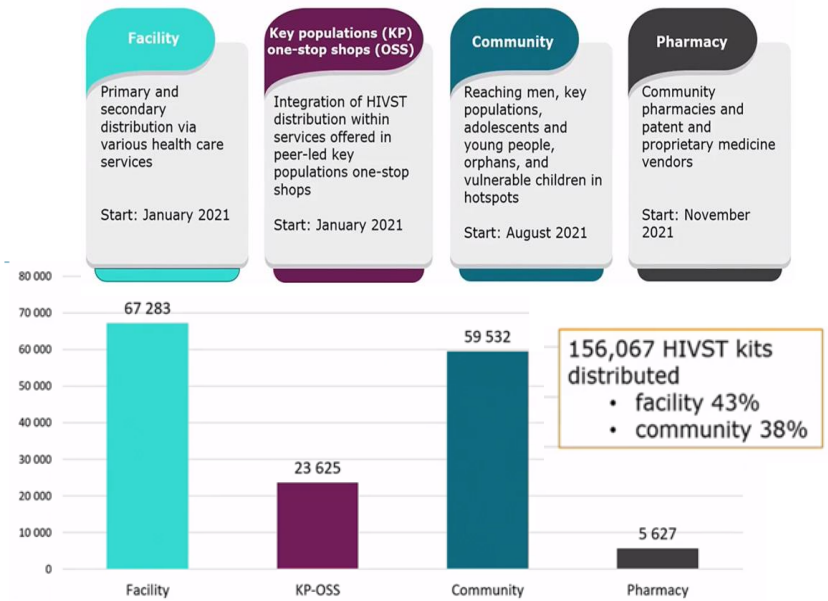
→New acceptable/feasible addition to HIV testing "tool kit" for identification of HIV+ children

→Can help decongest facilities

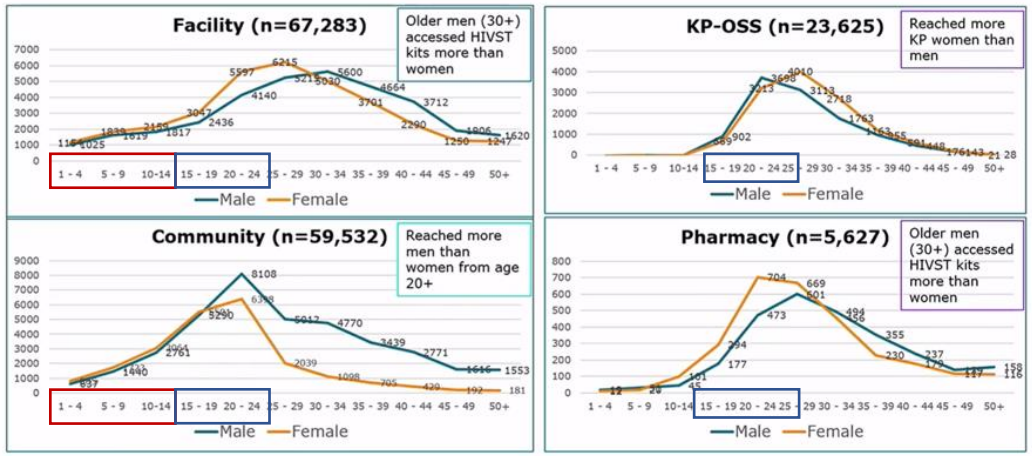
HIV Self-Testing Models: STAR III, Nigeria

Adepoju A et al. AIDS 2022, Montreal, Canada, Abs.OAE0103

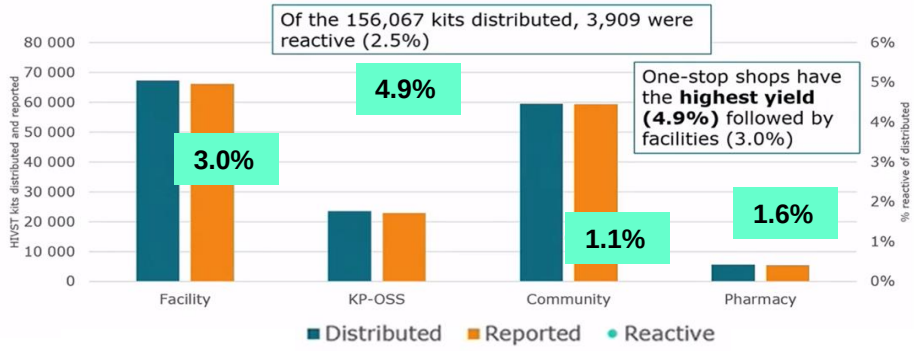
Distribution Models



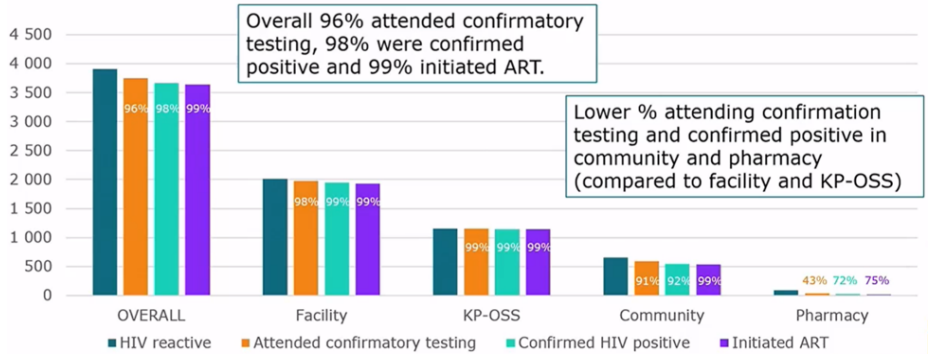
HIVST by Model, Age and Sex



HIVST Reporting and Reactivity, by Model



Confirmatory Testing, Confirmed HIV+, and ART Initiation Among Those Reporting Reactive HIVST Kit, by Model



→ HIVST distribution is acceptable & feasible across diverse settings, populations, and age groups in Nigeria, & reach high risk persons not tested previously

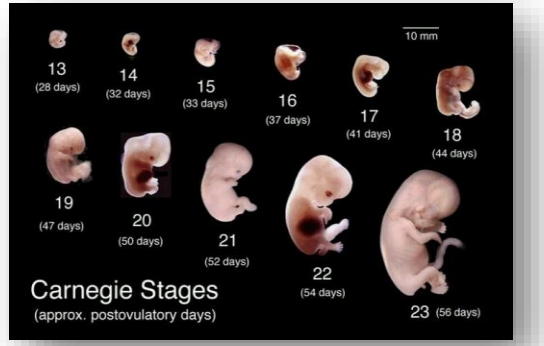
→ Positivity rate optimized by one-stop shops serving key populations

→ Achieving high result return possible enabling support/linkage based on result

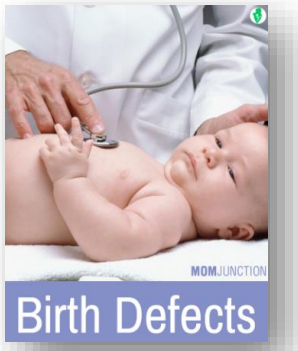
→ Lower rates of confirmatory testing and LTC with pharmacy distribution warrants further exploration

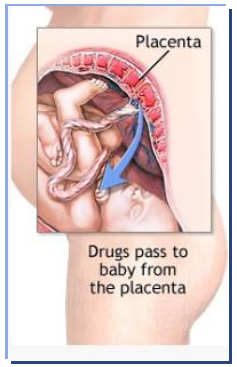
Implications for Programming – Paediatric HIV

- EARLY ART with DTG as FIRST LINE must be scaled up urgently
  - Field experience confirms DTG working well even for kids switching from PI 1st line
  - DTG levels not affected by food in children (unlike adults)
  - Even in infants treated as early as 3 months, mortality is highest in first 6 months
  - DSD called for, especially among older adolescents 15-19 years
- VL TESTING COVERAGE NEEDS TO IMPROVE
  - VL testing less accessible to children especially those below 5 years.
  - DTG switch provides an opportunity to increase access to VL testing for children
  - Other promising strategies – community VL test collection and POC
- FIND THE CHILDREN USING MULTIMODAL APPROACHES!
  - Supported Oral HIV self tests are widely accepted and have been used as home-based tests for index testing to identify children
  - Risk assessment tools are reducing costs and increasing case finding



Pregnancy, ARV Drugs and Infant Outcomes

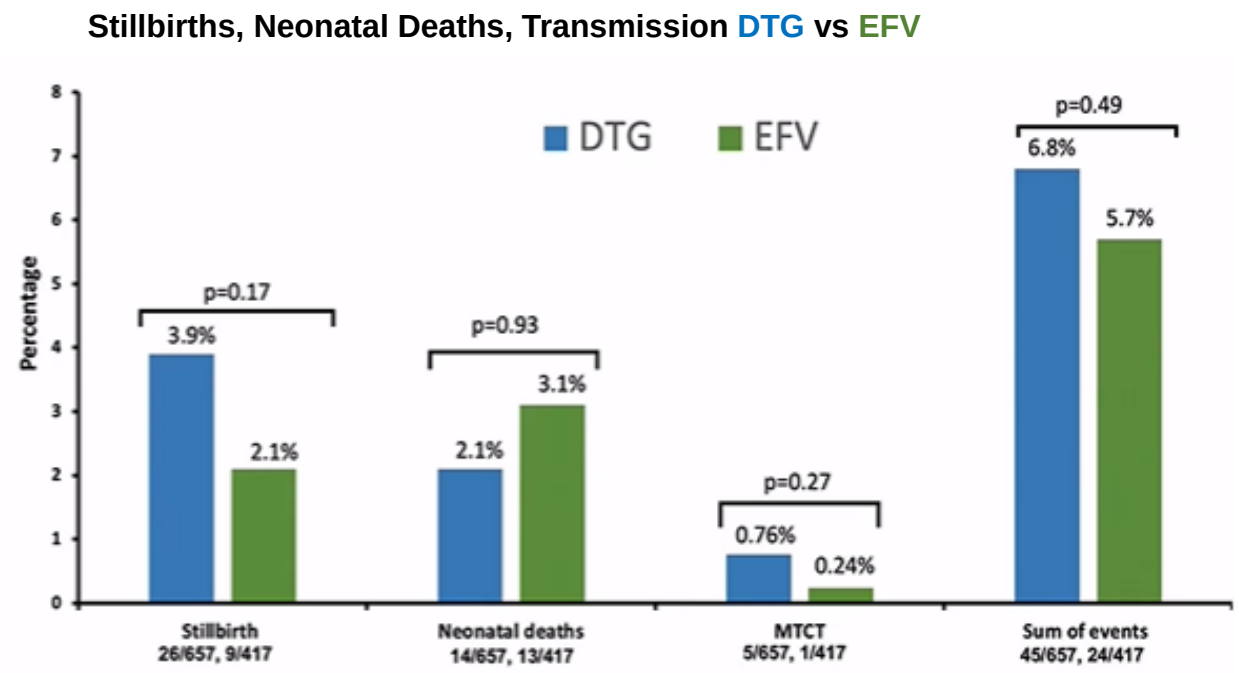




Pregnancy Outcomes with DTG vs EFV in 5 Clinical Trials

Hill A et al. AIDS 2022, Montreal, Canada Symposium 7/30/22

→Meta-analysis of 1,074 pregnancy outcomes from DolPHIN-1 (PK), DolPHIN-2 (DTG vs EFV late pregnancy), IMPAACT 2010/VESTED (DTG vs EFV after 1st trimester), and pregnancies in ADVANCE and NAMSAL trials



→**No significant differences** overall in risk of stillbirth, neonatal death or MTCT rates between DTG and EFV arms

→Some differences in outcomes btn trials – in DolPHIN-2 non-significant trend for more stillbirths and neonatal death on DTG arm while in VESTED non-significant trend for more stillbirths and neonatal deaths on EFV

→5 cases of MTCT DTG (4 with early + test [day 2-5], 1 with only 3 wk DTG duration = all in utero) vs 1 case EFV (breastfeeding)

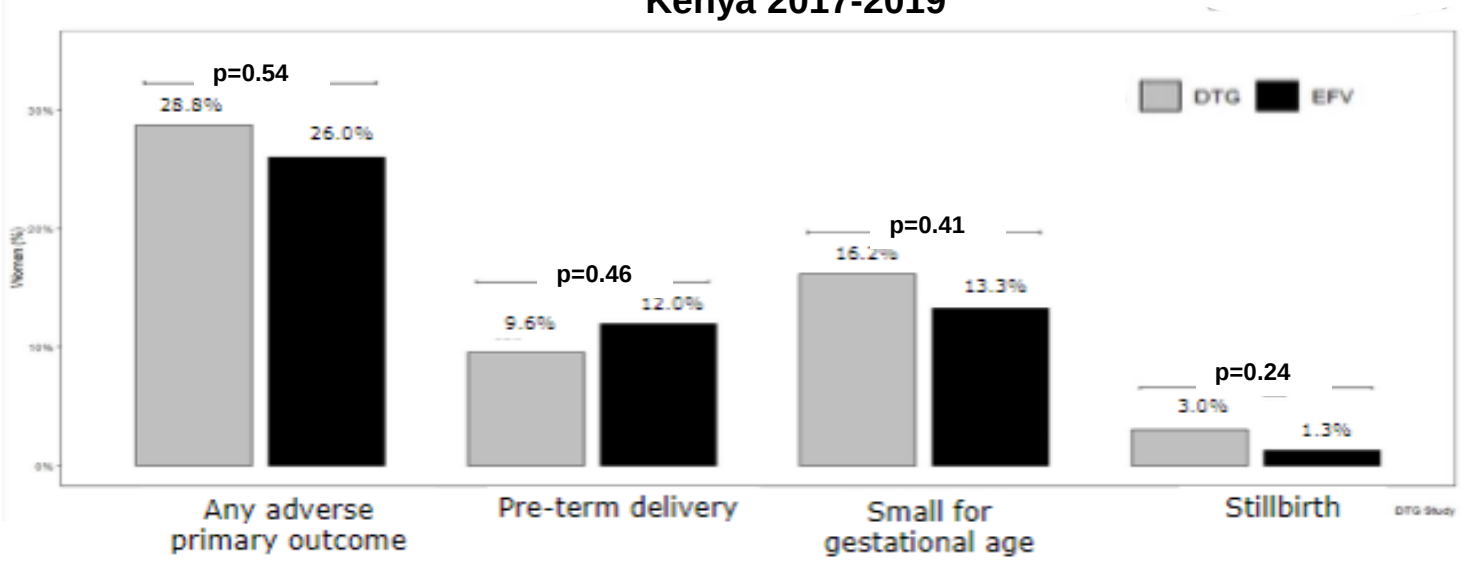
Periconception DTG Use & Risk of Adverse Pregnancy Outcome, Kenya

Da Silva J et al. AIDS 2022, Montreal, Canada Abs. OAE0504

- Cohort study 23 sites in Kenya identified 198 women receiving DTG periconception between Jul 2017-Jul 2019, matched to 392 women receiving EFV periconception, matched by age, LMP and facility type

		Efavirenz (n=392)			Dolutegravir (n=198)		
	N	%/median	95 % CI (or IQR)	N	%/median	95 % CI (or IQR)	P-value
Most recent viral load results							0.355
VL <1000cps/ml	350	89.3	(86.2 - 92.4)	184	92.9	(89.3 - 96.5)	
VL >1000cps/ml	35	8.9	(6.1 - 11.8)	12	6.1	(2.7 - 9.4)	
Attended antenatal care							0.006
Yes	388	99	(98.0 - 100)	189	95.5	(92.5 - 98.4)	
Median duration ART before conception, weeks							
	385	19.6	(10.1 - 30.8)	191	6.9	(1.4 - 42.1)	0.01

Adverse Pregnancy Outcomes by Periconception DTG vs EFV Exposure, Kenya 2017-2019



→ Adverse outcomes were common (>25% of births) both DTG and EFV

→ No significant differences adverse pregnancy outcome between periconception DTG vs EFV, and no NTD identified

- No NTD either group; 1 case cleft lip/palate EFV exposure

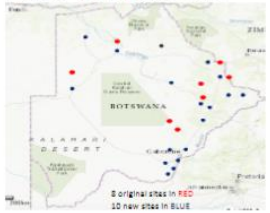
Safety and Effectiveness of DTG Use During Pregnancy- DOLOMITE-NEAT ID Network Study

Kowalska JD et al. AIDS 2022, Montreal, Canada, Abs.OALBF0103

- Data from Belgium, France, Italy, Poland, Portugal, Spain, UK, Ukraine, and Canada on women who received DTG-based regimen during pregnancy.
- Analysis included 138 DTG-exposed pregnancies
  - 92 exposed to DTG 1st trimester; 77 of these had preconception exposure
  - 16 miscarriages/abortions and 2 stillbirths (all 1st trimester exposure)
  - 131 live births (8 multiple pregnancies)
  - No difference LBW, VLBW, PTD, VPTD by trimester
  - 5 birth defects seen (none in stillbirths) (No NTD)
    - ASD
    - Small umbilical hernia
    - Cutaneous hemangioma
    - Left hydronephrosis
    - Suspicion pelvicalyceal system enlargement
  - **No significant difference birth defects 1st vs 2nd/3rd trimester exposure**

	Any Trimester	1st Trimester	2nd-3rd Trimester	P value
Pregnancy outcomes	*N=138*	*N=92*	*N=46*	
Induced abortion	7/138 (5.1%)	7/92 (7.6%)	0/46	0.095
Spontaneous abortion	9/138 (6.5%)	**9/92 (9.8%)**	0	0.029
Birth outcomes	*N=133*	*N=85*	*N=48*	
Stillbirth	2 (1.5%)	**2 (2.4%)**	0	
Live birth	131 (98.5%)	83 (97.6%)	48 (100%)	**0.535**
LBW	20/116 (17.2%)	10/69 (14.5%)	10/47 (21.3%)	**0.453**
VLBW	5/116 (0.9%)	2/69 (2.9%)	3/47 (6.4%)	**0.394**
PTD	20/116 (17.2%)	10/69 (14.5%)	10/47 (21.3%)	**0.453**
VPTD	5/116 (4.3%)	2/69 (2.9%)	3/47 (6.4%)	**0.394**
Birth defect live birth	5/131 (3.8%)	4/83 (4.8%)	1/48 (2.1%)	**0.652**
Birth defect stillbirth	0/2	0/2	0/0	

Figure 1. Tsepamo Sites



Update on NTD with ART Exposure, Tsepamo Study Botswana

Zash R et al. AIDS 2022, Montreal, Canada, Abs. PELBB02

- Surface birth outcomes surveillance by trained hospital midwives at sentinel sites in Botswana, covering 70% all births in country.
- Between August 2014 and March 2022, 224,251 deliveries occurred at study sites, of which 223,797 (99.8%) had evaluable infant surface examination.
  - 9,460 exposed to DTG from conception
  - 23,664 exposed to non-DTG ART from conception (14,432 to EFV)
  - 6,551 started DTG during pregnancy
  - 170,723 born to women without HIV
- 156 neural tube defects identified (100 with photo, 56 description only)
  - DTG from conception: 10 NTD/9,460 births (**0.11%;** 95% CI 0.06-0.19%)
  - Non-DTG from conception: 25 NTD/23,664 births (**0.11%;** 95% CI 0.07-0.16%)
  - EFV from conception: 11 NTD/14,432 births (**0.08%;** 95% CI 0.04-0.14%)
  - DTG during pregnancy: 4 NTD/6,551 births (**0.06%;** 95% CI 0.02-0.16%)
  - Women without HIV: 108 NTD/170,723 births (**0.07%;** 95% CI 0.05-0.08%)

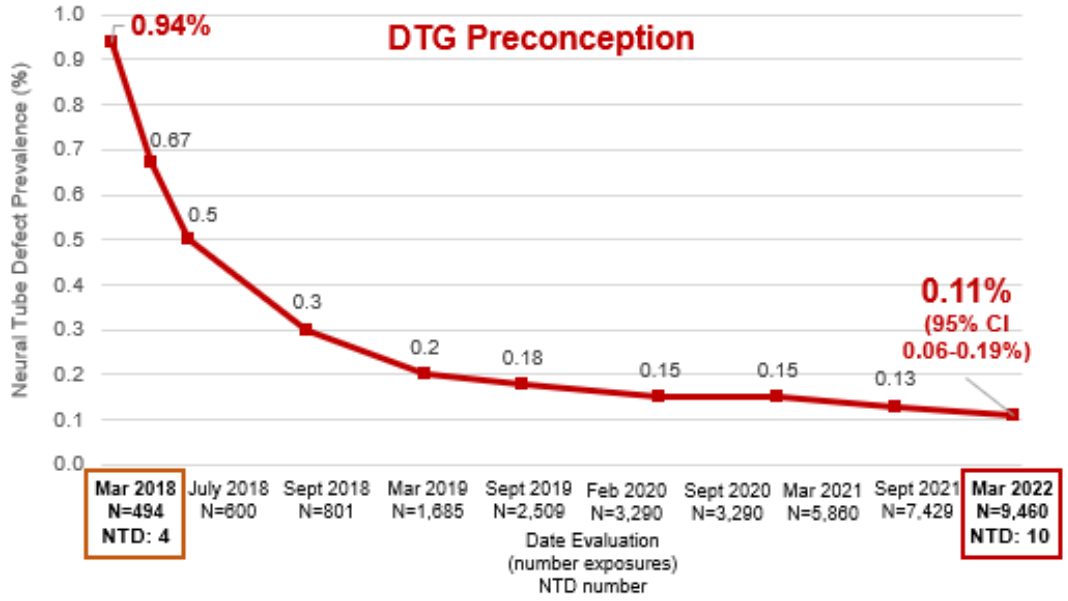
Prevalence Difference of NTD by ARV and HIV Exposure Categories

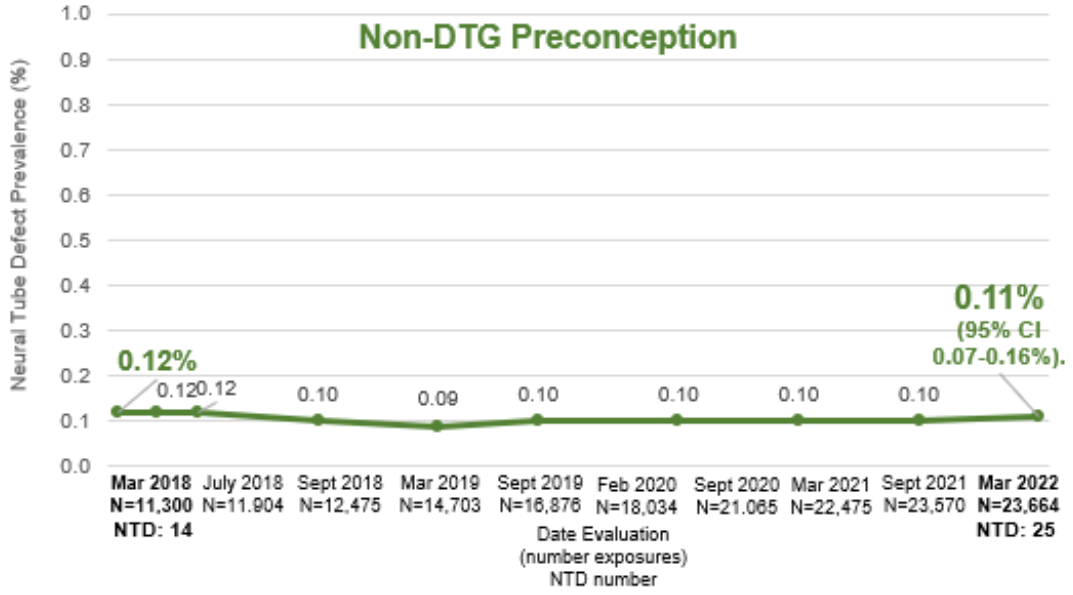
Exposure vs Comparison Groups	Prevalence Difference (95% CI)
DTG conception vs non-DTG conception	0.00 (-0.07, 0.10)
DTG conception vs EFV conception	0.03 (-0.05, 0.12)
DTG conception vs DTG during pregnancy	0.04 (-0.06, 0.14)
DTG conception vs Women without HIV	0.04 (-0.01, 0.13)

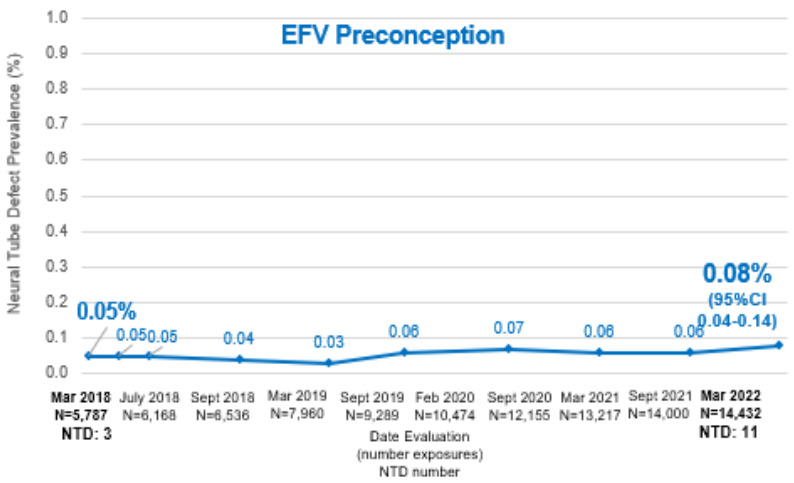
→ The prevalence of NTD in infants born to women on DTG at conception has **declined slightly to 0.11% and does not substantially differ from other exposure groups**.

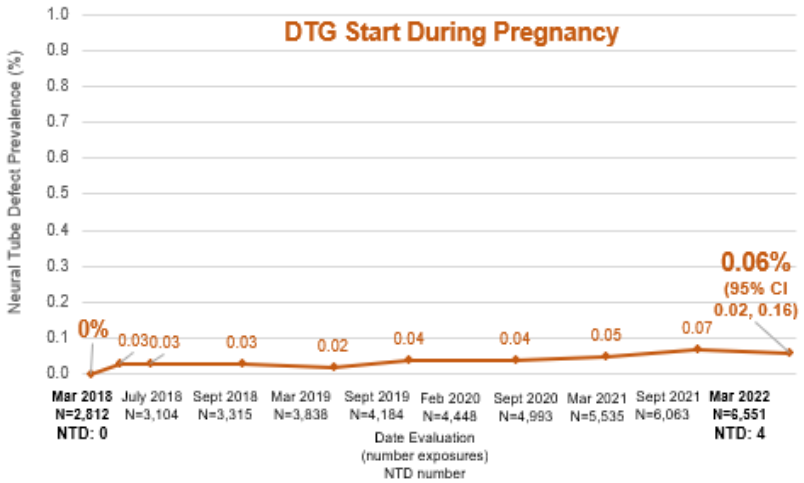
Update Tsepamo Study Botswana

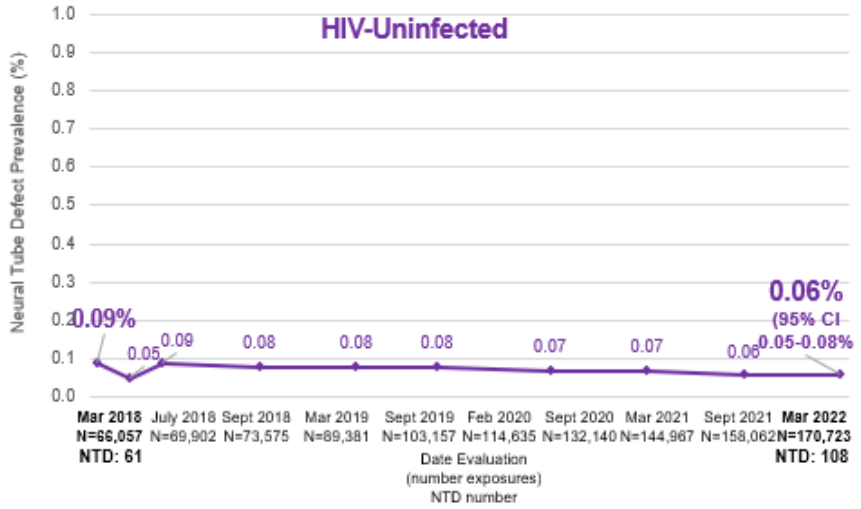
Zash R et al. AIDS 2022, Montreal, Canada, Abs. PELBB02







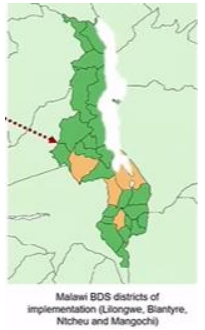




Prevalence of Adverse Birth Outcomes and External Birth Defects Among Women Living with HIV in Malawi

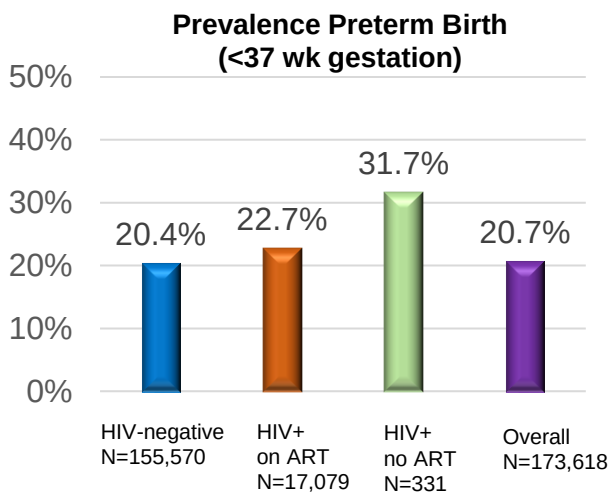
Smith-Sreen J et al. AIDS 2022, Montreal, Canada, Abs.OAC405

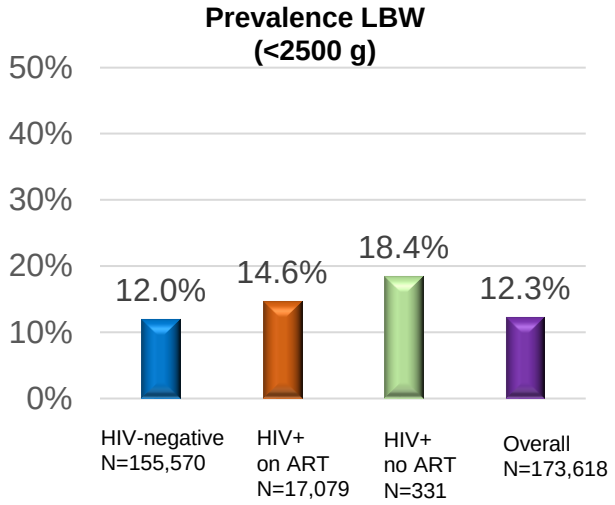
- Implemented Tsepamo-like data collection for birth defect surveillance at 4 high volume delivery sites in high HIV prevalence districts in Malawi.
- Data for Dec 2016-Dec 2021 excluding COVID suspension period Jun 2020-Jun 2021 (Note: *not yet analyzed by specific maternal ART regimen or timing*).
- 173,618 births; 10% (17,410) to HIV+ women; 17,079 on ART, 331 not on ART

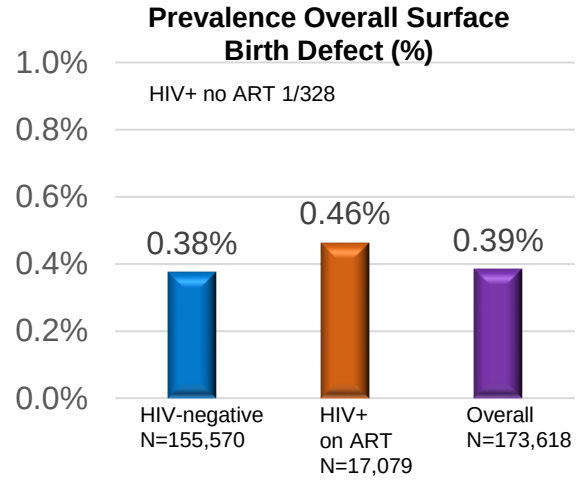


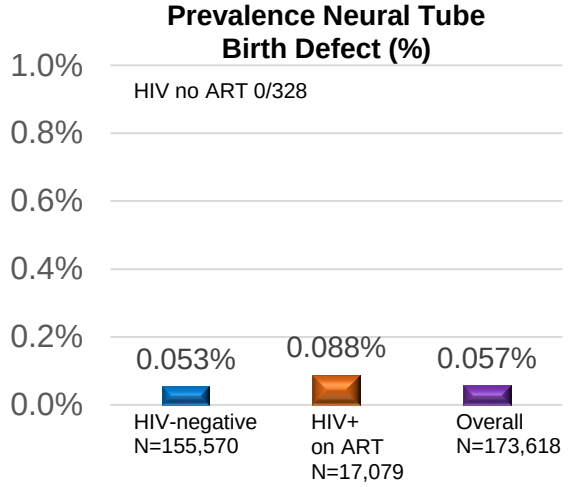
Malawi BDS districts of implementation (Lilongwe, Blantyre, Ntcheu and Mangochi)

- Trained midwifes conduct newborn physical exam and provide description and photographs/drawings of birth defects
- Trained core team (physician and project manager team) review narrative descriptions and photographs/drawings of each newborn with identified defect(s) to confirm diagnoses and code(s).
- Final review of narrative descriptions and photographs/drawings by CDC experts to confirm final diagnosis and codes using ICD-10
- All confirmed major birth defects were included in the analysis









→ Rate of PTD and LBW highest among HIV+ women not on ART, demonstrating importance of testing and early ART in HIV+ women

→ Rate of PTD and LBW slightly higher among HIV+ women on ART than HIV-negative women

→ 688 defects, overall prevalence 38.5/10,000 (0.39%)

→ Most common: clubfoot 0.172%; hypospadias 0.076%; NTD 0.057%

→ **Non-significant defect** ↑ in HIV+ women on ART vs HIV-negative women

- Overall defects, prevalence ratio HIV+ is 1.23 (95% CI 0.96-1.6), 0.078
- NTD prevalence ratio HIV+ is 1.65 (95% CI 0.95-2.9), p=0.076

Prenatal PrEP and Growth/Neurodevelopmer in Kenyan Infants at 24-36 Months

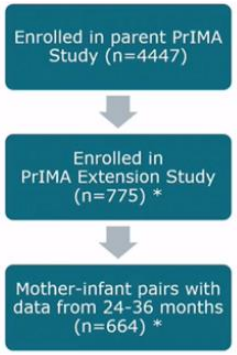
Gomez L et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 12; AIDS 2022 Abs.OAC0502

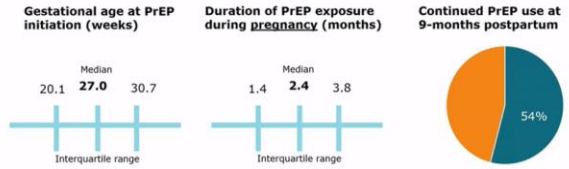
Parent study (n=4447)

- Cluster-randomized trial in 20 MCH clinics (Homa Bay & Siaya, Kenya)
- Inclusion: Pregnant, HIV-negative, >15 years old, able to consent
- Prenatal PrEP exposure ascertained via self-report
- Participants followed to 9 months postpartum

Extension study *(n=1300 anticipated; currently enrolling)*

- Observational cohort study from a subset of 4 PrIMA facilities
- Inclusion: HIV-negative, surviving infant at enrollment into extension
- Mother-child pairs followed until 60 months post-birth



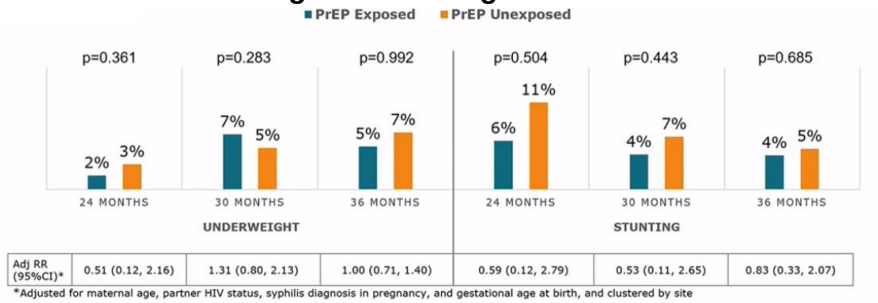


Characteristic	PrEP exposure during pregnancy	
	Any (n=119, 17%)	None (n=545, 83%)
	% or Median (IQR)	
Maternal age, years	30 (25-35)	28 (25-33)
Child age, months	26 (22, 33)	26 (21, 31)
Currently married	93%	91%
Maternal education, years	9 (8-12)	10 (8-14)
Number of living children	4 (3-5)	3 (2-4)
Preterm birth	10%	9%
Partner known to be living with HIV	13%	3%

Child Growth Indicators

	Median (IQR) Any PrEP exposure during pregnancy: Any (n=119)	None (n=545)	Adjusted Coeff (95% CI)	P-value
24-months[1]				
Weight (kg)	11.2 (10.2, 12.8)	11.5 (10.5, 12.7)	-0.07 (-0.83, 0.69)	0.783
Length (cm)	85.0 (81.3, 87.2)	85.0 (83.0, 87.5)	-0.61 (-1.85, 0.63)	0.217
30-months[2]				
Weight (kg)	12.5 (11.0, 13.6)	12.8 (11.1, 14.0)	-0.22 (-1.37, 0.92)	0.581
Length (cm)	89.0 (86.0, 93.0)	89.0 (86.0, 92.0)	-0.02 (-0.30, 0.26)	0.862

% with Underweight or Stunting



Adj RR (95%CI)*						
	0.51 (0.12, 2.16)	1.31 (0.80, 2.13)	1.00 (0.71, 1.40)	0.59 (0.12, 2.79)	0.53 (0.11, 2.65)	0.83 (0.33, 2.07)

*Adjusted for maternal age, partner HIV status, syphilis diagnosis in pregnancy, and gestational age at birth, and clustered by site

Prenatal PrEP exposure **not** associated with any adverse growth outcomes at 24-36 months

Child Neurodevelopment Indicators

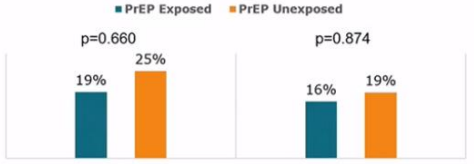
Ages & Stages Questionnaires®: Social-Emotional, Second Edition (ASQ®:SE-2)

	Median (IQR) Any PrEP exposure during pregnancy: Any (n=119)	None (n=545)	Adjusted Coeff (95% CI)	P-value
ASQ-SE score				
30-month	56.9 (35.0, 80.0)	55.0 (37.4, 85.2)	-3.32 (-19.26, 12.62)	0.555
36-month	62.1 (46.3, 84.7)	60.0 (40.0, 100.0)	1.14 (-21.73, 24.01)	0.884

*Adjusted for maternal age, partner HIV status, syphilis diagnosis in pregnancy, and gestational age at birth, and clustered by site
[1] Among n=149 30-month visits with socio-emotional development data
[2] Among n=278 36-month visits with socio-emotional development data

Abnormal score

ASQ-SE score cut-offs
30-months: >85
36-months: >105



Adj RR (95% CI)*		
	0.80 (0.31, 2.12)	0.89 (0.22, 3.58)

*Adjusted for maternal age, partner HIV status, syphilis diagnosis in pregnancy, and gestational age at birth, and clustered by site

Prenatal PrEP exposure **not** associated with adverse developmental outcomes at 30-36 months

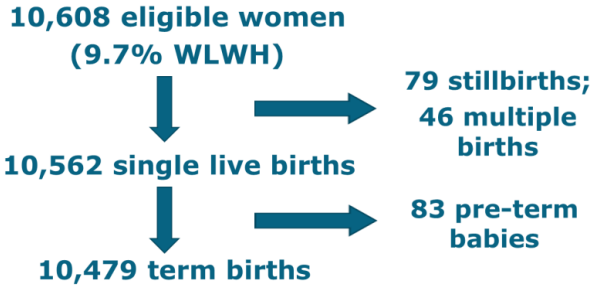
→ No differences in growth or neurodevelopment between children with and without prenatal PrEP exposure

→ Support safety of PrEP use in pregnancy

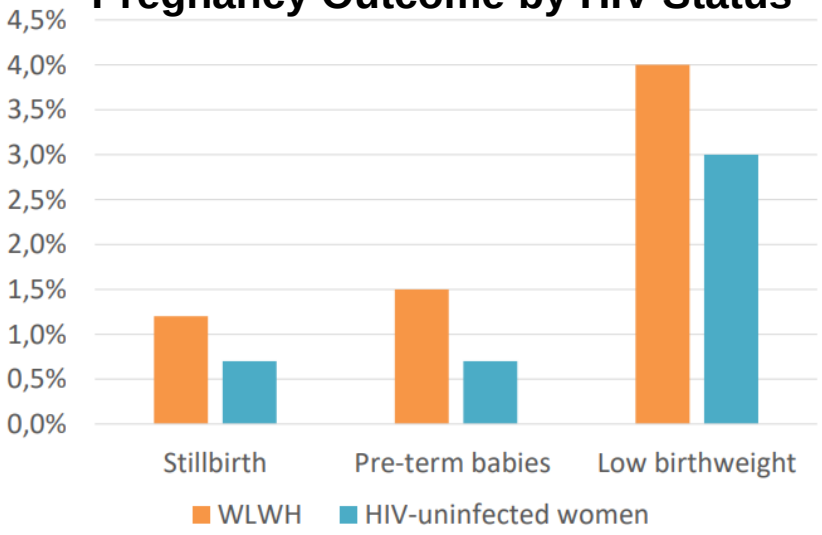
Low Birth Weight is More Common in HIV+ than HIV-Uninfected Women Even in the Universal ART Era

Zotova N et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 25

- Using data from Central Africa International Epidemiology Database to Evaluate AIDS (CA-IeDEA) sites in Rwanda, evaluated birth outcomes among all women who gave birth 2012-2020 at these sites.



Pregnancy Outcome by HIV Status

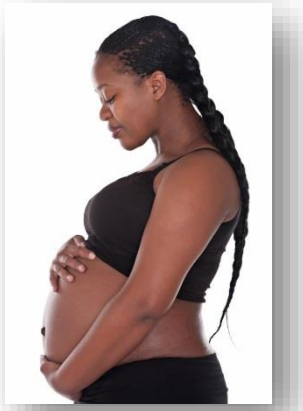


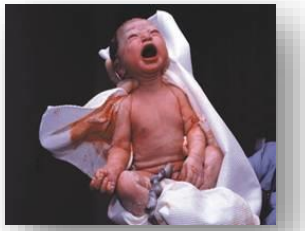
Factors Associated with LBW

	N	OR (95% CI)	aOR (95% CI)
HIV status			
Negative	9,473		
Positive	1,006	1.35 (0.98, 1.89)	**1.47 (0.85, 2.56)**
Age			
<=24	2,646		
25-34	4,201	0.61 (0.46, 0.81)	1.05 (0.71, 1.57)
35+	1,218	0.66 (0.44, 0.99)	1.02 (0.56, 1.89)
Marital status			
Divorced/separ./widow/ never married	761		
Married/cohabiting	6,260	0.55 (0.38, 0.79)	0.85 (0.52, 1.36)
Weight at admission, kg			
<60	3,435		
60-64	2,767	0.53 (0.4, 0.7)	**0.47 (0.31, 0.73)**
65+	3,900	0.37 (0.28, 0.49)	**0.45 (0.3, 0.67)**
Primigravida			
No	6,585		
Yes	2600	2.02 (1.58, 2.57)	**2.24 (1.51, 3.32)**

→ Even in age of universal ART, HIV+ women remain more likely to have LBW babies

→ Lower weight and primigravida status were independently associated with LBW – supplementary nutrition to women living with HIV may reduce LBW risks especially in those of low weight and primigravida?



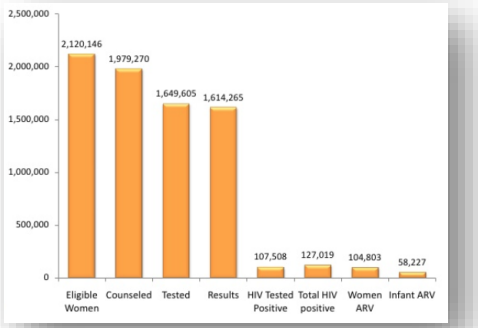


PMTCT Cascade Issues:

bNAb Infant Prophylaxis

Dual HIV/Syphilis Elimination

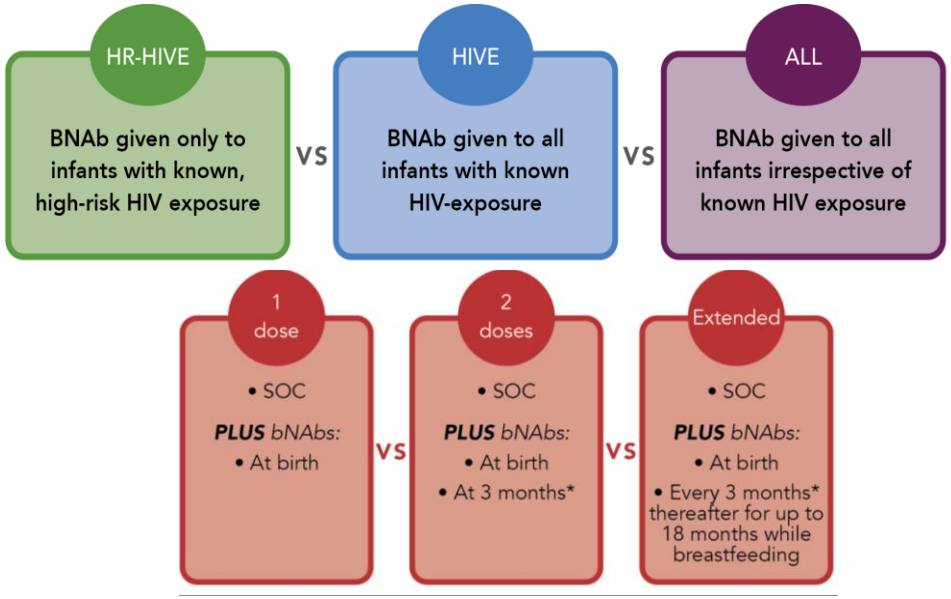
Gaps in Care and Interventions



Cost-Effectiveness of bNAbs for Infant HIV Prophylaxis

Alba C et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 10; AIDS 2022 Abs.OAE0303

- CEPAC Model: A strategy is **cost-effective** if it resulted in the greatest projected clinical benefit and was cost-saving or had an ICER ≤50% of a country's annual GDP per capita.
  - Standard of care strategy (SOC) = infants with known HIV exposure are offered WHO-recommended oral antiretroviral prophylaxis
  - Modeled offering bNAbs to one of three target populations:
  - Infants getting bNAb were offered one of three dosing approaches:



Methods: Key bNAb assumptions

Input parameter	Value	Rationale	Reference(s)
Efficacy against intrapartum and postnatal HIV acquisition	70%	Assumption based on existing data on efficacy against sensitive virus in adults (AMP trial) and neutralization coverage of single bNAbs	Corey et al. NEJM, 2021; Lorenzi et al. J Virol, 2020
Effect duration/dosing interval	3 mo.	VRC01LS and VRC07-523LS infant PK data	Cunningham et al., CROI 2022; McFarland et al. J Infect Dis, 2021
Uptake (range by age)	56% - 96%	Country-specific routine infant vaccination uptake	WHO, 2021
Cost, per dose	$20	Estimated costs of monoclonal antibody production and vaccine delivery in low- and middle- income countries	Anderson et al. AIDS, 2017; Mvundura et al. Vaccine, 2015; Cunnama et al. Trop Med Int Health, 2020; COVAX Working Group, 2021

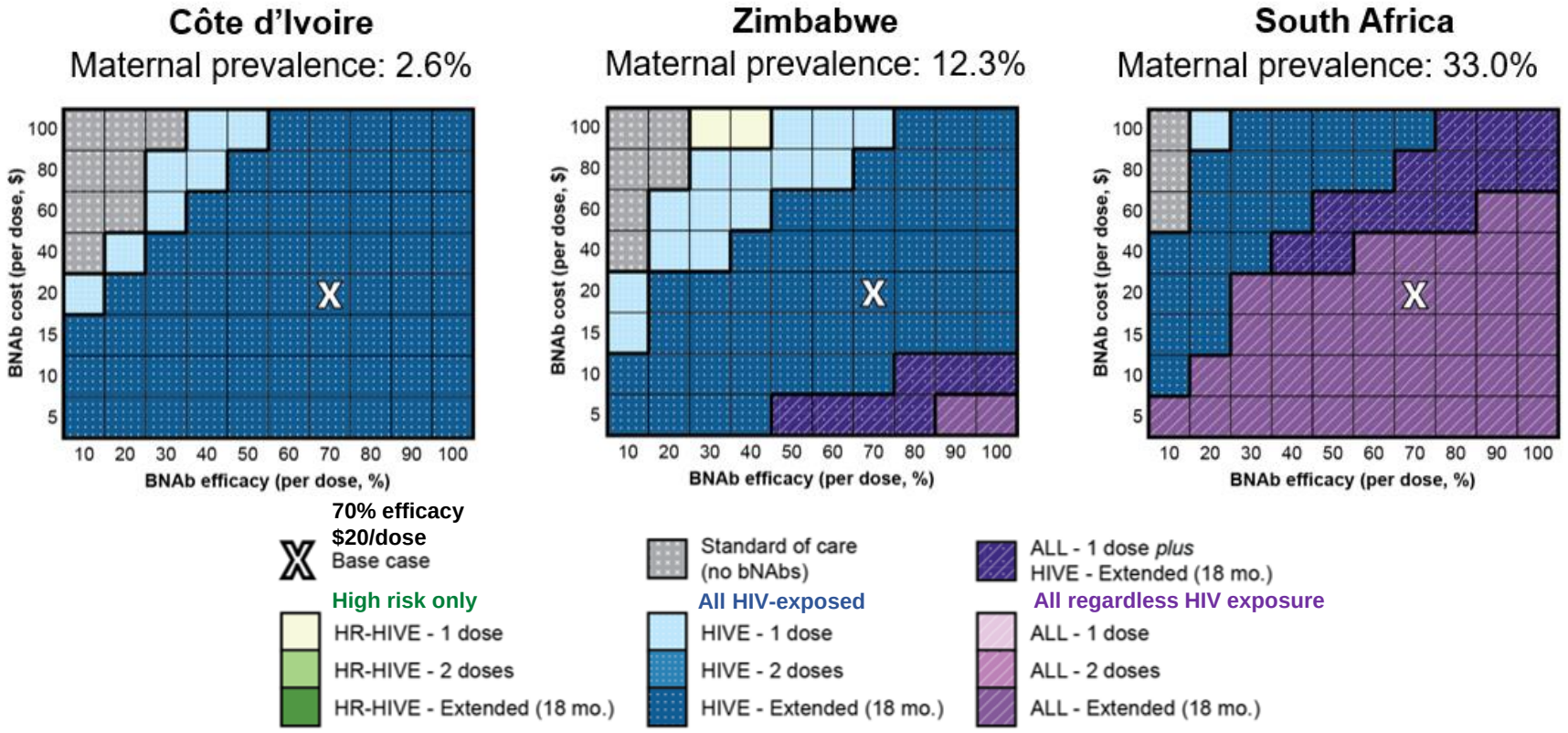
Cost-Effectiveness of bNAbs for Infant HIV Prophylaxis

Alba C et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 10; AIDS 2022 Abs.OAE0303

→ Offering bNAbs to infants with **known HIV exposure** was cost-effective in Côte d'Ivoire & Zimbabwe and offering bNAbs to **all infants** was cost-effective in South Africa, where maternal HIV prevalence and incidence are relatively higher.

→ Cost-effective bNAb strategies would substantially reduce projected MTCT compared to the current standard of care.

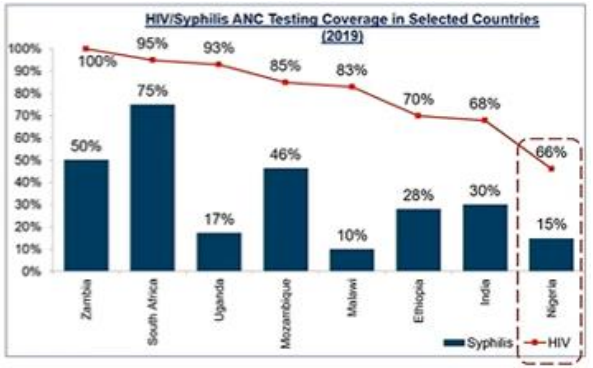
→ The potential clinical impact and cost-effectiveness of bNAb infant prophylaxis should motivate further bNAb research.



Dual HIV/Syphilis Elimination, Nigeria

Storey A et al. AIDS 2022, Montreal, Canada Abs.OALBE0105

- Globally, estimated 1 million cases of syphilis in pregnant women cause 350,000 adverse birth outcomes/yr
- Syphilis is 2nd leading infectious cause of stillbirth globally(64% in Africa)
- Despite this, significant disparity between national coverage for HIV vs syphilis testing in pregnant women globally



→ 51% disparity HIV vs syphilis testing, pregnant women in Nigeria

CHAI Pilot Program Dual HIV/Syphilis Testing Nigeria

SNO	INDICATOR	RIVERS	ANAMBRA	AKWA IBOM	TOTAL
1	Number of pregnant women tested for HIV/syphilis	16,382	13,369	15,662	**45,413**
2	Number of pregnant women who tested positive for Syphilis	26	11	69	**106**
3	Number of pregnant women who tested positive for Syphilis and received treatment with BPG	21	9	69	**99**
4	Number of partner(s) of syphilis positive PW tested with dual RDT	9	4	31	**44**
5	Number of partner(s) of syphilis positive PW positive for syphilis	8	0	19	**27**
6	Number of syphilis positive partner(s) of PW treated with BPG	8	0	18	**26**

45,431
All pregnant women attending ANC in the 31 pilot sites tested for HIV/syphilis

0.2%
Syphilis positivity rate among PW tested during the pilot

92%
Percentage of syphilis positive pregnant women treated with BPG

42%
Partners of syphilis positive pregnant women who were tested

SUPPLY

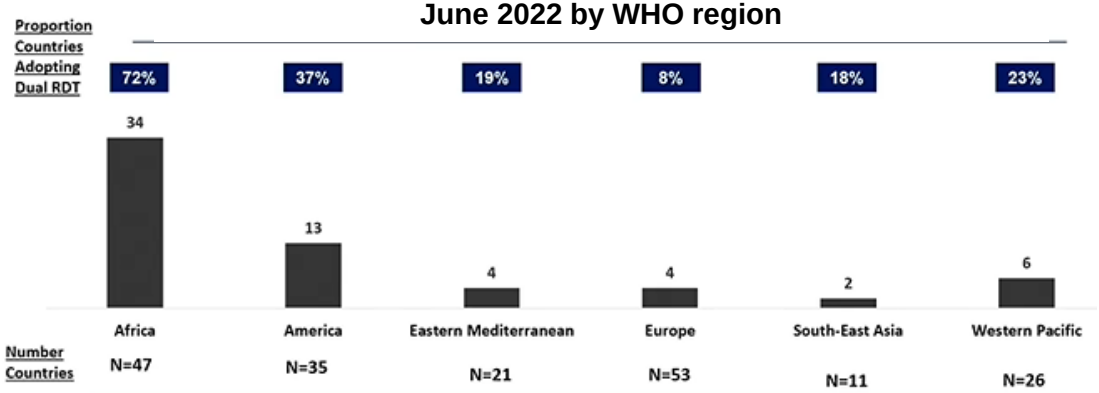
- At the global level, CHAI facilitated market shaping activities to attain dual HIV/syphilis RDT price reduction from initial $1.50 to <$1.00
- In-country, CHAI catalyzed market competition by deploying two brands of WHO prequalified dual RDTs in the pilot (SD Bioline and Premier)
- CHAI procured 1,000 vials of BPG to ensure treatment availability during the pilot

DEMAND

- CHAI facilitated policy updates to incorporate the dual HIV/syphilis RDT use in ANC; STI Guidelines, HTS Guidelines, HIV Treatment Guidelines

- Nigeria 2021 national policy change: HIV and syphilis testing should be offered to pregnant women seeking antenatal care in all settings
  - ↑ **pregnant women tested for HIV from 67% to 95% by 2022**
  - Plan ↑ pregnant women tested for syphilis from 10% to 60% by 2026

Country Adoption of Dual HIV/Syphilis Antenatal Testing June 2022 by WHO region



→Recent WHO data show **33% (63/194)** reporting countries have reported adoption of dual HIV/syphilis testing for pregnant women in ANC

Mbereko+Men: Impact of Community-Based Intervention on Maternal Mental Health and Care-Seeking in Rural Zimbabwe

***Mbereko** = Shona vernacular for the cloth wrap that holds the baby close to its mother during the first two years of life*

Webb K et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 13

Mbereko+Men: Our Baby, Our Health, Our Future

- Cluster randomized trial in 8 rural health facilities enrolling 457 women who had given birth in the prior 6 months (11% HIV+) and 242 male co-parents
- Did before/after implementation surveys to measure impact on maternal mental health (Edinburgh Postnatal Depression Score, EPDS, ≥12=depression) and male engagement in care/support

Maternal Characteristics	Control (n=227)	Intervention (n=230)
Age (yrs)	25.1	25.8
Completed primary school	182 (80.2)	171 (74.3)
Number children	2.4	2.4
Recent pregnancy ended in stillbirth	0/226	2 (0.9)
Married	204 (89.8)	198 (86.0)
Married before 18yrs	82/212 (38.7)	74/214 (34.6)
Self-identifies as HIV positive	20/226 (8.9)	34/227 (15.0)
Male partner lives in household	185 (81.5)	186 (80.9)
Male Characteristicss	**Control (n=136)**	**Intervention (n=106)**
Age	31.8 (7.7)	35.2 (8.6)
Engaged in Paid Work	85/135 (62.6)	73 (68.5)
Number of children	2.5 (1.5)	3.0 (2.1)

→ Reduction in EPDS score (↓ depression) in both intervention and control arms, but **decline in mean EPDS score was 34% greater in intervention** vs control arm (aRR 0.66, 95% CI 0.48-0.90, p=0.008)

Characteristics associated with **EPDS≥12***

Participant Characteristic	aOR (95%CI)	p
Younger maternal age (16-24yrs)	1.40 (0.48-4.09)	0.54
Primipara	0.41 (0.16-1.07)	0.41
Completed Primary School	0.69 (0.16-1.07)	0.51
Married before 18yrs	0.66(0.36-1.20)	0.17
HIV Positive Status	4.4 (1.03-16.6)	0.05
Intimate Partner Violence	10.15 (4.83-21.30)	<0.0001
Recent pregnancy ended in stillbirth	0.24 (0.01-4.47)	0.34

*adjusted for intervention exposure and clustering effects

→ **Improvement ANC indicators in intervention group**

PMTCT Indicator	aOR (95%CI)	p-value
Timely ANC (first trimester)	**1.7 (1.1, 2.6)**	**0.012**
4 or more ANC visits	1.0 (0.4, 2.4)	0.94
Couples HIV test in pregnancy	**2.1 (1.3, 3.4)**	**0.003**
Facility birth	1.9 (0.6, 5.9)	0.2
Timely postnatal care (mother)	**15.7 (5.4, 45.3)**	**<0.0001**
Timely postnatal care (baby)	**2.8 (1.7, 4.8)**	**<0.0001**

Significant impact of Mbereko+Men intervention on sub-measures of:

- **Overall relationship dynamics** (Intimate Bond Measure)
- **Men's gender attitudes** (Gender Equitable Men)
- **Men's practical support for women and babies** (cooking, accompanying to ANC/birth/infant illness, playing with baby)

Mbereko+Men

Multicomponent community-based intervention

Mbereko: Women's Empowerment Groups

***facilitated problem solving**

***income generation**

***psychosocial support**

+Men: Men's Facilitated Dialogue Sessions & Family Charters

Community & Facility: Health Centre Committees & Nurses

→ Low-intensity gender-synchronized intervention positively impacted maternal mental health, ANC cascade and improved couple's relationships

→ Women living with HIV and survivors intimate partner violence need targeted mental health support

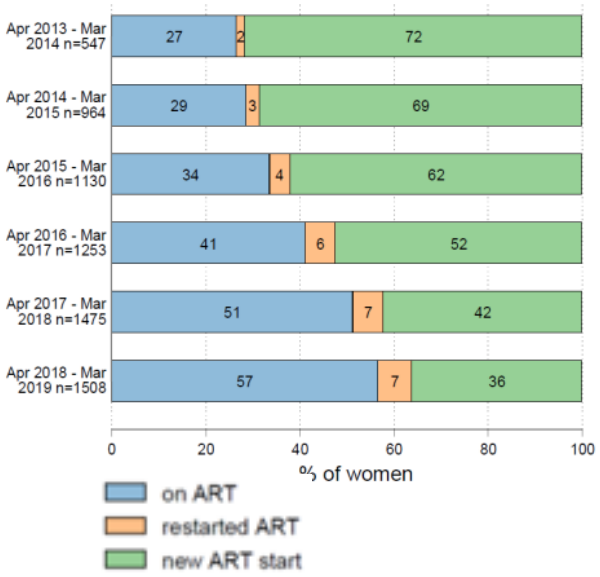
Impact of ART Status on Gaps in HIV Care in Women Living with HIV in Khayelitsha, South Africa

Phillips T et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 28

- Examined differences in HIV care gaps (≥270 days without evidence of HIV care) between delivery to 24 mos postpartum by maternal ART history at time of pregnancy in Khayelitsha ART cohort
- 6,877 women age 15-59 yr with ≥1 live birth between Apr 2013-Mar 2019

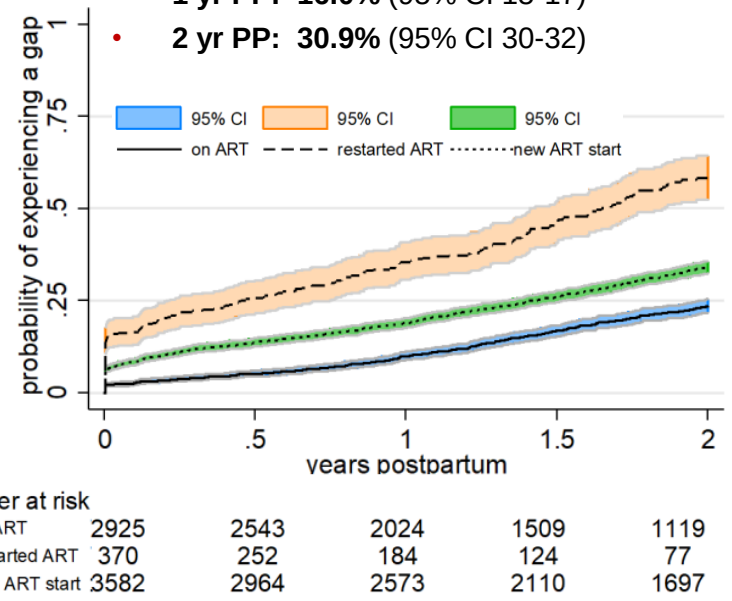
	ART history before pregnancy	
43%	On ART	ART start >48 weeks before delivery, with evidence of HIV care in the 270 days before first antenatal visit
5%	Restarting ART	ART start >48 weeks before delivery, no evidence of HIV care in the 270 days before first antenatal visit
52%	Newly starting ART	ART start date ≤32 weeks before delivery

Changing % Women on ART, Restarting ART, and Newly Starting ART by Year of Delivery



Cumulative incidence of PP gap HIV care:

- **1 yr PP: 16.0%** (95% CI 15-17)
- **2 yr PP: 30.9%** (95% CI 30-32)

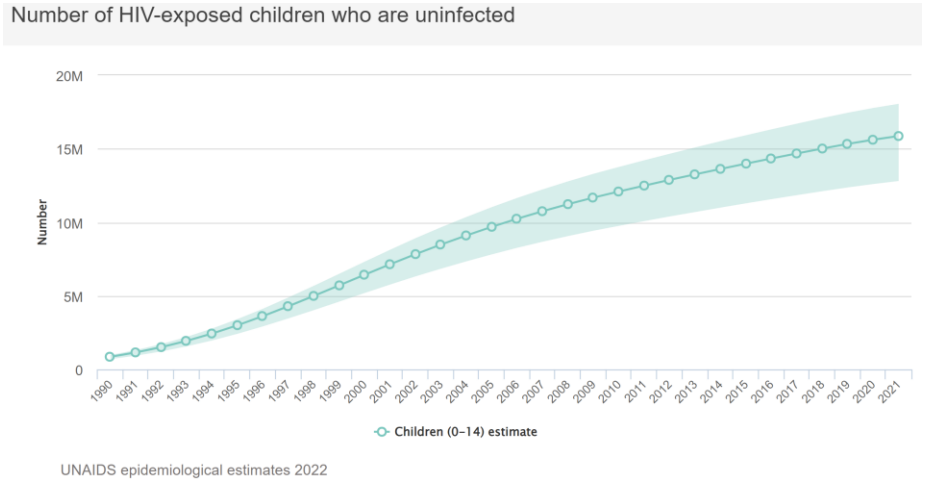


→ Increasing % of HIV+ women presenting for ANC are on ART

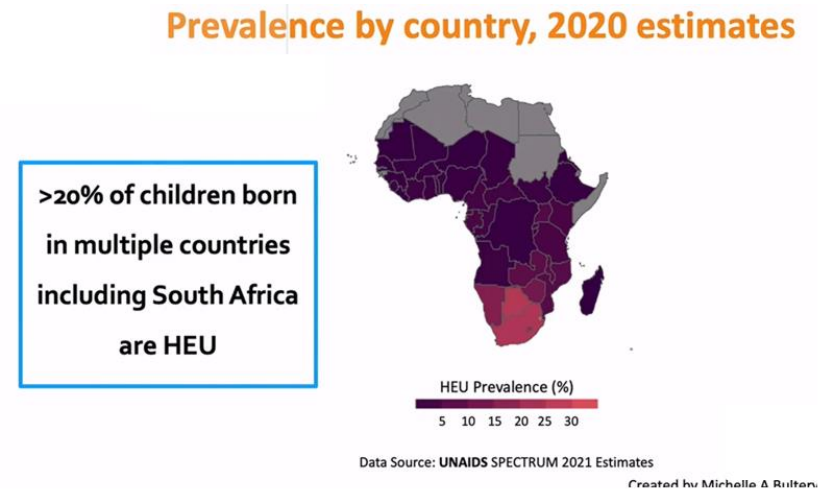
→ Women newly starting ART in pregnancy have ↑ risk of having PP gap in HIV care

→ Small but growing % of women re-entering HIV care/restarting ART in pregnancy who have ↑ ↑ risk of having PP gap in HIV care

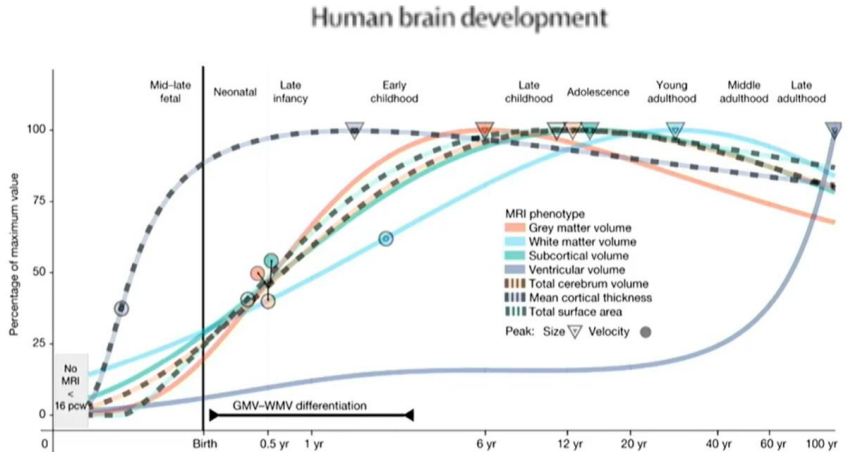
→ Assessment of ART history during ANC can facilitate support interventions to optimize sustained PP retention in care



16 million



HIV-Exposed Uninfected Infants

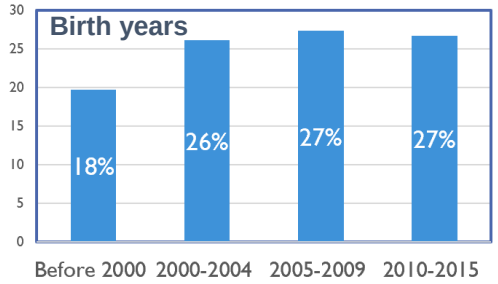


80% of brain growth happens by 3 years

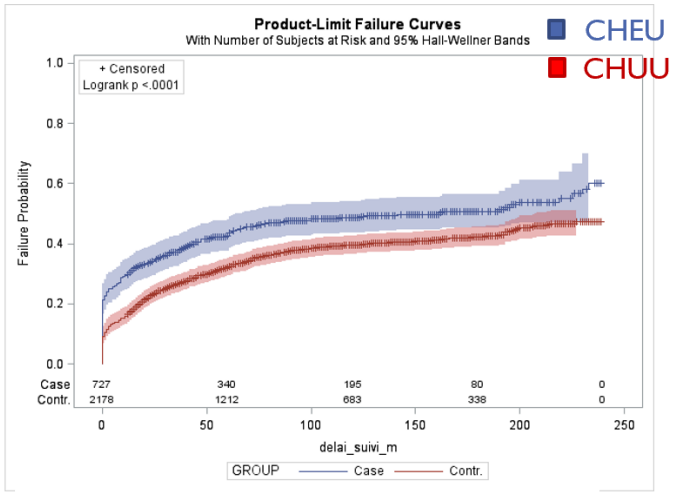
Increased Risk Long-Term Risk Hospitalization and Chronic Disease in HEU vs HUU, Montreal, Canada

Brochon J et al. International Pediatric HIV Workshop, Montreal July 2022, Abs.15; AIDS 2022 Abs.OAB0105

- **Centre maternel et infantil sur le SIDA (CMIS) Cohort:** established in 1988 at CHU Sainte-Justine in Montreal, follow-up mother-infant pairs from pregnancy to early childhood; 93% mothers on ARV in pregnancy, mostly PI-based (70%)

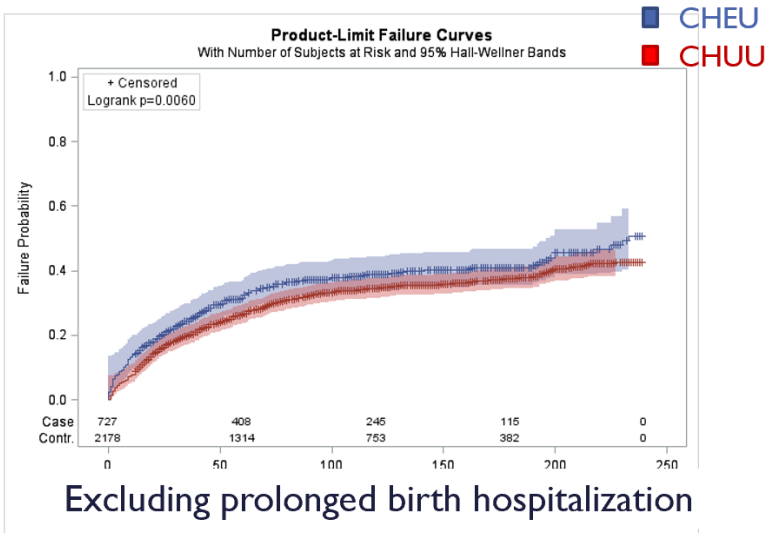


- Matched 1:3 with control children in RAMQ universal health system database selected randomly after matching for age, gender, and postal code (neighborhood)



All hospitalization CHEU vs. CHUU

HR= 1.42 [1.26-1.61], p<0.001
aHR for gestational age: 1.23 [1.08-1.40], p=0.001

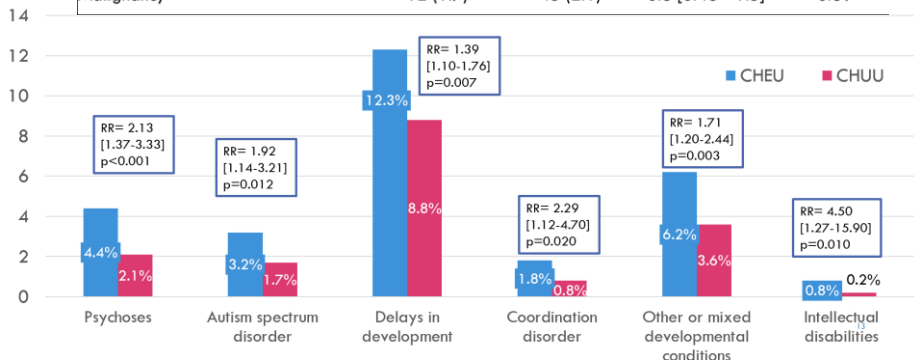


Excluding prolonged birth hospitalization

HR= 1.21 [1.06-1.40], p=0.006
aHR for gestational age: 1.14 [0.99-1.31], p=0.078

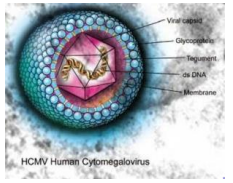
Summary Of Chronic Conditions

	CHEU (n=726) N(%)	CHUU (n=2178) N(%)	RR 95%CI	p-value
Congenital anomalies	40 (5.5)	76 (3.5)	1.58 [1.09 - 2.3]	0.016
Neuro-psychiatric disorders	241 (33.3)	566 (26.1)	1.28 [1.13 - 1.45]	<0.001
Endocrine nutritional, metabolic and immunity disorders	79 (10.9)	340 (15.7)	0.70 [0.55 - 0.88]	0.002
Respiratory diseases	161 (22.3)	559 (25.8)	0.86 [0.74 - 1.01]	0.06
Cardiovascular system diseases	21 (2.9)	75 (3.5)	0.84 [0.52 - 1.35]	0.47
Malignancy	12 (1.7)	45 (2.1)	0.8 [0.43 - 1.5]	0.89

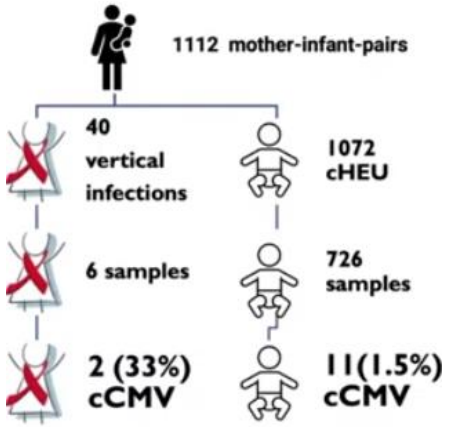


Congenital CMV (cCMV) Infection in HEU, Montreal

Kakkar F et al International Pediatric HIV Workshop, Montreal July 2022, Abs. 24



- Retrospective study of mother-infant pairs with available clinical samples in the SIME Montreal Cohort; tested for CMV by Altostar CMV PCR; prevalence of CMV in general population is 0.5%.



→HIV-infected infants had highest risk of cCMV.

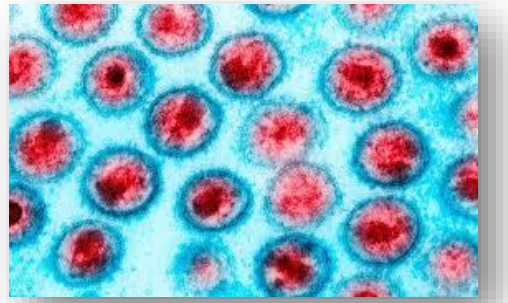
→**HEU had 3-fold ↑ risk of** CMV compared to general population.

→Highest risk among HEU with low birth weight or mothers with detectable RNA or low CD4 – would be highest priority for screening for cCMV.

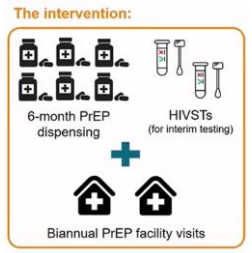
→Given risk neurodevelopmental delay in HEU and known association with cCMV, suggests that all HEU should be tested for cCMV at birth.

Implications for Programming – Elimination of vertical transmission and infants who are HIV exposed

- DTG should be offered to all women including of child-bearing age
  - No difference in adverse birth outcomes for women on DTG vs EFV at conception
  - Continued strong evidence on more rapid and better viral suppression
- Innovation for elimination of vertical transmission
  - PrEP safe in pregnancy (no difference in birth outcomes), and should be promoted with DSD for at risk populations
  - Promising strategies to increase VL testing – community maternal VL test collection and POC
  - Broadly Neutralizing Antibodies for injectable infant prophylaxis on the horizon



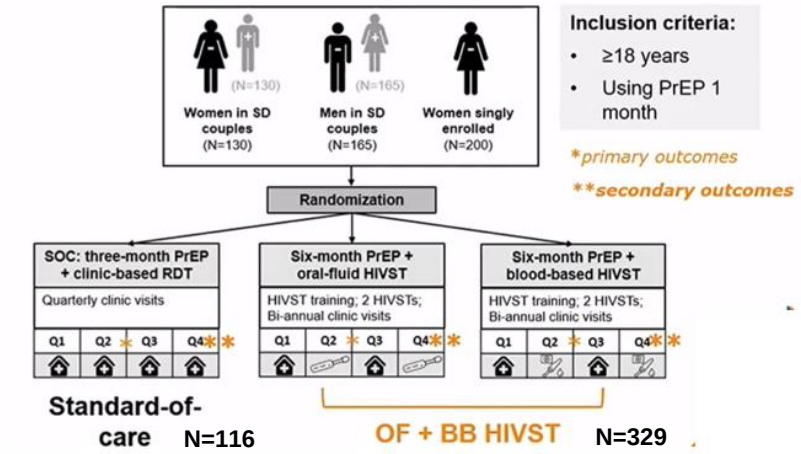
PrEP



Effect of 6 Month PrEP Dispensing Supported with Interim HIVST on PrEP Continuation at 12 Months, Kenya

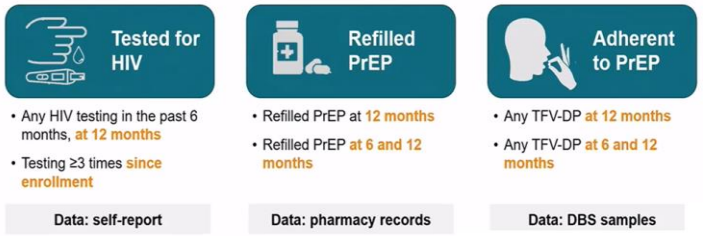
Ortblad K et al. AIDS 2022, Montreal, Canada, Abs.OAE0105

1:1:1 non-inferiority individual-level randomized trial:

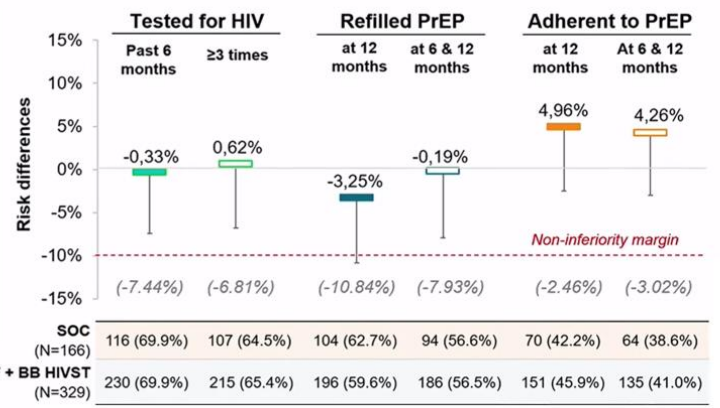


Inclusion criteria	• ≥18 years; using PrEP 1 month		
	Standard of care	**OF HIVST intervention**	**BB HIVST intervention**
WHEN Service frequency	No separation; PrEP refill combined with clinical consultation 3-monthly	No separation; PrEP refill combined with clinical consultation 6-monthly	No separation; PrEP refill combined with clinical consultation 6-monthly
WHERE Service location	Accredited primary healthcare facilities – ART service		
WHO Service provider	Service providers who can carry out follow-up visit/s that include PrEP refills and HIV testing		
WHAT Service package	Clinical consultation PrEP package + 3-month PrEP refill	Clinical consultation PrEP package + 6-month PrEP refill and two OF HIV tests	Clinical consultation PrEP package + 6-month PrEP refill and two BB HIV tests

Endpoints

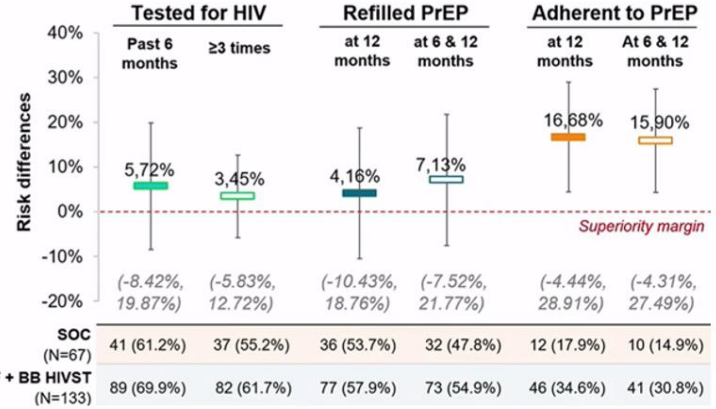


Risk Difference HIVST vs SOC
All Patients (N=495)



	Tested for HIV: Past 6 months	Tested for HIV: ≥3 times	Refilled PrEP: at 12 months	Refilled PrEP: at 6 & 12 months	Adherent to PrEP: at 12 months	Adherent to PrEP: At 6 & 12 months
SOC (N=166)	116 (69.9%)	107 (64.5%)	104 (62.7%)	94 (56.6%)	70 (42.2%)	64 (38.6%)
OF + BB HIVST (N=329)	230 (69.9%)	215 (65.4%)	196 (59.6%)	186 (56.5%)	151 (45.9%)	135 (41.0%)

Risk Difference HIVST vs SOC
Single Women (N=200)



	Tested for HIV: Past 6 months	Tested for HIV: ≥3 times	Refilled PrEP: at 12 months	Refilled PrEP: at 6 & 12 months	Adherent to PrEP: at 12 months	Adherent to PrEP: At 6 & 12 months
SOC (N=67)	41 (61.2%)	37 (55.2%)	36 (53.7%)	32 (47.8%)	12 (17.9%)	10 (14.9%)
OF + BB HIVST (N=133)	89 (69.9%)	82 (61.7%)	77 (57.9%)	73 (54.9%)	46 (34.6%)	41 (30.8%)

→At 12 mos, **the 6-month PrEP dispensing with interim HIVST was non-inferior** compared with SOC PrEP dispensing at 12 mos

→It simplified PrEP delivery reducing number clinic visits without compromising HIV testing, retention or adherence

→Among single women, the intervention increased PrEP adherence.

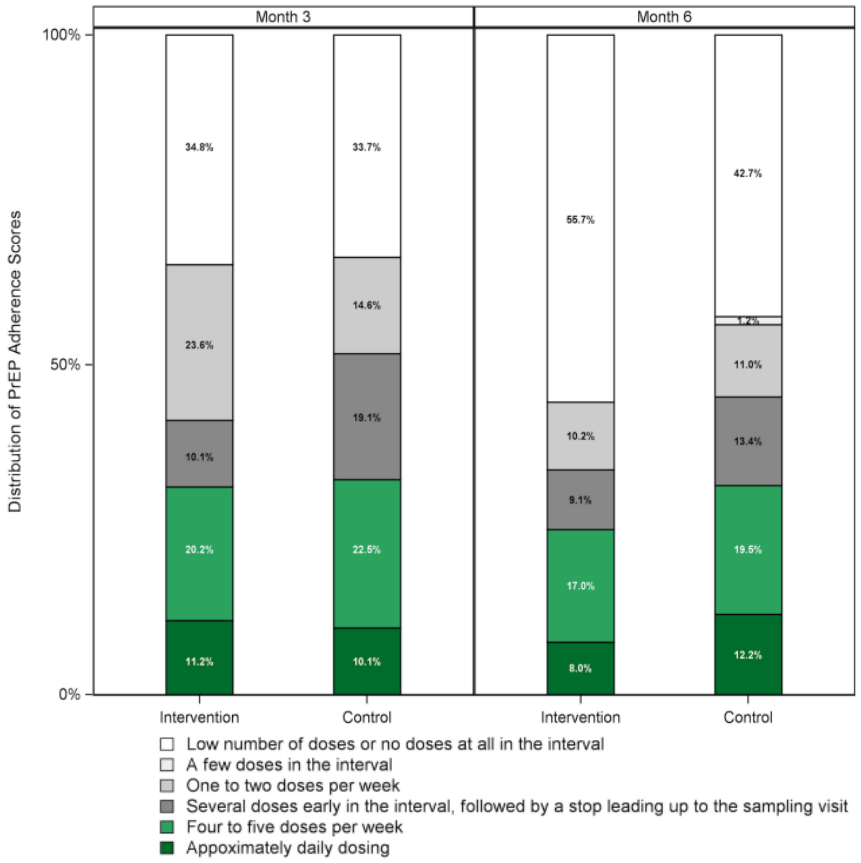
→HIVST should be considered to support PrEP continuation and increase health system efficiences

Combination Adherence Support for PrEP During Pregnancy, Malawi

Saidi F et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 11

- Pilot randomized trial of adherence support intervention vs control in 200 HIV-negative pregnant women initiating TDF/FTC PrEP at single site Malawi, evaluating retention and TFV-DP levels

Adherence at 3 & 6 Months According to TFV-SP Drug Level Scores



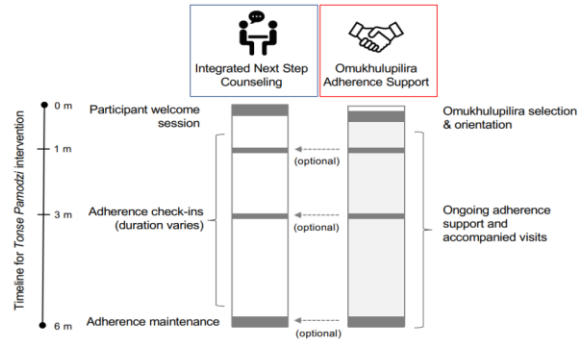
Control group

- Oral PrEP screening and initiation
- Adherence counselling
- Regular HIV testing

Intervention group

- Oral PrEP screening and initiation
- Adherence counselling
- Regular HIV testing, *plus*

- Patient-centered counselling
- Adherence supporter



Clinical Outcomes

Outcome	*Time point*	*n **	*Intervention*	*Control*	*Unadjusted probability difference (95% CI)*	*Adjusted probability difference (95% CI)^*
Retained in care						
	Month 3	200	90/100 (90.0%)	89/100 (89.0%)	1.0% (-7.5%, 9.5%)	5.1% (-3.7%, 14.0%)
	Month 6	200	88/100 (88.0%)	83/100 (83.0%)	5.0% (-4.7%, 14.7%)	7.4% (-2.7%, 17.4%)
Functional PrEP levels among women retained in care						
	Month 3	178	28/89 (31.5%)	29/89 (32.6%)	-1.1% (-14.8%, 12.6%)	-4.5% (-20.0%, 11.0%)
	Month 6	170	22/88 (25.0%)	26/82 (31.7%)	-6.7% (-20.3%, 6.8%)	-9.7% (-34.4%, 4.9%)
Retained in care with functional PrEP levels (primary outcome)						
	Month 3	199	28/99 (28.3%)	29/100 (29.0%)	-0.7% (-13.3%, 11.8%)	-1.8% (-16.2%, 12.7%)
	Month 6	199	22/100 (22.0%)	26/99 (26.3%)	-4.3% (-16.1%, 7.6%)	-5.5% (-18.0%, 6.9%)

* One specimen misplaced at Month 3 and one specimen misplaced at Month 6; outcomes set to missing

^ Adjusted for baseline imbalances in socioeconomic status (presence of electricity in the home and income source), gestational age, intercourse frequency, perceived HIV risk, and number of lifetime sex partners

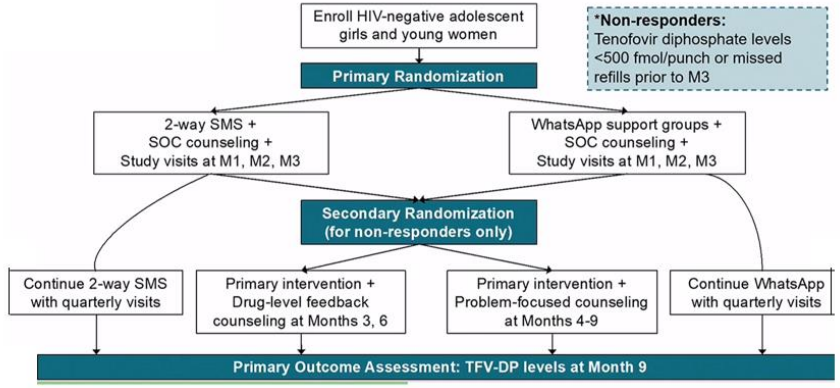
→ Oral PrEP adherence consistently low even in trial setting, with daily dosing by <12% of pregnant women.

→ Unfortunately, the combination adherence support did not increase retention or adherence to oral PrEP.

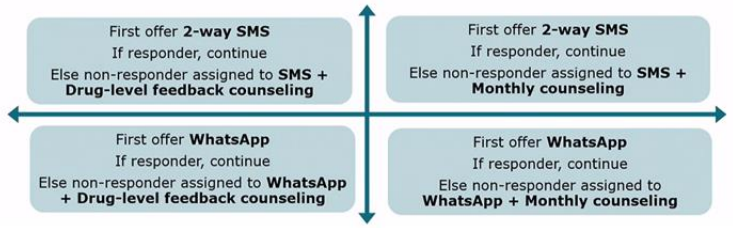
→ Will injectable PrEP result in improved retention and adherence?

Adaptive PrEP Adherence Interventions for Young South African Women

Velloza J et al. AIDS 2022, Montreal, Canada, Abs.OAC0504

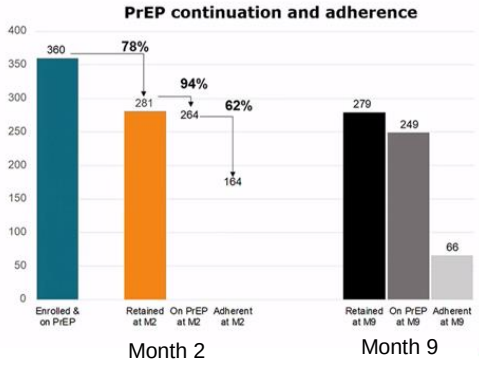


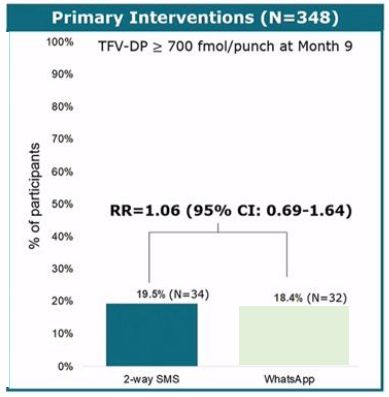
- Endpoint TFV-DP >700 fmol/punch
  - Primary randomization (SMS vs WhatsApp)
  - Secondary randomization (drug level feedback vs monthly counseling)
  - Optimal adherence of 4 dynamic treatment strategies:

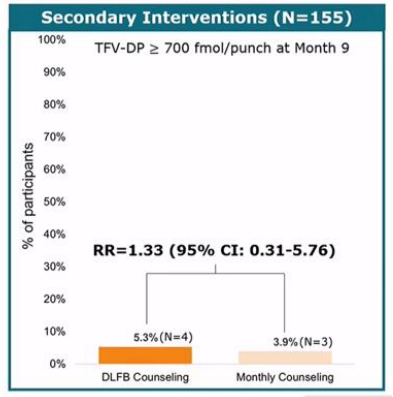


Enrollment characteristics (N=360)

	N (%) or Median (IQR)
Age	21 (20-23)
Unemployed	144 (40.0%)
College education	32 (8.9%)
Number of sex partners	2 (1-2)
Never or rarely uses condoms	130 (36.1%)
Transactional sex	80 (23.9%)
Curable STI	113 (31.4%)
Intimate partner violence	195 (54.2%)







Embedded dynamic treatment strategy	Estimated probability of high PrEP adherence	95% CI	Global p-value
SMS, followed by monthly counseling for non-responders (N=134)	0.25	(0.18–0.34)	0.94
SMS, followed by drug-level feedback counseling for non-responders (N=133)	0.27	(0.19–0.36)	
WhatsApp, followed by monthly counseling for non-responders (N=140)	0.24	(0.17–0.33)	
WhatsApp, followed by drug-level feedback counseling for non-responders (N=140)	0.24	(0.17–0.33)	

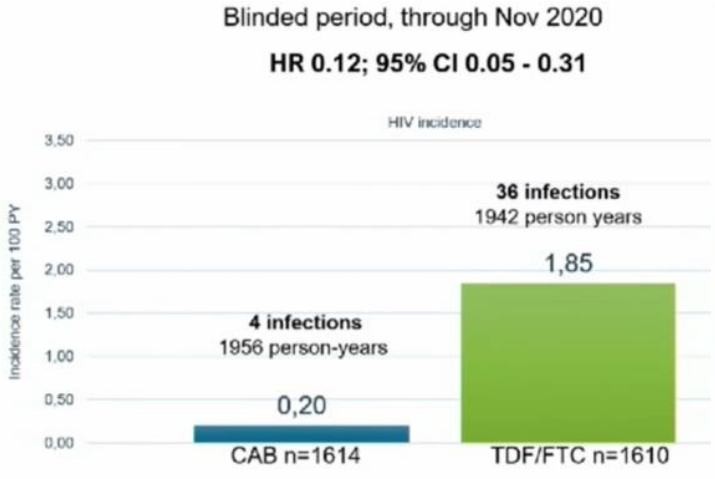
→ **No significant differences** between intervention or dynamic treatment strategies – had similar impact on adherence
  - Did <u>not</u> compare to SOC – and PrEP adherence actually higher than comparable cohorts
  - Challenging to re-engage non-responders after 2 mos

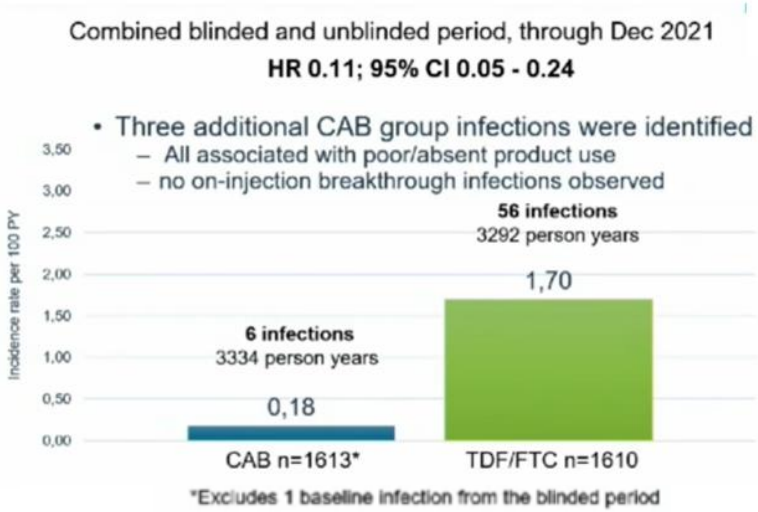
→ Individual level interventions may be insufficient to overcome structural barriers to PrEP for AGYW – **long-acting formulations may have promise**

HPTN 084 Updated Results CAB vs TDF/FTC for PrEP

Delany-Moretlwe S et al. AIDS 2022, Montreal, Canada, Abs.OALBX0107

- NEJM: HIV incidence CAB 0.20 vs TDF/FTC 1.85 per 100 PY, HR 0.12 (0.05-0.31)
- Blinded portion of trial stopped Nov 2020; pt continued on randomized regimen pending protocol amendment for open-label CAB – report on HIV infections during the 12-month period following the unblinding

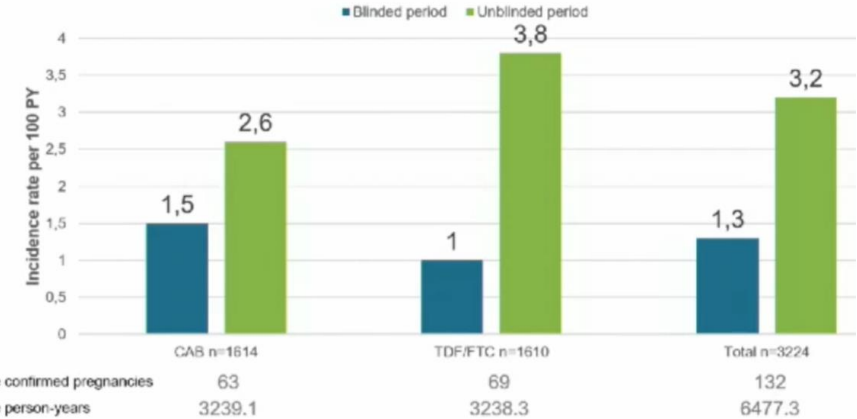




Participants with ≥ Grade 2 events	Total (n=2865)		CAB (n=1440)		TDF/FTC (n=1425)	
	n	%	n	%	n	%
Any Grade 2+ events	2391	83%	1194	83%	1197	84%
Any SAE/EAE	48	2%	26	2%	22	2%
Deaths	2	0,1%	2	0,1%	0	0%
ISR - Grade 2+ (n=1318)			32	2%		

*80% of Grade 2+ adverse events considered **unrelated** to study products, both arms*

Pregnancy Incidence CAB vs TDF/FTC, Blinded and Unblinded Periods



	Total n=132	CAB n=63	TDF/FTC n=69
Ongoing	57	23	34
Known pregnancy outcomes*			
Live births	61	31	30
Pregnancy loss			
>=37 weeks	0	0	0
20-36 weeks	3	1	2
<20 weeks**	13	9	4
Congenital anomalies	0	0	0

*includes multiple births
**includes ectopic pregnancy, elective and spontaneous abortion

→ CAB continues to be superior to TDF/FTC in preventing infections in women, with 89%↓ risk; no new safety concerns

→ **Pregnancy incidence ↑ in** unblinded period; confirms **importance of evaluating CAB safety and PI in pregnancy** during HPTN 084 open label extension

Cost-Effectiveness of CAB-LA vs Oral PrEP, South Africa Thembisa Modeled Analysis

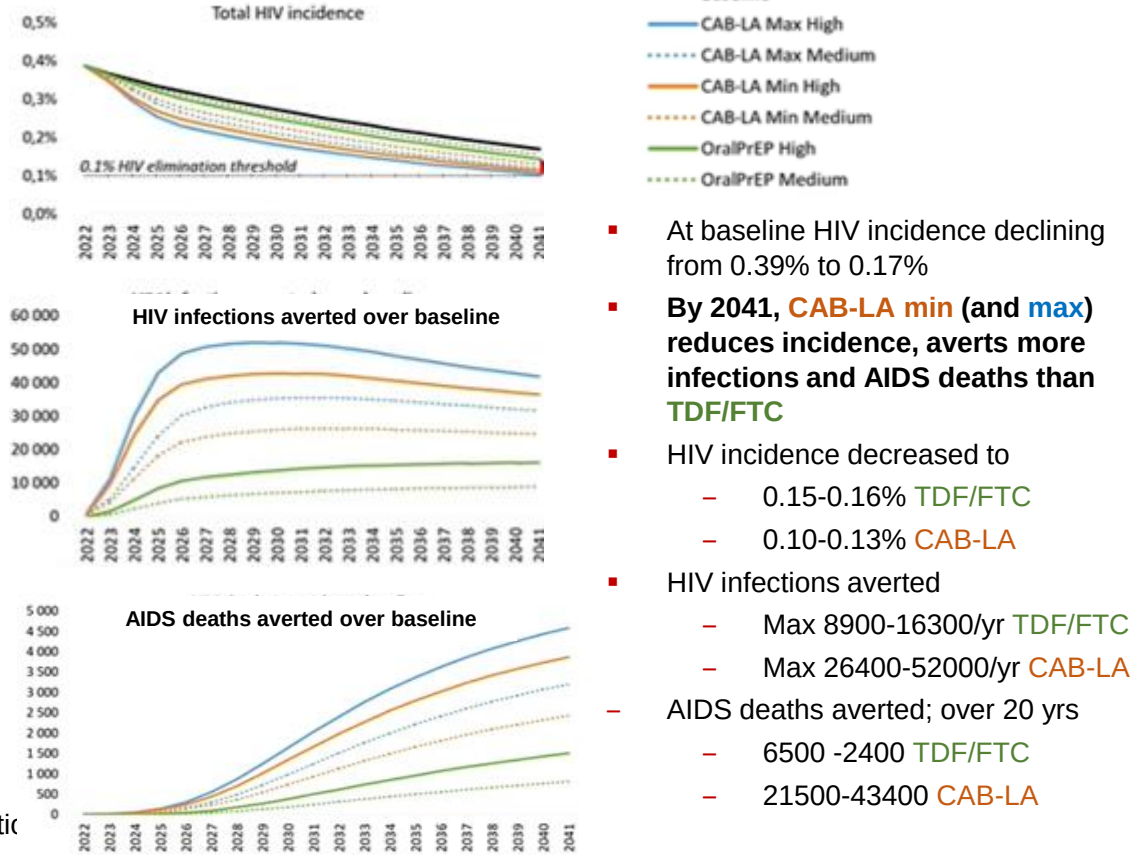
Jamieson L et al. AIDS 2022, Montreal, Canada, Abs.OAE0304

- Model impact and cost-effectiveness of CAB-LA vs TDF/FTC PrEP (using HPTN 083 and HPTN 084 data) over 20-year time (2022-2041) in South Africa using Thembisa model (https://thembisa.org), using 2 coverage scenarios (medium/high) and 2 duration scenarios for CAB (same as oral/longer than oral PrEP).

Target AGYW, FSW, ABYM, MSM populations

	Oral PrEP (TDF/FTC)		CAB-LA			
			Minimum duration		*Maximum duration*	
	Medium coverage	High coverage	Medium coverage	High coverage	Medium coverage	High coverage
Duration	5 mo (AGYW, FSW, ABYM); 11 mo (MSM)		*Same as for TDF/FTC*		12 mo (AGYW, FSW, ABYM); 24 mo (MSM)	
Coverage	5% (AGYW, ABYM); 15% (FSW, MSM)	10% (AGYW, ABYM); 30% (FSW, MSM)	10% (ABYM); 20% (AGYW); 25% (FSW, MSM)	20% (ABYM); 40% (AGYW); 50% (FSW, MSM)	20% (ABYM); 35% (AGYW); 40% (FSW, MSM)	35% (ABYM); 60% (AGYW); 67% (FSW, MSM)
Effectiveness	65% (AGYW, FSW); 85% (ABYM, MSM)		95% (all populations)			
Annual cost per person initiated	$76-78 (AGYW, FSW, ABYM); $116 (MSM)		$78-81 (AGYW, FSW, ABYM); $122 (MSM)		$131-137 (AGYW, FSW, ABYM, MSM 1st year); $105 (MSM 2nd year)	

Impact on HIV



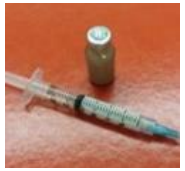
Oral Prep

- Duration 5-11 mo
- Coverage 5-15 % or 10-30% (hi)
- Effectiveness 65-85%
- Cost $76-78 ($116 MSM as includes syphilis test)

CAB-LA

- Duration same as oral or 12-24 mo
- Coverage 10-25% % or 20-50% (hi) min duration
- Coverage 20-40% or 35-67% (hi) max duration
- Effectiveness 95%
- Cost varies $78-81 or $31-137 depending on duratic

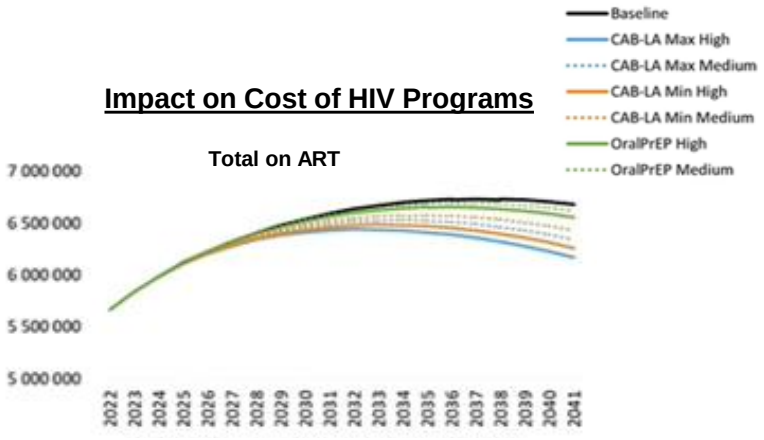
- At baseline HIV incidence declining from 0.39% to 0.17%
- **By 2041, CAB-LA min (and max) reduces incidence, averts more infections and AIDS deaths than TDF/FTC**
- HIV incidence decreased to
  - 0.15-0.16% TDF/FTC
  - 0.10-0.13% CAB-LA
- HIV infections averted
  - Max 8900-16300/yr TDF/FTC
  - Max 26400-52000/yr CAB-LA
- AIDS deaths averted; over 20 yrs
  - 6500 -2400 TDF/FTC
  - 21500-43400 CAB-LA

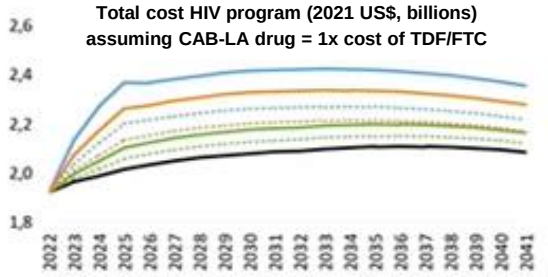


Cost-Effectiveness of CAB-LA vs Oral PrEP, South Africa Thembisa Modeled Analysis

Jamieson L et al. AIDS 2022, Montreal, Canada, Abs.OAE0304

Impact on Cost of HIV Programs





- By 2041, number of HIV+ pt on ART vs baseline
  - Reduced 1-2% TDF/FTC
  - Reduced 4-8% CAB-LA
- **Total HIV program cost higher** with CAB-LA despite less need for ART, likely due to assumed higher uptake compared to TDF/FTC

Cost-Effectiveness over 20 Years

Medium coverage scale-up for PrEP interventions

Scenario	New HIV infections		Life years lost due to AIDS		CAB-LA drug cost relative to oral PrEP	Total cost of the HIV programme (billions 2021 USD)		Incremental cost effectiveness (2021 USD)	
	Number [millions]	*% averted over BL*	*Number [millions]*	*% saved over BL*		*Cost*	*Incremental cost over BL*	*Cost/ infection averted*	*Cost/ life year saved*
Baseline	3.02		37.34			41.29			
Oral PrEP	2.90	4%	37.02	1%	-	42.08	2%	6,053	2,309
CAB-LA minimum duration	2.58	15%	36.19	3%	1x	43.25	5%	4,471	1,705
					2x	44.46	8%	7,211	2,751
					3x	45.66	11%	9,952	3,796
					4x	46.86	13%	12,692	4,842
					5x	48.07	16%	15,433	5,887
CAB-LA maximum duration	2.44	19%	35.81	4%	1x	44.31	7%	5,157	1,978
					2x	46.24	12%	8,447	3,240
					3x	48.16	17%	11,737	4,501
					4x	50.09	21%	15,027	5,763
					5x	52.02	26%	18,317	7,025

→To be more CE than TDF/FTC, CAB-LA needs to be same (1x) price; at slightly higher (2x) as TDF/FTC is less CE

Threshold Analysis

What Would Be Cost of CAB-LA/Injection to be as CE as Oral PrEP?

	Minimum duration scenario		*Maximum duration scenario*	
Cost per CAB-LA injection (2021 USD)	**Medium coverage**	**High coverage**	**Medium coverage**	**High coverage**
Equal ICERS for cost/HIV infection averted	$14.47	$11.57	$11.79	$9.03
Equal ICERS for cost/life year saved	$14.47	$11.88	$11.70	$9.33

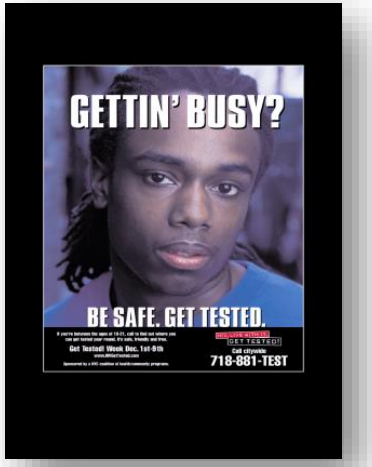
→Acceptable range of cost/injection to be as CE as TDF/FTC is $9-15

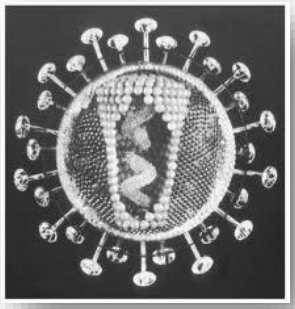
- CAB-LA is highly effective in preventing HIV transmission
  - Estimated 3-5-fold ↑ in averting HIV infection/AIDS deaths over 20 yrs
- Cost of CAB-LA drug needs to be <$9/injection (hi coverage) or <$15/injection (med coverage) for it to be similarly or more CE than TDF/FTC in South Africa
- Current US list price: $3700/injection – unaffordable for LMIC
- Voluntary licensing terms with Medicines Patent Pool under negotiation with ViiV

Implications for Programming – PrEP

- New Models for PrEP show promise
  - 6 mo prescriptions and HIV self-testing reduced the need for clinic visits
  - “Adaptive” strategies to improve adherence eg PrEP plus SMS work but don’t always overcome structural barriers
- Long-acting Cabotegravir for PrEP
  - Its coming, and it will be highly efficacious
  - But cost is a challenge. It would have to be >200 fold cheaper thatn current price

Adolescents and HIV





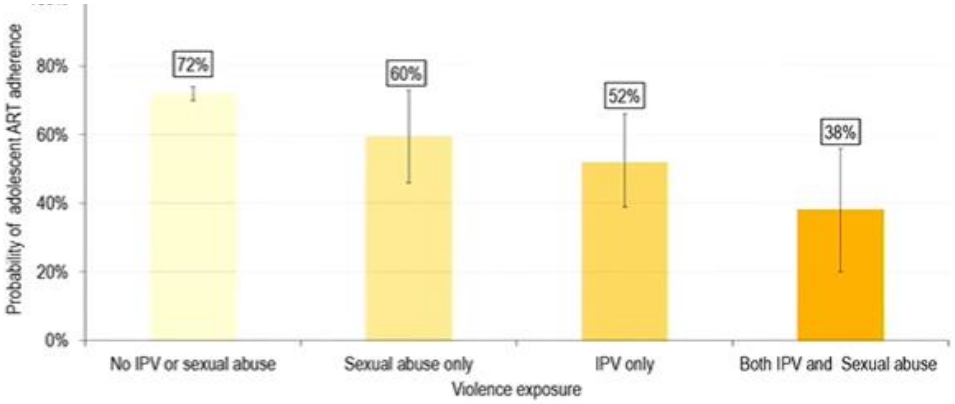
Impact of Intimate Partner and Sexual Violence on ART Adherence in Adolescents in South Africa

Cluver L et al. AIDS 2022, Montreal, Canada, Abs.OAD0503

- Cohort study of **1046 adolescents** living with HIV seen at >70 health facilities in Eastern Cape South Africa interviewed yearly for 3 years and health data collected from facilities; retention 94%, mortality 3.4%.

Experience with sexual violence

Impact of Sexual Violence on ART Adherence



Multivariable Associations Between IPV, Sexual Abuse, and Past-Week ART Adherence Among Adolescents (N=980, observations 1960)

Adolescent victimisation	aOR 95% CIs	p-value
IPV (past-year)	0.39 (0.21-0.72)	**0.003**
Sexual abuse (past-year)	0.54 (0.29-0.99)	**0.048**

→ Need to ask about IPV and sexual violence
→ Need to make referrals where possible
→ Scale up prevention programs and response services

Integrating and Scaling Up Evidence Based Violence Prevention Interventions

Behavior-Based Intervention on Effects of Preventive Sexual Violence Curriculum on Improving Male Attitudes Toward Women, S Africa

Madubela N et al. AIDS 2022, Montreal, Canada, Abs.OAD0502

- No Means No curriculum implemented in priority districts in South Africa
- Trained 16 male program facilitators to conduct the COVID-adapted 8-hr curriculum for adolescent boys and young men (10-24 yr) in 4 subdistricts – target 280 in each subdistrict.

NO MEANS NO BOYS &YOUNG MEN

- No Means No Worldwide (NMNW) and NACOSA launched the No Means No Boys & Young Men program in 2021
- An evidence-based intervention, delivering an educational sexual and GBV prevention curriculum.

8-hour intervention for men and boys

- Class 1: introduction to sources of strength (SOS)
- Class 2: Introduction to the Man Box and Cycle of Force
- Class 3: Your moments of truth
- Class 4: Introduction to intervention

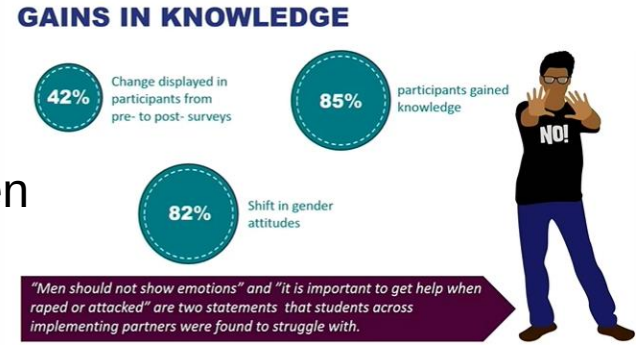
Focus

- Personal safety
- Redefining gender roles
- Debunking rape myths
- Consent
- Bystander intervention

3 models delivery: In school; after school extracurricular; out of school community spaces

→ Concluded standardized 4-week training program effective in improving attitudes toward women and increasing likelihood of successful intervention if witnessing GBV

- Conducted Aug 2021-Mar 2022; pre-and post-questionnaires to evaluate effect on attitudes toward women and gender-based violence



Changes in Knowledge and Attitudes Toward Women

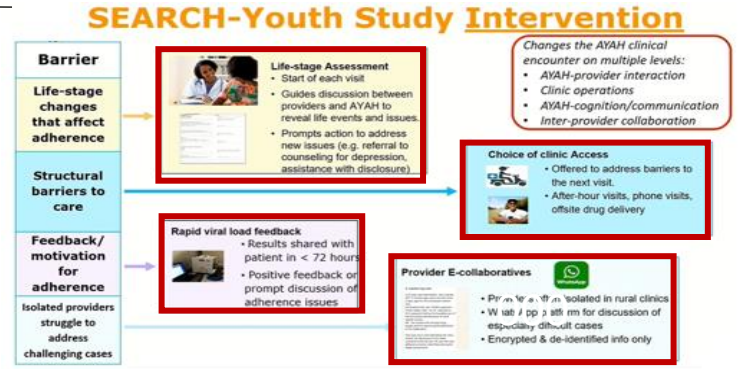
IMPLEMENTING PARTNER	KNOWLEDGE			ATTITUDES		
	% WITH DESIRED RESPONSE			% WITH DESIRED RESPONSE		
	PRE	POST	CHANGE	PRE	POST	CHANGE
Childline Gauteng	61%	89%	+45%	63%	84%	+33%
Amandla	65%	91%	+39%	67%	82%	+22%
Childline North West	44%	71%	+60%	74%	82%	+11%
Hope Africa	65%	100%	+54%	68%	67%	-2%
TOTAL	60%	85%	+42%	67%	82%	+21%

SEARCH-Youth Multilevel Health System Intervention to Improve Viral Suppression in HIV+ Adolescents/Young Adults Kenya, Uganda

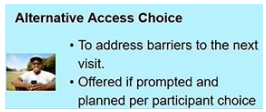
Mwangwa F et al. AIDS 2022, Montreal, Canada, Abs.OALBE0102

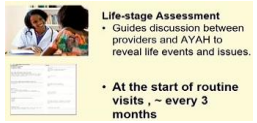
- Cluster randomized trial, 2,068 HIV+ adolescents 15-24 yrs in 28 clinics in Kenya and Uganda Mar 2019-Mar 2022; effect multi-level intervention effect on viral suppression (RNA <400) at 2 yrs

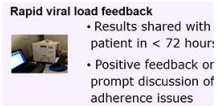
82% female
Median age: 21 years
40% single
58% had at least 1 child
75% on EFV/3TC/(TDF or ABC) at enrollment
74% suppressing viral replication <400 c/mL



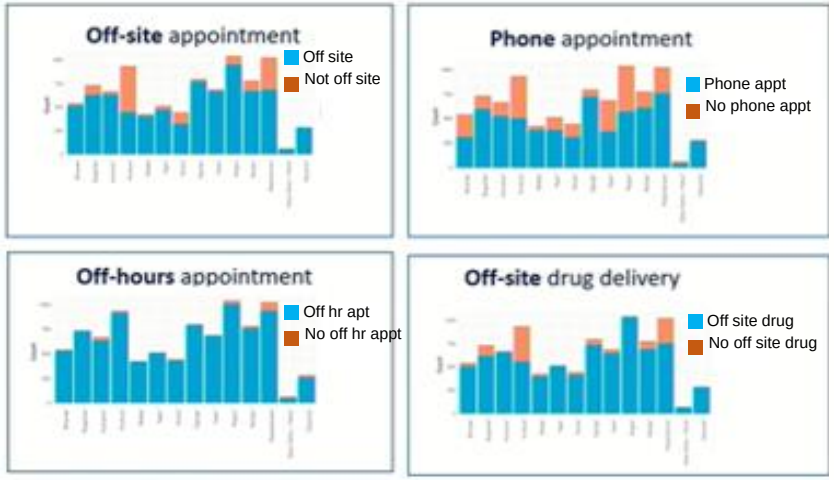
Intervention Utilization/Fidelity





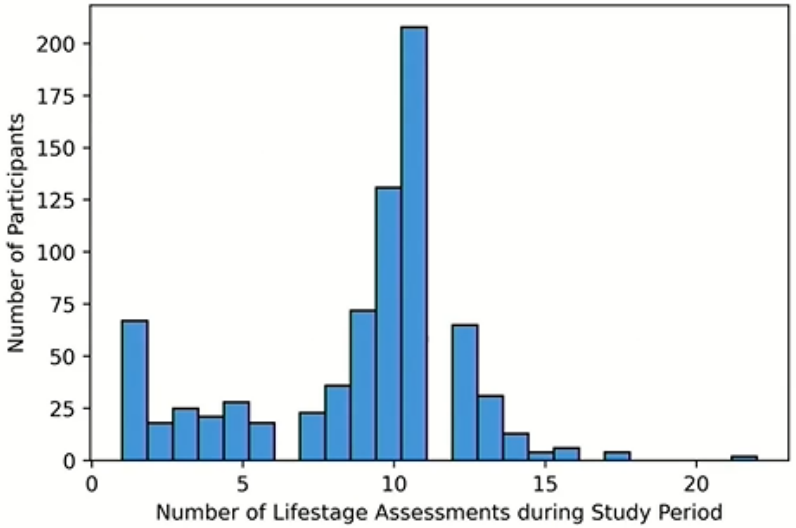


Alternative Clinic Site Visits by Clinic Site



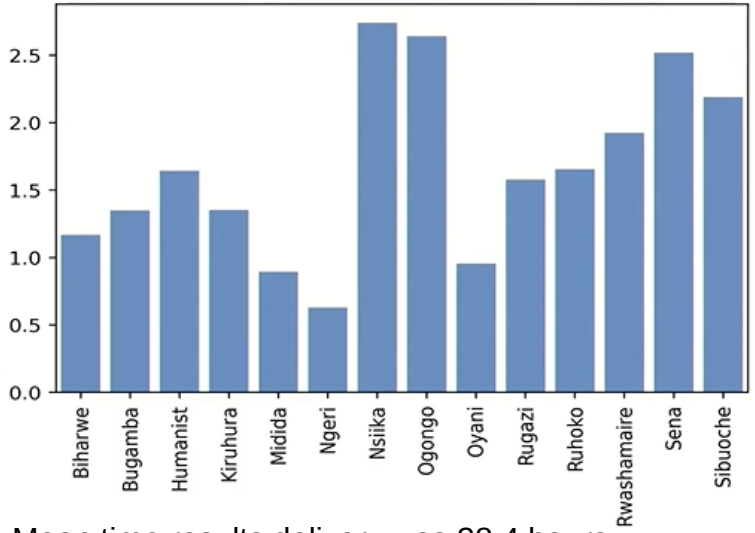
- Alternative clinic access selected by many participants
- Choices varied by clinic
- Useful during COVID periods

Number Life stage Asssessments During Study



- 84.5% of 785 participants remaining in region during 2-year period had ≥4 life-stage assessments

Mean VL Delivery Time (days)

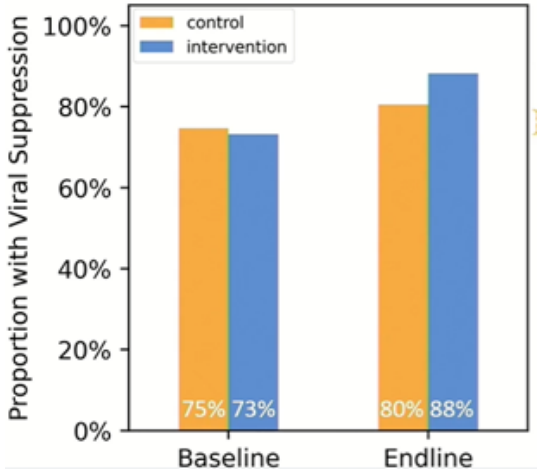


- Mean time results delivery was 38.4 hours
- In 13/14 clinics, 80% of results delivered within 72 h

SEARCH-Youth Multilevel Health System Intervention to Improve Viral Suppression in HIV+ Adolescents/Young Adults Kenya, Uganda

Mwangwa F et al. AIDS 2022, Montreal, Canada, Abs.OALBE0102

Viral Suppression (<400) at 2 Years

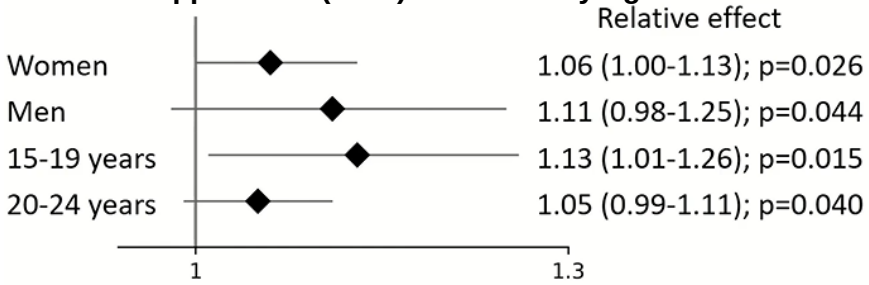


Engagement in care status at baseline

- 34% recent engagement (start ART in prior 6 mo/enrollment)
- 62% engaged (start ART >6 mos, with clinic visit prior 6 mos)
- 4% re-engaging (start ART >6 mos, without clinic visit prior 6 mos)

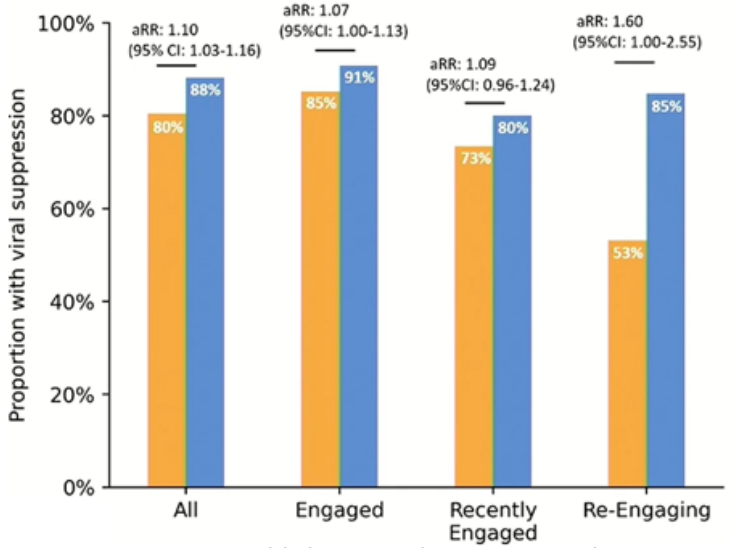
- 15% ↑ suppression in intervention vs 5% ↑ control
- 2-year suppression 88% intervention, 80% control
- Relative effect 1.10 (95% CI 1.03-1.2), p=0.002

Viral Suppression (<400) at 2 Years by Age and Sex



- Improvement by regardless of age and sex
- Largest effect in younger age (15-19 yrs)

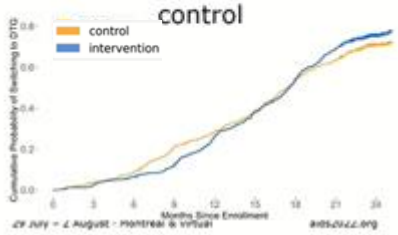
Viral Suppression (<400) at 2 Years by History Engagement in Care



- Improvements with intervention across subgroups defined by baseline care status
- Particularly impressive in those re-engaging in care: 85% intervention vs 53% control, relative effect 1.60 (95% CI 1.00-2.6), p=0.03

Majority of participants switched to DTG in both arms during study period

77% in intervention vs. 71% in control



- Study during DTG transition, switching similar both arms
- Intervention was associated with higher probability suppression in both youth who switched and did not:
  - DTG: 92% intervention, 88% control
  - No switch: 70% intervention, 64% control

→ Intervention increased viral suppression compared to SOC overall, in key subgroups & during period DTG transition and COVID-19

→ Added to current efforts, life stage-based assessment, allowing alternatives to clinic appts & rapid VL test/feedback could help AYAH achieve goal of universal suppression

Implications for Programming – Adolescents with HIV

- Counselling for GBV should be part of ART adherence for adolescents
  - IPV and sexual abuse strongly associated with poor adherence
  - Interventions targeting adolescent boys and young men can help to reduce GBV

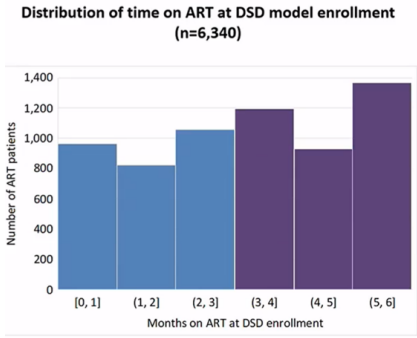
- Adherence strategies must be multilayered
  - Phone support and community delivery of ARVs improved adherence for adolescents and young people

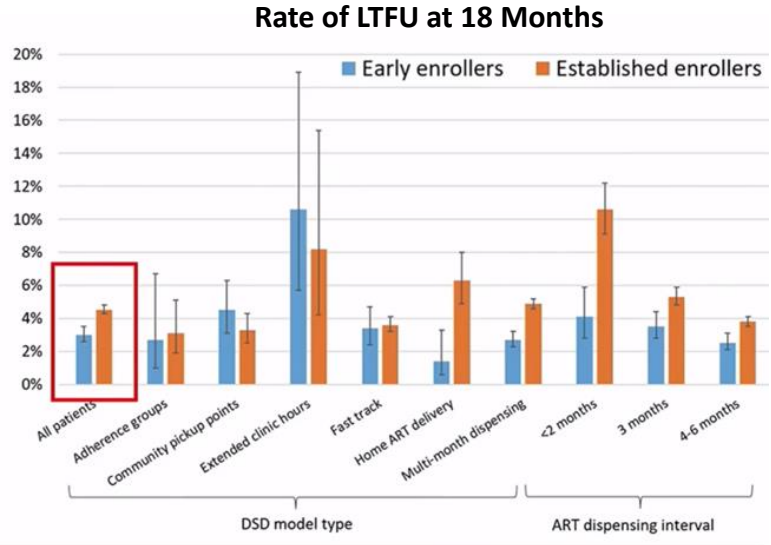
DSD Initiation

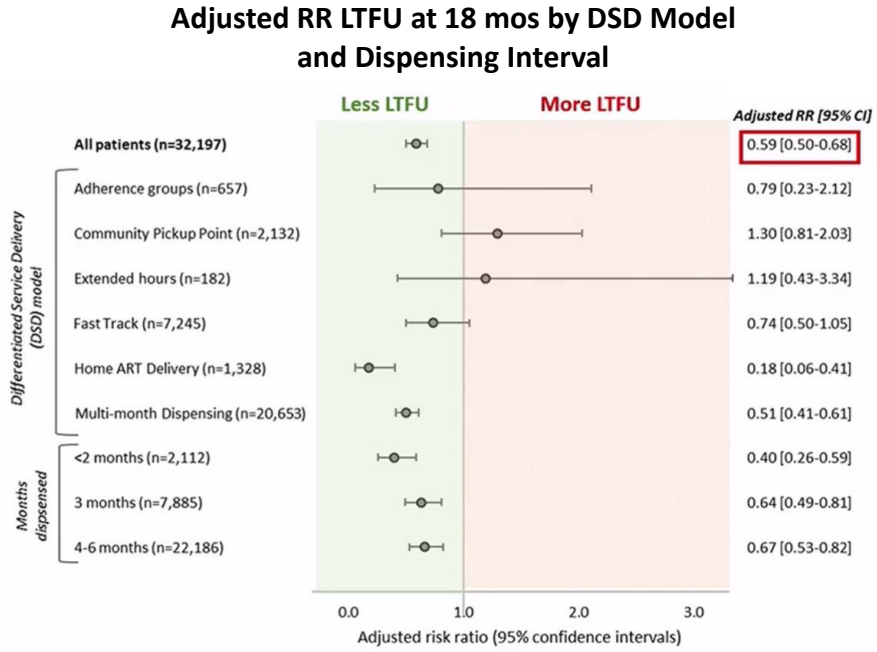
How Soon Should Eligilbity for DSD Happen?

Jamieson L et al. AIDS 2022, Montreal, Canada, Abs.OAE0104

- Zambia, EMR medical record review to ask is enrollment into DSD <6 mos after ART start associated with increased LTFU (no interaction with health system between 15-21 mos after ART start)?
  - Early enrollers (20%): DSD with <6 mos ART (N=6,340, 45% 0-3 mos; 55% 4-6 mo)
  - Established enrollers (80%): DSD with >6 mos ART (N=25,857)
  - No difference age (median, 37 yr), sex (61% female), setting (64%urban)

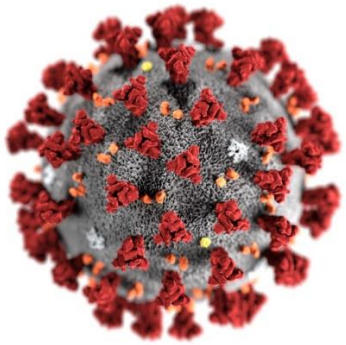




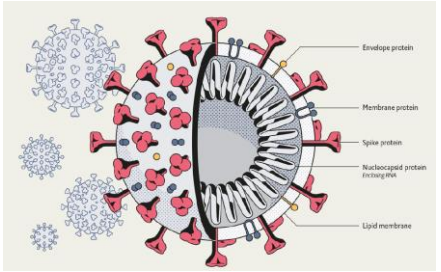


- Across most DSD models and all ART dispensing intervals, early enrollers had similar or lower rates of LTFU 18 mos after ART initiation

- Early enrollers risk LTFU lower than established pt for most models care and all dispensing intervals including those enrolled 0-3 mos after ART start.
- Potential bias re: early entry may be associated with pt with better adherence
- Despite this, DSD models do work for some early ART patients, suggesting blanket exclusion of those on ART <6 mos should be reconsidered



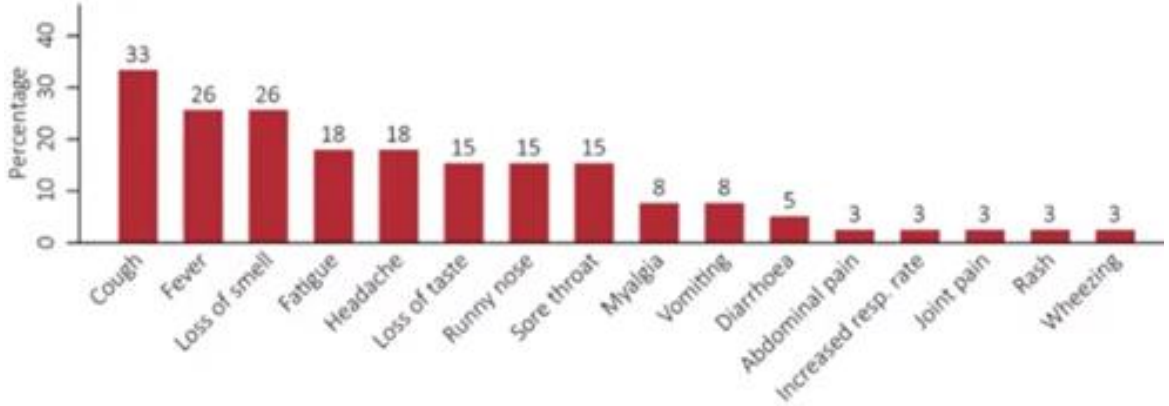
SARS-CoV-2/COVID-19, HIV, and Impact on HIV/TB Services



Incidence of SARS-CoV-2 Infection in Children and Adolescents Living with HIV in Europe

Chappell E et al. International Pediatric HIV Workshop, Montreal July 2022, Abs. 6

- Pediatric HIV cohorts from European Pregnancy and Pediatric Infections Cohort Collaboration (EPPICC) included if they had FU data through 2020 and were able to report COVID-19 data
- 11 cohorts including 1,718 children with HIV from 9 countries; **129 (8%) diagnosed with SARS-CoV-2 infection** (91% on ART): **47/1000 PY** (95% CI 40-56)
- Only 39 (30%) had additional clinical descriptive data available: 22/38 (61%) had symptoms, all mild; 3/39 (8%) hospitalized, no deaths



Characteristics Associated with SARS-CoV-2 Infection

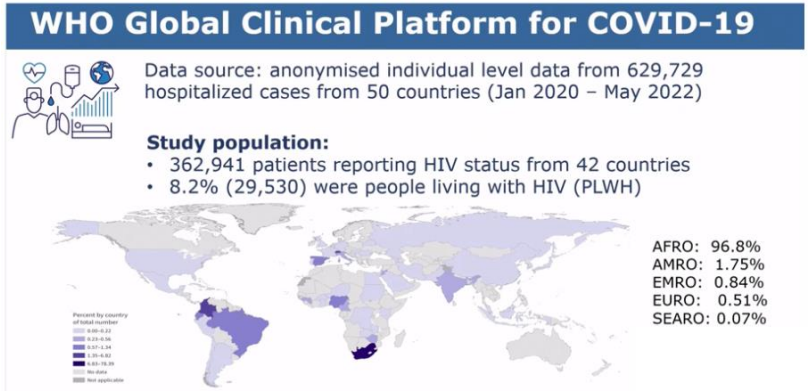
	SARS CoV 2 (N=129)	No SARS-CoV-2 (N=1589)	P value
Age	15.8	13.7	0.004
Yrs since HIV dx	11.0	9.1	0.050
VL <50	47%	59%	0.035

Not associated: sex, race/ethnicity, CD4, weight

→ Incidence SARS-CoV-2 was relatively low and generally mild, as seen in children without HIV; slightly more common in HIV+ older children and those not virally suppressed.

Increased Risk of Severe and Fatal COVID-19 in Persons Living with HIV: WHO Global Clinical Platform for COVID-19

Bertagnolio S et al. AIDS 2022, Montreal, Canada, Abs.OAB0404

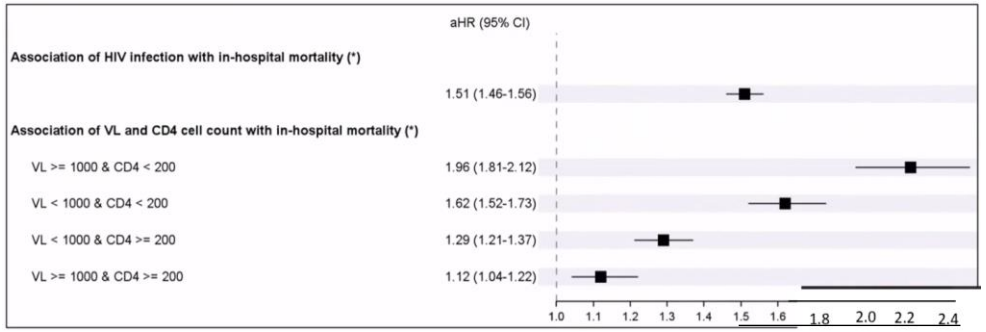


- Symptoms similar to HIV-negative except less frequent cough
- PLWH more frequent underlying conditions (≥1 underlying condition, 59% of PLWH vs 45% in HIV-negative (p<0.0001); 52% PLWH had 1-2 and 7% ≥3 underlying conditions)

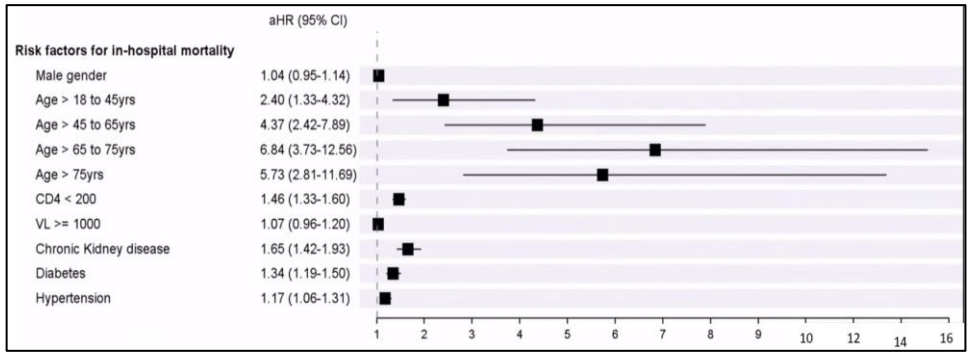
Differential Mortality Effect Omicron Variant Overall ↓ from Delta, But Still Higher PLWH

Mortality	Delta period (8/21-10/21)	Omicron period (11/21-5/22)	P value
PLWH	21.8%	17.6%	<0.001
HIV-neg	19.4%	8.1%	<0.001
aHR	1.55 (1.4-1.7)	2.47 (2.3-2.7)	

PLWH Have Higher Risk of In-Hospital Mortality Compared to HIV-Negative Persons



Risk Factors for In-Hospital Mortality in PLWH



*Adjusted for age, gender, comorbidities (TB, DM, hypertension, pulmonary disease, chronic kidney disease)

→ **Risk in-hospital mortality was 52% higher than HIV-negative**, adjusting for age, gender, underlying conditions

→ Independent mortality risk factors: older age, chronic kidney disease, diabetes, hypertension, **VL** & **CD4 <200 (regardless of VL status)**

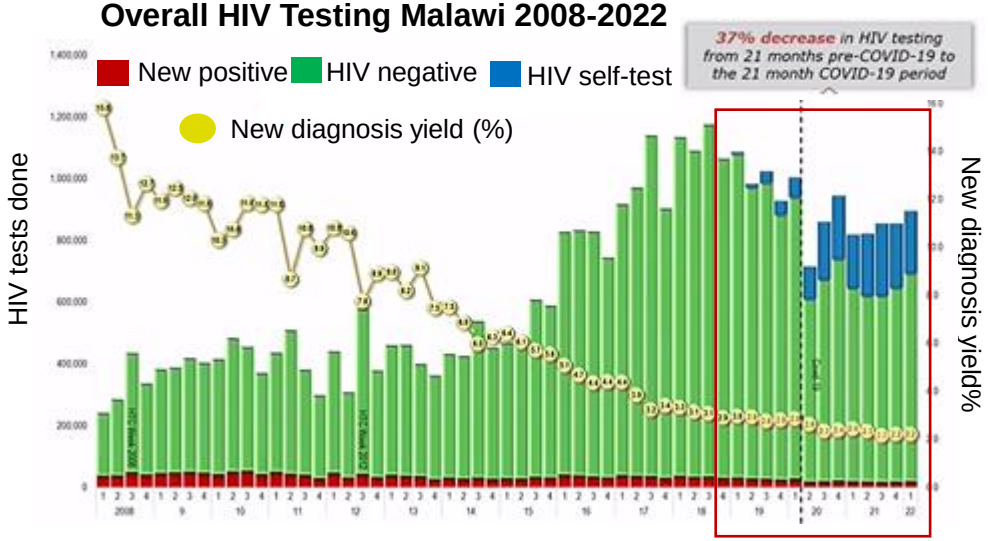
→ Decrease in mortality with Omicron seen in both PLHIV and HIV-negative but decrease was much less in HIV+

How Outreach Mobile Health Clinics Maintained HIV Testing and Linkage to Services in the Face of COVID-19, Malawi

Khozomba N et al. AIDS 2022, Montreal, Canada, Abs.OAE0202

- Malawi used Mobile Health Clinics to maintain HIV services during COVID

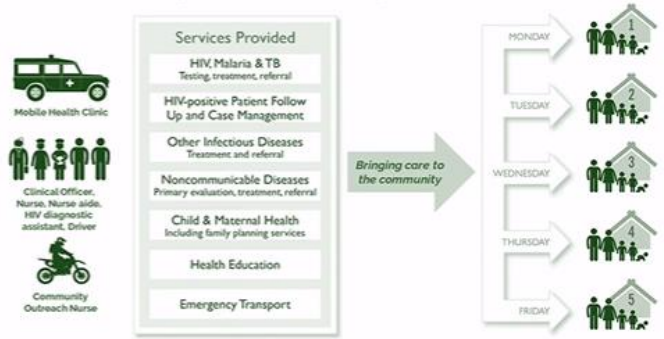
Overall HIV Testing Malawi 2008-2022



GAIA Mobile Health Clinics

7 clinics operating in 3 districts

Expanding access to care through Mobile Health Clinics



1 Mobile Health Clinic • 6 Personnel • 5 Villages • 35,000• client visits per Year

HIV services, provided for free

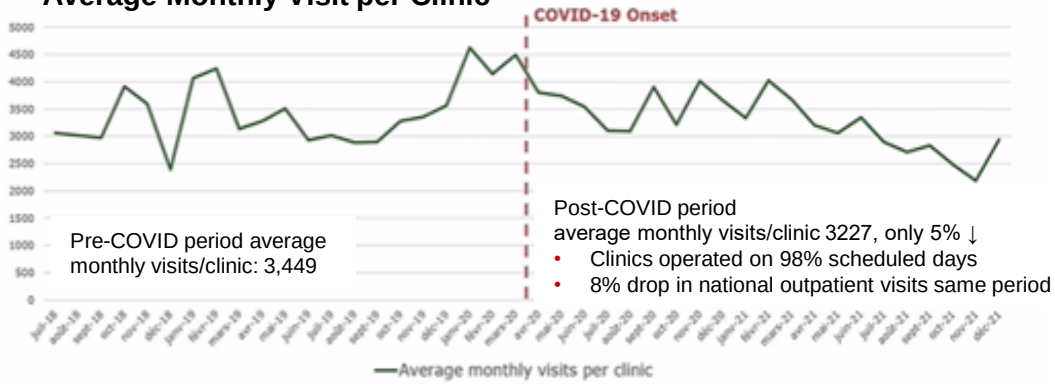
Proactive, preventive care:
- individual HIV risk assessment, risk reduction counselling, and HIV testing
- HIV self-testing
- home based follow up care and index testing
- condom distribution
- sexual reproductive health
- screening and treatment for HIV comorbidities and other acute and chronic ailments

2022 HIV service expansion

In 2022, GAIA is working with partners to add ar expand:
- community-based ART
- men's clinics, condom & lubricant provision
- outreach to sex workers and their clients
- antenatal Services
- cervical cancer screening & treatment
- targeted SBCC messages

To maintain access to essential health services for HIV, malaria, and other illnesses, GAIA:
- ❑ Added health and lay personnel and trained in COVID-19 prevention protocols to manage patient flow, social distancing, hand hygiene, separate individuals with COVID-19 symptoms, and reduce waiting times
- ❑ Procured PPE for clinic personnel and government partners
- ❑ Increased COVID-19 awareness through education and communication strategies
- ❑ Delivered COVID-19 prevention supplies to the community

Average Monthly Visit per Clinic



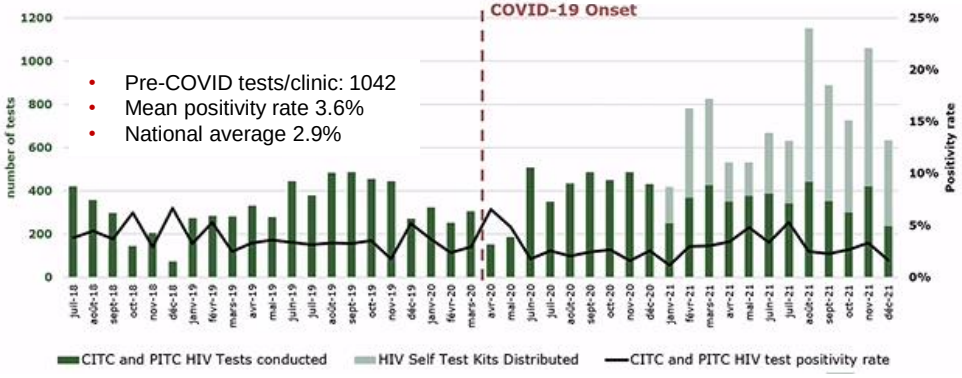
Pre-COVID period average monthly visits/clinic: 3,449

Post-COVID period
average monthly visits/clinic 3227, only 5% ↓
- Clinics operated on 98% scheduled days
- 8% drop in national outpatient visits same period

HIV Testing and Positivity by Month

- Pre-COVID tests/clinic: 1042
- Mean positivity rate 3.6%
- National average 2.9%

- Post-COVID tests/clinic: 1272, **22%** ↑
- Mean positivity rate: 2.8%
- National average: 2.3%



→ Community based care effectively blunted impact COVID in rural and remote populations

Lessons Learned

Services where people are: Community-based care lowers access barriers to health care

Flexibility: Mobile Health Clinic model can adapt to community needs and health crises

Community trust: Over a decade of work in the communities we serve has built lasting community trust and enduring, productive relationships with community leaders, helping to blunt the impact of health crises

Partnership: Close collaboration with District Health Offices and local government ensured efficient and effective use of resources, avoided duplication or clinic closure or disruption

Impact of COVID-19 Prevention Measures on Lives of Young People Living with HIV, Uganda

Ssekajja B et al. AIDS 2022, Montreal, Canada, Abs.OAD0202

- Quantitative (mobile web survey) and qualitative (focus group) study of HIV+ young people

MOBILE WEB SURVEY

1. GeoPoll
2. Cross-country
3. 640 young people (326 male, 314 females)

FOCUS GROUP DISCUSSIONS

1. 39 young people (14 males, 22 females, 3 nonbinary youth)
2. Between 8-9 members per group
3. Youth-Led
4. YPLHIV, young LGBTQI, Teenage mothers, and young people in school.

QUANTITATIVE FINDINGS

80% Needed information on sex, pleasure and COVID-19

47% Needed information on STIs/HIV testing or treatment

55% Of those in need of STI/HIV testing and/or treatment could not access the services due to COVID-19

10% Lacked access to medication

Need for STIs/HIV testing and/or treatment services during the covid-19 pandemic

Underlying Reasons for Difficulty in Accessing STI/HIV Services

1. **AFRAID OF COVID-19** — 34% of males and 29% of females afraid to catch COVID-19 infection from health facility
2. **LACK OF TRANSPORT** — Was reported by 25% of male respondents and 26% of female respondents
3. **HEALTH FACILITY CLOSED** — Was Reported by 11% of male respondents and 9% of female respondents
4. **CURFEW** — Was Reported by almost 12% of males and 9% of female respondents
5. **STOCK OUT OF MEDICINE** — Was Reported by 25% of the respondents

QUALITATIVE FINDINGS

- Inability for support groups to meet
- Medication was put on hold
- Inability to do viral load testing
- Increased chance of experiencing stigma (but also some positive experiences)
- Pandemic hindered access to contraceptives including condoms

INCREASED VULNERABILITY ACROSS ALL GROUPS OF YOUNG PEOPLE

YOUNG PEOPLE IN SCHOOLS — Limited access to sexuality education

SEX WORKERS — Increased physical and psychological abuse

LGBTQI+ — Increased harassment, rights violation and economic hardships

TEENAGE MOTHERS — Increased economic hardships

Recommendations from Young HIV+ People

- HIV prevention, care and treatment services should remain crucial during all times, including in case of a pandemic
- Prioritize the Mental health of YPLHIV
- Combat Stigma
- Address stock-outs, distribution, and adherence issues around ARVs
- Ensure access to PrEP and PEP
- Integrate sexuality education in online learning
- Provide economic support for young people including those living with HIV

The Global Alliance to end AIDS in children by 2030

A new global initiative to accelerate evidence-based action at scale

The Global Alliance is the successor to the Global Plan and the 3-Frees

A 9-year global strategic initiative in 3-year phases with the goal of ending AIDS in Children by 2030

PILLARS

I. **Early testing and comprehensive, high-quality treatment & care** for children and adolescents living with HIV and perinatally exposed children

II. **Closing the treatment gap and optimizing continuity of treatment** for pregnant and breastfeeding women living with HIV

III. **Preventing new HIV infections** among pregnant and breastfeeding women

IV. **Addressing rights, gender equality, and the social & structural barriers** that hinder access

POPULATIONS

I. **Children** (0-14 years) and **Adolescents** (15-19 years) Living with HIV

II. **Children perinatally exposed** to HIV

III. **Pregnant and Breastfeeding Girls and Women who are Living with HIV** including marginalized and key populations

IV. **Pregnant and Breastfeeding Girls and Women who are HIV-negative but at risk of HIV**

Learning from the past, the new Global Alliance will take some novel approaches

Build momentum over a longer period – 9 years from 2022 to 2030 in three phases, each will involve leadership of different regional and national partners.

Promote country leadership and community ownership with the participation of national programmes and affected communities of children, adolescents and mothers living with HIV, to lead, develop and execute plans

Boost existing initiatives to end AIDS in children, with the commitment to coordinate, collaborate and celebrate shared successes

Increase advocacy and ensure senior high-level engagement from partners including countries, UN agencies, global networks of PLHIV, implementers, PEPFAR and GF to drive support for the initiative;

Address programme gaps ***AND*** structural barriers that are hampering progress for children especially for marginalized communities including key populations

Use data to target and focus our attention

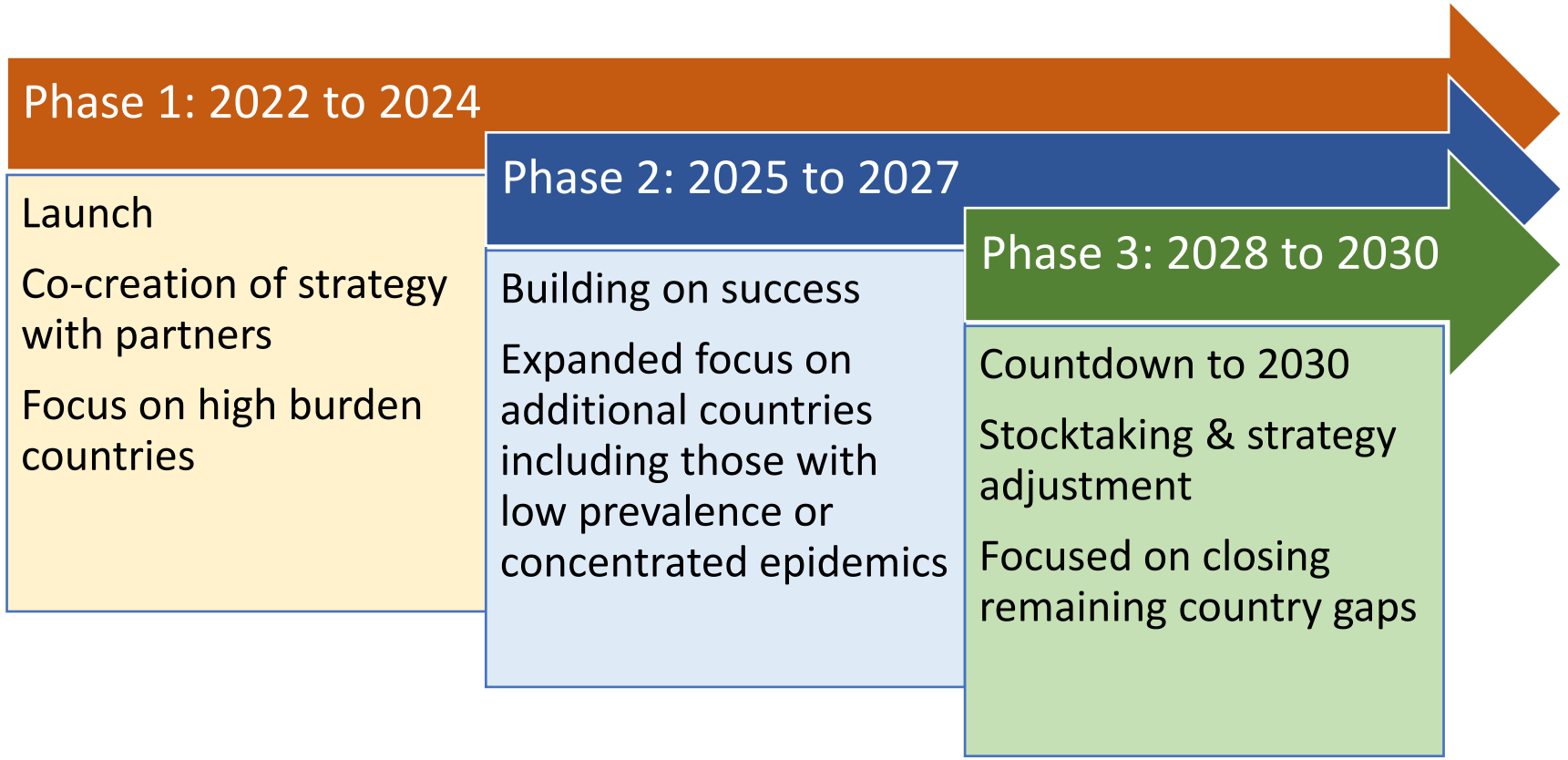
LESSONS LEARNED

- ✓ Country buy-in
- ✓ Senior political leadership
- ✓ Donor alignment
- ✓ Focused action
- ✓ Community engagement

Following the Launch at AIDS 2022, we committed to an Alliance kick-off in Abuja for the 12 Phase 1 partner countries

Angola, Cameroon, Cote d'Ivoire, Democratic Republic of Congo, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

Each 3 year phase of the Alliance will be an opportunity to take stock and re-align our efforts



For more information including joining the alliance as a Member – visit:
https://www.childrenandaids.org/global-alliance

Thank You For Your Attention!

Questions?