



# CONSIDERATIONS REGARDING CHANGES IN HIV TESTING AND DIAGNOSIS AMONG CHILDREN AND ADOLESCENTS AND THE EFFECTIVENESS OF A PEDIATRIC RISK ASSESSMENT TOOL FOR HIV TESTING IN ZAMBIA

Dickson Matulula<sup>1</sup>, Bright Kulukulu<sup>1</sup>, Godfrey Mutaawe<sup>1</sup>, Megumi Itoh<sup>2</sup>, Kebby Musokotwane<sup>2</sup>, Annie Mwila<sup>2</sup>, Kennedy Nkwemu<sup>2</sup>, Mwiya Mwiya<sup>3</sup>, Gloria Munthali<sup>3</sup>, Khozya Zyambo<sup>3</sup>, Felton Mpasela<sup>4</sup>, Sengelewayo Ndhlovu<sup>1</sup>, John Ngoma<sup>1</sup>, Zude Zyambo<sup>1</sup>, Jessica Gross<sup>5</sup>, Amy Medley<sup>5</sup>, David Mabirizi<sup>6</sup>, Chalilwe Chungu<sup>1</sup>

<sup>1</sup>Catholic Relief Services, Zambia, <sup>2</sup>Centre for Disease Control, Zambia, <sup>3</sup>Zambia Ministry of Health, <sup>4</sup>Clinton Health Access initiative, Zambia, <sup>5</sup>Centre for Disease Control and Prevention, United States of America, <sup>6</sup>Catholic Relief Services, United States of America

## Background

- In 2019, Zambia had an estimated pediatric treatment gap of 10,515 (17%) children living with HIV (CLHIV).
- In April 2019, the Ministry of Health (MOH) introduced a pediatric (<15 years) HIV Risk Assessment Tool (HRAT) (Figure 1).
- HRAT items included:** maternal HIV status, death ≥1 parent, tuberculosis symptoms, recent sickness or hospitalization, recurrent skin problems, or ear pus.
- Children scoring “yes” to ≥1 item were referred for HTS.
- Prior to HRAT introduction, the MOH recommended **universal routine HIV testing services (HTS)** in all facility entry points for children with an undocumented HIV status.
- The Faith-based Action for Scaling-up Testing and Treatment for the Epidemic Response (FASTER) project implemented the HRAT in **50 health facilities** from July 2019 to September 2021.
- This analysis assesses pediatric HIV testing and case identification pre/post HRAT implementation at select health facilities in Zambia.

## Methods

- Collected aggregate data on HIV tests conducted and HIV-positive results from the outpatient modality across 12 of 50 FASTER-supported health facilities.
- Using Stata 17, the Wilcoxon matched-pairs signed-ranks test to test for equality of **pre- (October 2017-June 2019)** and **post-HRAT (July 2019-March 2021)** implementation.

## Results

- During the post-HRAT period, pediatric **HIV tests decreased by 56.2%** ( $z=3.059, p=0.002$ ) and **diagnoses decreased by 43.3%** ( $z=3.040, p=0.002$ ).
- All 12 health facilities had declines in HIV tests and only one increased HIV case finding (**19.8%** increase).
- The increase in testing yield from (**2.4% vs. 3.2%**) was not statistically significant ( $z=-0.875, p=0.382$ ).

Figure 1: Zambia Pediatric (<15 years) HIV Risk Assessment Tool (HRAT) Screening Items

STEP TWO: SCREEN FOR HIV TESTING ELIGIBILITY			NO	YES	TEST FOR HIV AND TB
	1	Is the child's biological mother HIV+ or is her HIV status unknown?	<input type="checkbox"/>	<input type="checkbox"/>	
	2	Are one or both of this child's biological parents deceased?	<input type="checkbox"/>	<input type="checkbox"/>	
	3	Does this child have any TB symptoms including cough, fever, weight loss/poor weight gain, or night sweats?	<input type="checkbox"/>	<input type="checkbox"/>	
	4	In the last 6 months, has this child been sick more than other children or been admitted to hospital?	<input type="checkbox"/>	<input type="checkbox"/>	
	5	Has this child had frequent rashes or other skin problems?	<input type="checkbox"/>	<input type="checkbox"/>	
	6	Has this child had pus coming from his or her ear?	<input type="checkbox"/>	<input type="checkbox"/>	

Figure 2: Trends in HIV Tests performed (hollow circle) and HIV positivity (diamond) by quarter for all 12 facilities

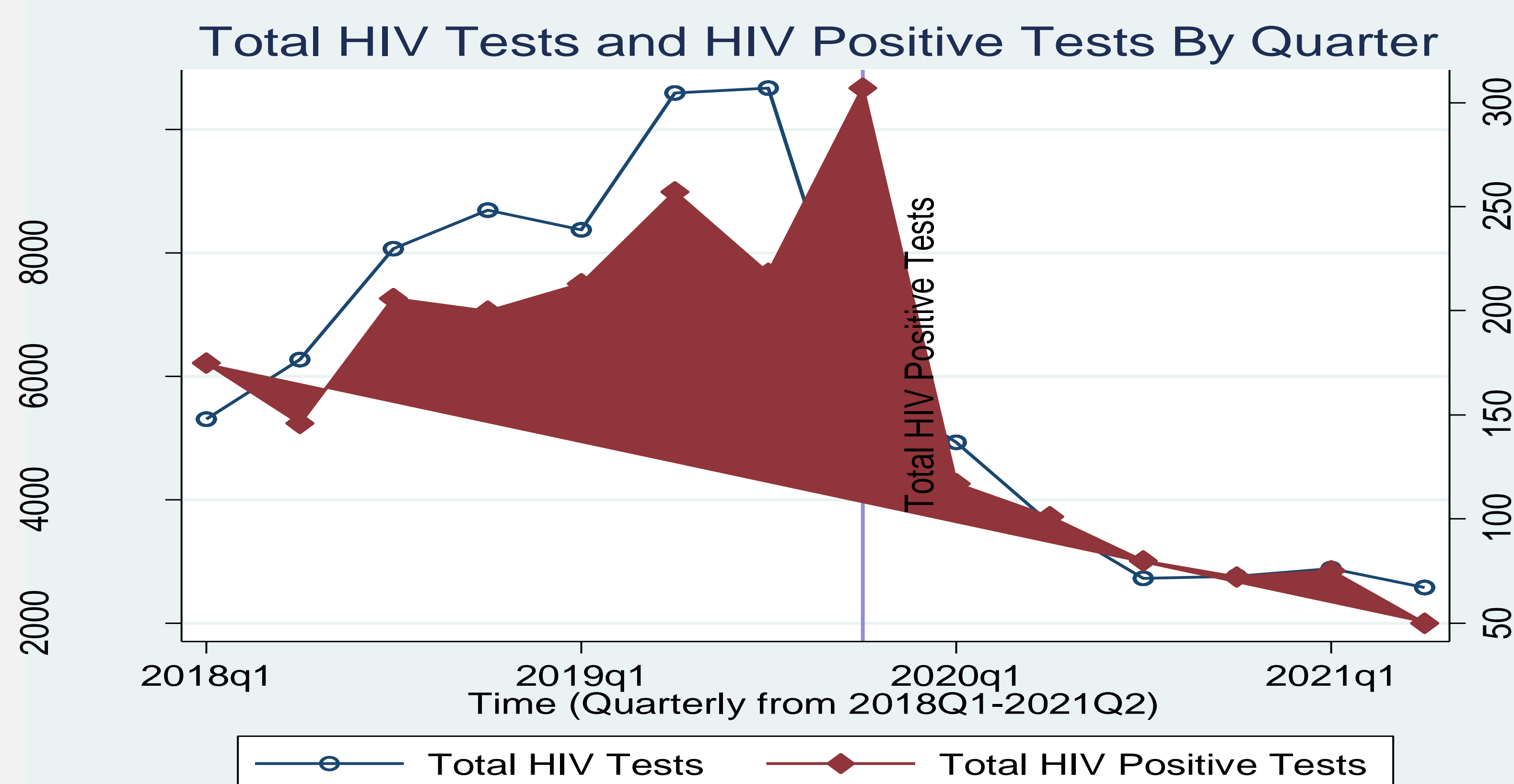
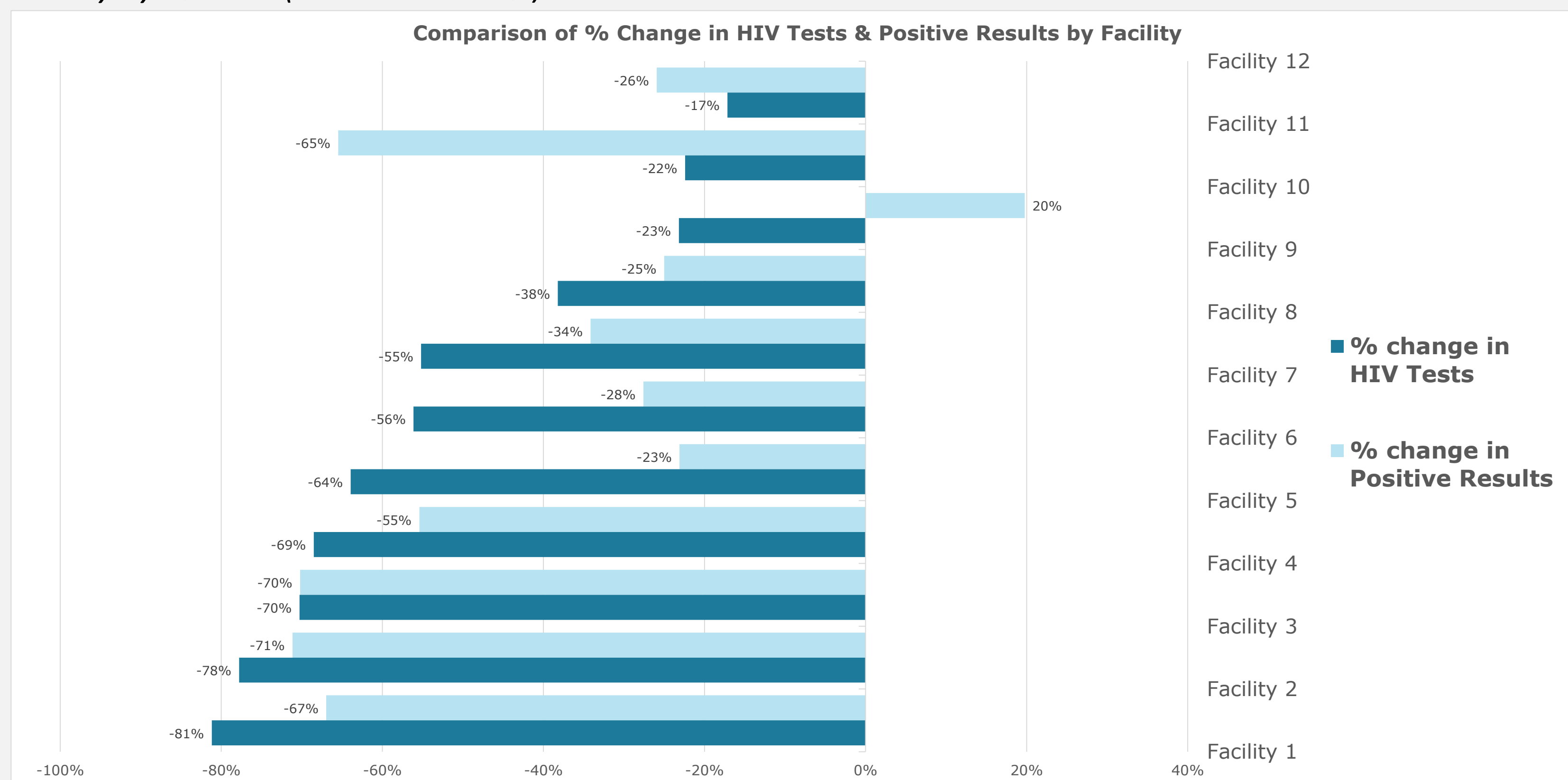


Figure 3: Comparison of percentage change in trends of HIV Tests Done and HIV Positive Tests by Health Facility by Quarter (2018Q1-2021Q2)



## Conclusion

There was a decline in pediatric HIV-positive case identification following the introduction of the HRAT, raising concerns CLHIV may have screened-out of HIV testing services. HRAT validation is recommended to inform tool screening performance (i.e., sensitivity, specificity) for HIV testing among children and adolescents. Countries introducing HRATs can validate tools in a limited number of sites in advance of national roll out and use continuous quality monitoring to identify gaps and inform real-time interventions. Further analysis is needed to understand the impact of the COVID-19 pandemic on pediatric outpatient attendance, changes in programmatic pediatric HIV testing targets, as well as other community-level factors, on pediatric HIV testing services.

### References

- PEPFAR Zambia Country Operation Plan (2020)
- Zambia Consolidated Guidelines for Treatment and Prevention of HIV (2020)

Contact | Dickson Matulula | dickson.matulula@crs.org

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

### FASTER

Faith-Based Action for Scaling Up Testing & Treatment for Epidemic Response

This study was supported by the U.S. President's Emergency Plan for AIDS Relief through the U.S. Centers for Disease Control and Prevention cooperative agreement # GH001463 with CRS and sub-awardees Makerere University School of Public Health, Uganda, and Macha Research Trust, Zambia, with oral HIV test kits donated by OraSure Technologies.

### Acknowledgements

Zambia Ministry of Health  
Centers for Disease Control and Prevention  
Catholic Relief Services  
Clinton Health Access Initiative Zambia