



# Cost of caregiver-assisted oral HIV screening of children in Uganda and Zambia

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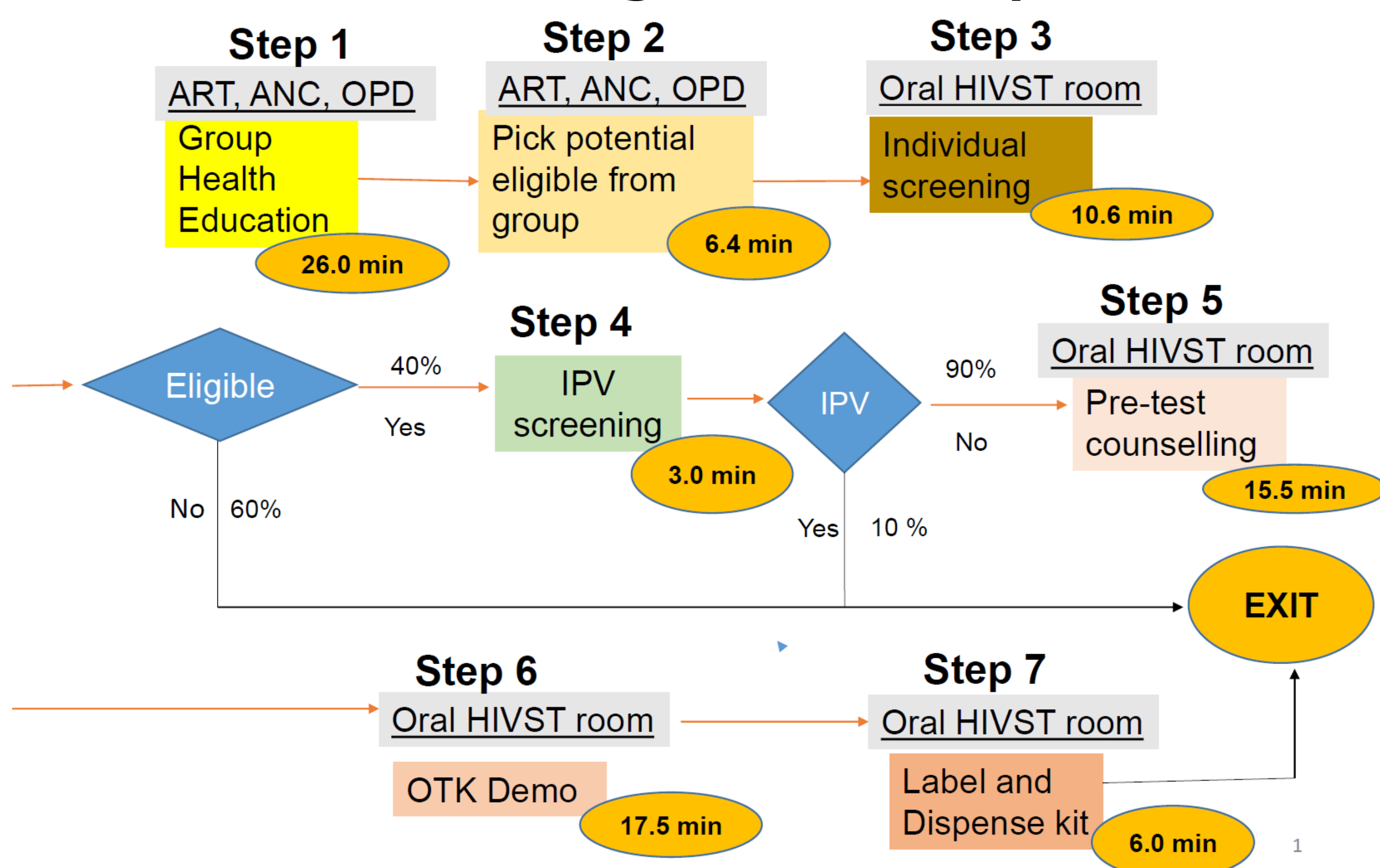
## Background

Caregiver-assisted pediatric oral HIV self-testing (HIVST) presents an alternative to facility-based testing which may improve testing access for children living with HIV (CLHIV) in resource-limited settings and decongest crowded health facilities. Data on cost and cost-effectiveness of this novel approach are scarce. Per person costs of facility-based HIV testing in Eastern Africa range from \$3-\$21 in 2020 United States Dollars (USD).

## Methods

- The study was nested in cross-sectional studies assessing the acceptability, feasibility, and effectiveness of caregiver-assisted oral HIVST at 32 health facilities in Uganda and 15 health facilities in Zambia.
- An ingredient-based approach was used to estimate costs including commodities, labor, and infrastructure inputs from the perspective of the healthcare system from April to October 2021.
- Resources use and cost data were obtained through interviews with health workers and time-motion studies.
- We estimated the cost per child screened using an oral test kit (OTK) and the cost per child identified as HIV-positive (excluding confirmatory testing).
- One-way sensitivity analyses were used to assess the robustness of the findings.

### Average Process Map



**Note: Steps 1,2 and 3:** time is weighted by percent eligible and the time for pre-test counseling is weighted by percent with no risk of IPV. i.e., (steps (1+2+3)\*percent eligible + step 4 + (step 5\* percent no IPV) + step 6 + step 7.  $(26+6.4+10.6)*0.4+3+15.5*0.9+17.5+6 = 57 \text{ minutes per Guardian enrolled}$

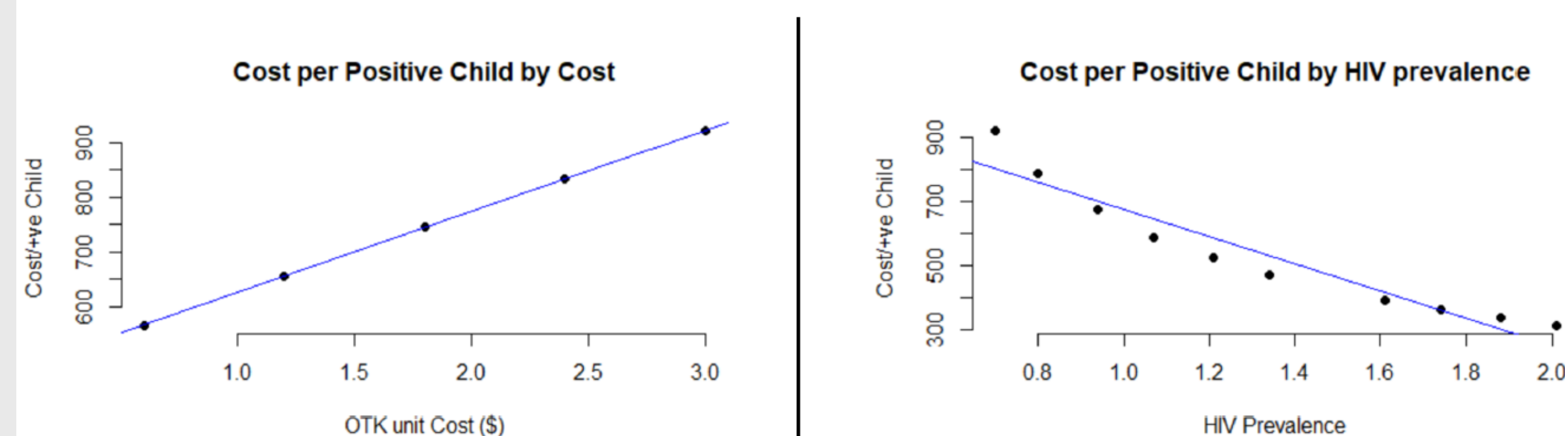
## Results

- HIV-positivity (screened HIVST-reactive and confirmed HIV-positive) was 0.67% among 4,766 children in Uganda and 0.43% among 2,649 children in Zambia.
- The unit cost of caregiver-assisted oral HIV screening per child was \$5.80 in Uganda and \$5.12 in Zambia.
- In Uganda and Zambia, respectively, the largest cost component was the OTKs (51% and 41%), followed by personnel (15% and 16%) and infrastructure (12% both).
- An integrated facility-based program with community follow-up by village health teams (Uganda) or lay counselors (Zambia) where infrastructure, overhead, and travel costs are eliminated, would reduce the unit cost to \$4.50 and \$4.93, respectively.
- The cost per CLHIV diagnosed was \$869 in Uganda and \$1,191 in Zambia.

**Table 1: Unit Oral Test Cost by Cost Category and Proportionate Contribution to Overall Unit Cost by Cost category**

	Cost/OTK Test (\$) - Uganda	Percent of Total Cost - Uganda	Cost/OTK Test (\$) - Zambia	Percent of Total Cost - Zambia
<b>Fixed costs</b>				
Infrastructure	0.7	12%	0.6	12%
Equipment/ storage	0.1	2%	<0.1	<1%
Training	0.3	5%	0.2	4%
Supervision	0.1	2%	0.5	10%
<b>Variable costs</b>				
OTK supplies	3.0	51%	2.1	41%
Other Supplies	0.1	1%	0.0	0%
Personnel	0.8	14%	0.8	16%
Overheads	0.3	5%	0.8	16%
Travel	0.2	4%	0.0	0%
Communication	0.2	4%	0.0	0%
<b>Total</b>	<b>5.8</b>	<b>100%</b>	<b>5.1</b>	<b>100%</b>

## Sensitivity Analysis



This unit cost is sensitive to HIV prevalence among tested children and cost of OTKs

## Conclusion

Caregiver-assisted pediatric oral HIV screening in Uganda and Zambia can decrease the number of children needing facility-based testing and offer flexibility and convenience to parents. Integrating caregiver-assisted oral HIV screening of high-risk children into existing community programs and negotiating lower OTK prices could further reduce the cost per HIV-positive child identified.

