Estimating the impact of HIV self-testing on HIV testing, diagnoses, and treatment initiation at the population-level with routine data : the example of the ATLAS program in Côte d'Ivoire

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Background

HIV self-testing (HIVST) is recommended by the WHO.

It has the advantage of greater autonomy and flexibility, supporting discretion, convenience and confidentiality. It makes it possible to reach untested and hard-to-reach populations.

However, its confidential nature and the network distribution approach (focusing on key populations and their relatives and partners) make it difficult to estimate the impact of HIVST at the population-level.

This study aims to overcome this challenge by using routine programmatic data **to estimate the impacts of the ATLAS project HIVST on 'conventional' HIV testing (i.e., non-HIVST), new HIV diagnoses, and initiation of antiretroviral therapy (ART) in Côte d'Ivoire.**

Methodology

We used quarterly programmatic data **(Q3-2019 to Q1-2021)** from implementing partners for the Nº HIVST kits distributed through ATLAS in Côte d'Ivoire.

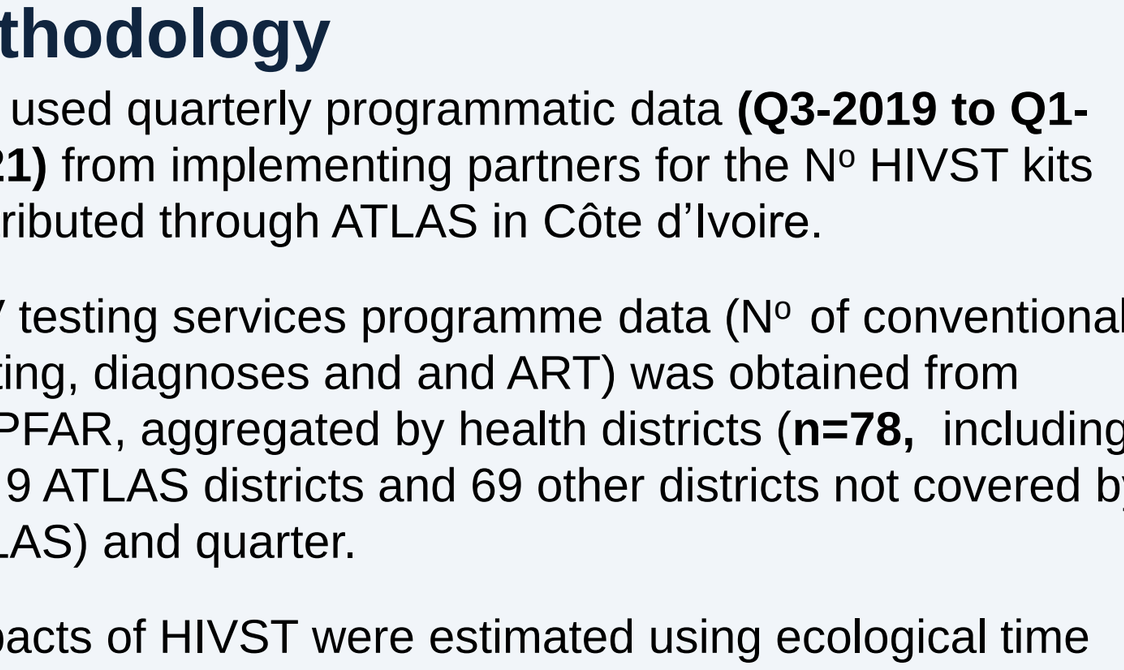
HIV testing services programme data (Nº of conventional testing, diagnoses and and ART) was obtained from PEPFAR, aggregated by health districts (**n=78,** including the 9 ATLAS districts and 69 other districts not covered by ATLAS) and quarter.

Impacts of HIVST were estimated using ecological time series regression using linear mixed-models.

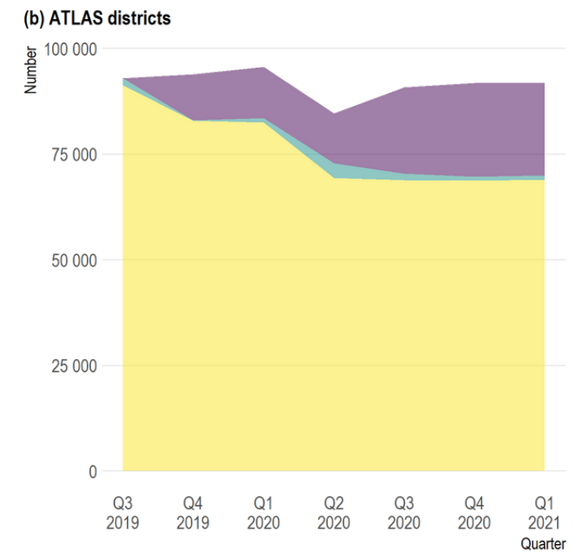
Results

Between Q3-2019 and Q1-2021, ATLAS distributed 99,353 HIVST kits in 9/78 health districts included the analysis.

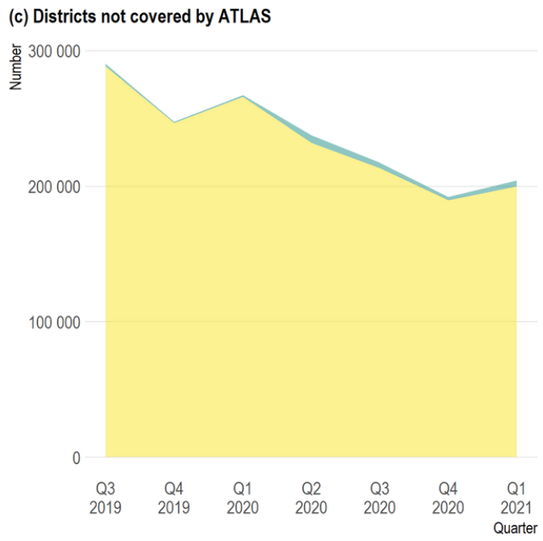
Conventional testing decreased from 379,554 in Q3 2019 to 268,807 in Q1 2021 (**Figure a**).



In the 9 ATLAS districts, the distribution of HIVST kits mitigated the decline in access to HIV testing (Figure b).



In the 69 districts not covered by ATLAS (Figure c), HIVST kits distributed through PEPFAR remained limited and insufficient to offset the reductions in 'conventional' testing.



There was a negative but nonsignificant signal of the effect of the number of ATLAS-distributed HIVST kits on conventional testing uptake (-190 'conventional' tests per 1,000 HIVST distributed; 95%CI: -427 to 37). However, even if only 20% of distributed kits were used, HIVST would still increase access to testing.

ATLAS HIVST kits have increased significantly the Nº of HIV diagnoses (+8 diagnoses per 1,000 HIVST distributed ; 95%CI: 0 to 15).

No association with ART initiation was observed (-2 ART initiations per 1,000 HIVST distributed ; 95%CI: -8 to 5).

***Table 1**: Linear effect of Nº of HIVST distributed via ATLAS on 'conventional' testing, HIV diagnosis and ART initiation, in 78 PEPFAR districts in Côte d'Ivoire (Q3-2019 to Q1-2021), adjusted by quarter year and region*.

Outcome variables	Effect for 1000 HIVST distributed by ATLAS	95% CI	p-value
Conventional testing	-190	-427 to +38	0·10
HIV diagnosis	+8	0 to +15	0·044
ART initiations	-2	-8 to +5	0·66

More information here: https://doi.org/10.1101/2022.02.08.22270670

Conclusions

The methodology used in this paper offers a promising way to use routinely collected programmatic data to estimate the effects of HIVST kit distribution in real-world programmes.

Our results show that a network-based HIVST distribution strategy focused on key populations and their relatives and partners improves diagnosis. Implementers should consider using this approach to monitor and optimize programming.

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