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

AG-RDT MASS TESTING IN LARGE GATHERINGS TO IDENTIFY SARS-COV-2 INFECTIONS IN KENYA

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BACKGROUND

- African countries are underreporting the COVID-19 case burden due to low testing rates. In fact, 6/7 cases are not detected
- Mass testing with Ag-RDT, including testing of asymptomatic individuals, is expected to improve the identification of SARS-CoV-2 infections and enable immediate clinical management, isolation of patients, contact tracing, and quarantining of contacts
- Data on SARS-CoV-2 infection rates, the acceptability of Ag-RDTs, and the cost of conducting widespread testing are limited in Africa

METHODS

- We conducted a cross-sectional study in 49 different high-attendance venues in Kiambu County, Central Kenya
- Testing venues identified in collaboration with the Department of Public Health as possible points of community-based transmission
- Individuals ≥2 years old were offered to test using Ag-RDT kits
- Participants enrolled after providing written consent
- Testing with nasopharyngeal swabs was collected by MOH laboratory technicians using MOH-approved Ag-RDT kits
- Participants with positive Ag-RDT results and negative symptoms were referred for PCR and genome sequencing
- Data collected through interviews
- Total cost of implementation estimated from a health system perspective using a micro-costing method





Main Findings

The case detection rate for SARS-CoV-2 was 1.07 (95% CI: 0.7 - 1.4) infections detected per 100 individuals. Most people were tested in markets and shopping centers

The major cost drivers for the Ag-RDT community testing were community mobilization (26%), Ag-RDT supplies (20.5%), and personnel (18%)

RESULTS

- From June-September 2022, 4,062 individuals were offered testing [mean age=39 years; 2,114 (58.6%) were male]
- The testing acceptance was 78.1% (3,174/4,062; 95%CI: 76.9%-79.5%)
- Of the 34 positive cases, 11 (32%) were asymptomatic
- Most of those who tested positive for SARS-CoV-2 presented with runny nose (62%), cough (47%), headache (32%), muscle aches (32%)
- PCR results were available for 27 Ag-RDT-positive participants and 13 Ag-RDT-negative participants with SARS-CoV-2 symptoms with positive PCR results in 24 (88.9%) and 4 (30.8%) respectively
- Circulating variants were identified in 11 participants (Omicron 22A: 36%; Omicron 22B: 64%); 15 samples could not be sequenced due to CT values >35
- The total cost of the intervention was US$50,538; the cost per individual tested was US$15.89 and US$1,484 per new COVID-19 infection

Venue type	Number offered testing, n (%)	Proportion tested among offered (95% CI)	Number of Ag-RDT positive	Percentage of positive among tested (95% CI)
Market/shopping centre (n=31)	2,591 (83.6)	77.1 (75.4-78.7)	24 (0.8)	1.2 (0.8-1.8)
Chief's camp (n=5)	328 (65.6)	73.8 (68.7-78.5)	2 (0.4)	0.8 (0.1-3.0)
Bus parks (n=6)	397 (66.2)	73.8 (69.2-78.1)	8 (1.3)	2.7 (1.9-5.3)
Stadium (n=2)	148 (74)	73.6 (65.8-80.5)	0	0
Others (n=6 /5*)	598 (99.7)	89.0 (86.2-91.4)	0	0
Overall (n=50)	4,062 (81.2)	78.1 (64.8-76.8)	34 (0.7)	1.07 (0.7-1.4)

RESULTS

Factor	Crude OR [95% CI]	P-value	Adjusted OR [95% CI]	P-value
COVID-19 symptoms in last ten days				
No	1	<0.001	1	<0.001
Yes	20.7 [10.0-42.9]		12.8 [6.1-27.1]	
Vaccinated			-	-
No	1			
Yes (at least one dose)	1.1 [0.5,2.1]	0.876		
Period of test				
Week 1-4 of testing (June 20th-July 15th) (>100 new cases per day country-wide)	1	<0.0001	1	0.001
Week-5-8 of testing (July 18th-Sept 1st) (10-100 new cases per day country-wide)	0.05 [0.01-0.20]		0.1 [0.02-0.3]	
Week 9-12 of testing (Sept 5th-Sept 30th) (<10 new cases per day country-wide)	0.04 [0.02-0.05]		0.2 [0.01-3.6]	
Ag-RDT type				
Q Biosensor	4	<0.0001	1	0.164
Pan Bio	15.1 [3.6-63.1]		4.2 [0.6-32.0]	

CONCLUSIONS

- Community COVID-19 testing using Ag-RDT was successful in the identification of SARS-CoV-2 infections within large gathering venues among asymptomatic and symptomatic individuals
- Mass testing in such venues is a feasible and useful approach to detecting SARS-CoV-2 infections
- Analysis of program inputs is useful in identifying the main cost drivers, informing planning, and improving resource allocation for mass SARS-CoV-2 Ag-RDT testing in community settings

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