Test-All Model for SARS-CoV-2 Testing is More Cost-Effective Than Screen-and-Test in Kenya and Cameroon

1083

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BACKGROUND

- Cameroon and Kenya use a SARS-CoV-2 "screen-and-test" (ST) model, offering testing to clients who report COVID-19-like symptoms or were known to be exposed.
- We implemented a randomized controlled trial comparing two models, ST and test-all (TA) (testing offered regardless of screening outcome) and assessed costs and cost-effectiveness of the models in Cameroon and Kenya.

METHODS

- Total costs of implementing TA and ST in Cameroon and Kenya were estimated from a health systems perspective using a micro-costing method.
- Financial costs were divided into: human resources, recurrent costs (travel, supplies, and meetings), and capital (equipment, furniture, and training).
- The cost per client tested (CPCT) and tested positive (CPCTP) for SARS-CoV-2 were estimated.
- A decision tree and cost-effectiveness acceptability curve (CEAC) were used to compare the cost-effectiveness.
- One-way and probabilistic sensitivity analyses were used to assess the effect of uncertainties in key parameters on costs per client and cost-effectiveness, respectively.

RESULTS

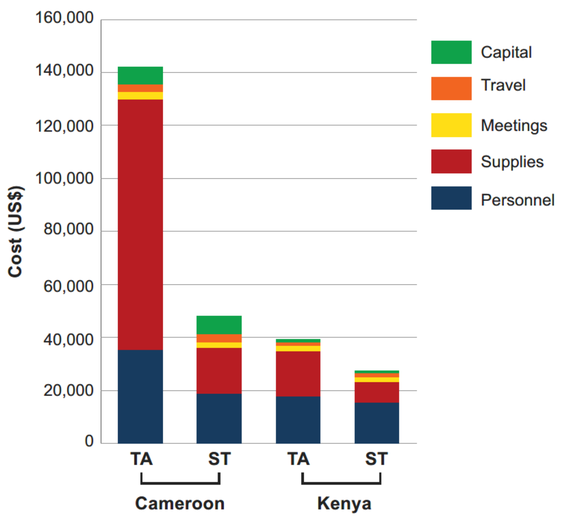


Figure 1. Total cost of providing testing services by country, arm, and category.

In both Cameroon and Kenya the cost per client tested and tested positive for SARS-CoV-2 was lower in the "test-all" model. In both countries, "test-all" was more cost-effective.

- In both countries, the TA model had lower CPCT and was more cost-effective (Table 1 and Figure 2).
- One-way sensitivity analysis showed that the number of clients tested and tested positive for SARS-CoV-2 had the biggest impact (inverse correlation) on the CPCT and CPCTP, respectively.

Table 1. Cost of per client tested and tested positive for SARS-CoV-2 disaggregated by testing model and country.

Category	Cameroon		Kenya	
	Test all (US$)	Screen and test (US$)	Test all (US$)	Screen and test (US$)
Total	**141,942**	**48,020**	**39,264**	**27,500**
Number of clients tested	18,526	1,919	3,010	220
Number of clients tested positive for SARS-CoV-2	279	66	33	22
Cost/client tested	**7.66**	**25.02**	**13.04**	**125.00**
Cost/client tested positive	**508.75**	**727.58**	**1,189.82**	**1,250.00**

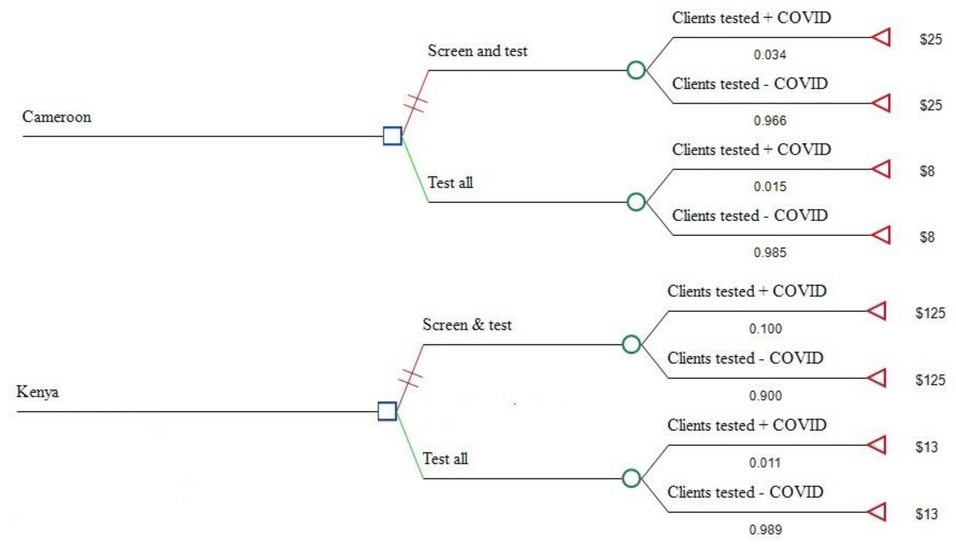


Figure 2. Decision tree for screen-and-test and test-all models for SARS-CoV-2 testing in health facilities in Cameroon and Kenya.

CONCLUSIONS

- The lower CPCT in TA in both countries are in line with the inverse correlation between the number of clients tested (and tested positive) and the CPCT (and CPCTP).
- The TA model is more cost effective but requires a much higher investment due to higher patient numbers tested. In Cameroon, the total cost of TA was US$93,922 more than ST, which may not be affordable in many low- and middle-income countries in Africa.

PUBLIC HEALTH IMPLICATIONS

- While the TA model is cost effective, governments may need to make decisions about feasibility depending on epidemiology of the disease and availability of resources.
- The TA model identified more SARS-CoV-2 positive clients and is more cost-effective. As a single infected individual who is not isolated or treated can cause on average 3.74 and 3.77 secondary cases of SARS-CoV-2 in Cameroon and Kenya, respectively, the identification of more cases could help limit transmission.

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- The views expressed are those of the authors and not necessarily of Unitaid.

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