Testing Strategies for SARS-CoV-2 In Rwanda

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Republic of Rwanda
Ministry of Health

Rwanda Biomedical Centre
Healthy People, Wealthy Nation

RWANDA JOINT TASK FORCE COVID-19

UNIVERSITY of RWANDA

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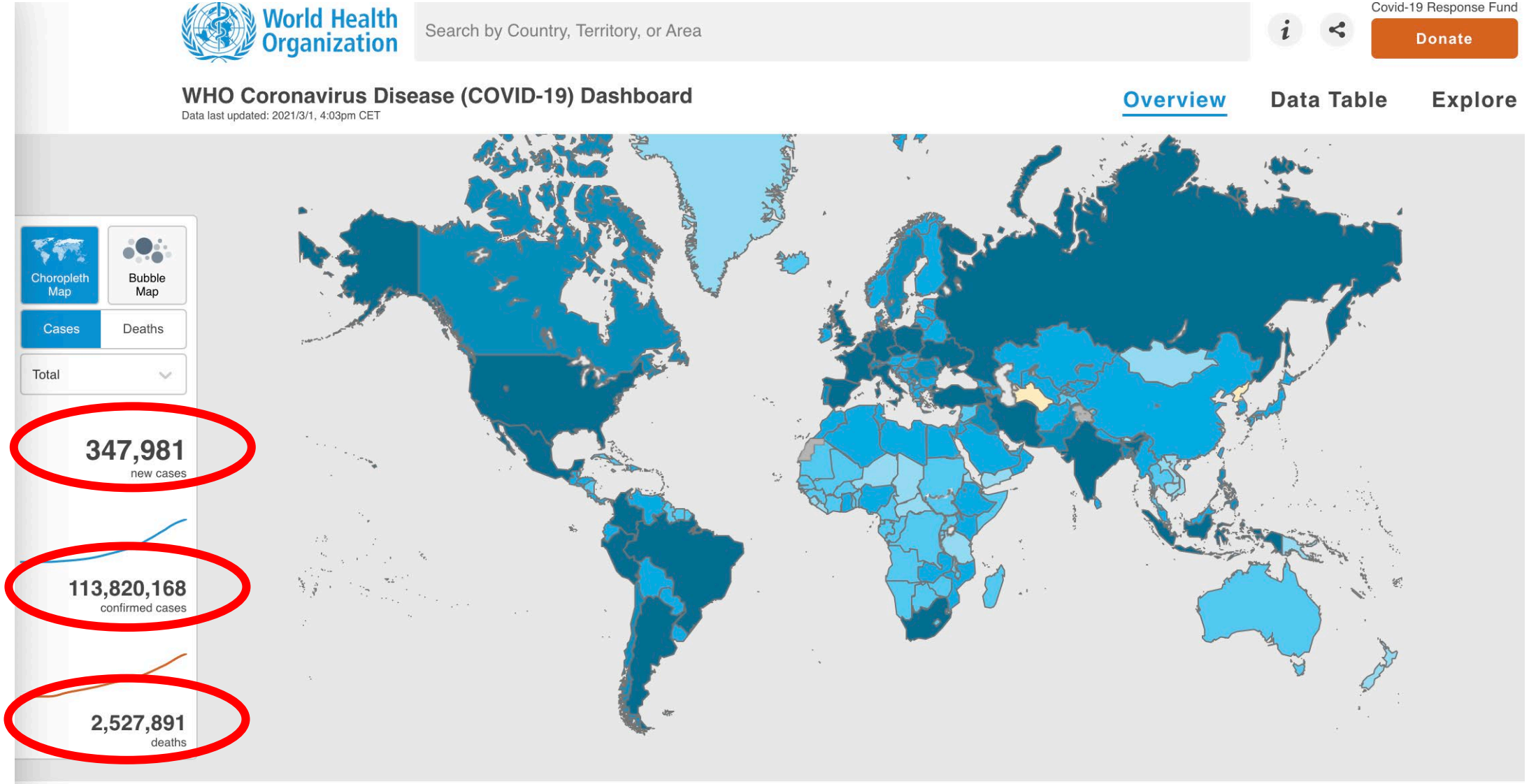
I. Background

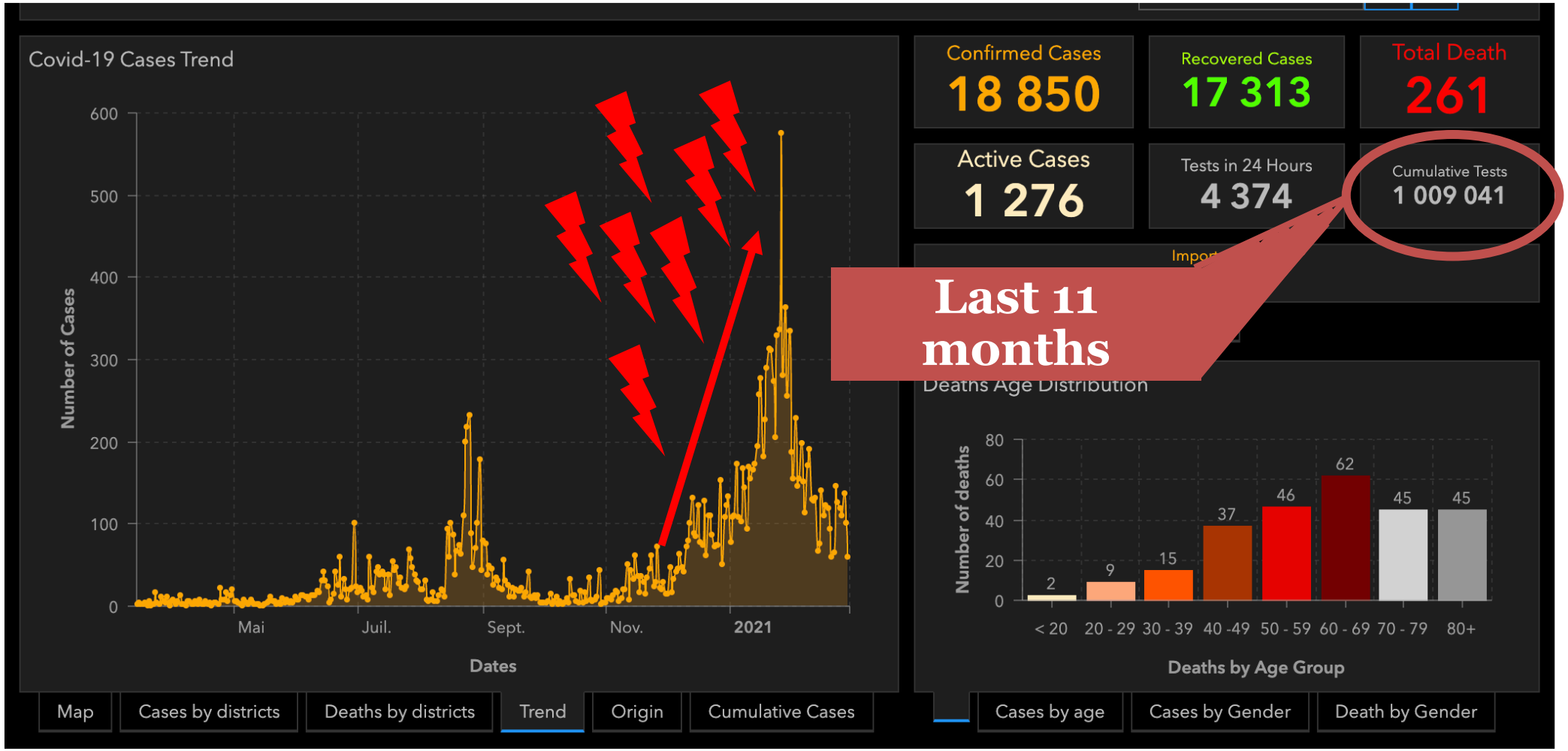
COVID-19 Global Overview



I. Background

Rwanda COVID-19: Current Situation

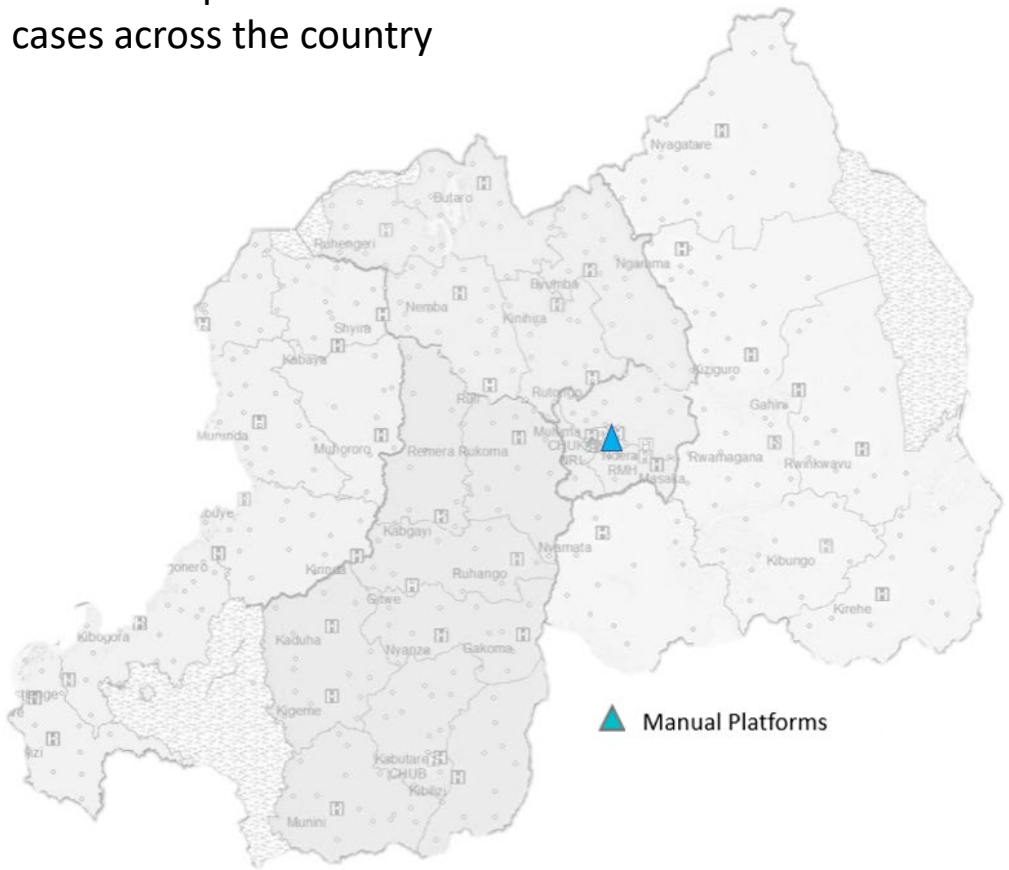
Rwanda Biomedical Centre
Healthy People, Wealthy Nation



II. Rwanda's SARS-CoV-2 Testing Approach

1

Q1 2020
Centralized NAT testing was used to respond to initial cases across the country



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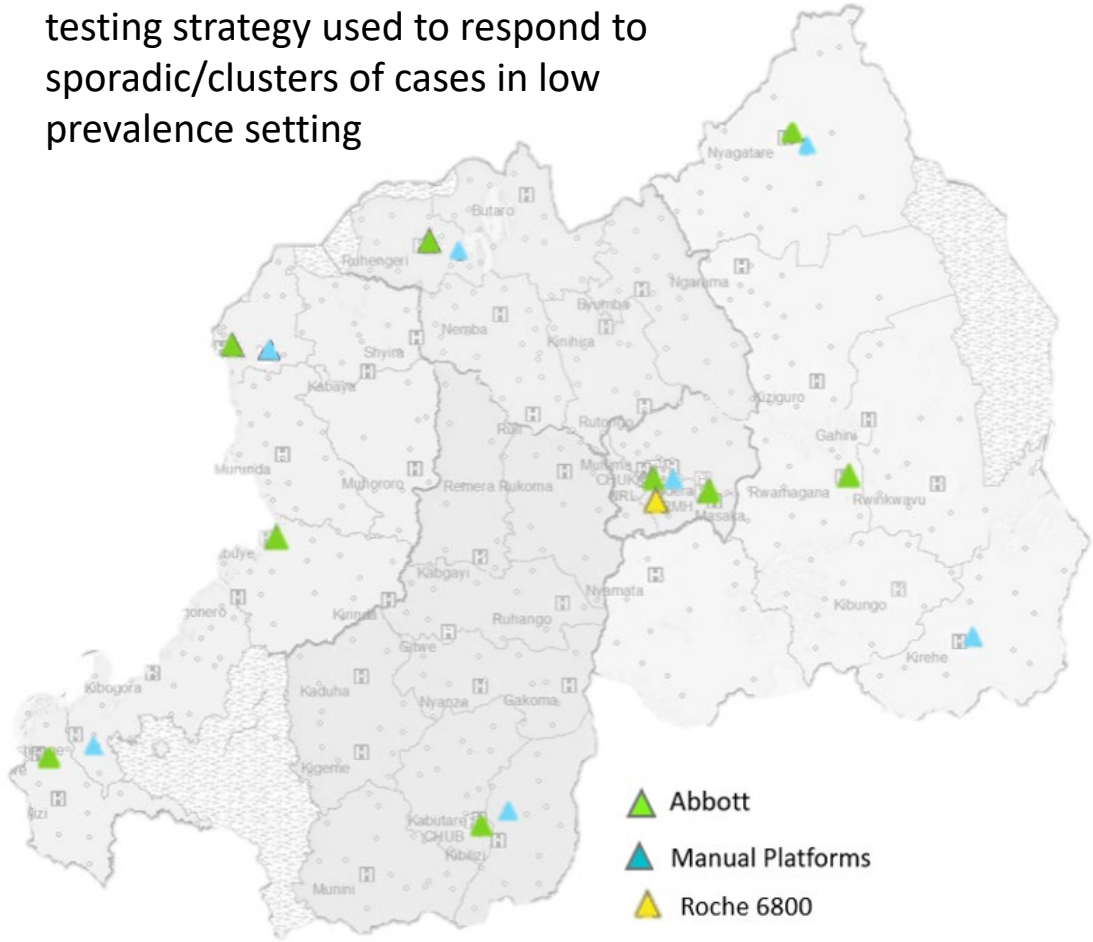
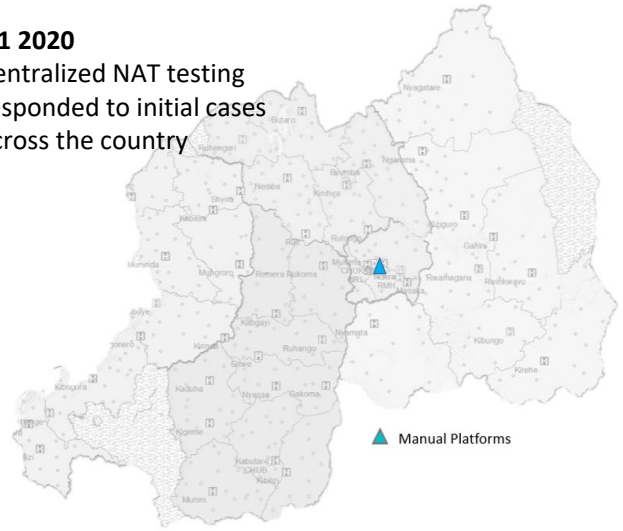
Q2/Q3 2020
Decentralized NAT testing and pooled testing strategy used to respond to sporadic/clusters of cases in low prevalence setting



II. Rwanda's SARS-CoV-2 Testing Approach

Q1 2020
Centralized NAT testing responded to initial cases across the country



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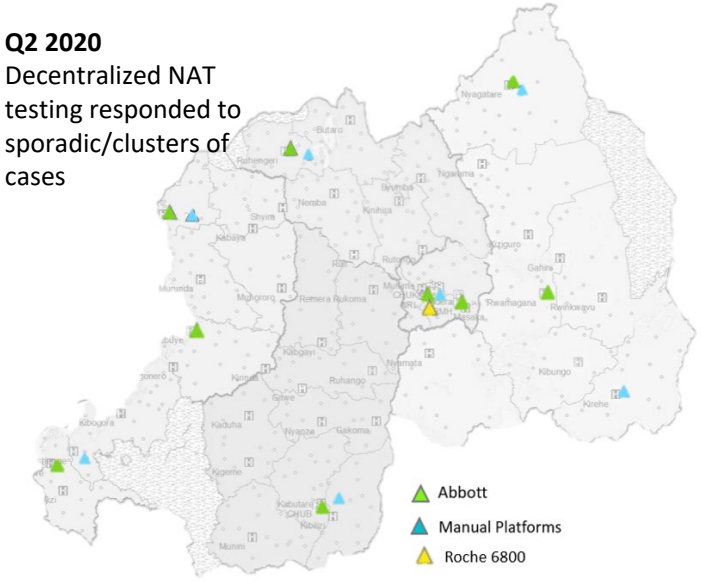
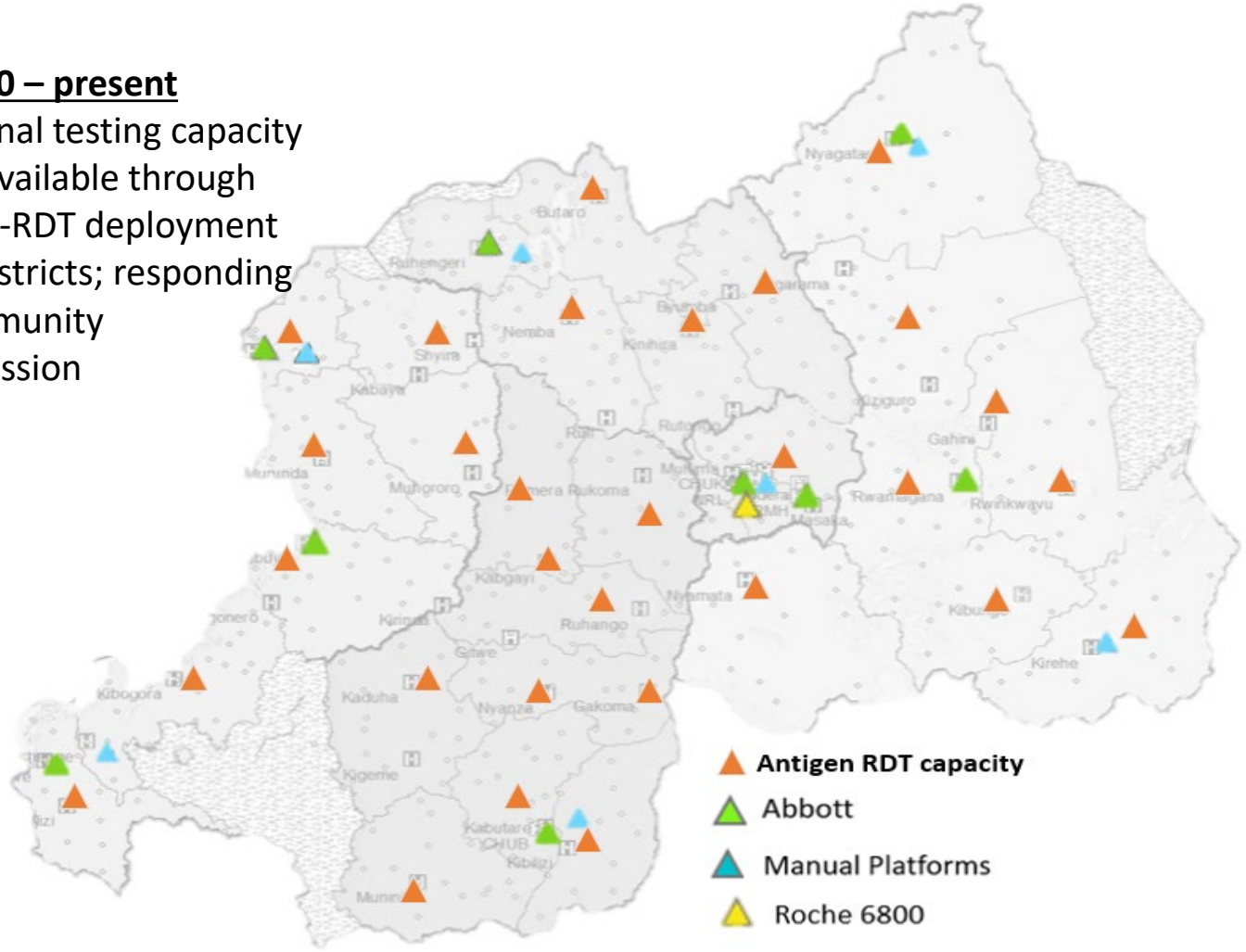


3

Q4 2020 – present
Additional testing capacity made available through antigen-RDT deployment to all districts; responding to community transmission



III. Testing in low prevalence setting – pooled testing strategy

nature

https://doi.org/10.1038/s41586-020-2885-5

Accelerated Article Preview

A pooled testing strategy for identifying SARS-CoV-2 at low prevalence

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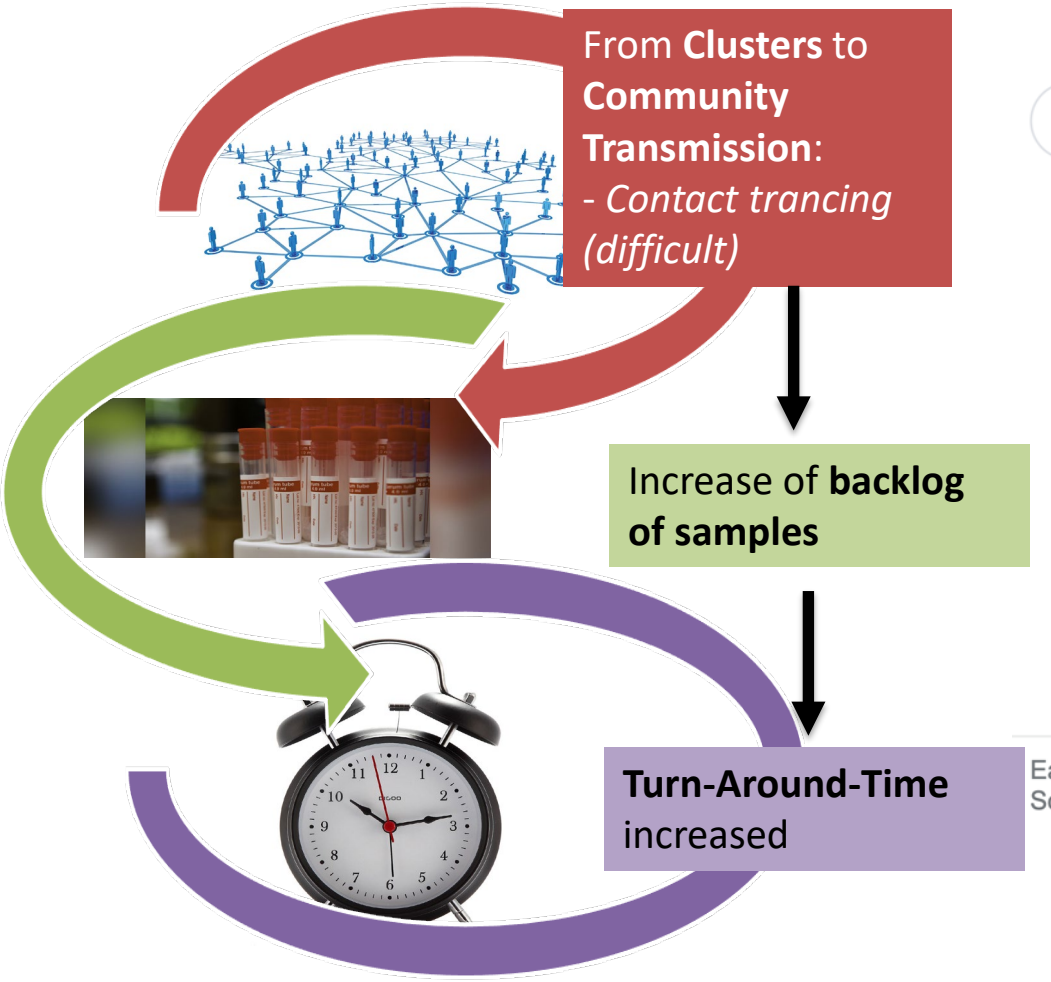
SARS-CoV-2 RNA to retest 1 by 1

III. SARS-CoV-2 Pooled Testing Benefits

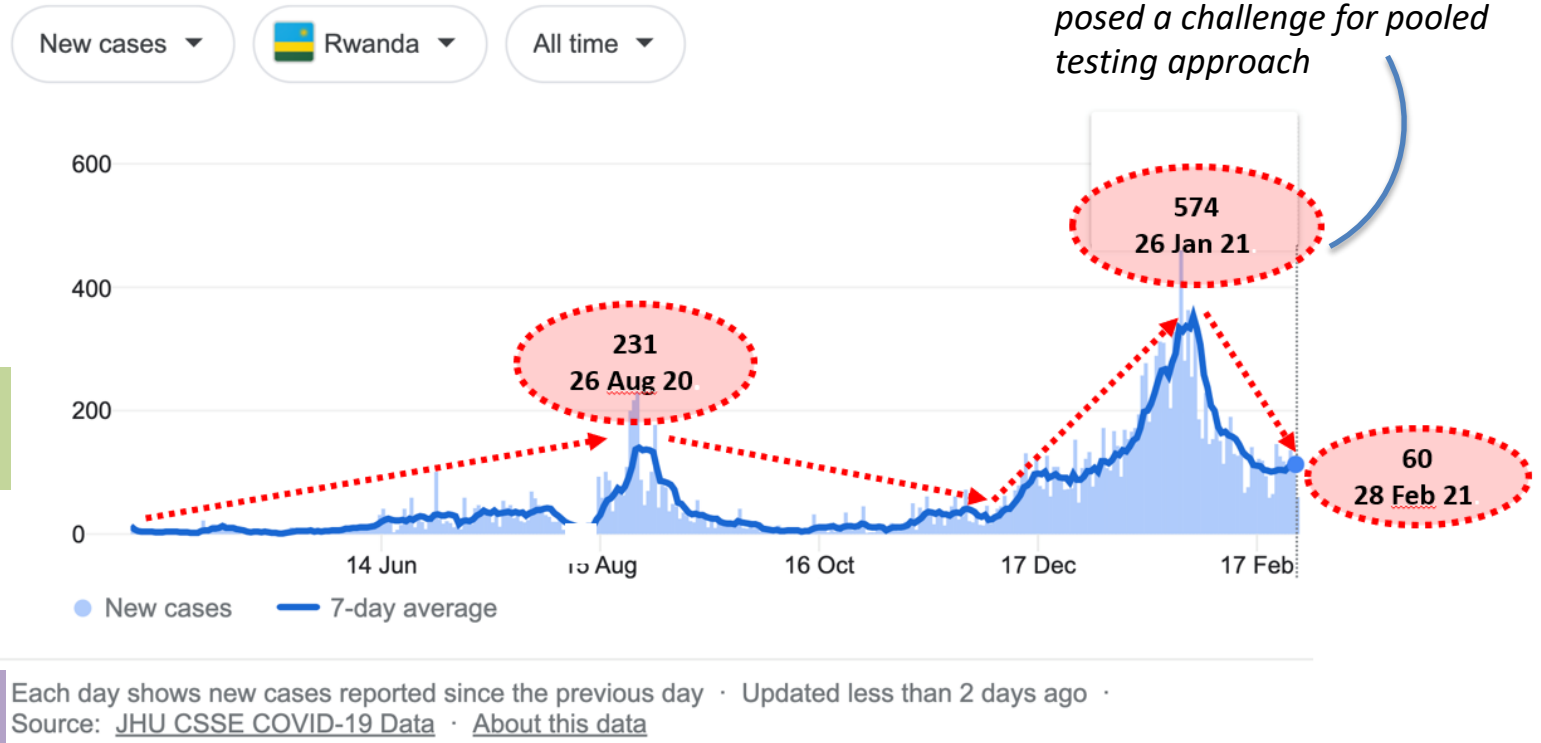
- Pooled testing has dou… *…ts to reduce costs and maximisin…*
- I… …r
- Ta… …d, …e

**Need to present a 72-ho… …-PCR negative result*

III. Testing in low prevalence setting



Increasing positivity rates posed a challenge for pooled testing approach

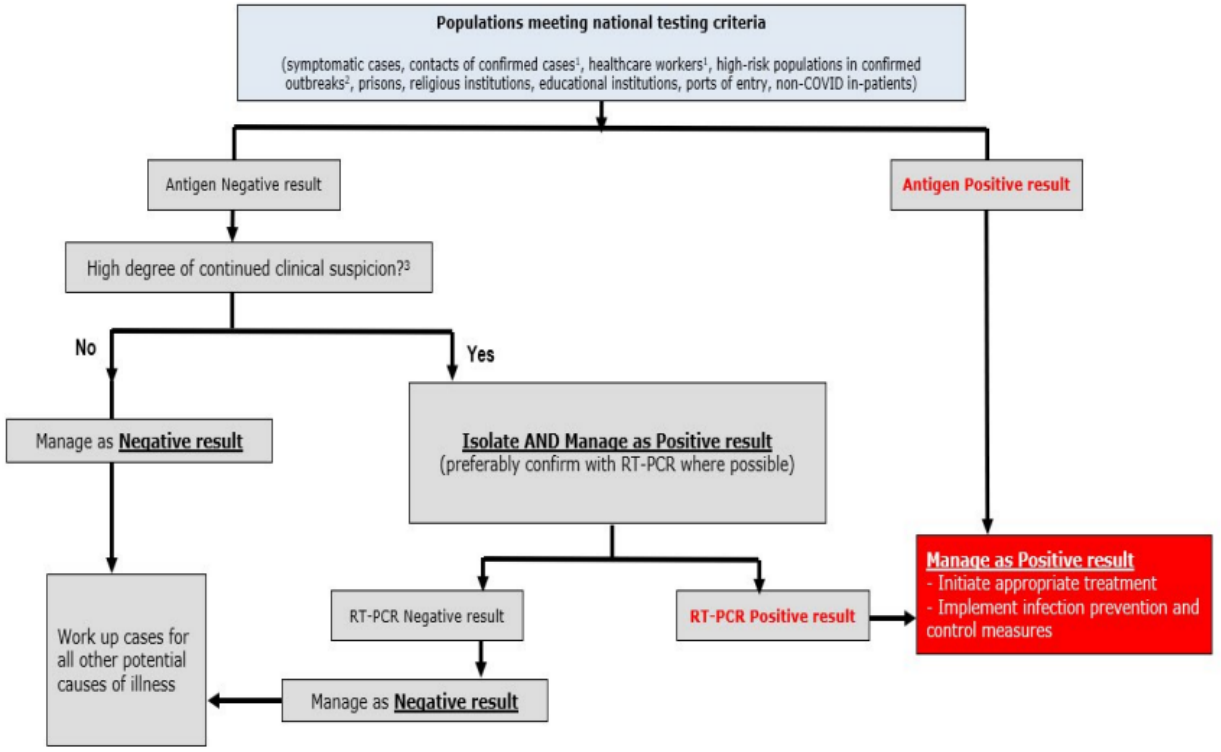


III. Testing in low prevalence setting – antigen testing

III. Testing in low prevalence setting – antigen testing

Following validations and need to quickly increase testing capacity in country, Rwanda was swift to adopt antigen testing within the SARS-CoV-2 diagnostic response

1. Algorithm of testing SARS-CoV-2 using antigen rapid immunoassay



1. Symptomatic & asymptomatic 2. Includes elderly, people with comorbidities, populations in closed-settings (prisons, care homes, etc) 3. As determined by clinician based on patient clinical history. As per WHO "Continued clinical suspicion can, for example, be the absence of another obvious etiology, the presence of an epidemiological link, or suggestive clinical finding (e.g. typical radiological signs)."
4. For Invalid results, document invalid result, collect new sample and retest on Antigen test immediately. **Known positives are not to be tested with antigen RDTs

RBC published algorithm and use cases to guide implementation

Use of Ag RDT SARS-CoV-2

Use of Antigen Rapid test are used in public and private health facilities, weddings, schools, prisons , churches or in other settings recommended by Ministry of Health.

RDT are intended for use in point of care settings by trained heath care or lab staff or trained operators who need to carry out sampling, testing, test analysis and reporting of tests results. Sample collectors will be required enter data within HMIS system and collect all information including results and indicating antigen rapid test as test conducted. The request of RDT will be done through RBC-National Reference Laboratory in order to ensure that sample collection, testing and result returned follow national guidelines.

RDT Testing prioritization: WHO Case Definition

Who should be tested?

Symptomatic cases
- Cough
- Fever
- Sore throat
- Etc.
- 1st week of infection

Commorbidities: *diabetes,…*

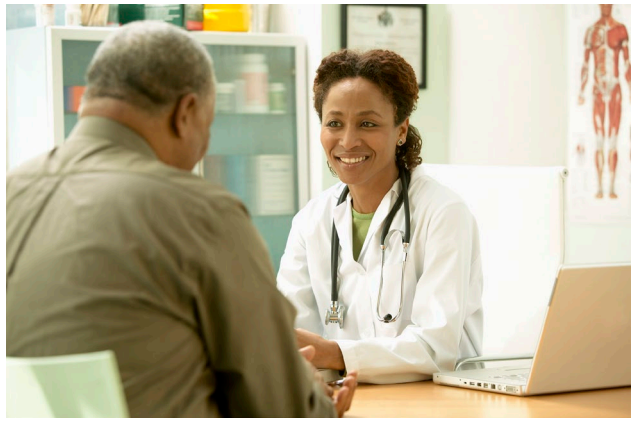
Priority group (RDT)

Frontliners

Elderly population

Testing prioritization for antigen testing

Markets



Private Clinics: OPD with high suspicion

Cross-borders

Truck-drivers

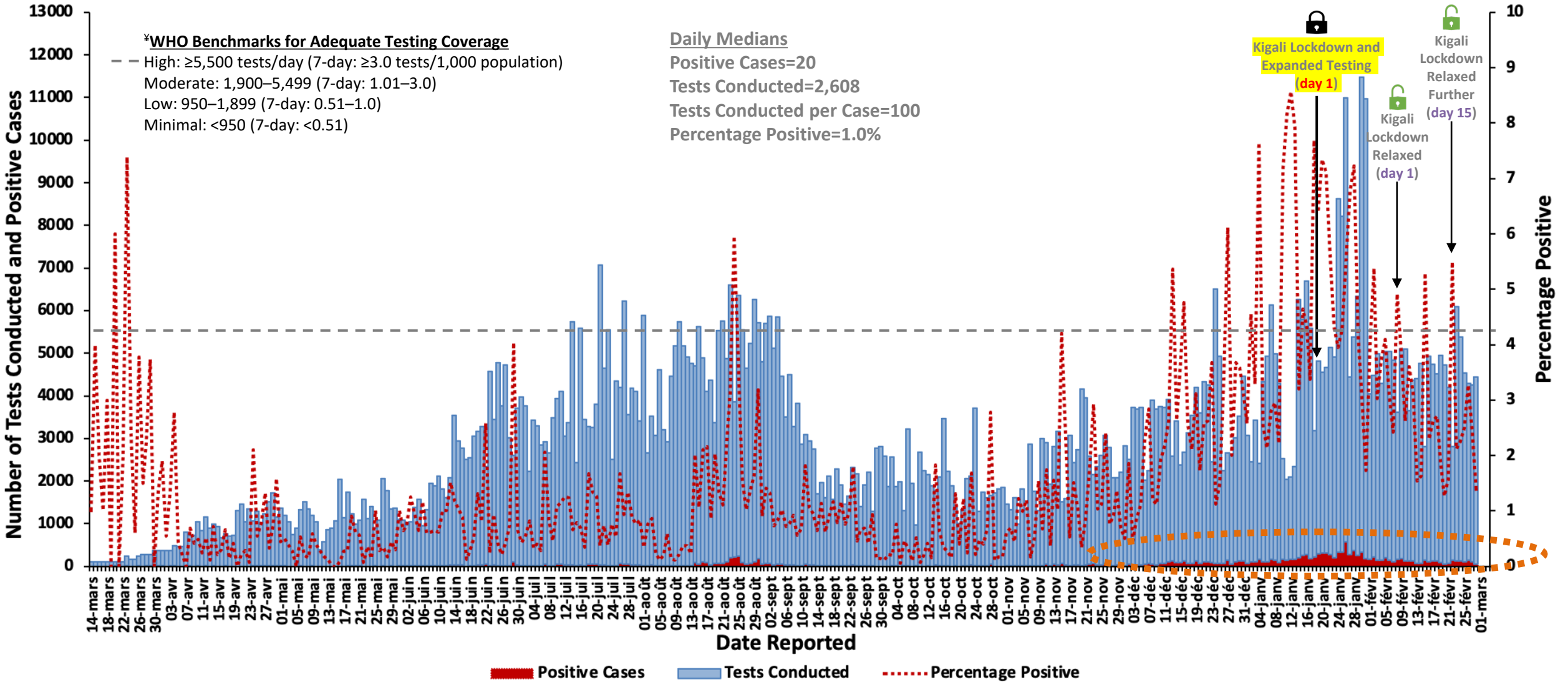
Prisons

Schools

Refugees

Additional groups : use of Antigen considering WHO Case Definition

COVID-19 Laboratory Diagnostic Testing—Rwanda, March 14, 2020–February 28, 2021 (N=1,009,041)



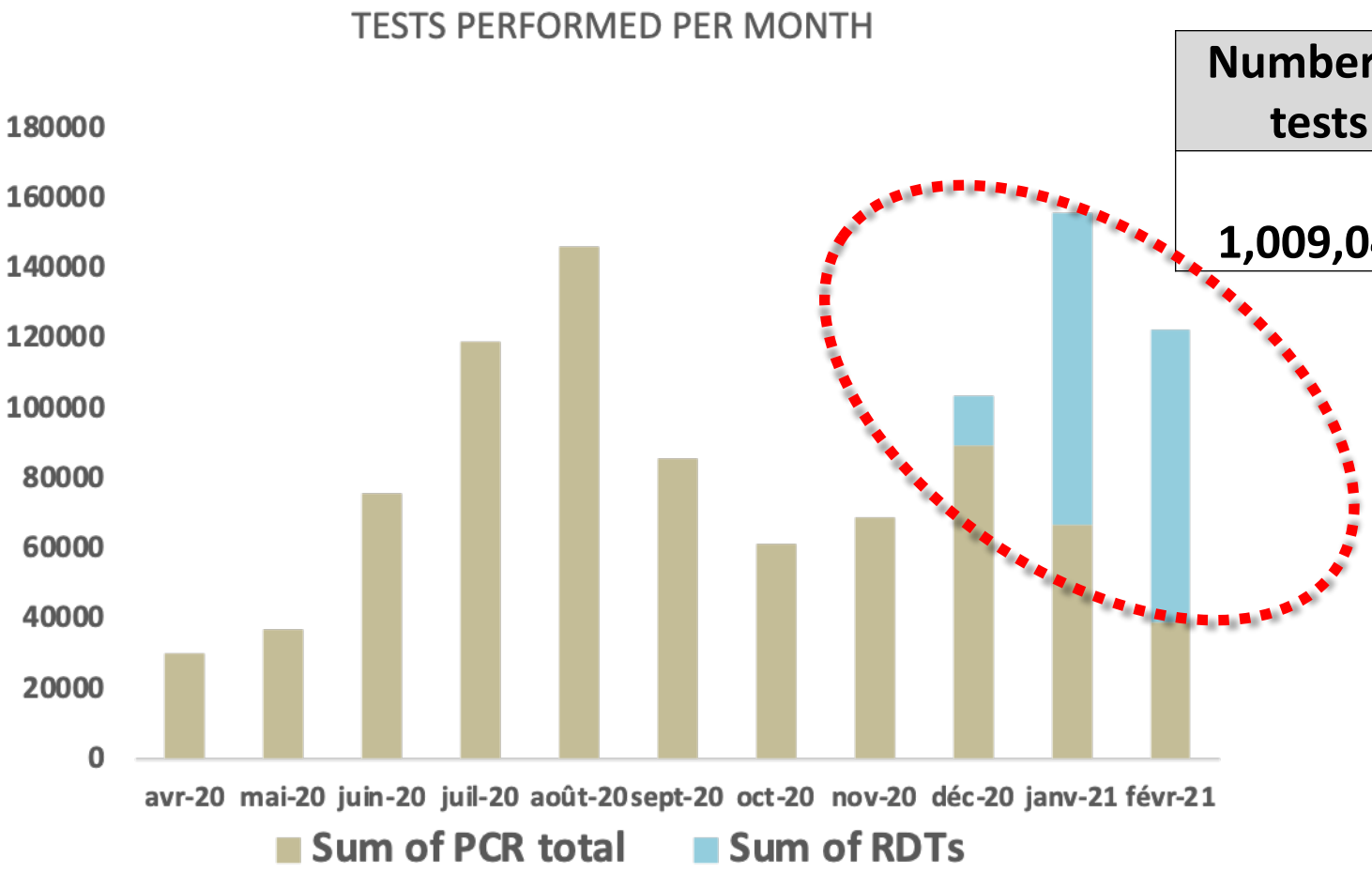
***Total tests conducted per million population (tests conducted per positive case)=77,905 (54) Selected African Countries:** South Africa=150,176 (6); Kenya=23,675 (12); Uganda=19,077 (22); Ethiopia=18,183 (14)

***Select African Countries Percentage Positive:** South Africa=17%; Kenya=8%; Ethiopia=7%; Uganda=5%; Rwanda=2%; Estimations unreliable due to lack of reporting: DRC, Tanzania, Burundi

¥ Daily tests conducted not reported until April 7, total number of tests conducted prior to April 7, n=5,751; number of daily tests conducted prior to April 7 are estimations

§Specimen=OP swab; Screening RT-PCR tests=Daan Gene nCoV (*N* gene, *ORF1ab* gene), Abbott m2000 (*N* gene, *RdRp* gene), Roche Cobas 6800 (*E* gene, *ORF1ab* gene), Tib Molbiol LightMix SARS-CoV (*E* gene, *RdRp* gene); SD Biosensor Standard Q COVID-19 Antigen Test (rapid chromatographic immunoassay) specimen=NP swab (SARS-CoV-2 antigen targets not disclosed)

PCR vs Antigen RDT: Cost Effectiveness



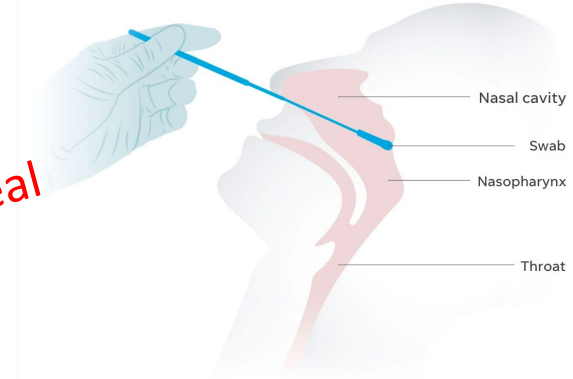
Trend of tests done by category:- April 2020-Feb 2021

Number of tests	Expected expenditure	Total spent	Cost benefit
1,009,041	50,452,050	42,989,970	↓ 7,462,080 (15%)

V. Conclusion

- Successful implementation of various SARS-CoV-2 Testing approaches allowed control COVID-19 in Rwanda
- Use of Pooled Testing Approach reduced the cost & TAT
- Use of Antigen RDTs: in hospitals, schools, airport,…
  - Efficient and timely diagnosis
  - Cost reduction vs RT-PCR
  - Limitation:

Nasopharyngeal swab



In pipeline:
RDT using nasal sample (e.g. Lumira Dg,…) vs SD Biosensor NP

Thank you!