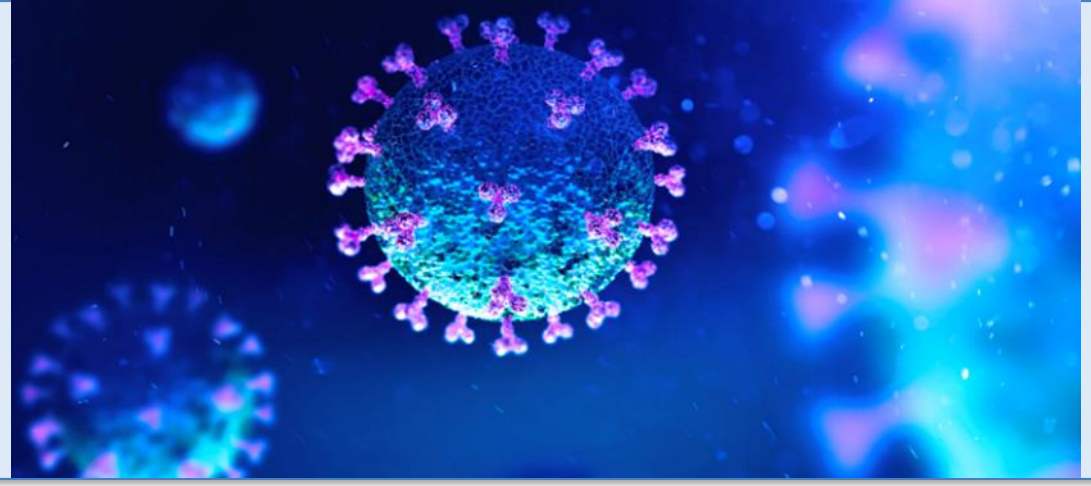


COVID-19 Response – The case of Rwanda
Lessons Learnt to Reinforce the Relevance of One Health Principles

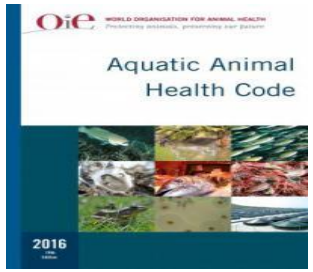
Thierry NYATANYI
MD, MPH, MMSc-GHD

Overview

1. A review of existing frameworks
2. Government-led coordinated response to COVID-19
3. Rapid scale-up of SARS-CoV-2 testing
4. Epidemiology surveillance
5. Learning to improve health system resilience

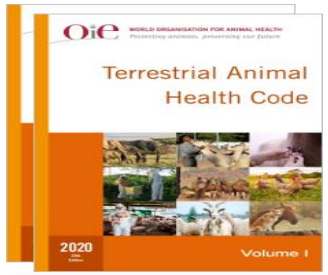
Existing frameworks to support countries respond to infectious disease threats

IHR monitoring and evaluation framework

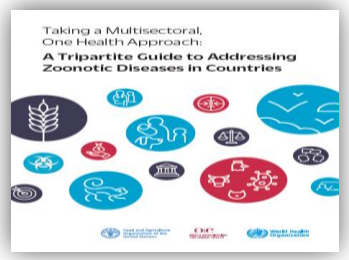


National action plans for health security

PVS Pathway missions



IHR-PVS National Bridging Workshops



Global Health Security Agenda

"To prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade"

WHO-IHR 2005 – Article 2

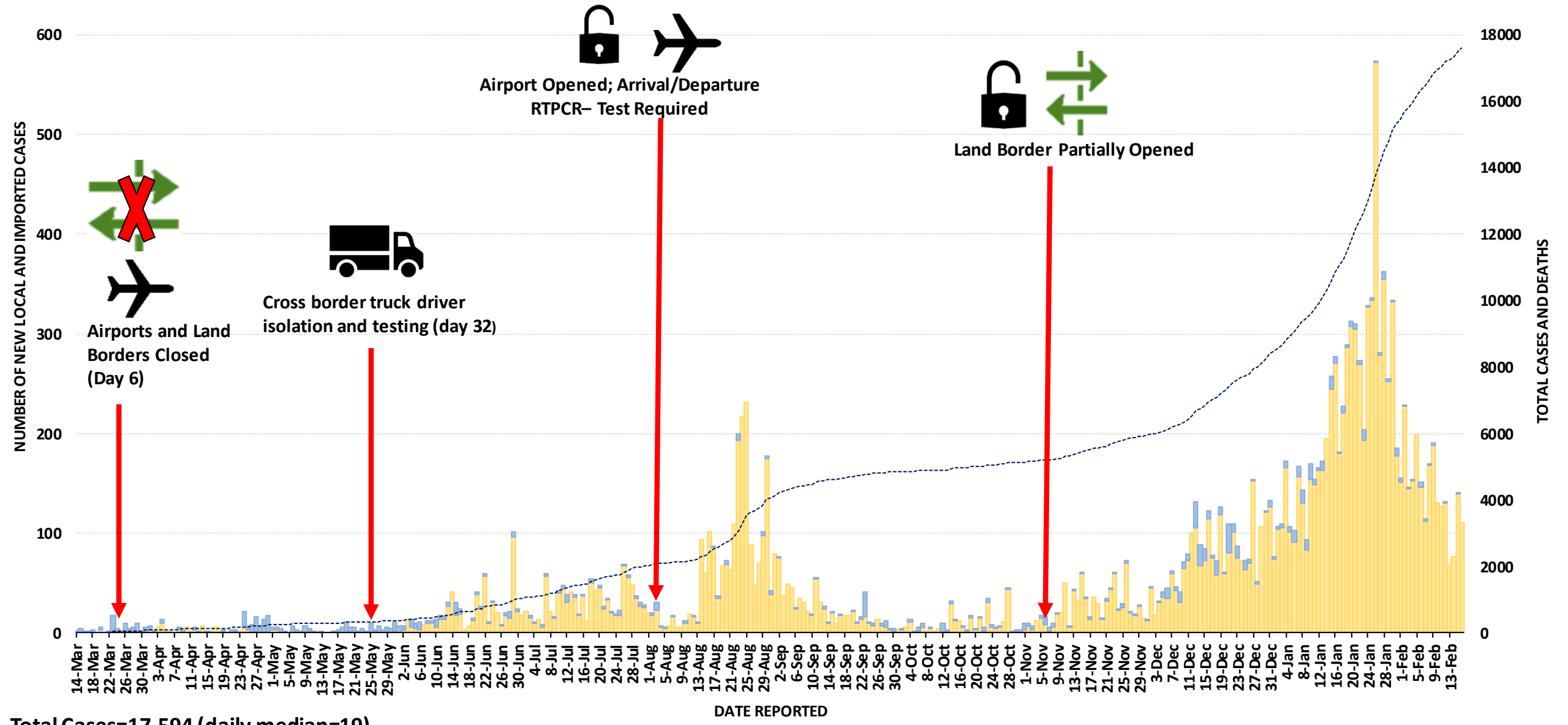
COVID-19 ➡ **HOW HAVE COUNTRIES RESPONDED??**

"…to provide for early detection, reporting and control agents that are pathogenic to animals or humans, and to prevent their transfer via international trade in animals and animal products, while avoiding unjustified sanitary barriers to trade"

OIE Terrestrial Animal Health Code – 2020

The OIE Aquatic Code – 2016

COVID-19 Local and Imported Cases by Date of Report — Rwanda, February 16, 2021 (N=17,594)



Total Cases=17,594 (daily median=19)

Local=16,542 (17)

Imported=1,052 (2)

Building on prior experience of managing public health threats

OPEN ACCESS Freely available online

PLoS one

2009 Pandemic Influenza A (H1N1) Virus Outbreak and Response – Rwanda, October, 2009–May, 2010

Justin Wane[1], Thierry Nyatanyi[2], Richard Nkunda[3], Joseph Rukelibuga[4], Zara Ahmed[5], Caitlin Biedron[5], Adeline Kabeja[2], Marie Aimée Muhimpundu[2], Alice Kabanda[3], Simon Antara[6], Olivier Briet[2], Jean Baptiste Koama[5], André Rusanganwa[7], Odette Mukabayire[3], Corine Karema[2], Pratima Raghunathan[5], David Lowrance[5]*

2010

Outbreak report

Open Access

PHB Public Health Bulletin

The Rwanda National Ebola Preparedness Exercise and Response Strategies

Nyamusore Jose[1,*], Mazarati Jean Baptiste[2], Ndimubanzi Patrick[3], Kabeja Adeline[1], Balisanga Helene[1], Nizeyimana Felicien[1], Ruyange Laurent[1], Kapiteni Alexis[1], Itanga Ines[1], Ndagijimana Valens[1], Gashegu Misbah[1], Uwamahoro Sandrine[1], Murekatete Celine[1], Umutoni Angela[1], Nsanzabaganwa Christian[4], Hitimana Nadia[5], Byiringiro Fidele[4], Nsanzimana Sabin[1], Mutesa Leon[7], Gashumba Diane[3]

2014

Analysis

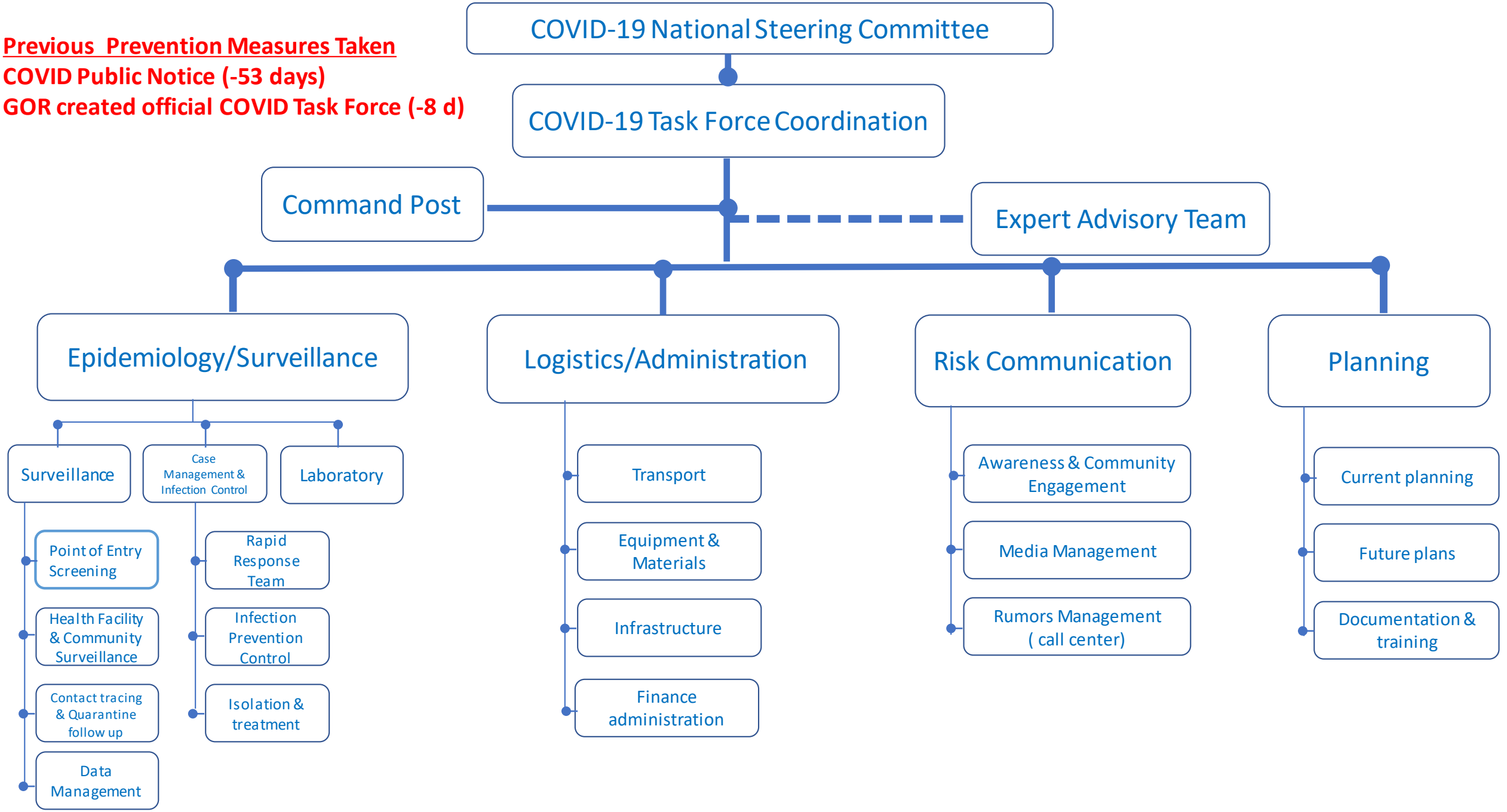
BMJ Global Health

Implementing One Health as an integrated approach to health in Rwanda

Thierry Nyatanyi,[1,2] Michael Wilkes,[3,4,5] Haley McDermott,[3,6] Serge Nzietchueng,[2,7] Isidore Gafarasi,[8] Antoine Mudakikwa,[9] Jean Felix Kinani,[9] Joseph Rukelibuga,[10] Jared Omolo,[10] Denise Mupfasoni,[10] Adeline Kabeja,[11] Jose Nyamusore,[11] Julius Nziza,[4] Jean Leonard Hakizimana,[11] Julius Kamugisha,[11] Richard Nkunda,[11] Robert Kibuuka,[4] Etienne Rugigana,[4] Paul Farmer,[5,6,12] Philip Cotton,[4] Agnes Binagwaho[5,12]

2015

Previous Prevention Measures Taken
COVID Public Notice (-53 days)
GOR created official COVID Task Force (-8 d)

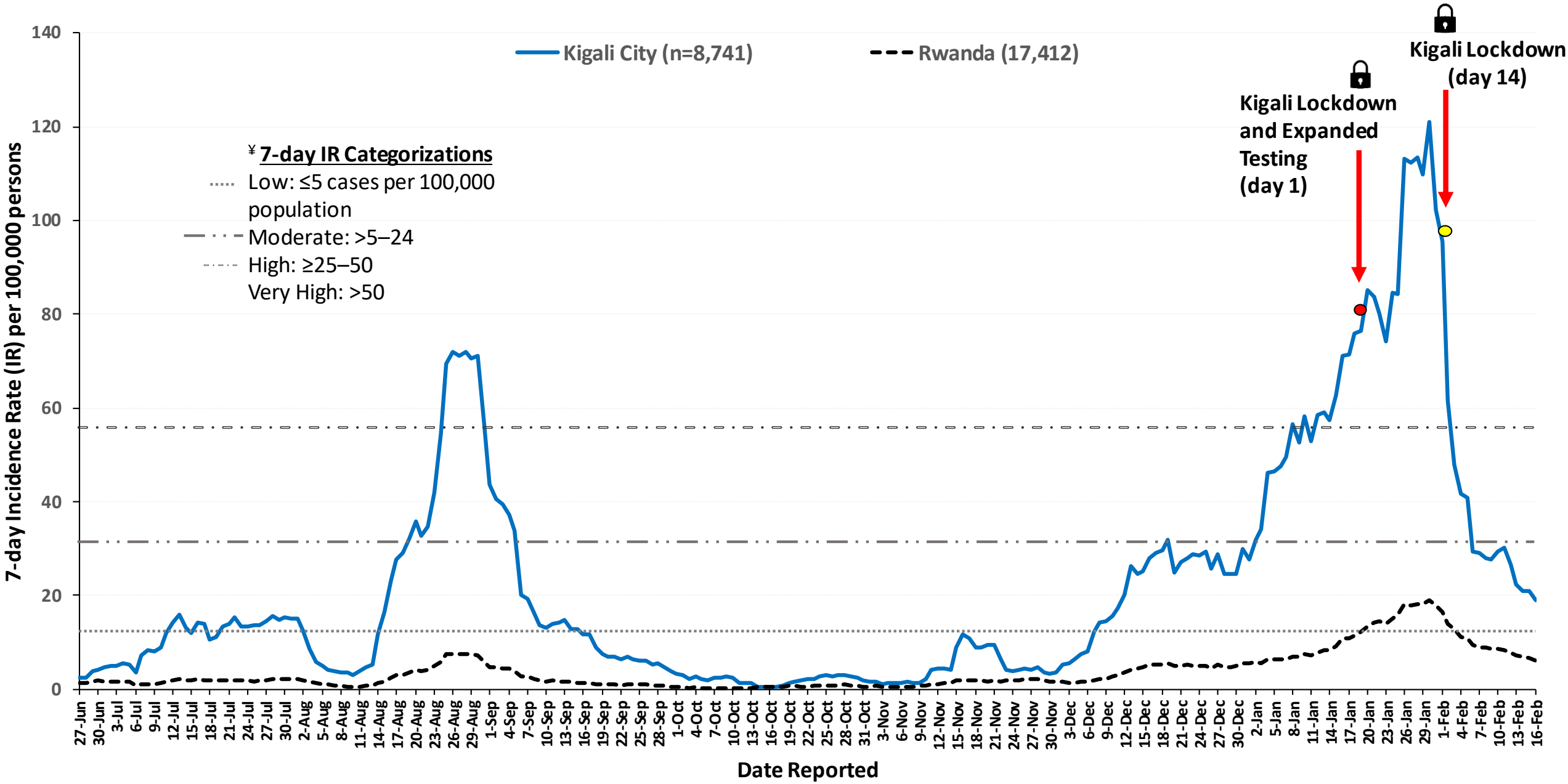


Emergency Management

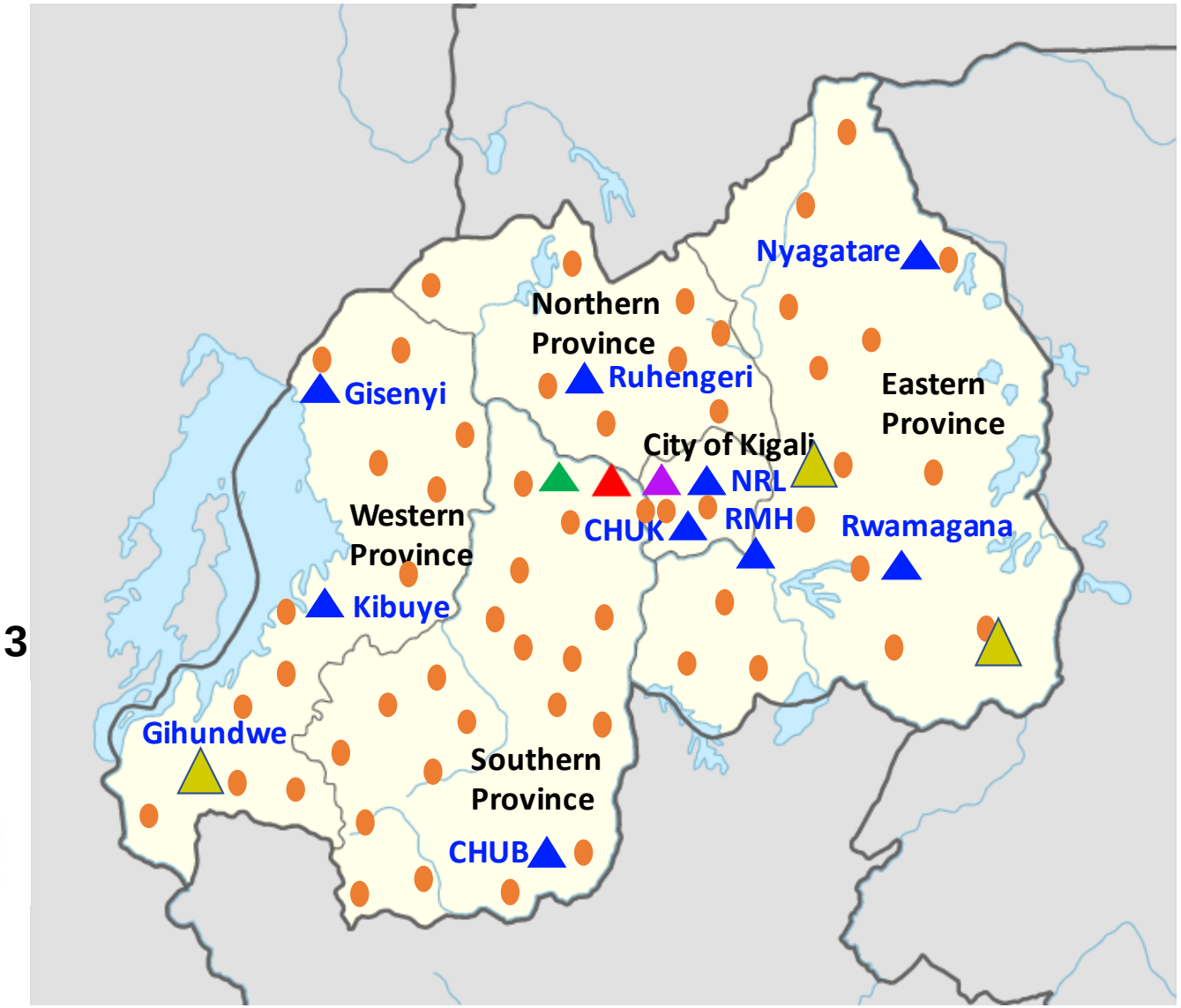
High level political commitment – fast-tracking decision making

- Consistent and unified messaging for adherence to COVID-19 mitigation measures
- Free services for COVID-19 testing, quarantine and treatment
- Building public trust during enforcement of stringent national measures (Lock-down, closure of land borders and airspace)
- Domestic resource mobilization to support COVID-19 response measures
- Enforcement of non-pharmaceutical public health measures
- Decentralization of COVID-19 preparedness and response
- Supporting local manufacturing to boost import gaps
- Production of basic essential protection equipment (masks, hand sanitizer's etc.)
- Fast-tracking vaccine readiness and deployment

COVID-19 Incidence Rate (IR) post lockdown — June 27, 2020–February 16, 2021



National scale-up for SARS-CoV-2 testing (0-9 months)



▲ Biorad 3

▲ Abbott machine m2000 (10 sites)

▲ ABI 7500 RT PCR (3 machines)

▲ Rotor Gene (2 machines)

▲ Cobas 6800 (1 machine)

● GeneXpert (69 machines)

Cost effective startegies for optimizing SARS-CoV-2 testing

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

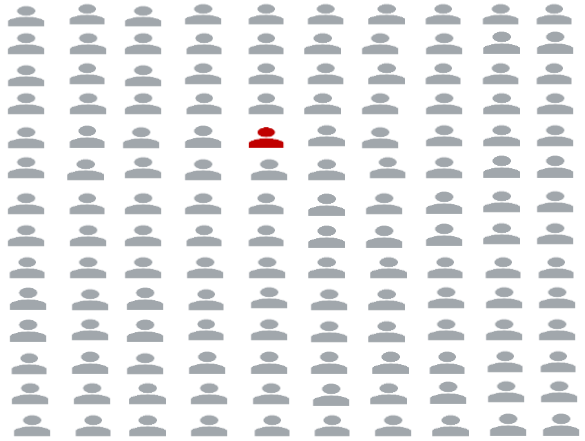
Received: 13 May 2020

Accepted: 12 October 2020

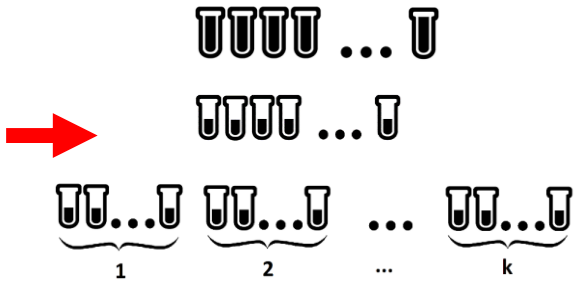
Accelerated Article Preview Published online 21 October 2020

Cite this article as: Mutesa, L. et al. A pooled testing strategy for identifying SARS-CoV-2 at low prevalence. *Nature* https://doi.org/10.1038/s41586-020-2885-5 (2020).

Leon Mutesa, Pacifique Ndishimye, Yvan Butera, Jacob Souopgui, Annette Uwineza, Robert Rutayisire, Ella Larissa Ndoricimpaye, Emile Musoni, Nadine Rujeni, Thierry Nyatanyi, Edouard Ntagwabira, Muhammed Semakula, Clarisse Musanabaganwa, Daniel Nyamwasa, Maurice Ndashimye, Eva Ujeneza, Ivan Emile Mwikarago, Claude Mambo Muvunyi, Jean Baptiste Mazarati, Sabin Nsanzimana, Neil Turok & Wilfred Ndifon

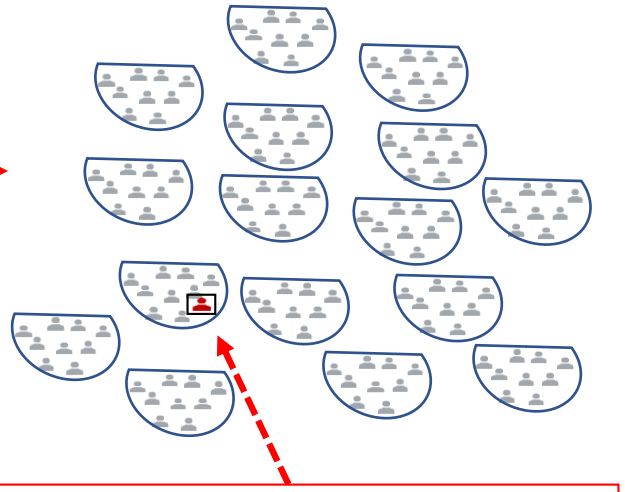


Mass Testing



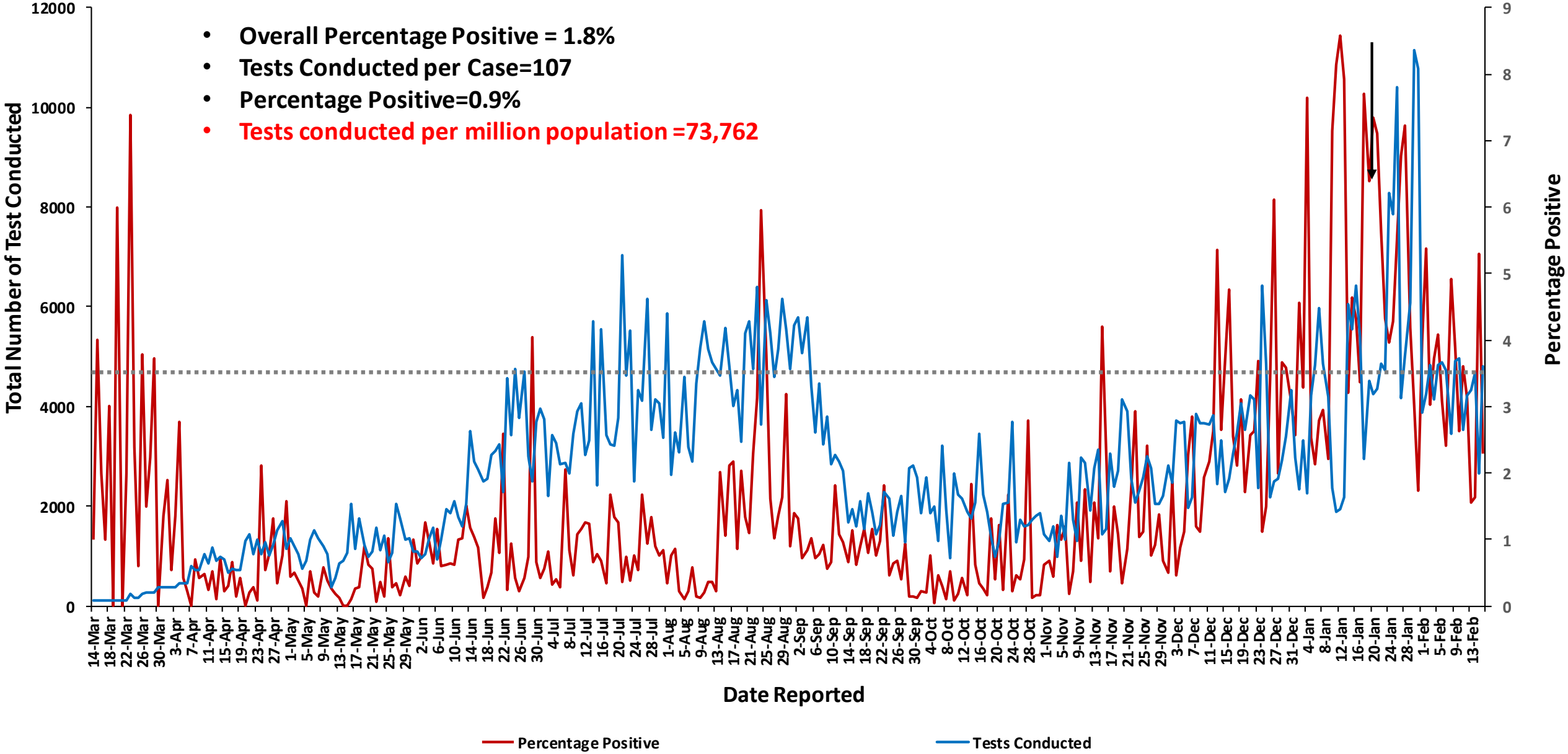
Testing Pools

20 Samples per pool



SARS-CoV-2 RNA to retest 1 by 1

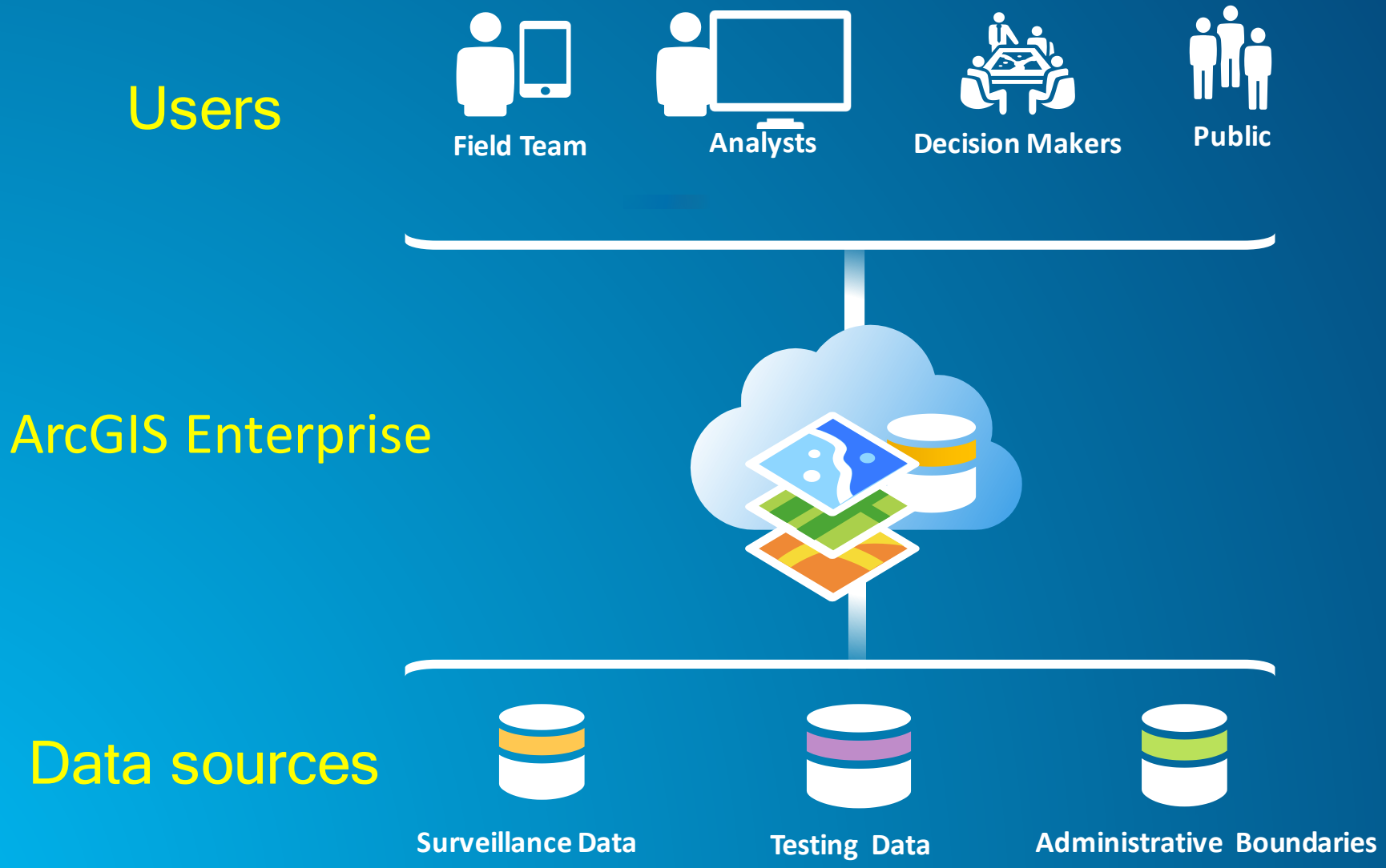
COVID-19 Laboratory Diagnostic Testing — Rwanda, March 14, 2020–February 16, 2021 (N=955,383)



Epidemiologic surveillance and capacity indicators

Indicators Threshold must be met for 7 consecutive days to trigger change in alert level. Exceeding any of the indicator thresholds can trigger a change in alert level.	**Level 1: New Normal**	**Level 2: Low Alert**	**Level 3: Moderate Alert**	**Level 4: High Alert**
Case Incidence New cases during past 7-days/100,000 persons	**<5**	**5–24**	**≥25–50**	**>50**
Diagnostic Testing Percentage positivity rate in past 7-days	**<3%**	**≥3%**	**≥3%**	**≥5%**
Diagnostic Testing Coverage Tests conducted/100,000 persons in past 28-days	**>1,200**	**401–1,200**	**200–400**	**<200**
Hospital Capacity Proportion of beds occupied by COVID-19 patients in past 24hrs				**≥20%**
ICU Capacity Proportion ICU beds occupied in past 24hrs				**≥70%**
Case Isolation and Home-Based Care (HBC) Capacity HBC patients monitored in past 24hrs	**>90%**	**<90%**	**<80%**	**<80%**
Identification of Contacts Proportion of new cases with completed contact lists in past 24hrs	**>90%**	**<90%**	**<80%**	**<80%**
Quarantining of Contacts Proportion of new contacts notified in past 24hrs	**>90%**	**<90%**	**<80%**	**<80%**

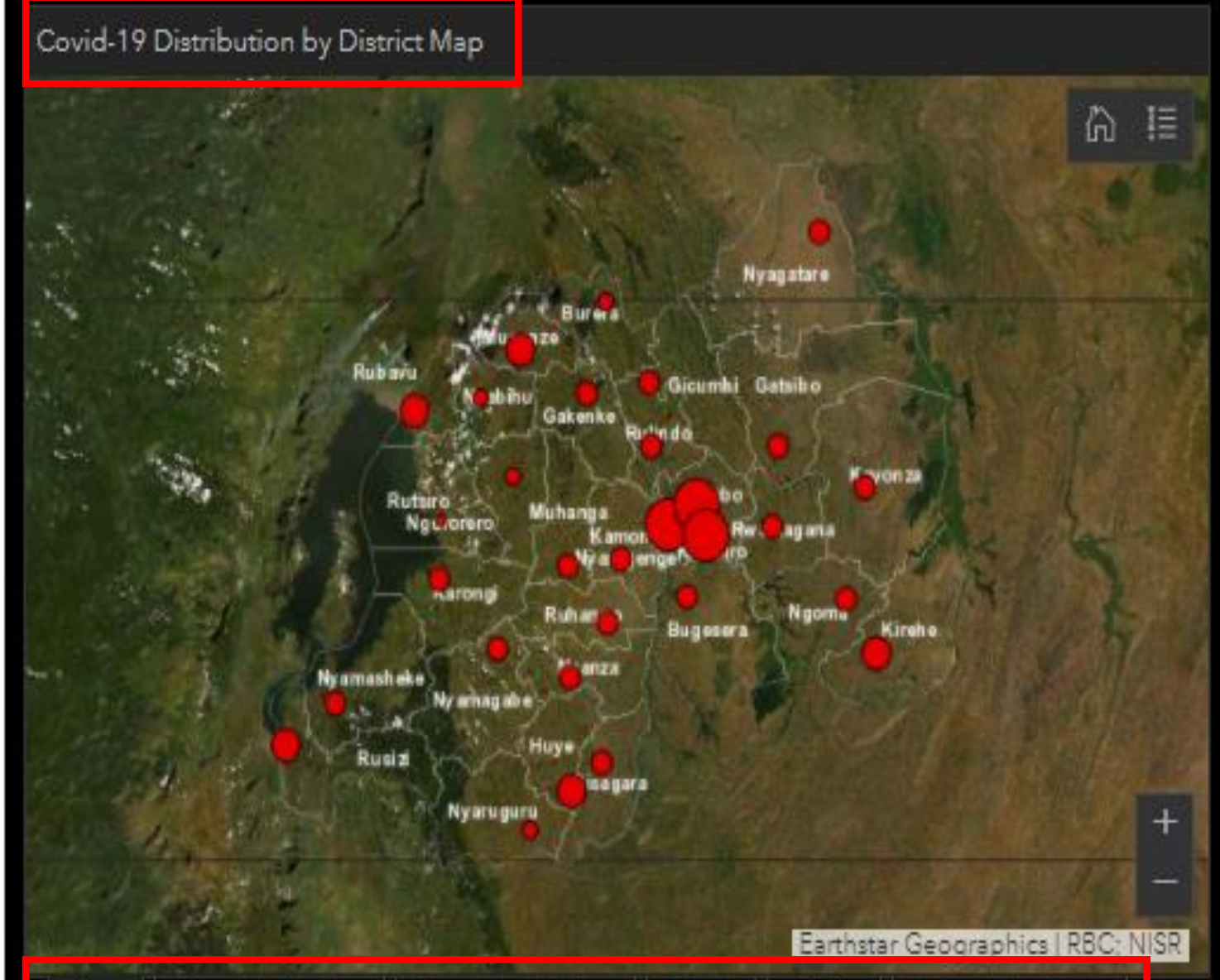
Epidemiology surveillance concept architecture



Covid-19 Rwanda Cases

Filter by Date

Covid-19 Distribution by District Map



Map | Cases by districts | Deaths by districts | Trend | Origin | Cumulative Cases

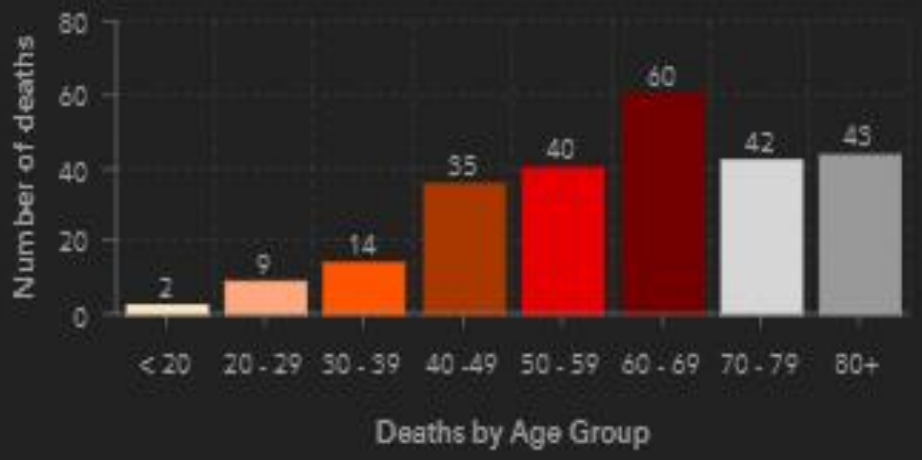
Confirmed Cases	Recovered Cases	Total Death
17,929	16,387	245

Active Cases	Tests in 24 Hours	Cumulative Tests
1,297	4,862	969,254

Imported Cases
1,058

Imported Cases | Local Cases

Deaths Age Distribution



Age distribution | Cases by Gender | Death by Gender

Developing home grown solutions through innovation (IT)

Smart bracelet

Pooling test

Contact tracing

Drones

USSD

Technologies used currently in Rwanda to fight coronavirus

Geological hotpot mapping

Robots

Digital surveillance

Thermal scanning camera

Improve health system resilience during the COVID-19 outbreak

Health System Resilience

- Analyze ongoing in country response to COVID-19
- Improve response by sustaining best practices
- Ensure continuity of health services
- Updating and validating the country's COVID-19 strategic preparedness and response plan

Number of Cases

Date Case Reported

Recovered Cases | Previously Reported Active Cases | New Cases | Total Deaths

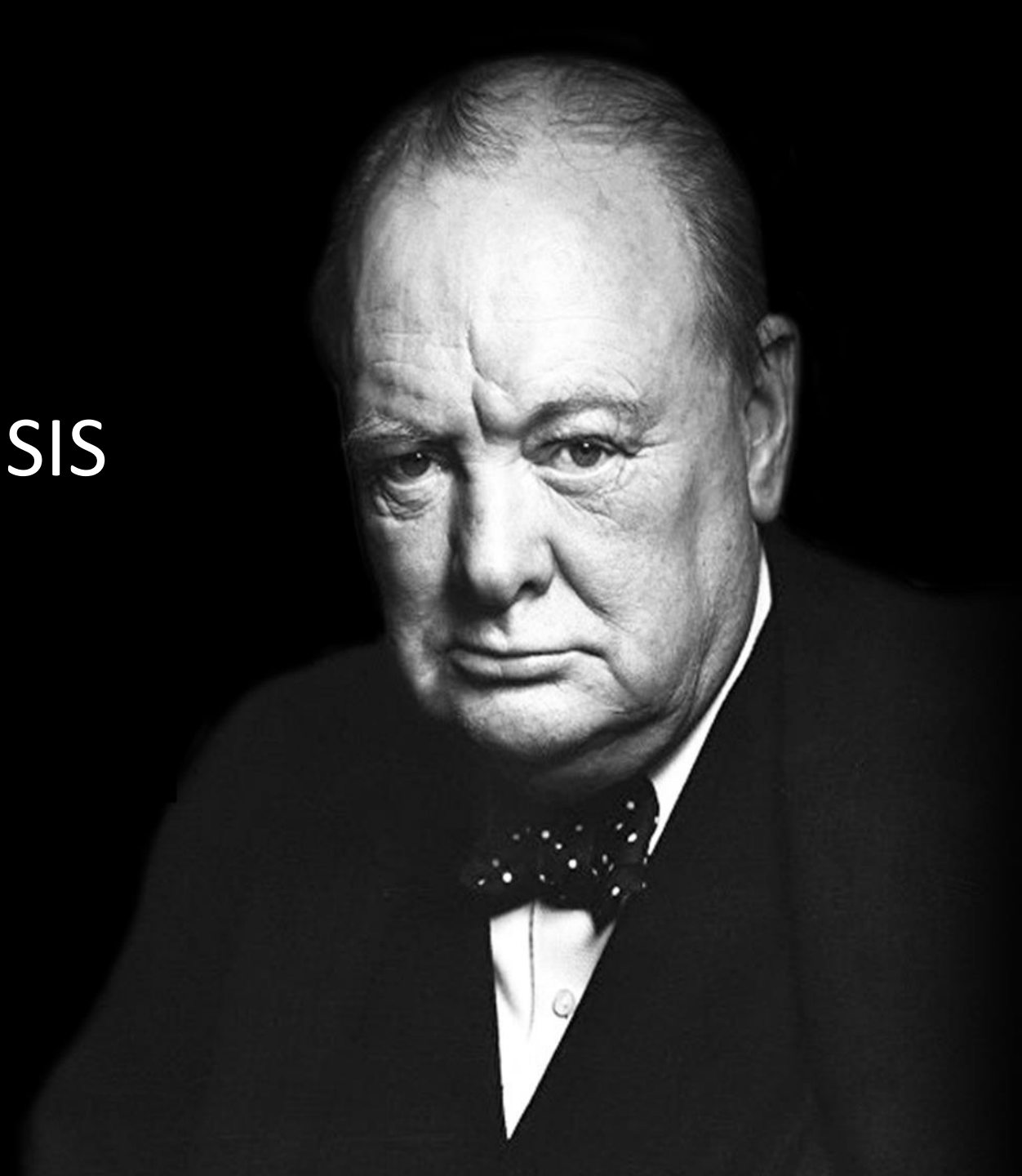
Lessons learnt

Epidemic preparedness and response requires a government-led approach

- Community trust in leadership
- Domestic investments for health systems strengthening
- Public private partnership to boost production of basic essential medical equipment's
- Foster home-grown innovative approaches to address preparedness and response (Research, IT innovations)
- Fast-track legislation and relevant mechanisms to operationalize (EOC's)
- Fast-track operationalization of One Health (WHO-IHR Benchmarks – GHSA Implementation)
- Foster organizational learning to improve health system resilience
- Leverage on existing preparedness and response frameworks to ensure continuity of international/cross-border travel and trade during a pandemic

“NEVER LET A GOOD CRISIS GO TO WASTE.”

Winston Churchill



Acknowledgements

Republic of Rwanda

Ministry of Health