World Health Organization
REGIONAL OFFICE FOR Africa

African Health Observatory
PLATFORM ON HEALTH SYSTEMS AND POLICIES

AHOP **INSIGHTS**

Containment strategies: lessons from early COVID-19 responses in five African countries

December 2021

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ISBN: 978-929023459-3

Suggested citation

Containment strategies: lessons from early COVID-19 responses in five African countries. Brazzaville: WHO Regional Office for Africa; 2021. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data

CIP data are available at http://apps.who.int/iris.

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About AHOP

The African Health Observatory - Platform on Health Systems and Policies (AHOP) is a regional partnership that promotes evidence-informed policy-making. AHOP is hosted by the WHO Regional Office for Africa (WHO AFRO) through the integrated African Health Observatory and is a network of centres of excellence from across the continent, leveraging existing national and regional collaborations. National Centres currently include the College of Health Sciences, Addis Ababa University, Ethiopia; KEMRI Wellcome Trust, Kenya; the Health Policy Research Group, University of Nigeria; the School of Public Health, University of Rwanda; and Institut Pasteur de Dakar, Senegal. AHOP draws on support from a technical consortium including the European Observatory on Health Systems and Policies, the London School of Economics and Political Science (LSE) and the Bill & Melinda Gates Foundation (BMGF).

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AHOP Insights

The AHOP Insights series draws upon the reflections of AHOP Partners and the wider evidence base. We explore themes that are of importance to the African region, often applying a comparative lens to assess issues and learn from diverse approaches. The series aims to capture current concepts, experiences and solutions to the ever changing health systems and policy environment.

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Contents

Key messages

Countries acted early, with most implementing responses before their first index case had been recorded.

Respect for and early implementation of basic tenets of public health and transmission prevention and control were a common pattern across the five AHOP countries and are broadly representative of responses across the region to the first wave of the pandemic. For example, hand washing, mask wearing and physical distancing measures were in place in four of the countries within two weeks of their first case.

Early implementation of subnational travel restrictions alongside cross-border travel bans were linked to continent-wide efforts to limit movement, contributing substantially to successful early containment of the first wave.

Creative approaches to testing and tracing programmes – notably in Ethiopia, Rwanda and Senegal – helped to mitigate capacity barriers and offer lessons for other countries.

Kenya and Nigeria demonstrated the effectiveness of regional and subregional autonomy as a decision-making tool, providing some flexibility to counterbalance economically, politically and socially costly national lockdowns.

There were impressive levels of adherence to containment measures across AHOP countries in the early phase of the pandemic. But adherence fatigue is a growing challenge, and increased community-level engagement is needed.

While containment measures led to the successful early containment of the first wave, AHOP countries have struggled to address the impact on vulnerable groups, the mental health toll on the population, and the challenges of misinformation and disinformation. These challenges have been reported worldwide.

Introduction

In September 2020 Dr Matshidiso Moeti, the World Health Organization (WHO) Regional Director for Africa, expressed a view shared by many: "Africa has not witnessed an exponential spread of COVID-19 as many initially feared". But, she added: "There is no room for complacency."[1]

> **"Prevention remains the key strategy in most sub-Saharan countries.**

Fast forward to summer 2021, with growing global inequities affecting COVID-19 vaccination access and the onset of a third wave in many African countries; the continent remains in a precarious position (Figure 1, Table 1).

The number of COVID-19 cases is on the rise again, with South Africa nearing half of all confirmed cases in the WHO African Region. Threats of new variants loom and low vaccination coverage raises questions on the future of the response to COVID-19. **Prevention remains the key strategy** in most sub-Saharan countries. Below, five National Centres (NCs) from the African Health Observatory Platform on Health Systems and Policies (AHOP), based in **Ethiopia, Kenya, Nigeria, Rwanda** and **Senegal**, reflect on lessons to be learnt from their containment responses in the initial phases. They construct timelines to highlight the policies and challenges associated with introducing a range of public health containment measures and discuss the extent to which these measures continue to be valuable given the ever-changing nature of the pandemic.

Table 1: Impact to date (January 2020 to July 2021)

	Ethiopia	Kenya	Nigeria	Rwanda	Senegal	Africa *	Global
Cumulative cases (as % of all the cases in the African Region)	278 543 (5.88 %)	197 409 (4.16 %)	171 111 (3.61%)	62 946 (1.33 %)	57 263 (1.21 %)	6 475 582	193 798 265
Attack rate per 100 000 population	247	377	83	480	328		
Cumulative deaths	4 369	3 865	2 132	742	1 281	164 383	4 158 041
Case fatality ratio	1.57%	1.96%	1.25%	1.18%	2.24%		
Total tests * (tests per 1 million population)	2 984 666 (25 954)	2 093 014 (38 904)	2 401 894 (11 654)	2 008 242 (154 480)	639 803 (38 312)	57 982 180	
Vaccine population coverage *	1.09%	1.52%	0.96%	3.76%	3.81%	1.39%	13.9%**

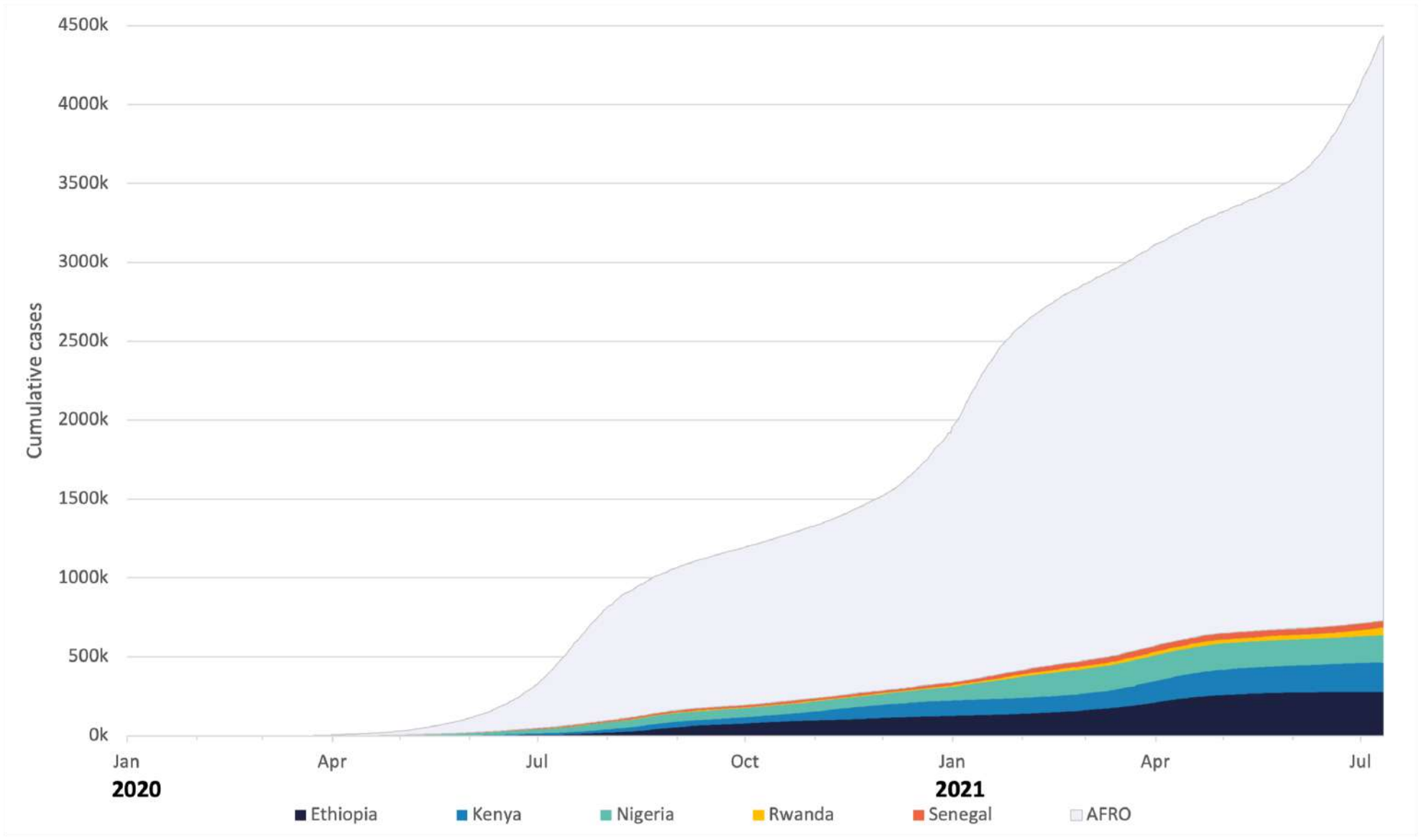
Source: Data taken from WHO and AFRO dashboards unless otherwise indicated.

https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

* Africa CDC Dashboard https://africacdc.org/covid-19-vaccination/ (accessed 2 August 2021).

** OurWorldInData.org/coronavirus (accessed 2 August 2021).

Figure 1: WHO African Region cumulative confirmed cases of COVID-19 (January 2020 to July 2021)



Source: AFRO Dashboard:
https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9
(accessed 26 July 2021).

Initial and evolving containment measures

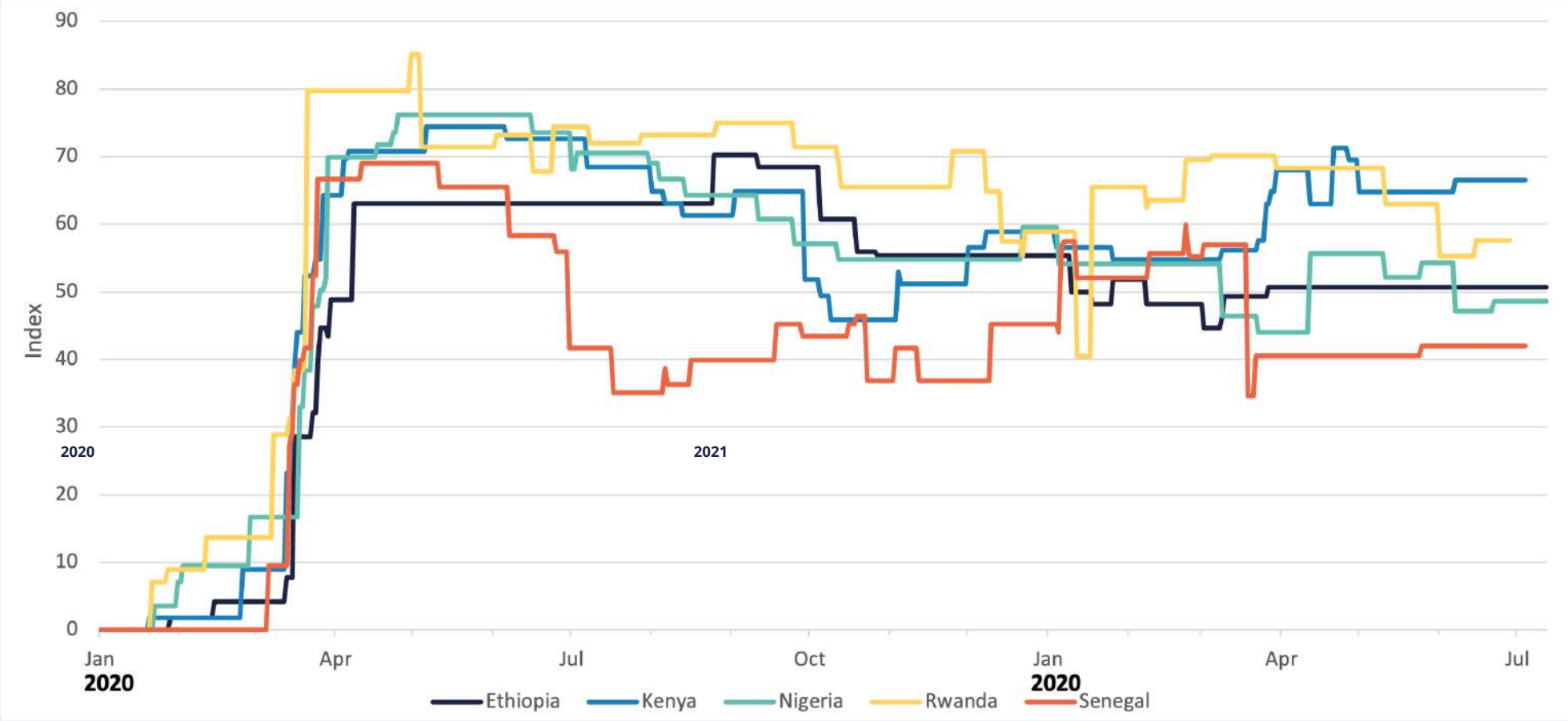
Containment: what do we mean?

The term containment is open to interpretation. For the purposes of this summary, we build on the definition of lockdown provided by Mboera and colleagues.[2] We include measures to reduce transmission of COVID-19 that are both compulsory and applied indiscriminately to the general population, as well as those targeted at individuals or sections of the population deemed at high risk. These include geographical containment; periods of home confinement; suspension of social, educational and economic activities; and prohibition of mass gatherings.

The first known case of COVID-19 in Africa was confirmed on 14 February 2020 in Egypt.[3] From the outset of the pandemic, most of the continent saw a universal ban on all free movement for a prolonged period – an impractical and unenforceable prevention strategy given the millions of people relying on daily subsistence wages and informal employment. More localized concepts of containment were designed to reflect the need to balance stringent prevention of transmission against the need to sustain livelihoods, by allowing individuals to leave their homes and engage in local activities.

Within a month of the first confirmed COVID-19 cases, nearly all countries across the region imposed swift and strict restrictions at both national and subnational levels. Such early and decisive action was widely reported to have helped contain the spread of the virus across the continent. Figure 2 tracks the stringency of a combination of 13 containment measures introduced since January 2020 across the five AHOP countries. It shows the steep rise of different strategies in March 2020, often in advance of the first confirmed domestic COVID-19 case. A range of containment measures has remained in place since, with Senegal having the fewest restrictions and Rwanda having the strictest policy responses over the first year. Figure 2 also illustrates the beginnings of a movement across AHOP countries to reintroduce curbs on movement in recent months in the wake of a spike in new cases and deaths. For example, as of April 2021 Kenyan containment measures have heightened in response to their third wave.

Figure 2: COVID-19 Containment and Health Index



Source: Hale, Angrist, Goldszmidt , Kira , Petherick, Phillips, Webster, Cameron-Blake, Hallas, Majumdar and Tatlow. (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." Nature Human Behaviour. https://doi.org/10.1038/s41562-021-01079-8 (accessed 2 August 2021)

Notes: Composite of 13 metrics: school closures; workplace closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; international travel controls; testing policy; extent of contact tracing; face coverings; and vaccine policy rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region https://ourworldindata.org/grapher/covid-containment-and-health-index

Public health strategies: country and cross-country variation

Ethiopia

The first case of COVID-19 was confirmed in Ethiopia on 14 March 2020. Ethiopia started its cross-sector COVID-19 response preparation early. Two weeks prior to the first case, Prime Minister Abiy Ahmed established a cross-ministerial committee composed of the Ministers of Peace, Finance, Customs, Foreign Affairs, Transport and Health to coordinate and oversee the national COVID-19 preparedness and response. The Ministerial Committee took several **coordinated decisions across sectors** including the closure of primary and secondary education, suspending face-to-face classes and interactions in universities, restricting gatherings, enforcing hand hygiene and face coverings and restricting physical contact. These responses were later included in the state of emergency (SoE) declared on 10 April 2020. Key COVID-19 containment measures have been imposed nationally, with the majority of strategies still in place nationwide, although with varying public adherence over time.

> “
> **Ethiopia started its cross-sector COVID-19 response preparation early.**

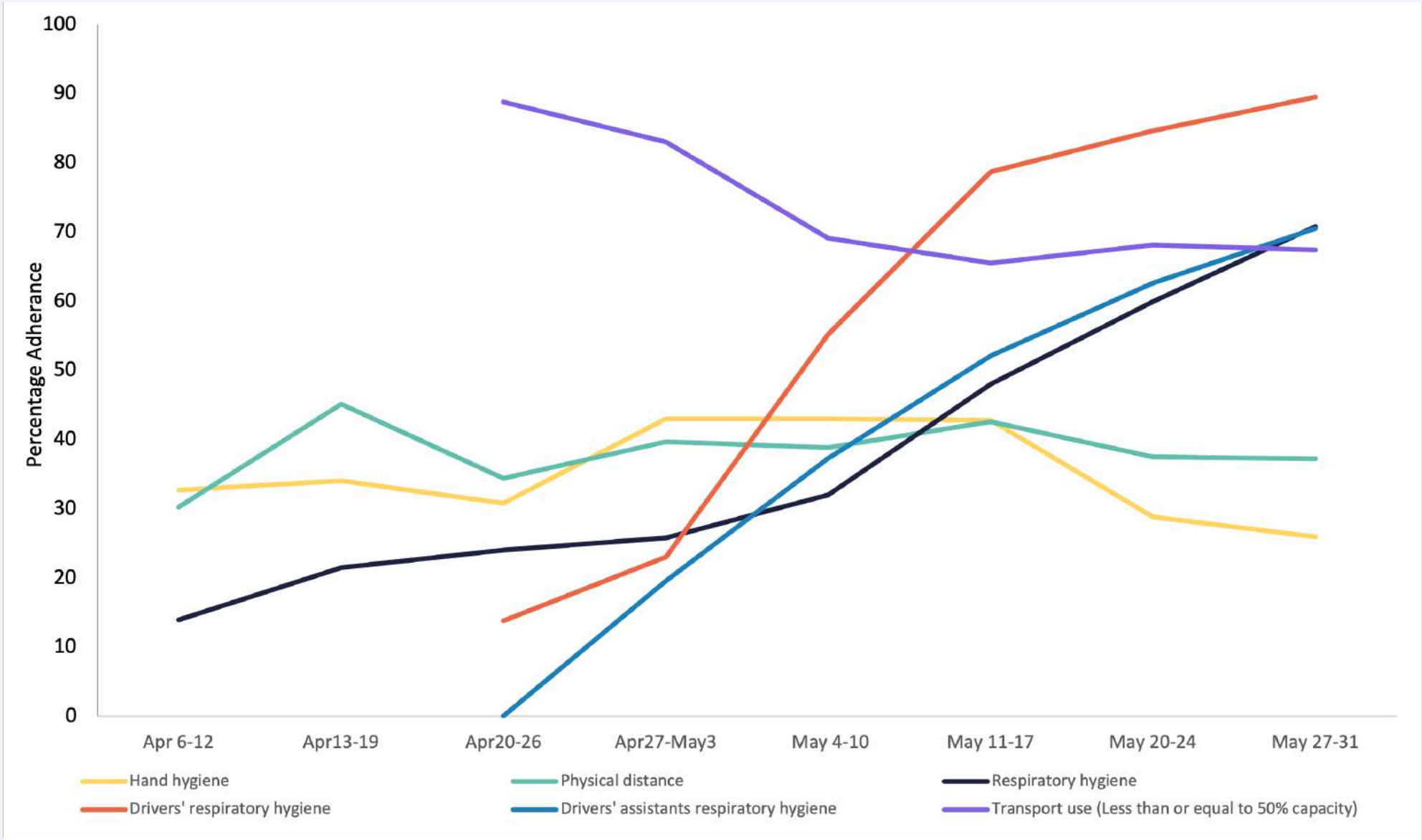
Swift and successful implementation of prevention measures in the initial phase of the pandemic helped Ethiopia contain the spread of COVID-19. On closer scrutiny, an unpublished survey of residents of Addis Ababa undertaken by the Ethiopian NC showed **initial uptake of preventative measures varied** (see Figure 3). For example, respiratory hygiene measures, such as face coverings, were quickly adopted by the majority of the general population (71%), with public transport drivers showing most adherence at 90% eight weeks after their introduction. This relatively high coverage may have been, in part, due to strict enforcement of the practice by government security forces. There were reports that thousands of people who did not wear face coverings were rounded up and penalized for not respecting the SoE.[4]

Not all containment practices retained an upward trend. Vehicles were expected to carry less than or equal to 50% of their capacity. This measure was initially well respected, with 89% adherence in week four, but by the eighth week adherence had fallen to 67%. Proper hand hygiene was the least practised preventative measure, followed by physical distancing, arguably due to environmental factors rather than individual choice.

Figure 4 outlines key containment decisions taken in Ethiopia over the first year and a half of the pandemic. It also plots the COVID-19 cases and deaths.

Although in early 2020 the response to pandemic containment measures was generally positive, by the end of the year compliance was declining and growing public fatigue was evident. In an attempt to improve the sustainability of the 2020 containment strategies, the Ethiopian Public Health Institute (EPHI) has recently launched the ‘COVID-19 Plan Revitalization (Dagim Tikuret LeCOVID-19) Movement’. This movement focuses on enhancing the COVID-19 response by increasing community awareness through risk communication and community engagement, detection capacity and improving the quality of care at national and subnational levels.

Figure 3: Trends in COVID-19 preventive hand hygiene and respiratory practices among residents of Addis Ababa (April to May 2020)



Source: Ethiopian AHOP National Centre

Kenya

Of all the AHOP countries, Kenya has had the most pronounced successive waves of COVID-19. If we go back to the beginning of the pandemic, on 28 February 2020 the Government of Kenya established the National Emergency Response Committee (NERC) on coronavirus to ensure **cohesive and effective coordination of the country's preparedness efforts**. NERC's mandate included coordinating disease surveillance, building capacity of health-care workers, coordinating the supply of tests and other medical supplies, and developing mitigation strategies. In addition, a national isolation and treatment facility was set up, along with the identification of other isolation and treatment facilities across the country. Public health messaging encouraging citizens to maintain hand and respiratory hygiene was also carried out. By 12 March, a day before the country's first COVID-19 case was reported, several containment measures had been put in place by NERC. These included mandatory screening of persons entering the country; suspension of international conferences, meetings and events; suspension of non-essential international travel; provision of personal protective equipment to all county health facilities and security and response teams; and increasing diagnostic capacity at the National Influenza Centre (NIC) and across Kenya Medical Research Institute (KEMRI) laboratories.

> **"By 12 March, a day before Kenya's first COVID-19 case was reported, several containment measures had been put in place**

Additional containment strategies were also enforced: for example, preventing movement into and out of high transmission areas such as the Nairobi metropolitan area and the coastal counties of Mombasa, Kwale and Kilifi. Initially, all cases and suspected cases were isolated in the health facilities and isolation centres in the country. However, as the number of cases increased, a home-based isolation policy was introduced in June for individuals who did not require medical attention.

In Figure 5 we present containment measures alongside COVID-19 cases and deaths. It is widely believed that certain containment decisions correlated with reduced community transmission. For example, a ban on the sale of alcohol and maintaining the extension of curfew hours could be credited with keeping the number of cases low between August and September 2020. Similarly, relaxation of measures could be associated with increasing cases. An initial school reopening in October 2020 corresponds with the start of the second COVID-19 wave.

While most of the restrictions on movement across the country have been lifted, the curfew and the mandatory wearing of face masks remain. The government also adopted a targeted approach with **restrictions on movement and other measures targeted at key hotspots** rather than instituting blanket national measures.

In addition to targeted containment measures, the government also launched a COVID-19 vaccination campaign on 5 March 2021, after receiving an initial batch of 1.02 million doses of the AstraZeneca vaccine from the Serum Institute through the COVAX Facility. The roll-out of the AstraZeneca vaccine, initially for front-line health workers and those aged over 58, is now current policy.

In mid-June 2021 the government announced further restrictions in response to the worsening of the COVID-19 pandemic. Restrictions are focused on 13 counties declared 'hot spot' zones in Western Kenya.

On 29 June the president also announced ambitious plans to vaccinate 10 million Kenyans by December 2021, and the entire adult population (26 million) by June 2022.

While there is little population-wide literature on Kenyan adherence to COVID-19 measures, studies in informal settlements reported high compliance with mask wearing and hand washing (89% and 81% respectively) during the initial phase of the pandemic. However, **'stay home'** and **social distancing recommendations were harder to heed** in these communities with four out of five individuals in a study reporting that they had left their house at least once in the last 24 hours.[5] Increasing pandemic fatigue has been an issue nationwide, with initially positive community-level cooperation and momentum now waning. Punitive responses to containment transgressions have aggravated the situation in some areas and more recently courts have opted for more conciliatory community service sentences for curfew offenders. Creative strategies are needed to reinvigorate engagement and sustain risk awareness. Low vaccine uptake among health-care workers has also been attributed to pandemic fatigue. The notable variation between national and subnational level coordination and stewardship of risk communication and community engagement efforts has been a barrier to better engaging front-line workers and motivating them to model behaviour change and vaccine uptake.

COVID-19 containment efforts have negatively impacted food and economic security in the country with **vulnerable groups such as individuals living in informal settlements bearing the greater burden**. Although the effectiveness of these COVID-19 measures on reducing transmission has not been fully examined, a growing body of evidence points to the containment measures having had major implications for Kenyans' everyday lives.[6] Massive closures of companies and other businesses have had far-reaching effects, especially for low-income daily wage earners. Approximately 2 million people live in informal settlements in Nairobi.[7] Small-scale traders in informal settlements have lost income due to the surge in the number of unemployed persons in these areas. Many households which were already poverty-stricken have been rendered even more vulnerable and are unable to afford food and rent.[8] In addition, informal settlements have faced substantial food shortages.[9]

Nigeria

Following the confirmation of the first COVID-19 case on 25 February 2020 in Nigeria, the federal and state governments put measures in place to stem transmission, culminating in multiple phases of implementing then easing restrictions, all with varying health and socioeconomic impacts[10] (see Figure 6).

Containment strategies and timelines varied across states. Kaduna State was the first to announce restrictions on movement on 25 March 2020, eleven days before the federal government announced its first phase of locking down the initial three epicentres of COVID-19 cases (Lagos, Ogun and Abuja). By 30 March state governments began shutting down their borders, prohibiting further entry. Together with state governors, a nationwide consensus was reached with the federal government placing a nationwide ban on interstate travel from 23 April 2020 (excluding those providing essential services such as food, health care, power and water). Densely populated markets were shut down, places of worship were closed and social activities and gatherings were also prohibited. The effort to scale up contact tracing and testing became a priority.

After four weeks of a national lockdown the federal government announced the first phase of easing from 4 May 2020, having recognized the socioeconomic consequences of the containment measures. States have since taken the lead in easing, then reinstating containment measures, causing variations in resumption of schools, clubs, bars, eateries, hotels and other businesses. For instance, while schools in states like Oyo and Lagos resumed in September 2020, those in Kaduna recommenced in October, and those in Rivers in November. The states had different experiences in trying to contain the virus, especially in terms of citizen compliance with the safety protocols and increasing or decreasing case numbers, causing them to review their plans according to local realities. Towards the end of 2020 many Nigerians' everyday lives were returning to normal as they increasingly disregarded most containment rules, resulting in rising cases and leading to calls for the government to act. Given the impact of lockdown measures, it is yet to be seen whether the Nigerian Government has further appetite to call for another lockdown.

In January 2021 the president signed into law the COVID-19 Health Protection Regulations 2021.[11] The law covers six key areas: (a) restrictions on gatherings; (b) restrictions on movement in public places; (c) mandatory compliance with treatment protocols; (d) offences and penalties; (e) enforcement and application; and (f) interpretation and citation. The aim of the law is to scale up containment measures, given that the deteriorating economic situation might preclude another lockdown. The government shows commitment to the measures, respecting COVID-19 protocols at most of its gatherings, but wider enforcement remains a problem. It is now common for hand washing facilities and thermometers in public spaces to be non-functional or absent. The same is true across tertiary schools following their reopening in January 2021, despite the universities' promise to keep Nigerian students safe.[12] The *Nigerian Guardian*[13] reports weak communication of the law, with many Nigerians unaware of its existence. Some fear that security operatives could exploit the law to enrich themselves.

The Presidential Task Force (PTF) is now a steering committee, and addresses the public less frequently than during the initial phases. Some states have made attempts to relaunch their containment campaigns, especially following the reported increase in COVID-19 cases and deaths in January and February 2021.[14] Since March the curve seems to have stabilized, coinciding with the delivery of 4 million doses of the AstraZeneca vaccine. Vaccination commenced immediately and by June 2021 a total of 3.4 million doses of the vaccine had been administered.[15]

Challenges in terms of adherence to containment measures are increasingly reported.[16] **Concern over testing capacity** has been a feature of the Nigerian response from the outset, and the fear of underreporting cases remains. In the early days of the pandemic, testing was limited to symptomatic cases who were either key workers or those who had come into contact with a known case. In recent times, the cost of testing for COVID-19 in private facilities and some public facilities has been a source of deep concern,[17] as have issues of equity of access to legitimate tests.[18] However, access to testing has improved owing to the establishment of more public, private and corporate testing centres (83, 54 and 7, respectively as of June 2021). Yet there are concerns about malpractice, with high fees charged where testing should be free, and test results issued without collecting and testing samples.[19]

> **“**
>
> **In Nigeria, the federal and state governments put measures in place to stem transmission, culminating in multiple phases of implementing then easing restrictions, all with varying health and socioeconomic impact.**

A top concern for states and the federal government is individuals who live in slums and informal settlements. Owing to **crowded living conditions**, the use of public latrines and the absence of clean water facilities, health safety protocols in such areas are not feasible. The University of Ibadan Urban Health Research Team reported that environmental factors in slums make it almost impossible to comply with physical distancing and hygiene rules.[20]

Many citizens have increasingly voiced resistance to lockdowns, as well as broader political concerns, citing what they consider a violation of their human rights. In Nigeria, citizen compliance with the public health protocols is linked to their trust in government,[21] with journalists reporting low compliance to COVID-19 safety protocols.[22] Reports of Nigerians not wearing face masks in public places, or wearing them inappropriately, are widespread. While formal transport services obey physical distancing rules in carrying passengers who are now forced to pay more, the informal transport sector demonstrates almost no adherence to social distancing rules. Security operatives do not always enforce these safety measures, leading to a concern that those who flout the safety protocols do so because they see **no serious deterrent** or sanctions as a result of their actions. On the other hand, the security operatives themselves are seen to be flouting the safety rules.

Myths around COVID-19 remain and hamper containment measures. A survey of citizens' knowledge and perceptions showed a significant proportion of the community believed "COVID-19 is not real", "COVID-19 only affects rich people", "there is no COVID-19 in Nigeria anymore", and "using face masks and physical distancing is not necessary". Encouragingly, in this same study nine out of 10 respondents continued to believe that the COVID-19 pandemic is not over and that all measures should be strictly adhered to, with 51% of respondents reporting that they knew the location of the COVID-19 testing centre closest to them.[23] These conflicting beliefs show the complexity of communicating COVID-19 responses.

Rwanda

In a country with high levels of reported trust in the health system,[24] Rwanda's public health response to COVID-19 was hailed by many within the country and further afield as decisive and successful.[25] Rwanda's preparation started well in advance of the first confirmed case in mid-March 2020 (see Figure 7). In January 2020 Kigali International Airport and the country's land borders started temperature screenings. In early March 2020, to control the spread of the disease in the general population, a national COVID-19 Joint Task Force was set up and COVID-19 prevention and control guidelines were issued on 6 March 2020; these included social distancing and hand washing, and hand sanitizer was placed outside the entrances of all major public buildings and shopping centres. Testing started well before the first Rwandan COVID-19 case was identified. When COVID-19 started to spread, a series of measures followed, including lockdowns, hygiene measures (hand washing), physical/social distancing, use of face masks, school closures, prohibition of public gatherings, and closure of non-essential business and economic activities.

Throughout the early phase of the pandemic the Rwandan Cabinet met every two weeks to review and provide new guidelines for COVID-19 prevention and containment measures. The public has largely followed these guidelines, with enforcement from the authorities. More than a year into the pandemic, cabinet oversight continues. On 20 March 2020 the government decided to put in place a nationwide lockdown and all non-essential movement outside homes was prohibited. The government's priority at that time was to contain the spread of the disease and protect Rwanda's health system, given the limited number of intensive care beds. During this lockdown all non-essential business and labour activities were stopped. On 30 April 2020 the government lifted the lockdown but made mask wearing mandatory outdoors and introduced an overnight curfew from 8 p.m. to 5 a.m. The manufacturing and construction sectors, hotels and restaurants were allowed to open until 7 p.m., but schools, bars and places of worship were instructed to remain closed. After an increase in COVID-19 cases in June and July 2021 the government resolved that a total lockdown in Kigali and some eight districts in the country would be extended until the end of July.

From the outset an **extensive testing effort** has been at the centre of the national response. Rwanda started active surveillance of cases, including systematic contact tracing, isolation of suspected cases and treatment of confirmed cases, with assistance from a range of stakeholders including the Rwandan security services.

Rwanda has been recognized for its **use of different technologies to help contain the virus**. For example, the internet and SMS have been used to reinforce public health messages across communities and remind people of the importance of prevention measures. Other technological solutions employed have included the use of artificial intelligence and robotics for patient management and data recording in hospitals, drones in broadcasting information on COVID-19 symptoms and prevention strategies, and a free telephone line for contact tracing and self-testing.[26]

A targeted approach to data collection and training has helped monitor the spread of infection. Rwanda uses focused strategies to assess the spread of the virus, including random vehicle stops by COVID-19 testers. Testing is also compulsory for all those entering Rwanda. Training for front-line health-care workers (nurses, medical doctors, hygiene officers and others) has been delivered to ensure appropriate COVID-19 management and response. Health-care workers in districts with higher numbers of COVID-19 cases (such as border areas and Kigali City) were targeted in the first wave of training.

Containment strategies are similar across the country, apart from airports and regions with international borders where specific strict measures have been put in place. Specific measures are also in place

for arrivals from some countries; for example, those entering from Uganda and India are required to quarantine for a week. Entry into the country at an airport requires a PCR test done in the previous 72 hours, and passengers are also requested to take a second PCR test on arrival. Furthermore, a strong surveillance system (using an electronic tracking system) has been put in place, resulting in the reduction of imported cases. Hotels checking in and out guests report on an online COVID-19 surveillance dashboard that results have been issued. If the tests turn out positive, asymptomatic patients are closely monitored for 14 days, then a follow-up test is done, while patients are hospitalized if required.

> **“From the outset an extensive testing effort has been at the centre of the Rwandan response**

Observations suggest that the majority of Rwandans have adhered to COVID-19 containment measures. This supports the perception that most Rwandans (along with Ethiopians) have greater trust in their health system than others in the region.[27] Adherence is further enabled by the **stiff penalties in place for not respecting containment measures**. For example, those not wearing masks properly or who break the curfew have reportedly been detained in stadiums overnight.[28] However, as the pandemic has lasted, while Rwandans in general may respect government guidelines, adherence is not 100%. The Minister of Health attributed the recent spike in cases to “people who undermine the directives and safety guidelines including prohibited gatherings, Rwandan nationals returning from Uganda and the recent mass movement of people to and from DRC due to the volcanic eruptions”.[29]

Although the containment measures put in place, including social distancing and lockdowns, school closures, bans on public gatherings and suspension of non-essential business and economic activities have helped to contain the spread of COVID-19 in Rwanda, they have taken their toll, with negative social, economic and health effects now evident. The impact on mental health in particular has required intense interventions and measures to mitigate the consequences for individuals, families and communities.

Restriction of movement between provinces has led to the loss of jobs and incomes for particular societal groups (notably those working in hospitality and manufacturing), disproportionately affecting those already in chronic poverty and deepening pre-existing divides.[30] Another consequence has been the rising cost of local and imported goods, with some traders exploiting the pandemic to increase prices of food, sanitation products and medicines. To counter this trend during the lockdown period in March 2020, the government implemented price freezes on food commodities nationwide. This helped to stabilize prices and is still in force in 2021.

Senegal

Even before recording the first confirmed case on 2 March 2020, Senegal's Ministry of Health and Social Action was already communicating with regional and district governors and hospital management, asking them to reinforce epidemiological surveillance and prepare to receive and treat potential confirmed cases according to strict guidelines. Once the index case was identified, the country reactivated the Public Health Emergency Operations Centre (COUSP). COUSP was created in 2014 in order to (i) define the measures to be implemented during health emergencies, and (ii) coordinate the actions of the different actors involved in the response.

> **"Even before recording their first case, Senegal's Ministry of Health and Social Action was already communicating with regional governors and hospital management.**

Throughout March 2020 a wide range of containment responses was put in place (see Figure 8). On 5 March testing policies were put in place for symptomatic and eligible individuals, alongside comprehensive contact tracing. The following week gatherings of more than 100 people were banned, coordinated public information campaigns were instituted, screening started for incoming travellers and schools were closed. Borders were then closed on 19 March and public events were cancelled. The Government of Senegal declared a state of emergency at the presidential press conference of 23 March 2020. Preventive measures to ensure social distancing were also put in place (mask wearing and curfews among others).

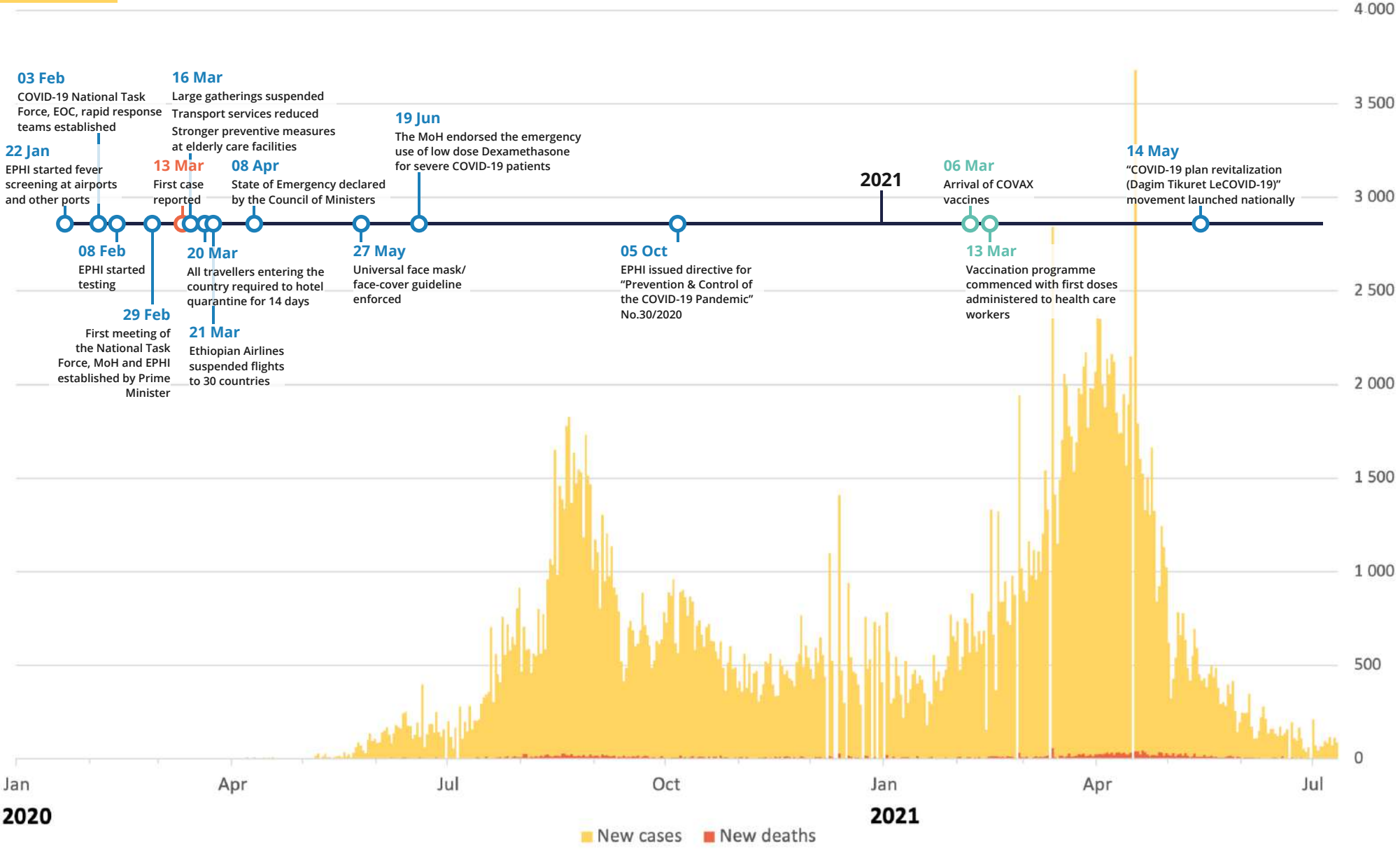
To try to offset some of the hardship associated with the containment measures, the Senegalese Government was quick to implement an economic and social resilience programme. According to the IMF, up to 7% of the Senegalese GDP from a revised budget was made available for the resilience package. Approximately 7% of the COVID-19 response package (CFAF 78.7 billion) was allocated to the health system to improve testing, treatment, tracing and prevention, and to enable the recruitment of 1500 additional health workers, especially in rural districts.[31]

Basic social distancing strategies including mask wearing have remained in place across the country. As of May 2021, the focus has been on continuing to build capacity via training programmes, the roll-out of a national vaccination plan, and continued screening of incoming and outgoing travellers.[32]

An analysis of the Senegalese AHOP National Centre's COVID-19 database has shown that people who tested positive are on average 42 years old (the median age in Senegal is 18.5 years). No measures taken by the government have specifically targeted this older group. All the measures put in place concern the entire population. Certain measures put in place, such as curfews and travel restrictions have led to a wave of public protests, resulting in violent confrontations with police officers. As elsewhere, many measures have led to a slowdown of the economy. Worst affected have been the night-time economy (forced to close owing to curfews) and the transport sector, as vehicles were forced to run at 50% capacity in order to respect social distancing, and the population more generally avoided public transport.

Ethiopia

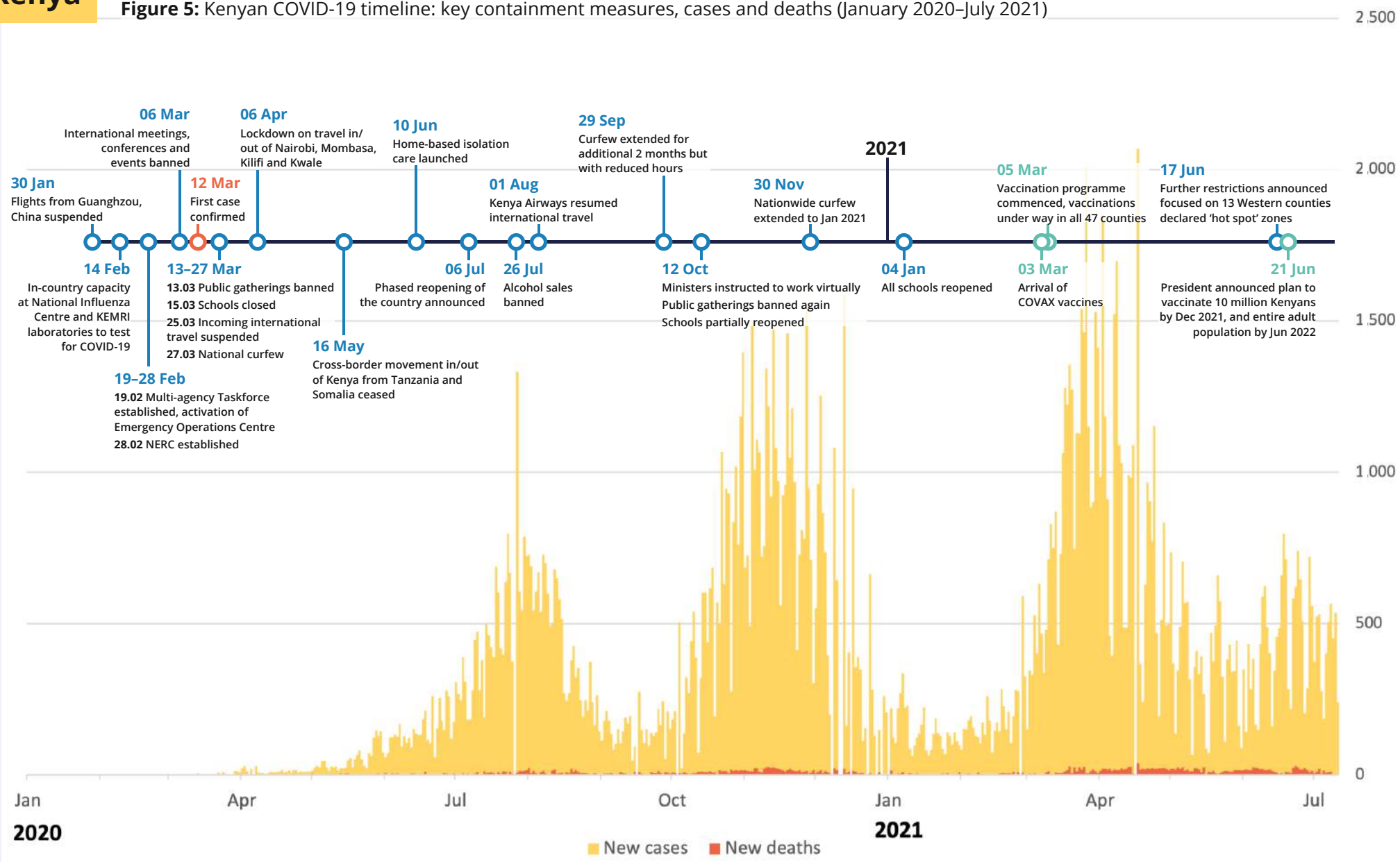
Figure 4: Ethiopian COVID-19 timeline: key containment measures, cases and deaths (January 2020–July 2021)



Sources: Dates and key containment measures taken from a range of official government documents and grey literature. New cases and new deaths taken from AFRO Dashboard https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

Kenya

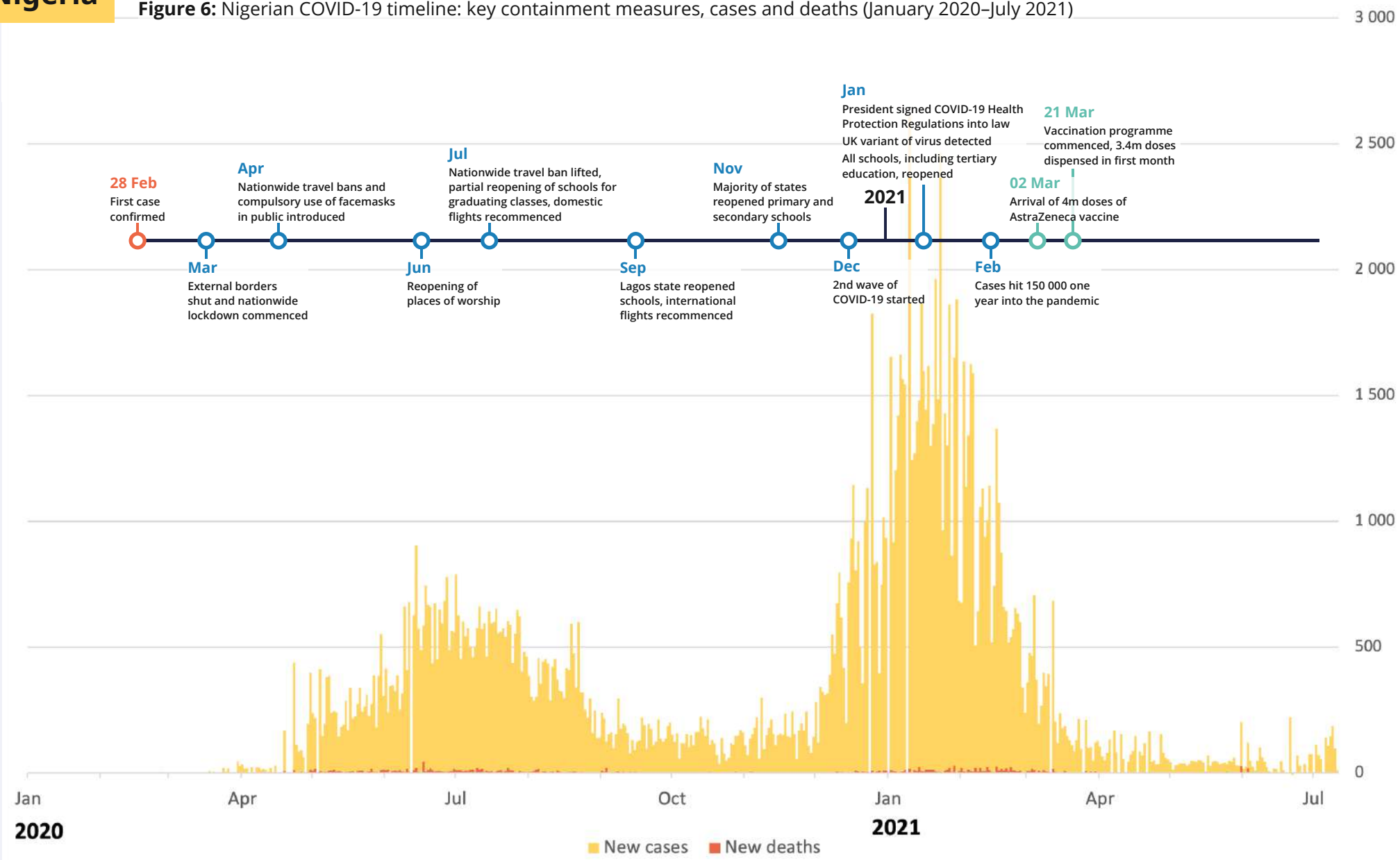
Figure 5: Kenyan COVID-19 timeline: key containment measures, cases and deaths (January 2020–July 2021)



Sources: Dates and key containment measures taken from a range of official government documents and grey literature. New cases and new deaths taken from AFRO Dashboard https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

Nigeria

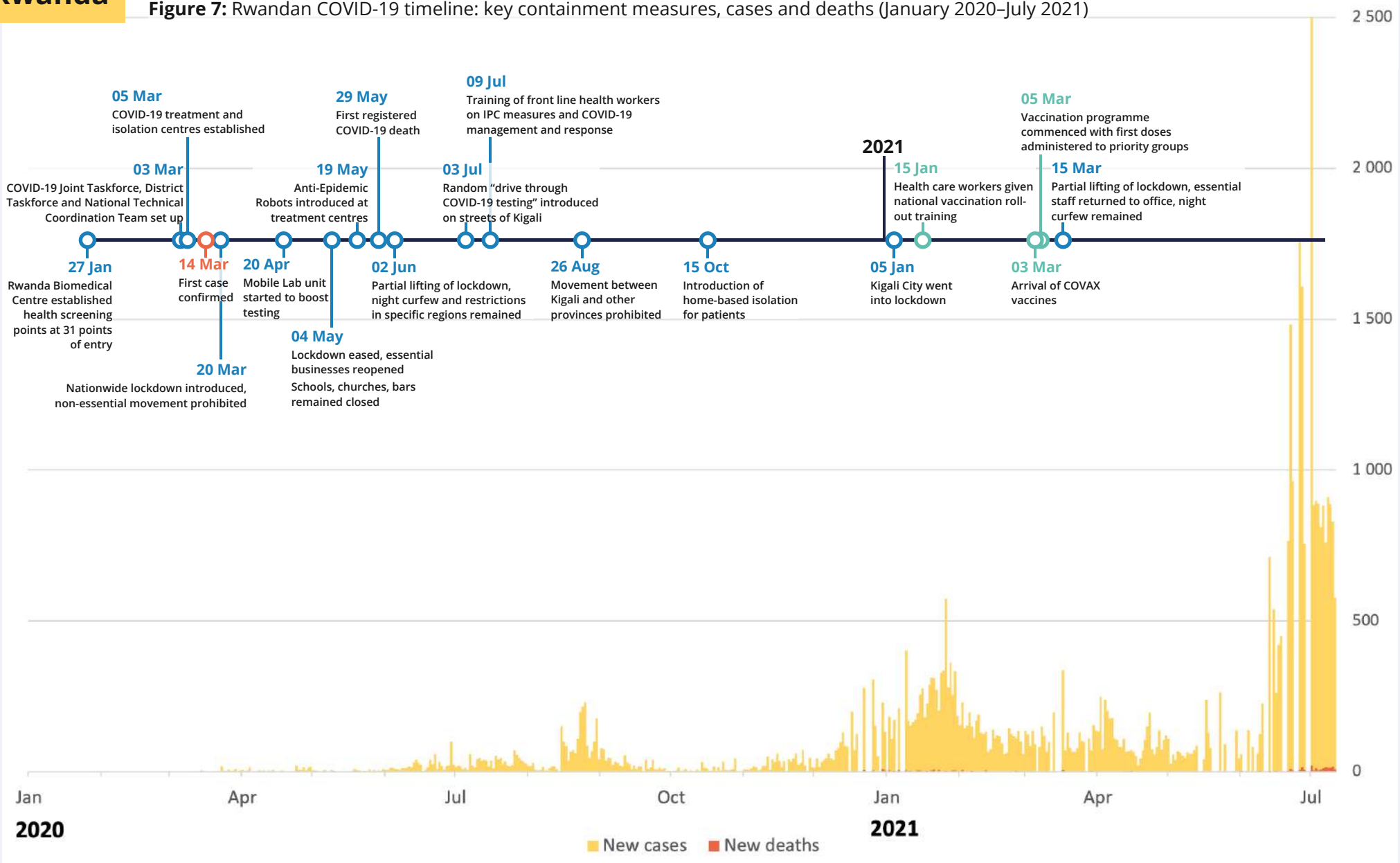
Figure 6: Nigerian COVID-19 timeline: key containment measures, cases and deaths (January 2020–July 2021)



Sources: Dates and key containment measures taken from a range of official government documents and grey literature. New cases and new deaths taken from AFRO Dashboard https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

Rwanda

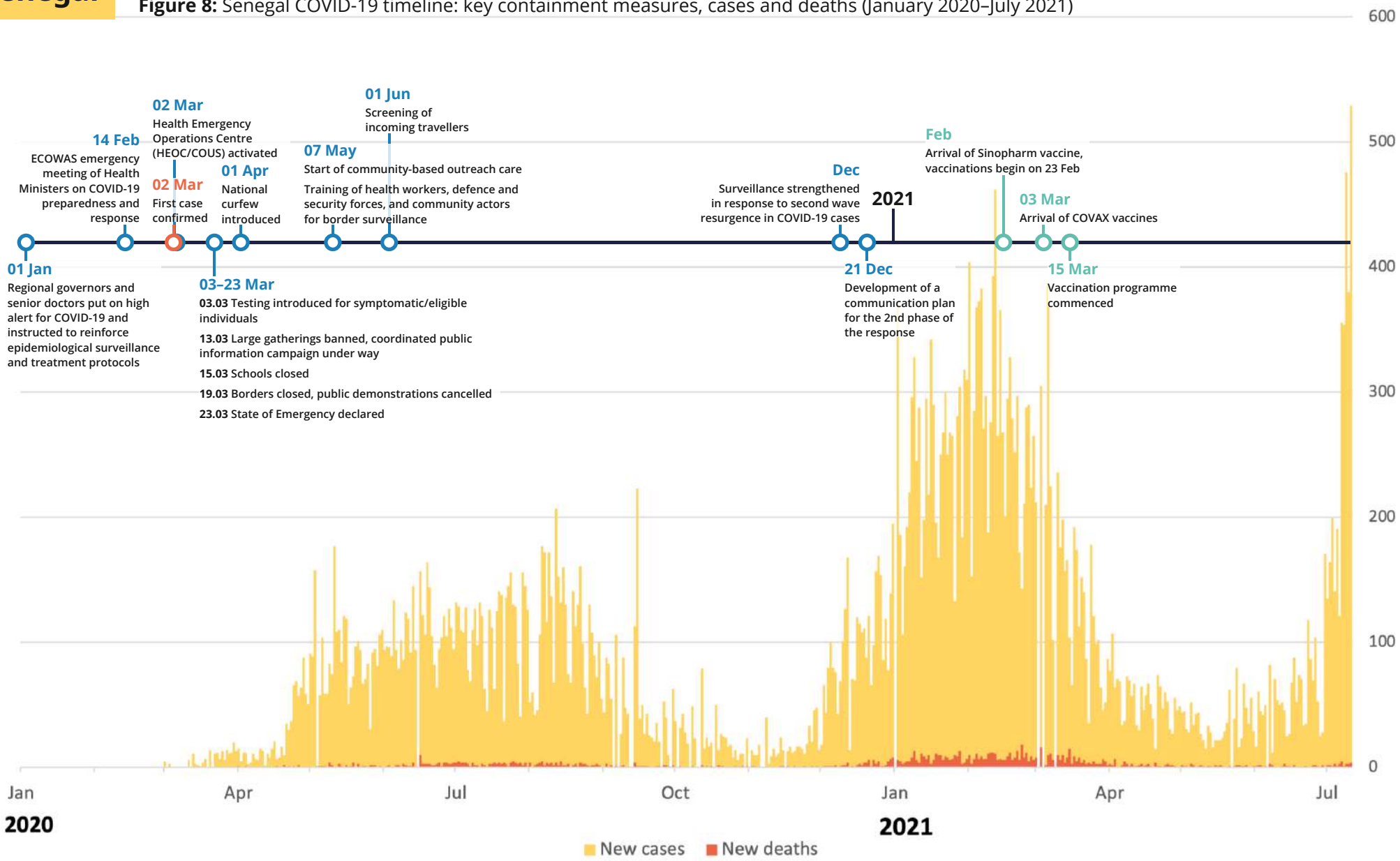
Figure 7: Rwandan COVID-19 timeline: key containment measures, cases and deaths (January 2020–July 2021)



Sources: Dates and key containment measures taken from a range of official government documents and grey literature. New cases and new deaths taken from AFRO Dashboard https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

Senegal

Figure 8: Senegal COVID-19 timeline: key containment measures, cases and deaths (January 2020–July 2021)



Sources: Dates and key containment measures taken from a range of official government documents and grey literature. New cases and new deaths taken from AFRO Dashboard https://who.maps.arcgis.com/apps/dashboards/0c9b3a8b68d0437a8cf28581e9c063a9 (accessed 2 August 2021).

Cross-cutting themes: what can we learn from AHOP experiences?

1. Sticking to the basics

Respect for and early implementation of basic tenets of public health and transmission prevention and control were a common pattern across our five AHOP countries and are broadly representative of responses across the region to the first wave of the pandemic.

Early start

Countries acted early, with some implementing responses before the first index case had been recorded. Kenya had an emergency response committee set up by late February and a number of containment measures in place before the first case was reported on 13 March. All AHOP countries had basic hand washing, mask wearing and physical distancing measures in place within two weeks of their first case (apart from Nigeria, where containment measures took a little longer to come into effect), correlating with wider regional responses which saw measures in place in almost all African countries within a month of the first recorded case on the continent.

Curbing movement

International travel was a significant risk factor for Nigeria, Ethiopia and Kenya in particular, given their roles as regional transport hubs and their extensive air links with Europe and China. Early implementation of subnational travel limits, alongside cross-border travel bans, was linked to continent-wide efforts to limit movement, contributing substantially to successful early containment of the first wave. Implementation was not faultless, with indications that swifter curbs in Nigeria in particular could have further limited spread there given that the majority of early cases comprised individuals with a travel history. Similarly, Nigerian colleagues noted the failure to limit inter-city transport early on as a learning point given the urban focus of disease incidence. Nevertheless, AHOP experiences suggest that curbs on movement were more rapidly and stringently applied than in other regions.

Importance of testing

Capacity barriers inevitably limited the effective implementation of testing and tracing programmes across AHOP countries and the region more generally. However, AHOP countries recognized its value, and significant containment benefits were visible in those countries where innovative and targeted testing was applied. This was most notable in Senegal where the effective management of COVID-19 patients and their contacts has been regarded as a success. Targeted testing underpinned the Rwandan response, where a multistakeholder approach was adopted, engaging various stakeholders, including the security services, to put in place systematic contact tracing, isolation of suspected cases and treatment of positive instances. Rwanda also innovated, trialling robots to carry out testing, geolocalized hotspot mapping for contact tracing and targeted testing approaches including random vehicle stops. While Senegal's and Rwanda's smaller populations made testing interventions more feasible, their creative approaches perhaps offer lessons for countries with larger populations, like Nigeria, where testing has been a persistent challenge, with issues of capacity, cost and equity of access.

2. Integrated responses

The success of implementation efforts differed across countries, but AHOP accounts offer a common awareness of the contribution of integrated approaches to containment, regardless of whether they are multisectoral, subregional or community-led.

Decentralized decision-making

AHOP experiences point to subregional action playing a significant role. As noted at the outset, efforts to balance health needs against economic pressures often resulted in a regional preference for more localized concepts of containment. For example, states in Nigeria acted individually before national lockdowns were imposed via a consensus approach. States then continued to take the lead in easing and reimposing restrictions as infections ebbed and flowed, with varied experiences of compliance across states. In Kenya, movement in and out of high transmission counties was restricted to help curb localized outbreaks. Regional and subregional autonomy in decision-making appears to have been an effective tool, providing some flexibility to counterbalance economically, politically and socially costly national lockdowns.

Community-led interventions

A number of AHOP reflections highlight instances where lack of community engagement has affected containment. In Nigeria, key health stakeholders, including the Nigeria Centre for Disease Control, have cited the lack of subnational community engagement on health security as an obstacle.[33] In Kenya, limited coordination between national and subnational efforts and poor stewardship of community engagement activities are cited as affecting vaccine uptake. The need for increased community-level engagement to counter increasing adherence challenges is also cited by a number of countries. This focus of the AHOP experiences reflects wider regional awareness of the importance of community engagement. Recent commentators on the African COVID-19 response have cited previous pandemic experiences of engaging communities as a key influence on successful containment strategies employed in the region.

Coordinated multisectoral responses

AHOP experiences underscore widespread and early national recognition that pandemic response must go beyond health. Ethiopia took several coordinated decisions across the health, education, trade and culture sectors within the first few weeks of the pandemic. The Nigerian public health response was also embedded in a multisectoral approach, aware of wider concerns about hunger, education, access to water and sanitation, job safety and others[34]; likewise the Senegalese response, where public health and economic strategies were seen as inseparable. By contrast, the Rwandan and Kenyan responses initially prioritized the health sector, with more multisectoral approaches following behind. In general, AHOP countries' frequent references to multisectoral approaches tend to reflect the pragmatism voiced by regional players from the outset. WHO AFRO and Africa CDC among others recognized that stringent containment measures for prolonged periods would never be practical in a region where subsistence wages and informal employment are widespread.

3. Common Challenges

AHOP experiences point to common challenges that all countries have struggled to address.

Impact on vulnerable groups

The disproportionate impact of the pandemic on the inhabitants of informal settlements in Kenya and Nigeria emerged clearly from AHOP reflections. Kenya noted struggles with food shortages and the impact of the economic shutdown on daily wage earners and small traders based in informal settlements in Nairobi, while Nigeria highlighted the concern of state and federal governments for urban slum dwellers unable to comply with containment measures.

Mental health toll

As with responses across the globe, AHOP reflections highlight the impact of the pandemic on mental health and the common challenge governments face in addressing this issue. Rwandan colleagues in particular referenced the need for intensive interventions to mitigate impacts at individual, family and community levels.

Disinformation and misinformation

The challenge posed by misinformation is another common thread across AHOP countries. Public health messaging strategies to counter widespread dissemination of myths about the virus have been the subject of regional-level cooperation led by WHO and other regional players. This is reflected in the AHOP country experience, with Ethiopia highlighting conflicting and mixed messaging from both reliable and unreliable mass media and social media sources as a significant challenge to containment compliance.[36] [37] Nigeria too noted misinformation as hampering containment efforts, citing survey data indicating significant community scepticism about the existence of COVID-19.[37] AHOP reflections indicate the complexity of the problem with simultaneously held but conflicting beliefs commonplace.

Adherence fatigue

The data show impressive adherence to containment measures across AHOP countries in the early phase of the pandemic, notably in Ethiopia and Kenya. But all countries emphasize adherence fatigue as a growing challenge. Three factors affecting adherence emerge from their reflections. Firstly, AHOP experiences suggest trust in government is perhaps a feature, with lower levels of trust, for example in Nigeria, resulting in lower levels of adherence, and vice versa elsewhere, for example in Senegal. Secondly, as above, misinformation or effective public health messaging that succeeds in engaging communities is also commonly cited as influencing adherence. Thirdly, enforcement emerges as a key variable, with more stringent enforcement of restrictions evident in Ethiopia, Kenya and Rwanda, while lapses in enforcement are highlighted as fuelling poor adherence in Nigeria. There are perhaps lessons to learn from Senegal, where enforcement remained less punitive throughout and containment measures were relaxed earlier and to a greater degree than elsewhere, without a negative impact on case numbers.

Where to next?

Collating AHOP experiences offers some common learning points to reflect on, while containment responses are still very much in progress. With third waves under way in the region, more data are emerging rapidly. Further work drawing on these data will help researchers to move beyond the anecdotal and descriptive, to produce more substantive analyses. As the vaccine roll-out overcomes existing barriers and accelerates, it will be a key factor in determining future containment approaches. Tracking adjustments in approach in light of likely uneven vaccine access will be informative, as will watching how governments manage the crucial challenge of pandemic fatigue and falling adherence. Based on the AHOP country reflections, more research could usefully be done to better understand variations in adherence across different country contexts – why was hand washing not widely adopted in Ethiopia but was successful elsewhere? AHOP teams will continue to reflect, and to collate and compare their experiences to add to the regional body of knowledge.

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