A Nigerian security officer holds an infrared thermometer, with which he checks the body temperatures of visitors before granting them access to a co-working space in Abuja, Nigeria. Credit: Paul Adepoju/Nature Medicine

Nigeria responds to COVID-19; first case detected in sub-Saharan Africa

A seasoned public-health institute puts Nigeria in a good position to respond to COVID-19, although there are area-specific challenges to be addressed. Nature Medicine reports from Nigeria.

Paul Adepoju

Around 1 AM on Friday 28 January 2020, Nigeria announced sub-Saharan Africa's first confirmed case of the coronavirus disease COVID-19, and the confirmation led to activation of the country's National Coronavirus Emergency Operation Centre. Nigeria's quick mobilization of resources and manpower to combat the Ebola virus disease in 2014, led by the Nigeria Centre for Disease Control (NCDC), received praise from the international community and from the World Health Organization (WHO). The outbreak, which caused 15,000 confirmed cases and over 9,000 suspected cases in West Africa, was controlled in just 92 days—a "piece of world-class epidemiological detective work," the WHO stated at the time.

This new coronavirus is putting the country's and the continents' recently expanded response infrastructure to the test. But Aderinola Olaolu, Deputy Incident Manager of Nigeria's Coronavirus Emergency Operation, notes that for COVID-19, the country had the time to prepare.

Ready for the outbreak

Olaolu remarks that before COVID-19 arrived in the country, "we ensured information went around to Nigerians, especially on personal hygiene and cough etiquette, for more than a month. We've shared case definition with health workers, [and] we have a network of state and public health emergency network centers around the country so that we can coordinate information. We have skilled manpower [who] can do contact tracing, and also treat, [and] we now have five testing laboratories

The front view of the administrative headquarters of the NCDC, from where officials are coordinating the country's COVID-19 response. Credit: Paul Adepoju/ Nature Medicine

that have helped in shortening our response time for detection."

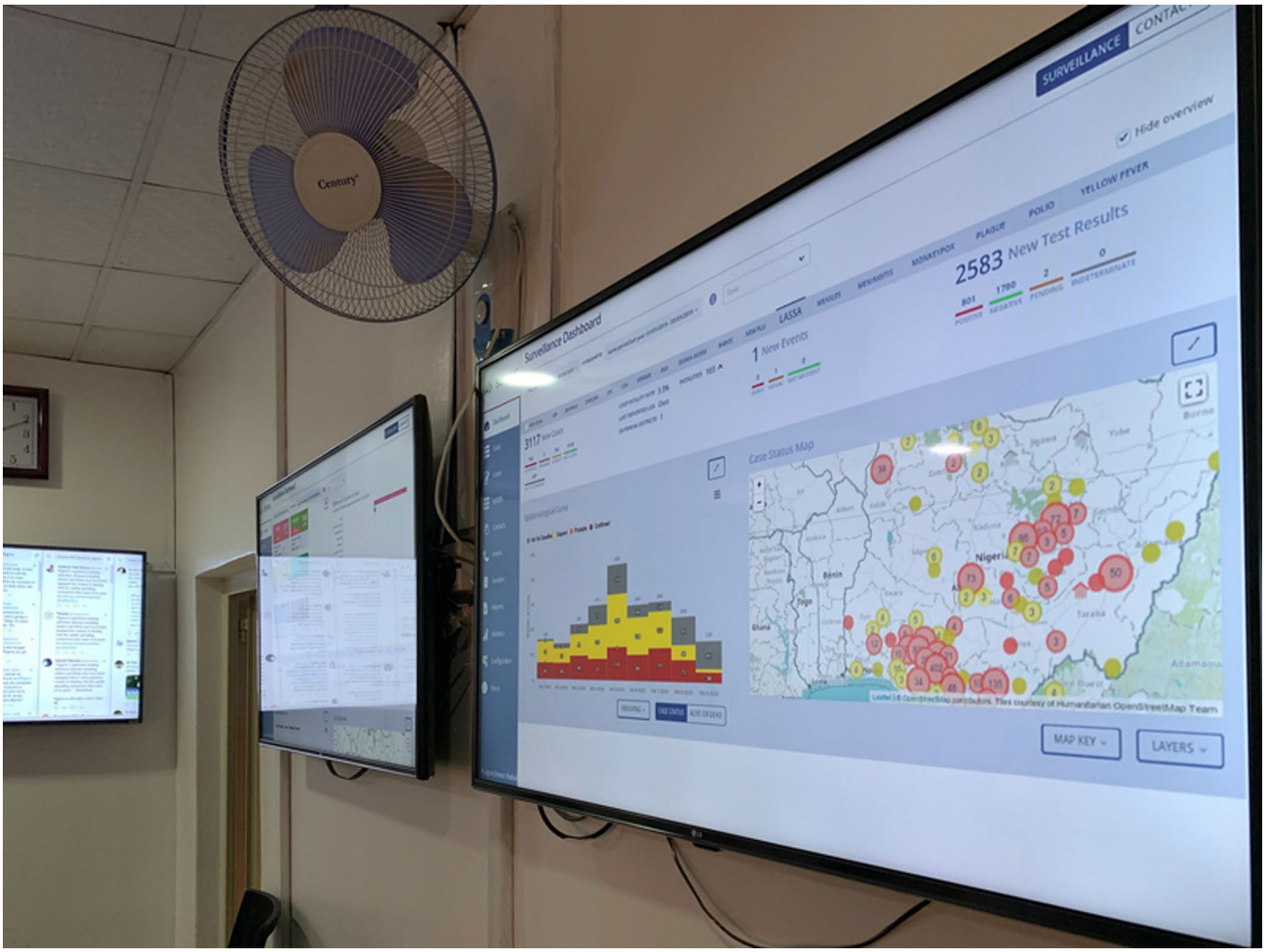
Over the past decade, a number of intercountry and regional collaborations have been established with the goal of ensuring shared capabilities. Olaolu remarks that it was only as a result of the 2014 Ebola epidemic that Nigeria realized the need for a public-health institute to be able to combat infectious disease; this culminated in NCDC's being signed into law in 2018, which gave the center the legal backing to perform its functions.

"We've been improving on the structure we had during the 2015 Ebola outbreak to ensure that the incidence management system we used to respond rapidly to public health emergencies is not just at the national level but we also at the state level. We've been training personnel and rapid response teams exist throughout the states. We are moving from paper to digital. We now have capacity to test for diseases that we didn't have before. We now have a network of laboratories. People are more enlightened. We have social media to pass messages across to people. There is much trust in the government now, and we expect people to take their health more seriously."

Ifeanyi Nsofor, Senior New Voices Fellow at the Aspen Institute and Senior Atlantic Fellow for Health Equity at George Washington University, believes that Nigeria has shown other African countries that a national public-health institute like the NCDC is important for leading epidemic preparedness, prevention and response. He also highlights the importance of their being supported by a strong legal framework.

"Heads of African governments must demonstrate strong political will in supporting their national public health institutes. Africans must realize that health security equals national security. It is more cost-effective to prioritize health security," Nsofor says.

The capacities of Nigeria and other member countries are being boosted on risk communication, healthcare preparedness and enhancement of surveillance at points of entry for COVID-19 by the Africa Centres for Disease Control and Prevention (Africa CDC), which is taking a leading role in this response. Africa CDC, which was modeled on the US Centers for Disease Control and Prevention, was first devised in 2013 and was officially launched in January 2017 by the African Union after the 2014–2016 Ebola epidemic, to improve the surveillance of, emergency response to and prevention of infectious diseases. It is also assisting member countries to build infection prevention and control capacities in healthcare facilities and is working with the airline sector to support



Surveillance trends for various diseases that are being monitored by the NCDC. Another screen is being used to monitor conversations on social media that can be relevant to the control of COVID-19, especially risk communication. Credit: Paul Adepoju/Nature Medicine

the screening of travelers. The organization has been organizing training sessions for representatives from member states on the various focus areas, and it is also coordinating with partners to establish sequencing capacity in six African reference laboratories, in addition to external quality assessment and proficiency testing for all laboratories with COVID-19-testing ability. It is also providing a central framework through which individual African countries can access essential support to meet their specific COVID-19 needs. Africa CDC is funded by the African Union, and it recently announced that a total of US$25 million has been committed to Africa by the Bill and Melinda Gates Foundation, for the COVID-19 outbreak.

African countries without capacity to test for COVID-19 can also leverage the WHO's existing specimen-referral network for influenza. The WHO's Global Influenza Surveillance and Response System was founded in 1952. Since the 2009–2010 influenza pandemic, laboratory capacity to diagnose, by RT-PCR, infections with influenza virus in the African region has grown, with 30 of 47 countries (64%) now able to detect such infection. For countries that do not have the testing capacity yet, the WHO curates a database of laboratories in Africa to which samples can be shipped. This already existing referral system is being deployed to ship specimens meant for COVID-19 testing in African countries without the ability to test for this coronavirus disease.

Element of luck

Despite Nigeria's preparedness for COVID-19, the director general of the NCDC, Chikwe Ihekweazu, believes that the country has been lucky with the first confirmed case of the disease.

As with many other countries around the world, Nigeria's prevention efforts are limited to screening international travelers at its airports while promoting handwashing and hygiene among the general populace. The country is relying on temperature screening at the airport, travelers' travel history and promotion of self-isolation for people visiting Nigeria from countries with numerous confirmed cases of COVID-19.

According to Ihekweazu, the country has a temperature scanner at the airport, and the patient filled out the form he was given on arrival. Furthermore, when he started having symptoms, he did not engage in self-medication, and the doctor he visited also took the patient's travel history and was able to immediately connect him with the isolation center in Lagos that facilitated safe movement and testing.

"If the patient had boarded a local flight upon arrival to [a distant and densely

populated city such as] Kano and had visited public places such as a church or a mosque, the disease would have spread by the time we got the first sample. This is my biggest fear. We are trying to show we are resilient across the country, but Nigeria is a big, complex and diverse country. There might be capabilities in Lagos and Abuja, [but] we also need to be able to quickly activate response mechanisms elsewhere," Ihekweazu says.

COVID-19-prevention strategies are largely lacking at local airports, and individual establishments are not compelled to introduce drastic measures to prevent COVID-19, although some are introducing temperature scanning and handwashing on their own.

Olaolu tells Nature Medicine that the patient is clinically stable and is being monitored, and his symptoms are being managed.

"The patient currently is not on any main treatment; we are just observing him. He is doing well, he has his laptop to himself, he communicates and doctors have been seeing him," Olaolu says.

Olaolu and other members of the team operate from the Incident Coordination Centre on the premises of the NCDC, where they get live updates from across the country via teleconference, coordinate rapid response teams and monitor Twitter trends on COVID-19.

Of note, the system did not detect at the airport that the person was infected. But Ihekweazu and Olaolu insist this does not suggest a failure of the system, since other countries were also unable to identify their first cases at the airport.

On the basis of these concerns, Ihekweazu and Olaolu say there are no guarantees that there are no additional cases of COVID-19 that are yet to be detected in Nigeria.

"We are not fooling ourselves that there will not be any other case. But if it comes up, how quickly will we be able to identify the person and quickly isolate? That is what we are really working hard towards," Olaolu says.

Ihekweazu, who was part of a24-person WHO team that toured China for 10 days to study that country's response to COVID-19, notes that waiting for people to be symptomatic before isolating them may have already translated into more cases.

"The size of Wuhan is similar to that of Lagos. Imagine Lagos on Election Day for one month. There is organizational structure in the society to deliver food and medicine to people stuck at home. I can't say we are able to do that in Nigeria, and I've also not seen any other country do that. Nigeria operates on a federal system; the president cannot order local governments to shut down their regions without deploying the military."

The detective work continues

"Even with the best measures in place, this is a virus; you can't stop people from travelling," Ihekweazu adds.

Health officials' inability to successfully contact every passenger on the flight to Nigeria that the patient boarded has also brought attention to another potential loophole in the prevention plan. According to Olaolu, some of the passengers did not provide accurate contact details as required upon arrival, which has made it difficult—almost impossible—to contact every passenger on the flight.

"We are contacting people on the plane with him: those seated two rows before him and two rows after him. We are contacting people on that plane and we are calling them. But some gave phone numbers that are not reachable, some do not even have phone numbers, especially if they are non-Nigerian visitors to the country. We are calling the phone lines we were given but we need people to be truthful," Olaolu says.

Public health expert Ogunniyi Abiodun, while decrying the booming business of facemask sales, adds that the general public also needs to be enlightened on self-isolation, handwashing and maintaining distance from people who are coughing.

Misinformation menace

Considered a major threat to COVID-19-intervention efforts in Nigeria and elsewhere, the spread of incorrect information on the SARS-CoV-2 coronavirus, the causative agent of COVID-19, has become a subject of concern to Nigeria's experts on public health and infection prevention and control. Abiodun notes the general public might get confused about whom to trust.

"The government needs to put up a system anyway to address the rumormongers and provide regular updates on the true situation of things. Trust-building process and [a] better rumor-management system will work, wherein the response from the government will be timely and sanctions put in place for initiators of fake news," he tells Nature Medicine.

According to the Nigerian Communications Commission, between 2014 (when Nigeria had the Ebola disease outbreak) and December 2019, the number of active telecommunication lines in Nigeria increased by over 45 million. With more Nigerians having access to mobile communications, misinformation has become easier to distribute and more impactful than it was in 2014.

Platforms such as Facebook, Instagram, Twitter and WhatsApp messenger have become effective channels through which misinformation can go viral within a short period of time. Facebook, which owns three of four of these platforms, tells Nature Medicine that it has taken a number of measures to address misinformation. These include a new policy prohibiting ads for products that refer to the coronavirus in ways intended to create a panic or that imply that their products guarantee a cure or prevent people from contracting it.

"To help bolster and extend those efforts, we are providing ad credits to the WHO and the NCDC to enable them to run coronavirus education campaigns on Facebook in Nigeria, which we will continue to do," Facebook tells Nature Medicine.

The company has also expressed its readiness to partner with governments, technology companies and civil society to respond to the immense challenge presented by this coronavirus.

"We have engaged health ministries around the world to provide simple ways for citizens to receive accurate information about the virus. While more than 90% of messages sent on WhatsApp are between two people, we work hard to curtail viral messages by banning the sending of mass messages and curtailing how messages can be forwarded. We have also run local education campaigns across a number of countries including Nigeria to help encourage people not to not spread rumors and will continue to work with partners on how to increase the resilience of local communities to misinformation," Facebook states.

But Ihekweazu describes COVID-19 misinformation as a serious problem caused by people who are intentionally disseminating wrong information with the intention of going viral.

He says: "We live in a new world. Even during the Ebola outbreak, social media wasn't used as it is now. What I've realized in the past few days is that these are not errors; these are people carefully designing messages to go viral that are false."

Life goes on

Ihekweazu says that the NCDC alone will not bring about health security for Nigeria; he describes this as an all-encompassing responsibility for everyone, including people with suspected cases of COVID-19, citizens in general and government at all levels investing in building local capacities.

"What is underreported from China is how much the society takes responsibility

for the response. Everybody is focused on getting China back on the business path. They are all doing what they need to do because they know by controlling this outbreak, they have the opportunity to push China back onto its feet. Everybody is involved. That type of societal mobilization is very hard here because we are polarized and everything is seen through the eyes of politics and religious sentiments. There are times when the country has to come together, and there is no better time than this, when we face a challenge we cannot see but is circulating," he tells Nature Medicine.

While Nigerian federal lawmakers announced suspension of deliberations in their chamber as a result of COVID-19, across Nigeria, the daily lives of citizens remain largely unchanged as schools remain open and large gatherings continue to occur.

On the day that the first case was announced, Muslims across Nigeria attended the Friday prayer service. On Saturday, wedding parties were still held. On Sunday, the country's numerous megachurches held multiple services, including the world's largest church, the 100,000-person-capacity Glory Sanctuary Dome in Nigeria's capital city of Abuja. ❐

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