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Ramping up SARS-CoV-2 testing in Africa

More than 140 disease outbreaks are detected annually in Africa, in addition to the threats of antimicrobial resistance and the high burden of endemic diseases such as tuberculosis, AIDS and malaria.

In January 2020 when the World Health Organization declared COVID-19 a public health emergency of international concern, surveillance and laboratory systems to support rapid management of outbreaks and effective control of endemic diseases in Africa was very weak. Only Senegal and South Africa had the capacity to conduct laboratory tests for Severe Acute Respiratory Syndrome Virus 2 (SARS-CoV-2), the causal organism for COVID-19.

“The most trying time for the continent was when we knew what to do in terms of diagnostics but didn’t have the tools and capacity to do them,” said Dr John Nkengasong, Director of Africa CDC.

Africa CDC stepped in immediately, partnering with the WHO and other organizations to convene the first continental training on SARS-CoV-2 diagnostics at the Institut Pasteur Senegal, in the first week of February, and a second training at the Roche Diagnostic Campus South Africa in the second week. Other training followed, along with the provision of start-up reagents and test kits to laboratories that participated in the training.

By the end of April 2020, 48 Member States had been supported to develop verified testing protocols for SARS-COV-2 and had acquired the capacity to test for the virus using the reverse transcriptase polymerase chain reaction test.

“The training facilitated by Africa CDC was transformational. We were afraid to start testing for SAR-CoV-2 because as healthcare workers we are also at risk. However, through the practical sessions and networking with other laboratory experts we became confident and were ready to start testing,” said Maruping Kenosi, Ministry of Health and Wellness, Botswana.

However, the increased demand for test kits, face masks, personal protective equipment and other medical supplies caused severe scarcity globally. Factories, suppliers and healthcare facilities ran out of test kits and supplies very quickly as demand surpassed production. Africa was badly hit because most of its medical supplies came from Europe, America and China.

“Africa CDC started addressing the pandemic very early through our continental strategy, but we were faced with the serious challenge of getting test kits and personal protective equipment because of the fierce competition we faced with the developed world for the limited available supplies,” said Dr Nkengasong.



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Recognizing the threat that such scarcity posed to the pandemic response across the continent, Africa CDC began mobilizing resources and support very quickly to source and distribute essential supplies to Member States through the supply chain and logistics system it had established as part of the Africa Joint Continental Task Force for COVID-19 (AFTCOR). Before Africa reported its first COVID-19 case in February 2020, Africa CDC had sourced and distributed 933,750 test kits and 22,995 other supplies to 15 Member States to meet their initial needs.

Support to Member States continued as Africa CDC launched the Partnership to Accelerate COVID-19 Testing (PACT) in March, which aimed to mobilize partnerships, experts, community workers, supplies and other resources to enhance COVID-19 testing, tracing and treatment in a timely manner across the continent.

PACT enabled the continent to scale-up testing from less than 300,000 in April to 22 million by the end of November, as organizations and countries made financial and equipment donations. In the first two weeks of September alone, Africa CDC distributed 1.4 million test kits worth over US\$6.8 million to Member States, bringing the total number of test kits distributed to nearly 5 million. And by the end of 2020, Africa CDC had distributed over 6.3 million test kits, including the antigen-based rapid diagnostic kits.

“Africa CDC has not only supported capacity building but also provided test kits and other supplies and this has helped Member States to conduct more testing and tracing, and to identify and isolate infected persons, thereby limiting transmission across the continent,” said H.E. Amira Elfadil Mohammed, Commissioner for Social Affairs, African Union Commission.

“PACT is an incredible initiative that has helped Africa CDC to build partnerships for the smooth supply of essential medicine and test kits to countries to ensure that they have predictable access to essential supplies,” said Dr Nkengasong.

Moreover, Africa CDC coordinated efforts to create a pathogen genomics

sequencing laboratory network in the continent, supporting 15 Member States with equipment and/or reagents for SARS-CoV-2 sequencing.

“The pathogen genomics network is essential in the response to COVID-19. Sequencing will enable countries to understand how the virus is introduced and transmitted, and by comparing the genomes of viral strains from different SARS-CoV-2 samples, public health officials will know how they spread through the population. This information can help direct mitigation and control measures as we have observed in the case of the new variants reported in South Africa and the United Kingdom a few weeks ago,” said Dr Yenew Kebede, Head, Division of Laboratory Systems and Networks at Africa CDC.

In addition to the test kits and laboratory equipment, Africa CDC provided about 14,000 GeneXpert cartridges and other supplies to support COVID-19 diagnosis across the continent. Africa CDC supported training for more than 1800 laboratory personnel and conducted a series of webinars on different aspects of SARS-CoV-2 diagnostics for more than 19,000 participants.

The laboratory technical working group of AFTCOR facilitated the development of important guidelines and manuals that helped Member States to standardize testing and address quality issues. These include the testing strategy and algorithm for COVID-19, guidance on the use of antibody test for COVID-19 response, pooled testing strategy, a biobanking manual, and guidance on the use of rapid antigen tests. Training materials were developed and distributed to Member States on PCR testing, use of GeneXpert for SARS-CoV-2 testing and the use of antigen rapid diagnostic tests.

The continental leadership provided by Africa CDC in strengthening laboratory systems for COVID-19 response is helping Africa to meet its testing needs and has a good foundation for the capacity to better respond to disease outbreaks in the future. It has helped improve the turnaround time for testing and allowed countries to quickly isolate positive cases and trace their contacts.



PACT

receives a boost in Cameroon



#TestTraceTreat is the slogan for PACT, which aims to mobilize partnerships, experts, community workers, supplies and other resources to enhance COVID-19 testing, tracing and treatment in a timely manner to minimize the impact of the pandemic in Africa. Since the inception of PACT, Africa CDC has supported Cameroon with 10 rapid responders and 95 community health workers. This is in addition to healthcare workers and rapid responders that the country has also hired to strengthen its response.

To promote community involvement in the response and expand the reach of the rapid responders and community health workers, Cameroon has invested in the training and deployment of community relays. From the extreme north to the southern parts of the country, via the central and Adamaoua regions, Cameroon has deployed 720 community relays and 120 community supervisors in 40 districts. Through a series of training

sessions conducted over three months by rapid responders deployed by Africa CDC, these community relays learnt the principles and practice of epidemiological surveillance and community engagement at the community level and they are now supporting contact tracing, sensitization and awareness about COVID-19 in the communities.

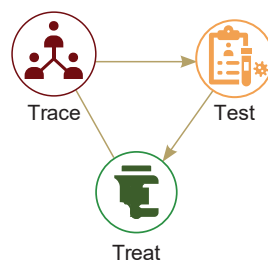
“Through the training, I acquired knowledge that enables me to interface with the community and health services and effectively approach our populations and sensitize them about COVID-19,” said Doline Akamba, one of the community relays.

“We conduct home visits to educate people about COVID-19 prevention and help mobilize contacts for testing when needed,” said Ndjoko Calvin.

“This support by Africa CDC has helped penetrate more districts and improve coverage of epidemiological surveillance,” said the Head of the Ebolowa Health District in southern Cameroon.

The community relays are local opinion and community leaders, and the rapid responders are experts who have supported Ebola Virus Disease response in the Democratic Republic of Congo. They were deployed to Cameroon in May 2020.

The community approach has proved useful in engaging populations during public health emergencies, leading to significant reductions in morbidity and mortality.



The case for COVID-19 case management in Africa

Managing cases effectively and in a timely fashion in a public health emergency is very crucial to minimizing morbidity and mortality. The COVID-19 pandemic sparked a global health crisis that has seen countries battling to meet the critical need for patient care at healthcare facilities and at home. Although Africa has not witnessed high death rates due to COVID-19 as in other continents, from the time the first case was reported in Egypt in February 2020 the number of cases has continued to increase daily with severe impact on the health system. Before COVID-19, Africa's health system had been seriously impacted by the care for other diseases like AIDS, tuberculosis and malaria and disease outbreaks like cholera, Ebola, yellow fever and listeriosis were common.

At the onset of the pandemic, case management of COVID-19 patients was a big challenge. The disease was new and clinicians had no guidance or approved treatment to effectively tackle it. Hospital beds were getting filled up with COVID-19 patients, some of whom were dying very quickly. Until now there is no approved medicine for the disease but there is respite with the use of a combination of drugs.

“COVID-19 presented many challenges to patient care. Africa already had a shortage of physicians and they were often overwhelmed. The sudden inflow of COVID-19 patients caused a lot of panic, fear and uncertainties at healthcare facilities,” said Dr Tajuden Raji, Head of the Division of Public Health Institutes and Research at Africa CDC.

With guidance from the WHO, clinicians began studying the clinical spectrum of the disease, to learn about the virus and how it affects the patients.

In fulfilment of its mandate and to bridge the huge gaps in clinical care skills and knowledge among healthcare workers, Africa CDC began supporting Member States to implement quality care at home and at healthcare facilities. Through the clinical care working group of AFTCOR, Africa CDC brought healthcare workers together for specialized training and knowledge exchange on the management of COVID-19 and related comorbidities.

With attention to workforce development as an essential part of health system strengthening and a critical factor in the survival of patients, training was delivered in different formats, including face-to-face meetings, weekly webinars and other virtual forums.



“COVID-19 has presented a unique opportunity to accelerate workforce development and capacity building of health institutions. Because of COVID-19 there are now very broad discussions on how to strengthen health systems in Africa and this is a positive thing,” said H.E. Amira Elfadil Mohammed, Commissioner for Social Affairs, African Union Commission.

To ensure that physicians have the capacity to treat such highly infectious and new disease, Africa CDC facilitated learning sessions with Chinese doctors to share experience of how they managed COVID-19 patients in China. Through the Africa CDC Institute for Workforce Development, Africa CDC established the Clinical Community of Practice, a knowledge hub containing latest COVID-19 literature and evidence and **ASK ME ANYTHING** office hours which holds twice a week to answer questions about COVID-19 case management.

Africa CDC supported the development of a curriculum for home management of mild cases of COVID-19 to help reduce pressure on healthcare facilities across the continent, and supported Member States in adapting guidance documents by the WHO to local context.

These interactive sessions and platforms have been very useful in helping clinicians to contextualize the pandemic and provide quality care across the continent.

Caring for COVID-19 patient remains a huge challenge because of the need for special treatment at intensive care units equipped with ventilators and oxygen concentrators, which are in short supply across the continent.

Current evidence on the clinical course of COVID-19 indicates that 15 percent of cases in Africa are severe and 5 percent are critical, requiring supportive oxygen therapy and mechanical ventilation, respectively. This is a significant

proportion that requires adequate and careful attention.

A capacity assessment of intensive care units conducted by Africa CDC in July 2020 showed that most Member States had very limited intensive care unit capacity: one-third of Member States had four or less mechanical ventilators per million population. Africa CDC, therefore, sourced and distributed oxygen concentrators, ventilators, gas analysers and dexamethasone tablets to support clinical care of COVID-19 patients by Member States. By the end of December, Africa CDC had supplied close to 9 million Dexamethasone tablets, 136 oxygen concentrators and 805 ventilators to Member States.

Following the approval of COVID-19 vaccines, Africa CDC started preparing Member States for vaccination by developing frameworks and guidance documents, including vaccine regulatory guidance. Africa CDC had earlier published several other guidance documents on case management of COVID-19 patients.

Using the results of a survey on the knowledge, attitude and perception towards the COVID-19 vaccine conducted in 15 African countries, Africa CDC is facilitating stakeholder engagement across the continent to enhance acceptability when the vaccine becomes available.

The COVID-19 pandemic has disrupted the provision of other healthcare services the same way it has disrupted economic activities across the globe as attention is shifted to caring for COVID-19 patients who often require emergency attention. Africa CDC continues to provide guidance to Member States on how to supplement service provision using ad hoc staff who are also being trained to support patient care.

Home management boosts COVID-19 care in Zambia



An interview with Dr Victor Mukonka, Director, Zambia National Public Health Institute and former Interim Coordinator of Africa CDC Regional Collaborating Centre for Southern Africa

Please tell us some of the unique and innovative methods Zambia has adopted to minimize COVID-19 case fatality.

Zambia adopted a centralised and specialised approach, with each province having a central facility for the management of severe cases that require oxygenation and specialist treatment. This is because there are not enough specialists in the country. Adoption of the home-based model has helped reduce pressure on the healthcare system and allowed better care for severe cases. We have also incorporated the use of novel therapeutics, including convalescent plasma and Remdesivir.

Reports from different countries have shown that COVID-19 has overwhelmed the healthcare system, what strategies is Zambia using to manage caseload at facilities?

The home-based model or community model has reduced the burden on healthcare facilities and healthcare workers. It has allowed better management of cases and use of non-clinical staff, such as environmental health practitioners and community health workers. It has reduced to patient monitoring the burden of care for asymptomatic and mild cases.

Some patients require home management, how are you combining this with clinical care at facilities?

Home care patients are managed by trained community health workers who are supervised by physicians, thus reducing the workload on healthcare workers and allowing better clinical management. To support this strategy, we follow-up patients on home management and their contacts through a call centre.

COVID-19 was not expected to have such devastating effect, what are you doing as a country to build resilience and prepare the healthcare system for any outbreak of this magnitude in the future?

In Zambia, we continue to build capacity through training of healthcare providers in the various pillars of response, including coordination. An 8th pillar, continuation of essential services, is a key component of the response and we are working hard to successfully implement this concept.



We have received reports of COVID-19 infection among healthcare workers, what do you think is responsible for this?

Non-adherence to infection prevention and control (IPC) protocols, fatigue, over-confidence by healthcare workers in their ability to manage safety, poor administrative controls, and limited infrastructure for adequate IPC all contribute to infection among healthcare workers.

What is Zambia doing to prevent or reduce such infection among healthcare workers?

We continue to provide IPC training, implement safety checks by safety officers, provide enough personal protective equipment (PPE), improve administrative controls by using standard operating procedures, and to improve isolation infrastructure. Healthcare workers also work two weeks on and two weeks off so they can have enough time for rest.

What kind of support does the country provide for healthcare workers who get infected in the line of duty?

We ensure that they receive early clinical management support. We quarantine the asymptomatic in a facility until they have a negative COVID-19 test, and we test and manage their close contacts according to the guidelines.

What other comments would you like to make on case management in Zambia?

There is a need for collaborative research, workforce development and sharing of standard operating procedures as well as innovations in the Southern Africa region. There is also a need to strengthen manufacturing of case management commodities and supplies locally, including PPE, to ensure that they are available for the safety of healthcare facility staff and patients. The dependence on imported commodities poses a serious challenge to the supply chain management.



From online learning to antimicrobial resistance stewardship

As I sat down to apply for the Africa CDC course on antimicrobial resistance (AMR), I realised just how wide our scope of work is as public health experts. Admittedly I have some general knowledge but not the nitty-gritty. The AMR course is designed for policymakers, key decision-makers and frontline health professionals.

After 6-8 weeks, I became more and more aware of the grave threat of AMR on all fronts; public health, agriculture, environment and even the economy. One of the key messages I will never forget is that use and misuse of antimicrobials in humans and animals is ever-increasing. We are looking at about 700,000 deaths annually due to AMR. And if this trend continues, the death toll could reach over 10 million per year globally by 2050, with financial losses of over US\$100 trillion.

The [Interagency Coordination Group on Antimicrobial Resistance](#) has explicitly stated that AMR is a significant threat to achieving universal health coverage (UHC). The critical question to ask is, are we even considering AMR within UHC? And the honest answer is, it is not a priority in the UHC policies of many countries.

I was particularly excited about the concept of [One Health](#) introduced in the course, it rightly shows that all sectors are very crucial in addressing AMR – health, trade and industry, agriculture, name it. We know this



Dr Shakira Choonara

in the development space, but we practically do very little or nothing about it. What definitely stood out when learning more about the One Health approach were the recommended videos on how antimicrobials are mostly being associated with [superbugs](#) used to treat most of the animals we consume as meat (literally I recall a video on the chicken), and importantly, how difficult it is to regulate this at the field level.

Within the sexual and reproductive health rights space, AMR does not dominate our conversations, but it should. There are increasing examples of AMR in sexually transmitted diseases such as [Gonorrhoea](#). Other concerns extend to multi-drug resistant [tuberculosis](#), [HIV and malaria](#); countries that have high HIV and tuberculosis burdens are likely to suffer as the gains in treatment will be reversed by AMR. AMR has the potential to shake

sub-Saharan Africa even further, especially given the impact on sexual and reproductive health rights. This is perhaps the loudest message that must be amplified during the annual World Antimicrobial Resistance Awareness Week.

The world will clearly need a lot more than one World Antimicrobial Resistance Awareness Week each year. There is a need to pay sustained attention to antimicrobial awareness. The other approach is to have strong AMR stewards who will place this at the top of the public/global health agenda. Crucially, we need stewardship at the implementation level, for farmers and for health professionals who can play a powerful role in protecting the populace. At the heart of it all, the most powerful stewards will be patients and consumers themselves who at present may not be aware of the gravity of the situation and will need to demand drastic changes to control AMR. If all it takes is an online course, one recommendation would be to rollout this course further and wider.

Finally, as each of us become increasingly resistant, it is a matter of life and death for many, AMR is not something to be taken lightly.

Written by Dr Shakira Choonara, award-winning independent public health practitioner and a member of the African Union Youth Council.

South Africa balances COVID-19 and other healthcare services

South Africa has realized that significant emphasis on tackling the COVID-19 pandemic may cause a ‘crowding-out’ effect, resulting in the reduction of services for other critical public health priorities such as maternal and child health programmes. The country has adopted the following key interventions to maintain essential health services during the pandemic:

- 1. Identifying key risks and vulnerabilities across other priority healthcare areas** – through long-standing investments to combat the “big three” infectious disease burdens of HIV/AIDS, tuberculosis and malaria,

and hard-earned progress to reduce and treat infections relating to communicable and non-communicable diseases, to critical services ranging from reproductive, maternal, new-born and child health.

- 2. Medication delivery and dispensing** – to deliver key services and mitigate the harmful impact of COVID-19 on other health priorities. South Africa has recognized the value of enabling access to longer courses of medication and multi-month refills, particularly for HIV and tuberculosis programmes through,

for example, implementing policies for extended prescriptions and multi-month dispensing of antiretroviral drugs.

- 3. Community-based care** – Non-healthcare professionals, such as community healthcare workers have already formed the backbone for primary healthcare provision in South Africa. In the context of COVID-19, South Africa is using community healthcare workers and technology to facilitate home-based screening, testing and contact tracing to continue providing services outside healthcare facilities



while appropriately triaging and referring people with more acute needs to higher-level care.

4. Dedicated treatment spaces

– Various pieces of technical guidance have highlighted the role of dedicated healthcare spaces for COVID-19 patients to reduce exposure risks among already vulnerable patient groups and to help allay fears about seeking needed services during this crisis. For example, South Africa has established dedicated COVID-19 treatment centres or

5. mHealth, digital tools and ICT solutions

– South Africa continues to use MomConnect as a digital technology solution for maternal and child health programmes and patient care during this crisis. We have rolled out GovCheck as a tool for screening COVID-19

symptoms, including screening most common co-morbidities such as hypertension, obesity and diabetes.

6. Mobilizing resources to support service continuity and adaptations, evidence-informed prioritization, and post-COVID recovery efforts

– South Africa is working with partners to provide grant flexibilities and additional support for country response to the pandemic and to continue in the fight against HIV, tuberculosis and malaria.

Africa must manufacture its own PPE



Protecting healthcare workers during a public health emergency is a priority so they can remain alive to take care of patients. However, at the beginning of the COVID-19 pandemic, surgical masks and other PPE were in short supply, a situation that posed a serious threat to the safety of healthcare workers and the long-term goal of providing quality care.

“The issue of healthcare workers is very important to us because they are the ones helping to fight the disease. We don’t have enough of them on the continent and losing even one healthcare worker will make the situation more complicated,” said Dr John Nkengasong, Director of Africa CDC.

The COVID-19 pandemic uncovered the fragility in the PPE supply chain

and exposed the dependency of many African countries on imported medical supplies. The disruptions in the global supply chain resulted in limited supplies and associated price increases in a system where resources for healthcare services is inadequate. This situation therefore left African Union Member States in dire need of PPE, forcing them to think of how to optimally use the limited available supplies.

With guidance from Africa CDC, healthcare workers innovatively managed PPE supplies to protect themselves. But how long can they continue doing this? In the long-term, national governments, in partnership with non-government actors and the private sector must invest in local PPE production and build sustainable systems that will guarantee continuous supply of PPE to frontline health workers.

Investment in PPE production will serve two purposes: in the short-term, it will help protect healthcare workers as they respond to the COVID-19 pandemic, and in the long-term it will ensure that Africa has enough PPE supplies for future pandemics.

“Africa cannot continue to import over 95 percent of its PPE requirements, or be dependent on other continents for medications or vaccines. In the new public health order for Africa, we must go into manufacturing of diagnostics and medical equipment to keep feeding the PPE need of the continent,” said Dr Nkengasong.

Through the infection prevention and control technical working group, Africa CDC supported a mapping exercise to identify local manufacturers of

PPE on the continent. Findings from the mapping highlighted the lack of domestic capacity to meet the continent's PPE requirements, limited systems for large-scale procurement and limited national regulatory standards for the accreditation of new PPE producers.

To promote local PPE manufacturing, therefore, the IPC working group convened a high-level workshop that brought together over 500 stakeholders from the manufacturing, regulatory, marketing and logistics and development sectors.

The workshop discussed key issues in PPE manufacturing, including standards and regulatory frameworks, quality assurance systems, coordination and collaboration, resource mobilization, procurement and supply chains, post-marketing surveillance, and the protection of intellectual property rights and patents.

“The new normal for us is to fix some of the bad things in the old normal by establishing better health systems, providing better education and improving our markets by focusing on local manufacturing of medical equipment and supplies,” said Dr Ilesh Jani, Director-General, National Institute of Health, Mozambique.

The discussion and partnerships have fostered new initiatives in PPE manufacturing and distribution in Africa. For example, a company in Nigeria has positioned itself to repurpose its manufacturing plant to produce 30,000 PPE on average per day and another private cooperation in Ethiopia is working with the government to repurpose their industrial park for the production and



distribution of PPEs for local use and for export.

In addition to promoting local PPE manufacturing, Africa CDC established partnerships that enabled the procurement and distribution of PPE to African Union Member States to meet the immediate needs. As of 31 December 2020, Africa CDC had procured and distributed over 12.6 million masks, more than 600,000 protective suits, 5 million face shields, more than 9000 goggles, over 1.6 million gloves, and more than 37,000 hygiene caps.

Africa CDC continues to promote initiatives to advance PPE manufacturing across the continent by encouraging investment in the establishment of national production systems, supporting

the development of continental standards for PPE manufacturing and fostering partnerships between national regulatory agencies and the manufacturers and suppliers of PPE.

Through training and knowledge sessions, Africa CDC is promoting correct and consistent use of PPE by healthcare workers and rapid responders across Africa.

“Prevention is the biggest tool to protect our healthcare workers and the entire population and it holds the key to ending this pandemic. No matter how awful prevention measures appear we must be thoughtful and forceful to ensure that healthcare workers and frontline workers have the IPC skills and observe the measures to protect themselves,” said Dr Chikwe Ihekweazu, Director-General, Nigeria Centre for Disease Control.



Africa Centres for Disease Control and Prevention (Africa CDC), African Union Commission
Roosevelt Street W21 K19, Addis Ababa, Ethiopia

+251 11 551 7700 africacdc@africa-union.org www.africacdc.org africacdc @AfricaCDC