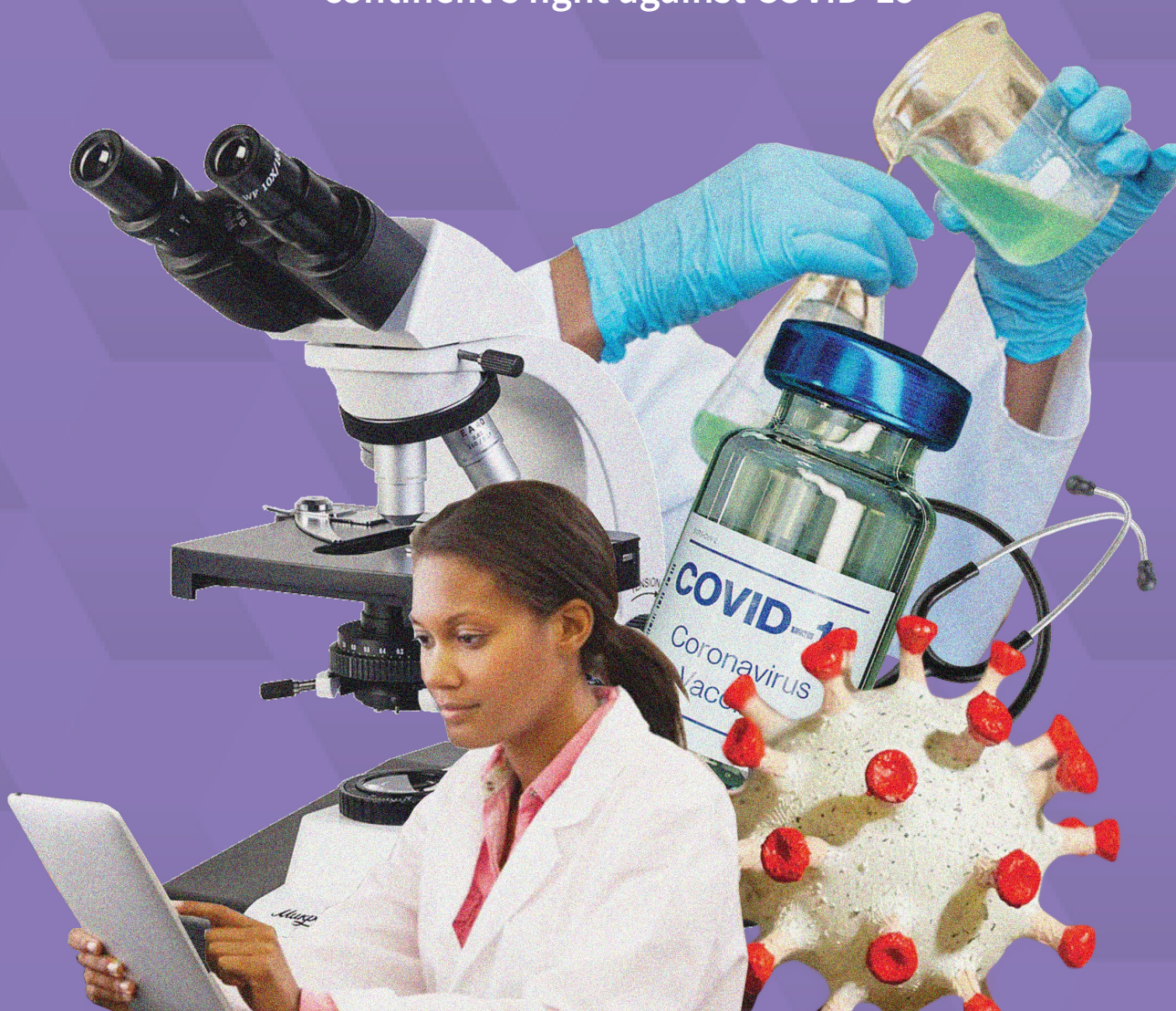


Breaking Barriers: African Women Innovating on COVID-19

Featuring stories of women using science in the
continent's fight against COVID-19



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The lesson of COVID-19 is this: if we don't work hard to address the challenges that are faced by people of different race or economic access, then at the end of the day, when a pandemic hits, we are all going to suffer.

DR. ESTHER NGUMBI

Entomology
Kenya/ USA



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I'm always going to be optimistic about vaccines. Vaccines are what saved millions and millions of lives [...] If these vaccines take a knock, then we will adapt and find better vaccines.

DR. PENNY MOORE

Infectious Diseases, Virology
South Africa



Editorial

In Sub-Saharan Africa, where only 31% of researchers are women, the story of the COVID-19 pandemic involves incredible women scientists whose work has had immeasurable impact in their fields – and across the region. The fourteen impressive women featured in this book have turned their expertise into innovation in the continent's fight against COVID-19. They are at the forefront of major innovations, strategy, and discoveries around the continent, including in South Africa, Kenya, Tanzania, Botswana, Malawi, and Egypt, to name a few.

Their stories and experiences embody what happens when vision meets steely determination. Whether it is medical doctors who turn to journalism to battle rampant COVID-19 misinformation, scientists working in laboratories to better understand the SARS COV-2 virus, engineers eager to create African solutions to African problems, academics offering solutions for food insecurity and improved education, or health workers seeing the effects of the disease in the faces of their patients, all these women faced their respective challenges head on.

What matters here, is not only that we identify the good work of African women scientists, but that we underscore their place within the historical retelling of COVID-19. As celebrants of African female achievement in the sciences, we want to say that at a time when the world was turned upside down by the worst pandemic in 100 years, African women scientists took up the charge. With resolve and expertise, African women are impacting the worlds of media, education, food security, epidemiology, and health to create better outcomes.

What follows are the stories of some of the African women who are exemplifying thought leadership in these unprecedented times. We invite you to celebrate and share their work as they build on global discourse around COVID-19 and its wide-reaching impacts.

Naliaka Odera

Content Creator: Mawazo Institute

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About Mawazo



The Mawazo Institute is a women-led African organisation supporting early-career women researchers as they work to find local solutions to global development challenges. In Kiswahili, “mawazo” means “ideas.” At Mawazo, we seek to support the next generation and uptake of homegrown and evidence-based solutions to pressing development needs.

We envision a world in which the voices and ideas of early-career African women shape the future of the continent and the world.

OUR PARTNERS

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Dr. Maryam Amour is a lecturer at the Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam, Tanzania, and a trained medical doctor who believes in never wasting a crisis. Her late father, a physician, and her mother, a nurse, inspired Dr. Amour's call to medicine. While completing a Master of Public Health programme at Dartmouth College, she became interested in infectious diseases. Her professional interests are on internal medicine, infectious diseases, particularly TB/HIV, public health, adolescent and women health.

As a recipient of the Fogarty fellowship, Dr. Amour got the chance to participate in a research training project on Tuberculosis (TB). Her specific assignment was the investigation of a vaccine product for the prevention of TB infections among adolescents in Tanzania. Later, she served as a co-Investigator in a clinical trial to test for TB vaccine among adolescents in Tanzania. This extensive work in TB research helped prepare Dr. Amour for research into another infectious disease; COVID-19.

As she recalls, the first case of COVID-19 in Tanzania was reported on March 16th, 2020 in Arusha. Dr. Amour immediately felt a strong call to action to get involved in the country's response. While face masks were being recommended by the World Health Organization as necessary

**“Not wanting to “waste a crisis.”
Dr. Amour and her colleagues
at MUHAS conducted a self-
financed research project on
the efficacy of masks made of
kitenge clothe.”**

personal protective equipment to help prevent the spread of COVID-19, misinformation about the use of face masks and the associated costs of masks available on the market made them unaffordable to low-income and poor Tanzanians.

This was an immediate pressing issue for Dr. Amour. Not wanting to “waste a crisis,” Dr. Amour and her colleagues at MUHAS conducted a self-financed research project on the efficacy of masks made of kitenge cloth, a readily available African fabric. By comparing these masks to surgical and N-95 masks, MUHAS' findings indicated that the kitenge cloth masks, while cheaper, were still effective in containing the wearers' respiratory droplets.

The MUHAS study showed that the cheaper masks were almost as effective as the surgical masks in stopping the spread of droplets. This important and timely research has shown that the use of the kitenge cloth masks holds significance in stopping the spread of COVID-19 infections in the absence of surgical masks or N-95 masks, when used appropriately.

Encouraging people to be more discerning and to listen to medical professionals when it comes to matters of health, has also become part of the job for Dr. Amour. Her goal, she says, is to continue to offer best practices for how individuals and communities in Tanzania can protect themselves from COVID-19. Dr. Amour's drive to educate the general public, and to effectively tackle health crises, has not gone unnoticed.

In 2021, Dr. Amour was awarded the 2020/21 Research Excellency Award as part of the Transforming Health Professions Education in Tanzania (THET) project; a multi-institutional project with university partners in Tanzania and the U.S. One of the goals of THET is to encourage research among junior faculty. Dr. Amour has also been actively involved in raising COVID-19 awareness and prevention both on campus, and beyond, using various platforms. Currently she is a principal investigator in a study examining the acceptance of COVID-19 vaccine among health care workers in Tanzania.

Dr. Amour is a member of the executive committee of the Medical Women Association of Tanzania (MEWATA) and serves as the head of publicity committee. Through MEWATA, she has been actively involved in advocacy and mass screening campaigns of breast and cervical cancer in Tanzania. 📍

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Marah Chibwana

Immunology
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Research Programme (MLW), University
of Oxford

Research is Marah Chibwana's great love. As a clinical scientist, Marah provides a vital connection between patients, clinical trials and research data. "To be a better clinician," she explains, "I need to be actively involved in research. I want to be part of the process that generates evidence that can inform clinical practice¹."

"We should be the ones spearheading our own research," Marah says.

Marah is guided by a central thesis: there can be no progress without research. Since 2019, she has been working at the Malawi Liverpool Wellcome Trust Clinical Research Programme (MLW). Headquartered in Blantyre, Malawi's second-largest city, MLW is a collaboration between Malawian researchers and international scientists, centered on scientific excellence and improving the lives of people on the African continent through increased, robust health research.

In 2020, as COVID-19 infections spread to the continent, the medical community in Africa was desperate to have its own data on the virus. In fact, as late as April of 2020, the majority of the available research on COVID-19's infection rates was coming from outside the continent.

¹ Clinical practice is the practice and study of medicine that is based on the direct examination of a patient.

"We should be the ones spearheading our own research," Marah says.

The lack of local research posed a major challenge for epidemiologists attempting to anticipate and mitigate the effects of the disease on the continent. Under the direction of Dr. Kondwani Charles Jambo at MLW, Marah participated as a researcher in three significant studies on SARS-COV2, the virus that causes the disease COVID-19. Firstly, Marah led one of the first serosurveys on the continent, testing blood serum from healthcare workers for COVID-19 antibodies which ascertains if they have been infected with the virus, whether or not they exhibited symptoms of the disease. As such, serosurveys can inform how infectious a virus is in a given population.

Additionally, the data gathered from serosurveys can be used to test the longevity of viral immunity in a population. Their team's serosurvey results showed that 12.3% of the individuals tested had previously

been infected with SARS-CoV-2. If we were to use these results as a sample of the population, it would suggest that the official figures of general-population COVID-19 cases in Africa were inaccurately low at the time. While it was possible that the testing procedures for the wider population had not been accessible, the difference in figures could also point towards a high number of asymptomatic patients who did not get tested.

The second project in which Marah's team at MLW was involved in, was also a serosurvey. That survey tested 1,300 subjects, a sample of the population of Blantyre to see how long antibodies remained in the population. As Marah's team had no way of predicting how long the antibodies would remain in an individual's system post infection, they ambitiously tested all the subjects within a three-week period, the largest numbers of testing that they had attempted yet. The team repeated the serosurvey process three months later, and then six months later.

The resulting data has fed into a third project that Marah is working on, about the longevity of antibodies in the system of someone who has contracted SARS-COV2. Though serosurveys were being conducted internationally, at the time there were only a few other similar projects in Africa, notably in South Africa and Kenya, that had produced data on the longevity of immunity for patients who had recovered from COVID-19.

Marah stresses the importance of Africa-specific research projects, particularly as Africa has the highest burden of disease in the world. In the last few decades, African countries have not only had to contend with communicable diseases like HIV and TB, but there has also been an increase in noncommunicable diseases like cancer and diabetes.

"It is only through creating and aggregating data on these diseases that we can become the ones leading the way in creating solutions for them," she explains. This is what Marah hopes to continue doing. In her role at MLW, she is also spearheading the Science For All Initiative, which encourages children and young people to pursue careers in clinical and biomedical sciences. As a junior researcher, still at the beginning of her career, Marah's experiences working on COVID-19 have bolstered her resolution 'that without research, we cannot make progress.' 🍷

Find her: www.twitter.com/MarahChibwana

"Though serosurveys were being conducted internationally, at the time there were only a few other similar projects in Africa, notably in South Africa and Kenya, that had produced data on the longevity of immunity for patients who had recovered from COVID-19."



Julia Jenjezwa

Engineering
Tanzania

Affiliated Organisations/ institutions:
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Global Health Technologies; Dar Es
Salaam Institute for Technology (DIT)
Design Studio



Zimbabwean engineer, Julia Jenjezwa, has been building things since she was a little girl. Some of her earliest memories involve puzzling over objects and banging things together to see how they would fit. When she pursued her degree in Mechanical Engineering at Yale University, Jenjezwa thrived in the multidisciplinary environment at Yale that allowed her to apply her craft to different fields of study. Since then, this approach to engineering has been a propellant in her life and something she is keen to pass on to other engineering students.

Like Jenjezwa, many aspiring Tanzanian engineers are drawn to the tangible aspects of the discipline. But they are dissuaded by the theoretical focus of undergraduate engineering programs in the country, which only allow them to build something significant at the very end of their course, in their senior project. As the Coordinator of the [Dar Es Salaam Institute of Technology \(DIT\) Design Studio](#), a space established and developed in collaboration with the [Rice360 Institute for Global Health Technologies](#), that is dedicated to student innovation, Jenjezwa is part of a [team of engineers](#) making engineering practical for their students.

Jenjezwa has engaged with several engineering faculty members of DIT and negotiated for sections of the courses to be turned into practical tutorials taught at the Design Studio. As a makerspace -- a publicly accessible workshop designed to

“COVID-19 demonstrated how critical it is to have design studios, especially in developing countries where needs can turn critical quickly.”

be a shared space of creativity where you can make things -- the Design Studio provides access to materials, equipment, and the latest technology, including computer aided design, 3D printing, and laser cutting, that allows for the creation of innovative projects. Jenjezwa says she loves to witness the moment when a student finally has their hands on a working prototype of something that they made.

“The vision of the Design Studio is to turn students into innovators,” she explains.

Before the pandemic, the Design Studio had forged relationships with some of the hospitals in Dar es Salaam where Jenjezwa and her students were offering ad hoc engineering services. In their initial engagement, students helped implement quick fixes to prevailing maintenance issues around hospitals. For example, repairing patient monitors or beds that no longer reclined, or creating novel suction pump systems. Once COVID-19 hit Tanzania in 2020, Jenjezwa saw an opportunity for her students to apply their skills in response to the emerging health care needs.

The Design Studio focused its attention on developing personal protective equipment for healthcare workers who were at increased vulnerability to disease spread. Over two months, their team – made up of Jenjezwa, a Design Studio engineering technician, community volunteers, and some faculty and students from DIT – created two new face shield designs, built an N95 mask UV sterilisation unit for Muhimbili National Hospital, and designed an intubation box for COVID-19 treatment. Without a makerspace like the Design Studio, Jenjezwa does not believe that they would have been able to produce this equipment.

“COVID-19 demonstrated how critical it is to have design studios, especially in developing countries where needs can turn critical quickly,” she says. The students have relished being able to create and work on relevant projects, but the experience has also exposed flawed systems holding the sector back. Despite the Design Studio having the expertise needed to address local gaps in health care, it finds itself constrained by government regulations and policies. For instance, one of the biggest issues facing Jenjezwa and her team is the lack of infrastructure

“I really want to see a situation where we see local technology being built within Africa, being scaled within Africa, and translated within Africa.”

for patenting, manufacturing, and distributing locally made equipment. With little precedent for Tanzanian designed medical hardware to be used in the country, the necessary structures required to launch a Design Studio product into the market do not exist.

Still, Jenjezwa remains encouraged and inspired by the talent of the young Tanzanian engineers she finds herself surrounded by. Under the Design Studio, Jenjezwa is pushing for more makerspaces in the country, built on partnership between academia and the private sector. As the Design Studio continues to meet the needs of its community, she yearns to see the uptake of local innovation across the continent. “I really want to see a situation where we see local technology being built within Africa, being scaled within Africa, and translated within Africa,” she stresses. 

Find her: juliajenjezwa.com





Dr. Linda Kalilani-Phiri began her career treating patients as a medical doctor but her desire to help patients before their diseases manifested and needed treatment, made her turn towards epidemiology: the study of disease conditions in defined populations.

“I realised I was seeing patients at the end of [their interaction with healthcare], and I wished I could help them before they had ever come to the clinic,” shares the epidemiologist who now supports new drug development at Glaxo-Smith Kline’s oncology department in North Carolina.

“The gulf between what the general public knows and what medical practitioners know need not be so wide.”

Once COVID-19 hit the continent in early to mid 2020, Dr. Kalilani-Phiri, like many in the diaspora, was considering the consequences of the disease in her home country, Malawi. The United Nations was forecasting that Malawi’s fragile health care system, which was already struggling to contain increasing rates of communicable diseases such as HIV and Malaria, would be put under strain by COVID-19 infections. Through formal and informal channels, Dr. Kalilani-Phiri learned that many individuals infected with COVID-19 in Malawi were seeking medical attention quite late -- well after symptoms of the virus had presented. By then, their conditions were likely to be more serious and also more likely to result in preventable deaths.

Investigating this further, Dr. Kalilani-Phiri found that there was a lot of misinformation, or sometimes, a complete lack of information, among the general public related to the COVID-19 virus.

“Social media has allowed us to connect with each other like never before,” she shares, “but at the same time, it has allowed us to spread misinformation much easier.”

In the various WhatsApp groups she belongs to and on social media feeds, Dr. Kalilani-Phiri could see incorrect speculation about COVID-19 circulating. This is backed by a September 2020 finding by UNICEF that showed COVID-19 misinformation in Malawi was one of the major hindrances in addressing the virus’ spread. Noting the absence of Malawian medical professionals who were addressing COVID-19 misinformation online, Dr. Kalilani-Phiri decided to become an informed voice in the melee. She began drafting Facebook social media posts and WhatsApp messages that debunked some of the myths she was encountering on a number of issues, including the symptoms of COVID-19, the effects of the disease, and whether Africans could contract the virus in the first place -- a popular myth proliferating as rates of infections remained comparatively low on the continent.

The response was positive, she says. For instance, she would find messages she had posted in one group making their way back to her through an entirely different group. She felt encouraged that she could potentially save lives by simply offering thoroughly researched and effectively broken-down information from a trusted voice. More recently, Dr. Kalilani-Phiri has been spending time demystifying the process of vaccine production and distribution to help encourage vaccine uptake in Malawi. Amid continued COVID-19 mistrust and misinformation, the Malawi government has taken an active role in trying to increase transparency, in order to build public trust with its citizens. In May 2021, for instance, [Malawi destroyed a batch of nearly 20,000 expired vaccines](#) to reassure the public on the quality of vaccines that were being administered.

Dr. Kalilani-Phiri has relished being able to help her country from afar. “Since January 2021, until pretty recently, all of my weekends were fully booked

“Social media has allowed us to connect with each other like never before... but at the same time, it has allowed us to spread misinformation much easier.”

[working on messaging],” she explains, as she paints a picture of the amount of work required for her online myth-busting campaign.

Dr. Kalilani-Phiri has also begun making [webinar presentations](#) where she, as a one-woman media team, gathers the latest available evidence and research and translates it into layman’s terms for her audiences. It’s important to her that accurate research not only becomes more publicised, but also that it is easily digestible. This is what keeps her working those long hours translating medical jargon into easy to understand language.

Dr. Kalilani-Phiri sees an opportunity for the medical community to learn from the pandemic and strengthen science communication, “As medical people, we don’t spend enough time explaining things clearly to [non-expert] people.”

The gulf between what the general public knows and what medical practitioners know need not be so wide. How else, she wonders, will people believe doctors more readily, especially when their lives are on the line? The right information, Dr. Kalilani-Phiri believes, can keep individuals from becoming patients to begin with, and that, for her, remains the ultimate goal. 📍

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Yariwo Kitiyo

Geospatial Information Systems
Kenya

Affiliated Organisations/ institutions:
Women in GIS Kenya

In any given situation, Yariwo Kitiyo can't wait to get her hands on the data. As a geospatial analyst and activist, Yariwo is at the forefront of gender equity in science within Kenya. Previously featured in Africa Science Week - Kenya's [2019 Breaking Barriers](#) campaign, she is the CEO and Business Developer of [Women in GIS Kenya \(WIGISKE\)](#), an organisation that is building a network and community of women innovators in the geospatial technology space.

Geospatial technology refers to all technology used to acquire, manipulate and store geographic material whereas GIS, geographic information system, is a type of geospatial technology that creates, analyses, manages and maps data. As COVID-19 infections rose in Kenya, Yariwo realised there was going to be vital data that GIS could help analyse. Data that could be useful in supporting decision making by individuals and governments.

"When we look at the history of pandemics, there are always marginalised people whose concerns we end up ignoring. In a way, pandemics expose society," Yariwo theorises.

"As COVID-19 infections rose in Kenya, Yariwo realised there was going to be vital data that GIS could help analyse. Data that could be useful in supporting decision making by individuals and governments."

For example, she points out that early in the pandemic, the major points of concern with how COVID-19 would affect Kenyans were focused on the disease burden and its impact within populations with preexisting comorbidities. What Yariwo felt was being left by the wayside were the effects on marginalised communities, like girls and women.

"The reality is this," she says, "women and girls are where the strain actually is; economically, socially, and medically."

In late 2020, under a newly founded partnership between WIGISKE and Kenya's [State Department for Gender](#), Yariwo began examining national data from police stations and crisis centres that the State Department was gathering at a county level. One of the first issues that she and her team looked at was whether or not there had been a spike in gender based violence (GBV) as Kenya went into its first lockdown, forcing many Kenyans to stay home for longer periods of time.

In February 2021, the State Department for Gender, in partnership with Healthcare Assistance Kenya, had also launched a [national toll-free Hotline 1195](#), for victims of GBV to access 24 hour confidential counselling and request help. In addition to the hotline, the State Department of Gender was collecting GBV reports from police stations across the country. Using this data, the WIGISKE team led in the creation of data analytics that mapped out the frequency and specifics of GBV in Kenya, including developing an [easy-to-read dashboard](#). Their work aided in the creation of the Gender Situation Room (GSR) under the State Department for Gender, a project where Yariwo is the technical lead.


"Ideally a situation room is a place that is able to compile mass amounts of data quickly, constantly updating spaces of shared information," she explains.

The GSR is mapping the locations of reported incidents of GBV, providing real time geo-visualisation of incidents and high risk areas. Yariwo adds that "the data shows that we need to expand our definition of violence to include more than just the physical. All types of violence against women

"When we look at the history of pandemics, there are always marginalised people whose concerns we end up ignoring. In a way, pandemics expose society," Yariwo theorises.

have been steadily increasing since 2016, and in lockdown there was a definite spike."

Yariwo and the WIGISKE also worked with the Ministry of Health in developing a [risk index for COVID-19 in Kenya](#). By questioning what factors made a community more susceptible to the spread of COVID-19 infections, the Ministry of Health could determine high risk towns and neighbourhoods and use this information to define policy on COVID-19. Lack of access to clean water, use of public transport, work that involved manual labour, and low frequency of hand washing, for instance, were all contributing factors to increased risk of infection. Yariwo's results showed that due to these factors, and more, slum areas had the highest risk of COVID-19 spread in Kenya, and therefore would need more preventative measures to curb infections.

As Yariwo continues to advocate for gender equity in the field of data science through WIGISKE, her research also remains invested in developing a better understanding of marginalised communities. She knows that with data there are many stories to tell, not just one. 

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Dr. Mercy Korir

Medical Journalism
Kenya

Affiliated Organisations/ institutions:
Standard Media Kenya, Gates
Foundation, International Centre for
Journalists

“If people had the right information, then they could do the right thing,” declares Dr. Mercy Korir, Kenya’s only medical journalist with a degree in medicine. Dr. Korir believes that equal access to healthcare is hindered by two major challenges: finances and knowledge. As a trained medical doctor, her experience as a medic taught her time again how misinformation on various treatments could be costly, especially for people in lower economic brackets. Quietly, she tells a story of a diabetic woman she came across while practising medicine. The woman halted her medication cycle and turned to alternative medicine. This decision to stop medical treatment of her condition, ultimately led to her foot needing amputation. A situation, Dr. Korir believes, would have been entirely avoidable had she had access to credible and evidence-based information.

Now, as a medical journalist and the Health and Science Editor for The Standard Group PLC, Dr. Korir takes seriously the role that mass media plays in communicating the science of diseases; helping us understand new information in this changing reality, and combating what WHO Secretary General, Tedros Ghebreyesus, referred to as an ‘infodemic’. But, she also argues that it is important for people to interrogate the information they receive – both its content and its source – and to verify it.

At the height of the first wave of COVID-19 infections in May 2020, Dr. Korir was debunking COVID-19 myths every day on her public social media

“[Newsrooms] saw the value in having a credible voice, who could address the public’s questions quickly and effectively.”

accounts, and on leading media platforms, KTN and The Standard newspaper. She read and researched constantly to make sure she had the right information for her audiences.


“I realised that any information I put out, whatever the platform, people believed it instantly. I could not afford to mislead them.”

The momentum that Dr. Korir gained as an informed news source allowed her to establish a dedicated Health and Science Desk in the Standard Group newsroom, tasked with gathering and disseminating news on health throughout the East African region. But misinformation is not just a phenomenon that occurs within discussions on COVID-19. Before the COVID-19 pandemic, Dr. Korir says, it was difficult to make the case for reporting on health. The pandemic created a need for accurate information on an ever-evolving topic and newsrooms, she explains, “saw the value in having a credible voice, who could address the public’s questions quickly and effectively.”

Here, Dr. Korir stresses how important her medical background has been, allowing her to report credibly on health. She goes on to say that it is imperative that Kenyans are informed on a diversity of health

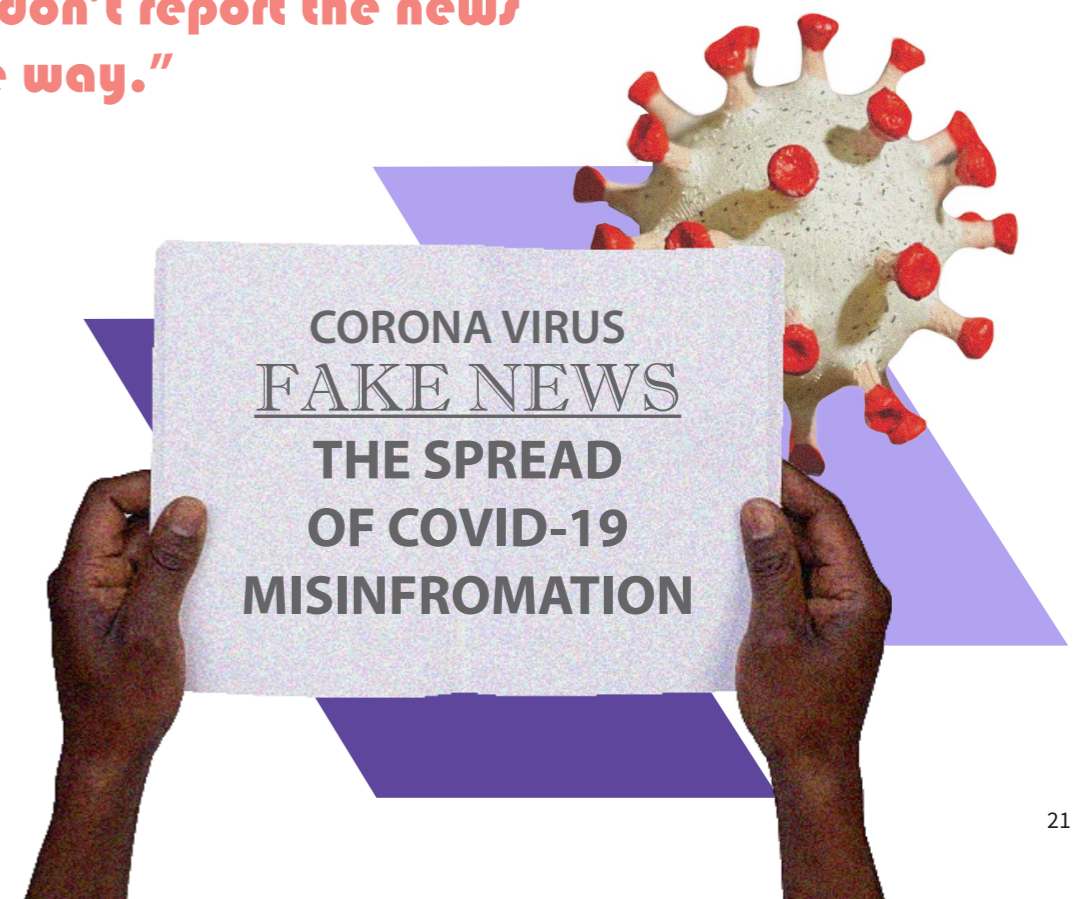
issues, including the state of the healthcare system. In Kenya, healthcare workers routinely go on strike demanding better salaries and working conditions. In fact, it was after one such doctors’ strike in 2011 that Dr. Korir first took up a communications course. A decision that changed her career trajectory.

Dr. Korir also points to the health consequences of poverty and the lack of investment in innovation in Kenya’s healthcare system as issues that need more reporting. Through her journalism, she hopes to offer more nuanced and accurate stories about the reality of Kenyan healthcare. “When people who are grounded in the subject matter tell the story, they don’t report the news in the same way.”

Across the continent, Dr. Korir is encouraged to see other media houses investing in public service journalism and dedicating more resources to health reporting. The goal, she says, should be to “crowd out” the people disseminating false information, letting experts and expert-sources lead the stories. 

Find her: www.twitter.com/DrMercyKorir

“When people who are grounded in the subject matter tell the story, they don’t report the news in the same way.”



Dr. Jenniffer Mabuka-Maroa

Infectious and non-infectious Diseases,
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University of Washington, Jomo Kenyatta
University of Agriculture and Technology,
Africa Health Research Institute (AHRI),
Ragon Institute (MIT/Harvard), African
Academy of Sciences.



If Dr. Jenniffer Mabuka-Maroa's childhood in western Kenya were a film, an unlikely character would be malaria. Her early life was marked with recurrent bouts of chills and fever, tell-tale signs of an infection that kills over 400,000 people worldwide each year. Memories of the illness would be a significant factor in her decision to pursue a career in biomedical sciences and global health. Dr. Mabuka-Maroa, who holds a PhD from the University of Washington, was working on HIV research and responding to infectious disease outbreaks in under-resourced locations before COVID-19 broke out. These prior roles have informed her perspective and the contributions she is making in response to the pandemic.

Over the past year, she has served on the ten-person Steering Committee of the COVID-19 Clinical Research Coalition, a global community geared at tackling the pandemic in low-resource settings. The coalition has been responsible for developing practical guidance on issues pertinent to low-resource settings across the globe. This includes guidance on how to manage scarce oxygen supplies, data sharing, and ethics and research protocol related to COVID-19. The resulting work is a collaborative blueprint for public health practitioners in low-income countries where resources are scarce.

Dr. Mabuka-Maroa was also the program manager of the African Academy of Science's (AAS) Clinical Trials Community (CTC), established early in the pandemic to increase African presence in research trials. In a video discussing the work of the CTC, Dr. Mabuka-Maroa noted the longstanding gap in research investment on the continent. "Although

the African continent has about 25% disease burden [...] the level of clinical trials investment on the continent remains minimal, at about 2%."

Research on this phenomenon has found that scientists from low-income countries could benefit from cross-border partnerships and collaborations. However, a lack of visibility to, and an awareness of, potential international partners is a barrier to early-career scientists in particular. This dynamic has persisted during the current pandemic. By January of 2021, only two of 33 vaccine candidates had conducted trials on the African continent, and in June 2021, plans for a study on m-RNA vaccines on the continent reportedly stalled. More recently, South Africa announced a joint effort to build "the first ever mRNA vaccine hub based in Africa."

The CTC aims to address the logistical barriers that feed this imbalance by building greater visibility for African trial sites and researchers. Through the platform, scientists based on the continent can highlight their experience and interests, making it easier for researchers to find each other and work together. The website also provides a centralized repository of information on relevant regulatory, feasibility, and ethics standards for different trial locations in Africa, as well as an interactive map highlighting trials sites for COVID-19 and other illnesses.

Dr. Mabuka-Maroa has also been a visible advocate for stakeholder participation in clinical trials on the African continent. In an Op-Ed published in The Conversation Africa in March 2020, she critiqued the "virtual absence" of the continent in COVID-19 vaccine trials: "Africa displays an incredible amount of genetic diversity. If this diversity is not well represented in clinical trials, the trial findings cannot be generalised to large populations." While Dr. Mabuka-Maroa calls for the inclusion of African populations in clinical trials; there remains an air of hesitancy among some communities given a history of medical experimentation in African countries.

Ultimately, Dr. Mabuka-Maroa's work has resonance beyond the current pandemic. She previously managed the Human Hereditary and Health in Africa (H3Africa) programme at the African Academy of Sciences, working to expand the availability of genetic information on African populations. Her efforts in disparate roles are tied together by a belief that better data and guidance are key to improving health outcomes on the continent. Through her work, she is working to build a future in which, as she has explained, therapies are "more relevant, more efficacious and more safe" for African populations. 🍌

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"Although the African continent has about 25% disease burden [...] the level of clinical trials investment on the continent remains minimal, at about 2%."



Shimmaa Mohammed

Science Education
Egypt

Affiliated Organisations/ institutions:
STEAM Hubs, AU-EU Cooperation Hub

“I never felt like I got the quality education in science that I would have wanted,” says Shimmaa Mohammed, an Egyptian education expert and awardee of the African Union Innovative Education Award. When she graduated with her BSc in Biology, Shimmaa felt there was a huge gap between her educational skills and the skills required by the science labour market. Her experience is all too common. Many science institutes on the continent, she finds, have excluded the arts and humanities in their curriculum, limiting learners’ exposure to other soft skills and interdisciplinary approaches to problem-solving that are important in the workforce.

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In response to this gap in science education, Shimmaa decided to focus on childhood education. In late 2019, she established STEAM Hubs in Cairo, an online learning platform for primary and secondary school-aged children and their teachers that allows them to supplement the science education provided by their curriculum. STEAM is

an interdisciplinary teaching method that combines Science, Technology, Engineering, the Arts, and Mathematics. “STEAM” is a new way of thinking about science education,” explains Shimmaa, that encourages critical thinking, problem solving, and debate. With STEAM Hubs, Shimmaa and her team are able to encourage students to approach

learning the STEAM way. An example of this is a tutorial in addition and subtraction on the STEAM Hubs YouTube channel, where students are directed to problem solve using arts and crafts.


In early 2020, when the spread of COVID-19 in Egypt resulted in school closures, Shimmaa found that STEAM Hubs became critical in ensuring children could maintain access to quality science education while they were in lockdown. In a bid to reach as many students as possible, STEAM Hubs made their online tutorials free to access; the number of children using the Hubs increased exponentially. This jump in enrollment numbers has made Shimmaa even more aware of how crucial the internet is in gaining access to education for many children.

While the “COVID connectivity boost”, as the United Nations refers to it, has led to more people online as they work or learn remotely, it has also emphasised the lack of access to the internet for the world’s poorest. Africa, for instance, is home to countries with higher internet connectivity such as Egypt, South Africa, Rwanda and Kenya, and also home to 9 of the 10 least connected countries in the world. This lack of access to the internet has had dire consequences, especially in a pandemic where many of us have been asked to work and learn from home.

In Shimmaa’s STEAM Hubs, one solution around the issue of internet connectivity has been to

send physical kits that enable students to work on practical simulations and experiments at home. This way, students are able to keep up with course work and also experience science tangibly. One of the kits, called the Electroplaydough, made for primary students above the age of six, offers at least eight possible experiments within the kit with manuals for both instructors and parents, as well as links to STEAM Hubs video tutorials that walk learners through the experiments. While Shimmaa champions equitable access to e-learning on the continent, she still recognises the importance of a child holding a test tube and falling in love with the practice of science.

“We are working on making science education fun, and hopefully encouraging more of the next generation to get involved and maybe dream about being scientists themselves one day,” she says.

Shimmaa has plans to roll out STEAM Hubs across the continent. For now, the Hub is working in Uganda, which experienced the longest school closure in the world as a result of COVID-19. In Uganda, STEAM Hubs is training other educators on how to make cheaper educational kits using naturally occurring materials. 

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Dr. Penny Moore

Infectious Diseases, Virology
South Africa

Affiliated Organisations/ institutions:
University of Witwatersrand, National Institute
for Communicable Diseases (NICD), National
Research Foundation (NRF), Department of
Science and Technology

Before the COVID-19 pandemic, Prof Penny Moore had built her career investigating some of the most perplexing viruses of our time. Her PhD in Virology at the University of London focused on Hepatitis B, and for over fifteen years now, she has been investigating the dynamic interplay between HIV and host immune responses, working within a formidable community of infectious disease scientists. Once COVID-19 broke out and hit her home country of South Africa, it was easy for Prof Moore to apply her virological expertise and existing networks to understanding the virus.

“The existing set of collaborations was really powerful for us,” she has said of HIV and TB researchers like herself who have been pivotal to the public health and scientific responses to COVID-19.

South Africa is the hardest hit country on the African continent, with over 3.6 million COVID-19 infections reported since the start of the pandemic (as at February 2022). Prof Moore, an Associate Professor and Research Chair at the National Institute for Communicable Diseases (NICD), the public health agency tasked with managing infectious disease outbreaks in South Africa, has been visible in sharing new knowledge with other practitioners and the public. Her laboratory work has proven essential to our current understanding of B. 1. 351 – commonly called the Beta variant – a COVID-19 variant first isolated in South Africa.

“South Africa is the hardest hit country on the African continent, with over 3.6 million COVID-19 infections reported since the start of the pandemic ”

The Beta variant, which led to a surge in COVID-19 cases in South Africa at the end of 2019, has mutations on the virus spike protein that make it more transmissible. Prof Moore led a group of over a dozen researchers who demonstrated that the strain could also escape the body’s immune responses. Their findings, Prof. Moore explains, offered “enough evidence to justify a concerted effort to understand whether there will be reduced protection from vaccines.”

Inversely, the team also found that past infection with the Beta strain could trigger immune responses that are effective against other strains of COVID-19. This research echoes her previous work looking at neutralizing antibodies in HIV+ patients that target multiple strains of the virus and could hold the key to the development of an effective HIV vaccine in the future.

Prof. Moore’s research team subsequently tested different vaccine candidates against the Beta strain and their findings have had implications on the deployment and development of vaccines. After their findings showed that the Oxford-AstraZeneca vaccine showed poor efficacy against the strain, the South African government stopped a countrywide rollout of the vaccine. Ongoing trials by AstraZeneca, who have since developed a new vaccine based on the structure of B. 1. 351, appear to confirm that new vaccines based on the strain are broadly effective. The AstraZeneca vaccine is currently the backbone of the continent’s vaccine supply through the COVAX vaccine-sharing scheme, making it critical that it works effectively.

Prof Moore, who has spent her career conducting HIV research, is no stranger to what she describes as a “rollercoaster” of hope and despair in the past year, particularly when it comes to vaccine development. As the COVID-19 pandemic took root in early 2020, a promising South African study into a HIV vaccine, which Dr. Moore was part of, had to be scrapped after it showed poor initial results. When it comes to the COVID-19 vaccine she says, “We went from being despondent about this virus to seeing the development of vaccines with technology that will change how we deal with infectious diseases forever.”

Prof. Moore understands that while pathogens wreak havoc on our bodies, the psychological toll of moving between progress to roadblock are their own devastation. Despite this, she remains optimistic about the human will and the proven power of vaccination.

“I’m always going to be optimistic about vaccines. Vaccines are what saved millions and millions of lives [..] If these vaccines take a knock, then we will adapt and find better vaccines.” 🍷

Find her: www.twitter.com/nicd_sa

“I’m always going to be optimistic about vaccines. Vaccines are what saved millions and millions of lives. If these vaccines take a knock, then we will adapt and find better vaccines.”



Dr. Esther Ngumbi
Entomology
Kenya / USA

Affiliated Organisations/ institutions:
Faulu Academy, Oyeska Greens, University of Illinois Urbana-Champaign

Dr. Esther Ngumbi’s involvement with COVID-19 plays out like a typical superhero story, where the unassuming hero comes from an unlikely vocation, except her superpower is foresight. Dr. Ngumbi was born in a small coastal region in Kenya where her parents were both primary school teachers who were also subsistence farmers. She spent her childhood helping them on their small farm, before and after school, and experiencing her family’s devastation anytime a crop was destroyed by a sudden insect infestation. The frequency and severity with which insects could destroy whole crop yields, lead to Dr. Ngumbi’s interest in the small creatures. This curiosity led her to become the first PhD holder in her community, in Entomology, the study of insects, no less.

“Social media has allowed us to connect with each other like never before... but at the same time, it has allowed us to spread misinformation much easier.”

In early 2020, Dr. Ngumbi was working at the University of Illinois Urbana-Champaign, as a researcher and teaching professor. She was also the co-founder of the Dr. Ngumbi Faulu Academy in Kenya and had started Oyeska Greens, an agriculture start-up empowering farmers at the Kenyan coast. Then, COVID-19 hit. While the world’s

attention was on the public health implications and possible economic concerns, Dr. Ngumbi applied her foresight and considered the consequences of the major disruptions of food systems on the most disadvantaged people.

It is worth remembering that at the beginning of COVID-19, before it had hit the continent, the western world was fixated on the way that the virus would ravage Africa and decimate Africans. Dr. Ngumbi’s experience with farmers and food security informed her that there was a greater threat to the continent than disease. “If COVID-19 doesn’t kill [Africans], then hunger may,” she declared in an opinion piece for All Africa in April 2020. What will happen, she wondered, when COVID-19 leads to the shutdown of export business as well as informal

work that is so integral to the economy? Dr. Ngumbi accurately predicted the inevitable loss of access to food being the major concern for Kenya and many other African countries. A recent World Bank report revealed that in 2020, COVID-19 preventative measures pushed 2 million Kenyans into poverty. Contrary to early fears, the most significant sector in Kenya impacted by the pandemic is not the health sector, but the economy.

Dr. Ngumbi’s perspectives on the impending food crisis that could result from COVID-19, and effective post pandemic food security strategies, have garnered positive responses and started important dialogue around the world including on Project Syndicate, All Africa, and Thomas Reuters Foundation. In mid 2020, she argued that African governments needed to take an integrated approach to curb the impending food crisis. There needed to be, she emphasised, an immediate short term response where governments strategically improved access to food and cash flow. Secondly, African countries needed to consider smallholder farmers more integrally in their economic strategies. Ultimately, while some governments have attempted to address some of these challenges, few have taken the severity of the food crisis as seriously as Dr. Ngumbi advised.

Dr. Ngumbi contends that it is not too late, that in fact now is the time to address these fundamental flaws in the systems that affect both food security and agriculture for the most vulnerable communities. “The lesson of COVID-19 is this: if we don’t work hard to address the challenges that are faced by people of different races or economic access, then at the end of the day, when a pandemic hits, we are all going to suffer.” Dr. Ngumbi’s compassion feels urgent and it runs through many different aspects of her work. The foundation of it is equity, she explains, and her belief that everybody deserves access to basic human rights. ○

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Dr. Jemimah Njuki

Gender Development and Agriculture
Kenya

Affiliated Organisations/ institutions:
International Food Policy Research Institute
(IFPRI), International Development Research
Centre (IDRC)

Agriculture, says Dr. Jemimah Njuki, is what gave her the life she leads today. “I grew up on a farm,” she explains, “And agriculture is what fed me, clothed me, and sent me to school.” Dr. Njuki works as an expert in Gender Development and Agriculture and is the Director for Africa at the International Food Policy Research Institute (IFPRI). Her unique specialisation, examining agriculture through a gendered lens, is vital to a country like Kenya that boasts a huge population of women farmers but only a small contingent of women in decision making positions within Agriculture.

From an early age, Dr. Njuki developed a deep respect for agriculture and the people who are engaged in it at every level. She also observed some of the pitfalls of the industry. Women in rural areas in Kenya, for instance, are typically less likely to own the land that they work on, and they rarely have any say as to how to spend the profits made from farming. This lack of access to income severely limits a woman’s economic freedom. The drudgery of agriculture also has a huge impact on women and their productivity.

“If you want to think of the economic independence of women,” Dr. Njuki argues, “You have to look at where women are and address where they want to be. In Africa, 69% of women are economically

dependent on agriculture, or more broadly on food systems.” This “sad contradiction”, as she refers to it, that farming is both a major resource for families but at the same time has many inequalities embedded in it, remains on Dr. Njuki’s mind.

In early 2020, she realised that the pandemic’s impact on health was very much in the spotlight, and less so was the impact on food security and on women’s lives. In a paper she co-published at the time, Dr. Njuki made a case for how the pandemic might impact “women’s own food security, and their ability to safely perform crucial roles in the food value chain, and the increase in unpaid care work.”

In the informal sector, where a significant portion of the continent’s urban population is employed, Dr. Njuki also warned that containment measures would cause heavy job losses, creating serious threats to food security. Pandemic job losses, which have mostly impacted small businesses and work in the informal sector, have had more severe impacts on women in Kenya, decreasing their access to steady income. This concerns Dr. Njuki. As she observed when she was younger, the loss of income for a woman greatly limits her independence, making her more vulnerable to unsafe situations.

Through this gender-sensitive lens Dr. Njuki, continues to look deeper still at the disruptions caused by the pandemic. At IFPRI, she has focused efforts on collecting information on how COVID-19 is impacting food security. This information is the silver lining Dr. Njuki has found in the pandemic.

“There are two things that COVID-19 has done. Firstly it has made inequalities more stark, and made people think more critically about issues of inequality, especially gender inequalities. Secondly, in terms of governance, globally it has made governments consider their poor and focus on informal work.”

At IFPRI, Dr. Njuki oversaw the completion of a report that looked at the devastating losses in food security due to increased unemployment. She believes that if we can learn from this crisis, we can create more resilient food systems that are reliant on shorter supply chains. What countries need, she says, is greater investment in local and less complex food

systems, rather than an explicit focus on export markets, which has been a financial model for developing countries like Kenya for a long time. In pandemics especially, local food systems can be a solution, and can continue to employ the poor even when international markets collapse.

It is also time to consider how governments can support people during a crisis or times of vulnerability by learning from the pandemic, which has had drastic impacts on the poor, and those that work in the informal sector especially women, says Dr. Njuki. To address the needs of women and society at large, she urges for the expansion of social protection. “Pandemics are going to happen, shocks are going to happen, but we can build people’s resilience by building the resilience of our systems and by providing social safety nets.”

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“COVID-19 has made inequalities more stark, and made people think more critically about issues of inequality, especially gender inequalities.”



Houriiyah Tegally

Bioinformatics, Genome Sequencing
South Africa / Mauritius

Affiliated Organisations/ institutions:
Centre for Epidemic Research and Innovation (CERI), Kwa-Zulu Natal Research Innovation and Sequencing Platform (KRISP), University of Kwa-Zulu Natal



As a bioinformatician, Mauritian Houriiyah Tegally patiently tests and retests samples to get a fuller understanding of the genomic makeup of a virus. Tegally first cultivated her love of the process of genome sequencing at Yale University where she completed her undergraduate degree. She is currently completing her PhD in Genome Sciences at KwaZulu Natal University. In the lab, Tegally believes that slow and steady wins the race.

Working at the [KwaZulu Natal Research Innovation & Sequencing Platform \(KRISP\)](#) during the first waves of COVID-19 infections, Tegally's methods and philosophy would be greatly tested.

As COVID-19 was first being labeled as an epidemic, spreading to Europe and the USA, KRISP's leadership began fundraising for a new large-scale genome sequencing operation that would end up being integral in the global fight against COVID-19. The [Network for Genomic Surveillance in South Africa](#), established by KRISP, commissioned five genome sequencing labs across the country. These were paired with existing diagnostic labs that would provide weekly samples for routine sequencing.

“Her results showed that there were several new mutations of the Spike Protein. Tegally recalls wishing that she could fast forward to the future and read the text books about SARS-COV 2, just so she could figure out what to do with this new information.”

Thanks to KRISP's quick thinking, when the first cases of COVID-19 were detected in South Africa, the Network for Genomic Surveillance was already up-and-running, allowing it to receive and test samples. In searching for genomic patterns in the samples, scientists like Houriiyah wanted to understand how the virus behaves. SARS-COV 2, the virus that causes illness, has three genes, and Tegally's team was most interested in the Spike Protein gene, which allows the virus to infect humans.

In late November and early December of 2020, as the second wave of infections in South Africa were peaking, Tegally made a crucial discovery. While conducting routine sequencing of SARS-COV 2 samples, she noticed anomalies in the samples. Her results showed that there were several new mutations of the Spike Protein. Tegally recalls wishing that she could fast forward to the future and read the text books about SARS-COV 2, just so she could figure out what to do with this new information.

Houriiyah relied on her training, testing the samples again and starting her analysis from scratch. The numbers did not lie, there was a new variant of the virus circulating among South Africa's provinces. Previous research had shown that the virus was seemingly slow to evolve, as compared to other more well-known viruses like HIV for example. In Europe, genomic sequencers had observed that there had been only one mutation of the virus, but that it had remained unchanged for a long time thereafter. KRISP's Director, Professor Tulio de Oliveira, a world-renowned bioinformatician, sent the findings to the [World Health Organization](#) team studying the evolution of SARS-COV 2 who confirmed KRISP's findings. Conclusively, KRISP found that although there were some minor mutations in different areas of the country, overall South Africa was dealing with one major variant, the 501Y.V2.

Their findings encouraged scientists in the U.K. to re-examine their own data, and conclude that they too had a new variant. During the pandemic, researchers in South Africa have continued to lead in the detection of new SARS-COV 2 variants, like Omicron.

“Now, there are new variants emerging every day, which we refer to as variants of interest, around the world,” Tegally says.

Her team's work continues to be pivotal and widely referenced by individuals hoping to gain an understanding of SARS-COV 2 and its evolution. Identifying variants of the virus has become a useful tool in predicting infection rates and vaccine efficacy globally. Ultimately, Tegally's commitment to procedure and the sequencing process are an example of the importance of the scientific method, and just how integral it has become in world politics. 🍌

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Dr. Tlameo Setshwaelo

Internal Medicine/ Emergency Medicine
Botswana

Affiliated Organisations/ institutions:
Sir Ketumile Masire Teaching Hospital,
London School of Economics

Having repatriated to Gaborone, Botswana, in late 2018 from the United Kingdom, where she was practicing internal medicine, Dr. Tlameo Setshwaelo was just a couple years into her new job when the pandemic hit. Dr. Setshwaelo, who works at Sir Ketumile Masire Teaching Hospital, one of Botswana's largest and best equipped hospitals, has spent the last year-plus providing care to COVID-19 patients in Botswana. Her twelve hour shift often begins and ends with fielding calls from clinics and hospitals around Botswana regarding patients experiencing severe COVID-19 symptoms that smaller institutions are ill equipped to handle. Once patients are transferred into Sir Ketumile Masire Teaching Hospital, then the desperate scramble to stabilise them begins before they are moved to intensive care.

Before the pandemic, Dr. Setshwaelo had already come across some major issues within the country's public health systems. She wondered if her specialisation in internal medicine even made sense in Botswana, "It is difficult to work as any specialist in a system that is lacking resources and suffers from poor management," she says. But even these early considerations could not prepare her for what it felt like when the pandemic hit.

"A 2014 study revealed that less than a quarter of the physicians in the country are citizens."

The first COVID-19 case in Botswana was reported on March 30th 2020. As cases stayed low initially, in part due to the government's quick decision to slow down movement nationally and partially shut down migration across borders, the country's hospitals seemed to have a handle on the crisis. But by late 2020, Dr. Setshwaelo and the rest of the medical staff at the hospital, were seeing a dramatic increase in patient referrals - and not just from within Gaborone, the capital city, but from the whole country.

Towards the end of 2020, Botswana experienced its first wave, as daily new cases began to increase exponentially. At the time, the small nation of two million people had an infection rate of around 300 new COVID-19 cases a day. At Sir Ketumile Masire Teaching Hospital, Dr. Setshwaelo and her colleagues found themselves facing shortages of medication, oxygen, masks, ventilators and even hospital beds. In ordinary circumstances, it would have been easy to allocate scarce resources to patients on a needs-

basis, but the most severe COVID-19 patients all require the exact same treatment. There simply was not enough to go around. By the time that Botswana began to experience its 3rd wave in mid 2021, where numbers of daily new cases reached over 8,000 in August, the glaring issues in Botswana's public health sector could not go unnoticed.

"You don't feel the intensity at the beginning, but once it started ramping up, we really realised how ill prepared we were. When you can't give people basic things like medication and oxygen, because the demand is too high, that is when you start to feel overwhelmed." Dr. Setshwaelo pauses, "Having to ask other clinics and hospitals to manage their own COVID-19 patients, because we couldn't take them, was one of the hardest things I have ever done."

As she reflects on the lessons of the pandemic, Dr. Setshwaelo is taking note of Botswana's failing systems and what needs to be fixed. Beyond the need to build up the country's stockpile of equipment or medication, for instance, Dr. Setshwaelo also points to the small and dwindling number of doctors in Botswana as a major challenge for the country's healthcare system. Like many other countries on the African continent, Botswana has struggled with

brain drain, as well as an inaccessible, challenging education system. A 2014 study revealed that less than a quarter of the physicians in the country are citizens.

To help remedy this shortage of medical doctors, Dr. Setshwaelo suggests that beginning at an early age, more citizens should be encouraged to pursue medical careers. She also suggests creating incentivising programmes that encourage doctors practising abroad, like her, to return home. On a personal level, she has decided to go back to school and specialise in public health so as to be better equipped to tackle some of Botswana's more immediate issues.

For now, as Dr. Setshwaelo continues to provide frontline care to COVID-19 patients, she is focused on the things that keep her motivated, like seeing patients go home at the end of their treatments. "We have to look at the positive aspects of our job. Seeing patients recover and go home is enough to make me so happy." 🍷

Find her: www.twitter.com/melosets

"When you can't give people basic things like medication and oxygen, because the demand is too high, that is when you start to feel overwhelmed."





Akhona Tshangela

Field Epidemiology
South Africa

Affiliated Organisations/ institutions:
African Union Africa Centres for Disease
Control and Prevention (Africa CDC)

“We call ourselves disease detectives,” Akhona Tshangela exclaims, laughing. As a field epidemiologist, Akhona investigates epidemics and outbreaks in communities, examining the environment, signs, and symptoms of a disease to identify its potential pathogen. Everything in her formal education and career is governed by research and data. Without data it is hard to understand the spread of an outbreak and whether the interventions being implemented are effective.

“As an epidemiologist, you get involved at so many different levels of data analysis, from lab work to policy making. Data is king,” she explains.

Akhona is currently the interim Principal program Officer/ Chief of Staff in the office of the Director at the African Union’s (AU) Africa Centres for Disease Control and Prevention (Africa CDC). Before the pandemic, Akhona was working as the Programme Manager for Mortality Surveillance at Africa CDC. Her main duties include encouraging and supporting AU member states to institute mortality surveillance programmes which collect mortality data that can help governments understand the reasons why, and how, people in a given geographic area are dying. According to Akhona, this type of data assists countries in identifying and implementing relevant health policies.

When COVID-19 infections began to rise in Africa, the Africa CDC played a critical role in the continent’s response to the pandemic, quickly developing and disseminating a unified plan to reduce the virus’s spread. Instituting rapid mortality surveillance also became even more vital to developing policies that could help governments get ahead of the disease. Akhona’s team began focusing their efforts on assisting

countries in developing effective tools that provided a comprehensive picture of the pandemic’s effects. For example, countries needed to be able to determine whether an increase in deaths was due to increased strain on an already overburdened health system or to an increase in fatal COVID-19 cases.

“Data in Africa, especially on mortality,” Akhona says, “has always been a challenge, and we are seeing the effects of that right now. Without mortality data, it is really hard to determine the overall direct and indirect impacts of COVID-19.”

Beyond her mandate in Mortality Surveillance at the Africa CDC, Akhona is also co-leading the Science, Standards and Regulations technical working group, which is helping guide continental responses to COVID-19. This involves coordination with other scientists to determine what COVID-19 guidelines should be recommended for Africa Union member states, as well as working with other COVID-19 focused technical working groups to create joint continental strategies. Since 2020, Akhona’s technical working group has drafted bi-weekly scientific reports on the COVID-19 situation on the continent; sending these to governments and Africa CDC partners across the continent.

Akhona’s bird’s-eye view of Africa’s response to the pandemic has given her insight into how the region might respond to future crises. Many countries, for example, were able to respond to the crisis in a collective and coordinated manner thanks to the AU’s continental joint strategy for COVID-19. She also credits member states’ joint initiatives for some of the continent’s early successes in reducing COVID-19 cases. Africa became one of the few continents with fairly cohesive pandemic strategies because countries were engaging in dialogue and quickly enforcing agreed-upon policies.

One of the most important lessons that COVID-19 has taught epidemiologists like Akhona is the importance of anticipating infections. As stated by Africa-CDC Director, John Nkengasong, Africa needs a new public health order. Strengthening National Public Health Institutes, the health workforce, and health security for local manufacturing of health commodities, will play an important role in ensuring that we are better prepared for the next pandemic. Subsequently, Akhona has since supported an initiative to bring together mathematical modellers from around the world to discuss how to create better models for disease prediction on the continent. Additionally, as a representative at the Clinical Research Coalition Group for COVID-19, Akhona has been part of the Coalition’s push for accelerated research into COVID-19 in fragile states. The Coalition’s prioritisation of research aligns with her philosophy that developing good data is crucial.

“Data is essential,” Akhona says. “You really can’t do much without it.”

Find her: www.twitter.com/AkhonaTshangela

“Data in Africa, especially on mortality, has always been a challenge, and we are seeing the effects of that right now. Without mortality data, it is really hard to determine the overall direct and indirect impacts of COVID-19.”

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