



WHO's global genomic surveillance strategy

On March 30, 2022, WHO released its 10-year strategy to strengthen and scale up genomic surveillance around the world. Vijay Shankar Balakrishnan reports.

For WHO's global genomic surveillance strategy see <https://www.who.int/publications/item/9789240046979>

For more on genomic surveillance in Equatorial Guinea see *Front Public Health* 2022; 9: 818401

Equatorial Guinea, a coastal country in central Africa—like any other nation in the continent—fights hard to eliminate malaria. “I remember as a kid growing up in my country, I used to get malaria three or four times a year”, said Mitoha Ondo’o Ayekaba, now the Vice Minister of Health, Equatorial Guinea. Although the discovery of crude oil reserves in Equatorial Guinea in 1995 catapulted the country’s economy, owing to the prevalence of malaria, a major portion of the adult population was frequently absent from work. In an attempt to counter the labour issue, the oil sector then began a historically controversial collaboration with the government of Equatorial Guinea in 2003 to address the underlying public health issue through establishing a malaria control programme. “Now in phase III, the program witnesses a decline in prevalence to a level of pre-elimination, below 10%”, Ayekaba said.

Together with the gas and oil sector, the government of Equatorial Guinea invested US\$3 million to build a cutting-edge laboratory infrastructure that later became the backbone of genomic surveillance in the country during the COVID-19 pandemic. While the country was about to conduct clinical trials for a malaria vaccine in 2020, the COVID-19 pandemic hit in March that year, at which point all of the resources were rerouted to SARS-CoV-2. Equatorial Guinea researchers then began working with Claudia Daubenberger and colleagues at the Swiss Tropical and Public Health Institute (Basel, Switzerland) to speed up testing and surveying for variants of SARS-CoV-2 in the country. “When the pandemic hit us...we were quickly able to switch research infrastructure meant to be used for clinical trials into [a] public health surveillance facility”, Daubenberger said.

According to WHO, historically, few countries have routinely done genomic surveillance within their nations, but COVID-19 has changed that. With the help of genomic surveillance, researchers, epidemiologists, and public health officials can monitor the evolution and spread of pathogens. In an attempt to make genomic surveillance one of the main tools to prepare for any future pandemic, in March, WHO launched a 10-year strategy that provides a framework to leverage existing capacities and build up the use of genomics to monitor and respond to public health threats—much like what Equatorial Guinea has done during the pandemic.

According to WHO’s spokesperson Tarik Jasarevic, “The strategy sets the stage for genomics in public health surveillance for pathogens, and through its implementation, we can collectively address challenges such as sustaining access in low resource settings”. Clearly it builds on the gains made during the COVID-19 pandemic, including the increased availability of sequencing and an increased understanding of its added value. “Partnerships are absolutely critical to strengthen genomic surveillance and to implement a global strategy, so WHO works closely with partners including through the Access to COVID-19 Tools Accelerator to facilitate equitable access to diagnostics and laboratory tools”, Jasarevic added.

The strategy comes with five objectives: to improve access to tools for better geographical representation; to enhance data sharing and utility for streamlined local-to-global public health decision-making and action; to strengthen the workforce to deliver at speed, scale, and quality; to maximise connectivity for timely value-add in the broader surveillance

architecture; and to maintain the state of readiness should public health emergencies happen. But genomic surveillance presents challenges related to laboratory and surveillance infrastructure, capacities, and capabilities needed.

Although the global capacity for genomics and sequencing technologies has increased since the start of the COVID-19 pandemic, with more than two-thirds of countries now owning sequencing capability, not all WHO member states are willing to share resources, whether it be data, reagents, or vaccines. Nor do many low-income or middle-income countries have the means or lucrative factors like oil reserves to lubricate the public-private partnership machinery for public health.

According to Jasarevic, WHO encourages data sharing and works closely with member states and stakeholders to understand barriers and incentives and to address them. WHO also recognises the challenges of sustaining access in low-resource settings, of having a genomics-savvy workforce as technologies continue to evolve, and the need for a standardised, trusted data-sharing system. According to Jasarevic, the strategy will involve the collaboration of “multiple global initiatives working towards health systems strengthening”.

Back in Equatorial Guinea, Ayekaba is positive that WHO’s genomic surveillance strategy’s objectives are useful so long as the individual member states’ health systems are reformed adequately to follow their directions. “WHO advises countries to utilise resources available in the country, but sometimes that’s not enough—we were lucky to collaborate with the Swiss researchers”, he said.

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