LabCoP EXTENDED ECHO SESSION

Policy and Action: Expanding Genomic Sequencing Capacity in Africa
Presenter: Dr Francis Chikuse, Senior Technical Officer, Public Health Policy, Africa CDC-PGI
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Genome use cases and priorities

1. Am from Kenya and my interest is Personalized medicine and these are my questions. Can Africa develop its own locally tailored TB vaccines based on genomic insights into circulating strains?

A: *In 2021, WHO, with support from the Medicines Patent Pool and Act-Accelerator (COVAX) established a technology transfer hub in Cape Town with the objective of building capacity for LMICs to produce mRNA vaccines. The SAMRC conducts the research, Biovac produces the vaccines and Afrigen Biologics establishes the technology. So, the capacity is available, and the hub produced some COVID-19 vaccines. Regarding TB vaccines, there is work currently ongoing at the South African Tuberculosis Vaccine Initiative (SATVI) sequenced the T-cell receptors of the T-cells that recognise M.tb-infected cells to identify potential vaccine targets. You can read more about this here and in the research articles here and here.*

2. How can African researchers ensure data sovereignty when collaborating with global AI firms on genomics?

A: *Developing data sharing agreements and protocols that comply with national laws and regulations can be beneficial. At the country level, designated individuals may have access to data, share data, and be responsible for data storage.*

3. What's the role of genomics in blood transfusion?

A: *Genomics contributes to the safety and efficacy of blood transfusions by enabling precise and comprehensive blood typing, identification of rare blood group variants, and better matching of donors and recipients. This process helps prevent transfusion-related adverse reactions and improves patient outcomes.*

4. Good afternoon, based on the case uses presented and proposed you mean all capacitated countries members state will be able to test/analyse these pathogens or you design a network with dedicated and specialized Labs for each disease?

A: *Genomics is still in its early stages on the continent. The objective is for countries to conduct sequencing of all priority pathogens, including viruses, bacteria, parasites, and fungi, as well as human genomics. However, countries possess varying functional capacities and capabilities, necessitating the expansion of existing infrastructures while*

leveraging the Africa PGI network, which encompasses centres of excellence and specialized facilities for tasks that cannot be undertaken at the national level. Africa PGI maintains a robust sample referral system both within and between countries.

5. Thank very much for this information. It is very necessary technology in high burden area like Ethiopia, which faces significant challenges with TB, HIV, malaria, and other bacterial infections. How can Africa CDC expand genomic services at lower health facility levels to effectively investigate and control drug resistance?

A: *Ethiopia has a core sequencing facility at the Ethiopian Public Health Institute (EPHI), where lower-level health facilities send their samples for analysis. The Africa Centres for Disease Control and Prevention (Africa CDC) has contributed equipment and continues to support EPHI with reagents and additional equipment.*

6. Thank you very much for the wonderful presentation. Are there any Africa CDC genomics initiatives on non-infectious diseases including cancers, NTDs

A: *Yes, we are establishing a unit for human and precision medicine within Africa CDC Institute of Genomics*

7. Hello, l see that our country, Ivory Coast, is not one of the 16 countries. Is there a reason?

***A**: There is no reason, they can reach out to Africa CDC for support, as we are open and willing to support all member states. We have limited resources at Africa CDC so those who reach us first are the ones currently being supported.*

Supply Chains

8. What best practices, if any, have been identified to effectively clear genomics commodities through customs?

A: *Not only genomics but all laboratory commodities and consumables need exemption from taxes especially during times of outbreaks, so best solution is for Ministries of health to engage customs department and clearly outline why exemption is critical for national health security.*

9. How are collaborations ensured to be secure with regards to biosecurity concerns?

A: *Collaborations in biosecurity are secured through a multi-layered approach encompassing risk assessment, mitigation strategies, and strong communication channels. Key elements include establishing clear protocols and guidelines, implementing physical security measures like access control, conducting regular*

audits and training, and maintaining robust communication and reporting mechanisms for any potential breaches.

10. What are the major supply chain strategies of PGI? Thank you

A: *Advocacy – Advocacy by Africa CDC-Africa PGI on (i) Equipment, Reagents and consumables, (ii) IT Systems and maintenance support (iii) Bioinformatics and data management.*

Africa CDC support

11. Is there a partnership between ASLM, Africa CDC and OOAS to boost medical biology in Africa.

A: *ASLM is a managing partner of Africa CDC. The two organisations work together in developing genomics national strategies and other areas in genomics. At national level, Africa CDC works with national public health institutes and national public health reference laboratories including research institutions and universities which have collaborations with national public health reference laboratories and NPHIs*

12. Thank you for an excellent presentation. Why is the capacity building for Genomics and Bioinformatics by Africa CDC only focused on Public Health Labs?

A: *This was the mandate given to Africa CDC by heads of states through Africa Union. Africa CDC is a public health agency of Africa Union whose main role is to safeguard the health of Africa*

13. Is there funding available to support medical biology laboratories in terms of quality?

A: *Africa CDC is supporting national public health laboratories in QMS programs. Check the website for more information*

14. Thank you for nice presentation. In my country in Tanzania is there any capacity building done?

A: *Yes, a lot is being done in Tanzania in term of genomics e.g. Africa CDC supported Tanzania in sequencing Ebola, Marburg viruses with great success and now Tanzania will be supported for malaria molecular surveillance. Africa CDC is also supporting Tanzania to develop its national genomics strategy*

15. Do you have e-learning free programs?

A: *Yes, through our NGS Academy for the Africa CDC Pathogen Genomics Initiative. Visit the website for more information*

16. What are the obstacles to retaining African experts trained in genomics?

A: *The main challenges include poor working environment, low remuneration, limited opportunities for advancement, and lack of personal growth*

17. Is Africa CDC ready to consider engaging the private sector to help innovate and provide solutions for Bioinformatics and Analytics. This space is evolving fast and there are powerful tools which we can deploy in collaboration and in partnership. Especially in the space of Pandemic preparedness and predictive surveillance informatics.

A: *Yes, through Advocacy – Advocacy by Africa CDC on (i) Equipment, Reagents and consumables, (ii) IT Systems and maintenance support (iii) Bioinformatics and data management.*

18. We are building a huge molecular laboratory and microbiology laboratory but there is not any infrastructure like furniture, lab equipment and others. how do you support us?

A: *If it is a national public health institute or national public health laboratory, then contact Africa CDC. If not, collaboration with the ministry of health and reaching out to Africa CDC through them is suggested. Collaborations are important for the future of genomics on the continent. It is beneficial for academia, private entities, national reference laboratories, and key partners to work together, and Africa CDC will support these collaborations.*