Diagnostics Approaches to COVID-19: Lessons learned & the path forward

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WHO Pathogen X meeting
29-30 august 2022
How it started?

Dec. 2019
First patients develop symptoms of Wuhan pneumonia

Jan 2020
Identification of SARS-CoV-2 virus DNA sequence

IP Hong Kong shares the first PCR Protocol with IPD & the Network

Jan. 2020
First course of SARS-CoV-2 molecular to Representative of African countries

Fev. 28th 2020
SARS-CoV-2 molecular diagnostics test transferred to 25 African countries

Fev. 7th 2020
SARS-CoV-2 molecular diagnostics test

March. 1st 2020
First line of pandemic Response operational

In January...

Early February...

Early April...

No diagnostic capability

2 countries
South Africa, Senegal

48 countries
with diagnostic capabilities

1.5M+
Test kits distributed
Scale up testing

Testing samples x10 within a month
Suspect cases, contacts, Patients follow up

Innovation

Digitalization

Manufacturing RDT

Decentralization

All samples
Positive samples
Decentralization & surge capacity

- Central laboratory at the capital
- Peripheral laboratories
- Itinerant mobile laboratory as surge capacity
- Training & transfer to local Laboratories
Decentralization & surge capacity

Mass Gathering: The Grand Magal of Touba is the largest Muslim religious pilgrimage in West Africa (millions of people from all the world)
SAYTU: The first COVID-19 test produced in Senegal
Syndromic Sentinel Surveillance in Senegal (4S network)

- 25 Community Sites
- District Health centers
- 3 Hospital sites*

**SARI sites***: Infectious diseases clinics, Pediatrics, ICU...

**Syndromes Under surveillance 4S Network**

- Febrile Syndrome
- **ILI_SARI_Covid-19**
- Malaria
- Dengue Like Syndrome
- Diarrhea Syndrome
Genomics Surveillance

Tegally H and colleagues, University of KwaZulu Natal
Environmental surveillance of SARS-COV-2 from Sewage

Assess the dynamic of virus circulation in the community
Monitor the emergence or introduction of new variants to Senegal for early control measures
Regional genomic surveillance

- 17 Countries
- 11383 Genomes (~6855 Senegal)
- 388 Alpha variant
- 28 Beta variant
- 1748 Delta variant
- 3659 Omicron variant

As of 20 August 2022

More than 10,000 genome sequences generated
Regional genomic surveillance

- Transmissibility
- Vaccines
- Risk of reinfection
- Disease severity
- Diagnostics
Take home messages

• Diagnostics and detection is foundational and starting point to any research & development and innovation for any new diseases
• Sequencing technology is key to identification, monitoring, detection of new pathogens and variants and may become more and more dominant for manufacturing of medical countermeasures
• Building the ecosystem that connecting surveillance, case management and R&D would make diagnostics impactful
• Local diagnostic capacity is key to teh first detector first responder approach
Our trusted R&D funding partners
Dolley Jën Ndox!
Senegalese proverb