Leveraging Investments in Diagnostic Network Optimization to Expedite Planning and Implementation of SARS COV-2 Laboratory Testing - Nigeria Country Experience

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Background

• Timely access to quality laboratory services is key to successful treatment of a disease condition.

• A sample referral system is an avenue of providing access to lab services for all despite location and ability to pay

• In 2017 Nigeria embarked on the roll-out of a National Integrated Sample Referral Network (NiSRN) for viral load, EID, CD4, and TB services

• The overall goal is for this to serve as the main sample referral network for all clinical and public health samples for laboratory testing and return of results.
Background -2

• Implementation of NiSRN led to:
  – Increased access to lab testing for HIV & TB services
  – Increased network effectiveness and efficiency
  – Reduction of number of HIV molecular labs from 27 to 17

• The COVID-19 pandemic in Nigeria provides an opportunity to leverage the sample referral network for COVID-19 sample referral needs
NISRN Operations March 2018 Till Date

VOLUME OF SAMPLES AND RESULTS MOVED

<table>
<thead>
<tr>
<th></th>
<th>Sample Volume</th>
<th>Result Received</th>
<th>% Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4</td>
<td>23,908</td>
<td>23,201</td>
<td>97%</td>
</tr>
<tr>
<td>DBS</td>
<td>92,345</td>
<td>90,645</td>
<td>98%</td>
</tr>
<tr>
<td>SPUTUM</td>
<td>119,151</td>
<td>117,433</td>
<td>99%</td>
</tr>
<tr>
<td>VIRAL LOAD</td>
<td>1,676,529</td>
<td>1,609,729</td>
<td>96%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,911,933</td>
<td>1,841,008</td>
<td>96%</td>
</tr>
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National Laboratory Strategy for Scaling Up COVID-19 Testing in Nigeria

- Expansion of the Lassa-Fever Lab Network, including private sector labs
- Optimization of systems

- Decentralization of COVID-19 Testing to States
- Leverage PEPFAR/Global Fund TB GeneXpert network
- At least one site per state

- Leverage existing PEPFAR PCR Lab network for high throughput testing for COVID-19
  - Including Hologic Panther, and Private sector Labs
  - Leverage National Integrated Sample Referral Network for sample transport

- Planned integration of Antibody/Antigen testing for surveillance and learning
Distribution of Covid Cases and Mapping of SARS-COV-2 Molecular Lab Testing in Nigeria
COVID-19 Sample Referral

- One of the Major challenges in the current response is increasing sample collection and referral to the testing labs across the country.

- NCDC has an on-going inter-state sample referral system with a 3rd-party logistics system – TRANEX; this is however limited to some states.

- In the wake of the COVID Pandemic State Governments have initiated their respective intra- and inter-state sample referral for COVID-19 to complement TRANEX or to fill in where TRANEX does not exist – however the funding and logistics to support these across all state has been very erratic.

- With funding support from USAID, the country is now leveraging the Integrated Sample Referral Network (NISRN) to support intra-state COVID-19 sample transport in select states.
Expected Outcomes

The optimized referral services was expected to accomplish the following:
- Reduced cost of sample movement
- Quicker testing/result turnaround time
- Safe and secure specimen referral and transport
- Facilitate Rapid expansion of COVID testing as well as other infectious diseases moving forward

Types of samples transported include:

<table>
<thead>
<tr>
<th>Viral load samples</th>
<th>DBS Samples</th>
<th>Immunological samples</th>
<th>Sputum and Nasopharyngeal samples</th>
</tr>
</thead>
</table>

![Viral load samples](image1)
![DBS Samples](image2)
![Immunological samples](image3)
![Sputum and Nasopharyngeal samples](image4)
Results

- 9,616 COVID-19 samples moved between June to First week of August by NISRN 3PLs.
- Zero reported cases of sample transport related infections among 3PL staff
- Average overall TAT of 2.95 hours maintained for sample movement.
- Zero Sample rejection rates for COVID-19 samples
- Sustainable low-cost hub and spoke models developed for sample referral across 6 states.
- Minimal disruption of testing services for other diagnostic specimen; HIV, TB, etc.
- Effective clustering of collection sites for efficient sample pickup and cost utilization
COVID-19 Sample Movement

- **June**: Sample Volume = 5037, Average (Hrs) = 2.3
- **July**: Sample Volume = 4201, Average (Hrs) = 3.2
- **August (Wk 1)**: Sample Volume = 378, Average (Hrs) = 2.4
- **Total**: Sample Volume = 9616, Average (Hrs) = 2.9
Limitations

- Multiple forms of sample transfer mechanisms - state, Tranex, and NISRN
- States implementing independent plans for COVID-19 diagnosis and management.
- Selection of COVID-19 sample collection sites is not aligned with existing health facilities on the National sample referral Network.
- High cost of intra-state and inter-state sample movement using conventional transport mechanisms
- Inefficient mapping of COVID-19 sample collection sites to hub facilities across states.
- Low sample volumes at designated NIRN pick up hubs in some states.
Recommendations

- Align the selection of COVID-19 sample collection sites with pre-existing health facilities on the National Integrated Sample Referral Network.
- Expand NISRN coverage to other states
- Work with the states to fully integrate COVID-19 testing into existing service delivery framework to ensure sustainability.
Thank you!