Laboratory Systems
Global Fund Geneva
LFA Training 2019/2020
Session Objective

• Get to know each other
• Learn about your challenges and suggestions
• Share an understanding of the Global Fund’s approach to Laboratory Systems
• Apply systems thinking to the LFA’s scope of work for Lab Systems
• Provide brief overview of Forecasting and quantification for Lab Commodities
• Provide a brief overview of Connectivity/LIS
Presentation outline

- Overview
- Health Systems
- Global Fund Lab System Strategy
- Laboratory Systems Forecasting & Quantification
- Connectivity /LIS
- Lab Network Optimization
- Waste management
Ending AIDS, TB and Malaria as Epidemics
## Core Principles

<table>
<thead>
<tr>
<th>Partnership</th>
<th>Country Ownership</th>
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<tbody>
<tr>
<td>All those involved in the response to the diseases are involved in decision-making: Governments, civil society, communities affected by the diseases, technical partners, the private sector, faith-based organizations, and other funders.</td>
<td>People implementing programs on the ground know best how to respond to HIV, TB and malaria in their local contexts. Each country tailors its response to the political, cultural and epidemiological context.</td>
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<thead>
<tr>
<th>Performance-based Financing</th>
<th>Transparency</th>
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<tbody>
<tr>
<td>Ongoing financing depends upon performance and proven results.</td>
<td>The Global Fund operates with a high degree of transparency in all of its work.</td>
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RSSH is one of four strategic objectives

1. MAXIMIZE IMPACT AGAINST HIV, TB AND MALARIA

2. BUILD RESILIENT AND SUSTAINABLE SYSTEMS FOR HEALTH

3. PROTECT AND PROMOTE HUMAN RIGHTS AND GENDER EQUALITY

4. MOBILIZE INCREASED RESOURCES

Vision
A world free of the burden of HIV, TB and malaria with better health for all.

Mission
To attract, leverage and invest additional resources to end the epidemics of HIV, tuberculosis and malaria and to support the attainment of the SDGs.

STRATEGIC ENABLERS: Innovate and differentiate along the development continuum + Support mutually accountable partnerships
<table>
<thead>
<tr>
<th>Options</th>
<th>Details</th>
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<tbody>
<tr>
<td>A.</td>
<td>Improve the availability of medicines, equipment, human resources, data, laboratory services, and funding.</td>
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<tr>
<td>B.</td>
<td>Improve the government’s ability to sustainably deliver high quality HIV, TB, and malaria services.</td>
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<tr>
<td>C.</td>
<td>Improve the coverage and quality of HIV, TB, and malaria services at an affordable cost.</td>
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<tr>
<td>D.</td>
<td>Efficiently improve the coverage and quality of HIV, TB, malaria, and Primary Health Care services.</td>
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</table>
The elephant

Every program wants a piece of this elephant and wants its services
Laboratory service is essential

WHY?

No labs
No diagnosis
No treatment

Will there be any program impact without lab support?

70% of clinical medicine decision making relies on laboratory test results
Substantial Investment in laboratory components across two funding cycles.

Source: Detailed budgets extracted from GOS.

Table 1: Comparison of Laboratory budgets across a funding cycle.

<table>
<thead>
<tr>
<th>Laboratory component</th>
<th>2014-2016 funding cycle</th>
<th>2017-2019 funding cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment &amp; reagents as % of total laboratory budget</td>
<td>$822,959,201.49</td>
<td>$710,653,288.09</td>
</tr>
<tr>
<td>Laboratory systems</td>
<td>$111,720,206.49</td>
<td>$42,210,270.46</td>
</tr>
<tr>
<td>Laboratory systems as % of total laboratory budget</td>
<td>10.4%</td>
<td>5.4%</td>
</tr>
<tr>
<td>PSM costs</td>
<td>$120,439,942.28</td>
<td>$74,874,378.75</td>
</tr>
<tr>
<td>PSM costs as % of total laboratory budget</td>
<td>10.3%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Total laboratory budget</td>
<td>$1,073,082,641.86</td>
<td>$887,930,477.30</td>
</tr>
<tr>
<td>Total grant budgets</td>
<td>$11,688,364,323.04</td>
<td>$7,183,174,812.99</td>
</tr>
<tr>
<td>Laboratory budget as % of total grant budgets</td>
<td>9.3%</td>
<td>11.5%</td>
</tr>
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</table>

Guiding Principles for Investing in Health Laboratory Systems

• **Country Ownership**

• **Integration of Laboratory Services and Systems**

• **Partnership**
Systems Thinking approach

1. Unifying Practical Approaches to Continuous Quality management systems
2. Leadership and Governance
3. Using polyvalent testing platforms
4. Human resources
5. Management Systems/Biosafety
6. Unifying laboratory information systems
7. Strengthening Specimen Referral Systems
8. Coordinating Efforts Through National Laboratory Strategic Plans to develop Laboratory Networks
Revised application material and guidance

- Added directional language in funding request, modular framework and information notes to encourage more cross-programmatic RSSH investment and linkages to the broader health system

- Additional and revised RSSH indicators and workplan tracking measures

- Updated RSSH Information Note and technical briefs
Forecasting and Quantification Laboratory
Lab quantification pre requisites

- Lab policy and strategic plan
- Standardization policy
- Defining – Test menus by level
- Testing Protocol by test by level
- Instrumentation/equipment by level
Types of forecasting data/methodologies

Consumption/Usage data (Logistics data): Data on quantities of products used/issued over time, losses and adjustments to inventory, and the stock on hand at the various levels of the in-country supply chain. Can use data direct from instruments if connected.

Demographic/Morbidity data: Data on disease prevalence and population characteristics.

Service Statistics data: Data on the number of service delivery sites, the volume of services or number of patients per site, and the type of service received.
Quantification: data for decision-making

Data Points

• Inventory of instruments
• Demand (quantification)
• Instrument utilization, diagnostic contribution and capacity
• Instrument down time
• Impact of maintenance agreements and vendor performance
• Data direct from instruments
Tools available

- Quantimed
- ProQ
- PipeLine
- Microsoft® Excel
- CHAI/DELIVER/SCMS Demographic/Morbidity Lab Quantification Excel-based Tool
- ForLabs CHAI/SCMS tool
- Reagent calculators
- FIND TB tool.
Connectivity Platform for GeneXpert Devices and other Lab instruments

As result data becomes available, connectivity solutions can direct information to key personnel via SMS, Email and APIs to other information systems used by the health services provider.
Aspect – Use Case: Aspect Reporter

Interfaces with LIS developed in country and Abbott m2000 at each reference laboratory

Once a sample resulted and was approved by lab controls, the data was sent over a secure connection to Aspect

Replaces motorcycle delivery of results from lab to clinic
Connectivity Solutions for GeneXpert Devices

Additional features include:
- Device monitoring and management
- Inventory management
- Customised reporting
Cepheid/NHLS Remote Monitoring

Operational dashboard for real-time monitoring of results, errors, resistance and positivity rates

Pre-configured on all newly installed GeneXperts

User Workshop held 5-9th November to improve usability and facilitate design changes, Johannesburg
Situation with GeneXperts

- **Overall Instrument Unitization is low.** Few countries need more instruments or modules to test at current notifications.
- **Scaling-up requires more testing, rather than more instruments**
- **Countries are not procuring enough cartridges to reach testing targets or utilise instrument**
- **Maintenance is a big issue**
- **Key elements demanding attention are adherence to algorithms and specimen referral mechanisms.**
- **COST of expanding network is a huge consideration**
  - Countries must fully evaluate their networks to ensure sustainability, reliability and accuracy of testing and focus on optimising networks by addressing operational, technical, and systemic challenges.

Source: “MSF Data”
Average sample transport distance (one way) : 32 KM
Reduced result TATs, improved CD4 service and patient care

Total Transport Cost: $677,000

- Vehicle/Fuel Cost\(^1\): $585,000
- Lab Tech Opportunity Cost\(^2\): $92,000

Savings from re-assignments: ~60%

\(^1\) Vehicle cost includes: Postal costs for current postal lanes, an assumed cost of .025 per shipment per KM, and the return leg on transport for non-postal service

\(^2\) Lab tech cost based on daily wage of $10.71 and time spent traveling. Does not include travel per diems
Waste Management
The Challenge

Health products are critical in the fight against AIDS, TB and malaria.

In 2017, the Global Fund spent about US$2 billion on health products.

Acknowledgement that in many low resource settings waste management infrastructure, capacities and systems are weak.

**KEY MESSAGE;** We need to be aware and take waste management seriously in reviews.
The Earth does not belong to us: we belong to the Earth.

Go Green...
Thank you very much for your attention and participation.

Discussion