ASLM
AFRICAN SOCIETY FOR LABORATORY MEDICINE

Lab CoP

6th Annual LabCoP Meeting

11 -13 October 2022

Strengthening Laboratory Systems and Networks Through Integration and Optimisation of Diagnostic Services

MEETING REPORT

1. BACKGROUND

The African Society for Laboratory Medicine (ASLM) Laboratory Systems Strengthening Community of Practice (LabCoP) is an initiative supporting knowledge 'co-creation' and exchange to accelerate the scale-up of high-quality laboratory services in Sub-Saharan Africa. The Bill & Melinda Gates Foundation (BMGF) funds the LabCoP, launched in 2017. The LabCoP targets the ministry of health's (MOH)-designated teams, and currently, 19 countries[1] are members. The initiative employs various strategies that include webinars, physical meetings, WhatsApp moderated discussions, and targeted interventions. It translates best practices into document guidance called "LabCoP receipes" and offers mentorships to identify and apply the solutions to laboratory systems bottlenecks and challenges that prevent diagnostic tests from contributing to positive clinical and public health outcomes.

LabCoP assists countries in identifying their laboratory system gaps and weaknesses through standardised tools and approaches. Every year, the results obtained in the preceding 12 months are analysed and synthesised into targeted action plans linking the gaps identified to the best practices and knowledge co-created during the various learning sessions. Notably, the plans are deliberately designed to fit the priorities of the United States (US) President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund (GF).

Annual LabCoP meetings are a key milestone in the LabCoP strategy, providing an opportunity for country teams to learn from their peers, to be heard by stakeholders, and to be coached by subject matter experts during the preparation of their laboratory system strengthening work plans. The annual meeting is also an opportunity to discuss emerging priority areas for investment with global and national laboratory stakeholders.

The 6th annual LabCoP meeting themed Integration of diagnostic services and diagnostic network optimisation, held from the 11th–13th of October 2022 in Cape Town, South Africa. The National Health Laboratory Services of South Africa (NHLS) and the ASLM collaboratively organised the meeting with support from the World Health Organization (WHO), the GF, and the European and Developing Countries Clinical Trials Partnership (EDCTP) Tuberculosis Close the gap, increase Access, Provide adequate Therapy (TB-CAPT). At the meeting, relevant topics of importance were discussed, including systems to facilitate the return of test results, community testing and access to diagnostics, waste management (WM), and effective diagnostic strategies to control and prevent HIV, Coronavirus Disease 2019 (COVID-19), and tuberculosis. Expectedly, the meeting provided opportunities for PEPFAR and GF representatives, other global health stakeholders, and laboratory leaders to discuss innovative solutions to improve diagnostics for better healthcare.

1 Burkina Faso, Burundi, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Eswatini, Gabon, Kenya, Malawi, Nigeria, Republic of Congo, Sierra Leone, South Africa, South Sudan, Tanzania, Uganda, Zambia, and Zimbabwe.

2. MEETING OBJECTIVES

The objectives of the meeting were:

- To review each country's assessment data and evaluate their gaps and progress towards laboratory systems targets and standards in the last 12 months.
- To assist the country team in developing evidence-based action plans to be submitted for the 2023 PEPFAR Country Operational Plan (PEPFAR COP23) and the GF's New Funding Model 4 (NMF4) funding cycle beginning in 2023.
- To review the LabCoP's recently-identified best practices and upcoming initiatives, including diagnostic network optimisation (DNO) and diagnostic integration to improve access to HIV, TB, and other essential diagnostics.
- To connect the LabCoP country teams with global laboratory stakeholders and funders and identify priority interventions and investment cases for laboratory systems strengthening.

3. OUTCOMES

By the end of the meeting, the following were achieved:

- An updated matrix of best practices, initiatives, and innovations to address African laboratory system gaps
- Nineteen evidence-based work plans drafts, which are to be submitted to the PEPFAR COP23 and the GF NMF4
- DNO and test integration priority use cases
- An updated list of priority actions and recommendations for Africa's laboratory system strengthening.

4. MEETING OVERVIEW

The sixth annual LabCoP meeting had 161 physical attendees and 938 unique Zoom conference connections. Participants included global health experts, funders, collaborating partners, and country teams from the 19 LabCoP countries and Guinea, Seychelles, Switzerland, UK, US, Botswana, Mozambique & Sao Tome. All country teams were led by their ministry of health representative(s), with additional participants from implementing partners, funding agencies, and civil society organisations.

The meeting had eight sessions (Annex A), including plenary sessions for presentations from ASLM, collaborating partners, and funding agencies. Selected countries also shared their implementation experience over the last 12 months. Additionally, each day had breakout sessions, during which countries were split into six breakout groups of three/four countries. In the groups, the countries shared their achievements, successes, and challenges from COP 22 (Day 1), determined their priorities for the upcoming implementation period (Day 2), and linked these identified priorities to ongoing initiatives, best practices, and PEPFAR and GF funding areas (Day 3). The meeting provided an interactive platform for countries and donors/funders to review action plans to match the next application priority areas.

5. SESSION SUMMARIES AND KEY TAKEAWAYS

Session 1: Introduction and Opening Plenary

The opening plenary (Session 1) began with welcome remarks from the ASLM's CEO, Nqobile Ndlovu, the BMGF's Program Officer, Thandi Onami, and the NHLS South Africa's CEO, Kamy Chetty. Following the remarks were brief presentations from Pascale Ondoa, ASLM Director of Science and New Initiatives *(Conference objective and expected outcomes)*, Collins Otieno, LabCoP Project Lead *(The ASLM LabCoP: 2021-2022 achievements and update)*, Lara Vojnov, WHO, (What's new in WHO diagnostics guidance), Juliet Bryant, The Global Fund, (Global Fund: Strengthening laboratory system), and George Alemnji, PEPFAR, (PEPFAR: Global laboratory strengthening priorities).

Session 1: Key Takeaways

- The LabCoP has been instrumental in facilitating a platform for multi-country, multidisciplinary interactions to identify and support the uptake of best practices and solutions to improve laboratory systems. The LabCoP's mission is to ensure that country funding requests are successful by providing a platform for countries and donors/funders to interact, and for the donor/funders to review and guide the next application process to ensure priority area match(s).
- The LabCoP has successfully (i) developed Laboratory guidelines and recipes of best practices, (ii) established south-to-south collaboration (Kenya and Uganda HIV Dashboard collaboration, South Sudan and Zambia waste management collaboration) and knowledge sharing in ECHO sessions, (iii) supported country visits for advocacy; (iv) supported systems and network assessments; (v) assisted in evidence-based prioritisation of interventions and (vi) developed country work plans that informed funding applications from PEPFAR, Global Fund, other donors and domestic sources.
- Since its 2017 inception, the LabCoP has broadened its scope beyond HIV Viral Load (VL) testing to include tuberculosis (TB), COVID-19, and other diseases. There is

also more focus on strengthening critical systems, such as waste management (WM), monitoring and evaluation (M&E), test integration/DNO, and quality management systems (QMS). Additional focus areas in the pipeline include access to essential testing, such as community testing and involvement.

- The GF is committed to maximising people-centred integrated health systems to deliver impact, resilience, and sustainability in line with their 2023-2028 Strategy. The GF has resources for laboratory systems strengthening classed under the Resilient and Sustainable Systems for Health module and applicable to HIV, Malaria, and TB. Laboratory-based surveillance funding is now available under the laboratory module, and funding for DNO & geospatial analyses –new interventions are available. Funding requests for environmental surveillance were encouraged to monitor the ongoing community-level transmission of priority diseases and new variants. Funding requests in these areas are encouraged.

- The WHO 2021 diagnostics guidance allows for greater decentralisation, bringing testing closer to the patient. In addition, it promotes diagnostic integration, including device sharing, systems integration, and service integration. The WHO 2021 diagnostics guideline builds upon the 2019 Molecular Diagnostic Integration Global Meeting Report recommendations.

- The WHO Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring urge countries to scale up early infant diagnosis (EID) in the post-natal phase by extending the final diagnosis to the end of the period of risk, which is breastfeeding. Countries should consider point-of-care (POC) infant diagnosis technology and strengthen it within the current algorithm, as infants are nine times more likely to start treatment within 60 days with POC than with standard-of-care testing. Repeat VL testing should be at three months (not 3-6 months), and VL repeat testing results should be available for clinical intervention during the patient visit. The use of POC testing needs to be strengthened to improve access to results and reduced TAT to ensure timely clinical intervention for Key Populations (children, adolescents, breastfeeding mothers, and pregnant women).

- PEPFAR supports the strengthening of laboratory networks on the continent by focusing on five key pillars (i) Health equity for priority populations; (ii) sustaining the response; (iii) public health systems and security; (iv) transformative partnership, and (v) following the science.

Session 2: Measuring Our Progress in Scaling up VL Testing and Strengthening of Laboratory Systems

Session two overviewed the tools for measuring progress made in scale-up of VL testing and strengthening laboratory systems, including the VL self-assessment scorecard, the WHO Regional Office for Africa (WHO-AFRO) VL/EID scorecard, the integration readiness assessment scorecard, and the LabNET scorecard. When used, these tools allow for a 3600 view of the laboratory network. In addition, the LabCoP countries shared their recent assessment results.

Session 2: Key Takeaways

- The HIV VL Testing Cascade Self-Assessment Scorecard and the WHO VL & EID Assessment tools identify critical gaps in laboratory systems and assess the VL cascade and EID testing to identify improvement opportunities. These tools also collect country data necessary for strategic decision-making and national plans.

- Results from the HIV VL self-assessment conducted in 17 LabCoP countries (2019-2022) identified gaps in three domains, Supply Chain & Equipment maintenance, Sample transportation & Result reporting (TAT), WM and Biosafety (vertical arrows in Table 1). Therefore, countries must develop national policies, guidelines or strategies to implement WM, reagent forecasting and procurement, sample transport optimisation and result reporting and utilisation.

- Countries were encouraged to use the LabNet scorecard to identify gaps and opportunities for improvement. The LabNet scorecard

assesses the existence and functionality of nine essential components of the laboratory network: political, legal and regulatory framework; structure and organisation; network coverage and rapid response; Laboratory Information Management Systems (LIMS); infrastructure; human resources, quality of the laboratory system; biosafety/ biosecurity; and priority disease.

- The LabNet follows the One-Health approach; hence a multidisciplinary national committee is appointed to work on the scorecard with external auditors. From the LabNet scorecard, 2022 priorities included improving integrated data systems, QMS beyond HIV and TB testing, access to diagnostics, and access to epidemiological evidence for planning

- Laboratory mapping (LabMaP), currently implemented as a collaboration between the Africa Centres for Disease Control and Prevention (ACDC) and ASLM, is an approach that helps assess diagnostic capability, access, and coverage of the laboratory network. LabMaP data needs regular updating to capture changes in laboratory networking. Eighteen countries participated in laboratory mapping between 2018 and 2022.

- Diagnostic integration allows synergised testing, supply chain, and WM to improve laboratory efficiency. The assessment of Integration readiness of laboratory systems evaluates four core capabilities: preparation and planning, network capacity, support systems, and data use for decision-making.

Table 1: HIV Viral Load Testing Cascade Self-Assessment Scorecard

Domain	Country 1	Country 2	Country 3	Country 4	Country 5	Country 6	Country 7	Country 8	Country 9	Country 10	Country 11	Country 12	Country 13	Country 14	Country 15	Country 16	Country 17
Demand Creation for HIV VL testing	3	4	3	2	3	3	3	3	3	4	1	4	3	4	4	4	4
Specimen Collection and Processing	2	3	3	2	3	1	1	1	3	1	1	3	3	4	4	3	3
Sample Transportation	2	3	2	2	3	1	2	2	1	1	1	3	3	3	4	2	3
HIV VL Testing	4	3	1	2	4	2	1	2	2	1	1	2	3	2	4	2	4
Waste Management and Biosafety	3	3	2	3	4	3	2	3	2	1	1	2	2	1	4	1	2
Supply Chain Management and Equipment Mainenance	2	2	1	2	2	2	2	3	2	1	1	3	3	2	3	2	2
Results Utilization	3	2	1	2	3	1	2	2	3	1	1	3	3	3	3	3	4
Leadership and Management	3	4	3	3	4	4	4	3	4	2	2	4	4	4	4	4	4

Domains that need increased attention → Sample Transportation; Waste Management and Biosafety; Supply Chain Management and Equipment Mainenance

Some countries require more dedicated TA

Key: Four progressive levels of scores of maturity of the system (domain)

1 (foundation level) 2 3 4 (fully matured)

Session 2: Panel Discussion

Session Two had a panel discussion on *"2022 priorities of laboratory systems and network consolidation"*. The ASLM CEO, Mr Nqobile Ndlovu, was joined by Prof Wendy Stevens (NHLS/ Wits Diagnostic Innovative Hub), Dr Charles Sawadogo (MoH Burkina Faso), Dr Kingsley Odiabara (MoH Nigeria), Dr Heather Alexander (United States Centres for Disease Control and Prevention (US CDC)), and Mr Nelson Otwoma (National Empowerment Network of People living with HIV/AIDS in Kenya). Mr Ndlovu gave the context and background for the discussion and moderated it. He noted that despite progress on laboratory systems capacity building, gaps remain, including access to diagnostic services, fragmented testing services and fragmented laboratory governance structures. He emphasised that laboratory capacity must now be consolidated and wholly owned by the countries. Thus, the discussions focused on country and donor priorities for laboratory systems and network consolidation beyond 2022.

Session 2: Panel Discussion Key Takeaways

- Integration and network optimisation are key focus areas in South Africa, and previous investments in TB and HIV molecular laboratory networks were integration pillars during the peak of the COVID-19 pandemic. There is, however, the need for digital and network integration at the clinic level as data at the clinic level is still largely paper-based, thus unutilised for evidence-based public health decision-making. Going forward, South Africa should include multiplex testing for other diseases, such as human papillomavirus, antimicrobial resistance, and other sexually transmitted diseases.

- Burkina Faso significantly advanced its laboratory systems capacity, particularly disease surveillance and diagnostic access. The country's 2022 priorities focused on revising the national laboratory policy and strategic plan, completing the laboratory mapping exercise, establishing a national regulatory framework for POC testing, and strengthening genomic surveillance capacity.

- Gap assessments informed priority interventions in Nigeria's National Laboratory Policies and Strategic Plans. However, there is a need to improve collaboration and communication with funders to determine project priorities.

- The US CDC 2023 priorities will include diagnostic system continuous quality improvement, POC implementation and continuous quality improvement, laboratory informatics and data systems, biosafety and WM. Consultations with country teams and regional and in-country laboratory advisors informed these priorities.

- The WHO shared its laboratory system priority areas and changing landscapes over the last decade. These included adopting country-driven priority consultations, adopting the Essential Diagnostic Lists or each country's equivalent, and integrating testing platforms and diagnostic networks.

- The National Empowerment Network of People living with HIV/AIDS in Kenya emphasised the need for capacity building for civil society players to ensure adequate information/ knowledge on diagnostic services. In addition, civil society helps to advocate better funding for diagnostics/services in the GF's Country Coordinating.

- Summarily, the panellists emphasised the need to consolidate the gains made through the TB, HIV, and COVID-19 investments in Africa to strengthen laboratory networks and systems.

Session 3: Breakout Session I

In Session three, the 19 LabCoP countries were grouped into six groups of three/four countries. Each country shared their perspective on using the assessment tools during this question-and-answer session.

Session 3: Breakout Session Country Responses

1. **How easy or difficult were the evaluations?**
   Some countries indicated that the assessment tools were easy to use because of ASLM's technical assistance and the participation

of all stakeholders. However, it was difficult for some countries to bring together all stakeholders involved in the self-assessment, and documented evidence was unavailable. In addition, the countries noted that the days for completing the assessments,two days, are insufficient.

2. **Were the stakeholders participating in the assessment aligned with the scope of the evaluation, and could they contribute to the result in interpretation (LabCoP is not going beyond HIV)?**
   For some countries, stakeholders, i.e., clinicians, laboratory staff, donors, and implementing partners, participated in the assessments. However, the private and regional/provincial sectors in most countries were not well represented. Therefore, the LabCoP country teams were mandated to devise mechanisms for including all key stakeholders to capture all perspectives and ensure a representative evaluation outcome.

3. **Do you have an opportunity to discuss these results with other departments in each country's ministry of health? With external stakeholders and funders besides LabCoP?**
   Most country teams shared the assessment results with the Technical Working Group comprising different stakeholders and departments. For some country teams, sharing with other disease control programs was difficult because the issues focused on the HIV program. In the case of one country, the laboratory does not report to the MoH but to the National Public Health Laboratory, making information sharing difficult.

4. **If you submitted to PEPFAR or Global Fund, was it easy to get the interventions in the request?**
   For most countries, getting intervention funds was easy because PEPFAR, GF and its implementing partners are among its laboratory sector stakeholders. However, some country teams indicated that the GF lacks in-country technical people. For some, the interventions were supported by other funding requests, as most activities are aligned and included in the strategic plans.

5. **Why were some interventions not funded?**
   Some reasons for unsuccessful bids included missing submission deadlines and intervention mismatch with the funder's business plan and priorities. Zambia shared that they utilise a central coordination point for funding applications to consolidate country priorities and ensure greater funding application coherence.

Session 4: Best Practices and Ongoing Initiatives

Session 4 focused on sharing best practices and ongoing initiatives, including improving the use of test results, enhancing electronic dashboards to include additional indicators for patients with unsuppressed VL, and establishing National Laboratory Quality Framework for the sustainable QMS, WM initiatives, task shifting, community-led HIV VL campaigns and many more.

Session 4: Key Takeaways

- The Ugandan team shared that using the Access Controlled Dashboard for Electronic Results Return led to a 50% TAT reduction. The last mile in result return was the successful implementation of the Laboratory Results Dispatch System, a client-centred platform that sends on-request short message service (SMS) to the client once results are uploaded on the web-based result dispatch system. The successful scale-up of the result return platform was attributed to building local Information and communications technology (ICT) capacity, ensuring consistent system updates, and establishing local data centres.

- The Kenyan team shared their success in developing and integrating a COVID-19 module into the existing Electronic Medical Records (EMR). The module integration facilitated vaccine screening and COVID-19 management in patients on HIV treatment. Mobile applications were also enhanced with COVID-19 messaging to enhance vaccine uptake among people living with HIV. They plan to improve the dashboards to include a cascade for suspected treatment failure and antimicrobial susceptibility tests.

- The Maputo declaration on Strengthening Laboratory systems and other guiding

frameworks, i.e., Strengthening Laboratory Management Towards Accreditation, have significantly improved diagnostic systems on the continent. Laboratory QMS improvement includes building national quality infrastructure, e.g., national accreditation bodies, laboratory licencing systems, skilled workforce, national External Quality Assessments programmes, and calibration centres. The national quality infrastructure should be guided by ACDC's Guidance for Establishing a National Laboratory Quality Framework. This framework creates a country-wide approach to advance QMS Implementation at all health system levels.

- The US CDC highlighted some innovative waste management methods (WM) methods, including Guanidine thiocyanate (GTC) precipitation protocols and showcased the HIV Laboratory Waste Cost Assessment Framework tool. The US CDC and Roche Diagnostics co-developed the tool under a public-private partnership to support accurate quantification of solid and liquid wastes generated in PEPFAR-supported countries. Future steps include building country capacity through WM training, strengthening WM monitoring and evaluation, and developing national GTC-containing WM systems policy framework for countries to adopt.

- Medicines Sans Frontieres, South Africa, urged countries to re-examine and complement current service delivery models for decentralised health facilities. For example, task shifting sample collection and rapid diagnostic testing to trained lay testing cadres and non-laboratory staff when professional staffing is limited.

- International Treatment Preparedness Coalition worked with six LabCoP countries –the Democratic Republic of the Congo (DRC), Kenya, Malawi, Sierra Leone, South Sudan, and Zimbabwe– on community-led campaigns between 2020 and 2021. The campaigns showed that time should be allowed to communicate and reinforce campaign messages. Also, digital or social media campaigns complement non-digital campaigns to help reach certain subpopulation groups (e.g., rural, adults and limited literacy). Finally, they emphasised that creating VL testing demand is only a partial solution as testing capacity should match testing demand. Thus, addressing testing issues, such as the availability of test commodities, human resource capacity, and equipment capacity, is vital.

- The US CDC Clinical-Laboratory Interface Continuous Quality Improvement program (CLICQI) pilot in Uganda and Nigeria improved patient and specimen retention throughout the TB/HIV diagnostic cascade. Key achievements included reduced TAT and an increased number of patients that received TB services. In the program, participants received training on continuous quality improvement (CQI) practices, data review, and other strengthening activities. Participants developed site-specific improvement projects to bridge prioritised gaps.

- Country teams were urged to use cost-effectiveness analysis (CEA) to optimise the selection of laboratory services. South Africa's NHLS presentation highlighted findings from the CEA study comparing reflex Cryptococcal antigenemia (CrAg) screening to provider-initiated CrAg. Reflex CrAg is performed automatically following a CD4<100 cells/ul; in provider-initiated CrAg, healthcare workers request the test following a CD4<100 cells/ul. Key findings from the study showed that CEA application in diagnostic studies provided an objective measure of cost and effect and determined which intervention was optimal for the public health system. The CEA also enabled local cost projections and effectiveness.

- Countries should embrace the Global Laboratory Leadership Program (GLLP), which fosters and mentors current and emerging laboratory leaders to build, strengthen, and sustain national laboratory systems. In addition, the Laboratory Leadership Competency Framework Should guide laboratory leaders' key competencies.

- The ASLM LABNETLEAD course, complementary to the GLLP, was designed to address the lack of comprehensive

overview and management skills among laboratory leaders to coordinate the national tier laboratory network. The course targets the technical working groups managing the laboratory network. From the Zimbabwe experience, The LABNETLEAD course has built leadership and management capacity through practical group work aimed at optimising the country's laboratory network.

Session 5: Highlights on Integration and Diagnostic Network Optimisation

Historically, African laboratories are not equitably available or accessible to the greater population; this inequity affects clinical and public health service delivery. Furthermore, funding to optimise laboratory networks in resource-limited settings is often lacking or not driven by context-relevant geo-localised (GIS) data on laboratory capacity. In Session five, participants discussed the continent's current laboratory system Integration readiness tools, including its benefits and country-specific experiences in implementing DNO.

Session 5: Key Takeaways

- The ASLM assessed the integration readiness of laboratory systems and networks across 11 countries using a pilot integration readiness tool. The assessment revealed some integration readiness strengths, including having integration as an objective in most countries' national laboratory policy and a coordinating technical working group. All the assessed countries had some form of geographic Information system mapping for the current laboratory capacity and a mechanism of integrated electronic data reporting for HIV and TB testing. Integration readiness gaps observed included non-data/evidence-informed instrument placement; shortage of staff and lack of workforce regulation; no mechanisms to cover the cost of cross-cutting activities; and outdated or inadequate essential diagnostic list or equivalent (Table 2). The next steps include drafting interventions for the identified integration gaps into the upcoming PEPFAR and GF work plans.

Table 2: Median integration readiness scores for 11 assessed countries

Capability	Component	Score/Scorecard maturation stages
Preparation and Planning	1.1 Policies guidance and regulation	2
	1.2 Governance and coordination	3
	1.3 Defining testing use cases	2
Network capacity	2.1 Network design	2
	2.2 Network servicing and contract of instruments, equipment, reagents	3
	2.3 Testing platform placement and configuration	1
Support systems	3.1 Workforce	1
	3.2 QMS, Biosafety, biosafety	3
Data use for decision making	4.1 Data for clinical and public health	3
	4.2 Continuous improvement	2

Key: Stage 0= Absence of key attributes; Stage 1= Foundation level; Stage 2=Moderate level; Stage 3= Strong technical and managerial level; Stage 4= Advanced level; Stage 5= Attainment of international standards

- Country teams were urged to perform DNO exercises, especially when procuring and placing new devices, expanding decentralised testing, expanding sample transportation systems, integrating new tests on existing devices, and leveraging private sector capacity to scale up access to testing. DNO exercises are systematic and generally include five steps, from defining the scope to selecting and implementing the outputs (Figure 1), as illustrated in the Guide to Diagnostic Network Optimisation.
- In Zambia, the DNO caused a 5km decrease in the average distance travelled per TB sample. Distance travelled on average for priority HIV samples also decreased 10-fold to 11 km, and there were savings in annualised GeneXpert cost of 23% through cost-sharing with the HIV programme.

Figure 1: Steps in Diagnostic Network Optimisation

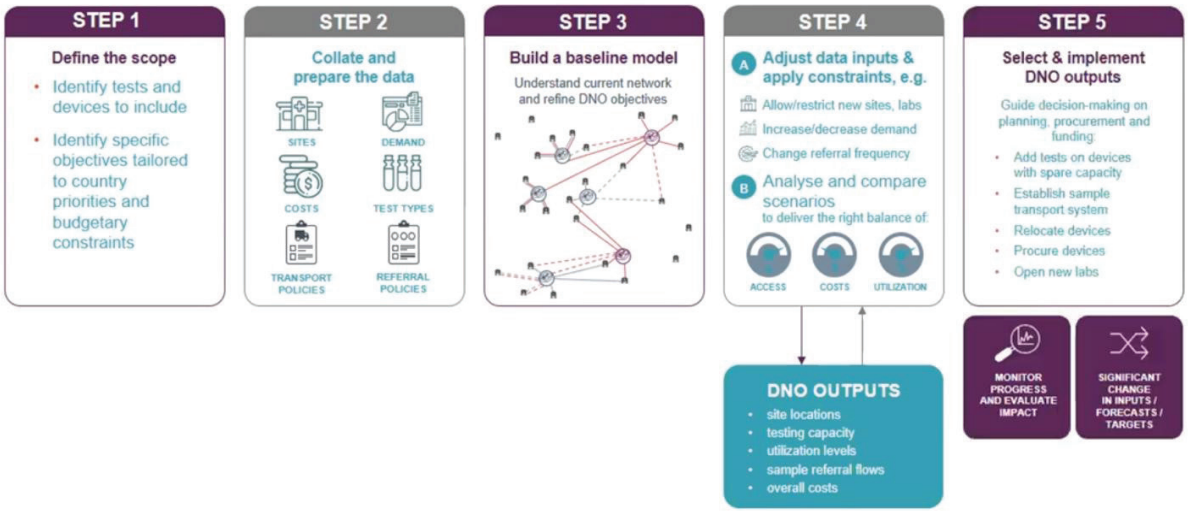


Table 3: Funding Priority Interventions identified by Group

Priority Intervention area	Aim of the intervention	Public health goal (s)	Targets
Waste management • Lack of infrastructure • Lack of guidance	• Development of waste management guidelines • Pilot different pretreatment methods of GTC containing waste and adopt the most sustainable ones	• 2030 Agenda for Sustainable Development	• To have sustainable methods of disposing of GTC-containing waste by the end of 2023
Equipment maintenance • Frequent breakdowns due to ageing equipment • Service contracts not covering ancillary equipment	• To have equipment replacement plans in place • Capacitate NRLS to conduct service and calibration of ancillary equipment locally	• Universal health care	• To have equipment replacement plans in place. • To set up functional calibration centres by 2024
Electronic Health registers/ Laboratory Information Management System • Lack of defined integration approaches • Lack of technical expertise	• Integration of systems • Platform for sharing implementation	• UNAIDS Fast Track (3rd 95) • "End the global TB epidemic" by 2035	• To integrate at least 90% of sites using Electronic health records into Laboratory Information Management System by the end of 2023

Session 6: Planning for Funding Request

In Session 6, the LabCoP countries summarised priority gaps identified from the various assessments, followed by a group discussion. Each breakout group representative presented a summary of common funding approaches(Table 3). The top priorities listed by most country teams include additional support to expand electronic test requests and result returns and the introduction of innovative methods for waste management, such as precipitation of GTC.

Session 6: Satellite Session

The TB-CAPT satellite session focused on scaling up access to near POC/POC molecular testing services for TB and drug-resistant TB. Scale-up requires sharing preliminary results from implementation studies of new molecular tools for diagnosing TB and DR-TB. Countries shared their Truenat™ molecular testing platform experience and its operational consideration for placement within the existing TB laboratory network. The discussion covered integrated service delivery, waste management, and a national essential diagnostic list.

Session 6: Satellite Session Key Takeaways

- The TB-CAPT consortium is currently conducting randomised control trials to assess the impact of the Molbio MTB assays on the Truenat™ (Molbio Diagnostics, Goa, India) platform in peripheral health clinics. The focus is to evaluate the impact of diagnostic interventions on patient outcomes and expand TB testing for people living with HIV.

- Preliminary findings from the feasibility study on "Reflex Xpert MTB/XDR genotypic susceptibility testing of residual rifampicin-resistant sputum specimen" showed that Xpert MTB/XDR detected Mycobacterium tuberculosis in 93% of samples compared to Xpert MTB/ RIF Ultra. Valid drug susceptibility test (DST) results for all drug targets were obtained from 87% of samples on Xpert MTB/ XDR compared to 67% in the standard of care (line probe assays). Holding samples for more than 4 hours did not affect M. tuberculosis detection rates and DST. TAT for DST on Xpert MTB/XDR was also significantly less compared to the standard of care.

- The introducing New Tools Project (iNTP) proposed the Practical guidance to implement Truenat tests for the detection of TB and Rifampicin resistance. This guideline includes examples of SOPs, budget considerations, implementation roadmaps, M&E frameworks, job aids, and maintenance checklists.

- Truenat™ testing has improved accessibility to WHO-recommended molecular diagnostic (mWRD) at low-level facilities. The next steps include ensuring lessons learnt are shared with other countries and stakeholders to enable scale-up, improved QMS implementation, and support for device connectivity to ensure optimum instrument uptime.

- Early key stakeholder engagement and ministerial endorsement drove the successful implementation and increased acceptability of Truenat™ in Nigeria and the DRC. The Truenat™ was also integrated into their national TB diagnostic policy.

- Truenat™ needs to be included in the national TB diagnostic network so that its reagents are included in national reagents quantification exercises, its data connected to data sharing platforms (i.e., GxAlert), and its assay enrolled in external quality assessment and QMS support.

- Countries shared the adoption of standardised waste management procedures, including decontaminating cartridges with 10% bleach for at least 30 minutes before incineration and decontaminating unused sputum samples and other waste with freshly prepared 0.5% sodium hypochlorite for at least 30 minutes before discarding.

- Zimbabwe emphasised that the placement of Truenat™ instruments should be guided by coverage targets set out in the National TB strategic plan, laboratory network spatial analysis and consultation with stakeholders.

Session 7: Funding Opportunities and Priorities

Session 7 focused on the funding priorities of key global health donors, including PEPFAR and the GF and emphasised the need for countries to identify and seek additional funding sources,

including domestic financing, for VL scale-up and laboratory systems strengthening activities.

Session 7: Key Takeaways

- Reducing energy consumption and conserving resources, improving WM, taking care of equipment, optimising processes and incorporating sustainability in programs will ensure sustained laboratory efficiency.
- All-inclusive pricing is an important strategy to address issues around instrument breakdown, specimen backlog, service and maintenance contracts, stock-outs and high unit-cost-per-test for reagents.
- The GF shared the 2023 Funding application timelines, with window one applications expected by the 20th of March 2023, Window two expected by the 29th of MarchMay, and Window 3 applications expected by the 21st of August 2023. For NFM4, GF recommends a 10% minimum total allocation to Resilient and Sustainable Systems for Health. The GF has resources for laboratory systems strengthening, classed under the Resilient and Sustainable Systems for Health module and applicable to HIV, Malaria and TB.
- The GF allocation-based funding model emphasises alignment with country processes and aims to incentivise the development of robust, cost-effective, and prioritised national strategic plans. For laboratory systems strengthening to be foremost in the country's applications, laboratory leaders should present a country coordinating mechanism for laboratory investments at country dialogues.

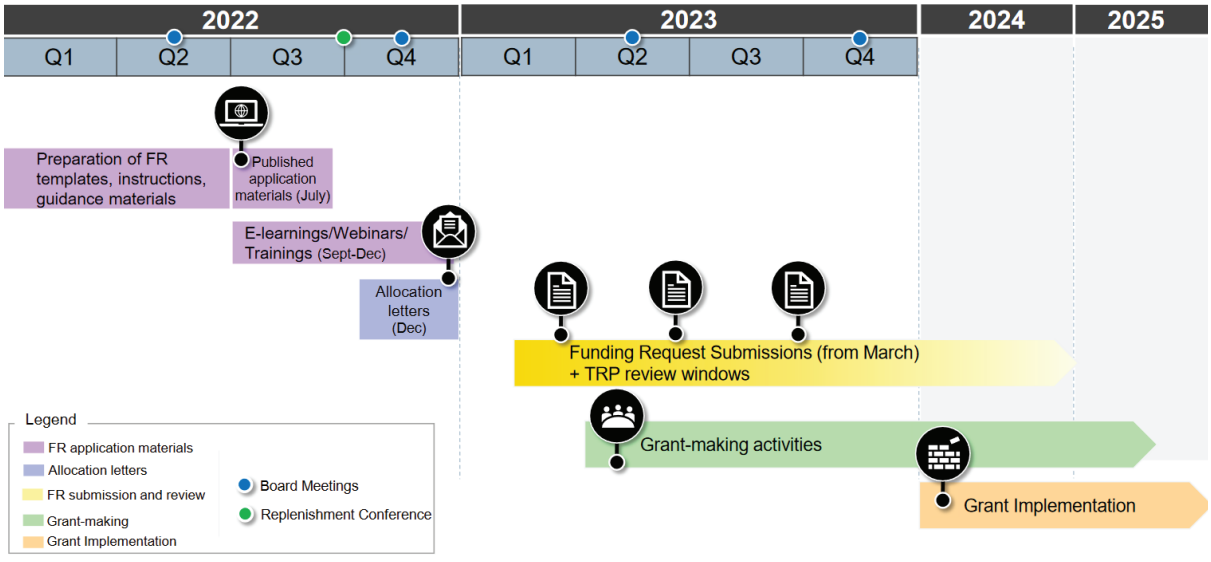
Session 7: Panel discussion

The session also included a panel discussion on 'How to improve the relevance and level of funding for laboratories'. Mr Ndlovu moderated the session comprising of panellists Kamy Chetty (NHLS South Africa), George Alemnji (PEPFAR), Thandi Onami (BMGF), Adama Diomande (MoH Cote d'Ivoire), Gregory (MoH South Sudan), Juliet Bryant (The Global Fund). Mr Ndlovu gave the discussion's context and background. The panel discussed how to align country priorities with available funding. The aim was to provide ideas for improving fund use, absorption, and funding level for laboratory systems and networks.

Session 7: Panel Discuss Key Takeaways

- The BMGF emphasised creative collaboration, dialogues and knowledge sharing to improve laboratory systems.
- South Sudan shared that the government is not funding most of the laboratory activities

Figure 2: Global Fund 2023-2025 Allocation Period Timeline



as a new country; instead, funding comes from the US CDC, PEPFAR, ICAP and GF. Notably, in-country technical advisors guided and aligned priority areas for funding application and implementation. More so, the collaboration between the South Sudan MoH and implementation partners ensured that funding assigned to the laboratory reached the intended programmes.

- South Africa's pay-per-service through parastatals has successfully increased laboratory activity funding. South Africa's NHLS is a government parastatal with its controlling board giving it visibility and budget control. The national treasury funds 90% of the laboratory services, while donors fund priority diseases.
- There has been a decrease in laboratory funding over the last few years. Also,there is a skewed emphasis on services strengthening and neglect of the laboratory systems support. However, PEPFAR's 5x3 strategic approach pillar number three emphasises strengthening both laboratory services and systems.

Session 8: Parallel Breakout Session

The session linked the priority identified from the previous day to ongoing initiatives, best practices and PEPFAR and the GF funding areas. Country teams used the strategic decision matrix to identify strategic interventions and priority actions for improvement. Priority action for improvement highlighted by the countries included demand creation, integrated sample referral, QMS support, WM, and VL testing coverage.

Table 4: Group Four's Priority Actions for Improvement Interventions

Strategic option	Priority action for improvement	Funding application and alignment
Demand creation	Increase demand creation to 80% of population coverage	PEPFAR COP23 and Global Fund NFM4
Integrated sample referral	Establish additional five hubs in the five states	PEPFAR COP23 and Global Fund NFM4
QMS implementation	Enrol 18 Viral Load Labs in QMS support	PEPFAR COP23 and Global Fund NFM4
QMS Implementation	Support one laboratory to accreditation	PEPFAR and Global Fund NFM4
Waste management	Establishment of waste management TWG	PEPFAR and MoH implementation
Improving TAT	Reduce VL TAT from 14 to 7 days	PEPFAR and Global Fund
Viral load testing coverage	Increase VL testing capacity to 95% across all testing laboratories	PEPFAR COP23 and Global Fund NFM4
Supply chain management	Establish a Supply chain TWG	PEPFAR COP23 and Global Fund NFM4
Result utilisation	Ensure all VL results are documented and results	PEPFAR COP22 and Global Fund NFM4

Group 4 comprised Sierra Leone, Eswatini and South Sudan; TWG, Technical working group; VL, viral load; QMS, quality management system; TAT, turn-around time; PEPFAR COP23, PEPFAR Country Operational Plan 2023; NMF4, New Funding Model 4 (NMF4)

6. CLOSING PLENARY

In the closing plenary, Dr Ondoa, the ASLM's Director of Science and New Initiatives, recognised the contributions and participation of country teams in LabCoP sessions and new LabCoP members, including the Republic of Congo, Gabon, and Cote D'Ivoire.

Nigeria, Kenya, South Africa, Ethiopia and Uganda Countries had the highest participation in ECHO sessions. Also, Tanzania, South Africa, South Sudan, Malawi, Zimbabwe, Zambia, Nigeria, Burkina Faso, Nigeria, Uganda and Kenya were recognised for sharing presentations during ECHO sessions, satellite sessions, and the 2021 annual meeting. Countries recognised for reporting data at the national level for most indicators of the viral load cascade were Eswatini, Kenya, South Africa, Tanzania and Zimbabwe. South-to-South collaborations between Zambia-South Sudan (Waste management) and Kenya-Uganda (Electronic test results transmission) were recognised. In addition, Zambia and Malawi TWG were recognised for the LabNet Lead Country training.

Subject matter experts recognised for outstanding contributions included Norah Vere, Agnes Chibango, Joseph Mwewa, Innocent Hamaganyu, Amos Zulu, MacDonald Kamwela, Aaron Shibemba, Clement Phiri, Robert Olemukan, and Lul Deng Lojok. Recognition for most WhatsApp engagements went to Tapfumanei Mashe, Innocent Twabeze, Muwonga Jeremie Masidi, Ed Krisiunas, Viktor Hristov, Patrick Madingar, and Ndayitwayeko Salvator.

In closing, ASLM and partners reiterated the the value of LabCoP and the community's collective achievements in scaling up VL testing and strengthening Africa's laboratory systems and diagnostic networks. They emphasised that LabCoP will advance these achivements and looks forward to a fruitful 2023.

7. WAY FORWARD

1. Countries will complete their 2023 work plans based on groupwork outputs and identified priority areas linked to funding opportunities. The ASLM LabCoP and LabCoP country teams will monitor the implementation of funded country work plans.

2. Country teams need to continue refining priorities and addressing other diseases.

3. The ASLM and partners need to continue investing in people through initiatives such as LabNetLead and supportive technical assistance.

4. The ASLM is committed to intensifying advocacy for the laboratory through platforms such as the Directors' Forum.

5. The LabCoP will plan for and have dedicated sessions for engaging the private sector in subsequent meetings.

6. The time and method of delivery for future breakout sessions and follow-on plenary discussions will be restructured to allow for exhaustive experience-sharing.

8. ACKNOWLEDGEMENTS

The ASLM specially the NHLS, all the country teams and global stakeholders who planned and attended the meeting and acknowledges the ASLM's HIV Awareness Ambassador, Moses' Supercharger' Nsubuga, for composing and producing LabCoP's 2022 theme song. The activities of the LabCoP, including this six annual LabCop meeting, are funded and supported by the BMGF. Special thanks to the WHO, the Resolve to Save Lives project, and the TB-CAPT project as part of the EDCTP2 programme supported by the European Union, for their financial contribution to the 2022 annual LabCoP meeting,

9. APPENDIX A: MEETING AGENDA

AGENDA

Day 1 – Tuesday, the 11th of October 2022

Time	Session	Facilitator/Presenters
Session 1 | Introduction and Opening Plenary		**Anafi Mataka (ASLM)**
8.30 - 9.00	Registration	ASLM
9.00 - 9.15	Opening remarks	Nqobile Ndlovu (ASLM) Thandi Onami (BMGF) Kamy Chetty (NHLS South Africa)
9.15 - 9.25	Meeting objectives and expected outcomes	Pascale Ondoa (ASLM)
9.25 - 9.40	The ASLM LabCoP: 2021-2022 achievements and updates	Collins Otieno (ASLM)
9.40 - 10.00	What's new in WHO diagnostics guidance	Lara Vojnov (WHO)
10.10 - 10.20	Global Fund: Strengthening laboratory systems	Juliet Bryant (The Global Fund)
10.20 - 10.40	PEPFAR: Global laboratory strengthening priorities	George Alemnji (PEPFAR)
10.40 - 11.00	**Group photo and tea break**	
Session 2 | Measuring our progress in scaling up VL and strengthening laboratory systems		
11.00 - 11.20	Scaling up viral load and early infant diagnosis	Michael Maina (ASLM)
11.20 - 11.40	Beyond Viral Load: Strengthening laboratory systems and networks	Marguerite Massinga-Loembe (ASLM)
11.40 - 11.50	Q&A	
11.50 - 12.30	The 2022 priorities of laboratory systems and network consolidation: panel discussion	Nqobile Ndlovu (ASLM)
12.30 - 13.00	Introduction to breakout session	Anafi Mataka (ASLM)
13.00 - 14.00	**Lunch Break**	
Session 3 | Parallel Breakout Session I		
14.00 - 15.45	Group work Aim: share achievements/success/challenges from last work plan (COP 21 and 22) • **Group 1:** DRC, Burkina Faso, Gabon • **Group 2:** Cameroon, Cote d'Ivoire, Burundi • **Group 3:** Zambia, Zimbabwe, Malawi • **Group 4:** Sierra Leone, South Sudan, Eswatini, • **Group 5:** Nigeria, Tanzania, Ethiopia • **Group 6:** Uganda, Kenya, South Africa	• **Group 1:** Pascale, Juliet, CDC • **Group 2:** Samba, Nadine, Jean-Fredrick, CDC • **Group 3:** Collins, Thandi, Heidi, GF/CDC • **Group 4:** Michael, CDC, GF • **Group 5:** Anafi, Beatrice, GF, CDC • **Group 6:** Adisu, Lara, CDC, GF
15.45 - 16.00	**Break**	
16.00 - 17.00	Groups report back session (15 mins/group) 3 groups report	Anafi Mataka (ASLM)
17.20 - 17.30	Close of day/ announcements	Francis Ocen (ASLM)

Day 2 – Wednesday, the 12th of October 2022

Time	Session	Facilitator/Presenters
8.30 - 8.40	Recap of Day 1	Francis Ocen (ASLM)
Session 4 | Best practices and ongoing initiatives		**Heather Alexander (US CDC)/ Aaron Shibemba (MoH Zambia)**
8.45 - 9.15	Electronic return of HIV VL results to reduce TAT and time to act. Revamping the National dashboard to facilitate tracking of recipients of care with non-suppressed viral load test result	Proscovia Mbabazi (MoH Uganda) Faith Ngari (MoH Kenya)
9.15 - 9.30	Waste management updates	Dave Bressler (US CDC)
9.30 - 9.40	Q&A	
9.40- 9.55	Implementing national laboratory quality programmes	Samba Diallo (ASLM)
9.55- 10.00	Updates from CLSI	Barbara J. Jones (CLSI)
10.00 -10.30	Access to testing in communities • Task shifting • Integrated testing services for HIV care	Zee Ndlovu (MSF) Solange Baptiste (ITPC)
10.30 - 10.45	**Tea Break**	
10.45 - 11.00	Clinic-Laboratory Interface Continuous Quality Improvement (CLICQ!)	Jamie Dawson (US CDC)
11.00 - 11.15	Cost-effectiveness analysis of laboratory services	Naseem Casim (NHLS South Africa)
11.15 - 11.45	Strengthening laboratory Leadership and coordination capacity • GLLP • LabnetLead	Juliet Bryant (The Global Fund) Collins Otieno (ASLM)/Norah Vere (MoH Zimbabwe)
11.45 - 12.00	Q&A	
Session 5 | Highlight on Integration and DNO		**Lara Vojnov (WHO)**
12.00 - 12.15	Integration readiness of laboratory systems and networks: how to move the needle?	Collins Otieno (ASLM)
12.15 - 12.30	Diagnostic Network Optimization for improved clinical and public health outcomes	Marguerite Massinga Loembe (ASLM) Heidi Albert (FIND)
12.30 - 13.10	Panel discussion: Integrated testing services through optimised laboratory networks: the way forward	Chair: Lara Vojnov(WHO)/ Heather Alexander (US CDC)
13.10 - 14.10	**Lunch Break**	

Day 2 continued

Time	Session	Facilitator/Presenters
Session 6 I Parallel Breakout session : planning for funding request – what are the areas of weaknesses and country priorities for 2023?		
14.10 - 15.45	Parallel **Breakout Groups II:** ***Building on existing challenges and opportunities to future plans*** **Aim: Reflection on previously prepared logic framework (from the LabCoP in-country workshop) for addressing prioritised gaps.** **What are the priorities?** • **For the entire laboratory system?** • **For HIV, TB, COVID-19 or others?** • **For improving access to diagnostics?** **Quantify the level of improvement that are needed for each priority area** • **Group 1:** DRC, Burkina Faso, Gabon • **Group 2:** Cameroon, Cote d'Ivoire, Burundi • **Group 3:** Zambia, Zimbabwe, Malawi • **Group 4:** South Sudan, Sierra Leone, Eswatini, • **Group 5:** Nigeria, Tanzania, Ethiopia • **Group 6:** Uganda, Kenya, South Africa	• **Group 1:** Pascale, Juliet, US CDC • **Group 2:** Samba, Nadine, Jean-Fredrick, US CDC • **Group 3:** Collins, Thandi, Heidi, GF/ US CDC • **Group 4:** Michael, US CDC, GF • **Group 5:** Anafi Beatrice, GF, US CDC • **Group 6:** Adisu, Lara, US CDC, GF
15.45 - 16.00	**Tea Break**	
16.00 - 17.20	Groups report back session (15 mins/group) 3 other groups present	
16.00 - 17.00	Close of day/ announcements	Anafi Mataka (ASLM)
17.30 - 18.30	**Break**	
18.30 - 20.00	Satellite Session: Expanding tuberculosis diagnostics	Marguerite Massinga-Loembe (ASLM)

Day 3 – Thursday, the 13th of October 2022

Time	Session	Facilitator/Presenters
8.30 - 8.40	Recap of Day 2	Francis Ocen (ASLM)
Session 7 I Funding opportunities and priorities		**Clement Zeh (CDC)**
8.40 - 9.05	PEPFAR's Laboratory Approach to Cost Effective Funding and Program Implementation	George Alemnji (PEPFAR)
9.05 - 9.30	Priorities for laboratory strengthening: Global Fund perspective NMF4	Juliet Bryant (The Global Fund)
9.30 - 10.30	Panel discussion: How to improve the relevance and level of funding for laboratories	Nqobile Ndlovu (ASLM)
10.30 - 11.00	**Tea Break**	
Session 8 I Parallel Breakout session		
11.00 - 12.15	Parallel **Breakout Groups III** **Aim: link the priority identified (from previous day) to ongoing initiatives, best practices and areas of funding from PEPFAR and the GF** • **Group 1:** DRC, Burkina Faso, Gabon • **Group 2**: Cameroon, Cote d'Ivoire, Burundi • G**roup 3:** Zambia, Zimbabwe, Malawi • **Group 4:** South Sudan, Sierra Leone, Eswatini, • **Group 5**: Nigeria, Tanzania, Ethiopia • **Group 6:** Uganda, Kenya, South Africa	• **Group 1**: Pascale, Juliet, US CDC • **Group 2:** Samba, Nadine, Jean-Fredrick, US CDC • **Group 3:** Collins, Thandi, Heidi, GF/US CDC • **Group 4:** Michael, US CDC, GF • **Group 5:** Anafi Beatrice, GF, US CDC • **Group 6:** Adisu, Lara, US CDC, GF
12.15 - 13.00	Groups report back session (10 mins/group) 4 other groups present	Anafi Mataka (ASLM)
13.00 - 13.30	Closing Plenary and Awards Ceremony	Pascale Ondoa (ASLM)
13.45 - 14.15	**Lunch Break**	
14.15 - 17.00	Visit to waste management site	Mmashela Kgote (MoH South Africa)

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