

## IANPHI Joint-Webinar:

### IANPHI Africa Network & Pandemic Preparedness, Response and Recovery Committee

#### The Role of Laboratory Leadership Programs in Improving Early Detection and Rapid Response to Outbreaks

The webinar was moderated by Dr. Alex Riolexus Ario, Chair of the IANPHI Africa Regional Network, Director of Uganda National Institute of Public Health, and Dr. Chinwe Ochu, Vice-Chair of the PPRR Committee, Director of Planning, Research, and Statistics at the Nigeria Centre for Disease Control and Prevention.

The first presentation, entitled “**The Role of The Uganda Public Health Fellowship Program—Laboratory Leadership Program (PHFP-LLP) in Improving Early Detection and Rapid Response to Disease Outbreaks**” was presented by Samuel Gidudu, Program Coordinator, Laboratory Leadership program, UNIPH (Uganda).

Mr. Gidudu introduced the Laboratory Leadership Program (LLP) in Uganda, a two-year in-service training initiative designed to strengthen the country’s capacity for early detection and rapid response to infectious disease outbreaks. Uganda’s vulnerability to outbreaks—with significant health and economic impacts—underscores the need for a robust laboratory system.

The LLP enhances laboratory capacity, leadership, and coordination through mentorship, project implementation, and community engagement. Key activities include evaluating laboratory readiness, improving diagnostic accuracy, fostering collaboration among health professionals, and empowering laboratory staff with strategic skills. The program also standardizes training, provides real-time updates during outbreaks, documents lessons learned, and supports policy integration.

By transforming laboratory systems and empowering professionals, the LLP significantly improves Uganda’s ability to detect and respond to outbreaks effectively. Gidudu acknowledged the support of partner organizations in advancing the program’s mission.

The second presentation, entitled “**The Implementation of the GLLP experience of CICM-Mali**” was presented by Prof. Bourema Kouriba, Director of Centre infectiologie Charles Merieux of Bamako (Mali).

The Centre of Infectiology Charles Mérieux in Mali, established in 2005 through a public-private partnership with the Malian government and the Mérieux Foundation, focuses on combating infectious diseases. The centre includes the ISO 15189-accredited Rudolf Mérieux Laboratory and a training unit.

The centre organized two Global Laboratory Leadership Program (GLLP) trainings: one for Central African leaders (supported by WHO AFRO) and another for Malian leaders (with the

Mérieux Foundation). The first program, held from May 2022 to April 2023, trained 25 professionals from five Central African countries (Congo Brazzaville, Gabon, Central African Republic, DRC, and Chad) in leadership, laboratory management, and One Health collaboration. The curriculum included in-person and online sessions, personal projects, and mentorship. The program featured modules on laboratory systems, management, leadership, and strategic planning, with daily assessments and pre/post-tests. Participants presented their projects to a jury, and 19 out of 20 received certificates of completion.

A second, shorter GLLP was conducted for Malian leaders from May to December 2023, with 14 participants completing projects such as improving quality control and bacteriology sample processing. Both programs were deemed successful, fostering regional collaboration and strengthening laboratory leadership in West and Central Africa. Participants suggested continuing the GLLP, supporting project implementation, and creating a national laboratory system directorate.

The third presentation, entitled **“Leadership and coordination of the laboratory network in epidemic management in Mali”**, was presented by **Prof. Ibrehima Guindo, Director of NPHI Bamako (Mali)**.

Prof. Guindo’s presentation focused on the critical role of leadership and coordination within Mali’s laboratory network for effective epidemic management. Mali faces significant public health challenges due to its size, dispersed population, and climate change impacts, which influence disease outbreaks such as Ebola, cholera, measles, yellow fever, dengue, and Mpox.

Mali’s laboratory network is structured in four tiers: district laboratories, regional hospital laboratories, national hospital laboratories, and the national reference laboratory. This network collaborates with international partners (WHO, Africa CDC) and research centers (e.g., Centre of Infectiology Charles Mérieux) to ensure timely detection, confirmation, and response to epidemicprone diseases.

The network’s core functions include sample transportation, surveillance, early detection, diagnostics, case tracking, genomic sequencing, and risk assessment. Enabling functions—governance, workforce, communication, and research—are essential for effective leadership and coordination.

During recent outbreaks (Crimean-Congo hemorrhagic fever, COVID-19), the laboratory network played a pivotal role within the incident management system. Key decisions included centralizing and later zoning sample testing, standardizing protocols, and ensuring rapid result turnaround. Successes included improved networking, reduced diagnostic times, and variant tracking. Challenges involved funding gaps, communication breakdowns, security issues, and equipment standardization.

To build a more resilient system, recommendations include investing in infrastructure and equipment, continuous training for laboratory personnel, and strengthening partnerships with international organizations. The future outlook emphasizes enhancing the role of laboratories and leadership coordination to support early detection and a robust public health response.

In conclusion, Prof. Guindo explained that no laboratory can operate in isolation; a coordinated network is vital for decision-making and resilient epidemic management in Mali.

The final presentation was delivered (in French) by **Prof. Hervé Hien, Co-Chair of the IANPHI Africa Regional Network and former Director General of the NPHI of Burkina Faso.**

Prof. Hien shared practical insights from a public health specialist on integrating routine and national reference laboratories within health system reforms, particularly in the context of establishing national public health institutes (e.g., Burkina Faso's INSP).

Routine laboratories (in hospitals and health districts) and national reference laboratories (for diseases like TB, HIV, yellow fever) historically operated separately. The creation of the national public health institute first led to resistance and confusion due to poor communication and change management. But ultimately, it allowed more coordination among laboratories.

Health security reforms require four essential functions: epidemic response, training, research, and laboratory services. In Burkina Faso, a central reference laboratory was established to coordinate all national reference laboratories, including a biobank. However, this created tension with the Ministry of Health's Directorate of Medical Biology Laboratories, which oversees routine laboratories.

A steering committee, comprising public and private sector experts, was formed to develop consensus on the roles of each system. The goal was to ensure routine laboratories continue essential diagnostics while reference labs handle specialized, rapid diagnoses for epidemic management. This collaboration now allows routine laboratories to benefit from training and quality improvements driven by the central reference laboratory.

To strengthen health security, laboratories should be central to reform, collaborating closely with training, research, and expertise systems. This approach ensures routine and reference laboratories work together, not in competition, for effective population health management.

The experience in Burkina Faso demonstrates that with clear communication, leadership, and compromise, routine and reference laboratories can coexist and mutually reinforce health system resilience.

The webinar concluded with a Q&A session.