

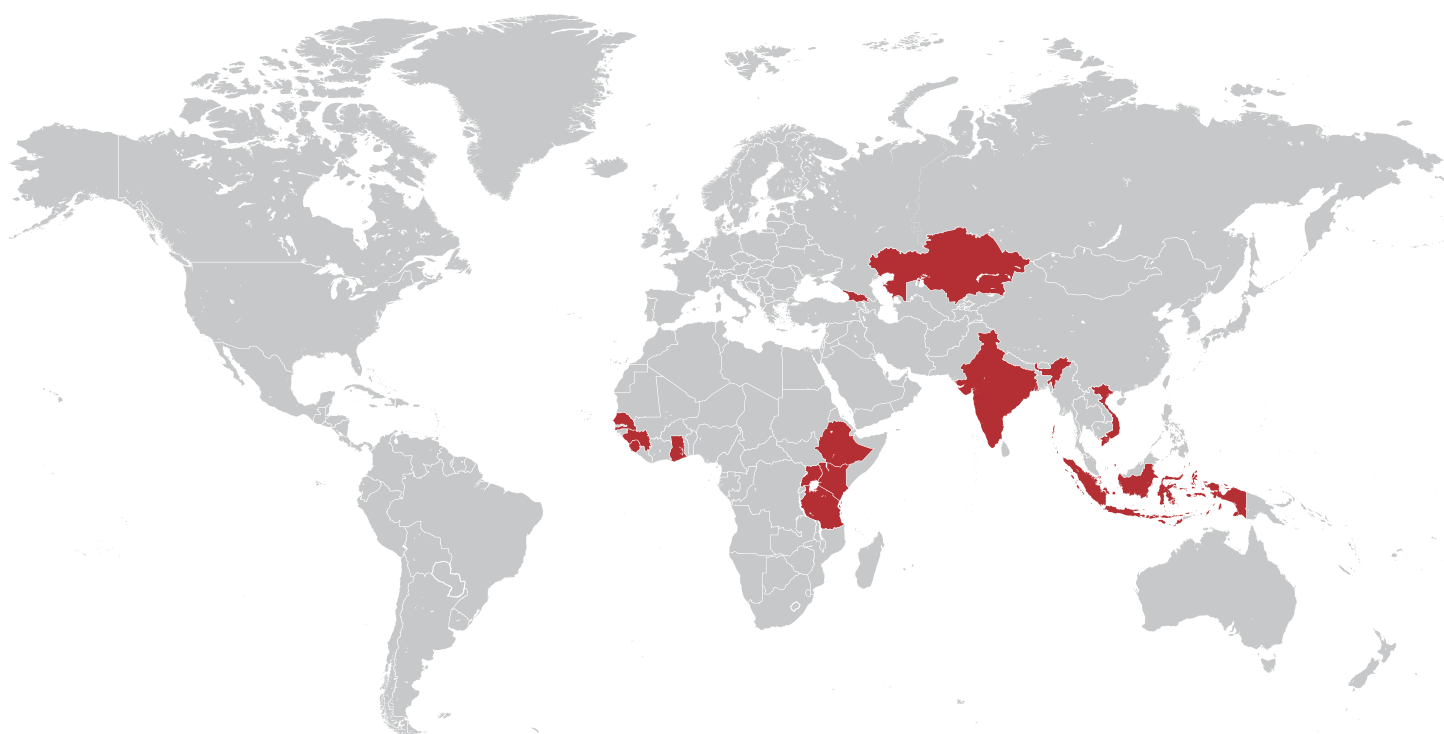


APHL Supports Global Health Security Worldwide



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GLOSSARY

APHL..... Association of Public Health Laboratories

AMR..... Antimicrobial Resistance

ASLM.... African Society for Laboratory Medicine

BSC..... Biological Safety Cabinet

CDC..... US Centers for Disease Control and Prevention

GHSA Global Health Security Agenda

LIS Laboratory Information System

MOH Ministry of Health

QMS..... Quality Management System

SOP..... Standard Operating Procedure

WHO..... World Health Organization

APHL & THE GLOBAL HEALTH SECURITY AGENDA

APHL works worldwide to develop effective national laboratory systems and expand access to quality diagnostic testing services. With over 20 years of experience on five continents, the association is recognized internationally as a leader in quality laboratory science and practice. APHL collaborates with ministries of health to support laboratory strategic planning, develop and strengthen national laboratory systems, implement laboratory information management systems, and provide quality assurance programs and training.

Much of this critical work has been possible through funding from CDC, in support of the Global Health Security Agenda (GHSA), which aims to strengthen the capacity to prevent and reduce the likelihood of outbreaks, detect threats early and respond rapidly and effectively to public health emergencies of international concern. APHL supports GHSA's goals in many ways:

PREVENT

Antimicrobial Resistance: utilize public health laboratories and partnerships with clinical laboratories to conduct surveillance for antimicrobial resistance. Network laboratories to share information on rapid antimicrobial susceptibility testing.

Biosafety and Biosecurity: share lessons learned in the US with the broader global community. Deliver training and promote development of appropriate biosafety facilities.

Twinning: develop long-term linkages between a US public health laboratory (usually a State Public Health Laboratory) and a partner laboratory (typically the national public health reference laboratory) in a low-middle income country. Foster technical and leadership skills via ongoing mentorship and sharing of best practices.

DETECT

Networks: develop and strengthen national laboratory systems by leveraging proven models such as the Laboratory Response Network and PulseNet for early detection and rapid response.

Data Exchange: review existing systems for results reporting (e.g., APHL Laboratory Information Management System projects) and expand implementation of standardized electronic results reporting.

Quality Management Systems: collaborate with partners to develop and deploy quality diagnostic tests and EQA programs to strengthen laboratory systems.

Workforce: facilitate leadership development forums and provide technical training (e.g., biosafety and biosecurity, specimen collection, packaging and shipping, external quality assessments, GeneXpert, AMR testing, equipment maintenance).

RESPOND

Emergency Operation Centers: support the establishment of emergency operation centers and integration of laboratories into this response framework. Promote continuity of operations planning.

GHSA LABNET ASSESSMENT PROCESS

The GHSA Laboratory Network (LABNET) Assessment process was developed by ASLM with assistance from APHL. The assessment tool, known as the “scorecard,” complements the World Health Organization GHSA Joint External Evaluation, which evaluates the full GHSA Action Package addressing laboratory networks and systems. The scorecard assigns laboratories a numerical maturity level between 0 (absence of key attribute) and 5 for each component within nine core capabilities:

- Political, legal, regulatory and financial framework
- Structure and organization of the laboratory network
- Network coverage and rapid response
- Laboratory information (management systems)
- Infrastructure
- Laboratory Workforce
- Quality of laboratory services
- Biosafety and biosecurity
- Priority diseases

APHL GHSA-RELATED TRAININGS

APHL offers a number of trainings and seminars for laboratory staff at all levels. The goal is for participants to take what they have learned during the workshops and implement improvements at their respective laboratories.

BIO SAFETY AND BIOSECURITY

A five-day workshop for biosafety officers and professionals. The comprehensive biosafety overview includes topics such as:

- Biosafety vs. Biosecurity
- Chemical, biological and physical safety hazards
- Use of personal protective equipment
- Risk assessments
- Waste management
- Safe handling of specimens
- Containment levels
- Use of biosafety cabinets

BIOLOGICAL SAFETY CABINET USE AND MAINTENANCE

A practical and hands-on two-day workshop on the safe use of BSCs and routine BSC maintenance. Topics and activities include:

- The purpose of BSCs and the different types available
- Practicing the safe use of BSCs
- Methods of routine maintenance, including procedures and documentation



Education, training and mentoring are the three steps in developing BSC certifiers. This results in laboratory workers improving their practices, procedures, processes and, ultimately, personal safety.”

— Bob Jones, Eagleson Institute trainer

EMERGING LEADERS PROGRAM

The year-long Emerging Leaders Program (ELP), targeted at self-motivated laboratory leaders, focuses on developing competency in management, leadership and communication skills. Participants are paired with a US-based ELP alumni coach to further build their professional network. This one-to-one relationship focuses on developing the individual, challenging and supporting that person to become more effective, and to reach his/her own highest levels of competence and ability. This program also includes three one-week workshops and periodic project meetings and mentorship sessions, on topics such as:

- Team management profiles and their use in leadership and management
- Strategic communications
- Five practices of exemplary leadership
- Change management
- Team building and trust
- Planning and project management
- Accountability and ethics

FOUNDATIONS IN LABORATORY LEADERSHIP AND MANAGEMENT

A five-day workshop to train laboratory managers and supervisors in basic management skills. Topics include:

- Roles and responsibilities of an effective manager
- Organizational structure and management styles
- Human resources
- Communication and conflict resolution
- Efficient team management
- Problem solving and decision making
- Finance and ethical principles

GLOBAL HEALTH SECURITY

A four-day workshop for senior national and regional laboratory personnel on the overarching goals of GHSA: laboratory networking, priority infections and AMR, surveillance response, emergency and outbreak response, biosafety/biosecurity.

Global health security topics covered include:

- The laboratory's role in disease prevention, detection and response, as well as incident or emergency response
- Laboratory networks and partnerships
- Managing priority and zoonotic infections and antimicrobial resistance
- Assimilation of integrated disease response and data management
- Key components of biosafety and biosecurity

Most workshops included here can also be conducted as a Train the Trainers (TOT) program. TOT workshops are generally two weeks; during the first week participants learn the content, then use the second week to practice teaching content. Typically, APHL assists with the first courses conducted by the newly qualified trainers and provides additional coaching as needed.

GLOBAL LABORATORY LEADERSHIP PROGRAM

This two-year fellowship program builds participants' skills, knowledge and experience to better manage public health laboratory systems, anticipate and address disease threats, assure effective laboratory diagnostic capacity, and support disease surveillance, outbreak investigations and disease prevention efforts.

The program provides education and training through a combination of academic classroom sessions, case-based study sessions, and mentored practical experiences through laboratory site placements. All program participants complete academic sessions and assigned projects during the first year, then complete a capstone project during the second. Topics include:

- Laboratory systems and infrastructure
- Leadership
- Management
- Communication
- Quality management
- Biorisk management
- Disease surveillance and outbreak investigation
- Preparedness, response and recovery
- Applied laboratory research

LABORATORY INFORMATION MANAGEMENT SYSTEMS

A hands-on, five-day course to provide IT specialists and managers with a comprehensive overview of using information management systems in the laboratory. Topics include:

- Data collection and use
- Paper-based vs. electronic data collection systems
- Comparison of various electronic systems
- Central storage systems and back up
- Methods of planning and evaluating new systems

QUALITY MANAGEMENT SYSTEMS

A five-day workshop to provide laboratory and biosafety professionals, quality officers and laboratory managers the tools to process quality improvement and understand the importance of quality control and external quality assurance. Topics include:

- Understanding the value of utilizing continuous QMS
- Expanding processes and procedures for the 12 essential elements of a QMS
- Establishing, monitoring and evaluating quality indicators to assess laboratory performance and identify areas for improvement
- Differentiating licensure, certification and accreditation

STRATEGIC PLANNING, LAB TESTING POLICIES & MONITORING AND EVALUATION

An interactive, five-day workshop that combines didactic sessions with group exercises to assist laboratory managers and supervisors develop laboratory policies, operational and strategic plans. Topics and activities include:

- Essential leadership behaviors and effective communication
- Writing policy statements and objectives
- Hierarchy of national laboratory documents
- Developing, monitoring and comparing strategic and operational plans
- Writing effective vision and mission statements and measurable objectives
- Conducting a SWOT analysis

SNAPSHOT OF IN-COUNTRY GHSA ACTIVITIES

ETHIOPIA

Training & Mentorship

Provided a multifaceted BSC certification program, in collaboration with Eagleson Institute, to address training and workforce development needs and build capacity for maintenance and certification of BSCs. Seven engineers from the Ethiopian Public Health Institute completed this certification program.

Piloted a seven-day interactive Global Health Security and Foundation in Laboratory Management workshop to support and strengthen 34 senior laboratory personnel throughout Ethiopia.

GEORGIA

Training & Mentorship

Provided ongoing AMR technical assistance to strengthen laboratory capacity through the development and implementation of laboratory activities, including direct service delivery and building comprehensive national laboratory services.



GHANA

Document Development

Conducted a desktop review of existing biosafety regulations and practices and reviewed prior assessments to provide recommendations for adaptation of the Biorisk Management Framework template that was developed by APHL.

Evaluation & Accreditation

Conducted three rapid AMR assessments focused on basic laboratory capabilities, bacterial isolates and AMR susceptibility testing. The final report included recommendations based on the findings and was shared with CDC Ghana and laboratory directors.

Conducted four biosafety and biosecurity needs assessments, in partnership with Integrated Quality Laboratory Services, at the country's four public health laboratories to determine current capabilities, identify priority needs and propose recommendations.

Training & Mentorship

Conducted a BSC end-user training for 15 laboratory scientists, which included hands-on work with BSCs to further improve technical skills and covered set-up, use, spill response and decontamination, maintenance and best practices.



Ethiopia

Top: Participants and faculty, including APHL staff Sherrie Staley and APHL consultants Sally Liska and Kim Lewis, of the Global Health Security and Foundation in Laboratory Management pilot workshop in Addis Ababa

Left: Participants conduct a SWOT analysis during the workshop

APHL & GHSA RESPOND TO EBOLA

As a response to the 2013 Ebola outbreak, the US government pledged \$5 billion in emergency funds for the Ebola response. CDC awarded a portion of the funds to APHL for work in Guinea and Sierra Leone, where APHL immediately began to increase capabilities and build capacity for quality laboratory services: testing for case detection, treatment monitoring and surveillance.

Sierra Leone's Central Public Health Referral Laboratory and Guinea's Institut National de Sante Publique (INSP) were overwhelmed by the sharp increase in demand for testing related to the Ebola outbreak, and lacked the biosafety containment laboratory facilities to safely process specimens from suspect cases. APHL provided mentorship and trainings for personnel along with infrastructural improvements.

SIERRA LEONE

APHL helped ramp up system-building efforts in Sierra Leone and created an effective and sustainable model that would simultaneously advance capacity and workforce training: a certified Rapid Response Team that would cross-train on tests for Ebola and other epidemic-prone diseases. This team was key in sustaining project activities when an international partner's laboratory unexpectedly pulled its entire staff out of the country. The investment in human resources brought a new level of technology and quality testing services.



Sierra Leone: Laboratory technician Alhaji Kamara, a member of the Rapid Response Team, gives a laboratory tour at the Ola During Children's Hospital



GUINEA

APHL led trainings on Laboratory Quality Management Systems for INSP and national hospital laboratory personnel. These trainings introduced the concepts of laboratory quality assurance, biosafety, and the essentials of quality management systems. APHL laboratory technicians at INSP followed up by reinforcing each concept via bench-level technical support. In June 2016, INSP Deputy Director Dr. Falaye Traore visited the New Mexico State Public Health Laboratory to view its services, operations, test capacity and management systems as a possible model for INSP as it developed into a public health laboratory.

Guinea: Prefecture Hospital's chief laboratory technician, Mr. Boré Kaliva, demonstrates the use of the Rapid Diagnostic Test for Ebola in Yomou, Guinea (Photo: CDC, Alaine Knipes)

GUINEA

Document Development

Developed laboratory testing SOPs for over 40 epidemic-prone diseases at the Laboratoire National de Sante Publique (LNSP) and one national hospital laboratory.

Supported the development of an updated national laboratory policy and facilitated stakeholder meetings to develop a National Laboratory Strategic Plan.

Quality Systems

Provided ongoing support to laboratory scientists and managers at LNSP for QMS.

Supported ISO 15189 training for two APHL scientists who are now certified as assessors.

Supported minor renovations to one national hospital laboratory to improve laboratory workflow, enable increased testing capacity and enhance biosafety and biosecurity.

Training & Mentorship

Provided bench-level mentoring at LNSP that increased laboratory testing capacity, including media and reagent preparation for the diagnosis of meningitis, cholera and other epidemic-prone diseases.

Supported an electrical engineer from Guinea to attend advanced training in BSC certification in the US.

Supported a national hospital laboratory scientist to receive microbiology and AMR testing training at the National Institute for Communicable Diseases in South Africa.

Provided training workshops on laboratory management, data management and calibration and standardization of laboratory equipment and procedures.



Guinea: Laboratory scientists at work in the parasitology lab at the National Public Health Laboratory in Conakry

INDIA

Training & Mentorship

Supported 69 microbiologists and epidemiologists from 25 districts in Tamil Nadu to attend integrated microbiology and epidemiology training in Tiruchirappalli.

Supported internal auditor training in Chennai with 57 participants from medical college microbiology, pathology, and biochemistry departments.

Supported two, two-day QMS trainings in Chennai with 122 participants from the district public health labs and medical colleges.

Supported over 50 participants to attend the National Workshop on Strengthening Laboratory-based Surveillance of AMR.

INDONESIA

Training & Mentorship

Hosted a QMS Training with 55 participants coming from 10 cities across Indonesia.

Presented an overview of the GHSA LABNET Scorecard with 13 participants from Jakarta. This assessment tool was developed in collaboration with the Amsterdam Institute for Global Health Development and ASLM to assess the performance of national laboratory networks and system using a maturity scale across various laboratory standards. The GHSA LABNET Scorecard provides an initial assessment to identify areas that are preventing a laboratory from achieving the nine core capabilities identified in the GHSA Package.

SENEGAL

Training & Mentorship

Provided ongoing AMR technical assistance to strengthen laboratory capacity through the development and implementation of laboratory activities, including direct service delivery and building comprehensive national laboratory services.

KAZAKHSTAN

Training & Mentorship

Supported trainings on ISO 15189 in Almaty and Petropavlovsk and three-day trainings on Assuring Quality of Examination Procedures/Measurement Uncertainty in Karaganda, Oskeman, Petropavlovsk, Almaty and Shymkent.

SIERRA LEONE

Document Development

Reviewed, updated and approved specimen management SOPs and guidelines for five sites (Central Public Health Reference Laboratory, Ola During Children's Hospital, Princess Christian Maternity Hospital, Moyamba and Kambia).

Developed an SOP for reporting and validation of results by the Central Public Health Reference Laboratory in accordance with the Ministry of Health and Sanitation recommendations and international standards.

KENYA

Document Development

Hosted the National Public Health Laboratory (NPHL) Operational Planning meeting with 28 participants in attendance.

Developed the NPHL Operational Plan 2017-2018.

Vietnam: Participants in the Trioplex training session at the Pasteur Institute of Nha Trang





Uganda: APHL member consultant Marty Soehnlen, MPH, PhD (center), and the Central Public Health Laboratory's microbiology team during Soehnlen's four-week visit to help set up new microbiology and molecular testing labs

TANZANIA

Informatics

Successfully completed an integration of the Sample Referral System and LIS, so requests captured at lower-level laboratories can be sent electronically to the LIS at testing laboratories and completed test results can be returned electronically from the LIS to the Sample Referral System.

Introduced the Mirth integration engine as a tool for submitting data from disparate LIS to a centralized laboratory data repository, the OpenLDR.

A generic dashboard was developed for the MOH to measure result-positivity rates and turnaround times. Use of the dashboard began with microbiology data, with the ability to add on other laboratory tests as needed.

Established role-based access to this dashboard, enabling laboratories to view individual data, while MOH can view data across all submitting laboratories.

Training & Mentorship

Provided a three-day BSC training workshop for ten biosafety officers from facilities throughout Tanzania. On the third day nine new students—laboratory safety officers from GHSA-supported regions in Tanzania—participated in a BSC training given by the original ten biosafety officers.

Provided BSC certification mentorship for four participants, in partnership with the Eagleson Institute.

UGANDA

Training & Mentorship

Provided four weeks of microbiology mentorship and support.

Facilitated the year-long Emerging Leader Program with 14 participants, which concluded with a week-long workshop in February 2017.

VIETNAM

Training & Mentorship

Facilitated a twinning relationship between the Hawaii State Public Health Laboratory (HSPHL) and the Government of Vietnam, specifically the National Institute of Hygiene and Epidemiology (NIHE). As part of this relationship, APHL:

- Collaborated with CDC Vietnam and the Government of Vietnam to provide a didactic workshop on the use of the Trioplex assay, a test used to detect Zika, Chikungunya and dengue virus RNA.
- Conducted a training on risk assessment to establish a culture of biosafety in four national institutes (NIEH, PI Nha Trang, PI Ho Chi Minh and Tay Nguyen Institute for Epidemiology and Hygiene). The three-day workshops focused on intrinsic laboratory QMSs, development of a biosafety manual, implementation of biosafety plans and biological risk assessments.
- Supported one person from NIHE to attend a Biosafety Officer Training put on by APHL at HSPHL.
- Facilitated an exchange visit to HSPHL for representatives from NIHE and CDC Vietnam, which focused on sharing best practices and lessons learned by laboratory experts, and discussing the connection between laboratory testing and epidemiology.

GHSA MEETINGS & PARTNERSHIPS

ADDRESSING CHALLENGES IN GLOBAL HEALTH SECURITY

Geneva, Switzerland: APHL staff attended the Geneva Centre for Security Policy's course, "Addressing Challenges in Global Health Security," where experts from WHO, the pharmaceutical community, academia and hospital institutions around the world came together to discuss health security challenges. Participants shared best practices and worked together to understand and devise ways to mitigate potential health threats for the future.

ENHANCING COLLABORATION BETWEEN DETECT 1 (NATIONAL LABORATORY SYSTEM) AND DETECT 5 (WORKFORCE DEVELOPMENT)

Bangkok, Thailand: APHL staff attended the GHSA regional meeting, "Enhancing Collaboration between Detect 1 (National Laboratory System) and Detect 5 (Workforce Development)," which focused on commonalities, advantages and challenges between the two action packages. APHL staff highlighted the collaboration between APHL, CDC, WHO, the European Centre for Disease Prevention and Control, Food and Agriculture Organization and World Organization for Animal Health to develop a training program, the Global Laboratory Leadership Program, which will take a comprehensive, One Health approach to competency-based and laboratory-specific leadership training.

VIETNAM NATIONAL STAKEHOLDER MEETING & WORKSHOP ON ESTABLISHMENT OF NATIONAL PUBLIC HEALTH REFERENCE LABORATORY

Hanoi, Vietnam: APHL staff and consultants joined CDC in chairing a national stakeholder meeting in Hanoi, followed by a technical working group meeting on the establishment of the Vietnam National Public Health Reference Laboratory (NPHRL). This meeting convened numerous local and international partners, including representatives from the MOH, US Embassy, USAID, CDC Foundation, WHO, Defense Threat Reduction Agency, Japan International Cooperation Agency, Vietnam Department of Animal Health, Center for Animal Health Diagnosis, various ministerial human and animal institutes, and laboratories throughout the country to initiate and conceptualize the formation of the NPHRL.



Vietnam: Participants of the National Public Health Reference Laboratory stakeholder meeting

Association of Public Health Laboratories

The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.

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