# Request for Proposals (RFP):

## Instructional Design for Global Laboratory Leadership Program

**December 12, 2018**

**Submissions due to Shannon Emery** (Shannon.Emery@aphl.org)

via: The Association of Public Health Laboratories, Inc.
8515 Georgia Avenue, Suite 700
Silver Spring, MD 20910

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## Summary

The Association of Public Health Laboratories, Inc. (APHL or the Association), in collaboration with the United States Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), the European Centre for Disease Control (CDC), the World Organisation for Animal Health (OIE), and the Food and Agricultural Organization of the United Nations (FAO) is developing a Global Laboratory Leadership Programme (GLLP). The program is being developed based on a Laboratory Leadership Competency Framework already completed by the collaborating partners. APHL is seeking an instructional designer to assist in the development of a competency based learning program for laboratory leaders across the globe.

Through this Request for Proposals (RFP), APHL seeks to identify a company or individual who can support a concept to completion project. Desired expertise and approaches include those found in the traditional Analysis, Design, Development, Implementation and Evaluation (ADDIE) model:

- Program analysis and needs identification
- Program instructional design and development expertise
- Graphic/design layout capabilities and expertise
- Program monitoring and evaluation expertise
- Strong facilitation and project management methodologies

## Background

APHL is a non-profit organization that works to safeguard the public's health by strengthening public health laboratories (PHLs) in the United States and globally. APHL is organized under the laws of the United States of America's District of Columbia, with its headquarters office in Silver Spring, MD. The Association's members include state and local laboratories, state environmental and agricultural laboratories and other government laboratories that conduct testing of public health significance. APHL is recognized as tax exempt in the United States under Section 501(c)(3) of the U.S. Internal Revenue Code. Its work on behalf of public health labs spans more than 60 years.

In collaboration with its members, APHL advances laboratory systems and practices and promotes policies that support healthy communities globally. The Association serves as a liaison between the public health laboratories and federal and international agencies. It ensures that the network of public health laboratories has current and consistent scientific information in order to be ready for outbreaks and other public health emergencies.

The APHL Global Health Program (GHP) currently implements workforce development projects in countries throughout Africa, Asia and Eastern Europe. APHL supports Global Health Security initiatives through Cooperative Agreement Number NU2GGH001993 (the Cooperative Agreement) with the CDC. APHL is working in coordination with multiple leading organizations to develop a comprehensive leadership program for global implementation.

# Eligibility

Interested parties must submit a proposal to APHL that provides all of the information specified in the Proposal Submission section below. In order to be considered for funding, an applicant must ensure APHL has its complete proposal by no later than the Proposal Due Date specified in the Anticipated RFP Schedule section below. Applicants will find proposal submission information in the Response Submittal section below.

# Anticipated RFP Schedule

Applications are due to the individual(s) specified in the Final Response section of this **RFP by 5:00 pm Eastern Standard Time (EST) on January 12, 2018**. APHL anticipates the following schedule for the entire competitive bidding process:

| | |
|---|---|
| December 12, 2018 | APHL issues RFP |
| December 23, 2018 | Letter of Intent due to APHL by 5:00 pm EST |
| December 31, 2018 | Last day to submit questions (exceptions may be granted in APHL's sole discretion) |
| January 12, 2019 | *Complete RFP responses due to APHL by 5:00 pm EST* |
| January 20, 2019 | Proposal review |
| January 23, 2019 | APHL publicly announces the names of the selected applicants on its procurement website, www.aphl.org/rfp |
| February 19, 2019 | Anticipated start date of GLLP project |

If APHL makes any modification to this anticipated schedule, it will post the change to APHL's procurement website, www.aphl.org/rfp.

# Response Submittal

## Confirmation of Intent to Respond

APHL requests that prospective applicants submit a brief email statement indicating intent to submit a proposal by **no later than 5:00 PM EST on December 23, 2018**. The letter of intent should be emailed to Shannon.Emery@aphl.org. While the letter of intent is not binding and does not enter into the review of the RFP, the information that it contains allows APHL's evaluation team to plan the contract development and review process. Potential applicants must include the name of the organization or individual that will submit the proposal in their email.

## Final Response

APHL must receive a complete proposal by no later than **5:00 PM EST on January 12, 2019.** Applicants may send proposals by the following methods:

Via email to shannon.emery@aphl.org; or

Via certified, registered or express mail through the postal service or via trackable mail delivery services provided by DHL, FedEx, and UPS, addressed to:

> **c/o Shannon Emery**
> The Association of Public Health Laboratories, Inc.
> 8515 Georgia Avenue, Suite 700
> Silver Spring, MD 20910

APHL will send an email acknowledging the receipt of your application. If you do not receive an acknowledgement within 48 hours, please email the points of contact below to confirm receipt.

Regardless of the delivery method, APHL must receive all responses by 5:00 PM EST. It is the applicant's responsibility to ensure that the proposal is received at APHL by this deadline.

APHL may terminate or modify the RFP process at any time during the response period. All changes to the RFP will be posted to the APHL's procurement website, www.aphl.org/rfp.

## Questions

Please direct all questions regarding this RFP or its application requirements via email to Shannon Emery at shannon.emery@aphl.org, with a copy to Jocelyn Isadore at joc.isadore@gmail.com.

A member of APHL's Global Health staff will respond directly to the questions on an individual basis as questions are received. While APHL will endeavour to answer questions within one business day of receipt, additional time may be needed depending on the issue raised. APHL anticipates that it will also post each question, together with the answers, to APHL's procurement website (www.aphl.org/rfp) within one business day of responding directly to the email sender.

*APHL should receive all questions by 5:00 pm EST on December 31, 2018*. APHL is unlikely to answer any question received after this deadline, but it will have discretion to do so if APHL's Global Health staff reasonably feel that the question raises a substantial issue that could affect multiple applicants, and may be answered without impacting the application submission and review process. Should APHL opt to answer any late questions, APHL will post the question and answer to APHL's procurement website and will not respond directly to the sender.

## Scope and Approach

The organization or individual engaging in this project must provide the capabilities to work from the early stages of the course design through full development, including implementation and evaluation strategies.

APHL has included a draft of the Laboratory Leadership Competency Framework upon which this program will be based. A draft program design plan is also included and provides initial learning objectives and content overview. This material may be found in the following RFP attachments:

- Appendix A: Laboratory Leadership Competency Framework
- Appendix B: Draft program design plan

The applicant will be expected to do the following:

1. Provide a critical review of the partner-developed program design plan.
2. Develop APHL supplied materials into a cohesive learning package to include:
   a) A learning guide (main media presentations, activities, job tools, glossary of terms, and links to additional resources, materials for activities such as role plays and other exercises or activities);
   b) An instructor guide (course agenda, details and key points to cover, media use instructions, guide to facilitating activities, cases and/or project work); and
   c) A monitoring and evaluation plan with necessary tools.
3. All materials must be developed with a professional skin that incorporates GLLP branding (GLLP logos and style guide will be provided).

The program covers a wide range of concepts for course development and includes nine leadership competency areas. APHL will provide all content for the program and the applicant will design and develop the program content to address all nine competencies.

If an applicant is looking for a metric to utilize for purposes of estimating the level of expected effort required to deliver the program envisioned in this RFP, the applicant might consider a typical competency unit developed for this project to equal *roughly* 30 contact hours worth of content and interaction, or a total program of 270 contact hours for the entire course (9 competencies with 30 contact hours each). This is an estimate of needed contact hours and APHL's current vision for this project does *not* yet specify or dictate how course hours will be delivered/derived. The applicant must define the best modalities to meet APHL and partner needs.

## Project Term and Award

APHL will deliver a written notice of award to the successful applicant. The successful applicant will receive funding through a contract agreement with APHL for a maximum amount of $200,000. Funding is available for the period from February 1, 2019 through September 29, 2020.

APHL has responsibility for validating the accuracy and completeness of the content of the final product and all materials created.

## Proposal Submission

### Guidelines and Required Information

The applicant must ensure that APHL receives its letter of intent and its complete response by the due dates set out in the Anticipated RFP Schedule above. *APHL's evaluation team will not review incomplete applications.*

There is no designated response format or outline for responding to this RFP. However, regardless of the chosen format, an applicant's proposal must be limited to *15* pages of narrative and visuals. If an application exceeds this 15-page limit, only the first 15 pages will be sent to the evaluation team and scoring will be based solely on the portion of the proposal submitted for review. An application should have a font size of 11 points or larger and page margins of at least 0.5 inches. *Note*: Neither the Cost Proposal described below nor anything included as an appendix will count as part of the 15-page count (material included as an appendix will only be used as reference material and will not be reviewed as part of the evaluation process).

The applicant must include the following in their 15-page response:

1. A company profile;
2. A description of two (2) past learning/development activities that best reflect the applicant's work and relevancy to this project (examples of course materials for activities may be included as an appendix);
3. Reference information from two (2) former or current clients. Include company name; contact person's name; contact person's phone number and/or email address; and description of product delivered;
4. A description of the applicant's experience in producing training programs that included highly technical or scientific content (examples may be included as an appendix);
5. A description of organizational capacity and approaches to the following:
   a) Producing training programs using multiple modalities;
   b) Designing and developing competency based training; and
   c) Designing training for a global, adult audience.
6. A description of what type of team will be assigned to this project, including a description of each person's role (resumes or CVs should be provided as an appendix); and
7. A brief description of the applicant firm's project management and instructional development processes.

## Cost Proposal

The applicant should provide a detailed cost estimate and explanation/justification of costs. The cost proposal must be no longer than three (3) pages. There is no required format and the cost proposal should be submitted in the format of the applicant's choice.

The applicant should provide estimates for this RFP that hold some level of reasonable accuracy for time and cost based on the information provided; however, APHL recognizes that it is difficult to fully estimate development costs since the nine competencies targeted for development have not been fully designed. APHL will work with the selected applicant to review and evaluate the proposed time and effort to allow for needed adjustment in the level of effort, depending on course complexity.

A rough suggestion for development is around 30 contact hours per competency once concepts are drafted in a syllabus format.

Appendix C: Project Approach has been included to assist applicants in understanding the level of detail that APHL and partners have discussed in relation to this project. *Note*: Applicants are not required to use or reference anything outlined in Appendix C unless they would like to. APHL only provides this as supporting documentation.

# Evaluation

## Initial Review

APHL staff members or consultants under contract with APHL will conduct an initial review of all proposals for completeness. APHL will not consider any applications incomplete by the proposal due date specified in the Anticipated RFP Schedule section above. Incomplete proposals will not receive a formal evaluation.

## Evaluation Process

APHL will conduct reviews via a combination of teleconference and email communications between the evaluation team described below. APHL's GLLP Coordinator (consultant) will coordinate the review process and the evaluation sessions.

The reviewers may request follow-up interviews with all or some of the applicants and, following these interviews, may request supplemental information on an applicant's proposal. These interviews and any supplemental information will clarify an applicant's capacity or experience in one or more of the evaluation criteria, or will help to explain other information contained in an applicant's proposal.

## Evaluation Team

An evaluation team will be assembled to evaluate competitive proposals and then assess their relative qualities based on the Evaluation Criteria outlined below. This evaluation team will consist of four members: the GLLP Coordinator and three APHL staff and members.

## Conflicts of Interest

APHL will ask potential reviewers to complete and sign APHL's **Conflict of Interest Disclosure Statement** in order to disclose any real or perceived conflict of interest prior to the start of the evaluation process and to affirm that they have no conflict of interest that would preclude an unbiased and objective review of the proposals received. A copy of the disclosure statement and the related Fiduciary Responsibility and Conflict of Interest Policy is attached as [Exhibit E: Conflict of Interest Disclosure Form and Policy](). APHL will not select reviewers with a perceived or potential conflict of interest. Once potential reviewers have been identified, APHL's Director, Health Preparedness and Response will have final approval over the review team's composition.

## Evaluation Criteria

The evaluation team will use the following criteria as a general overall framework in which to evaluate proposals:

- *Suitability of the Proposal* – The proposed solution meets the needs and criteria set forth in the RFP.
- *Instructional Designer Expertise* – The applicant shows knowledge of the subject by recommending and communicating appropriate technical and aesthetic solutions as evidenced by the proposal and references.
- *Instructional Designer Organizational Capacity* – Applicant has successfully completed similar projects and has the qualifications necessary to undertake this project. The applicant firm has appropriate staff to devote to the project within the timeframe needed.
- *Project Management*- The applicant shows experience and resources related to successful management of a similar international program.
- *Value/Pricing Structure and Price Levels* – The price is commensurate with the value offered by the applicant.

Each member of the evaluation team will evaluate proposals against the 13 questions or criteria found in Appendix D: Instructional Designer RFP Scorecard and will assign a numeric score from zero (0) (indicating a 'poor' response) to four (4) (indicating an 'outstanding' response) to reflect that reviewer's assessment of the responsiveness of a proposal to each question or criterion. The evaluators will assign score using the following categorizations:

- *Poor* (0 points) – The respondent's proposed approach neither meets the baseline requirements set out in this RFP nor demonstrates more than a minimal understanding of the subject matter.

- *Fair* (1 point) – The respondent's proposed approach does not meet the baseline requirements set out in this RFP but does demonstrate a baseline understanding of the subject matter.
- *Good* (2 points) – The respondent's proposed approach meets the baseline requirements set out in this RFP and demonstrates the necessary understanding of the subject matter.
- *Excellent* (3 points) - The respondent's proposed approach exceeds the baseline requirements set out in this RFP and demonstrates a deep understanding of the subject matter.
- *Outstanding* (4 points) - The respondent's proposed approach greatly exceeds the baseline requirements set out in this RFP and demonstrates a thorough and comprehensive understanding of, or an expertise in the subject matter.

The raw scores will be weighted in such a manner so that the 52 maximum possible raw score points will be converted into a maximum possible weighted score of 100 points.

## Post Evaluation Procedures

APHL staff will notify the selected instructional designer within ten (10) business days of completion of the evaluation, and the name of the recipient will be posted to APHL's procurement website, found at [www.aphl.org/rfp](www.aphl.org/rfp) on the same day. Unsuccessful applicants will receive notification of these results by e-mail or by U.S. mail within 30 days of the date that the winning/successful vendor is posted.

All applicants will be entitled to utilize APHL's Appeals Process to formulate a protest regarding alleged irregularities or improprieties during the procurement process. Specific details of the policy are listed on the procurement website.

## Conditions of Award Acceptance

The eligible applicants must be able to contract directly with APHL or have an existing relationship with a third party organization that can contract directly with APHL on behalf of the applicant. Applicants must agree to comply with expectations outlined in the appendices.

## General Considerations

This RFP is neither an agreement nor an offer to enter into an agreement with any respondent. Once application evaluation is complete, APHL may choose to enter into a definitive contract with the selected applicant or it may decline to do so.

APHL must ensure that the selected respondent is neither suspended nor debarred from receiving federal funds and that the respondent meets any other funding eligibility requirement imposed by the Cooperative Agreement. APHL's determination of whether the respondent is eligible to receive Cooperative Agreement funding will be definitive and may not be appealed. In the event that APHL determines that the selected respondent is ineligible to receive Cooperative Agreement funding, APHL will nullify the contract or will cease negotiation of contract terms.

Each respondent will bear its own costs associated with or relating to the preparation and submission of its application. These costs and expenses will remain with the respondent, and APHL will not be liable for these or for any other costs or other expenses incurred by a respondent in preparation or submission of its application, regardless of the conduct or outcome of the response period or the selection process.

## Appendix A – Laboratory Leadership Competency Framework

# Laboratory Leadership Competency Framework

December 3, 2018

Developed by:

World Health Organization (WHO)
Food and Agriculture Organization of the United Nations (FAO)
World Organisation for Animal Health (OIE)
European Centre for Disease Prevention and Control (ECDC)
U.S. Centers for Disease Control and Prevention (CDC)
Association of Public Health Laboratories (APHL)

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# 1. Introduction

## 1.1. Background

Laboratories are an essential and fundamental part of health systems and play a critical role in the detection, diagnosis, treatment and control of diseases.[1,2] However, reliable laboratory services continue to be limited in many low- and middle-income countries.[3] Although there have been examples of effective laboratory response to outbreaks[4,5,6], a number of well-documented events including some at the convergence of human, animal, and environmental health have shown how a lack of robust laboratory systems can impede disease control and prevention efforts. Recent examples of such outbreaks include Ebola viral disease, Human H5N1 (Avian) Influenza, Zika viral disease, bovine spongiform encephalopathy (BSE) and Foot and Mouth Disease (FMD).[7,8,9] Likewise, the control and management of endemic diseases such as Human Immunodeficiency Virus (HIV) disease, malaria, cholera and brucellosis as well as infections caused by antimicrobial resistant pathogens are also hampered by a lack of adequate laboratory services[10]. These circumstances highlight the importance of building sustainable national health laboratory systems that are a component of overall health systems[11]. This is a long-term commitment requires laboratory leaders who are able to manage laboratories in complex environments and build strong collaborative networks at every level of the health system in order to attain optimal human, animal and environmental health.[12]

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[1] Brown CS, Zwetyenga J, Berdieva M, Volkova T, Cojocaru R, Costic N, Ciobanu S, Hasanova S, van Beers S, Oskam L. New policy-formulation methodology paves the way for sustainable laboratory systems in Europe. Public Health Panorama, 2015; 1(1):41-7.

[2] Edwards S, Jeggo MH. Governance and management of veterinary laboratories, Rev Sci Tech Off Int Epiz, 2010:31(2), 493–503.

[3] Olmstead SS, Moore M, Meili RC, Duber HC, Wasserman J, Sama P, et al. Strengthening Laboratory Systems in Resource-Limited Settings, *Am J Clin Pathol.* 2010;134:374–380.

[4] Saraswathy Subramaniam TS, Thayan R, Yusof MA, Suppiah J, Tg Abd Rashid TR, Zawawi ZM, Mat Rahim NA, Kassim F, Zain RM, Saat Z. Sharing experiences from a reference laboratory in the public health response for Ebola viral disease, MERS-CoV and H7N9 influenza virus investigations. Asian Pac J Trop Med. 2016 Feb;9(2):201-3.

[5] Stopping Avian Influenza in Togo, Food and Agriculture Organization of the United Nations, http://www.fao.org/in-action/stopping-avian-influenza-togo/en/

[6] Responses to Avian Influenza and State Pandemic Readiness, Fourth Global Progress Report, October 2008, UN System Influenza Coordinator & World Bank, http://siteresources.worldbank.org/EXTAVIANFLU/Resources/3124440-1172616490974/Fourth_ProgressReport_Oct_15.pdf

[7] Goodfellow I, Reusken C, Koopmans M. Laboratory support during and after the Ebola virus endgame: towards a sustained laboratory infrastructure. *Euro Surveill.* 2015;20(12):21074.

[8] Petti CA, Polage CR, Quinn TC, Ronald AR, Sande MA. Laboratory medicine in Africa: a barrier to effective health care. Clin Infect Dis. 2006;42(3):377-82. http://dx.doi.org/10.1086/499363 PMID:16392084

[9] Bender JB, Hueston W, Osterholm M. Recent animal disease outbreaks and their impact on human population. Journal of Agromedicine, 2006; 11 (1), 5-15.

[10] Nkengasong, JN, Nsubuga P, Nwanyanwu O, Gershy-Damet, GM, Roscigno G, Bulterys M, Schoub B, DeCock K, Birx D, Laboratory Systems and Services are Critical in Global Health: Time to End the Neglect, Am J Clin Pathol, Vol 134, Issue 2, 1 September 2010, p 368-373, https://doi.org/10.1309/AJCPMPSINQ9BRMU6

[11] European Centre for Disease Prevention and Control. EU Laboratory Capability Monitoring System (EULabCap) — Report on 2016 survey of EU/EEA country capabilities and capacities. Stockholm: ECDC; 2018.

[12] American Veterinary Medical Association. One Health – Responding. (2016). Available from: https://www.avma.org/KB/Resources/Reports/Pages/One-Health117.aspx)

It is recognized that laboratory leaders require meaningful education and training in leadership and management skills to lead efforts in the development and direction of a capable laboratory system[13] and most of them have not had sufficient specific training in these areas.[14] The lack of adequate leadership and management training is particularly acute in low- and middle-income countries. To effectively address this gap, a comprehensive, competency-based learning programme applicable on a global scale is needed to provide the foundation for training programmes for laboratory leadership and management.

Towards this end, six leading organisations have partnered to develop the Global Laboratory Leadership Programme (GLLP) targeting leaders working in human and animal health laboratories, as well as laboratories with public health functions (e.g., environmental, agricultural, food, chemical and aquatic laboratories). The partners include the:

- World Health Organization (WHO)
- Food and Agriculture Organization of the United Nations (FAO)
- World Organisation for Animal Health (OIE)
- European Centre for Disease Prevention and Control (ECDC)
- U.S. Centers for Disease Control and Prevention (CDC)
- Association of Public Health Laboratories (APHL)

In order to create the GLLP, the partners committed to the development of the Laboratory Leadership Competency Framework (subsequently referred to as the Framework) that provides a foundation for the GLLP and a Learning Package including core course materials, and guidance for programme development, planning, implementation and evaluation.

## 1.2 Framework Development

This Framework was developed through a consensus process involving subject matter experts from the aforementioned GLLP partners. In October 2017, the partners established the GLLP Competency Framework Development Workgroup. Based on literature review[15,16,17] and consultation, the partners agreed upon nine leadership competencies.

In the first stage, the Workgroup designed the structure of the Framework, developed descriptions of each competency and defined competency domains, subdomains, and areas of activity. The action verbs that describe the areas of activity are observable and measurable and were developed based on the Structure of the Observed Learning Outcome (SOLO)[18] and Bloom's[19] taxonomies. Some modifications of the verbs were incorporated to represent learned outcomes specifically related to leadership. Performance activities are associated with levels of proficiency and are presented at three levels – developing, skilled, and expert.

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[13] Martin R, Barnhart S. Global laboratory systems development: needs and approaches. Infect Dis Clin North Am. 2011 Sep.25(3):677-91.

[14] Report of the WHO Laboratory Leadership and management training programme meeting, Lyon, France, 12-13 May 2011. Lyon: World Health Organization; 2011 (unpublished).

[15] Competency Guidelines for Public Health Laboratory Professionals. MMWR Suppl 2015;64(Suppl - 1):1-95.

[16] Report of the WHO Laboratory Leadership and Management Training Programme Meeting. WHO, unpublished.

[17] European Centre for Disease Prevention and Control. European public health training programme. Stockholm: ECDC; 2013.

[18] SOLO Taxonomy, http://www.johnbiggs.com.au/academic/solo-taxonomy/

[19] Bloom's Taxonomy, https://www.missouristate.edu/assets/fctl/Blooms_Taxonomy_Action_Verbs.pdf

## 1.3 Framework Scope

The purpose of the Framework is to outline the essential competencies needed for laboratory leaders to build and direct sustainable national laboratory systems for disease detection, control and prevention efforts in health systems.

This Framework takes a multisectoral One Health approach addressing the entire "National Health Laboratory System," defined in the context of this Framework as networks that include human, animal, environmental, agricultural, food, aquatic and chemical laboratories in support of health systems. Accordingly this Framework provides a strong orientation to One Health recognizing that improving coordination among human, animal and environmental health has reciprocal benefits and will lead to stronger health systems. This Framework is designed to build bridges, enhance communication, foster collaboration and develop an understanding of existing synergies within the human, animal and environmental health sectors.

## 1.4 Intended Use of Framework

Multisectoral laboratory workforce development is essential and the use of common competencies across disciplines and organizations can facilitate communication and cooperation and allow career development and growth. The Framework can be used by national authorities from all sectors and disciplines, policy makers, regulatory agencies, educational institutions and other stakeholders including donors, non-governmental organizations (NGOs), private sector organizations, etc. The Framework can be used for:

- Workforce development: as a standardized reference for laboratory workforce development applicable across human, animal, environmental, and other relevant health sectors;
- Programme development: as a foundation for laboratory leadership learning programmes;
- Specific job descriptions: as guidance to write standardized job descriptions;
- Needs assessment: as guidance to develop a tool for self-assessment, observer assessment or a combination of both to identify individual or group needs and guide staff development planning;
- Self-assessment: by individuals to assess their current level of knowledge, skills and abilities, identify areas in need of improvement and plan for achieving higher levels of proficiency.

The Framework may facilitate the development of other leadership learning programmes and each competency is designed in a way that allows complementary learning opportunities for those who are in need of a particular competency development. It also allows flexibility in learning programmes and may be adapted to meet country-specific needs.

While the document can be used as highlighted above, the partners of the GLLP have also committed to the development of the Learning Package and guidance on programme development, planning, implementation and evaluation. Within the context of that initiative and when implemented as a whole programme for the training of laboratory leaders, the Framework is intended to foster and mentor current and emerging laboratory leaders to build, strengthen and sustain national laboratory systems. Those who complete the GLLP in its entirety will be required to complete and/or demonstrate proficiency in all nine competencies with activity areas in each competency reinforcing other competencies, in the format of a structured and long-term training course. The Learning Package with its attendant curricula, learning objectives and guidance is currently under development.

## 1.5 Framework Structure

The Framework **consists of nine competencies as outlined below.**

1) Laboratory systems
2) Leadership
3) Management
4) Communication
5) Quality management system
6) Biosafety and biosecurity
7) Disease surveillance and outbreak investigation
8) Emergency preparedness, response and recovery
9) Research

The following key considerations were taken in to account during the development of the Framework:

1. Terms used in the Framework are defined in the glossary and definitions incorporate the One Health approach embraced by the Framework.
2. Competencies may be applied at the laboratory system or facility level as appropriate.
3. Duplication of activity areas across competencies is intentional to facilitate flexible use of the framework and to acknowledge that some areas of activity like designing organograms or organizational structure, for example, have both a leadership as well as a management component. Areas of duplication are indicated with parenthetical cross-references.

*Framework design:*
Each competency is structured as described below:

The Laboratory Leadership Competency Framework is designed in levels according to proficiency as described below.

| | |
|---|---|
| **Competency:** | A combination of knowledge, skills and abilities that are critical to perform a task effectively (e.g., 3. Management) |
| **Competency Domain:** | A discrete component of a competency (e.g., 3.2 Resource management) |
| **Subdomain:** | A subcomponent of a domain (e.g., 3.2.a. Budgeting and financial management) |
| **Area:** | Competency domains and subdomains are broken down further into areas of activity (e.g., 3.2.1 Laboratory budget, 3.2.2. Financial auditing process, 3.2.3 Financial resource utilization) |
| **Performance activities:** | Activities that allow for evaluation of individual performance at three levels of proficiency |

*Levels of Proficiency*

| | |
|---|---|
| **Developing:** | Advanced knowledge of the principles, concepts and/or methodologies of the competency as attained from education or training (e.g., coursework, on-the-job orientation, mentorship, etc.). Individuals are able to perform a range of assignments under supervision, mentorship and/or coaching. |
| **Skilled:** | Analyse and apply principles, concepts and/or methodologies of the competency as attained from education or training and successful experience in a variety of complex assignments. Individuals are able to apply skills independently. |
| **Expert:** | Mastery of the principles, concepts and/or methodologies of the competency as well as significant success in performing the most demanding assignments requiring the competency. Apply innovations in the competency to problem solving and task completion. Individuals are able to synthesize, critique or teach the competency and value and are able to provide coaching and mentoring. |

Within each performance activity, action verbs are standardized according to each level of proficiency.

*Action verbs\* used at each level of proficiency:*

| Developing | Skilled | Expert |
|---|---|---|
| **Define:** to determine or identify the essential qualities or meaning of | **Explain**: 1) to give reason or cause of; 2) to show logical development or relationships of | **Create:** to produce or bring about by a course of action; to produce through skill; to make or bring in to existence something new |
| **Describe:** to represent or give an account of in words (or represent by figure, model or picture) | **Analyse**: to study or determine the nature and relationship of the parts | **Design:** 1) to conceive or plan out in the mind; 2) to draw plans for |
| **Identify:** to establish the identity of | **Apply**: to put to use, especially for practical purpose | **Develop:** to set forth or make clear by degrees or in detail |
| **Outline:** to indicate the principal features or different parts of | **Demonstrate**: 1) to prove or make clear by reasoning or evidence; 2) to illustrate and explain especially with many examples | **Evaluate:** to determine the significance, worth or condition of, usually by careful appraisal and study |
| **List:** to make a simple series of words or numerals | **Implement**: to give practical effect to and ensure of actual fulfilment by concrete measures | **Perform\*\***: to carry out an action |
| | | **Prioritize:** to list or rate in order of priority |

*Definitions from https://www.merriam-webster.com

**May be used at more than one level of proficiency depending on context

## 1.6  Framework Outline

All competencies, competency domains, and subdomains are listed below:

*Competency 1: Laboratory Systems*
    Domain 1.1: Policy and legal framework
    Domain 1.2: Information systems
    Domain 1.3: Infrastructure
    Domain 1.4: Workforce
*Competency 2: Leadership*
    Domain 2.1: Strategic planning
    Domain 2.2: Organizational leadership
    Domain 2.3: Critical thinking, problem solving and decision making
    Domain 2.4: Partnerships and coalition building
    Domain 2.5: Ethics and integrity
*Competency 3. Management*
    Domain 3.1: Laboratory Management
    Domain 3.2: Resource Management
        Subdomain 3.2.a: Budgeting and financial management
        Subdomain 3.2.b: People management
*Competency 4. Communication*
    Domain 4.1: General communication skills
    Domain 4.2: Proposal writing
    Domain 4.3: Communication with media
    Domain 4.4: Risk communication
    Domain 4.5: Scientific communication
*Competency 5. Quality Management System*
    Domain 5.1: Process management
        Subdomain 5.1.a: Sample management
        Subdomain 5.1.b: Process control
    Domain 5.2: Document and record management
    Domain 5.3: Equipment and consumables
    Domain 5.4: Purchasing and inventory
    Domain 5.5: Nonconforming events management
    Domain 5.6: Assessments
        Subdomain 5.6a: Audits
        Subdomain5.6.b: External Quality Assessment
        Subdomain5.6.c: Norms and accreditation
    Domain 5.7: Continual improvement
    Domain 5.8: Customer focus
*Competency 6. Biosafety and Biosecurity*
    Domain 6.1: Biosafety
    Domain 6.2: Biosecurity
    Domain 6.3: Shipment of dangerous goods including non-biological goods
*Competency 7. Disease Surveillance and Outbreak Investigation*
    Domain 7.1: Surveillance
    Domain 7.2: Outbreak investigation

*Competency 8. Emergency Preparedness, Response and Recovery*
>     Domain 8.1: Preparedness
>     Domain 8.2: Response
>     Domain 8.3: Recovery

*Competency 9. Research*
>     Domain 9.1: Health research
>     Domain 9.2: Innovation and development

## 2. Competency Framework

## Competency 1: Laboratory Systems

*Knowledge, skills, and abilities needed to develop, maintain and strengthen a complete and functional national health laboratory system\* capable of producing high quality results using efficient and effective procedures, administration and policies throughout all levels of the health system.*

*\*A national health laboratory system is defined as networks that include human, animal, environmental, agricultural, food, and chemical laboratories in support of health systems.*

### Domain 1.1: Policy and legal framework

| 1.1.1 Organizational structure (see also 2.1.2; 1.4.1) | |
|---|---|
| *Performance activities* | |
| Developing | Outline the organization of the national/regional/multinational/international networks of laboratories |
| Skilled | Explain the organization of the national/regional/multinational/international networks of laboratories |
| Expert | Evaluate the organization of the national/regional/multinational/international networks of laboratories |
| 1.1.2 Human-animal-environmental interface | |
| *Performance activities* | |
| Developing | Identify the sectors and disciplines working within the human-animal-environmental interface |
| Skilled | Explain the various roles of the sectors and disciplines working within the human-animal-environmental interface |
| Expert | Evaluate collaboration among the various sectors and disciplines working within the human-animal-environmental interface |
| 1.1.3 National policies (see also; 5.1.5; 5.3.1; 9.1.3) | |
| *Performance activities* | |
| Developing | List existing national policies that impact laboratory practice |
| Skilled | Explain the cause and effect of the existing national policies that impact laboratory practice |
| Expert | Design national policies that maximally support laboratory practice through a consultative process |
| 1.1.4 Legal framework | |
| *Performance activities* | |
| Developing | Identify the legal framework that governs the scope laboratory systems operations |
| Skilled | Explain the legal framework that governs laboratory systems operations |

| Expert | Evaluate the legal framework that governs laboratory systems operations |
|---|---|

## Domain 1.2: Information systems

| 1.2.1 Documentation control (see also 5.2; 5.5.2) | |
|---|---|
| *Performance activities* | |
| Developing | Define laboratory documentation and records systems |
| Skilled | Analyse laboratory documentation and records systems |
| Expert | Design and evaluate standard laboratory documentation and records systems and ensure compatibility with the national health information system |
| 1.2.2 Laboratory information management system (LIMS) (see also 1.2.6) | |
| *Performance activities* | |
| Developing | Describe the components of a laboratory information management system (LIMS) |
| Skilled | Analyse the laboratory information management system (LIMS) |
| Expert | Evaluate an improved laboratory information management system (LIMS) |
| 1.2.3 Required databases | |
| *Performance activities* | |
| Developing | Identify the relevant databases in support of laboratory systems |
| Skilled | Apply the key elements of the relevant databases in relation to laboratory operations |
| Expert | Evaluate and design the relevant databases based on laboratory system needs |
| 1.2.4 Information sharing (see also 3.1.8; 2.4.5 and competency 4) | |
| *Performance activities* | |
| Developing | Identify the process for information sharing across relevant sectors and disciplines |
| Skilled | Apply the process for information sharing across relevant sectors and disciplines |
| Expert | Evaluate appropriate process for information sharing across relevant sectors and disciplines |
| 1.2.5 Information systems sustainability | |
| *Performance activities* | |
| Developing | Describe the methods in which the financial and technical sustainability of the information system is assured |
| Skilled | Analyse the methods by which the financial and technical sustainability of the information system is assured |
| Expert | Evaluate the processes which can assure the financial and technical sustainability of the information system |
| 1.2.6 Information technology (see also 1.2.2) | |
| *Performance activities* | |
| Developing | Identify information technology needs and applicable policies |

| Skilled | Explain information technology needs and applicable policies |
| --- | --- |
| Expert | Evaluate information technology needs and applicable policies |

| 1.2.7 Data protection (see also 2.5.1) | |
| --- | --- |
| *Performance activities* | |
| Developing | Describe the process whereby personal and sensitive data is captured and protected |
| Skilled | Apply the data protection standards necessary to protect personal and sensitive data |
| Expert | Design and implement personal and sensitive data protection standards, adhering to all applicable laws, rules and regulations |

## Domain 1.3: Infrastructure

| 1.3.1 Laboratory design (see also 3.1.5) | |
| --- | --- |
| *Performance activities* | |
| Developing | Define basic laboratory design and maintenance requirements |
| Skilled | Apply the process for designing and maintaining a laboratory |
| Expert | Evaluate the laboratory design and maintenance requirements to address changing needs |

| 1.3.2 Engineering systems (see also 3.1.3) | |
| --- | --- |
| *Performance activities* | |
| Developing | Identify the guidelines needed for engineering design, creation and use |
| Skilled | Apply guidelines related to engineering design, creation and use |
| Expert | Evaluate the application of guidelines related to engineering design, creation and use |

| 1.3.3 Equipment and consumables inventory (see also 5.4) | |
| --- | --- |
| *Performance activities* | |
| Developing | Outline a plan for the inventory of laboratory equipment, supplies and reagents |
| Skilled | Implement a plan for the inventory of laboratory equipment, supplies and reagents to specific laboratory operational needs |
| Expert | Design and evaluate a plan to establish and maintain an inventory of laboratory equipment, supplies and reagents |

| 1.3.4 Preventive maintenance (see also 5.3.6) | |
| --- | --- |
| *Performance activities* | |

| Developing | Describe the essential components of an equipment preventive maintenance programme |
|---|---|
| Skilled | Analyse the effectiveness of an equipment preventive maintenance programme |
| Expert | Develop and/or evaluate the equipment preventive maintenance system |

| 1.3.5 Waste management (see also 6.1.9) | |
|---|---|
| *Performance activities* | |
| Developing | Identify the essential components of a waste management system |
| Skilled | Analyse the design and function of a waste management system |
| Expert | Develop and/or evaluate the waste management system |

| 1.3.6 Nonbiological risks | |
|---|---|
| *Performance activities* | |
| Developing | Identify nonbiological risks |
| Skilled | Implement appropriate responses in case of exposure to nonbiological substances |
| Expert | Design and evaluate the system in place to respond to nonbiological substances exposure |

| 1.3.7 Contract management | |
|---|---|
| *Performance activities* | |
| Developing | Outline the basic requirements for the development of contracts |
| Skilled | Apply the local or national requirements which can impact contracts |
| Expert | Evaluate and design contracts that adhere to local or national requirements |

## Domain 1.4: Workforce

| 1.4.1 Strategies and policies (see also 1.1.3; 7.2.1; 8.2.3) | |
|---|---|
| *Performance activities* | |
| Developing | Identify the key strategies and policies that support the laboratory workforce plan |
| Skilled | Implement strategies and policies within the national health laboratory system |
| Expert | Evaluate the efficacy of the current laboratory health workforce plan, including strategies and policies |
| 1.4.2 Alignment of laboratory workforce with current and future needs (see also 3.2.6; 8.1.5) | |
| *Performance activities* | |

| | |
|---|---|
| Developing | Describe laboratory talent management policies, i.e., education and training, recruitment, deployment and retention |
| Skilled | Implement a plan to optimize laboratory talent management policies |
| Expert | Evaluate talent management policies within the national-health laboratory system |
| **1.4.3 Laboratory technical and management capacities (see also 3.2.7)** | |
| *Performance activities* | |
| Developing | Identify the key components of a plan to strengthen the laboratory technical and management capacities (policies, processes, workforce development, etc.) |
| Skilled | Implement the key components of a plan to strengthen the laboratory technical and management capacities (policies, processes, workforce development, etc.) |
| Expert | Evaluate the key components of a plan to strengthen the laboratory technical and management capacities (policies, processes, workforce development, etc.) |

# Competency 2: Leadership

*Knowledge, skills and abilities essential for motivating and inspiring a group of people to act towards achieving a common goal. This includes strategic approaches with vision on sustainable and improved success of the laboratory or laboratory systems through the process of positively influencing people to attain desired outcomes.*

## Domain 2.1: Strategic planning

| | |
|---|---|
| **2.1.1 Strategic thinking** | |
| *Performance activities* | |
| Developing | Define strategic thinking processes |
| Skilled | Apply strategic thinking processes |
| Expert | Evaluate strategic planning process and implementation at regular intervals |
| **2.1.2 Strategic plan development and implementation (see also 1.1.1)** | |
| *Performance activities* | |
| Developing | Describe the development and implementation processes for the national laboratory strategic plan |
| Skilled | Apply creative and strategic thinking to develop and implement the national laboratory strategic plan |
| Expert | Evaluate the national laboratory strategic plan and prioritize implementation at all levels of the laboratory system |
| **2.1.3 Strategic plan monitoring and evaluation** | |
| *Performance activities* | |

| Developing | Describe the process for monitoring and evaluating the national laboratory strategic plan |
| --- | --- |
| Skilled | Apply the monitoring and evaluation process to the national laboratory strategic plan |
| Expert | Evaluate and justify opportunities for changes to the national laboratory strategic plan based on monitoring and evaluation findings |

## Domain 2.2: Organizational leadership

| 2.2.1 Laboratory organogram (see also 1.1.1; 3.2.6) | |
| --- | --- |
| *Performance activities* | |
| Developing | Describe the laboratory organogram |
| Skilled | Analyse the strengths and weaknesses of the laboratory organogram |
| Expert | Evaluate and design or redesign the laboratory organogram for maximum efficiency and effectiveness |
| 2.2.2 Management and leadership styles | |
| *Performance activities* | |
| Developing | Identify the process for organizing staff according to their management and leadership styles and strengths |
| Skilled | Apply process for organizing staff members based on their management and leadership strengths to promote successful outcomes |
| Expert | Evaluate staff development plan to achieve successful outcomes |
| 2.2.3 Motivational and empowering approach (see also 3.2.8) | |
| *Performance activities* | |
| Developing | Describe motivational theory |
| Skilled | Apply motivational and empowering principles, providing staff with clear direction, delegating work appropriately and showing confidence in staff |
| Expert | Prioritize ownership and responsibility for desired outcomes at all levels of the organization, motivating staff towards achieving objectives |
| 2.2.4 Change management | |
| *Performance activities* | |
| Developing | Describe new ideas, methods of working and approaches |
| Skilled | Apply new methods of work and approaches, proposing solutions to improve work processes |
| Expert | Prioritize the management of changing conditions to address ongoing challenges |

## Domain 2.3: Critical thinking, problem solving and decision making

| 2.3.1 Critical thinking | |
|---|---|
| *Performance activities* | |
| Developing | Outline principles of critical thinking |
| Skilled | Implement critical thinking principles |
| Expert | Evaluate benefits of critical thinking for successful problem solving and decision making |
| 2.3.2 Problem solving | |
| *Performance activities* | |
| Developing | Define a problem and explain problem solving |
| Skilled | Apply established problem solving processes |
| Expert | Evaluate benefits of problem solving processes |
| 2.3.3 Decision making | |
| *Performance activities* | |
| Developing | Describe the steps in decision making |
| Skilled | Apply established decision making processes |
| Expert | Prioritize decision making processes as part of the organizational culture, avoiding decision making traps |

## Domain 2.4: Partnerships and coalition building

| 2.4.1 Internal and external laboratory collaboration with partners and stakeholders (see also 8.1.6) | |
|---|---|
| *Performance activities* | |
| Developing | Describe collaboration mechanisms and identify partners and stakeholders internal and external to the laboratory |
| Skilled | Demonstrate how to develop collaborations with partners and stakeholders internal and external to the laboratory |
| Expert | Evaluate collaborations with partners and stakeholders internal and external to the laboratory |
| 2.4.2 Role of laboratory within the national health system networks (see also 1.1.1) | |
| *Performance activities* | |
| Developing | Outline how the laboratory functions within the national health system |
| Skilled | Explain how the laboratory functions within the national health system |
| Expert | Evaluate how the laboratory functions within the national health system |
| 2.4.3 Multidisciplinary and multisectoral collaboration | |
| *Performance activities* | |

| Developing | Define the role of different agencies/partners involved in multidisciplinary and multisectoral laboratory collaborations |
|---|---|
| Skilled | Demonstrate how to organize the different agencies involved in multidisciplinary and multisectoral collaborations for routine activities |
| Expert | Evaluate the roles of different agencies involved in multidisciplinary and multisectoral collaborations for both routine and new activities |

| 2.4.4 Community partnerships | |
|---|---|
| *Performance activities* | |
| Developing | Identify community partners that support epidemiological and laboratory-based investigations and surveillance |
| Skilled | Demonstrate how to foster community partners to support epidemiological and laboratory-based investigations and surveillance |
| Expert | Evaluate, prioritize and create community partnerships in support of epidemiological and laboratory-based investigations and surveillance |

| 2.4.5 Information sharing (see also 1.2.4) | |
|---|---|
| *Performance activities* | |
| Developing | Identify procedures used for information sharing |
| Skilled | Implement procedures used for information sharing |
| Expert | Evaluate procedures used for information sharing |

| 2.4.6 Advocating for the laboratory (see also 4.2) | |
|---|---|
| *Performance activities* | |
| Developing | Describe the principles of advocacy and the strengths and resources of existing advocacy campaigns and materials |
| Skilled | Apply principles of advocacy, implement advocacy campaigns |
| Expert | Evaluate the effectiveness of advocacy campaigns and materials used in the promotion of the laboratory |

## Domain 2.5: Ethics and integrity

| 2.5.1 Legal framework (see also 1.2.7) | |
|---|---|
| *Performance activities* | |
| Developing | Describe laws relevant to data collection, management, dissemination and use of information and personal data protection |
| Skilled | Apply laws relevant to data collection, management, dissemination and use of information and personal data protection |
| Expert | Create an environment where adherence to all laws pertaining to data collection, management, dissemination and use of information and personal data protection are part of the culture |

| 2.5.2 Ethical principles (see also 9.1.2) | |
|---|---|
| *Performance activities* | |
| Developing | List ethical principles relevant to the human-animal-environment relationships |
| Skilled | Apply ethical principles relevant to the human-animal-environment relationships |
| Expert | Develop an environment that follows ethical principles relevant to the human-animal-environment relationships |
| 2.5.3 Professional code of conduct | |
| *Performance activities* | |
| Developing | Describe the professional code of conduct and conduct oneself according to a professional code of conduct |
| Skilled | Implement a professional code of conduct and conduct oneself according to professional code of conduct |
| Expert | Design policies that demonstrate the organizational expectations for adhering to a professional code of conduct and conduct oneself according to a professional code of conduct |
| 2.5.4 Conflicts of interest | |
| *Performance activities* | |
| Developing | Identify potential conflicts of interest in the laboratory |
| Skilled | Demonstrate ethical response to conflict of interest in the laboratory |
| Expert | Evaluate and respond ethically to any personal or staff conflicts of interest |

## Competency 3. Management

*Knowledge, skills and abilities to effectively and efficiently achieve quality laboratory results using available resources. May include operational management together with long-range strategic management within the laboratory.*

### Domain 3.1: Laboratory management

| 3.1.1 Laboratory core functions (see 1.1) | |
|---|---|
| *Performance activities* | |
| Developing | Define laboratory core functions |
| Skilled | Implement laboratory core functions |
| Expert | Evaluate how national laboratory policies and plans are reflected in laboratory core functions |
| 3.1.2 Laboratory programme functions and directives (see also 8.1.1) | |
| *Performance activities* | |

| | |
|---|---|
| Developing | Outline laboratory programmes/services, their functions and directives |
| Skilled | Implement laboratory programmes/services, their functions and directives |
| Expert | Design and evaluate laboratory programmes/services and functions based on the laboratory mandate |

**3.1.3 Implementation planning (see also 1.3.3)**

*Performance activities*

| | |
|---|---|
| Developing | Outline an implementation plan for a new laboratory programme/service |
| Skilled | Implement a plan for a new laboratory programme/service |
| Expert | Evaluate laboratory services and programme implementation plans |

**3.1.4 Management roles and responsibilities (see also 3.2.6)**

*Performance activities*

| | |
|---|---|
| Developing | Describe management roles and responsibilities at all organizational levels |
| Skilled | Demonstrate management roles and responsibilities |
| Expert | Evaluate management roles and responsibilities to optimize performance |

**3.1.5 Laboratory operations and workflow (see also 1.3.1)**

*Performance activities*

| | |
|---|---|
| Developing | Outline the components of laboratory operations and their relationship to workflow |
| Skilled | Apply the appropriate components of laboratory operations to workflow |
| Expert | Evaluate the components of laboratory operations related to workflow |

**3.1.6 Laboratory monitoring, evaluation, and auditing (see also 5.6a)**

*Performance activities*

| | |
|---|---|
| Developing | Describe the standards and good practices required for laboratory quality monitoring, evaluation and auditing |
| Skilled | Apply the standards and good practices required for laboratory quality monitoring, evaluation and auditing |
| Expert | Evaluate the standards and good practices required for laboratory quality monitoring, evaluation and auditing |

**3.1.7 Disease surveillance and outbreak investigation (see also 7.2)**

*Performance activities*

| | |
|---|---|
| Developing | Outline the laboratory role in surveillance, outbreak investigation and response to rare or emerging disease |
| Skilled | Demonstrate the performance of the laboratory in its role in surveillance, outbreak investigation and response to rare or emerging diseases |
| Expert | Evaluate the laboratory's performance in its role in surveillance, outbreak investigation and response to rare or emerging diseases |

**3.1.8 Utilization of laboratory data (see also 1.2.4; 2.4.5)**

*Performance activities*

| Developing | Describe how laboratory data is used for decision and policy making |
|---|---|
| Skilled | Demonstrate how laboratory data is used for decision and policy making |
| Expert | Evaluate the suitability and relevance of laboratory data used for decision and policy making |

**3.1.9 Emergency laboratory response (see also 8.2)**

*Performance activities*

| Developing | Identify management functions associated with emergency laboratory response |
|---|---|
| Skilled | Demonstrate management functions associated with emergency laboratory response |
| Expert | Evaluate management functions associated with emergency laboratory response |

**3.1.10 Customer focus (see also 5.8.1)**

*Performance activities*

| Developing | Describe how laboratory services meet the needs of varied types of customers |
|---|---|
| Skilled | Analyse how the services meet the needs of varied types of customers |
| Expert | Evaluate customer needs and services provided |

## Domain 3.2: Resource management (see also 8.1.5)

*Subdomain 3.2.a: Budgeting and financial management*

| 3.2.1 Laboratory budget | |
|---|---|
| *Performance activities* | |
| Developing | Identify the components of a budget |
| Skilled | Analyse components of budget |
| Expert | Develop a budget |
| **3.2.2 Cost analysis** | |
| *Performance activities* | |
| Developing | Describe the purpose of a cost analysis |
| Skilled | Demonstrate how to conduct a cost analysis |
| Expert | Evaluate the results of a cost analysis |
| **3.2.3 Financial resource utilization** | |
| *Performance activities* | |
| Developing | Identify how financial resources align with laboratory operations |
| Skilled | Analyse financial resources in support of on-going laboratory functions as well as emerging challenges |
| Expert | Evaluate the use of financial resources ensuring that timelines are met and laboratory goals are achieved |

| 3.2.4 Financial auditing processes | |
|---|---|
| *Performance activities* | |
| Developing | Outline financial auditing processes |
| Skilled | Apply financial auditing processes |
| Expert | Evaluate financial auditing processes |
| 3.2.5 Financial sustainability | |
| *Performance activities* | |
| Developing | Outline the foundation for financial sustainability |
| Skilled | Demonstrate where opportunities exist to financially support the laboratory |
| Expert | Design a financial sustainability model for the laboratory |

### Subdomain 3.2.b: *People management*

| 3.2.6 Organizational structure (see also 1.4.2; 2.2.1; 3.1.4) | |
|---|---|
| *Performance activities* | |
| Developing | Outline the existing organizational structure |
| Skilled | Implement the existing organizational structure |
| Expert | Design and evaluate organizational structure including a functional chart with clear assignment of responsibility |
| 3.2.7 Team management (see also 1.4.3) | |
| *Performance activities* | |
| Developing | Outline the stages of team development |
| Skilled | Implement team work considering the stages of team development |
| Expert | Evaluate team development to ensure desired results achieved |
| 3.2.8 Staff motivation (see also 2.2.3) | |
| *Performance activities* | |
| Developing | Describe motivational theory |
| Skilled | Apply motivational theory and practice |
| Expert | Evaluate staff motivation and apply motivational theory to maximize staff performance |
| 3.2.9 Conflict management | |
| *Performance activities* | |
| Developing | Describe the strategies needed to both minimize and manage workplace conflict |
| Skilled | Apply strategies to minimize and manage workplace conflict |
| Expert | Create an environment that minimizes and manages workplace conflict by applying appropriate strategies |

| 3.2.10 Stress management | |
|---|---|
| *Performance activities* | |
| Developing | List the elements of stress management |
| Skilled | Apply the elements of stress management |
| Expert | Create a work environment that minimizes stress |
| 3.2.11 Staff development (see 1.4.1) | |
| *Performance activities* | |
| Developing | Outline the staff development process |
| Skilled | Apply staff development processes |
| Expert | Evaluate staff development process to ensure inclusion of all appropriate processes |
| 3.2.12 Staff retention | |
| *Performance activities* | |
| Developing | Describe staff retention strategies |
| Skilled | Implement staff retention strategies |
| Expert | Prioritize strategies for staff retention, e.g., workload review, financial rewards, flexible work schedules |

## Competency 4. Communication

*Knowledge, skills, and abilities necessary to communicate laboratory and laboratory system related information across scientific disciplines in a clear and concise manner adjusted to the level and type of audience.*

### Domain 4.1: General communication skills

| 4.1.1 Oral communication (see also 1.2.4; 9.5.1; 6.2.9) | |
|---|---|
| *Performance activities* | |
| Developing | Describe effective oral communications skills |
| Skilled | Demonstrate effective oral communications skills |
| Expert | Develop and mentor subordinates in effective oral communication skills |
| 4.1.2 Written communication | |
| *Performance activities* | |
| Developing | Describe principles of effective written communications process |
| Skilled | Apply principles of effective written communications process |
| Expert | Evaluate training in principles of effective written communication process |

## Domain 4.2: Proposal writing (see also 2.4.6)

| 4.2.1 Identifying funders | |
|---|---|
| *Performance activities* | |
| Developing | Identify potential funders of one's organization |
| Skilled | Implement strategies to attract potential new funders |
| Expert | Evaluate strategies used for attracting funders and identify elements of success |
| **4.2.2 Proposal components** | |
| *Performance activities* | |
| Developing | Identify the main components of a successful proposal |
| Skilled | Apply the components of a successful proposal |
| Expert | Evaluate the composition of a proposal |
| **4.2.3 Writing process** | |
| *Performance activities* | |
| Developing | Describe the key steps and elements of the proposal writing process |
| Skilled | Apply the keys steps of the proposal writing process |
| Expert | Develop and/or evaluate a proposal |
| **4.2.4 Review process (see also 9.1.4)** | |
| *Performance activities* | |
| Developing | Outline the principal components of a (peer) review process |
| Skilled | Implement the (peer) review process |
| Expert | Evaluate the (peer) review process |

## Domain 4.3: Communication with media (see also 8.2.7)

| 4.3.1 Media relations policy and strategies | |
|---|---|
| *Performance activities* | |
| Developing | Describe media relations policies and strategies |
| Skilled | Implement media relations policies and strategies |
| Expert | Evaluate media relations policies and strategies |
| **4.3.2 Media communication strategies** | |
| *Performance activities* | |
| Developing | Describe effective verbal and written media communication strategies |

| Skilled | Implement effective verbal and written media communication strategies |
|---|---|
| Expert | Evaluate verbal and written media communication strategies |

## Domain 4.4: Risk communication (see also 8.2.7)

| 4.4.1 Communicating risk | |
|---|---|
| *Performance activities* | |
| Developing | Describe principles of risk communication |
| Skilled | Apply principles of risk communication during emergency and non-emergency situations |
| Expert | Design a risk communication plan for use during emergency and non-emergency situations |
| 4.4.2 Key messages for high-risk topics | |
| *Performance activities* | |
| Developing | Describe methods of delivery for key messages on complicated high-risk topics |
| Skilled | Demonstrate the delivery of key messages on complicated high-risk topics |
| Expert | Design a plan for how to deliver key messages on complicated high-risk topics |
| 4.4.3 Empathetic messaging | |
| *Performance activities* | |
| Developing | Describe the principle of empathetic messaging |
| Skilled | Apply the principles of empathetic messaging for high-risk situations and emergencies |
| Expert | Design empathetic messages for high-risk situations and emergencies |

## Domain 4.5: Scientific communication (see also 8.2.5)

| 4.5.1 Communicating scientific information (see also 9.1.5) | |
|---|---|
| *Performance activities* | |
| Developing | Describe principles of effective scientific communication |
| Skilled | Apply principles of effective scientific communication |
| Expert | Perform communication of effective scientific information with varied audiences |
| 4.5.2 Scientific report/paper | |
| *Performance activities* | |
| Developing | Outline the essential elements of a scientific report/paper |
| Skilled | Demonstrate scientific report/paper preparation |

| Expert | Develop and/or evaluate a scientific report/paper |
|--------|--------------------------------------------------|

## Competency 5. Quality Management System

*The knowledge, skills and abilities to implement and sustain a national quality management system and a culture of quality in laboratory operations.*

### Domain 5.1: Process management

*Subdomain 5.1.a: Sample management*

| 5.1.1 Sample collection, handling, and transport practices | |
|------------|--------------------------------------------------|
| *Performance activities* | |
| Developing | Outline the policies, processes and procedures for sample collection, handling and transport |
| Skilled | Apply the policies, processes and procedures for sample collection, handling and transport |
| Expert | Evaluate policies, processes and procedures for sample collection, handling and transport |
| **5.1.2 Sample accessioning and processing** | |
| *Performance activities* | |
| Developing | Describe sample accessioning and processing |
| Skilled | Implement sample accessioning and processing |
| Expert | Evaluate sample accessioning and processing |
| **5.1.3 Sample referral, storage and retention and disposal policies** | |
| *Performance activities* | |
| Developing | Describe sample referral, storage, retention, chain of custody and disposal policies |
| Skilled | Implement sample referral, storage retention, chain of custody and disposal policies |
| Expert | Design sample referral, storage, retention, chain of custody and disposal policies |
| **5.1.4 Biobanking/repository** | |
| *Performance activities* | |
| Developing | Outline biobanking /repository policies, processes and procedures |
| Skilled | Implement biobanking /repository policies, processes and procedures |
| Expert | Create biobanking /repository policies, processes and procedures |

*Subdomain 5.1.b: Process Control*

| 5.1.5 Quality control policies, processes and procedures (see also 1.1.3) | |
|---|---|
| *Performance activities* | |
| Developing | Describe quality control policies, processes and procedures |
| Skilled | Apply quality control policies, processes and procedures |
| Expert | Evaluate quality control policies, processes and procedures |
| 5.1.6 Monitoring tools for process control | |
| *Performance activities* | |
| Developing | Describe tools for monitoring processes to ensure quality |
| Skilled | Apply tools for monitoring processes to ensure quality |
| Expert | Evaluate tools for monitoring processes to ensure quality |

## Domain 5.2: Document and record management

| 5.2.1 Document management (see also 1.2.1) | |
|---|---|
| *Performance activities* | |
| Developing | Describe a document management system |
| Skilled | Apply a document management system |
| Expert | Evaluate document management system to ensure appropriate policies, processes, and procedures for document control and management |
| 5.2.2 Record management | |
| *Performance activities* | |
| Developing | Describe a record management system |
| Skilled | Apply a record management system |
| Expert | Evaluate record management system to ensure appropriate policies, processes, and procedures for document control and management |

## Domain 5.3: Equipment and consumables

| 5.3.1 Selection and acquisition (see also 1.1.3) | |
|---|---|
| *Performance activities* | |
| Developing | Describe policies, processes and procedures for equipment selection and acquisition |
| Skilled | Apply policies, processes and procedures for equipment selection and acquisition |
| Expert | Evaluate policies, processes and procedures for equipment selection and acquisition |
| 5.3.2 Equipment policy and planning | |

| Performance activities | |
| --- | --- |
| Developing | Identify the minimum equipment needed for each tier of laboratory services |
| Skilled | Explain the minimum equipment package needed for each tiered laboratory service as related to its testing algorithms |
| Expert | Prioritize laboratory system equipment distribution and use in testing for surveillance strategies |

**5.3.3 Consumables planning**

| Performance activities | |
| --- | --- |
| Developing | Describe consumables planning |
| Skilled | Apply supply chain plans |
| Expert | Evaluate supply chain plans |

**5.3.4 Equipment verification and validation plan**

| Performance activities | |
| --- | --- |
| Developing | Outline plan for equipment verification and validation |
| Skilled | Implement the equipment verification and validation plan |
| Expert | Develop the equipment verification and validation plan |

**5.3.5 Calibration**

| Performance activities | |
| --- | --- |
| Developing | Describe equipment calibration |
| Skilled | Analyse instrument and equipment calibration results |
| Expert | Design and evaluate processes for preventive maintenance, service, troubleshooting and repair |

**5.3.6 Preventive maintenance (see also 1.3.4)**

| Performance activities | |
| --- | --- |
| Developing | Describe the policies, processes and procedures for preventive maintenance, service, troubleshooting and repair |
| Skilled | Apply the policies, processes and procedures for preventive maintenance, service, troubleshooting and repair |
| Expert | Evaluate instrument and equipment calibration policies, processes and procedures |

**5.3.7 Decommissioning**

| Performance activities | |
| --- | --- |
| Developing | Outline policies, processes and procedures for equipment decommissioning |
| Skilled | Apply policies, processes and procedures for equipment decommissioning |
| Expert | Evaluate policies, processes and procedures for equipment decommissioning |

## Domain 5.4: Purchasing and inventory (see also 1.3.3)

| 5.4.1 Procurement | |
|---|---|
| *Performance activities* | |
| Developing | Outline the procurement system |
| Skilled | Implement the procurement system |
| Expert | Design a procurement system and/or evaluate procurement system efficiency and effectiveness |
| 5.4.2 Inventory management | |
| *Performance activities* | |
| Developing | Outline the inventory management system |
| Skilled | Implement the inventory management system |
| Expert | Design an inventory management system and/or evaluate inventory management system efficiency and effectiveness |

## Domain 5.5: Nonconforming events management

| 5.5.1 Managing nonconforming events | |
|---|---|
| *Performance activities* | |
| Developing | Define nonconforming event |
| Skilled | Analyse nonconforming events |
| Expert | Evaluate policies, procedures and processes to respond to nonconforming events |
| 5.5.2 Documentation (see also 1.2.1; 5.2) | |
| *Performance activities* | |
| Developing | Describe documentation used to record nonconforming events |
| Skilled | Analyse documentation used to record nonconforming events |
| Expert | Evaluate documentation used to record nonconforming events |
| 5.5.3 Root cause analysis | |
| *Performance activities* | |
| Developing | Describe a root-cause analysis |
| Skilled | Analyse results of root cause analysis |
| Expert | Evaluate results of root cause analysis |

## Domain 5.6: Assessments (see also 3.1.6)

## Subdomain 5.6a: Audits

| 5.6.1 Quality indicators | |
|---|---|
| *Performance activities* | |
| Developing | Define quality indicators |
| Skilled | Apply quality indicators |
| Expert | Evaluate quality indicators |
| 5.6.2 Internal audits | |
| *Performance activities* | |
| Developing | Outline the internal audit process |
| Skilled | Implement internal audit processes |
| Expert | Evaluate outcome of internal audits |

## Subdomain5.6.b: External Quality Assessment (EQA)

| 5.6.4 EQA concepts | |
|---|---|
| *Performance activities* | |
| Developing | Outline EQA concepts |
| Skilled | Apply EQA concepts |
| Expert | Evaluate application of EQA concepts |
| 5.6.5 EQA programme planning and implementing | |
| *Performance activities* | |
| Developing | Describe the elements of an EQA programme |
| Skilled | Implement an EQA programme |
| Expert | Design and/or evaluate an EQA programme for a national health laboratory system |
| 5.6.6 EQA results analysis | |
| *Performance activities* | |
| Developing | Describe EQA results |
| Skilled | Analyse EQA results and take action |
| Expert | Evaluate impact of EQA results |

## Subdomain5.6.c: Norms and accreditation

| 5.6.7 Norms and standards | |
|---|---|
| *Performance activities* | |
| Developing | Define laboratory norms and standards |

| Skilled | Apply laboratory norms and standards |
|---------|--------------------------------------|
| Expert | Evaluate use of laboratory norms and standards |

| 5.6.8 Laboratory registration, licensure, certification and accreditation | |
|---------|--------------------------------------|
| *Performance activities* | |
| Developing | Define laboratory registration, licensure, certification and accreditation |
| Skilled | Explain laboratory registration licensure, certification and accreditation processes |
| Expert | Evaluate laboratory registration, licensure, certification and accreditation processes and advise and plan for development of national health laboratory system quality standards |

| 5.6.9 Developing national standards | |
|---------|--------------------------------------|
| *Performance activities* | |
| Developing | Describe processes to develop national standards |
| Skilled | Apply processes to develop national standards |
| Expert | Evaluate national standards |

## Domain 5.7: Continual improvement

| 5.7.1 Continual quality improvement (CQI) strategies | |
|---------|--------------------------------------|
| *Performance activities* | |
| Developing | Define CQI strategies for continual process improvement |
| Skilled | Implement CQI strategies for continual process improvement |
| Expert | Design and evaluate CQI strategies continual process improvement |

| 5.7.2 CQI tools and activities | |
|---------|--------------------------------------|
| *Performance activities* | |
| Developing | Identify CQI tools and activities |
| Skilled | Apply CQI tools and implement processes for continual improvement |
| Expert | Evaluate tools and processes for continual improvement |

| 5.7.3 Corrective action | |
|---------|--------------------------------------|
| *Performance activities* | |
| Developing | Describe corrective action processes and procedures |
| Skilled | Apply corrective action processes and procedures |
| Expert | Evaluate corrective action processes and procedures |

| 5.7.4 Preventive action | |
|---------|--------------------------------------|
| *Performance activities* | |

| Developing | Describe preventive action processes and procedures |
|---|---|
| Skilled | Apply preventive action processes and procedures |
| Expert | Evaluate preventive action processes and procedures |

## Domain 5.8: Customer focus

| 5.8.1 Customer needs, expectations and requirements (see also 3.1.10) | |
|---|---|
| *Performance activities* | |
| Developing | Describe policies, processes and procedures to address customer needs, expectations and requirements |
| Skilled | Apply policies, processes and procedures to address customer needs, expectations and requirements |
| Expert | Develop policies, processes and procedures to address customer needs, expectations and requirements |
| 5.8.2 Feedback and satisfaction tools and data | |
| *Performance activities* | |
| Developing | List feedback tools from internal and external customers |
| Skilled | Apply tools and analyse data from internal and external customer feedback |
| Expert | Evaluate feedback tools and satisfaction data from internal and external customers |

## Competency 6. Biosafety and Biosecurity

The knowledge, skills and abilities to ensure the laboratory system is operating in a way that optimally minimizes the risks related to biohazards, both externally and internally generated.

## Domain 6.1: Biosafety

| 6.1.1 Biosafety principles | |
|---|---|
| *Performance activities* | |
| Developing | Outline laboratory biosafety principles |
| Skilled | Implement principles of laboratory biosafety |
| Expert | Evaluate principles of biosafety |
| 6.1.2 National biosafety rules and regulations and international guidance | |
| *Performance activities* | |
| Developing | Outline national biosafety rules and regulations and international guidance |

| Skilled | Implement national biosafety rules and regulations and international guidance |
|---|---|
| Expert | Evaluate compliance with national biosafety rules and regulations and international guidance applicable to local context |

| 6.1.3 Biosafety policies and procedures | |
|---|---|
| *Performance activities* | |
| Developing | Identify laboratory biosafety policies and procedures |
| Skilled | Apply laboratory biosafety policies and procedures |
| Expert | Evaluate laboratory biosafety policies and procedures |

| 6.1.4 Biosafety programme and manual/management | |
|---|---|
| *Performance activities* | |
| Developing | Describe the structure of a comprehensive laboratory biosafety programme and the essential elements of a biosafety manual |
| Skilled | Implement a biosafety programme including biosafety manual |
| Expert | Design strategic and implementation plans in the establishment of a laboratory biosafety programme including a biosafety manual |

| 6.1.5 Biosafety risk assessment | |
|---|---|
| *Performance activities* | |
| Developing | Outline the steps involved in a risk assessment |
| Skilled | Apply risk assessment to reduce risk |
| Expert | Evaluate risk assessment tools and apply relevant tools to a local context |

| 6.1.6 Biological risk mitigation | |
|---|---|
| *Performance activities* | |
| Developing | Describe common laboratory biosafety controls measures and procedures |
| Skilled | Apply biosafety control measures and procedures |
| Expert | Evaluate risk mitigation measures for their suitability to address identified risks |

| 6.1.7 Biosafety training | |
|---|---|
| *Performance activities* | |
| Developing | Describe the essential elements of staff biosafety training |
| Skilled | Implement staff biosafety training |
| Expert | Develop a framework for staff biosafety training |

| 6.1.8 Biosafety incident management | |
|---|---|
| *Performance activities* | |
| Developing | Outline the components of a biosafety incident reporting and management system |
| Skilled | Apply biosafety incident management |

| | |
|---|---|
| Expert | Develop policies and procedures for biosafety incident response and reporting |

**6.1.9 Waste management (see also 1.3.5)**

| | |
|---|---|
| *Performance activities* | |
| Developing | Describe the **different types of waste management and decontamination procedures** |
| Skilled | **Implement waste management and decontamination procedures** |
| Expert | Evaluate waste management practices to ensure compliance with policies, rules and regulations |

## Domain 6.2: Biosecurity

**6.2.1 Biosecurity principles**

| | |
|---|---|
| *Performance activities* | |
| Developing | Outline biosecurity principles |
| Skilled | Implement biosecurity principles |
| Expert | Evaluate principles of biosecurity |

**6.2.2 National biosecurity rules and regulations and international guidance**

| | |
|---|---|
| *Performance activities* | |
| Developing | Identify national biosecurity rules and regulations and international guidance |
| Skilled | Implement national biosecurity rules and regulations and international guidance |
| Expert | Evaluate compliance with national biosecurity rules and regulations and international guidance |

**6.2.3 Biosecurity policies and procedures**

| | |
|---|---|
| *Performance activities* | |
| Developing | Identify biosecurity policies and procedures |
| Skilled | Apply biosecurity policies and demonstrate biosecurity procedures |
| Expert | Evaluate biosecurity policies and procedures |

**6.2.4 Biosecurity programme management**

| | |
|---|---|
| *Performance activities* | |
| Developing | Describe the features of a good laboratory biosecurity programme |
| Skilled | Implement a laboratory biosecurity programme |
| Expert | Design strategic and implementation plans in the establishment of a laboratory biosecurity programme |

**6.2.5 Biosecurity risk assessment**

| | |
|---|---|
| *Performance activities* | |
| Developing | Outline the steps involved in a risk assessment |

| | |
|---|---|
| Skilled | Apply risk assessment to reduce risks |
| Expert | Evaluate risk assessment tools and apply relevant tools to a local context |
| **6.2.6 Biosecurity risk mitigation** | |
| *Performance activities* | |
| Developing | Describe common laboratory biosecurity controls measures and procedures |
| Skilled | Apply biosecurity control measures and procedures |
| Expert | Evaluate risk mitigation measures and procedures for their suitability to address locally identified risks |
| **6.2.7 Biosecurity training** | |
| *Performance activities* | |
| Developing | Describe the need for biosecurity training |
| Skilled | Implement staff biosecurity training |
| Expert | Design biosecurity training |
| **6.2.8 Biosecurity incident management** | |
| *Performance activities* | |
| Developing | **Outline the components of a biosecurity reporting and management system** |
| Skilled | Implement biosecurity incident management |
| Expert | Develop policies and procedures for security incident response and reporting |
| **6.2.9 Sensitive information and technology (see also 4.1)** | |
| *Performance activities* | |
| Developing | Describe processes and procedures for identifying, prioritizing and controlling sensitive information, agents and technology |
| Skilled | Apply processes and procedures for identifying, prioritizing and controlling sensitive information, agents and technology |
| Expert | Develop policies, processes and procedures for identifying, prioritizing and controlling sensitive information, agents and technology |

## Domain 6.3: Shipment of dangerous goods including non-biological goods

| | |
|---|---|
| **6.3.1 Regulations** | |
| Performance activities | |
| Developing | Outline various national and international regulations exist that may be applicable to the transport of dangerous goods within country and across national borders |
| Skilled | Apply national and international regulations on the transport of dangerous goods to within country and/regional contexts. |

| Expert | Evaluate compliance to national and internationally applicable regulations in the transport of dangerous goods. |
|---|---|
| **6.3.2 Classification of dangerous goods** | |
| *Performance activities* | |
| Developing | Outline the different classes of dangerous goods and provide general examples for each class. |
| Skilled | Apply dangerous goods classifications to materials that may be found in, or are applicable to, laboratory operations. |
| Expert | Develop standard processes and procedures to address dangerous goods classification requirements in the local laboratory context. |
| **6.3.3 Classification of infectious substances** | |
| *Performance activities* | |
| Developing | Outline the different biological substance categories and classifications of infectious substances |
| Skilled | Apply categorization and classification groups to potential infectious substances present in the local laboratory context. |
| Expert | Develop standard processes and procedures for that address the use of infectious substance classification in the local laboratory context. |
| **6.3.4 Packaging, labelling and documenting** | |
| *Performance activities* | |
| Developing | Describe basic elements of triple packaging for infectious substances and list the most common marks, labels and documents required. |
| Skilled | Explain how the packaging, marking labelling and documentation of infectious substances contributes to safety and containment. |
| Expert | Design scenarios which illustrate the differences between the packaging, marking, labelling and documentation of different infectious substance classifications. |
| **6.3.5 Transportation of dangerous goods** | |
| *Performance activities* | |
| Developing | List the most important topics to be included in a training program for dangerous goods transportation |
| Skilled | Analyse the content of various training options and/or programs that impart knowledge about dangerous goods transportation. |
| Expert | Evaluate the effectiveness training on the competency and proficiency of shippers involved in the transportation of dangerous goods. |

# Competency 7. Disease Surveillance and Outbreak Investigation

*Knowledge, skills, and abilities required for the on-going/routine management of a health surveillance system at the laboratory system level and the individual laboratory level including outbreak response.*

## Domain 7.1: Surveillance (see also 3.1.7)

| 7.1.1 Development and sustainability of laboratory support for surveillance systems | |
| --- | --- |
| *Performance activities* | |
| Developing | Identify the laboratory specimen collection, methods and data necessary for health surveillance |
| Skilled | Apply methods of laboratory specimen and data collection necessary for health surveillance |
| Expert | Prioritize laboratory specimen collection, methods and data necessary for health surveillance |
| 7.1.2 Integrated surveillance | |
| *Performance activities* | |
| Developing | Define integrated surveillance approaches |
| Skilled | Implement integrated surveillance approaches |
| Expert | Develop an integrated surveillance system |
| 7.1.3 Laboratory-based surveillance | |
| *Performance activities* | |
| Developing | Describe laboratory-based surveillance |
| Skilled | Apply the principles of a laboratory-based surveillance system |
| Expert | Evaluate laboratory-based surveillance system |
| 7.1.4 Standardized testing algorithms for surveillance of priority diseases | |
| *Performance activities* | |
| Developing | Outline the testing algorithms for priority diseases |
| Skilled | Apply the testing algorithms for priority diseases |
| Expert | Evaluate and create testing algorithms for priority diseases |
| 7.1.5 Surveillance data for disease detection and response | |
| *Performance activities* | |
| Developing | Identify surveillance data needed for disease detection and response |
| Skilled | Analyse surveillance data for disease detection and response |
| Expert | Evaluate surveillance data for disease detection and response |

## Domain 7.2: Outbreak investigation

| 7.2.1 Mobilization and redirection of staff and resources (see also 1.4; 3.1.7.) | |
|---|---|
| *Performance activities* | |
| Developing | Identify where laboratory support is essential for outbreak response including roles and responsibilities of laboratory personnel |
| Skilled | Apply laboratory support as appropriate for outbreak investigation |
| Expert | Prioritize activities and mobilize and redirect staff and resources to meet outbreak response needs |
| 7.2.2 Outbreak protocols and testing requirements | |
| *Performance activities* | |
| Developing | Outline the process for timely sample testing and results reporting during an outbreak |
| Skilled | Apply processes and procedures to ensure appropriate and timely sample testing and results reporting during an outbreak |
| Expert | Prioritize and evaluate processes and procedures to ensure appropriate and timely sample testing and results reporting and prioritize testing as required |
| 7.2.3 Communication (see also 4.3, 4.4, 4.5) | |
| *Performance activities* | |
| Developing | Outline a communication strategy for outbreak related laboratory information to be shared with the outbreak team |
| Skilled | Implement communication strategies for outbreak related laboratory information to be shared with the outbreak team |
| Expert | Design and carry out a communication strategy for outbreak related laboratory information to be shared with the outbreak team and the public |
| 7.2.4 Participation in outbreak investigation team | |
| *Performance activities* | |
| Developing | Identify ways that the laboratory can assist with an outbreak investigation |
| Skilled | Implement laboratory activities contributing to an outbreak investigation |
| Expert | Prioritize and evaluate the laboratory's contribution to outbreak response and actively contribute as a member of the outbreak investigation team |
| 7.2.5 Outbreak report (see also 4.2; 4.3) | |
| *Performance activities* | |
| Developing | Identify laboratory data required for outbreak report |
| Skilled | Analyse laboratory data and write preliminary outbreak report |
| Expert | Evaluate laboratory response, write final outbreak report and communicate results and recommendations |

# Competency 8. Emergency Preparedness, Response and Recovery

*Knowledge, skills and abilities needed to prepare for, respond to and recover from an emergency or other natural or human-caused adverse health event.*

## Domain 8.1: Preparedness

| 8.1.1 National emergency management system (see also 3.1.2) | |
|---|---|
| *Performance activities* | |
| Developing | Describe the national emergency management system and the laboratory's role in it |
| Skilled | Implement national emergency management system in the laboratories |
| Expert | Evaluate the laboratory's role in the national emergency management system |
| 8.1.2 All hazard risk assessments | |
| *Performance activities* | |
| Developing | Describe an all hazard risk assessment |
| Skilled | Implement an all hazard risk assessment |
| Expert | Evaluate the results of an all hazard risk assessment to guide preparedness planning |
| 8.1.3 Mitigation | |
| *Performance activities* | |
| Developing | Outline mitigation **strategies as they apply to a laboratory in an emergency** |
| Skilled | Apply principles of mitigation planning in your laboratory |
| Expert | Evaluate mitigation plans |
| 8.1.4 Laboratory priorities in emergencies | |
| *Performance activities* | |
| Developing | Outline laboratory priorities in potential emergency situations |
| Skilled | Implement laboratory priorities in potential emergency situations |
| Expert | Prioritize laboratory activities in emergency situations |
| 8.1.5 Resource identification (see also 1.4.6; 3.2) | |
| *Performance activities* | |
| Developing | Identify resources (personnel, equipment, financial etc.) needed for emergency response |
| Skilled | Implement strategies and processes for obtaining resources during emergency situations |
| Expert | Design, implement and monitor strategies and processes for mobilizing resources during emergency situations |
| 8.1.6 Partnership and collaboration building (see also 2.4.1) | |
| *Performance activities* | |
| Developing | Identify partners for preparedness planning |

| Skilled | Demonstrate collaboration with partners for preparedness planning |
|---|---|
| Expert | Prioritize partnership building and collaboration in preparedness activities |

| 8.1.7 Emergency operations plan | |
|---|---|
| *Performance activities* | |
| Developing | Outline a laboratory emergency operations plan |
| Skilled | Implement a laboratory emergency operations plan |
| Expert | Evaluate laboratory emergency operations plan and ensure it is aligned with other partners' plans |

| 8.1.8 Exercises | |
|---|---|
| *Performance activities* | |
| Developing | Identify partners for preparedness collaboration conducting training, exercises and drills |
| Skilled | Implement coordinated training, exercises and drills with partners |
| Expert | Evaluate the impact of coordinated training, exercises and drills with partners |

| 8.1.9 Communication (see also competency 4) | |
|---|---|
| *Performance activities* | |
| Developing | Outline the information required for effective communication in emergency situations |
| Skilled | Apply communication strategy required for a coordinated emergency response |
| Expert | Design and implement an emergency communication strategy |

## Domain 8.2: Response

| 8.2.1 Situational assessment | |
|---|---|
| *Performance activities* | |
| Developing | Describe the process for performing a situational assessment during an emergency |
| Skilled | Analyse the results of a situational assessment during an emergency |
| Expert | Evaluate the results of a situational assessment during an emergency |

| 8.2.2 Coordination of laboratory response | |
|---|---|
| *Performance activities* | |
| Developing | Describe mechanisms for coordination of laboratory activities during an emergency response |
| Skilled | Demonstrate coordination of laboratory activities during an emergency response |
| Expert | **Design a strategy for coordinating laboratory activities during an emergency response** |

| 8.2.3 Mobilization of staff and resources (see also 1.4) | |
|---|---|

| Performance activities | |
|---|---|
| Developing | Identify where laboratory support is essential for emergency response |
| Skilled | Apply laboratory support as appropriate for emergency response |
| Expert | Prioritize activities and mobilize and redirect laboratory staff and resources to meet emergency response needs |
| **8.2.4 Implementation of emergency operations plans, laboratory protocols and testing requirements** | |
| Performance activities | |
| Developing | Outline the components of laboratory emergency response plan, including how it relates to laboratory protocols and testing requirements |
| Skilled | Implement laboratory emergency response plan, laboratory protocols and testing requirements |
| Expert | Evaluate laboratory emergency response plan |
| **8.2.5 Prioritization of health system laboratory activities during an emergency** | |
| Performance activities | |
| Developing | Identify laboratory priorities during an emergency |
| Skilled | Apply laboratory priorities during an emergency |
| Expert | Evaluate laboratory priorities during an emergency |
| **8.2.6 Active participation in incident management system** | |
| Performance activities | |
| Developing | Describe laboratory's role in incident management system |
| Skilled | Implement laboratory's role in the incident management system |
| Expert | Evaluate the policy that describes the laboratory's role within the incident management system |
| **8.2.7 Communication with other responders, public and media (see also 4.3, 4.4, and 4.5)** | |
| Performance activities | |
| Developing | Outline the components of effective communication during emergency situations |
| Skilled | Demonstrate the communication required during a coordinated emergency response |
| Expert | Design a strategy for communicating with emergency response partners, the public and the media |

## Domain 8.3: Recovery

Note: During recovery from an adverse animal health event, laboratories will test to demonstrate freedom from disease prior to conducting activities listed in domain 8.3. The activities and performance activities will be similar to Domain 8.2, but the purpose will be to prove freedom from disease and remove trade and travel barriers.

| 8.3.1 After action review/report (AAR) and follow up | |
|---|---|
| *Performance activities* | |
| Developing | Identify components of after action review/report (AAR) and describe follow up processes |
| Skilled | Analyse after action review/report (AAR) and explain the impact of identified gaps in laboratory systems identified |
| Expert | Design after action review/report (AAR) and evaluate the response to AAR and whether gaps were addressed |
| 8.3.2 Financial and staff resources (see also 3.2a) | |
| *Performance activities* | |
| Developing | Identify financial and staff resources needed to facilitate laboratory's response and recovery |
| Skilled | Analyse financial and staff resources needed to facilitate laboratory's response and recovery |
| Expert | Evaluate financial resources and staff needed to facilitate laboratory's response and recovery |
| 8.3.3 Return to normal activities | |
| *Performance activities* | |
| Developing | Outline needs for restoring laboratory infrastructure, function and systems after emergencies |
| Skilled | Analyse needs for rebuilding/reopening of laboratory infrastructure, function and systems |
| Expert | Develop a plan to establish routine laboratory infrastructure, function and systems after emergencies |

# Competency 9. Research

*Knowledge, skills and abilities needed to plan, conduct and analyse hypothesis driven and other well articulated investigations that include innovative approaches and methods, testing and evaluation designed to advance health by correlating basic science with clinical, epidemiological and laboratory practice thereby addressing relevant health questions.*

## Domain 9.1: Health research

| 9.1.1 Health research | |
|---|---|
| *Performance activities* | |
| Developing | Outline the stages of health oriented research project |

| | |
|---|---|
| Skilled | Implement a health oriented research project |
| Expert | Evaluate a health oriented research project |

**9.1.2 Ethical principles in research (see also 2.5.2)**

*Performance activities*

| | |
|---|---|
| Developing | Describe ethical principles regarding human, animal and environmental welfare when planning studies, conducting research and reporting results |
| Skilled | Apply ethical principles regarding human, animal and environmental welfare when planning studies, conducting research, and writing report |
| Expert | Evaluate study design, conduct and report writing while considering ethical principles regarding human, animal and environmental welfare |

**9.1.3 Legal aspects of conducting research (see also 1.1.3)**

*Performance activities*

| | |
|---|---|
| Developing | Identify relevant laws and rules pertaining to data collection, management, dissemination and use of information |
| Skilled | Apply relevant laws to data collection, management, dissemination and use of information |
| Expert | Evaluate compliance with laws and rules pertaining to data collection, management, dissemination and use of information |

**9.1.4 Research proposal review (see also 4.2.4)**

*Performance activities*

| | |
|---|---|
| Developing | Define role of research proposal review committees and of peer review |
| Skilled | Implement peer review principles |
| Expert | Perform as member of research proposal review committees and/or scientific editorial board |

**9.1.5 Communicating research findings (see also 4.1;4.5.1)**

*Performance activities*

| | |
|---|---|
| Developing | Outline critical components of communicating research results/finding |
| Skilled | Apply the process for communicating and acting on research findings |
| Expert | Design the process for communicating and acting on research findings |

## Domain 9.2: Innovation and development

**9.2.1 Innovation in research**

| | |
|---|---|
| *Performance activities* | |
| Developing | Describe an environment conducive to innovation |
| Skilled | Implement actions conducive to innovation in research and the needed resources |
| Expert | Create an environment conducive to innovation in research with mobilized resources |
| 9.2.2 Translating research results into applications | |
| *Performance activities* | |
| Developing | Describe process of translation of research results to innovative applications benefitting health |
| Skilled | Apply/Implement/ translate research results how research results can translate in to innovative applications benefitting health |
| Expert | Prioritize translation of research results into innovative applications benefitting health |
| 9.2.3 Health technology assessment of new diagnostic devices for decision making and health interventions | |
| *Performance activities* | |
| Developing | Describe methods for assessing diagnostic devices |
| Skilled | Apply actions for assessing diagnostic devices |
| Expert | Evaluate performance to integrate diagnostic devices into the laboratory testing algorithm |

## Glossary of terms

In the context of the framework, all definitions incorporate the One Health concept and include the intersection of human-animal-environment relationships.

Definitions were developed by partnership unless otherwise indicated with a reference.

| | |
|---|---|
| **Accreditation** | Procedure by which an authoritative body gives formal recognition that an organization is competent to carry out specific tasks. From: ISO 15189:2012. |
| **Adverse event** | An imminent harm or danger that threatens the health of humans, animal or the environment. Adapted from: http://www.fao.org/3/a-i5168e.pdf |
| **Advocacy** | The act or process of supporting a cause or proposal. From: https://www.merriam-webster.com/dictionary/advocacy |
| **Area:** | Defined by its specific use in the Leadership Competency Framework - competency domains and subdomains are broken down further into areas (of activity) |
| **Audit:** | Systematic, independent and documented process for obtaining objective evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled. From: ISO 9000:2015. |
| **Biosafet**y | Laboratory biosafety describes the principles and practices for the prevention of unintentional exposure to biological materials, or their accidental release. From: http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/0.04_GLOSSARY.pdf |
| **Biosecurity** | Laboratory biosecurity describes the controls on biological materials within laboratories, in order to prevent their loss, theft, misuse, unauthorised access, or intentional unauthorised release. From: http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/0.04_GLOSSARY.pdf |
| **Certification** | Procedure by which a third party gives written assurance that a product, process or service conforms to specific requirements. From: ISO/IEC 17000:2004. |
| **Code of conduct, code of ethics, code of practice** | Non-legislated guidelines, which one or more organizations and individuals voluntarily agree to abide by, that set out the standard of conduct or behavior with respect to a particular activity. From: http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_EPR_2006_6.pdf |
| **Communication** | A process by which information is related between individuals and across disciplines in a clear and concise manner adjusted to the level and type of audience using a common system of symbols, signs, or behavior. Adapted from: https://www.merriam-webster.com/dictionary/communication |

| | |
|---|---|
| **Competency** | Defined by its specific use in the Leadership Competency Framework - a combination of knowledge, skills and abilities that are critical to perform a task effectively |
| **Competency domain** | Defined by its specific use in the Leadership Competency Framework - Discrete components of a competency |
| **Core functions** | See laboratory core functions. |
| **Customer** | Person or organization that could or does receive product or a service that is intended for or required by this person or organization. From: ISO 9000:2015. |
| **Dangerous goods** | Items or materials with inherently hazardous properties which, if adequate control measures are not applied, have the potential to cause harm to people, animals, infrastructure and/or the environment." Adapted from: https://www.dgiglobal.com/classes |
| **Developing** | Defined by its specific use in the Leadership Competency Framework - advanced knowledge of the principles, concepts and/or methodologies of the competency as attained from education or training (e.g., coursework, on-the-job orientation, mentorship, etc.) Individuals are able to perform a range of assignments under supervision, mentorship and/or coaching. |
| **Directives** | Something that serves to direct, guide, and usually impel toward an action or goal, especially, government; an authoritative order or instrument issued by a high-level body or official.  From: https://www.merriam-webster.com/dictionary/directive |
| **Disease surveillance** | See surveillance. |
| **Emergency response** | A cyclical process, involving repeated assessment, planning, action and review, to respond appropriately to needs and capacities as they evolve during an emergency. From: http://www.who.int/water_sanitation_health/hygiene/emergencies/em2002chap4.pdf |
| **Emergency preparedness** | Emergency Preparedness is the knowledge and capacities and organizational systems developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, emerging, or current emergencies. From WHO, 2017 http://apps.who.int/iris/bitstream/handle/10665/254883/9789241511827-eng.pdf;jsessionid=2A80A4B407CA67D65C1367159C135300?sequence=1 |
| **Emergency Operations Plan** | A written plan for who will do what, when, with what resources, and by what authority--before, during, and immediately after an emergency. Adapted from: https://www.fema.gov/pdf/plan/slg101.pdf |
| **Ethics** | The principles of conduct governing an individual or a group. From https://www.merriam-webster.com/dictionary/ethic |
| **Expert** | Defined by its specific use in the Leadership Competency Framework - mastery of the principles, concepts and/or methodologies of the competency as well as significant success in performing the most demanding assignments requiring the competency. Able |

| | |
|---|---|
| | to apply innovations in the competency to problem solving and task completion. Individuals are able to synthesize, critique or teach the competency and value and are able to provide coaching and mentoring. |
| External quality assessment | A system for objectively checking the laboratory's performance using an external agency or facility. From: From: WHO. Laboratory quality management system handbook. Geneva: 2011. |
| Guidance | Non legally binding standards |
| Health | A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.  From WHO:  Preamble to the Constitution of WHO as adopted by the International Health Conference, New York, 19 June - 22 July 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of WHO, no. 2, p. 100) and entered into force on 7 April 1948. The definition has not been amended since 1948. Health (adjective): of or relating to the well being of humans, animals and the environment. |
| Health laboratory(ies) | Laboratories inclusive of clinical, diagnostic, medical, public health, animal, environmental or any other laboratories performing testing for the purpose of disease diagnosis, screening, prevention, medical treatment decisions, surveillance or public health. From: WHO. Laboratory quality management system handbook, Geneva, 2011. |
| Health security | The activities required, both proactive and reactive, to minimize vulnerability to acute health events that endanger the collective health of populations living across geographical regions and international boundaries. Adapted from: http://www.who.int/whr/2007/overview/en/ |
| Health system | All activities whose primary purpose is to promote, restore, and maintain human, animal and environmental health. Adapted from: http://www.who.int/healthsystems/Glossary_January2011.pdf  http://www.who.int/healthsystems/hss_glossary/en/index5.html |
| Infectious substances | Infectious substances are substances that are known or are reasonably expected to contain pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.  From: https://www.iata.org/whatwedo/cargo/dgr/Documents/infectious-substance-classification-DGR56-en.pdf |
| Integrated surveillance | Surveillance program that promotes the rational use of resources by integrating and streamlining common surveillance activities across disciplines. Adapted  from: https://www.cdc.gov/globalhealth/dphswd/idsr/pdf/Technical%20Guidelines/IDSR%20Technical%20Guidelines%202nd%20Edition_2010_English.pdf |

| | |
|---|---|
| Internal audit | An activity carried out by laboratory staff that verifies laboratory operations adhere to the requirements of the management system, the customer, and/or regulatory agencies. From: https://www.cdc.gov/mmwr/pdf/other/su6401.pdf |
| Laboratory core functions | Essential roles assumed by the laboratory that underlie the laboratory's ability to support health. Adapted from: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5114a1.htm |
| Laboratory information management system (LIMS) | System for the exchange of laboratory data. LIMS may range in complexity from networked computers and servers with connectivity to automated testing equipment handling a large volume of specimens to a standalone computer serving a small laboratory that uses manual equipment. A LIMS may also be a paper-only system where everything is done manually, or a hybrid of manual and computer components. From: https://www.aphl.org/MRC/Documents/GH_2005October_LIS-Guidebook.pdf |
| Laboratory leader | Individual laboratory science subject matter expert responsible for managing finances, motivating staff, advocating for the laboratory, building relationships with external partners and navigating legislative processes. |
| Laboratory manager | Person(s) who direct and manage the activities of a laboratory. From: ISO 15189:2012 |
| Laboratory system | See national health laboratory system |
| Law | A binding custom or practice of a community; a rule of conduct or action prescribed or formally recognized as binding or enforced by a controlling authority. Or the whole body of such customs, practices, or rules. From: https://www.merriam-webster.com/dictionary/law |
| Leadership | Motivating and inspiring a group of people to act towards achieving a common goal. |
| Licensure | Granting of permission by a competent authority (usually a government agency) to an organization or individual to engage in a practice or activity; a legal confirmation that the laboratory can operate. Adapted from: WHO. Laboratory quality management system handbook. Geneva: 2011. |
| Management | A person or group of people with authority and responsibility for the conduct and control of an organization (Coordinated activities to direct and control an organization). From: ISO 9000: 2015. |
| Multinational | Relating to, or involving two or more nations. Adapted from: https://www.merriam-webster.com/dictionary/multinational |
| Multisectoral/ Multidisciplinary | Concerning or involving more than one sector or an industry, economy, etc./ Combining or involving several academic disciplines or professional specializations in an approach to a topic or problem. From: https://en.oxforddictionaries.com See One Health. |
| National health laboratory system | Networks that include human, animal, environmental, agricultural, food, and chemical laboratories in support of health systems. |

| | |
|---|---|
| **Nonconforming event** | An occurrence that does not to conform to the laboratory's policies, processes, and/or procedures; does not conform with applicable regulatory or accreditation requirements; or has potential to affect (or has affected) patient, donor, or employee safety. From: CLSI guideline QMS11. |
| **One Health** | An approach to address a health threat at the human-animal-environment interface based on collaboration, communication, and coordination across all relevant sectors and disciplines, with the ultimate goal of achieving optimal health outcomes for both people and animals; a One Health approach is applicable at the subnational, national, regional, and global level. From: Tripartite Zoonosis Guide (add full reference) |
| **Outbreak** | Occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season. From: http://www.searo.who.int/topics/disease_outbreaks/en/ |
| **Outbreak investigation** | Steps taken to identify, respond to and control a disease outbreak affecting humans, animals or the environment. |
| **People management** | The engagement and effective utilization of people to obtain optimum efficiency in the use of their talents while engaging them in organizational strategy. |
| **Performance activities** | Defined by its specific use in the Leadership Competency Framework - activities that allow for evaluation of individual performance at three levels of proficiency. |
| **Policy** | A set of basic principles or guidelines to direct plans actions and decisions of staff and the organization. CDC/APHL Competency Guidelines https://www.cdc.gov/mmwr/pdf/other/su6401.pdf |
| **Priority diseases** | Diseases that pose a public health risk because of their epidemic potential and for which there are no, or insufficient, countermeasures. From: http://www.who.int/blueprint/priority-diseases/en/ |
| **Procedures** | A specified way to carry out an activity of a process. From ISO 9000:2015 |
| **Processes** | Set of interrelated or interacting activities that transform inputs into outputs. From: ISO 15189:2012 |
| **Public health** | Public health is the science of protecting and improving the health of people and their communities.} This work is achieved by promoting healthy lifestyles, researching disease and injury prevention, and detecting, preventing and responding to infectious diseases. From: https://www.cdcfoundation.org/what-public-health 2018 |
| **Public health laboratory** | Laboratory working in collaboration with the public health system to provide clinical diagnostic testing, disease surveillance and advanced skills in laboratory practice. From: https://www.cdc.gov/publichealth101/laboratories.html |
| **Quality control** | A set of activities or techniques whose purpose is to ensure that all quality requirements are being met. Simply put, it is examining "control" materials of known substances along with patient samples to monitor the accuracy and precision of the complete examination process |

| | From: WHO Laboratory Quality Management handbook (2011) |
|---|---|
| Quality management system | Coordinated activities to direct and control an organization with regard to quality. From: WHO Laboratory Quality Management handbook (2011) |
| Recovery | 1. Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk (ISDR). 2. Longer-term effort to (a) reconstruct and restore the disaster-stricken area, e.g. through repairing or replacing homes, businesses, public works, and other structures; (b) deal with the disruption that the disaster has caused in community life and meet the recovery-related needs of victims; and (c) mitigate future hazards. From: http://www.who.int/hac/about/definitions/en/ |
| Regional | Serving an administrative area, division, or district, may be within a country or among countries. Adapted from: https://www.merriam-webster.com/dictionary/regional |
| Registration | To enter a name into a specified register as a demonstration that an organization **or** individual meets certain criteria and has been accepted into membership to a given body, e.g. Health Professions Council. Adapted from APHL training materials |
| Regulations | Any standard that is mandated by a governmental agency or authoritative body<br><br>From: WHO Laboratory Quality Management handbook (2011)<br><br>See also Law |
| Research | Research - Investigation, experimentation, or evaluation aimed at the discovery and interpretation of information, or the practical application of such information to the field of public health. Research may be categorized as applied, basic, clinical, systems and services, or translational.<br><br>• Applied- Solves problems rather than to acquire new knowledge. Such research might be used to improve a process.<br>• Basic - Tests a hypothesis or answer a scientific question. The motivation for such research is to acquire new knowledge.<br>• Clinical - Determines the safety or efficacy of medications, devices, diagnostic products/procedures and regimens. Often carried out for the prevention, treatment or diagnosis of a disease or condition.<br>• Systems and Services - Examines the organization, financing and delivery of public health services in communities, and assesses the impact of these services on public health.<br>• Translational - Translates the findings in basic research and applies them to meaningful health outcomes that broadly affect a population or community.<br><br>From: APHL Comprehensive Laboratory Services Survey |
| Response | Actions taken to put preparedness plans in to action in order to save lives and prevent damage during an emergency event  (From: https://www.dhs.gov/topic/plan-and-prepare-disasters) |

| | |
|---|---|
| **Retention strategy** | Policies and plans that organisations follow to reduce employee turnover and attrition and ensure employees are engaged and productive long-term<br><br>From: https://www.hrzone.com/hr-glossary/what-is-a-retention-strategy |
| **Risk** | **The likelihood of the occurrence and the likely magnitude of consequences of an adverse event or effect to animal, human, and environmental health. Adapted from http://www.oie.int/index.php?id=169&L=0&htmfile=glossaire.htm** |
| **Risk assessment** | Identifying potential failure modes, determining severity of consequences, identifying existing controls, determining probabilities of occurrence and detection, and evaluating risks to identify essential control points. WHO. Laboratory quality management system handbook. Geneva: 2011. |
| **Risk communication** | Risk communication refers to the real-time exchange of information, advice and opinions between experts, officials and people who face a threat to their wellbeing, to enable informed decision-making and to adopt protective behaviors. From OpenWHO.org |
| **Rules** | A prescribed guide for conduct or action. From: https://www.merriam-webster.com/dictionary/rule See regulations. |
| **Skilled** | Defined by its specific use in the Leadership Competency Framework – able to analyse and apply principles, concepts and/or methodologies of the competency as attained from education or training and successful experience in a variety of complex assignments. Individuals are able to apply skills independently. |
| **Stakeholder(s)** | Person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity (Note: A decision maker can be a stakeholder.) From: ISO Guide 73:2009. |
| **Standard(s)** | Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context. From: ISO/IEC GUIDE 2:2004. |
| **Strategic plan** | An organization's written plan for how it will operate and grow over a given period of time (usually 3 to 5 years) including the organization's vision, mission and strategic goals and objectives. |
| **Subdomain** | Defined by its specific use in the Leadership Competency Framework - a subcomponent of domain. |
| **Surge capacity plan** | Ability to obtain additional resources when needed during an emergency From: US Centers for Disease Control and Prevention. |
| **Surveillance** | The continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. From: http://www.who.int/topics/public_health_surveillance/en/ |

Appendix B – Program Framework (Draft)

NOTE: This is an initial draft with completion of the plan scheduled for January 2019.

# Instructional Design Planning

## Contents

# Background and rationale

*This section provides the background and performance gap identified.*

Laboratories are an essential and fundamental part of health systems and play a critical role in the detection, diagnosis, treatment and control of diseases. However, reliable laboratory services continue to be limited in many low- and middle-income countries. Although there have been examples of effective laboratory response to outbreaks a number of well-documented events have shown how a lack of robust laboratory systems can impede disease control and prevention efforts. Strong laboratory leaders are needed to build sustainable national health laboratory systems that are a component of overall health systems. A long-term commitment is needed to train laboratory leaders who are able to manage laboratories in complex environments and build strong collaborative networks at every level of the health system.

It is recognized that laboratory leaders require meaningful education and training in leadership and management skills to lead efforts in the development and direction of a capable laboratory system and most of them have not had sufficient specific training in these areas. The lack of adequate leadership and management training is particularly acute in low- and middle-income countries. To effectively address this gap, a comprehensive, competency-based learning programme applicable on a global scale is needed to provide the foundation for training programmes for laboratory leadership and management.

# Target Audience

*This section identifies the population requiring this educational intervention. Prerequisites for application may be included here.*

A laboratory leader is defined in laboratory leadership competency framework as an "individual laboratory science subject matter expert responsible for managing finances, motivating staff, advocating for the laboratory, building relationships with external partners and navigating legislative processes."

The GLLP target audience will be a diverse, from various regions, different cultural backgrounds (incl. language, etc.) and different fields (human, animal, environment, etc. sectors)

Participants in the GLLP may include:
- Laboratory directors
- Laboratory deputy directors
- Laboratory section heads
- Laboratory managers
- New, up-coming talent (laboratory scientists transitioning to management)
- Non-bench personnel (i.e., lab engineer)
- Mid- to upper-level career managers in charge of laboratories in Ministries of Health, Education, Agriculture, Environment, Animal, Food, Emergency Services
- Managers in private sector laboratories

- Laboratory epidemiologists

GLLP pre-requisites may include: (country-dependent)
- Educational background: minimum university degree
- Working laboratory experience of 5-10 years
- Other as determined by country
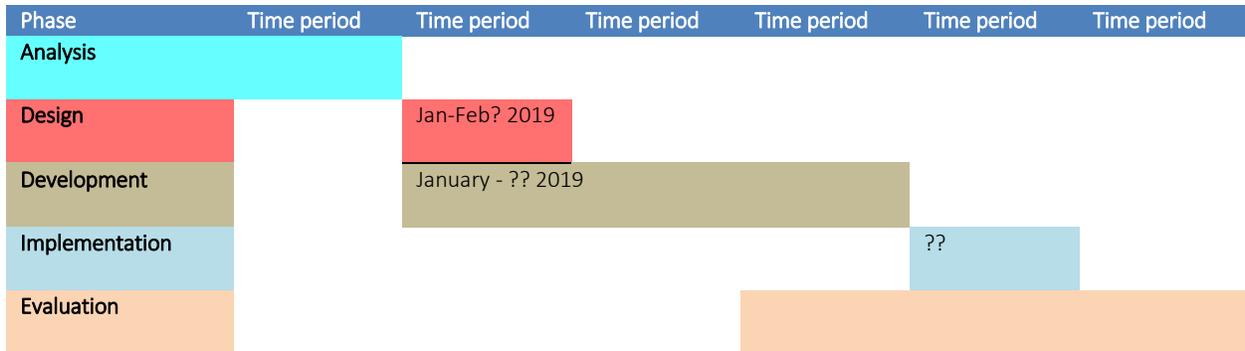
# Available Course Materials

*This section identifies available materials, materials needed and may include a cost-benefit analysis to assist in decision making about buying or developing needed materials*

See Crosswalk

# Timetable

*This section defines the project timetable. This section may be general (overall timeline below) and/or specific (detailed timeline).*

## Project Overall Timeline

| Phase | Time period | Time period | Time period | Time period | Time period | Time period |
|---|---|---|---|---|---|---|
| Analysis | | | | | | |
| Design | | Jan-Feb? 2019 | | | | |
| Development | | January - ?? 2019 | | | | |
| Implementation | | | | | ?? | |
| Evaluation | | | | | | |

## ADDIE: Design:

1. Outline content
2. Identify course materials
3. Draft lesson plan
4. Select specific learning strategies (closest to real work environment will enhance learning and retention)
5. Create list of resources

*Course materials may include:

a.  eLearning modules
b.  PowerPoints or other electronic presentations
c.  Audio or video files
d.  Quizzes
e.  Group exercises
f.  Case studies
g.  Photographs, Graphs, other graphics
h.  Handouts/resources
i.  Pre-work assignments

## Detailed Timeline: Design

| Phase Tasks, Milestones and/or Deliverables | Start Date | End Date | Responsible Person |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## ADDIE: Development

1.  Create missing course materials
2.  Revise/adapt existing content to audience
3.  Implementation guide
4.  Faculty, participant and mentor guide
5.  Evaluation plan (prior to pilot)

## Detailed Timeline: Development

| Phase Tasks, Milestones and/or Deliverables | Start Date | End Date | Responsible Person |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Educational Goals, Objectives and Outcomes

*This section outlines the overall program goal, learning objectives and learning outcomes. It describes what the participant will learn, know, apply, and be able to do when the training is complete.*

**Program goal:** To foster and mentor current and emerging laboratory leaders to build, strengthen and sustain national laboratory systems.

| Learning objective | Learning Outcome |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |

## Content Outline

*This section contains an outline of the content of the course to be developed.*

## Course Duration and Schedule

*This section contains the length of the course including the number of sessions and their schedule.*

*Duration*  Add text

*Schedule*  Add text

- 10 – 24 month part-time duration based on target audience
- 9 weeks of training (for design purposes for now)

## Delivery and Instructional Methods

*This section identifies the methods of delivery and the methods of instruction.*

1. Delivery options
    a) Online
    b) Classroom
    c) Webinar IT skills (computer literate) experience with on-line learning?
    d) **Blended (F2F didactic and web-based)**
    e) Language available

Also include Mentorship, Capstone Projects, Twinning

2. Learning methodologies
   a) Lectures, (online) conferences,
   b) Demonstrations
   c) Discussions
   d) Practical experience, field visits,
   e) Exercises: Role play, simulation, case studies
   f) Discussion fora, assignments, cross-training, tutoring, flipped classroom
   g) Small projects and capstone project (of national relevance – may or may not be research)
2. Mentorship
3. Twinning

| Content | Delivery Method | Instructional Method |
|---|---|---|
|  | Digital, written, recorded, in-person, blended | See instructional methods in Appendix 1 |
|  |  |  |
|  |  |  |
|  |  |  |

# Evaluation Methods

*This section provides evaluation methods and metrics to measure success.*

Example: Kirkpatrick 4-level training evaluation model
> Reaction – how did participants react to training
> Learning – measure increase in knowledge
> Behavior – how have behaviors changed (applying knowledge learned)
> Results – analyze overall outcomes (moving towards program goal?)

Also on-going evaluation throughout program

Evaluation immediately after and longer term for impact evaluation

# Certification/Degree Granting

*This section provides options for certification or degree granting*

Add text

## Community Building Activities

*This section provides a summary of community building activities initiated during the program as well as after program completion. The activities will create linkages among and between cohorts as they move through the program on an annual basis.*

Add text

## Appendix 1: Instructional Methods

| Method | Purpose | Rationale |
|---|---|---|
| Case Studies | Allow participants to discover certain learning points themselves | To apply new knowledge to a specific situation<br>To practice problem-solving skills |
| Games | Provide non-threatening way to present or review course material | To help grasp total program content<br>To present dry material in an interesting way<br>To add a competitive element to the session |
| Survey Instrument | Provide feedback; self-assessment | To identify areas for improvement<br>To establish a baseline for future growth |
| Lectures | Convey information when interaction or discussion is not desired or is not possible | To convey information quickly within a short time<br>To communicate the same information to large numbers of people<br>To provide basic information to a group that is not knowledgeable |
| Mental Imagery Exercises | Help participants increase understanding, gain insight | To address affective learning<br>To stimulate thinking, imagination<br>To replace role playing |
| Observations | Certain participants act out or demonstrate behaviors, tasks, or situations while others observe and give feedback | To show the group how to perform a procedure or apply a skill or behavior<br>To increase participants' observation, critiquing, and feedback skills<br>To demonstrate behavior modeling |
| Role Plays | Help participants practice skills used in interactions | To practice newly acquired skill<br>To experience what a particular situation feels like<br>To provide feedback to participants about their behavior |
| Simulations | Recreate a process, event, or set of circumstances, usually complex, so that participants can experience and manipulate the situation without risk and then analyze what happened | To integrate and apply a complex set of skills<br>To elicit participants' natural tendencies and provide feedback on those tendencies<br>To provide a realistic, job-related experience |

| | | |
|---|---|---|
| Small Group Discussions | Offer opportunities for participants to express opinions, share ideas, solve problems, interact with others | To generate ideas<br>To find out what participants think about a particular subject<br>To increase level of participation<br>To encourage group interaction and build group cohesiveness |
| Task Exercises or Activities | Allow participants to work with the content in small groups | To practice and test participants' understanding of a concept or process<br>To promote group collaboration<br>To increase participants' confidence in their ability to apply learning on the job |
| Writing Tasks | Help participants reflect on their understanding of concepts, information, ideas | To provide for individual input |

Adapted from Lawson, K*., The Trainer's Handbook,* 2nd ed. Pfeiffer, San Francisco, CA, 2006.

## Appendix C – Project Approach

To help frame the required level of detail, respondents should be thinking about this information as they provide their estimates on cost, deliverables and proper staffing. NOTE: RESPONDENTS DO NOT HAVE TO USE OR REFERENCE THIS INFORMATION, IT IS ONLY INCLUDED AS A GUIDANCE RESOURCE.

1. Review of master program design plan:

   As is apparent in Appendix B, APHL and partners are in the process of developing a master design plan for the program. Between now and the contract start date, the partners aim to publish the Laboratory Leadership Competency Framework, complete the program master design plan, identify all existing course materials and identify gaps in available materials and program content. The instructional designer should be prepared to review partner-developed materials and plans and make recommendations on content delivery and methodology.

2. Creation of a project plan and timeline:

   With enough information generated from task #1, the instructional designer should prepare a plan and timeline for the design and development of the learning package. Minor adjustments in the proposed costs and resources can occur at this time.

3. Draft overall program design and storyboards:

   A document describing the competency specific design modalities should be prepared by the instructional designer. Story boards for each competency are requested allowing subject matter experts to confirm the content, concept delivery and evaluate success in meeting the competency goals. Content informing these documents will be provided by APHL and partners.

4. Completion of final storyboards and program development approaches:

   The instructional designer will confirm final design and associated schedule with APHL and partners.

5. Build and deliver the learning guide and accompanying instructor guide:

   The instructional designer will undertake development of the agreed upon GLLP materials with APHL provided content and input from APHL Subject Matter Experts as required

6. Build and deliver a monitoring and evaluation plan:

   The instructional designer will provide a monitoring and evaluation plan including any tools necessary for program evaluation.

## Appendix D – Instructional Designer RFP Scorecard

The following table is a copy of the scorecard that will be used to evaluate RFP responses.

| Scoring: | Poor: 0 | Good: 2 | Excellent: 3 | Outstanding: 4 | | |
|---|---|---|---|---|---|---|
| **Category** | **Criteria** | | | | **Score** | **Comments** |
| **Suitability of the Proposal:** Does the applicant's proposal demonstrate an understanding of the operational need of the project and follow application instructions? | To what degree did the proposal meet the overall objectives of the project? | | | | | |
| | Did the applicant follow instructions - i.e., stay in page count, include required information? | | | | | |
| | Is the information presented in a clear, logical manner and is well organized? | | | | | |
| | Did the applicant provide references for two former or current clients? | | | | | |
| | **Section Total** | | | | | |
| **Instructional Designer Expertise:** Does the applicant's proposal demonstrate sufficient experience in course design and development to serve as the instructional designer? | Did the applicant list and articulate two past learning and development activities they produced that best reflect their work and relevancy to this project? Are the activities articulated at a quality level that APHL seeks? | | | | | |
| | Did the applicant thoroughly explain and have experience in producing training programs for non-profit and/or global projects? | | | | | |
| | Does the applicant have experience in recommending and communicating appropriate technical and aesthetic solutions to course design challenges as evidenced by the proposal and | | | | | |
| | Is the applicant's existing knowledge and experience in this field as described in the proposal relevant to the project? (provided company profile, length of time in business and experience with | | | | | |
| | **Section Total** | | | | | |
| **Instructional Designer Organizational Capacity:** Does the applicant have the appropriate staff to develop the product in the time frame needed? | Does the applicant have organizational capacity to produce learning and development training programs for in-person and online courses? | | | | | |
| | Did the applicant outline an appropriate team to work on this project? (i.e. web designers, developers, instructional designers) | | | | | |
| | **Section Total** | | | | | |
| **Project Management:** Does the applicant have experience in project management? | Does the applicant demonstrate project management experience relevant to completion of international program of this magnitude? | | | | | |
| | Does the applicant have instructional development processes in place to achieve program goals according to a set schedule? | | | | | |

| | | | |
|---|---|---|---|
| | **Section Total** | | |
| **Value/Pricing Structure and Price Levels:** Is the price commensurate with the value offered by the applicant? | Did the applicant hold some level of reasonable accuracy for time and cost based on the nine competency targets? | | |
| | **Section Total** | | |
| | **Total Score** | | |

## Appendix E: Conflict of Interest Disclosure Statement and Policy

Association of Public Health Laboratories

# Conflict of Interest Disclosure Statement

**Applicability**:  Disclosure of the following information is required of all Officers, Directors, committee members, staff members and other volunteers who have been designated and who have accepted responsibility to act on behalf of APHL ("APHL Personnel"). Please answer the following questions and, where indicated, include the same information for your immediate family members (your parents, your spouse or partner, your children and your spouse/partner's parents).

APHL will keep your completed disclosure statement in the corporate records of the association.

1.	Please list the name, address, phone number, email address and type of business of your current employer. If you are self-employed, please note that below and provide us with the address, phone number, email address and type of business you operate.

_____

_____

_____

2.	Do you, or does any family member, currently serve as an officer, director, committee member, or other volunteer (or work as an employee of or a paid consultant to) any organization serving the interest of laboratory science or public health laboratories other than APHL or your state or local laboratory?

☐ **Yes**		☐ **No**

If yes, please list the organization(s) and provide detail on your or your family member's interest or position in the organization(s).

_____

_____

3.      Do you, or any family member, have an existing or potential interest in, or compensation arrangement with, any third party providing goods or services to APHL, or with which APHL is currently negotiating?

☐ **Yes**          ☐ **No**

If the answer is yes, please provide the name of the organization below and describe in detail the nature of the position held.

_____

_____

4.      Please note any other financial or business interest you may have with any organization serving the interests of public health laboratories.

**If you have none, please check this box:** ☐

_____

_____

5. Do you, or does any family member, have any other interest or affiliation that is likely to compromise your ability to provide unbiased and undivided loyalty to APHL, or that could come in conflict with your official duties as an Officer, Director, committee member, staff member or other volunteer who has been designated and who has accepted responsibility to act on behalf of APHL?

☐ **Yes**          ☐ **No**

If you answered yes, please describe in detail below the nature of each such interest or affiliation.

_____

_____

_____

If you are currently aware of any actual or possible conflict of interest that might otherwise hamper your ability to serve APHL to your best ability and with the highest degree of care, loyalty and obedience **– *including any potential conflict you or a family member may have with one or more of the RFP applicants* –** please describe them in detail below.

_____

_____

_____

_____

6. Do you agree that so long as you are an Officer, Director, committee member, staff member or other volunteer who has been designated and who has accepted responsibility to act on behalf of APHL

you will immediately disclose to the other Directors and/or Officers or, for staff members, the Executive Director and/or General Counsel the nature of any interest or affiliation which you may hereafter acquire, which is in or is likely to become in conflict with your official duties with APHL?

☐ **Yes** ☐ **No**

### YOU MUST READ THIS SECTION AND THEN SIGN BELOW

I acknowledge that I have received and read APHL's Fiduciary Responsibility and Conflict of Interest Policy (the Policy). I have listed all my relevant fiduciary responsibilities and affiliations, and I have identified any actual or potential conflict of interest on this Disclosure Statement and I agree to abide by the Policy. I understand that it is my responsibility to inform APHL in writing of any change in circumstances relating to the Policy and this Disclosure Statement.

Signature: _____ Date: _____

Printed Name: _____

# APHL Fiduciary Responsibility and

# Conflict of Interest Policy

## 1. Policy Statement and Purpose

The members of the APHL Board of Directors understand the importance of serving APHL to the best of their ability and with the highest degree of obedience, loyalty and care. Accordingly, the Board adopts the following policy for APHL Officers and Directors, all staff, committee members, and other volunteers who have been designated and who have accepted responsibility to act on behalf of APHL ("APHL Personnel").

## 2. Individual Duty and Annual Disclosure

APHL Personnel will avoid any conflict of interest with APHL. APHL Personnel will not profit personally from their affiliation with APHL, or favor the interests of themselves, relatives, friends or other affiliated organizations over the interests of APHL. As used in this Policy, "Conflict of interest" includes any actual, apparent, and potential conflict of interest.

Upon commencing service with APHL, each APHL Personnel will file with the Board an annual statement disclosing all material business, financial, and organizational interests and affiliations they or persons close to them have which could be construed as related to the interests of APHL or the profession of public health laboratory science. Each APHL Personnel has an obligation to make an additional disclosure if a conflict of interest arises in the course of the individual's service to APHL, whether arising out of his/her employment, consulting, investments, or any other activity.  These disclosures will be documented promptly in writing and recorded in the Board minutes and corporate records.

## 3. Procedure

Whenever APHL considers a matter, which presents an actual, apparent, or potential conflict of interest for APHL Personnel, the interested individual will fully disclose his/her interest in the matter, including the nature, type, and extent of the transaction or situation and the interest of the individual or that individual's relatives, friends or other affiliated organizations. The Board, after consultation with counsel as appropriate, will determine whether an actual and material conflict exists and, if so, what is the appropriate course of action under this policy and the Board vote will be recorded in the minutes.

Any Board member having a conflict of interest must either (i) voluntarily abstain from and be disqualified from participation in all deliberation and voting on all Board actions relating to the situation or matter that gives rise to the conflict of interest, or (ii) ask the Board to determine whether an apparent or potential conflict of interest is considered by the Board to be an actual and material conflict. In the event that the Board member in question requests that the Board evaluate the apparent or potential conflict, that Board member will abstain and be disqualified from participating in (and voting on) the determination of whether the issue presents an actual and material conflict. If the Board determines that an actual and material conflict exists, the Board member in question will abstain from

all voting on, and will be disqualified from participation in all deliberation concerning all Board actions relating to the conflict of interest.  The vote will be recorded in the minutes.

These procedures will neither prevent the interested individual from briefly stating his/her position on the matter, nor preclude him/her from answering pertinent questions of Board members, since his/her knowledge may be of assistance to the Board's deliberations.

APHL Personnel must be cautious and protective of the assets of APHL and insure that they are used in the pursuit of the mission of APHL. The association's policy requires APHL Personnel to avoid transactions in which APHL personnel may have a significant financial interest in any property which APHL purchases, or a direct or indirect interest in a supplier, contractor, consultant, or other entity with which APHL does business. The Board, after consultation with counsel as appropriate, will determine whether an actual and material conflict exists and, if so, determine whether the transaction is nonetheless favorable to APHL before considering whether to approve it.

## 4.  Other Duties and Obligations

Whenever any APHL Personnel discovers an opportunity for business advantage which is relevant to the activities of APHL, the opportunity belongs to APHL and the individual must present this opportunity to the Board. Only once the Board determines not to pursue the matter and relinquishes the opportunity may the individual consider it a matter of possible personal benefit.

APHL Personnel may not accept favors or gifts exceeding $75.00 from anyone who does business with APHL.

All APHL Personnel will keep confidential those APHL matters designated confidential. APHL Personnel are prohibited from disclosing information about APHL to those who do not have a need to know or whose interest may be adverse to APHL, either inside or outside APHL, and are prohibited from using in any way such information for personal advantage to the detriment of APHL.

All APHL Personnel who participate in APHL activities, including committee activities and international consultation activities, must be adequately prepared to fully participate as their position descriptions require and will do so in accordance with the applicable laws and regulations of their respective state or territory and APHL's Articles of Incorporation, Bylaws, and corporate policies. The APHL Board will read and understand the association's Articles of Incorporation, Bylaws, corporate policies and financial statements, and routinely verify that all state, federal, and local tax payments, registrations and reports have been filed in a timely and accurate manner.

Board members will never exercise authority on behalf of APHL except when acting in meetings with the full Board or the Executive Committee or as authorized by the Board. If any member of the Board has significant doubts about a course of action of the Board, he or she must clearly raise the concern with the Executive Director and the Board and, when appropriate, seek independent expert advice.