Restitution Meeting

Cambodia National Laboratory System Assessment findings

Human and Veterinary

Cambodia

September 2021

Presentation content

- Human and Veterinary laboratory system assessment tools (S-LAT)

- Results of human and veterinary lab system assessment

- Main strengths and weaknesses of human and veterinary lab system

- Key recommendations for human and veterinary lab system

- Recommendations for SEALAB project
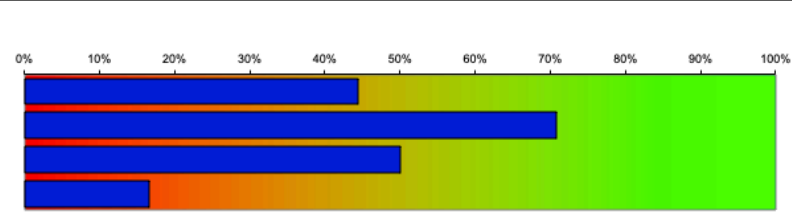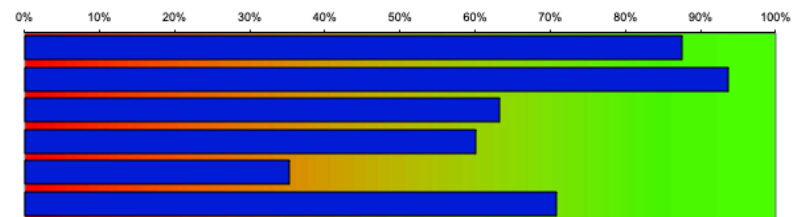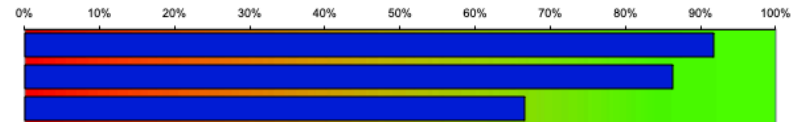
What is a laboratory system assessment?

- **This is not targeting any specific laboratory**
- But the whole system
  - Human: PH labs, hospitals, private laboratories
  - Veterinary, food safety and water laboratories
- Evaluating:
  - National coordination, governance, public health
  - Centralized quality and biosafety management
  - National documentation, SOPs, guidelines
  - Human resources
  - Data management, equipment management
  - Communication

Tool used for system assessment

- 2 different MS Excel files (human/vet), EN/Khmer

- Core capacity or module 8 for human and 9 for vet

- Automated scoring (0-100%)

Human Laboratory System Assessment Results

Overall scores: modules and general indicator

គារវាងពិនុ្ទមុខវិជ្ជាការសវិក្សរា	Scores
ការដឹកនាំប្រពន្ធមន្ទីរពិសោធន៍និងការអភិបាល	82%
រចនាសម្ព័ន្ធ ការរៀបចំ និងបទបញ្ញត្តិបសមន្ទីរពិសោធន៍	68%
ប្រពន្ធមន្ទីរពិសោធន៍និងមុខងារសុខភាពសាធារណៈ	78%
ប្រពន្ធគ្រប់គ្រងគុណភាពមន្ទីរពិសោធន៍	72%
ការគ្រប់គ្រងធនធានមនុស្ស	75%
ការគ្រប់គ្រងឧបករណ៍និងការផ្គត់ផ្គង់	45%
ប្រពន្ធគ្រប់គ្រងពត៌មានមន្ទីរពិសោធន៍និងការទំនាក់ទំនង	60%
ការគ្រប់គ្រងហានិភ័យជីវសាស្ត្រ	68%
General Indicator	69%

Main identified gaps

Bottleneck analysis, from smallest (0) to biggest (5) problems

- **Grade 5**:
  - Not identified

- **Grade 4**:
  - Sample transportation system
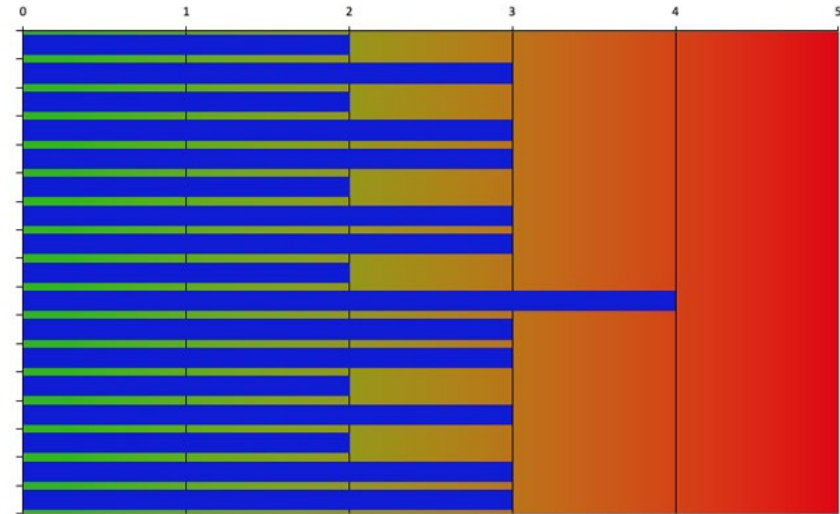
- **Grade 3:**
  - Quantity of Human resources
  - In-service training availability
  - Equipment quality
  - Equipment maintenance
  - Quality of lab infrastructure
  - LIMS and data management
  - Availability of testing guidelines
  - Networking of labs
  - Financial resources

Main strengths (excellent scores; > 90%)

- Laboratory system coordination body (**BMLS**)

- Laboratory biosafety documentation

- Reference laboratories organization

- Testing capacity for priority Non-Communicable disease of public health importance

- Laboratory quality policy and plan

- Laboratory request form

Main strengths (Very good scores; 71-90%)

- Laboratory regulation mechanism

- Laboratory equipment financial resources

- Laboratory workers pre-service training and qualification

- National testing strategies, guidelines for non-communicable diseases

- Human resource motivation, support and retention

- Good practices in biorisk management

- **Laboratory system** structure

- Laboratory supervision

Main weaknesses (scores <50%)

- In-service curriculum

- Laboratory equipment management

- Laboratory information and data collection, analysis and aggregation

- Lab/Epi Data coordination & harmonization

- Metrology (weakest score)

Key Recommendations
Human Laboratory System

Laboratory system leadership and governance

- Strengthen the technical and organizational capacities of the BMLS (for BMLS to fulfill its mandate)

- Update the National Laboratory Policy

- Assess the implementation level of the 2015-2020 strategic plan to develop a new one

- Ensure that annual operational plans are designed to support the implementation of the new strategic plan

Laboratory structure, organization and regulation

- Update the national laboratory standards (minimum)

- Include private laboratories in the lab network

- Propose a national specimen transportation system

- Establish mechanisms for laboratories and laboratory processionals licensing

- Establish a laboratory inspections system

- Strengthen the post-marketing surveillance system for In Vitro Diagnostics (laboratory reagent)

Laboratory system and public health functions

- Develop regulations on public health functions for public and private laboratories

- Develop disease notification guidelines and SOPs

- Define and communicate to all laboratories an official list of notifiable diseases or pathogens

- Identify the list of 10 core tests according to the IHR immediately notifiable list of diseases

Laboratory quality management system

- Expend the QMS training program to cover all laboratories

- Strengthen national EQA schemes and ensure they cover all laboratory disciplines

- Develop regulations to mandate participation of public and private laboratories in EQA programs

- Develop and disseminate a guideline or SOP for the appropriate management of EQA results

Human resources management

- Finalize and validate the existing draft of the national in-service curriculum

- Develop an online platform to store training materials

- Value competencies gained to improve retention of well trained lab professionals

Equipment and supplies management

- Develop national guidelines for laboratory equipment management

- Develop a standard list and technical specifications for critical laboratory equipment to be used in the procurement process

- Strengthen national laboratories capacity (for ISO17025 accreditation) for the calibration of critical measurement equipment (e.g. micropipettes, thermometers, temperature-controlled devices)

Laboratory information management system

- Develop regulations governing laboratory data management and addressing laboratory data security and patient data confidentiality

- Develop a more robust feedback mechanism with lower-level laboratories

- Develop SOPs for laboratory data management especially notification and reporting

Veterinary Laboratory System Assessment Results

Overall scores: modules and general indicator

គារវាងពិនិន្ទុម៉ូខខវិជ្ជាកាសសវិក្សរា	Scores
បរិបទប្រទេស	54%
ការអភិបាលប្រព័ន្ធមន្ទីរពិសោធន៍ និង ការដឹកនាំ	59%
រចនាសម្ព័ន្ធមន្ទីរពិសោធន៍ ការរៀបចំ និងបទបញ្ជា	62%
ប្រព័ន្ធគ្រប់គ្រងគុណភាពមន្ទីរពិសោធន៍	41%
ការគ្រប់គ្រងធនធានមនុស្ស	57%
ការគ្រប់គ្រងឧបករណ៍ និង ការផ្គត់ផ្គង់	44%
ប្រព័ន្ធគ្រប់គ្រងព័ត៌មានមន្ទីរពិសោធន៍ និង ការទំនាក់ទំនង	29%
ការគ្រប់គ្រងហានិភ័យដ៍វិសាស្ត្រ	79%
មុខងារសុខភាពសាធារណៈ	87%
General Indicator	57%

Main identified gaps

Bottleneck analysis from smaller (0) to bigger (5) problems

Grade 5:

- Not Identified

Grade 4:

- Human resources appropriateness
- Availability of suitably qualified veterinarian microbiologists
- Quality assurance improvement/QMS implementation
- Sample transportation system
- Organization/structure/networking of laboratories
- LIMS and data management
- Financial resources for ensuring required biosafety level
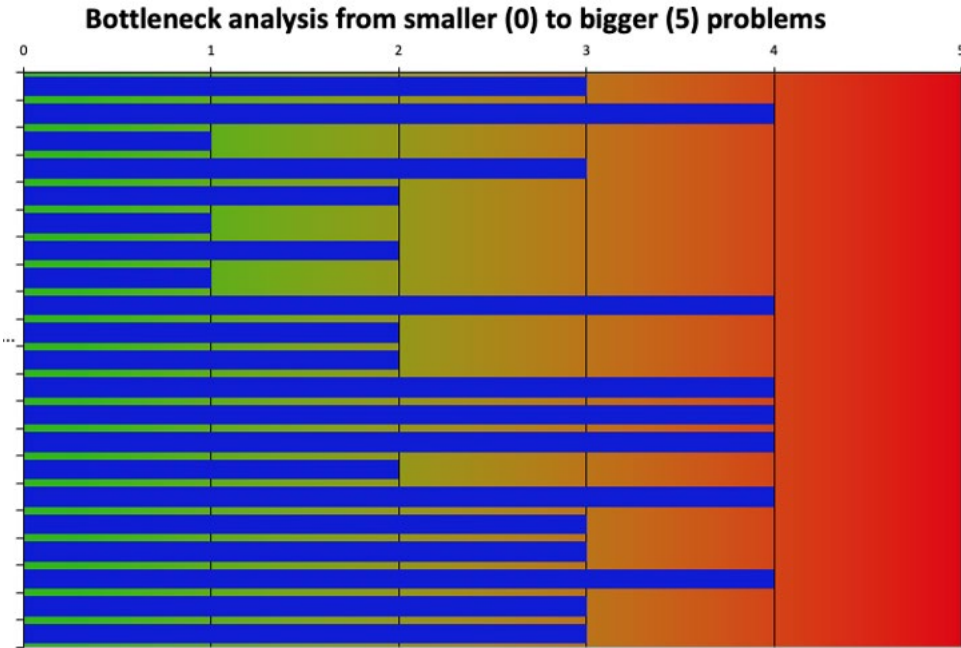
Main strengths (excellent scores; > 90%)

- Laboratory biosafety documentation

- Specific information on animal health and productions

- Organization of database system

- Documentation for implementation of veterinary inspection

Main strengths (Very good scores; 71-90%)

- Laboratory services funding

- Laboratory regulation mechanism

- Reference laboratories linkage

- Laboratory workers knowledge

- Human resource motivation, support and retention

- Laboratory-based Anti-Microbial Resistance surveillance

Main weaknesses (very weak scores, < 35%)

- Laboratory supervision

- Laboratory equipment management

- Laboratory workers pre-service training and qualification

- Communication and IT equipment

- Electronic laboratory information management system (LIMS)

- Laboratory External Quality Assessment

- National quality infrastructure, standards and accreditation

Key Recommendations
Veterinary Laboratory System

Laboratory system governance and leadership

- Establish national veterinary laboratory coordination unit

- Update national Laboratory Strategic Plan

Laboratory structure, organization, & regulation

- Define and formally adopt tiered levels for the veterinary laboratory network for central and provincial level

- Develop and adopt reference laboratory regulatory document for priority diseases in Cambodia

- Develop and implement a program for animal disease surveillance and response (ADSR) for main notifiable/reportable priority diseases in the country including reference laboratory function

- In collaboration with MoH consider to establish a national transport system

Laboratory quality management system

- Develop national veterinary laboratory quality policy, program

- Develop laboratory quality indicators

- Revise/update SOPs

- Develop SOPs to implement IQC and statistical analysis

- Strengthen participation in international EQA schemes to cover all main priority diseases

- Plan continuous QMS improvement to move forward to seek ISO17025 accreditation

Human resources management

- Develop and implement training management plan for veterinary laboratory specialists' pre-service trainings and continuous education program

- Develop an online database to store training materials and manage training sessions and trainers

- Establish and ensure that staff competency assessments are consistently performed

Equipment and supplies management

- Develop guidelines for veterinary laboratory equipment management

- Develop a standard list and technical specifications for critical laboratory equipment that could be used in the procurement process

- Strengthen national laboratories capacity (for ISO17025 accreditation) for the calibration of critical measurement equipment such as micropipettes, thermometers, temperature-controlled devices

Laboratory information management system & communication

- Develop regulations governing veterinary laboratory data management, notification and reporting

- Procure and install electronic laboratory information management system

- Improve communication and IT capabilities

Biorisk management

- Develop and endorse regulations to define minimal biosafety levels, pathogens risk group, measures or requirements for veterinary laboratory operation

- Perform regular biosafety and general risk assessment in the veterinary laboratory

- Develop SOPs for specimen packaging and transportation

Recommendations for SEALAB Project

Recommendations for SEALAB project implementation for Human Lab System

- Create a working group to review and update national Laboratory Policy and national Laboratory Strategic Plan

- Work with MoH/BMLS to conduct workshop to define and then officially adopt laboratories tiered level network outlining minimum testing capacity, equipment, staffing laboratories building requirements at each level

- Support the expansion of the QMS implementation program to covers more labs

- Strengthen national EQA to ensure sustainability of proficiency testing in the country

Recommendations for SEALAB project implementation for Human Lab System

- Update and validate the existing draft of national in-service curriculum

- Deliver trainings according to identified priorities

- Develop and implement a sustainable national specimen transport system

- Adopt official list of notifiable diseases or pathogens and identify 10 core tests as per international recommendations

- Strengthen metrology laboratory capable to calibrate all critical laboratory equipment

Recommendations for SEALAB project implementation for Human Lab System

- Develop national guidelines for laboratory equipment management including standard list and technical specifications

- Develop a document governing laboratory data management and addressing laboratory data security and patient data confidentiality

Recommendations for SEALAB project implementation for Veterinary Lab System

- Create a working group:
  - To review/update national laboratory strategic action plan
  - To develop national veterinary laboratory quality policy, program, and actions to strengthen laboratory QMS
- Organize a workshop to define tiered levels for the future veterinary laboratory network
- Update/develop technical SOPs on lab techniques and QMS
- Procure and install LIMS for central veterinary laboratory

Recommendations for SEALAB project implementation for Veterinary lab system

Develop and deliver trainings:

- Laboratory quality management system

- Laboratory equipment preventive maintenance, calibration and basic concepts of metrology

- Theoretical and bench level technical trainings on molecular biology (PCR), bacteriology, and serology including priority and emerging diseases testing

- Laboratory information management system and communication (LIMS)

- Biosafety/biosecurity and risk management

Recommendations for SEALAB project implementation for Veterinary lab system

- Facilitate development of an online training database to store and manage training materials

- Initiate participation in international EQA schemes to cover main priority diseases

- Establish/strengthen national EQA program to ensure sustainability of proficiency testing

- In collaboration with MoH develop a sustainable one specimen transportation system