BIOSAFETY MANUAL
for HEALTH PERSONNEL
(MEKONG REGION CROSS BORDER)

MEKONG BASIN DISEASE SURVEILLANCE
(MBDS)

Developed by:
MEKONG BASIN DISEASE SURVEILLANCE SECRETARIAT

Contributed by:
MINISTRY OF HEALTH FROM
CAMBODIA, LAO P.D.R, MYANMAR, THAILAND and VIETNAM
# TABLE OF CONTENTS

**BIOSAFETY MANUAL FOR HEALTH PROFESSIONEL**  
(Mekong Region Cross Border)

**MEKONG BASIN DISEASE SURVEILLANCE(MBDS)**

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>Abbreviation</td>
</tr>
</tbody>
</table>
| 06   | List of Figures  
List of Tables |
| 07   | Preface |
| 08   | Introduction, scope and objectives of the manual |
| 09   | Definition and Terminology |
| 10   | Stakeholders in international at cross border check point |
| 15   | Identification and clarification of risk, immediate notification and verification by staff at Point of Entries |
| 18   | IPC in Health Care Facility proposed at XB |
| 21   | Waste disposal |
| 25   | Incident, accident preparedness and response  
Spill Decontamination Method  
. Contingency plan |
| 30   | Role of national / sub national level Preparedness and Stockpile (PH and VH)  
. Institutional level  
. Training and exercise |
| 31   | Surveillance system for border region  
WHO-DO- WHAT-WHEN)  
Cambodia  
40 Laos  
48 Myanmar  
54 Thailand  
63 Vietnam |
<p>| 71   | References and web links |
| 72   | Annexes |
| 88   | Authors &amp; Contributors |</p>
<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>AFP</td>
<td>Acute Flaccid Paralysis</td>
</tr>
<tr>
<td>ARDS</td>
<td>Acute Respiratory Distress Syndrome</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of South East Asia Nations</td>
</tr>
<tr>
<td>ACMECS</td>
<td>Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy</td>
</tr>
<tr>
<td>ARI</td>
<td>Acute Respiratory Infection</td>
</tr>
<tr>
<td>AEFI</td>
<td>Adverse Event Following Immunization</td>
</tr>
<tr>
<td>BSC</td>
<td>Bio-Safety Cabinet</td>
</tr>
<tr>
<td>BSL</td>
<td>Blood Sugar Level</td>
</tr>
<tr>
<td>BHS</td>
<td>Bachelor of Health Science</td>
</tr>
<tr>
<td>BMLS</td>
<td>Bachelor of Medical Laboratory Science</td>
</tr>
<tr>
<td>CoV</td>
<td>Coronavirus</td>
</tr>
<tr>
<td>CEU</td>
<td>Central Epidemiology Unit</td>
</tr>
<tr>
<td>CDs</td>
<td>Clinical Decision support</td>
</tr>
<tr>
<td>CDC</td>
<td>Communicable Disease Control</td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic Acid</td>
</tr>
<tr>
<td>DUNS</td>
<td>Diseases Under National Surveillance</td>
</tr>
<tr>
<td>DDC</td>
<td>Department Disease Control</td>
</tr>
<tr>
<td>DF</td>
<td>Dengue Fever</td>
</tr>
<tr>
<td>DHF</td>
<td>Dengue Hemorrhagic Fever</td>
</tr>
<tr>
<td>DSS</td>
<td>Dengue Shock Syndrome</td>
</tr>
<tr>
<td>EH&amp;S</td>
<td>Environmental, Health and Safety</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme Linked Immuno Sorbent Assay</td>
</tr>
<tr>
<td>EIDs</td>
<td>Emerging Infectious Diseases</td>
</tr>
<tr>
<td>EVD</td>
<td>Ebola virus disease</td>
</tr>
<tr>
<td>FETP</td>
<td>Field Epidemiology Training Program</td>
</tr>
<tr>
<td>GMS</td>
<td>Greater Mekong Sub-region</td>
</tr>
<tr>
<td>GDPM</td>
<td>Goal Directed Project Management</td>
</tr>
<tr>
<td>HFMD</td>
<td>Hand-Foot-and-Mouth Disease</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IEC</td>
<td>International Electro technical Commission</td>
</tr>
<tr>
<td>IPC</td>
<td>Infection Prevention and Control</td>
</tr>
<tr>
<td>IHR</td>
<td>International Health Regulation</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>IC</td>
<td>Infection Control</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>IFA</td>
<td>Immuno Fluorescent Assay</td>
</tr>
<tr>
<td>IgM</td>
<td>Immunoglobulin M</td>
</tr>
<tr>
<td>ILI</td>
<td>Influenza-like Illness</td>
</tr>
<tr>
<td>JE</td>
<td>Japanese Encephalitis</td>
</tr>
<tr>
<td>MBDS</td>
<td>Mekong Basin Disease Surveillance</td>
</tr>
<tr>
<td>Mers-CoV</td>
<td>Middle-East Respiratory Syndrome</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NGU</td>
<td>Non Gonococcal Urethritis</td>
</tr>
<tr>
<td>NIPH</td>
<td>National Institute of Public Health</td>
</tr>
<tr>
<td>POE</td>
<td>Point of Entry</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protection Equipment</td>
</tr>
<tr>
<td>PH</td>
<td>Public Health</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
</tr>
<tr>
<td>PRNT</td>
<td>Plaque Reduction Neutralization Test</td>
</tr>
<tr>
<td>PHEIC</td>
<td>Public Health Emergency of International Concern</td>
</tr>
<tr>
<td>QD-DP</td>
<td>Qualified Developmental Disabilities Professional</td>
</tr>
<tr>
<td>RRT</td>
<td>Rapid Response Team</td>
</tr>
</tbody>
</table>
The emerging and re-emerging diseases pose a major threat to the world population. Since 2003, many diseases occurred including Severe Acute Respiratory Syndrome (SARS), Avian Influenza (H5N1, H7N9), pandemic influenza (H1N1), Ebola infection, Middle-East Respiratory Syndrome (Mers-CoV), Hand-Foot-and-Mouth Disease (HFMD) and Zika infection. Those diseases had a great impact on social, demographic, trade, and economic dimensions. It is estimated that around 75% of the current public health threats have origin from the animals. They have been mainly caused by demographic, ecological, climate changes and genetic mutation.

There is no single country in the world, which can deal with those emerging and re-emerging diseases alone. It requires national and international cooperation to combat those public health threats. Sharing information including priority communicable diseases and public health events of international concern has been initiated in the world and in the region. All the member states of the World Health Organization (WHO) notify WHO within 24 hours for any public health events of international concern through the designated National Focal Points. In 2015, the Mekong Basin Disease Surveillance (MBDS) network composed of 6 countries (Cambodia, China, Lao PDR, Myanmar, Thailand and Vietnam) renewed and signed a Memorandum of Understanding (MoU) to enhance disease surveillance and response across border in member countries. An agreed list of communicable diseases has been shared between designated border provinces on regular basis.

Some member states in the network already developed national legislation, guidelines, protocols, standard operational procedure (SOP) to enhance disease surveillance and response at Point of Entry (POE) including air, land, and seaport. But those existing policies did not highlight the cross-border cooperation to address the biosafety at the POEs.

In this particular regard, the members of the MBDS including Cambodia, Lao PDR, Myanmar, Thailand and Vietnam highlighted the need to develop the biosafety manual to enhance biosafety procedures at POEs, especially the quarantine officers and relevant authorities. The members of the network would use this manual as guidance at national/sub-national levels to ensure the compliance with the biosafety principles.
MEKONG BASIN DISEASE SURVEILLANCE FOUNDATION

Introduction, scope and objectives of the manual

In an era of change and uncertainty, no one can know when and how new infectious disease emerges. Health personnel in cross border areas have to deal with many infectious agents without realizing the actual threats. In this regards, the border health officials, who are first line defense in the border, should have basic knowledge on bio safety in order to apply the knowledge and prevent exposure to potentially infectious agents.

Biosafety encompasses the knowledge, techniques, equipment, and facilities necessary to prevent or minimize an exposure to a biohazard. This manual, Biosafety Manual for Cross Border, focuses mainly on the knowledge to prevent exposure and mitigate risks providing the biosafety guidelines based on duty performance scenarios: People’s health screen at check point, Sick people quarantine, Check goods/infectious material, etc.

The manual applies to all personnel working at cross border areas in Mekong Basin Disease Surveillance Region. It is for health officers and people, who may expose to sick people/animal, biological material, infectious substances, etc., and are involved in cross border health, goods, and animal control.

The purpose of the manual is to provide basic knowledge on biosafety and covers the topics as follows:

- Basic knowledge for Biosafety
- Infection Prevention Control (IPC) of Health Care Facility in Cross Border
- Waste disposal
- Incident, accident preparedness and response: Spill Decontamination Method
- Role of national / sub national level Preparedness and Stockpile (PH and VH)
- Surveillance system for border region (WHO-DO-What-When)
- Biosafety poster for Sub-National Health Care Personnel

Its intent is to give the users, i.e. health officers and other stakeholders, some insights related to bio-safety. It also identifies definition and terminology, determines actions required by different stakeholders, identify and clarify risk and provides basic knowledge on waste disposal, incident, accident preparedness and response.

It is also designed to help foster a safe environment in cross border areas while minimizing the risk of incidents at work. In addition, it is intended to be a resource for information and guidelines to reduce potential exposure. Finally, it intends to aid in the protection of cross border personnel from infectious agents and guide them how to handle waste, incident, accident preparedness and response.

DEFINITION AND TERMINOLOGY

Biorisk

Generally refers to the risk associated with biological materials and/or infectious agents. It encompasses biosafety and biosecurity.

Biosafety

Preventive measures designed to reduce the risk of accidental exposure or release of a biological material.

Biosecurity

Preventive measures designed to reduce the risk of intentional release of a biological material.

Biological material

Biological materials are any material that includes (but is not limited to): Microorganism, recombinant DNA (rDNA), cell lines, animals (live or tissue and biological fluids), plants, human tissue or biological fluids and microbial toxins.

Containment

Containment refers to safe methods for managing infectious materials in the laboratory environment, where they are being handled or maintained.

Hazard

A hazard is a potential source of harm or adverse health effects on a person(s).

Quarantine / Isolation

- Isolation separates sick people with a contagious disease from people who are not sick.
- Quarantine separates and restricts the movement of people, who were exposed to a contagious disease to see if they become sick.

Personal Protection Equipment (PPE)

Personal protective equipment, commonly referred to as “PPE”, is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from the contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits.

The following represents the stakeholders at cross border checkpoint:

- Immigration
- Border Authority
- Security
- Health
- General staff

Roles and responsibilities of the sample collector, sender, and coordinator at border checkpoint are as follows:

• The coordinators at cross border check point should examine the container to ensure the container is sealed properly and the address of sender and receiver is labeled clearly on the container including labeling hazard symbol.
• The coordinator shall inform those who are responsible for transporting samples to the respective laboratory and the contact person of the designated laboratory.
• The handler of the biohazard container should be informed about the procedure of keeping it safe and secure no access for the other people and protect themselves from exposing to the samples and reach the designated laboratories of the recipient country.
• They check the temperature of the container and secure that it is set at a required level.
• They inform all the authorities about the container and its hazard inside and facilitate the formalities to allow the container to cross the border, especially the custom and immigration authorities.
• The designated laboratories shall follow the procedure of storing the sample and select the appropriate testing.
• The designated laboratory shall inform the sender about the arrival of the container and its status including the temperature and information sheet, the testing algorithm and method and inform about the date of the issue of the result of the testing.
• The result of the testing shall be sent to the sender electronically (email or social media) or in hard copy.
Like the other units of cross border check point, health unit is also located and belong under the direction and leadership of the cross border authorities. In some countries, health unit is systematically established in parallel with other units since the beginning. Whereas some countries’ health unit is established later, depending on the progress and readiness of the implementation of the International Health Regulation (IHR).

The health unit, like the other units of the cross border check points, need regular and continuous support from the cross border authorities including financial support for laboratory expenditures, similar incentives or equal treatment incentive policy to health workers in the other units.

For the effectiveness and the success of work of the health sector unit at the cross border check point, the authorities should have the policy to influence/collaborate with other units (customs, immigration police, veterinary) to collaborate and work closely with the health units.

In some cross border check points, where health unit is newly established, regular meeting with other units should be organized. In addition, the health units should collaborate more with

Table 1: Activities, Risks and Safety Practice & Procedure

<table>
<thead>
<tr>
<th>Activities</th>
<th>Risks</th>
<th>Safety Practice &amp; Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection of Cattle, Pigs, Poultry,</td>
<td>Inhalation of infectious aerosol contact with infectious waste,</td>
<td>Personal and Hand Hygiene, Wearing Surgical Mask / N95 Mask, Wearing</td>
</tr>
<tr>
<td>Dogs, cats and animal Products</td>
<td>blood and body fluid, Animal Blood (Avian Influenza, Avian Tuberculosis,</td>
<td>PPE</td>
</tr>
<tr>
<td></td>
<td>Leprosy, Malaria, Anthrax, Aparasites)</td>
<td></td>
</tr>
<tr>
<td>Handling of Laboratory Specimens and</td>
<td>Inhalation of infectious aerosol contact with infectious waste,</td>
<td>Personal and Hand Hygiene, Wearing Surgical Mask / N95 Mask, Wearing</td>
</tr>
<tr>
<td>Medical Devices</td>
<td>blood and body fluid, Needle P Hick and Sharp Objects exposure</td>
<td>PPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarantine Inspection for Human</td>
<td>Inhalation of infectious aerosol by coughing and sneezing contact</td>
<td>Personal and Hand Hygiene, Wearing Surgical Mask / N95 Mask, Wearing</td>
</tr>
<tr>
<td></td>
<td>with infectious waste, bleed and body fluid</td>
<td>PPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intentional bioterrorism</td>
<td>Inhalation of infectious aerosol, Contact with infectious materials</td>
<td>Personal and Hand Hygiene, Wearing Surgical Mask / N95 Mask, Wearing</td>
</tr>
<tr>
<td></td>
<td>(e.g., Anthrax)</td>
<td>PPE</td>
</tr>
<tr>
<td>Food and Food Products</td>
<td>Ingestion of contaminated foods, Contact with contaminated foods</td>
<td>Personal and Hand Hygiene, Food safety practices</td>
</tr>
</tbody>
</table>
the other units and share the challenges and difficulties and request the support from the authorities. All the units assigned at cross border have different responsibilities related to biorisk at the checkpoint. The following represents duties performed by the involved stakeholders.

**Health workers at POE**
- Identify suspected cases
- Health Check (e.g., exposure risk), wear PPE
- Report to surveillance unit - Investigation by RRT
- Quarantine in isolated place - Investigation by RRT

**Agricultural staff/Animal Health**
- Import permit check
- Health certificate
- Quarantine (if suspect) - Report to surveillance unit (RRT)
- Test (RTD) (Table for using suitable PPE), disinfectant, etc.

**Custom/Police**
- Notify health worker when the officer finds the suspected cases coming from outbreak countries
- Develop IEC Materials
- Respiration / droplets
- Oral / fecal (Food safety)
- Blood borne (safe)

---

**IDENTIFICATION AND CLARIFICATION OF RISK, IMMEDIATE NOTIFICATION AND VERIFICATION BY STAFF AT POINT OF ENTRIES**

**BIORISK ASSESSMENT**

As mentioned in Guideline of the World Health Organization, the backbone of the biosafety practice is risk assessment. In this section, we will discuss some related issues, such as definitions, principle of biorisk assessment in simple way, and what a cross border coordinator should do in daily basis.

**DEFINITIONS**

**Biorisk:**
The combination of the probability of occurrence of harm and the severity of that harm, where the source of harm is a biological agent or toxin (adapted from ISO/IEC Guide 51:1999).

**Biohazard:**
A danger or source of danger; the potential to cause harm.

**Severity:**
The degree of injuries/harm that can occur while performing a specific work activity.

**Likelihood:**
The probability of any accident/incident that might happen as a result of performing a specific work activity.

**Risk:**
Risk is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard

**Classification of infective microorganisms by risk group**

**Risk group 1:**
No or low individual and community risk: A microorganism that is unlikely to cause human disease or animal disease.

---

Risk group 2:
Moderate individual risk, low community risk. A pathogen that can cause human and animal disease but it is unlikely to be a serious hazard to laboratory workers, the community and environment. Effective treatment and preventive measures are available and the risk in spreading of infection is limited.

Risk group 3:
High individual risk, low community risk. A pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another. Effective treatment and preventive measures are available.

Risk group 4:
High individual and community risk. A pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individually to another, directly or indirectly. Effective treatment and preventive measures are not available.

Principle of biorisk assessment:
While there are many tools available to assist in the assessment of risk for a given procedure, the most important component is professional judgment. The individuals, who are familiar with the specific characteristics of the organisms being considered for use, the equipment and procedures to be employed, should perform risk assessment. Once performed, risk assessments should be reviewed routinely and revised when necessary, taking into consideration the acquisition of new data having a bearing on the degree of risk and other relevant new information from the scientific literature.

One of the most helpful tools available for performing a biorisk assessment is the list of microbiological organisms by risk groups. This list should be developed by country’s Ministry of Health. If not, the website of the American Biosafety Association\(^6\) is very useful and updated source of information. However, simple reference to the risk grouping for a particular agent is insufficient in the conducting risk assessment. Other factors that should be considered, as appropriate, include:

- Pathogenicity of the agent and infectious dose
- Potential outcome of exposure
- Routes of infection (parenteral, airborne, ingestion)
- Stability of the agent in the environment
- Concentration of the agent and volume of concentrated material to be manipulated
- Presence of a suitable host (human or animal)
- Information available from animal studies and reports of laboratory-acquired infections or clinical reports
- Local availability of effective prophylaxis or therapeutic interventions

Aims of biorisk assessment are to identify risks, available control measures, and prioritize the risks in order to make plan of risk management. For the risk prioritization, risks are classified into three levels: high, medium, and low based on the formula:

\[
\text{Risk} = \text{Likelihood} \times \text{Consequence}
\]

Table 2 Equations on Consequences and Likelihood

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Remote (1)</td>
</tr>
<tr>
<td>Minor (1)</td>
<td>Low Risk (1)</td>
</tr>
<tr>
<td>Moderate (2)</td>
<td>Low Risk (2)</td>
</tr>
<tr>
<td>Major (3)</td>
<td>Medium Risk (3)</td>
</tr>
</tbody>
</table>

Table 3. Likelihood and Consequence

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Occasional</th>
<th>Frequent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>No injury to personnel or harm to the environment</td>
<td>Light injury or ill-health that requires first aid treatment only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort)</td>
</tr>
<tr>
<td>Moderate</td>
<td>Injury requiring medical treatment</td>
<td>Ill-health leading to disability (includes lacerations, burns, sprains, minor fractures, dermatitis)</td>
</tr>
<tr>
<td>Major</td>
<td>Death</td>
<td>Serious injury or life-threatening occupational disease (includes amputations, major fractures, multiple injuries, occupational cancer, acute poisoning and fatal diseases)</td>
</tr>
</tbody>
</table>

As mentioned above, the bio risk assessment is quite complicated and assessors should be trained carefully.
INFECTION PREVENTION AND CONTROL (IPC)

Infection prevention and control measures aim to ensure the protection of those who might be vulnerable to acquiring an infection both in the general community and while receiving care due to health problems, in a range of settings. The basic principle of infection prevention and control is hygiene.

Infection prevention and control is a multi-disciplinary task that requires leadership, knowledge and expertise in various areas. It is important that each member states should have IPC policy at national level with resource allocation to support IPC in health care facilities. Guidelines, education and training on IPC must be available. The IPC process in healthcare facilities involves clinician, pharmacist, IC nurse, laboratory team, biosafety team, waste management, etc. Thus, coordination is a key to success.

The management team at healthcare facilities should appoint the IPC committees to provide a forum for multidisciplinary input, cooperation, and information sharing for effective planning, implementation and monitoring of IPC programs.

**WASTE DISPOSAL**

**Infectious Waste**
Infectious waste is the waste from patients with communicable disease, laboratory and microbiological investigations from all clinical and related laboratory services; and animal carcasses contaminated with pathogenic organisms.

**Animal wastes**
Animal wastes means a material composed of excreta, with or without bedding materials and/or animal drugs, collected from poultry or other animals except humans. It's also a waste of a biological nature, which has the potential to cause harm by acting as an infectious agent, while undergoing decomposition.

**Animal Carcasses**
Animal carcasses refer to the carcasses of domestic and laboratory animals including parts that are not classified as clinical and related (pathological) waste or cytotoxic drugs and related waste.

**Animal waste disposal**
All animal house waste and carcasses of animals are to be incinerated within the confines of the animal house (C1 containment). Cages, water bottles, fittings and instruments must be autoclaved or disinfected according to requirements dictated by the organism involved before washing. No animal waste must leave the animal house. Thoroughly burnt ashes may be discarded through the municipal system.

**Pharmaceutical waste**
Pharmaceutical waste may arise from:
- Outdated pharmaceuticals
- Pharmaceuticals no longer required.

**Disposal of Pharmaceutical waste**
Records must be kept of all pharmaceuticals destroyed. Pharmaceutical Waste must be placed in non-reactive containers and whenever possible, they should be incinerated. All pharmaceutical wastes should be stored in appropriately labeled and constructed containers until collected by an appropriately licensed collection agency.

**SHARPS**
Sharps mean any discarded article that may cause punctures or cuts. Such wastes include, but are not limited to, needles, intravenous (IV) tubing with needles attached, scalpel blades, glass slides, glassware, and syringes that have been removed from their original sterile containers.

**Used sharps**
Sharps that have been in contact with infectious agents or that have been used in animal or human patient care or treatment, at medical, research or industrial laboratories.

Disposal of sharps (needles, syringes, scalpel blades, etc.)
1. Sharps must be placed in a rigid, impact resistant, puncture proof and sealable container of
Disposal of non-sharp solid waste
(Autoclave)

1. Collect non-sharp solid biological waste in autoclavable bags. It is preferable that autoclave bags be white or clear (not red or orange) and with the word “biohazardous” or the universal symbol for biohazardous material.
2. Place filled bags into the autoclave pan for transport from the laboratory to the autoclave.
3. Add 250 mL of water to the bag and close loosely to allow the steam to escape and air to enter.
4. Autoclave the pan and bag at 121°C for one hour.
5. Allow the pan and autoclaved material to cool.
6. Put autoclaved bags into trash cans lined with heavyweight, opaque plastic bags, and then transport them to the building dumpster.

Disposal of contaminated glass and Pasteur pipettes (10% Hypochlorite solution)

1. Decontaminate the glass by autoclaving, or by soaking in 10% bleach for 30 minutes, then place it in sturdy cardboard box, tape closed, and put the box in the building dumpster; or,
2. Contaminated glass may be discarded into a sharps container and handled according to the instructions for “Sharps.”

Disposal of chemical wastes

Waste generated from the use of chemicals in laboratory procedures, during sterilization processes and research (Pharmaceutical and cytotoxic wastes are also chemical wastes).

Disposal of Chemical wastes

Prepare the waste for disposal by storing it in an appropriate container. The container must be of sound and leak-tight condition and be appropriate to the type of waste to be disposed. No harmful quantity of chemical waste shall adhere to the outside of the container.

PRECAUTIONS

1. Chemical waste must not be accumulated for disposal. Regular disposal must be arranged.
2. Chemical waste must be stored in an appropriate manner so as not to create a hazard to laboratory-staff.
3. Personal Protective Equipment should be a consideration when handling chemical waste.
4. Untrained staff and students are not to handle infectious wastes and must not be given responsibility for them.
5. Gloves must be worn at all times when handling infectious waste and disposed of as infectious waste.
6. Infectious waste should not be stored for long periods in the generating area.
7. Storage should be under refrigeration in a locked room, which is clearly identified and labeled "Infectious Waste" and carry the internationally recognized "Biohazard" symbol.
8. Infectious waste should be double-bagged in yellow plastic bags carrying the Biohazard symbol. It must never be compacted or mulched.
9. Waste from infectious organisms, infected materials, imported organisms and genetically manipulated microorganisms are to be autoclaved and incinerated.
10. All animal carcasses contaminated by such microorganisms are to be incinerated within the confines of the animal house.

The following links and guidelines represent the related documents on waste disposal available in the region:
Ministerial Instruction of Waste management (Lao P.D.R)
Guidelines on Biosafety and Biosecurity for Biomedical Laboratories, 2017 (Myanmar)
Biosafety Sampling and Safety Guidebook (Thailand)
Progress and Challenges of Biosafety Management (Vietnam)

GENERAL COMMENTS ON STORAGE

- All storage facilities must be adequate, suitably sited, safe and hygienic.
- Unqualified personnel are not to have access to waste storage.
- Waste must not be compacted under any circumstances.
- Categories of waste must be identified and separated before storage.
- Waste must not be allowed to accumulate excessively and must be collected as frequently as possible.
STORAGE CONTAINERS

Infectious wastes:
Yellow bags with the internationally recognized biohazard symbol in black - double bagging.

WASTE TRANSPORT

External

All waste is collected by accredited waste collection agencies.

Internal

The process of transport of wastes to collection/storage areas is as follows.

1. All wastes must be fully labeled and secured (closed) within appropriately designed and constructed containers in the lab or other point of generation prior to transport to the autoclave or other destination and must remain closed at all times during transport.
2. All containers must be packed to minimize the risk of breakage or rupture.
3. If transport is by vehicle, the secondary container must be in leak-proof with a tight sealing lid that remains closed during transport, spill kits and appropriately trained staff must accompany wastes.
4. Wastes must never be left unattended whilst waiting for collection by external agencies.

METHODS OF DISPOSAL

Autoclaving

Autoclaving is used for the treatment of infectious wastes. Problems may arise because of bulk and compaction of waste material; complete penetration of steam may be compromised and sterilization may not be achieved. Only special autoclave bags may be used. All bags must carry an indicator to show that waste has been subjected to adequate heat treatment. Autoclaves must be tested at least annually for adequate performance.

Chemical disinfection

Chemical disinfection is used for mopping up spills and for disinfectant baths for routine laboratory work. Sodium hypochlorite (5%) is used for potentially HIV contaminated equipment and disposables prior to autoclaving. A 0.5% of Sodium Hypochlorite solution is used for general laboratory clean up for hematological work not involving spills. Seventy percent ethyl alcohol is used for standard clean up in microbiology laboratories. Hypochlorite solution should be rinsed off prior to autoclaving since dangerous gases may be generated when it is autoclaved.

Inkination

Inkination means burning in a multi-chambered monitored facility. Any waste requiring high temperature inkination is collected by specialized agencies. Normal animal waste and carcasses are burned in the Animal House Inkinator. All plastics or other materials likely to produce toxic emissions must be collected by specialist agencies. Completely burned ashes are placed in sealed plastic bags and disposed of through normal rubbish collection.

Sewerage and drain system disposal

Avoid discharging wastes into the sewerage and drain system wherever possible. Very dilute non-toxic chemicals may be washed into the sewerage system. There are significantly justifiable limits for materials discharged into the sewerage and drain system.

INCIDENT, ACCIDENT PREPAREDNESS AND RESPONSE: SPILL DECONTAMINATION METHOD

Bio safety shall establish and maintain plans and procedures to identify the potential for incidents and emergency situations involving biological agents, toxins and materials, to prevent their occurrence, to respond to emergency situations and to limit the consequences that may be associated with them. Emergency planning shall cover all aspects of biorisk and include general safety, security and medical issues. National and/or local health authorities should be involved in the development of the emergency preparedness plan and each organization shall ensure that adequate back-up and contingency measures are in place.

CONTINGENCY PLAN

The contingency plan should provide operational procedures for:

- Precautions against natural disasters (e.g., fire, flood, explosion),
- Biohazard risk assessment,
- Incident-exposure management and decontamination,
- Emergency evacuation of people and animals from the premises,
- Emergency medical treatment of exposed and injured persons,
- Medical surveillance of exposed persons,
- Clinical management of exposed persons,
- Epidemiological investigation, and
- Post-incident continuation of operations.

In the development of this plan the following items should be considered for inclusion:

- Identification of high-risk organisms.
- Location of high-risk areas (e.g., laboratories, storage areas, animal facilities).
- Identification of at-risk personnel and populations.
- Identification of responsible personnel and their duties (e.g., biosafety officer, safety personnel, local health authority, clinicians, microbiologists, veterinarians, epidemiologists, and fire and police services).
- Lists of treatment and isolation facilities that can receive exposed or infected persons.
• Transport of exposed or infected persons.
• Lists of sources of immune serum, vaccines, drugs, special equipment and supplies.
• Provision of emergency equipment (e.g., protective clothing, disinfectants, chemical and biological spill kits, decontamination equipment and supplies).

EMERGENCY PROCEDURES FOR MICROBIOLOGICAL LABORATORIES

Puncture wounds, cuts and abrasions

The affected individual should remove protective clothing; wash the hands and any affected area(s), apply an appropriate skin disinfectant, and seek medical attention as necessary. The cause of the wound and the organisms involved should be reported, and appropriate and complete medical records kept.

Ingestion of potentially infectious material

Protective clothing should be removed and medical attention sought. Identification of the material ingested and circumstances of the incident should be reported, and appropriate and complete medical records kept.

Potentially infectious aerosol release (outside a BSC)

All persons should immediately vacate the affected area and any exposed persons should be referred for medical advice. The laboratory supervisor and the biosafety officer should be informed at once. No one should enter the room for an appropriate amount of time (e.g., 1 h), to allow aerosols to be carried away and heavier particles to settle. If the laboratory does not have a central air exhaust system, entrance should be delayed (e.g., for 24 h). Signs should be posted indicating that entry is forbidden. After the appropriate time, decontamination should proceed, supervised by the biosafety officer. Appropriate protective clothing and respiratory protection should be worn.

Broken containers and spilled infectious substances

Broken containers contaminated with infectious substances and spilled infectious substances should be covered with a cloth or paper towels. Disinfectant should then be poured over these and left for the appropriate amount of time. The cloth or paper towels and the broken material can then be cleared away; glass fragments should be handled with forceps. The contaminated area should then be swabbed with disinfectant. If dustpans are used to clear away the broken material, they should be autoclaved or placed in an effective disinfectant. Cloths, paper towels and swabs used for cleaning up should be placed in a contaminated-waste container. Gloves should be worn for all these procedures. If laboratory forms or other printed or written matter are contaminated, the information should be copied onto another form and the original discarded into the contaminated-waste container.

Breakage of tubes containing potentially infectious material in centrifuges not having sealable buckets

If a breakage occurs or is suspected while the machine is running, the motor should be switched off and the machine left closed (e.g., for 30 min) to allow settling. If a breakage is discovered after the machine has stopped, the lid should be replaced immediately and left closed (e.g., for 30 min). In both instances, the biosafety officer should be informed. Strong (e.g., thick rubber) gloves, covered if necessary with suitable disposable gloves, should be worn for all subsequent operations. Forceps, or cotton held in the forceps, should be used to retrieve glass debris. All broken tubes, glass fragments, buckets, trunnions and the rotor should be placed in a noncorrosive disinfectant known to be effective against the organisms concerned. Unbroken, capped tubes may be placed in disinfectant in a separate container and recovered. The centrifuge bowl should be swabbed with the same disinfectant, at the appropriate dilution, and then swabbed again, washed with water and dried. All materials used in the clean-up should be treated as infectious waste.

Breakage of tubes inside sealable buckets (safety cups)

All sealed centrifuge buckets should be loaded and unloaded in a BSC. If breakage is suspected within the safety cup, the safety cap should be loosened and the bucket autoclaved. Alternatively, the safety cup may be chemically disinfected.

Fire and natural disasters

Fire and other services should be involved in the development of emergency preparedness plans. They should be told in advance which rooms contain potentially infectious materials. It is beneficial to arrange for these services to visit the laboratory to become acquainted with its layout and contents. After a natural disaster, local or national emergency services should be warned of the potential hazards within and/or near laboratory buildings. They should enter only when accompanied by a trained laboratory worker. Infectious materials should be collected in leak proof boxes or strong disposable bags. Salvage or final disposal should be determined by biosafety staff on the basis of local ordinances.

Emergency services: whom to contact

The telephone numbers and addresses of the following should be prominently displayed in each facility:

• The institution or laboratory itself (the address and location may not be known in detail by the caller or the services called).
• Director of the institution or laboratory.
• Laboratory supervisor.
• Biosafety officer.
• Fire services.
• Hospitals/ambulance services/medical staff (names of individual clinics, departments, and/or medical staff, if possible).
• Police.
• Medical officer.
• Responsible technician.
• Water, gas and electricity services.
Emergency equipment

The following emergency equipment must be available:
- First-aid kit, including universal and special antidotes.
- Appropriate fire extinguishers, fire blankets.

The following are also suggested but may be varied according to local circumstances:
- Full protective clothing (one-piece coveralls, gloves and head covering – for incidents involving microorganisms in Risk Groups 3 and 4).
- Full-face respirators with appropriate chemical and particulate filter canisters.
- Room disinfection apparatus (e.g., sprays and formaldehyde vaporizers).
- Stretchers.
- Tools (e.g., hammers, axes, spanners, screwdrivers, ladders, ropes).
- Hazard area demarcation equipment and notices.

Post-Incident Management: Incident Reporting, Investigation and Follow-up

Reporting and feedback are an important aspect of emergency and incident planning because it informs the planning and preparation stage and also provides information on what worked and what did not. Results from incident investigations should be used to update emergency response plans. Each organization shall establish and maintain documented procedures to define, record, analyze and learn from accidents and incidents involving biological agents and toxins. As a minimum, the accident/incident investigation process should include:

- Identifying those responsible for maintaining the accident/incident reporting system.
- Defining what constitutes an accident/incident, and what triggers recording and reporting.
- Specifying required documentation to support the system.
- Identifying the reports that will be generated, their frequency and distribution.
- Ensuring analysis of trends.
- Identifying root causes using individuals trained in investigation techniques.

1. Procedures.

Personal exposure takes priority over clean up. If exposure occurs, immediately remove contaminated clothing and other protective equipment and wash affected areas with soap and water. If medical follow-up is warranted it should be sought immediately.

2. Materials in a biological spill kit

The following materials should be set aside apart from those that are in regular use to ensure their availability in an emergency.

- Goggles or face shield, gloves, wrap-around lab coat, shoe covers (optional).
- Disinfectant solution*.
- Paper towels or other absorbent.
- Forceps, tongs, broom, dust pan.
- Red bags for regulated medical waste, sharps container*.
- A 1/10 dilution of household bleach, prepared fresh on the day is effective in most situations.

3. Spill response procedures involving microorganisms, including recombinant microorganisms, requiring BSL1 or BSL2 containment.

- Alert personnel in vicinity to leave the immediate area.
- Don protective equipment (gown/lab coat, gloves, eye protection).
- Cover an area twice the size of the spill with paper towels, or other absorbent material.
- Pour disinfectant solution onto the spill, starting at the perimeter and working inward from the edges of the towels. Avoid splashing.
- Allow 20 minute contact period.
- Wipe down any contaminated stationary equipment or furniture twice with disinfectant. Contaminated fabric-covered furniture or porous material should generally be treated with disinfectant and then discarded. EH&S can provide a consultation on other contingencies.
- Use forceps, tongs, or broom to remove broken glass and other items; place in sharps container or red bag, as appropriate.
- Remove towels and re-clean area with disinfectant solution.
- Collect and dispose in Regulated Medical Waste (RMW) container.
- Decontaminate (autoclave, or use a chemical disinfectant) reusable clean-up items and other permanent equipment.
- Inform laboratory personnel or responsible person when the clean-up is complete. Procedures for BSL-1 and BSL-2 laboratories should incorporate a degree of flexibility. One could safely abridge the procedures above if 1 ml were spilled over a small bench top area. However, dropping 50 ml of culture on the floor necessitates the more detailed procedure.
ROLE OF NATIONAL / SUB NATIONAL LEVEL PREPAREDNESS AND STOCKPILE (PH AND VH)

Once established (health unit including Biosafety and biosecurity) at the cross border, the role of national and sub-national to support the work at cross border check point is vital. The annual planning at national and sub national level should incorporate the needs in terms of materials and reagents used at the cross border check point. The national and sub national level should establish a system monitoring the stockpile of reagents, drugs, PPE need to be used at the cross border check point. The use of materials, reagents as well as expenditures at the health unit of the cross border check point should be incorporated into the planning and procurement unit/division at national and sub-national levels.

• NATIONAL LEVEL (please refer to country PH emergency contingency plan)
• SUB NATIONAL LEVEL
• INSTITUTIONAL LEVEL

• TRAINING AND EXERCISE

Laboratory staffs must attend training programs dealing with the use, handling and disposal of hazardous materials.

Stockpile

• Spill kit
  The spill kit consist of

1. PPE
   a) Lab coat and apron
   b) Hair Mop Caps
   c) Goggle
   d) Gloves
   e) Mask
   f) Shoe cover

2. Disinfectant set (Antiseptic)
   a) Drinking water 900 ml
   b) Sodium hypochlorite solution (Bleach, Clorox) 100 ml
   c) Fogging machine

3. Absorbent paper / towel

4. Waste management set
   a) Forceps
   b) Broom and dustpan
   c) Box for Sharp material container
   d) Biohazard waste bag (red) 19x23 inches
   e) Plastic buckets with covers

• First AID Kit
• Bio Hazard Bags
• Bleach (Disinfectant)
• Fogging machine
• Plastic buckets with covers

SURVEILLANCE SYSTEM FOR CROSS BORDER REGION (WHO-D0- WHAT-WHEN)

CAMBODIA

1. Mechanism

The existing focal points of the surveillance of each province shall be responsible to report the public health events required by the International Health Regulation (2005). But they shall report as well the events with high or very high risk to their partners as well.

The information sharing shall be formal or informal ways. The formal way is to scan and send the report by the email and the informal way shall be by phone call or some applications (Whats App, Messenger, Telegram, Viber). The information sharing should follow the national policy or authorized by the senior Ministry of Health or provincial governor depending on the internal rule of each country.

The information shall content level of risk (risk assessment), time, place and person and public health actions.

List of disease and its case definitions:

I think the list of the diseases should be discussed during the workshop as different countries have different policies about the diseases and the public health events, even the risk assessment tool is interpreted differently. In my personal opinion, the diseases that are mentioned in the IHR shall be included like anthrax, yellow fever,

I attach the list of pathogens raised by WHO in 2015 and the list of diseases by MBDS and Communicable Disease Control Project (ADB) in Cambodia, Lao, and Vietnam.

For example, one case of measles in Cambodia shall be reported and investigated as Cambodia already got the measles elimination certificate from WHO.
**Diseases under IHR:**

<table>
<thead>
<tr>
<th>List of diseases</th>
<th>Case definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Influenza of new subtype</td>
<td>Positive results from polymerase chain reaction (PCR), virus isolation, or paired acute and convalescent serologic tests</td>
</tr>
<tr>
<td>2 Poliomyelitis (Wild-type)</td>
<td>A suspected case is defined as a child under 15 years of age presenting with acute flaccid paralysis (AFP2), or as any person at any age with paralytic illness if poliomyelitis is suspected</td>
</tr>
</tbody>
</table>
| 3 Severe acute respiratory syndrome (SARS)            | Clinical case definition of SARS: 1. A history of fever, or documented fever  
                                          AND 2. One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath)  
                                          AND 3. Radiographic evidence of lung infiltrates consistent with pneumonia or acute respiratory distress syndrome (ARDS) or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause  
                                          AND 4. No alternative diagnosis can fully explain the illness.  
                                          Diagnostic tests required for laboratory confirmation of SARS:  
                                          A) Conventional reverse transcriptase polymerase chain reaction (RT-PCR) and real-time reverse transcriptase PCR (real-time RT-PCR) assay detecting viral RNA present in:  
                                          1. At least two different clinical specimens (e.g. nasopharyngeal and stool)  
                                          OR  
                                          2. The same clinical specimen collected on two or more occasions during the course of the illness (e.g. sequential nasopharyngeal aspirates)  |

3. In a new extract from the original clinical sample tested positive by two different assays or repeat RT-PCR/real-time RT-PCR on each occasion of testing  

OR  

4. In virus culture from any clinical specimen.  

**B) Enzyme Linked Immunosorbent Assay (ELISA) and immunofluorescent assay (IFA)**  

1. Negative antibody test on serum collected during the acute phase of illness followed by positive antibody test on convalescent phase serum, tested simultaneously  

OR  

2. Fourfold or greater rise in antibody titre against SARS-CoV between an acute serum specimen and a convalescent serum specimen (paired sera), tested simultaneously  

4 Smallpox  

Confirmed case of smallpox:  
An individual of any age presenting with acute onset of fever (≥38.3°C/101°F), malaise, and severe prostration with headache and backache occurring 2 to 4 days before rash onset  

AND  

Subsequent development of a maculopapular rash starting on the face and forearms, then spreading to the trunk and legs, and evolving within 48 hours to deep-seated, firm/hard and round well-circumscribed vesicles and later pustules, which may become umbilicated or confluent  

AND  

Lesions that appear in the same stage of development (i.e. all are vesicles or all are pustules)
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yellow Fever</strong></td>
<td><strong>Zika virus</strong></td>
</tr>
<tr>
<td><strong>Suspected</strong></td>
<td>A case that is characterized by acute onset of fever followed by jaundice within two weeks of the onset of the first symptoms</td>
</tr>
<tr>
<td><strong>Confirmed</strong></td>
<td>A suspected case that is laboratory-confirmed or epidemiologically linked to a laboratory-confirmed case or outbreak</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>Zika virus</td>
</tr>
<tr>
<td>Suspected:</td>
<td>A case that is characterized by acute onset of fever followed by jaundice within two weeks of the onset of the first symptoms</td>
</tr>
<tr>
<td>Confirmed:</td>
<td>A suspected case that is laboratory-confirmed or epidemiologically linked to a laboratory-confirmed case or outbreak</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>Zika virus</td>
</tr>
<tr>
<td>Suspected:</td>
<td>A case that is characterized by acute onset of fever followed by jaundice within two weeks of the onset of the first symptoms</td>
</tr>
<tr>
<td>Confirmed:</td>
<td>A suspected case that is laboratory-confirmed or epidemiologically linked to a laboratory-confirmed case or outbreak</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yellow Fever</strong></td>
<td><strong>Zika virus</strong></td>
</tr>
<tr>
<td><strong>Suspected</strong></td>
<td>A case that is characterized by acute onset of fever followed by jaundice within two weeks of the onset of the first symptoms</td>
</tr>
<tr>
<td><strong>Confirmed</strong></td>
<td>A suspected case that is laboratory-confirmed or epidemiologically linked to a laboratory-confirmed case or outbreak</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
<tr>
<td><strong>Confirmed case</strong></td>
<td>A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.</td>
</tr>
<tr>
<td><strong>Probable case</strong></td>
<td>A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) AND Direct epidemiologic link with a confirmed MERS-CoV case AND Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>1 With no evidence of infection with other flaviviruses 2 Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within two weeks prior to onset of symptoms.</td>
</tr>
</tbody>
</table>
AND
Direct epidemiologic link\(^2\) with a confirmed MERS-CoV case
AND
Testing for MERS-CoV is inconclusive\(^4\)

Notes
1 A case may be laboratory confirmed by detection of viral nucleic acid or serology. The presence of viral nucleic acid can be confirmed by either a positive RT-PCR result on at least two specific genomic targets or a single positive target with sequencing of a second target. A case confirmed by serology requires demonstration of sero-conversion in 2 samples ideally taken at least 14 days apart, by a screening (ELISA, IFA) and a neutralization assay.

However, the interim recommendations for laboratory testing for MERS-CoV should be consulted for the most recent standard for laboratory confirmation (http://www.who.int/csr/disease/coronavirus_infections/en/)

2 A direct epidemiological link with a confirmed MERS-CoV patient may include:
4 Contact list of national / provincial surveillance focal point:

<table>
<thead>
<tr>
<th>No.</th>
<th>Provinces</th>
<th>Name</th>
<th>Position</th>
<th>Email address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kampot</td>
<td>Dr. Heng Chantha</td>
<td>Chief of Technical Office</td>
<td><a href="mailto:chantha.kp@gmail.com">chantha.kp@gmail.com</a></td>
</tr>
<tr>
<td>2</td>
<td>Takeo</td>
<td>Dr. TUM Kimdy</td>
<td>Chief of Technical Office</td>
<td><a href="mailto:kimlytakeo@gmail.com">kimlytakeo@gmail.com</a></td>
</tr>
<tr>
<td>3</td>
<td>Svay Rieng</td>
<td>Dr. HEM Blnaly</td>
<td>Chief of Technical Office</td>
<td><a href="mailto:nalyhb_swphdz@yahoo.com">nalyhb_swphdz@yahoo.com</a></td>
</tr>
<tr>
<td>4</td>
<td>Tbong Khmom</td>
<td>Dr. KEO Vannak</td>
<td>Director of Provincial Health Department</td>
<td><a href="mailto:keovannakend@gmail.com">keovannakend@gmail.com</a></td>
</tr>
<tr>
<td>5</td>
<td>Stung Treng</td>
<td>Dr. UNG Soviet</td>
<td>Director of Provincial Health Department</td>
<td><a href="mailto:ungsovet67@gmail.com">ungsovet67@gmail.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. RIN Ravuth</td>
<td>Chief of Technical Office</td>
<td><a href="mailto:ravuthvorun17@yahoo.com">ravuthvorun17@yahoo.com</a></td>
</tr>
<tr>
<td>6</td>
<td>Banteay Meancheay</td>
<td>Dr. KEO Pechsvann</td>
<td>Deputy Director of Provincial</td>
<td><a href="mailto:dr_kpsovann@yahoo.com">dr_kpsovann@yahoo.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Che Picheth</td>
<td>Deputy Director of Provincial Health Department</td>
<td><a href="mailto:che.pichetb@yahoo.com">che.pichetb@yahoo.com</a></td>
</tr>
<tr>
<td>7</td>
<td>Koh Kong</td>
<td>Mr. Nop Sokun</td>
<td>Rapid Response Team</td>
<td><a href="mailto:npoksokun@yahoo.com">npoksokun@yahoo.com</a></td>
</tr>
</tbody>
</table>
Mechanism:

With the guidance from the Ministry of Health, the National Center for Laboratory & Epidemiology (NCLE), acts as the National Focal Point for the Communicable Disease Surveillance and Response in collaboration with related ministries, departments, and organizations. National Surveillance System focuses on surveillance of the epidemic prone communicable diseases, Diseases Under National Surveillance (DUNS), emerging infectious diseases, post disaster communicable diseases, climate related communicable diseases, and vaccine preventable diseases. Diseases Surveillance and response by Central Epidemiology Unit include preparedness and response to emergence and re-emergence of infectious diseases and biology surveillance including Ebola Virus Disease, H7N9 and MERS-CoV.

Under the technical supervision from National Center for Laboratory & Epidemiology (NCLE) each province has Disease Control Teams and Laos have 18 DCU teams and focal points for diseases surveillance at provincial levels. The Disease Control Units (DCU) are backbone for communicable diseases control activities in provinces and regions, and epidemiological investigation and management of outbreak, effective supervision and evaluation of disease control and preventive activities carried out by DCU, prevention and control of emerging and remerging diseases, disaster mitigation and management, planning supervision, implementation and evaluation of activities.

The NCLE also acts as focal point for implementation and capacity building on international health regulations (IHR 2005) for timely detection and response to public health emergency events is important for containment of the events. Ministry of Health in cooperation with related ministries, all partners and international organizations to achieve IHR implementation status in Laos. Ministry of Health is carried out annual self-assessment on IHR implementation as well as periodic assessment by cooperation with World Health Organization and other agencies.

The assessments highlighted that capacities such as coordination, surveillance, preparedness, response, resources are in place for effective response to emerging infectious diseases and biological events, however, capacity related to chemical and radiology events need to be strengthened. Ministry of Health is strengthening disease surveillance and capacity building at international airports, seaports and ground crossing points as preparedness response to Emerging Infectious Diseases and Biological events. Joint assessment from Ministry of Health by cooperation with WHO in 2015 found that there is substantial evidence that effective response mechanism for biological events including Ebola at point of entries in Laos.

NCLE also carried out RRT training and FETP training as human capacity building and there are more than 130 RRT teams and 60 FET trainees in Laos up to October 2016. Success story of surveillance mechanism include surveillance and response in 25th SEA Games, Health care activities for people affected by both Natural and Social Disasters, surveillance for EIDs and PHEIC such as Ebola and MERS-CoV.

The NCLE also enhance the international networking including international and regional organizations such as ASEAN (Association of South East Asia Nations), ACMECS (The Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy), MBDS (Mekong Basin Disease Surveillance Network), GMS (Greater Mekong Sub-region), US CDC etc., is also essential for effective preparedness and response to Emerging Infectious Diseases and Public Health Emergency of International Concern including bio threat surveillance.
### List of Disease and Its Case Definitions:

<table>
<thead>
<tr>
<th>ID</th>
<th>Syndrome/Disease</th>
<th>Case Definition</th>
</tr>
</thead>
</table>
| 1. | Acute Flaccid Paralysis (AFP)            | Any child under fifteen years of age with acute flaccid paralysis (AFP)* which is defined by sudden onset of paralysis may occur in all parts of the body, and characterized by:  
  - dropping of the affected joint(s),  
  - decrease or absence of resistance of the affected muscles when pushing |
| 2. | Fever and Rash                           | Any person presenting with fever and rash                                                                                                        |
| 3. | Neonatal Tetanus (NNT)                   | Any newborn with a normal ability to suck and cry during the first two days of life, and who between 3 and 28 days of age cannot suck normally and become stiff and/or has convulsions and or died. |
| 4. | Tetanus of all ages                      | Any person with sudden painful muscular contraction (majority, maxillary and neck muscle pain) and generalized muscular spasms. and/or history or currently having punctured or open wound in any part of the body. |
| 5. | Diphtheria                               | A person with an illness characterised by laryngitis or pharyngitis or tonsillitis, and an adherent membrane of the tonsils, pharynx and/or nose. |
| 6. | Pertussis                                | A person with a cough lasting at least 2 weeks with at least one of the following:  
  - paroxysm (i.e. fits of coughing)  
  - inspiratory whooping |
| 7.1| Dengue without warning signs             | A person with fever and 2 of the following criteria:  
  - Nausea / vomiting  
  - Rash  
  - Aches and pains  
  - Tourniquet positive test  
  - Leukopenia |
| 7.2| Dengue without warning signs             | A person with fever and 2 of the following criteria:  
  - Nausea / vomiting  
  - Rash  
  - Aches and pains  
  - Tourniquet positive test  
  - Leukopenia  
  **AND** |
| 7.3| Severe Dengue                            | Severe plasma leakage, leading to:  
  - Shock (DSS)  
  - Fluid accumulation with respiratory distress  
  **OR**  
  Severe bleeding: as evaluated by clinician  
  **OR**  
  Severe organ involvement:  
  - Liver: AST or ALT ≥1000  
  - CNS: impaired consciousness  
  - Heart and other organs |
| 8. | Acute watery diarrhea                    | Any patient with acute watery diarrhea (passage of 3 or more loose or watery stools in the past 24 hours) with or without dehydration. |
| 9. | Acute mucoid-bloody diarrhoea            | Any patient with acute diarrhea with visible blood and/or mucus in the stool. |
| 10.| Food poisoning                           | Any patient with signs and symptoms of the digestive system (such as nausea, vomiting, abdominal pain, diarrhea) and/or nervous system (such as paresthesia (tingling) around the mouth and extremities, dizziness) after consuming foods or drinks suspected to be contaminated with bacteria, chemical substances and/or toxins. |
| 11.| Typhoid fever                            | Clinical illness is characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation, or diarrhea. |
| 12.| Anthrax                                  | An illness with acute onset characterized by several clinical forms. These are:  
  - **cutaneous**: skin lesion evolving over 1 to 6 days from a papular through a vesicular stage, to a depressed black eschar invariably accompanied by oedema that may be mild to extensive
<table>
<thead>
<tr>
<th>Section</th>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Acute Jaundice Syndrome (AJS)</td>
<td>Any person with acute onset of jaundice with or without fever and absence of any known precipitating factors or suspected for leptospirosis.</td>
</tr>
<tr>
<td>14.</td>
<td>Meningitis</td>
<td>A person presenting with acute onset of fever (usually &gt; 38.0 °C) AND headache AND at least one of the following signs: neck stiffness, projectile vomiting, altered consciousness (lethargy, delirium, coma). For children under one, fever and bulging fontanelle.</td>
</tr>
<tr>
<td>15.</td>
<td>Acute Encephalitis Syndrome (AES)</td>
<td>Acute onset of fever and a change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk) AND/OR new onset of seizures (excluding simple febrile seizures). May also include: increased irritability, somnolence or abnormal behaviour greater than that seen with usual febrile illness.</td>
</tr>
<tr>
<td>16.</td>
<td>Plague</td>
<td>Disease characterized by rapid onset of fever, chills, headache, severe malaise, prostration, with: • <strong>bubonic form</strong>: extreme painful swelling of lymph nodes (buboes) • <strong>pneumonic form</strong>: cough with blood-stained sputum, chest pain, difficult breathing</td>
</tr>
<tr>
<td>17.</td>
<td>Severe Acute Respiratory Infection (SARI)</td>
<td>Acute respiratory infection with • History of fever or measured fever of ≥ 38°C And • Cough And • Onset within the last 7 days And • Hospitalization required.</td>
</tr>
</tbody>
</table>

### Flow of the information:

![Health Information Flow LAO PDR](image)
### Contact list of national/provincial surveillance focal point:

<table>
<thead>
<tr>
<th>No.</th>
<th>Health Facilities</th>
<th>Authorized person</th>
<th>Phone Number</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. Rattanaxay Phetsouvanh Director General of DCDC</td>
<td>856 20 22214957</td>
<td>Department of Communicable Disease Control, The Ministry of Health</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dr. Viengsavanh Kittiphong Head of Surveillance and Response Division</td>
<td>8562058254846</td>
<td>Department of Communicable Disease Control, The Ministry of Health</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mrs. Bouaphanh Khamphapongphanh Medical Superintendent</td>
<td>8562055036006</td>
<td>National For Laboratory and Epidemiology, The Ministry of Health</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mr. Khamphao Medical Superintendent</td>
<td>85620 56888022</td>
<td>Phongsaly Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Dr. Khammone douangphachanh Medical Superintendent</td>
<td>85620 59640572</td>
<td>LuangNamtha Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dr. Hompheng Medical Superintendent</td>
<td>85630 5992112</td>
<td>Oudomxay Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mrs. Khetchanh Sysaphet Medical Superintendent</td>
<td>85620 23380466</td>
<td>Bokeo Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Dr. Bounyasith Head of Epidemiology Unit</td>
<td>85620 22201444</td>
<td>Louangprabang Provincial Health Department</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Health Facilities</th>
<th>Authorized person</th>
<th>Phone Number</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Dr. Khamla Deputy Head of CDC Unit</td>
<td>85620 22347000</td>
<td>Houaphanh Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Mrs. Bouathong Thongsonbath Medical Superintendent</td>
<td>85620 55789515</td>
<td>Xiengkuang Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mrs. Siouphane Phounsavanh Medical Superintendent</td>
<td>85620 22168245</td>
<td>Bolikhamsay Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Dr. Sisavath Phanatda Head of CDC Unit</td>
<td>85620 55369665</td>
<td>Khampouane Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Dr. Souny keobounsy Head of Epidemiology Unit</td>
<td>85620 98662887</td>
<td>Saravane Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Mr. Kongsin Sylaphat Head of Epidemiology Unit</td>
<td>85620 56673299</td>
<td>Sekong Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Mr. Vilaysack Samonty Head of Epidemiology Unit</td>
<td>85620 55627109</td>
<td>Champasak Provincial Health Department</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Mr. Phouskhong Head of Epidemiology Unit</td>
<td>85620 55040018</td>
<td>Attapeu Provincial Health Department</td>
<td></td>
</tr>
</tbody>
</table>
1. Mechanism:

With the guidance from the Ministry of Health and Sports, the Central Epidemiology Unit (CEU), acts as the National Focal Point for the Communicable Disease Surveillance and Response in collaboration with related ministries, departments and organizations. National Surveillance System focuses on surveillance of the epidemic prone communicable diseases, Diseases Under National Surveillance (DUNS), emerging infectious diseases, post disaster communicable diseases, climate related communicable diseases and vaccine preventable diseases. Diseases Surveillance and response by Central Epidemiology Unit include Preparedness and Response to emergence and re-emergence of infectious diseases and bioloy surveillance including Ebola Virus Disease, H7N9 and MERS-CoV.

Under the technical supervision from Central Epidemiology Unit (CEU) each state/ regional levels have Special Disease Control Teams and Myanmar have 17 SDCU teams and focal points for diseases surveillance at State and Regional Levels. The Special Disease Control Units (SDCU) are backbone for communicable diseases control activities in states and regions, and epidemiological investigation and management of outbreak, effective supervision, evaluation of disease control and preventive activities carried out by BHS, prevention and control of emerging and reemerging diseases, disaster mitigation and management, planning supervision, implementation and evaluation of activities.

Central Epidemiology Unit also acts as focal point for implementation and capacity building on international health regulations (IHR 2005) for timely detection and response to public health emergency events is important for containment of the events. Ministry of Health and Sports is cooperation with related ministries, all partners and international organizations to achieve IHR implementation status in Myanmar. Ministry of Health and Sports is carried out annual self-assessment on IHR implementation as well as periodic assessment by cooperation with World Health Organization and other agencies. The assessments highlighted that capacities such as coordination, surveillance, preparedness, response, resources are in place for effective response to emerging infectious diseases and biological events, however, capacity related to chemical and radiology events need to be strengthened. Ministry of Health and Sports is strengthening disease surveillance and capacity building at international airports, seaports and ground crossing points as preparedness for EIDs and PHEIC such as Ebola and MERS-CoV.

Central Epidemiology Unit also enhance the international networking including international and regional organizations such as ASEAN (Association of South East Asia Nations), ACMECS (The Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy), MBDS(Mekong Basin Disease Surveillance Network), GMS (Greater Mekong Sub-region), US CDC etc., is also essential for effective preparedness and response to Emerging Infectious Diseases and Public Health Emergency of International Concern including bio threat surveillance.

2. List of disease and its case definitions:

1. Diarrhoea
- Diarrhoea (mild) referred to patients with history of passage of 3 or more loose or liquid stool in the past 24 hours without dehydration or with some dehydration.
- Diarrhoea (severe) referred to patients passing watery stools with symptoms of severe dehydration, such as thirst, sunken eyes, reduced urine output and very slow skin pinch.

2. Dysentery
Dysentery referred to patients with bloody or mucoid stools and abdominal cramps.

3. Food poisoning
Food poisoning referred to occurrence of within a variable but usually short time period after consumption of contaminated food presenting with severe nausea, abdominal cramps, vomiting and prostration accompanied by diarrhea and dizziness, shock, unconsciousness and death.

4. Typhoid fever
Typhoid is a systemic bacterial disease with insidious onset of sustained fever with constipation more often than diarrhea, abdominal discomfort, altered mental status, intestinal haemorrhage with black tarry stool or bloody diarrhea (dark or fresh blood in the stool).

5. Measles:
Measles referred to patients with following symptoms
(a) fever
(b) generalized maculopapular (i.e. non-vesicular) rash
(c) cough, coryza (i.e. runny nose) or conjunctivitis (i.e. red eyes)

6. Diphtheria:
Diphtheria referred to patients with following symptoms:
Tetanus is characterized by painful muscular contractions, primarily of the masseters and neck muscles, secondarily of trunk muscles, with typical as risus sardonicus and opisthotonous neck muscles, secondarily of trunk muscles, with contractions, primarily of the masseters and 

7. Whooping Cough:

Whooping Cough referred to patients with following symptoms
(a) common cold, with runny nose, watery eyes, sneezing, fever and mild cough
(b) cough gradually becomes paroxysmal characterized by repeated violent coughing; each series of paroxysms has many coughs without intervening inhalation and can be followed by a characteristic crowing or high-pitched inspiratory whoop, post-tussive vomiting (expulsion of clear, tenacious mucus often followed by vomiting), subconjunctival haemorrhage
(c) the violence of paroxysm precipitates cyanosis

8. Neonatal Tetanus:

Neonatal Tetanus referred to patients with following symptoms
(a) a newborn infant sucks and cries well for the first two days
(b) develops progressive difficulty and then inability to feed between 3-28 days
(c) trismus, generalized stiffness with spasms or convulsions and opisthotonous
(d) death

9. Tetanus

Tetanus is characterized by painful muscular contractions, primarily of the masseters and neck muscles, secondarily of trunk muscles, with typical as risus sardonicus and opisthotonous

and death may occur. History of an injury or abortion or delivery may be present.

10. Meningitis

Meningitis is characterized by fever, neck stiffness, severe unexplained headache, neck pain and photophobia, nausea, vomiting, bulging fontanelle in children and delirium and unconscious.

11. Acute Respiratory Infection (ARI) (Pneumonia):

The followings symptoms may be present in ARI and one or more of them will be upto 4 weeks.
(a) fast breathing
(b) stridor and wheezing
(c) difficult breathing
(d) chest indrawing
Note: (1) fever may also present
(2) fast breathing is present when the respiratory rate is:
- 60 breaths and above or less than 30 breaths per minute in a child under 2 months of age
- 50 breaths per minute or more in a child aged 2 months upto 12 months- 40 breaths per minute or more in a child aged 12 months upto 5 years

12. Hepatitis

Hepatitis is an illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue and right upper quadrant of the abdomen tenderness and may also have fever, loss of appetite, constipation, arthralgias and clay colored stools.

13. Rabies (excluding rabid dog bites)

Rabies is characterized by a sense of apprehension, headache, fever, malaise and aeroand/or hydrophobia, delirium with occasional convulsions, difficulty in breathing, coma and death and may also have history of animal bite especially dog and cat.

14. Malaria:

The typical attack comprises three distinct stages:
(a) cold stage (b) hot stage
(c) sweating stage (or) development of fever with chills & rigor or febrile paroxysms occur with definite intermittent periodicity repeating every third or fourth day in persons who have travelled to malaria endemic area within one month by return and person those lived in malaria endemic area. Splenomegaly and anaemia often develop after few days. (Have to exclude other possible causes of fever) (or) Persons suffering from fever with demonstration of malaria parasite in a blood film.

15. Tuberculosis (TB):

Any persons present with cough for more than 2 or 3 weeks, haemoptysis, malaise, evening rise in Tuberculosis (TB): any persons present with cough for more than 2 or 3 weeks, haemoptysis, malaise, evening rise in temperature, night sweats, loss of appetite, weight loss, and chest pain.

16. Anthrax

Anthrax is a widespread zoonosis transmitted from domestic animals (cattle, sheep, goat, buffaloes, pigs and others) to human by direct contact or through animal products. Human anthrax is serious problem and has potential for explosive outbreaks (especially the gastro-intestinal form); while pulmonary (inhalation) anthrax is mainly occupational and in biological warfare attacks.
(a) Cutaneous anthrax
Skin lesion evolving over 1 to 6 days from a papular through a vesicular stage, to a depressed black eschar invariably accompanied by oedema that may be mild to extensive and occupational and history of contact with animals (cattle, sheep, goat, buffaloes, pigs and others)
(b) Gastro-intestinal anthrax
Abdominal distress characterized by nausea, vomiting, anorexia and followed by fever
(c) Pulmonary (inhalation) anthrax
Brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnoea and high temperature, with X-ray evidence of mediastinal widening
(d) Meningeal anthrax
Acute onset of high fever possibly with convulsions, loss of consciousness, meningeal signs and symptoms; commonly noted in all systemic infections

17. Severe Acute Respiratory Syndrome (SARS)

Suspected case of SARS: An individual with:
(a) A history of fever, or documented fever > 38 °C AND (b) One or more symptoms of lower respiratory tract illness (cough, difficulty breathing, shortness of breath) AND (c) Radiographic evidence of lung infiltrates consistent with pneumonia or ARDS or autopsy findings consistent with the pathology of pneumonia or ARDS without an identifiable cause AND
(d) No alternative diagnosis can fully explain the illness.

Confirmed case of SARS: An individual who tests positive for SARS-CoV infection by the WHO recommended testing procedures.

18. Influenza-like Illness (ILI)

Influenza-like Illness: A person, child or adult with:

(a) Sudden onset of fever > 38 °C within 10 days AND
(b) Cough or sore throat in the absence of other diagnoses.

A confirmed case of influenza is a case that meets the clinical case definition and is laboratory confirmed (laboratory results must be positive for influenza virus).

Flow of the information:

### Contact Information for MBDS

<table>
<thead>
<tr>
<th>No.</th>
<th>Health Facilities</th>
<th>Authorized person</th>
<th>Phone Number</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tarchileik District Hospital</td>
<td>Medical Superintendent</td>
<td>+958451486</td>
<td>Tarchiliektown is situated at Myanmar-Thailand Border of East Shan State and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>2</td>
<td>East Shan State Public Health</td>
<td>State Public Health Director</td>
<td>+958451486</td>
<td>East Shan State Public Health Department is situated in</td>
</tr>
<tr>
<td>3</td>
<td>Myawaddy District Hospital</td>
<td>Medical Superintendent</td>
<td>+955830511</td>
<td>Myawaddy town is situated at Myanmar-Thailand Border of Kayin State and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>4</td>
<td>Kayin State Public Health Department</td>
<td>State Public Health Director</td>
<td>+955821236</td>
<td>Kayin State Public Health Department is situated in Hpa-An city.</td>
</tr>
<tr>
<td>5</td>
<td>Kawthaung District Hospital</td>
<td>Medical Superintendent</td>
<td>95-59-51993</td>
<td>Myawaddy town is situated at Myanmar-Thailand Border of Thanintharyi Region and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>6</td>
<td>Thanintharyi Regional Public Health Department</td>
<td>State Public Health Director</td>
<td>95-59-23584/23583</td>
<td>Thanintharyi Regional Public Health Department is situated in Daewi city.</td>
</tr>
<tr>
<td>7</td>
<td>Central Epidemiology Unit,</td>
<td>Director (Epidemiology)</td>
<td>95-67-431432/33</td>
<td>Central Epidemiology Unit, Department of Public Health, acts as MBDS coordinators is situated in Nay Pyi Taw (Epidemiology)</td>
</tr>
<tr>
<td></td>
<td>Department of Public Health,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nay Pyi Taw</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
THAILAND

Mechanism:

1. **Mechanism:**

   - **DDC**
   - Bureau of epidemiology
   - Office of disease control 1-12
   - Provincial health office
   - District health office
   - CUP
   - PCU,CUS/CUT
   - Health office

   **SRRT : Surveillance and Rapid Response Team**
   - Central & Regional
   - Province
   - District
   - Sub-district
   - VHV (Village Health Volunteers) & Community Leaders

2. **List of disease and its case definitions:**

   According to the Communicable Disease Act B.E.2558 infectious diseases are classified into 3 categories:

   A. Communicable diseases
   B. Dangerous communicable disease
   C. Communicable disease requiring surveillance
   D. Epidemic

   **Dangerous communicable disease (12)**

   1. Plague
      a. Bubonic plague
      b. Septicemic plague
      c. Pneumonic plague
   2. Smallpox
   3. Crimean - Congo hemorrhagic fever
   4. West Nile Fever
   5. Yellow fever
   6. Lassa fever
   7. Nipah virus disease
   8. Marburg virus disease
   9. Ebola virus disease - EVD
   10. Handra virus disease
   11. Severe Acute Respiratory Syndrome – SARS
   12. Middle East Respiratory Syndrome – MERS

   If any individual case of dangerous communicable disease is suspected notification shall be sent to the communicable disease control officer at DDC headquarter within 3 hours.

   **Communicable disease requiring surveillance (58)**

   **Respiratory diseases**
   - Influenza
   - Pneumonia
   - TB

   **Vector borne diseases**
   - Malaria
   - Filariasis
   - Dengue: DF, DHF, DSS
   - Zika virus disease
   - Chikungunya fever
   - Leishmaniasis
   - Scrub Typhus

   **Food and water borne diseases**
   - Cholera
   - Diarrhea
   - Food Poisoning
   - Dysentery / non specific dysentery / Amoebic Dysentery
   - Typhoid / Paratyphoid
   - Hepatitis

   **Neurological infection**
   - Encephalitis, JE
   - Meningitis
   - Eosinophilic meningitis

   **Vaccine preventable diseases**
   - Measles
   - Diptheria
   - Tetanus
   - Pertussis
   - Hepatitis B
   - Mumps
   - Rubella
   - Poliomyelitis
   - Adverse Event Following Immunization: AEFI
   - Chickenpox
Zoonosis
- Rabies
- Avian Influenza
- Melioidosis
- Leptospirosis
- Streptococcus suis infection
- Brucellosis
- Anthrax
- Trichinosis

Sexual transmitted disease and Direct contact transmitted diseases
- Lymphogranuloma Venereum (Granuloma Inguinale)
- Syphilis
- Changcroid
- Vaginal Trichomoniasis
- Anogenital Herpes
- Gonorrhea
- Non Gonococcal Urethritis : NGU
- Genital Molluscum Contagiosum
- Condyloma Acuminata or Venereal Warts

Communicable disease requiring surveillance cases shall be report to provincial health officers weekly.

Epidemic
The suspected epidemic shall be reported to communicable disease control officers in respective areas within 24 hours.

Case definition of priorities diseases

<table>
<thead>
<tr>
<th>No.</th>
<th>Diseases</th>
<th>Causative Agent</th>
<th>Transmission</th>
<th>Clinical signs and symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>H1N1</td>
<td>H1N1 influenza virus</td>
<td>Respiratory</td>
<td>Fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills and fatigue and sometimes vomiting and diarrhea. Severe illnesses and deaths as a result of illness associated with this virus</td>
</tr>
<tr>
<td>2</td>
<td>H5N1</td>
<td>Highly pathogenic avian influenza A virus (H5N1)</td>
<td>Zoonotic (close contact with poultry)</td>
<td>Typical human influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches) to eye infections, pneumonia, severe respiratory diseases (such as acute respiratory distress), and other severe and life-threatening complications</td>
</tr>
<tr>
<td>3</td>
<td>AFP</td>
<td>Virus</td>
<td>Ingestion of contaminated food and drink</td>
<td>Fever, fatigue, headache, vomiting, stiffness in the neck and pain in the limbs. One in 200 infections leads to irreversible paralysis (usually in the legs). Among those paralyses, 5% to 10% die when their breathing muscles become immobilized</td>
</tr>
<tr>
<td>4</td>
<td>SARS</td>
<td>SARS Virus</td>
<td>Respiratory</td>
<td>Cough, difficulty in breathing, fever, and other breathing symptoms. Chills and shaking, headache, muscle aches and less common symptoms include cough that produces phlegm (sputum), diarrhea, dizziness, nausea and vomiting, runny nose and sore throat</td>
</tr>
<tr>
<td>5</td>
<td>Cholera</td>
<td>Bacterium Vibriocholerae</td>
<td>Eating or drinking contaminated food or water</td>
<td>The symptoms, varied from mild to severe, are abdominal cramps, dry mucus membranes or mouth, dry skin, excessive thirst, glassy or sunken eyes, lack of tears, lethargy, low urine output, nausea, rapid dehydration, rapid pulse, sunken “soft spots” in infants, unusual sleepiness or tiredness, vomiting, and watery diarrhea.</td>
</tr>
<tr>
<td>No.</td>
<td>Disease</td>
<td>Organism</td>
<td>Mode of Transmission</td>
<td>Symptoms</td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>----------</td>
<td>----------------------</td>
<td>----------</td>
</tr>
<tr>
<td>6</td>
<td>Encephalitis</td>
<td>Virus</td>
<td>Breathing in respiratory droplets from an infected person, contaminated food or drink, mosquito, tick, and other insect bites, skin</td>
<td>In symptomatic cases, severity varies: mild infections are characterized by febrile headache or aseptic meningitis or encephalitis; severe cases have a rapid onset and progression with headache, high fever and meningeal signs.</td>
</tr>
<tr>
<td>7</td>
<td>Tetanus</td>
<td>Bacteria Clostridium tetani</td>
<td>The spores enter the body through an injury or wound.</td>
<td>Tetanus often begins with mild spasms in the jaw muscles (lockjaw). The spasms can affect the chest, neck, back, and abdominal muscles, can sometimes affect muscles that help with breathing, which can cause breathing problems. Other symptoms: drooling, excessive sweating, fever, hand or foot spasms, irritability, swallowing difficulty, uncontrolled urination or defecation</td>
</tr>
<tr>
<td>8</td>
<td>Meningitis</td>
<td>Bacteria as well as Virus</td>
<td>Meningitis may also be caused by: Chemical irritation, Drug allergies, Fungi, Tumor</td>
<td>Stiff neck, high fever, sensitivity to light, confusion, headaches, vomiting, mental status changes, and nausea</td>
</tr>
<tr>
<td>9</td>
<td>Diphtheria</td>
<td>Bacteria Corynebacterium diphtheriae</td>
<td>Respiratory</td>
<td>The bacteria infect the nose and throat and the throat infection causes a gray to black, tough, fiber-like covering, which can block the airways. Diphtheria may first infect the skin, producing skin lesions in some cases</td>
</tr>
<tr>
<td>10</td>
<td>Leptospirosis</td>
<td>Leptospira bacteria</td>
<td>Fresh water that has been contaminated by animal urine</td>
<td>Dry cough, fever, headache, muscle pain, nausea, vomiting, and diarrhea, shaking chills, abdominal pain, abnormal lung sounds, bone pain, enlarged lymph glands, enlarged spleen or liver, joint aches, muscle rigidity, muscle tenderness, skin rash, sore throat</td>
</tr>
<tr>
<td>11</td>
<td>Chikungunya</td>
<td>Virus</td>
<td>By the bite of infected female mosquitoes, Aedes aegypti and Aedes albopictus</td>
<td>Fever frequently accompanied by joint pain, muscle pain, headache, nausea, fatigue and rash. Infected individuals can be misdiagnosed in areas where dengue occurs.</td>
</tr>
<tr>
<td>12</td>
<td>Dengue fever</td>
<td>Virus</td>
<td>By the bite of infected female mosquito, Aedes aegypti</td>
<td>Severe flu-like illness, and sometimes a potentially lethal complication called dengue hemorrhagic fever. Fever vary according to the age of the patient: infants and young children may have a fever with rash, older children and adults may have either a mild fever or the classical incapacitating disease with abrupt onset and high fever, severe headache, pain behind the eyes, muscle and joint pains, and rash</td>
</tr>
<tr>
<td>13</td>
<td>Typhoid fever</td>
<td>Bacteria called Salmonella typhi</td>
<td>By ingestion of contaminated food, drink, or water</td>
<td>Fever, general ill-feeling, and abdominal pain at early stage and high fever, severe diarrhea as the disease gets worse.</td>
</tr>
<tr>
<td>14</td>
<td>Measles</td>
<td>Virus</td>
<td>By contact with droplets from the nose, mouth, or throat of an infected person. Sneezing and coughing can put contaminated droplets into the air</td>
<td>High fever, which begins about 10 to 12 days after exposure to the virus, and lasts four to seven days. Runny nose, a cough, red and watery eyes, and small white spots inside the cheeks in the initial stage. A rash erupts, usually on the face and upper neck after several days and the rash spreads, eventually reaching the hands and feet over three days. The rash lasts for five to six days, and then fades. Generally, the rash occurs 14 days after exposure to the virus (within a range of seven to 18 days)</td>
</tr>
</tbody>
</table>
15 Malaria  
Parasite  
By the bite of infected female/Anopheles mosquitoes  
After the infective mosquito bit, symptoms appear seven days or more (usually 10–15 days) in a non-immune individual. Fever, headache, chills and vomiting – and sometimes symptoms may be mild difficult to recognize as malaria

16 Pneumonia  
Bacteria, viruses, and fungi  
Respiratory  
Rapid or difficult breathing, cough, fever, chills, loss of appetite and wheezing (more common in viral infections)

17 HIV/AIDS  
Virus  
By sexual contact, sharing needles, and by transmission from infected mothers to their newborns during pregnancy, labor (the delivery process), or breastfeeding  
No symptoms or a flu-like illness including fever, headache, rash or sore throat during the first few weeks after initial infection. Swollen lymph nodes, weight loss, fever, diarrhoea and cough after infection weakens infected person’s immune system. Severe illnesses such as tuberculosis, cryptococcal meningitis, and cancers such as lymphomas and Kaposi’s sarcoma can occur if untreated.

18 Tuberculosis  
Bacteria  
By breathing in air droplets from a cough or sneeze of an infected person  
No symptoms during primary stage, When symptoms of pulmonary TB occurs, they include cough (usually cough up mucus), coughing up blood, excessive sweating, especially at night, fatigue, fever, unintentional weight loss and other symptoms such as breathing difficulty, chest pain, wheezing
Contact list of national / provincial surveillance focal point:

Health Control at port, Airport and Ground crossing database and website can be found at this link.9

<table>
<thead>
<tr>
<th>No.</th>
<th>Bureau of Epidemiology</th>
<th>Number</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Department of Disease Control</td>
<td>02 5903839</td>
<td>Sentinel focal point</td>
</tr>
<tr>
<td>2</td>
<td>Department of Disease Control</td>
<td>02 5913878</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>International Communicable Disease Section, Bureau of General Communicable Diseases</td>
<td>0-2500-3160 to 65</td>
<td>Quarantine (Health Control focal point)</td>
</tr>
<tr>
<td>4</td>
<td>The Office of Disease Prevention and Control 1 Chiangmai</td>
<td>0-53140774-6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The Office of Disease Prevention and Control 2 Phitsanulok</td>
<td>0-55214-615-7</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The Office of Disease Prevention and Control 3 Nakhonsawan</td>
<td>0-5622-1822</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The Office of Disease Prevention and Control 4 Saraburi</td>
<td>0-3623-9302</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The Office of Disease Prevention and Control 5 Ratchaburi</td>
<td>0-3233-7120</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The Office of Disease Prevention and Control 6 Chonburi</td>
<td>0-3827-7057-8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The Office of Disease Prevention and Control 7 Khonkhan</td>
<td>0-4322-2820</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>The Office of Disease Prevention and Control 8 Udon Thani</td>
<td>0-4322-2820</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>The Office of Disease Prevention and Control 9 Nakorn Ratchasima</td>
<td>0-4421-2900</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>The Office of Disease Prevention and Control 10 Ubon Ratchathani</td>
<td>0-4524-3236</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>The Office of Disease Prevention and Control 11 Nakon Sri Thammarat</td>
<td>0-7536-0042</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>The Office of Disease Prevention and Control 12 Songkhla</td>
<td>0-7536-0042</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>The Office of Disease Prevention and Control 13 Bangkok</td>
<td>02-5514349</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Health Control at MaeSai Border</td>
<td>053 734 171 , 081 901 0982</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Aranyaprathet Quarantine Office</td>
<td>0-3723-6236</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Thai - Lao Friendship Bridge 4 (ChiangKhoong - HouayXai)</td>
<td>0-5379-2846</td>
<td></td>
</tr>
</tbody>
</table>


**VIETNAM**

**Mechanism:**

Surveillance on CDs is collecting information continuously and systematically on the situation and trends of CDs, analyzing, interpreting and providing information for planning, implementation and effectiveness evaluation of prevention and control CDs.

**Responsibilities of surveillance**

- Early detection of communicable disease cases in the hospital and community.
- Testing to determine the positive cases.
- Sharing information, conducting rapid report on communicable disease cases and implementing action timely.
- Analyze the long-term surveillance lead to determine the epidemiology distribution of communicable diseases in each geographic region.
- Determine the structure of communicable diseases in the community.
- Assess the severity of each communicable diseases by number of case, number of death and legacy.
- Detection arises characteristics, outbreak cycle.
- Forecasting trends of communicable diseases, to take active for active prevention.
- Selecting priority communicable diseases for prevention planning in each period.
- Proposed timely prevention solutions.

**Surveillance performance**

Based on Circular 13/2013/TT-BYT on communicable disease surveillance guideline

**Indicator based surveillance**

- Based on Circular 54/2015/TT-BYT for 42 communicable diseases
- Sentinel Surveillance
- 5 diseases in sentinel surveillance: Influenza, Dengue fever, HFMD, Plague and Japanese encephalitis.
**Event based Surveillance**

- Early detection on risk potential event for disease, outbreak early detection, risk factors affecting public health
- Based on Decision 134/QĐ-DP by GDPM
- Indicator Based Surveillance

Circumstances that require reporting

- Upon detection of a human case of communicable diseases regulated in Appendix 1 promulgated under this Circular.
- Upon detection of a communicable disease outbreak, when the communicable disease outbreak is active and when the outbreak terminates.
- When communicable disease prevention and control activities are implemented.
- Upon a requirement by a higher level agency for reporting to support surveillance, inspection and direction on communicable disease prevention and control activities.

Reporting Performance

- Routine report
- Weekly report
- Monthly report
- Yearly report
- Rapid report: within 24 hours and 72 hours
- Outbreak detection report
- Outbreak update report
- Outbreak ending report
- Urgent report: for dangerous outbreak
- Was required from leader

**Sentinel Surveillance**

**Overall objective**

- Providing accurate, timely and complete the necessary information on the epidemiology, bacteriology and related factors of the disease in sentinel surveillance.

**Goals**

- Early detection outbreak
- Determine the existing of pathogens, vectors for disease transmission
- Making statements, warnings, early and accurate forecast of disease situation.
- Implement in-time, effectively measures of outbreak prevention and control. Not allow the outbreak to spread widely.
- Implementing timely and effectively the prevention activities to control widespread outbreak.
- Developed sentinel surveillance system with stable implementation in 4 regions, representative for 7 ecoregions, stable operation.
- Determined the level of circulating pathogens. Providing timely information on epidemiological and virology characteristics for policy making, planning and specific activities on prevention and control.
- Upgraded and improved laboratories in 4 Hygiene and Epidemiology/Pasteur Institutes and laboratory capacity building.
- Unified SOPs for testing and diagnosis.
- Provides information for global disease prevention network.

**Event based surveillance**

**Objective**

- Early detection on risk potential event for disease, outbreak early detection, risk factors affecting public health
- Providing information to operate rapid response properly with epidemic and event situation
- Promoting the collaboration between health authorities in disease surveillance and prevention.

---

### List of disease and its case definition:

**Dangerous communicable diseases for which each individual case must be reported immediately after diagnosis and no later than 24 hours**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of diseases</th>
<th>Group</th>
<th>ICD10 codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poliomyelitis</td>
<td>A</td>
<td>A80</td>
</tr>
<tr>
<td>2</td>
<td>Diptheria</td>
<td>B</td>
<td>A36</td>
</tr>
<tr>
<td>3</td>
<td>Streptococcus suis in humans</td>
<td>B</td>
<td>B95</td>
</tr>
<tr>
<td>4</td>
<td>Avian influenza A(H5N1)</td>
<td>A</td>
<td>J10/A(H5N1)</td>
</tr>
<tr>
<td>5</td>
<td>Avian influenza A(H7N9)</td>
<td>A</td>
<td>J10/A(H7N9)</td>
</tr>
<tr>
<td>6</td>
<td>Plague</td>
<td>A</td>
<td>A20</td>
</tr>
<tr>
<td>7</td>
<td>Ebola</td>
<td>A</td>
<td>A98.4</td>
</tr>
<tr>
<td>8</td>
<td>Lassa</td>
<td>A</td>
<td>A96.2</td>
</tr>
<tr>
<td>9</td>
<td>Marburg</td>
<td>A</td>
<td>A98.3</td>
</tr>
<tr>
<td>10</td>
<td>Rubella</td>
<td>B</td>
<td>B06</td>
</tr>
<tr>
<td>11</td>
<td>West Nile fever</td>
<td>A</td>
<td>A 92.3</td>
</tr>
<tr>
<td>12</td>
<td>Yellow fever</td>
<td>A</td>
<td>A95</td>
</tr>
<tr>
<td>13</td>
<td>Dengue haemorrhagic fever</td>
<td>B</td>
<td>A91</td>
</tr>
<tr>
<td>14</td>
<td>Measles</td>
<td>B</td>
<td>B05</td>
</tr>
<tr>
<td>15</td>
<td>Cholera</td>
<td>A</td>
<td>A00</td>
</tr>
<tr>
<td>16</td>
<td>Hand, foot, and mouth disease</td>
<td>B</td>
<td>A08.4</td>
</tr>
<tr>
<td>17</td>
<td>Anthrax</td>
<td>B</td>
<td>A22</td>
</tr>
</tbody>
</table>
### Communicable diseases for which number of cases and deaths must be reported on a monthly basis

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of diseases</th>
<th>Group</th>
<th>ICD10 codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>West Niles</td>
<td>A</td>
<td>B09.0-949.9</td>
</tr>
<tr>
<td>36</td>
<td>Adenovirus disease</td>
<td>A</td>
<td>B37.9</td>
</tr>
<tr>
<td>37</td>
<td>Acute hemorrhagic disease</td>
<td>A</td>
<td>B47.9</td>
</tr>
<tr>
<td>38</td>
<td>Acute conjunctivitis</td>
<td>A</td>
<td>B02.9</td>
</tr>
<tr>
<td>39</td>
<td>Typhoid</td>
<td>A</td>
<td>A01</td>
</tr>
<tr>
<td>40</td>
<td>Typhus</td>
<td>A</td>
<td>A02</td>
</tr>
<tr>
<td>41</td>
<td>Malaria</td>
<td>A</td>
<td>A03-A06</td>
</tr>
<tr>
<td>42</td>
<td>Malaria</td>
<td>A</td>
<td>A08</td>
</tr>
<tr>
<td>43</td>
<td>Malaria</td>
<td>A</td>
<td>A09</td>
</tr>
</tbody>
</table>

### Steps in Event Based Surveillance implementation

- **Capture of initial alert information/alert signals**
- **Triage of raw information/signals**
- **Verification**
- **Risk assessment**
- **Response to the event/outbreak**
3 Flow of the information:

Flow of the information:

**Mekong Basin Disease Surveillance (MBDS)**

Contact list of national / provincial surveillance focal point:

**National level:**

1. Assoc. Prof. Tran Thi Giang Huong  
   MBDS Executive Board  
   Director General, International Department, MoH  
   Email: gianghuong_tran2002@yahoo.com  
   Tel: +84-983319965

2. Assoc. Prof. Nguyen Dang Vung  
   MBDS Executive Board, MBDS Foundation  
   Vice Director Institute for Preventive Medicine and Public Health  
   Hanoi Medical University.  
   Email: vunghmu@gmail.com  
   Tel: +84-947484988

3. Dr. Pham Hung  
   MBDS Country Coordinator  
   Head, Department of Communicable Disease Surveillance  
   General Department of Preventive Medicine, MoH  
   Email: hungvncdc@gmail.com  
   Tel: +84-1234322899

**Regions and provinces:**

- 63 provinces
- ~700 districts
- >10,000 communes
- >100,000 ward/communities
Provincial level:

1. Lai Chau
Dr. Nguyen Thi Lien
Director
Provincial Center for Preventive Medicine
Email: liendplc@gmail.com
Tel: +84- 912600058

2. Nguyen Dinh Manh
Staff Provincial Center for Preventive Medicine,
Email: nguyendinhmanh1987@gmail.com
Tel: +84- 1687226608

3. Lang Son
Nguyen Manh Hung
Director
Provincial Center for Preventive Medicine
Email: dr.nguynemanhungcdc@gmail.com
Tel: +84- 989858589

4. Ha Tinh
Dr. Nguyen Luong Tam
Director
Provincial center for preventive medicine
Email: luongtamtydp@gmail.com
Tel: +84- 989988899

5. Quang Tri
Dr. Mai Nam
Vice Director
Quang Tri Health department.
Email: mainamyt@yahoo.com.vn
Tel: +84-914135945

6. An Giang
Dr. Pham Thanh Tam
Director
Provincial Center for Preventive Medicine
Email: bspttampt@gmail.com
Tel: +84-918378683

7. Kien Giang
Dr. Nguyen Van Nam
Director
Provincial Center for Preventive Medicine
Email: namcaokg@gmail.com
Tel: +84-918243038

Dr. Mai Thao Chi
Staff Provincial Center for Preventive Medicine
Email: maithaochi92@gmail.com
Tel: +84- 979383238

8. National Health Laboratory (2017) Guideline on Biosafety and Biosecurity for Biomedical Laboratories

REFERENCES AND WEB LINKS

1. Biosafety encompasses the knowledge, techniques, equipment, and facilities necessary to prevent or minimize an exposure to a biohazard (http://www.asu.edu/ehs/documents/biosafetymanual.pdf)
3. Personal Protection Equipment (PPE) (https://www.osha.gov/SLTC/personalprotectiveequipment/)
6. Website of the American Biosafety Association (https://absa.org/)
7. The basic principle of infection prevention and control is hygiene (http://www.who.int/topics/infection_control/en/)
8. Appropriate protective clothing and respiratory protection should be worn (http://www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf)
9. Health Control at port, Airport and Ground crossing database and website can be found at this link (http://www.pagth.net/pagth/index.php?p=send=pagth1)
Infectious waste management guideline.

Temasek foundation (2012) Laboratory safety principle and practices and fundamental of biorisk management. Primary containment and PPE.

WHO (2016) Training in Biosafety and Infectious substances shipping for public health laboratories in the Asia Pacific region.

Annexes

Annexes 1.
SAMPLE COLLECTION, PACKAGING AND TRANSPORTATION AS APPROPRIATE

e.g., <https://www.cdc.gov/vhf/ebola/pdf/ebola-lab-guidance.pdf>


Example of triple packaging system for the packaging and labelling of Category A infectious substances (Figure kindly provided by IATA, Montreal, Canada)

Example of the triple packaging system for the packing and labelling of Category B infectious substances (Figure kindly provided by IATA, Montreal, Canada)

### Annexes 2. CASE REPORT FORM

State and Regions (Cross Border):
Date reported to health department: (MM/DD/YYYY)
Date State Epi ID:
State Lab ID:

**Demographic Information**
1. Name:
2. Date of birth: (MM/DD/YYYY)
3. Sex: Male/ Female
4. Address:
5. Race:
6. Travelling history:


### Annexes 3. DIRECTORY: LAB MAPPING, CONTACT PERSONS

**CAMBODIA**

Contact List for Microbiology laboratories

<table>
<thead>
<tr>
<th>Microbiology Lab Director</th>
<th>Name</th>
<th>email address</th>
<th>phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMLS</td>
<td>Dr. Sau Sokunna</td>
<td><a href="mailto:kunnasau@gmail.com">kunnasau@gmail.com</a></td>
<td>012 920480</td>
</tr>
<tr>
<td></td>
<td>Ph. Uch Monipheap</td>
<td><a href="mailto:uchmonipheap@gmail.com">uchmonipheap@gmail.com</a></td>
<td>017 991 194</td>
</tr>
<tr>
<td>NIPH</td>
<td>Dr. Chau Darapheak</td>
<td><a href="mailto:cpheak18@gmail.com">cpheak18@gmail.com</a></td>
<td>012 939441</td>
</tr>
<tr>
<td>University of Health</td>
<td>Dr. Chau Monidar</td>
<td><a href="mailto:cmonidarin@uhs.edu.kh">cmonidarin@uhs.edu.kh</a></td>
<td>017 702455</td>
</tr>
<tr>
<td>Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khmer Soviet Friendship</td>
<td>Dr. Thay Kosal</td>
<td><a href="mailto:thay_kosal@yahoo.com">thay_kosal@yahoo.com</a></td>
<td>012 504434</td>
</tr>
<tr>
<td>Calmette</td>
<td>Seanghuoy</td>
<td><a href="mailto:seanghuoy.ho@gmail.com">seanghuoy.ho@gmail.com</a></td>
<td>098 257 893</td>
</tr>
<tr>
<td>Preah Kosomak</td>
<td>Ph. Chroeung Sopheap</td>
<td><a href="mailto:sopheapchroeng@gmail.com">sopheapchroeng@gmail.com</a></td>
<td>012 864 353</td>
</tr>
<tr>
<td>National Pediatric Hospital</td>
<td>Ph. Srey Viso</td>
<td><a href="mailto:srey.viso@yahoo.com">srey.viso@yahoo.com</a></td>
<td>012 707279</td>
</tr>
<tr>
<td>Battambang</td>
<td>Ph. Chiek Sivhour</td>
<td><a href="mailto:sivhour.chiek@gmail.com">sivhour.chiek@gmail.com</a></td>
<td>092 939372</td>
</tr>
<tr>
<td>Takeo</td>
<td>Ph. Seang Sorsophea</td>
<td><a href="mailto:sophea579@gmail.com">sophea579@gmail.com</a></td>
<td>017 211888</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Ph. Nhem Somary</td>
<td><a href="mailto:somary_nhem@yahoo.com">somary_nhem@yahoo.com</a></td>
<td>092902903</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>Ph. Leak Lamleav</td>
<td><a href="mailto:leaklamleav@yahoo.com">leaklamleav@yahoo.com</a></td>
<td>078286586</td>
</tr>
<tr>
<td>Kampot</td>
<td>Mr. Touch savuth</td>
<td><a href="mailto:kptmicrolab@gmail.com">kptmicrolab@gmail.com</a></td>
<td>012 554 323</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>Ph. Khek Sam Y</td>
<td><a href="mailto:kheksamy007@gmail.com">kheksamy007@gmail.com</a></td>
<td>092 216 142</td>
</tr>
</tbody>
</table>
**LAOS**

<table>
<thead>
<tr>
<th>Microbiology Lab Director</th>
<th>Name</th>
<th>email address</th>
<th>phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Center for Laboratory and Epidemiology</td>
<td>Dr. Onchanh Keosavanh</td>
<td><a href="mailto:konechan@gmail.com">konechan@gmail.com</a></td>
<td>85620 55897320</td>
</tr>
<tr>
<td>Institute Pasteur Lao</td>
<td>Dr. Phopadith</td>
<td><a href="mailto:uchmoniphesp@gmail.com">uchmoniphesp@gmail.com</a></td>
<td>8562058858878</td>
</tr>
<tr>
<td>Well Come trust</td>
<td>Dr. Manivanh Vongsouvath</td>
<td><a href="mailto:manivanh@tropmedres.ac">manivanh@tropmedres.ac</a></td>
<td>85620 59935836</td>
</tr>
<tr>
<td>Sethatiith Hospital</td>
<td>Dr. Khamla Choumlivong</td>
<td><a href="mailto:Khamla_choumlivong@yahoo.com">Khamla_choumlivong@yahoo.com</a></td>
<td>856 20 22226104</td>
</tr>
<tr>
<td>Champasack hospital</td>
<td>Dr. Ratsamy</td>
<td><a href="mailto:ratsamy@yahoo.com">ratsamy@yahoo.com</a></td>
<td>8562055630099</td>
</tr>
<tr>
<td>Savannakhet Province</td>
<td>Dr. Tiengkham Pongvongs</td>
<td><a href="mailto:tiengkhampvs@gmail.com">tiengkhampvs@gmail.com</a></td>
<td>8562055640403</td>
</tr>
<tr>
<td>Khammouane Province</td>
<td>Dr. Sisavath Phanatda</td>
<td><a href="mailto:sisavathphanatda@gmail.com">sisavathphanatda@gmail.com</a></td>
<td>8562055365665</td>
</tr>
<tr>
<td>Bokeo Province</td>
<td>Mrs Ketchanh Sysavath</td>
<td><a href="mailto:ketchanh@gmail.com">ketchanh@gmail.com</a></td>
<td>8562022380456</td>
</tr>
</tbody>
</table>

**MYANMAR**

<table>
<thead>
<tr>
<th>No.</th>
<th>Health Facilities</th>
<th>Authorized person</th>
<th>Phone Number</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tarchileik District Hospital</td>
<td>Medical Superintendent</td>
<td>+95-8451486</td>
<td>Tarchileik town is situated at Myanmar-Thailand Border of East Shan State and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>2</td>
<td>East Shan State Public Health Department</td>
<td>State Public Health Director</td>
<td>+95-8451486</td>
<td>East Shan State Public Health Department is situated in Kengtung city.</td>
</tr>
<tr>
<td>3</td>
<td>Myawaddy District Hospital</td>
<td>Medical Superintendent</td>
<td>+95-5850511</td>
<td>Myawaddy town is situated at Myanmar-Thailand Border of Kayin State and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>4</td>
<td>Kayin State Public Health Department</td>
<td>State Public Health Director</td>
<td>+95-5821236</td>
<td>Kayin State Public Health Department is situated in Hpa-An city.</td>
</tr>
<tr>
<td>5</td>
<td>Kawthaung District Hospital</td>
<td>Medical Superintendent</td>
<td>95-59-51993</td>
<td>Myawaddy town is situated at Myanmar-Thailand Border of Thaninhtaryi Region and an official Trade entry/exit gate between two countries is set up there.</td>
</tr>
<tr>
<td>6</td>
<td>Thaninhtaryi Regional Public Health Department</td>
<td>State Public Health Director</td>
<td>95-59-23584 95-59-23583</td>
<td>Thaninhtaryi Regional Public Health Department is situated in Daewi city.</td>
</tr>
</tbody>
</table>
### MYANMAR

<table>
<thead>
<tr>
<th>No.</th>
<th>Institute</th>
<th>Director/Assistant Director</th>
<th>Phone</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Central Epidemiology Unit, Department of Public Health, Nay Pyi Taw</td>
<td>Director (Epidemiology) 95-67-431432 95-67-431433</td>
<td>Central Epidemiology Unit, Department of Public Health, acts as MBDS coordinators is situated in Nay Pyi Taw</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>National Health Laboratory, Yangon</td>
<td>Dr. Win Thein Director (Laboratory) 95-9452668216</td>
<td>National Health Laboratory, acts as Reference Laboratory of Myanmar</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Public health laboratory, Mandalay</td>
<td>Dr. May Wint Wah Assistant director 95-92017432</td>
<td>Public health laboratory, Mandalay</td>
<td></td>
</tr>
</tbody>
</table>

### THAILAND

<table>
<thead>
<tr>
<th>No.</th>
<th>Reference Laboratories</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National Institute of Health</td>
<td>02 5912153</td>
</tr>
<tr>
<td>2</td>
<td>Regional Medical Sciences Center 1 (Chiangmai)</td>
<td>0 5311 2188-90</td>
</tr>
<tr>
<td>3</td>
<td>Regional Medical Sciences Center 1/1 (Chiangrai)</td>
<td>0 5317 6225-6</td>
</tr>
<tr>
<td>4</td>
<td>Regional Medical Sciences Center 2 (Phitsanulok)</td>
<td>0 5532 2824-6</td>
</tr>
<tr>
<td>5</td>
<td>Regional Medical Sciences Center 3 (Nakhonsawan)</td>
<td>0 5626 7428</td>
</tr>
<tr>
<td>6</td>
<td>Regional Medical Sciences Center 4 (Nonthaburi)</td>
<td>02 9659750</td>
</tr>
<tr>
<td>7</td>
<td>Regional Medical Sciences Center 5 (Samut songkhram)</td>
<td>0 3472 0668-71</td>
</tr>
<tr>
<td>8</td>
<td>Regional Medical Sciences Center 6 (Chonburi)</td>
<td>0 3878 4006-7</td>
</tr>
<tr>
<td>9</td>
<td>Regional Medical Sciences Center 7 (Khonkaen)</td>
<td>0 4324 0800</td>
</tr>
<tr>
<td>10</td>
<td>Regional Medical Sciences Center 8 (Udon thani)</td>
<td>0 4220 7364-6</td>
</tr>
<tr>
<td>11</td>
<td>Regional Medical Sciences Center 9 (Nakhon ratchasima)</td>
<td>0 4434 6006-15</td>
</tr>
<tr>
<td>12</td>
<td>Regional Medical Sciences Center 10 (Ubon ratchathani)</td>
<td>0 4531 2250-3</td>
</tr>
<tr>
<td>13</td>
<td>Regional Medical Sciences Center 11 (Surat thani)</td>
<td>0 7735 5301-6</td>
</tr>
<tr>
<td>14</td>
<td>Regional Medical Sciences Center 11/1 (Phuket)</td>
<td>0 7635 2041</td>
</tr>
<tr>
<td>15</td>
<td>Regional Medical Sciences Center 12 (Songkhla)</td>
<td>0 7444 7024-8</td>
</tr>
<tr>
<td>16</td>
<td>Regional Medical Sciences Center 12/1 (Trang)</td>
<td>0 7550 1050-3</td>
</tr>
</tbody>
</table>
VIETNAM

1. National Institute of Hygiene and Epidemiology
   Address: No 1 – Yecxanh Street - Hai Ba Trung District - Hanoi
   Tel: (84-24) 3.971.6356
   Fax: (84-4) 3.821.0853
   Website: http://www.nihe.org.vn
   Email: nihe@nihe.org.vn

2. Pasteur Institute in Ho Chi Minh City
   Address: 167 Pasteur Street, Ward 8, District 3, Ho Chi Minh City
   Tel: (84-28) 38230352
   Fax: (84-28) 38231419.
   Website: www.pasteurhcm.gov.vn
   Email: pasteur@pasteur-hcm.org.vn

3. Nha Trang Pasteur Institute
   Address: 8 Tran Phu Street, Nha Trang City, Khanh Hoa Province
   Tel: (84 258) 3 822 406
   Fax: (058) 3 824 058
   Website: http://pasteur-nhatrang.org.vn
   Email: info@ipn.org.vn

4. Tay Nguyen Institute of Hygiene and Epidemiology
   Address: 34 Pham Hung Street, Tan An Ward, Buon Ma Thuot City, Dak Lak Province
   Tel: (84 262)3663979
   Fax: (84 262)3852423
   Website: http://www.tihe.org.vn
   Email: info@tihe.org.vn

SOPS FOR ZIKA VIRUS INFECTION CONTROL FROM MYANMAR

STANDARD OPERATING PROCEDURE FOR ZIKA VIRUS INFECTION

Standard Operating Procedure for Zika Virus Infection

- Community
- Hospitals
- Points of Entry

Suspected Case Definition:
History of travel to Zika affected countries and go back to Myanmar within two weeks and any patient presenting with rash and/or fever and at least one of the following signs or symptoms: arthralgia; arthritic; or non-urinary conunctivitis

- PeEs Medical Team
- Community Rapid Response Team
- Hospitals Case Investigation form by MO

Integrated
- Confirm for Laboratory Sample taking or not
- Specimens sent to National Health Laboratory

WHO
- BHR
- Confirm
- PRESS

VBDC
- Inform to CEU, DoPH
STANDARD OPERATING PROCEDURE FOR FIRST ZIKA CASE

Point of Entry

Community + Hospital

Suspected Case Definition
History of Travel to Zika affected countries and go back to Myanmar within two weeks and any patient presenting with rash and/or fever and at least one of the following signs or symptoms:
- arthralgia
- arthritis
- non-pruritic conjunctivitis

Inform to CEU and DG, DOPH

Isolate suspected patient in mosquito proof room

Refer to designated Hospital
- Wai Bgy (Yagon)
- Kandawngadi (Mandalay)
- 1000 bedded general hospital (Nay Pyi Taw)

Isolate suspected patient in

Blood Specimen

Positive

PHEIC
- By Minister of MOHS
- Vector Control
- Contact Tracing
- Active case search

WHO
Asean

Media
Briefing by assigned person

STANDARD OPERATING PROCEDURE FOR DISEASE SURVEILLANCE IN INTERNATIONAL AIRPORT AND SEAPORT

SOP for Port & Airport

Standard Operating Procedures for Disease Surveillance in International Airport and Seaport

Inspection for all passengers

Check for body temperature with infrared fever screening sensor

Check for body temperature

Temperature Normal

Pass

Temperature Abnormal

Pass

Temperature Normal

Pass

Temperature Abnormal

Pass

Person Under Investigation (POI)

Yes

No

Add for further investigation whether the person has a history of travelling to Zika Virus Disease affected country within the month

Add for further investigation (POI) for suspected Zika Virus Disease

Pass

- Immediately transfer to Central Epidemiology Unit
- Put patient in the changing area and put on PPE
- Health personnel also put on PPE
- Transfer the patient to hospital with ambulance
- Distribution of all contact places including ambulance

Mekong Basin Disease Surveillance (MBDS)
STANDARD OPERATING PROCEDURE FOR DISEASE SURVEILLANCE IN GROUND CROSSING POINTS

SOP for Ground Crossing

- Interaction in Ground Crossing Point
  - Investigation to alginement
  - Check for Body Temperature with Non-contact Thermometer
    - Temperature Normal
      - Pass
    - Temperature above 38°C
      - Wait for 17 minutes and Record Body Temperature
    - Body Temperature above 38°C
      - Person Under Investigation (PUI)
        - Ask for travel history whether the passenger has any history of traveling to Ebola Virus Disease affected countries within one month.

- Ask for Personal Data and Address in Myanmar in detail
  - Pass

- Person Under Investigation (PUI) for suspected Ebola Virus Disease
  - No
    - Contact Township Medical Officer Disease In
  - Yes
    - Immediately inform to Township Medical Officer and Department of Health
      - Put passenger in the changing room and put on PPE
      - Healthy passenger also put on PPE
      - Transfer the passenger to hospital with ambulance
      - Disinfect of all-contact places including ambulance

STANDARD OPERATING PROCEDURE FOR PERSON UNDER INVESTIGATION (PUI) FOR SUSPECTED EBOLA VIRUS DISEASE IN HOSPITALS AND CLINICS

SOP for Clinics & Hospital

- Standard Operating Procedure for Person Under Investigation (PUI) for suspected Ebola Virus Disease in Hospitals and Clinics
  - Signs and Symptoms
    - Fever
    - Muscle Ache
    - Headache
    - Intense Fatigue
    - Swollen lymph nodes
    - Vomiting
    - Diarrhoea
    - Hemorrhage

- Attendance of Patient in Hospitals and Clinics OSF
  - Absence
    - Ask for travel history whether the passenger has any history of traveling to Ebola Virus Disease affected countries within one month.
  - Present
    - Ask for Personal Data and Address in Myanmar in detail
      - Inform the patient if there is any health problem to bring to health center immediately.

- Persons Under Investigation (PUI) for suspected Ebola Virus Disease
  - Yes
    - Immediately inform to Township/ District/ Medical Officer/ State Region Health Director
    - Patient must be isolated in Ward and after treatment
    - Health personnel always put on PPE in isolation Ward
    - Disinfection of all-contact places including ambulance
AUTHORS

CAMBODIA:
Dr. Bun Sreng, Former Deputy Director
CDC Department, MOH
Mr. BUTH Sokhal, Pharmacist, Assistant
Professor Deputy-Director, NIPH

LAO P.D.R:
Dr. Bounlay Phommasack,
Senior Advisor, MOH

MYANMAR:
Prof. Dr. Htay Htay Tin (Lead), Deputy DG
(Laboratory), MOHS
Dr. Ohnmar Lwin, Consultant
Microbiologist, MOHS
Dr. Nyan Win Myint, Deputy Director
(Epidemiology/IHR), MOHS

THAILAND:
Ms. Noppavan Janejai, Deputy Director,
Dept of Medical Sciences, MOPH

VIETNAM:
Dr. Nguyen Dang Vung, Head, Dept of
Demography, HMU
Dr. Nguyen Thanh Thuy, Head, Dept of
Biosafety and Quality Management, NIH

MBDS SECRETARIAT:
Dr. Moe Ko Oo, MBDS Board
Ms. Win Min Thit, Consultant
Ms. Jittra Thajeen, Assistant Project Coordinator

CONTRIBUTORS

CAMBODIA:
Dr. Yi Seng Doeurn, Deputy Director, CDC,
MOH
Mr. Chin Savuth, Deputy Chief of National
Public Health Laboratory

LAO P.D.R:
Dr. Viengsavanh Khitthiphong, Deputy
Director, CDC, MOH
Dr. Darouny Phonekeo, Deputy Director of
Lao Pasteur Institute
Dr. Tiengkham Pongvongsa, Deputy
Director, Savannakhet province
Mrs. Ketchanh Sysavat, Deputy Chief of
Epidemiology Unit, Bokaeo province

MYANMAR:
Assoc. Prof. Dr. Win Thein, Director
(Laboratory), NHL, MOHS
Dr. San Mya, Deputy Director, National
Health Laboratory
Dr. Eh Htoo Pe, Deputy Director, National
Health Laboratory
Dr. Latt Latt Kyaw, Deputy Director,
National Health Laboratory
Dr. Witt Yee Win Mg, Assistant Director,
National Health Laboratory
Dr. Nyan Lin Aung, Pathologist, National
Health Laboratory
Dr. Hla Kyae Mone, Microbiological,
National Health Laboratory

THAILAND:
Mrs. Punchawee Sukbut, Head of CDC
Sector, Mukdahan province
Mr. Narin Suriyon, Public Health Technical
Officer, Chiang Rai province
Dr. Somchaitychote Pyawatchwela, Medical
Officer, Nongkhai province
Mr. Thapon Tiawsirichaisakul, Technical
Officer, Nongkhai province

VIETNAM:
Dr. Mai Nam, Deputy Director, Quang Tri
province
In an era of change and uncertainty, no one can know when and how new infectious disease emerges. Health personnel in cross border areas have to deal with many infectious agents without realizing the actual threats.

In this regards, the border health officials, who are first line defense in the border, should have basic knowledge on biosafety in order to apply the knowledge and prevent exposure to potentially infectious agents.

The members of the network would use this manual as guidance at national/sub-national levels to ensure the compliance with the biosafety principles.