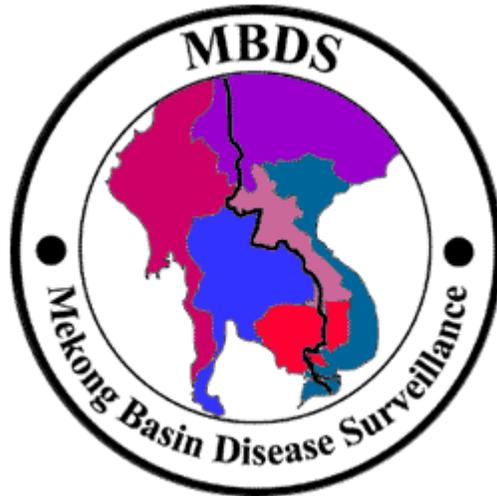


# Regional Pandemic Influenza Tabletop Exercise



## Mekong Basin Disease Surveillance Partners

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Siem Reap

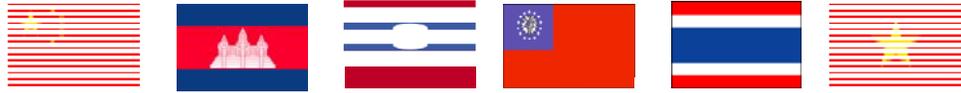
March 12-15, 2007

# After Action Review

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# RECOGNITION OF PARTNERS



United Nations

## Preface

This After Action Review (AAR) summarizes the regional pandemic influenza tabletop exercise conducted in Siem Reap, Cambodia on March 13-14, 2007 by the Mekong Basin Disease Surveillance (MBDS) countries (Cambodia, Lao PDR, Myanmar, Thailand, Vietnam, and Yunnan-China) and their partners. This exercise culminated a project that began with individual exercises in each of the six MBDS countries, all oriented toward enhancing preparedness and response to a pandemic influenza emergency. The regional exercise was developed and executed through an active collaboration among MBDS country stakeholders, Nuclear Threat Initiative, the Rockefeller Foundation, the U.S. Centers for Disease Control and Prevention (CDC), and the RAND Corporation. Exercise participants included national and provincial officials from a wide range of government sectors in all six MBDS countries. Observers included technical resource personnel from CDC, a number of organizations and offices within the United Nations system and representatives from the Google Foundation, Kenan Institute and the Mekong Institute.

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## Acronyms

AAR	After Action Review
AI	Avian Influenza
ASEAN	Association of Southeast Asian Nations
CDC	U.S. Centers for Disease Control and Prevention
HCW	Healthcare Workers
IHR	International Health Regulations
MBDS	Mekong Basin Disease Surveillance
MoH	Ministry of Health
MoU	Memorandum of Understanding
NTI	Nuclear Threat Initiative
PI	Pandemic Influenza
PPE	Personal Protective Equipment
RAND	RAND Corporation
RF	Rockefeller Foundation
RRT	Rapid Response Team
TTX	Tabletop Exercise
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNSIC	United Nations System Influenza Coordination
WHO	World Health Organization

## Summary

On March 13-14, 2007, 59 national and provincial government officials from the six countries participating in the Mekong Basin Disease Surveillance (MBDS) project and 25 international observers convened in Siem Reap, Cambodia to participate in a tabletop exercise (TTX) aimed at strengthening regional pandemic influenza preparedness. The government officials represented a broad array of ministries from Cambodia, Lao PDR, Myanmar, Thailand, Vietnam and Yunnan Province of China; observers represented United Nations agencies and organizations that are currently, or are interested in, supporting MBDS programming. The exercise focused on three main preparedness areas: surveillance and information sharing, disease prevention and control, and communications, and sought concrete outputs that could be used to strengthen national preparedness and guide future MBDS programming. Participants identified priority actions and associated challenges and began to consider new opportunities for cross-border cooperation.

The exercise proceedings are described in detail in the report. Summarized here are potential actions to strengthen critical capabilities, observed strengths and challenges regarding exercise design and implementation, and recommendations for future action.

### **Critical Capabilities**

The exercise focused on the three major preparedness areas noted above, and within these, twelve critical capabilities. Suggestions from the small group scenario deliberations and initial plenary planning addressing each of these are presented below.

#### ***Surveillance and information sharing***

1. Early warning systems, especially from rural and border areas: Participants suggested a number of specific actions when warranted by imminent disease threats, including more targeted surveillance, intensified border screening, and even the possibility of an internet-based MBDS-wide early warning system. They recognized the challenges of financing, limited laboratory and communications infrastructure, maintenance of public calm, and technical expertise for the internet-based option. As a next step, they suggested an MBDS-wide technology assessment during 2007-2008.
2. Enhanced surveillance as human-to-human disease emerges and spreads: Participants proposed actions to strengthen facility-based surveillance among both patients and healthcare workers (HCWs), and screening at border areas and other entry points. They identified such challenges as the high volume of travelers across borders, virus transmission by infected persons before they become ill, the policy dilemma of balancing economic, e.g., tourism, with public health priorities, and administrative issues related to specimen transport across borders. They suggested ways to overcome such challenges, e.g., using existing cross-border teams and building upon lessons learned to date from MBDS cross-border surveillance. They tentatively suggested that such efforts be undertaken during 2007-2008.

3. Sharing surveillance information across MBDS: Participants addressed this issue at all stages of the evolving exercise scenario, from when case clusters were identified in a country neighboring an MBDS country through to when clusters were occurring in all MBDS countries. They felt that current and new communications mechanisms should be used, point persons identified, and decision-making and standard operating procedures developed to address such issues as the content and frequency of information sharing, and changes in these as a pandemic emergency evolves. They suggested consideration of a new MBDS emergency communications center to help handle such information sharing. Policy and technical challenges include government approvals and transparency, assurance that mechanisms are in place before an actual emergency event, infrastructure limitations especially with regard to internet technologies, and ability to respond promptly to information.
4. Joint investigation: This has been an important component of MBDS programming in a limited number of cross-border demonstration sites. In response to the emergence of a case cluster in one MBDS country, participants suggested that all countries establish their own Rapid Response Teams (RRTs) and be prepared to respond to any request for assistance from another MBDS country. However, the exercise discussions, which drew on project experience to date, uncovered administrative challenges related to timely border crossing for investigation teams, language barriers, and disease control concerns with personnel traveling between affected and unaffected areas. They suggested ways to overcome these challenges and proposed more practice of cross-border investigations, including other disease outbreaks, and the development of cross-border plans and protocols over the next year.
5. Laboratory support: Participants recognized the need for more laboratory capacity, including trained staff, and they acknowledged the need for support from other MBDS countries and the international community. They also identified the need for rapid laboratory testing in critical areas such as affected border areas. They also recognized the limitations related to the variable levels of laboratory capacity across MBDS countries and the sub-optimal accuracy of current rapid diagnostic tests. They suggested an MBDS-wide laboratory capacity assessment over the next 3-6 months and additional training that is in alignment with the International Health Regulations (IHR, 2005).

### ***Disease prevention and control***

6. Workforce capacity and training: Participants specified the need for a health workforce, including surge personnel, that is sufficiently trained in disease prevention and control before a pandemic arises, and they offered different approaches to achieve this. They also identified challenges associated with advance training, volunteers, legal issues such as authorization of paramedical personnel to provide additional services, and language barriers associated with cross-border cooperation to strengthen the health workforce. They suggested that MBDS develop a plan for joint training, e.g., of HCWs, on both sides of border areas (or

joint planning of a standardized curriculum for training in each country), possibly within the next 6-12 months, drawing from World Health Organization (WHO) guidance as appropriate.

7. Health workforce protection: Participants expressed serious concerns about protecting their health workforce – medical and public health workers -- and suggested such measures as routine hospital infection control, PPE and antiviral medications. They identified challenges related to adequate training of HCWs and limited availability of PPE, medications and vaccine. Participants suggested ways to overcome these challenges, e.g., external financial support to arrange for national and regionally stockpiled materials, especially for border areas.
8. Rapid containment of initial case cluster: Participants suggested a range of actions consistent with WHO guidelines, e.g., appropriate case management in healthcare facilities, and movement restrictions in communities. At the same time, they noted the challenges of border control, depleted supplies needed for containment efforts, accessing relevant stockpiles, and implementation of large-scale movement restriction measures. Possible near-term priorities include the establishment of adequate isolation facilities, especially along border areas, development of procedures for a full range of non-pharmacologic measures and protocols for hospital infection control and case management, and testing/exercising stockpile procedures. Participants agreed that multiple government ministries would need to be involved and suggested a possible 6-12 month timetable for these activities.
9. Control measures during an early pandemic: Participants noted that while their countries address such issues at the national level, based on guidance from WHO and others, MBDS may have comparative advantage (e.g., over other bilateral and multilateral efforts) specifically in cross-border areas. Participants suggested a range of intervention measures and recognized the need for greater clarity on national versus MBDS-wide decision making and productive involvement of all relevant sectors (e.g., for border control). They suggested as near-term priorities the strengthening of provincial level plans and committees.
10. Medical surge capacity: As a pandemic emerges in all countries, medical surge capacity will be critical but extremely challenging. Participants identified a number of potential avenues for strengthening surge capacity, as well as challenges related to manpower, facilities, supplies and multi-sector cooperation. They noted that the military could potentially help address surge demand, in terms of both personnel and facilities. One near-term priority might be to further develop country-specific and MBDS-wide surge capacity plans, e.g., using military and retired medical personnel, volunteers, and alternative sites for care, e.g., schools (which would likely be closed at the time they might be needed for this purpose). Participants suggested that such actions should take place in conjunction with relevant sectors and investment partners, with minimum requirements potentially to be set over the next 12 months.

### **Communications**

11. Communications across MBDS governments: Participants addressed communications at different steps of the evolving scenario. They offered suggestions for a reliable communications system with designated contacts and spokespersons. One possibility is an MBDS emergency communications center to coordinate timely information sharing on all aspects of an evolving emergency in the region. Participants identified a number of administrative, logistical, and communications infrastructure challenges. They noted that planning in this area should include communications modalities that can be assured during a crisis, e.g., satellite phones in every country or telephone hotlines. They also suggested revision of the MBDS Memorandum of Understanding (MoU) by September 2007 (or even earlier), to accommodate some of these emerging priorities.
12. Communications to the public: While participants' public communications priorities evolved as the simulated situation worsened, consistent priorities included MBDS cooperation in message development and timely, clear, accurate communications that inform the public without causing confusion or undue panic. Participants identified challenges related to national versus sub-regional authority for communications planning, language barriers, and maintenance of critical communications infrastructures. Their near-term priorities are to determine key behaviors needed to prevent and manage cases, develop risk communication messages in advance, select credible (presumably MoH) spokespersons, and conduct exercises with the media. They felt that relevant sectors should work on such risk communications planning, potentially over the next 6-12 months. WHO and UNICEF offered technical support to help with these efforts.

## **Observed Strengths**

- Participant engagement, concrete outputs: The scenario led to meaningful small group discussions. These deliberations yielded concrete proposed actions and associated challenges, which were subsequently shared with the larger group and then fed into initial action planning at the end of the exercise.
- Stakeholder diversity and commitment: The exercise involved a remarkable number of participants across countries, sectors and organizations, demonstrating the firm commitment of MBDS countries and partner organizations to the regional approach to pandemic influenza (PI) preparedness.
- Commitment to regional cooperation: Discussions during the exercise reflected a shared view among participants of the importance of MBDS regional collaboration in advance of a PI emergency, and by extension, the importance of convening a regional group of stakeholders to discuss PI issues and challenges. Joint activities require a framework for cooperation and operational guidelines, and thus time, trust among partners, and formal actions by each country's central government.

- Valuable observer input: Technical resource personnel from the United Nations system and the U.S. CDC provided rich input to the exercise at every step, from review and comment on early drafts of the exercise to helpful comments at the pre-exercise orientation, exercise deliberations and post-exercise review meeting. They are stakeholders in the larger global community and thus both shared valuable insights and, hopefully, drew some of their own from the MBDS exercise.
- Springboard to further planning: Outcomes from the exercise are useful for revising certain elements of national plans, drafting a regional preparedness plan, and potentially guiding future MBDS programming.

## **Observed Challenges**

As the very first multi-country, multi-sector exercise, some challenges to exercise design and implementation were both expected and observed.

- Language barriers: Not all exercise participants had English language proficiency that allowed them to fully engage in the exercise.
- Size of small groups: Given the language constraints and other factors, in retrospect smaller groups may have resulted in more dynamic discussions. However, this would have required fewer participants, or more facilitators and more plenary presentations.
- Multi-sector engagement: The comprehensive and diverse composition of the country delegations presented challenges to facilitation of meaningful interactions among the various sectors. Facilitators faced potential tradeoffs between useful health-oriented focus and useful multi-sector dialogue. Given the complexity of PI and its potential impacts, the multi-sector approach was probably the right choice, but there remain opportunities for improvement.
- Final planning step: Concrete planning for future activities was clearly an important area to address, however, the final plenary session did not provide the time or comfortable environment for careful deliberation and full participation. In particular, participants found it difficult to follow the planning for activities that they did not discuss in their own small group. Therefore, the outputs from this step should be viewed as illustrative of the planning process rather than definitive planning of next steps.

## **Recommendations**

### ***Future exercises***

- Consider future MBDS exercises at provincial, national and regional levels. Multi-sector exercises should sufficiently engage non-health sector participants, prepare them in advance, and use language and terms that are clear to all participants.
- Consider ways to overcome language barriers, e.g., each country arrange for translation for delegation members.

- Maintain diverse composition of small groups (multi-country, multi-sector), but reduce the size of these groups to a maximum of 10-12 participants each.
- Maintain the objective of concrete action planning (Step 4 in this exercise), but find a more conducive format, including more time overall and small group action planning (based on their earlier discussions), followed by plenary discussion; further planning can take place in follow-up meeting/s with a smaller group of stakeholders.

***Future MBDS programming***

- Use outputs from the exercise to help improve national planning and as a first step toward further MBDS programming. MBDS planning can draw from the full range of activities and challenges identified during the exercise and reconsider priorities and timetables for action.

## Introduction and Background

The Mekong Basin is home to the Kingdom of Cambodia, Lao PDR, the Union of Myanmar, the Socialist Republic of Vietnam, the Kingdom of Thailand, and Yunnan Province of the People's Republic of China. After a meeting in Bangkok in February 1999, delegates from these countries agreed to initiate collaboration in disease surveillance under the name Mekong Basin Disease Surveillance (MBDS). The goal is to strengthen national and Mekong sub-regional capabilities in disease surveillance and effective response to outbreaks of priority infectious diseases. The Rockefeller Foundation (RF), through its Southeast Asia Regional Office, has supported MBDS since its inception. Early project activities included training of epidemiologists, surveillance information exchange, and then cross-border surveillance and joint investigation in selected sites.

MBDS Country Coordinators began to discuss potential programming related to avian/pandemic influenza at their meeting in Hanoi in December 2005. In response, in early 2006 the Nuclear Threat Initiative (NTI) started working closely with the RF and MBDS leaders on a new activity: the development and implementation of tabletop exercises (TTXs) to openly examine the challenges of a regional approach to the surveillance, early detection, and response to a major biological event such as that posed by an avian influenza (AI) or pandemic influenza (PI) emergency. The plan for this new activity called for an individual TTX in each MBDS country, followed by a final regional exercise. The individual exercises were conducted from August to October 2006. All six shared the common goal of exercising national preparedness and response to a PI emergency, but there was variation across countries in the topic areas addressed, government sector/s involved, and scope (national or provincial). Detailed information on the national TTXs is reported in each respective After Action Review (AAR).

With significant planning by all MBDS countries, partners, and especially the MBDS Coordinating Office in Bangkok, the regional TTX was conducted in Siem Reap, Cambodia, on March 13 and 14, 2007. It included 59 participants from a broad range of sectors within the six MBDS countries and 25 observers and facilitators from partner organizations (see Participant List in Appendix 1 for more information).

Key stakeholders hoped that the exercise would provide a good opportunity for MBDS participants to explore regional and cross-border responses to selected aspects of an evolving pandemic emergency, identify priority actions to further improve preparedness and response, and develop recommendations to help guide future MBDS programming and donor investments. An orientation meeting prior to the exercise and a follow-up meeting after the exercise were held on March 12 and 15, respectively, with the participation of MBDS country team leaders and partner organization representatives. The orientation meeting was designed to familiarize MBDS country leaders with the exercise content and procedures, review and make final revisions to the exercise, and prepare the exercise facilitators to lead designated group discussions. The follow-up meeting was designed as a round-table discussion to allow for more detailed feedback on the exercise and further planning for future MBDS cooperative activities.

Highlights from these meetings and the exercise proceedings are described in the sections that follow.

## Pre-Exercise Orientation

A pre-exercise orientation meeting was held the day before the exercise in the afternoon of March 12, 2007. Participants included MBDS country team leaders, small group facilitators, and representatives from partner organizations (see Participant List in Appendix 1 for more information). Dr. Sok Touch (Cambodia) chaired the meeting, and Dr. Melinda Moore (RAND Corporation) briefed participants on the proposed design, scope, structure, objectives and contents of the TTX. Participants were asked to provide comments and suggested revisions to the exercise. Key suggestions from participants at this meeting included:

- The exercise facilitator should provide some background on the MBDS project to exercise participants on the first day.
- The exercise should not include references to specific countries in the scenario, to avoid any sensitivities.
- For facilitators:
  1. The facilitators should try to take into account the differing levels of knowledge about influenza and public health across the range of participants, particularly in the small group discussions.
  2. The facilitator guide provides a large number of questions but facilitators do not need to cover them all.
  3. Facilitators should seek to avoid domination by individual participants during small group deliberations.
  4. Facilitators should encourage participants who do not function well in English to speak their native language when necessary. Colleagues with good command of English can help translate.
  5. Emphasize the multi-sector nature of the TTX. Facilitators need to pay special attention to engage non-health participants in discussion. There are non-health questions in the facilitator guide that facilitators should use as reference.
  6. Focus on regional cooperation rather than country-specific plans.
  7. Observers are welcome to ask questions and share ideas.

# Exercise Proceedings

## Agenda

The agenda for the two-day exercise is shown below. Each half-day session was led by an MBDS Country Coordinator or Associate Coordinator, on a rotating basis.

### TTX Agenda

<b>MARCH 13, 2007</b>	
8:00-8:30	Registration
8:30-9:00	Opening ceremony
9:00-9:30	<b>GROUP PHOTO &amp; COFFEE BREAK</b>
9:30-10:15	Introduction to the exercise
10:15-11:45	Step 1: Deliberations (small groups)
11:45-12:30	Step 1: Presentations from small groups
12:30-14:00	<b>LUNCH</b>
14:00-15:30	Step 2: Deliberations (small groups)
15:30-15:45	<b>COFFEE BREAK</b>
15:45-16:30	Step 2: Presentations from small groups
16:30	Adjourn
18:30	<b>GROUP DINNER</b>
<b>MARCH 14, 2007</b>	
8:30-9:30	Thoughts and concerns (around the table)
9:30-9:45	<b>COFFEE BREAK</b>
9:45-11:15	Step 3: Deliberations (small groups)
11:15-12:00	Step 3: Presentations from small groups
12:00-13:00	<b>LUNCH</b>
13:00-15:00	Step 4: Action planning
15:00-15:15	<b>COFFEE BREAK</b>
15:15-17:00	Step 4: Action planning (continued) and conclusions
17:00	<b>Closing</b>

### Opening ceremony

Dr. Ly Sovann (Cambodia) moderated the opening ceremony and began by welcoming all participants to Siem Reap and thanking all individuals and organizations for their contributions to the planning of the TTX. Opening remarks were then delivered by Dr. Katherine Bond (RF), Dr. Terence Taylor (NTI), Dr. Nicole Smith (US CDC), Dr. Melinda Moore (RAND), Dr. Mark Smolinski (Google Foundation), Dr. Koji Nabae (UNSCIC), Dr. Thawat Suntrajan (Thailand CDC), and Dr. Sok Touch (Cambodia CDC). These remarks included important acknowledgments for the MBDS nations' outstanding collaboration, which originally focused on disease surveillance among the health personnel and grew to include personnel from ministries and departments of agriculture,

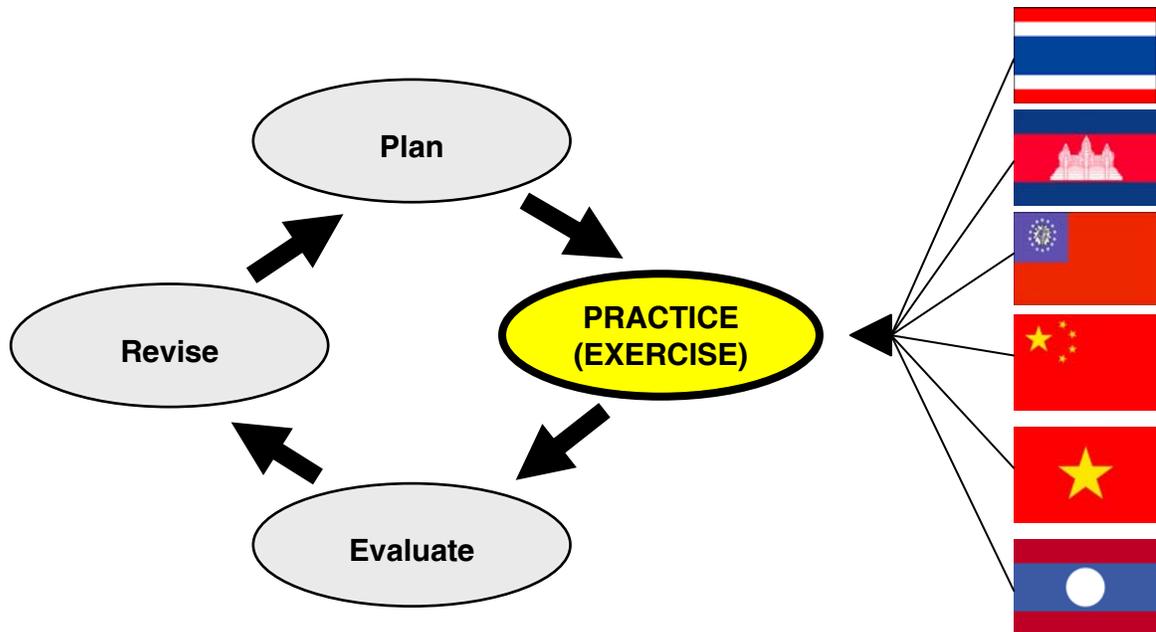
finance, commerce, tourism, justice, interior, foreign affairs, security, defense, immigration, information and culture, communication, and transportation. Speakers considered the multi-country and multi-sector approach as essential in protecting the region and the world from a PI emergency. They noted that the regional TTX was a major development for the MBDS network and at the same time set a sample for regional collaboration to tackle a broader range health threats that extend beyond national borders. They encouraged MBDS countries and their partners to continue their commitment to such cross-border and sub-regional cooperation and noted the importance of exercises to test preparedness plans to make sure that they work effectively. They noted the utility of the TTX to lay the groundwork for developing a regional PI preparedness plan and to provide the opportunity to identify priority actions and begin to address key challenges.



## Overview

Dr. Sok Touch (Cambodia) presided over the remainder of the morning session, with Dr. Melinda Moore (RAND) as co-chair. The facilitators presented an overview that included the following key items:

- Planning and preparedness cycle: Placed this exercise in the context of previous exercises and regional preparedness (see figure below)

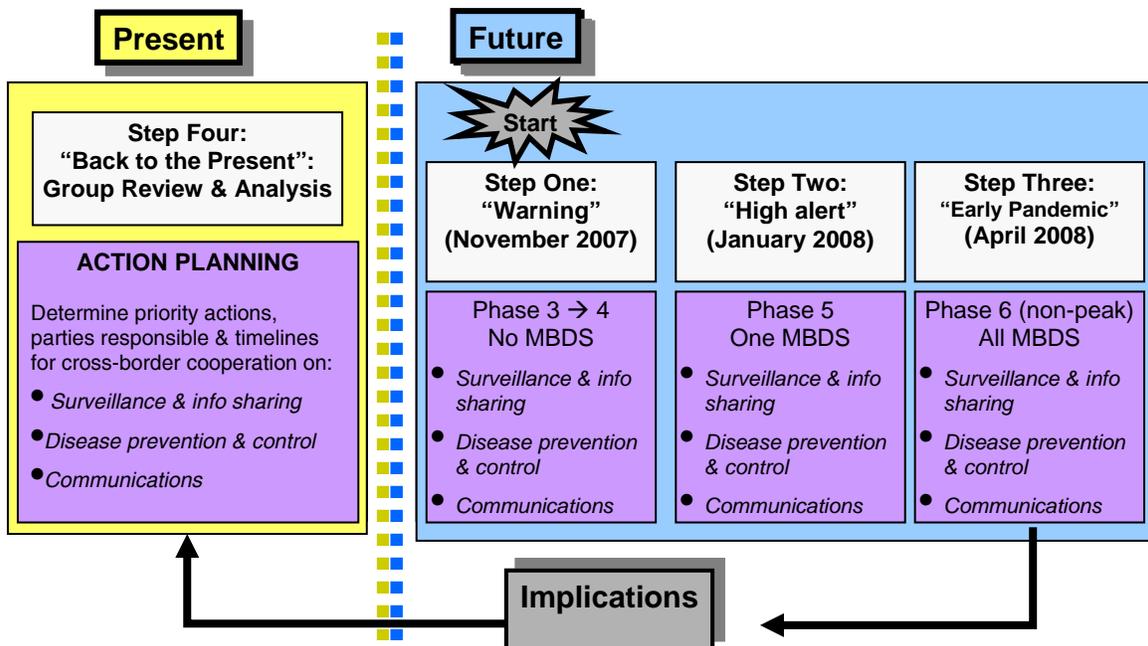


- TTX objectives:
  - Learn/Practice cross-border responses to selected aspects of an evolving pandemic emergency.
  - Identify priority actions that should be taken, particularly in the near term, to improve preparedness and response.
  - Develop recommendations to help guide further MBDS programming and donor investments.
- Expected outputs:
  - Identified priorities for revision of national/provincial preparedness plans
  - MBDS plan of action to help improve regional preparedness in the areas addressed in the exercise
  - Description of resources needed to undertake these actions, to guide development partner investments
- Issue areas to be covered:
  - Surveillance and information sharing

- Disease prevention and control
- Communications
- General participation tips:
  - Open and active participation
  - Succinct and focused responses
  - No "right" or "wrong" answers

Exercise structure

Four sequential steps then followed (see figure below), with the first three steps focusing on responses to a scenario of unfolding events set in the future and the last step returning to the present to plan for potential future needs.



For deliberations on Steps 1-3, participants were split into three pre-assigned small groups, each with approximately 18 participants, representing all MBDS countries, and as balanced a mix as possible of health and non-health sector officials. The discussion leaders of these groups were as follows:

- Group A: Dr. Nguyen Dang Vung (Vietnam), Dr. Nyphonh Chanthakoumane (Laos), Dr. Nicole Lurie (RAND)
- Group B: Dr. Ly Sovann (Cambodia), Dr. Preecha Prempre (Thailand), Dr. David Dausey (RAND)
- Group C: Dr. Soe Lwin Nyein (Myanmar), Dr. Chun Cheng (Yunnan), Dr. Melinda Moore (RAND)

For each small group session, participants had about 90 minutes for deliberations. Representatives from the partner organizations also joined the small groups as “observers” during the deliberations, which were co-facilitated by MBDS country team leaders and a RAND team member. The group leaders posed specific questions and guided the discussion while keeping the participants focused on joint actions across MBDS countries. Each group managed to reach consensus on appropriate actions and identification of challenges in response to the scenario and questions deliberated upon. During the last 15 minutes, the participants synthesized their discussion. After Steps 1, 2, and 3, each small group reported summaries of their discussion in the plenary, using standardized Power Point slide templates. The Step 4 discussion took place entirely in plenary. At the beginning of the second day of the TTX, all participants and observers were asked to share their top thought or concern about PI preparedness. At the end of the day, everyone was asked to complete an evaluation form. The results are presented in Appendix 2.

The following sections describe the simulated scenarios and highlights from Steps 1-3, participant thoughts and concerns, and the Step 4 discussion focused on action planning. It is important to note that the actions proposed and challenges identified during Steps 1-3 reflect the deliberations of individual groups, and not consensus across all participants, since the full group did not debate the findings from individual group discussions.

## **Step 1: Warning**

### SCENARIO (November 2007)

For more than a year now, avian influenza (H5N1 subtype) has been endemic in birds in Asia, Africa, and Europe. The number of humans worldwide infected with the disease continues to rise; however, WHO investigations of human cases suggest that extensive contact with birds is responsible for nearly all of the human infections to date. On November 12, 2007 the Ministry of Health in a country neighboring an MBDS country reports that public health officials are investigating an influenza outbreak involving 18 patients and 3 healthcare workers in a hospital near the border. Interim microbiological results found H5N1 in the patients and healthcare workers tested. More detailed analyses of the virus are being conducted. The patients are from the same community, and some are from the same families; the cases represent at least two generations of transmission within families. Therefore, the country’s public health officials believe that the outbreak reflects person-to-person transmission. WHO sends a team to join the investigation. In addition to the outbreak identified in the hospital, the team finds a small localized outbreak of a similar respiratory disease in the community, where one of the sick patients in the hospital lives. Results of detailed viral analyses show the H5N1 virus isolated from these cases has significantly mutated in a way that makes it more easily transmitted from person-to-person. On November 30, 2007 WHO officially declares a Phase 4 Pandemic Alert. There is no evidence of disease clusters with person-to-person transmission outside of this country.

## Key Questions for discussion

### Surveillance and Information Sharing

- What are the surveillance priorities across MBDS countries?
- What surveillance information do you need to share with the other MBDS countries, and how will you share it?

### Communications

- What information will you communicate to your government ministries and to your populations?

## Highlights of deliberations from the three groups

All three small groups discussed the questions above and then were asked to summarize their deliberations in a way that sets the stage for future planning – by identifying at least one key action and associated challenge related to relevant capabilities. The following highlights consolidate the three groups' presentations.

### ***Surveillance and Information Sharing***

- Early warning systems, especially from rural and border areas: Participants suggested a range of targeted actions to step up their early warning systems at this stage, with a suspected human cluster in a neighboring country. They also identified a number of challenges, such as balancing sufficient alert with avoidance of public panic, determining the appropriate point at which to take action, and dealing with the realities of their limited communications infrastructures.

#### *Actions:*

- Surveillance activated in targeted areas from rural to urban area.
- Border screening (air, sea, land).
- Instructions to all local healthcare workers and facilities to immediately report cases, especially from rural and border areas.
- Internet-based reporting system across MBDS countries.

#### *Challenges:*

- Awareness of cases outside MBDS countries.
- Keeping life operating as normally as possible while remaining sufficiently alert.
- Quickly identifying cases with laboratory confirmation, deciding when to report suspected cases (before or only after laboratory confirmation).
- Realities associated with proposed internet-based system: Assuring political will, lack of electricity, lack of phones, financial limitations, limited technical capacity to build website.

- Enhanced surveillance as human-to-human disease emerges and spreads: Proposed actions addressed surveillance within healthcare facilities, among travelers, and at border areas. Challenges identified included the high volume of travelers, the occurrence of viral transmission by asymptomatic persons, determining the appropriate level of heightened surveillance, and administrative challenges of transporting specimens across borders.

*Actions:*

- Conduct surveillance within hospitals and clinics - focus on health workers, patients, and travelers from infected areas.
- Coordinate surveillance among MBDS countries - upgrade existing surveillance systems, set up emergency reporting system.
- Enhance border screening and surveillance related to travel (air, train, bus), including rapid specimen collection and follow up of passengers after entry.

*Challenges:*

- Tracking tourists and travelers after entry (high volume of daily border crossings).
- Assignment and coordination of surveillance responsibility.
- Lack of lab capacity and equipment.
- Determining what level of surveillance is appropriate at this point.
- Miss detection at borders if in incubation period.
- Ability to quickly send specimen across borders.

- Sharing surveillance information across MBDS countries: Participants suggested the types of data and a variety of possible mechanisms for sharing surveillance information across their countries. They identified a number of associated technical and policy challenges.

*Actions:*

- Share data on morbidity and mortality.
- Issue a health alert (“beware”) card or health declaration to travelers.
- Develop a standard reporting system, e.g., internet-based with updated information.
- Assign contact persons/focal points.
- Determine frequency of sharing based on situation and increase during elevated threats (such as at this point, with a suspected human cluster in a bordering country).

*Challenges:*

- Establishing, a clear information-sharing mechanism

- Determining what agency or organization is appropriate to approve information that can be officially shared.
- As noted above, technical and other challenges to internet-based system
  - political willingness, lack of electricity, lack of phones and financial limitations, limited capacity to build and constantly update website.

### **Communications**

- Communications among MBDS governments: Participants offered suggestions for a reliable communications system with designated contacts and spokespersons, consistent with internal national government organization and drawing upon guidance from WHO. They identified a number of administrative and logistical challenges.

#### *Actions:*

- Set up hot telephone lines.
- Every country should be able to communicate by phone at any time.
- Each MBDS country will identify one office, representative or leader for communications, and assign a spokesman.
- Each MBDS country will convene its existing multi-sector committee.
- If necessary, request assistance from WHO to utilize existing communications resources to communicate across MBDS countries.

#### *Challenges:*

- Getting official authorization to release information and establishing a clear line of responsibility within governmental structure.
- Convening in a timely fashion.
- Language barriers across MBDS countries.
- Maintaining consistent and accurate communication messages.

- Communications to the public: Participants recognized the importance of clear and timely communications to the public and the importance of involving all relevant government ministries. They suggested a possible role for WHO to help coordinate public communications in the sub-region. At the same time, they identified the challenges of coordinating communications (e.g., balancing country responsibilities and interest in MBDS cooperation) and maintaining public calm.

#### *Actions:*

- Provide information to the press/media daily.
- Involve all relevant ministries and departments in communication planning.
- Provide clear, timely, accurate information to the public.

- All countries will ask WHO regional office to coordinate communication messages across MBDS.

*Challenges:*

- Clarifying the role of MBDS in the context of national level responsibilities
- Avoiding public panic and confusion.
- Providing the public with appropriate bio safety instructions.
- Assuring that the tourist industry provides information responsibly.
- Ensuring consistent and timely messages across MBDS countries.
- Different interpretation of messages across borders.

## **Step 2: High Alert**

Dr. Nyphonh Chanthakoumane (Laos) chaired the afternoon session in which Step 2 was discussed, with Dr. Melinda Moore (RAND) as co-chair.

### SCENARIO (January 2008)

The outbreak in the neighboring country grows larger. That country has a train station and an express bus hub that connects it to major transportation hubs for all of Southeast Asia, including at least one MBDS country. For political reasons, the train station and bus hub were officially not shut down until mid-December. By that time many of the residents from the affected community and the surrounding area fled to other countries in the region. On January 8, 2008 the Ministry of Health of an MBDS country neighboring your own reports that they are investigating a large respiratory disease outbreak on the border they share with your country. Their investigation reveals at least three generations of person-to-person transmission in the province, with 30 confirmed cases of H5N1, at least 40 more suspected cases (laboratory tests either negative or still pending), and 3 deaths. They have notified WHO as required by the International Health Regulations (IHR, 2005). WHO works with the country to verify the cases, obtain viral isolates for potential vaccine development and institute stringent containment efforts including: isolating patients, antiviral treatment and prophylaxis, social distancing measures, and quarantine of the affected area. WHO and the country work out arrangements for release of regional stockpile materials to support the containment efforts. On January 22, 2007 WHO officially declares a Phase 5 Pandemic Alert. Production of a vaccine against the novel strain is in its very early stages and it will be months before a vaccine is available for use anywhere. At this point, no other country aside from the originally affected neighboring country and this MBDS country has a confirmed localized outbreak of the illness with documented person-to-person transmission.

### **Key Questions for discussion**

#### *Surveillance and Information Sharing*

- What surveillance information do you need to collect and share with others? How will you get it?
- What is the role of MBDS joint investigation?
- What laboratory support may be needed from other MBDS countries or other partners?

#### Disease Prevention and Control

- What population-based disease prevention/control actions are warranted at this time in the affected MBDS country? In unaffected MBDS countries?
- What actions should you take to protect your health care workers and other critical personnel?

#### Communications

- How will you coordinate your risk communications across MBDS countries?

### **Highlights of deliberations from the three groups**

As before, all three small groups discussed the questions above and then summarized their deliberations in terms of key actions and associated challenge related to relevant capabilities. The following highlights consolidate the three groups' presentations.

#### ***Surveillance and Information Sharing***

- Sharing surveillance information across MBDS: At this higher level of alert, i.e., suspected cluster of cases with human-to-human transmission in one MBDS country, participants suggested a somewhat broader range of communications mechanisms than before, but otherwise little change for sharing information across their countries. They identified some of the same challenges as earlier, and also the challenges of transparency in reporting and official versus unofficial information sharing.

##### *Actions*

- Use existing network (national & MBDS) to share information (by telephone hotline, website, email, focal points).
- Share information regarding potential cases as quickly as possible.
- Organize a meeting to share information and discuss the situation.
- Continue use of internet-based communications system proposed earlier.
- Use informal information sharing in the absence of official communications.

##### *Challenges*

- Official information sharing may entail long waits for approvals and confirmations.
  - Maintaining information transparency across MBDS countries.
  - Ensuring prompt investigation and confirmation to ensure accurate information to the public and avoid panic
  - Technical challenges identified earlier regarding internet-based communications.
- Enhanced surveillance: At this higher level of alert, participants suggested intensified surveillance from health facilities, communities, and border areas, including “zero reporting” (explicit reporting of no cases). They also linked surveillance to investigative response actions. Limited infrastructures (e.g., laboratory capacity, resources for cell phone cards), response issues (e.g., whether or not to act pending laboratory confirmation) and policy issues (e.g., empowerment of MBDS Coordinator, policy for border screening) were among the associated challenges identified.

#### *Actions*

- Increase reporting including zero reporting - reporting from hospitals of cases or clusters of influenza-like illness and pneumonia in patients and HCWs, increased community-based surveillance.
- MBDS coordinator could serve as the bridge between the national and regional information.
- Coordinate screening at borders and entry points (e.g., health alert cards, health declaration forms) between health and the immigration/customs ministry.
- Conduct contact tracing.

#### *Challenges*

- Sufficiently aggregating information shared across countries so that it is useful.
- Mechanics of sharing information across countries, especially if each country has its own website.
- Basic needs like having resources to pay for cell phone cards.
- Deciding how thorough an investigation needs to be done.
- Lack of sufficient laboratory support.
- Timeliness of lab confirmation and whether to act without it.
- Government authorization and empowerment of MBDS coordinator to effectively serve their role
- Entry of travelers during incubation periods - need more teams at screening centers, may need to quarantine luggage

- Joint investigation: Cross-border cooperation in selected sites, including joint investigation, has been a major focus of MBDS programming over the past three years. Participants suggested that each country should establish its own RRTs and be prepared to respond to requests from neighboring (or any other) MBDS countries to participate in joint outbreak investigation of the cluster affecting the MBDS country in this scenario. Identified challenges included policy, administrative and logistical issues that need to be addressed, as well as the potential problem of investigators returning from an affected country into their unaffected home country.

*Actions:*

- Each country should establish rapid response teams (RRT) to respond jointly to the outbreak.
- Neighboring countries would send teams to help investigate cases along the border.
- Upon request, countries should be willing to help any MBDS country (will help identify cases missed upon entry, help with specimen transport).

*Challenges:*

- Deciding when joint investigation will be undertaken and if it is necessary.
- Cumbersome paperwork requirements before RRTs can travel.
- Establishing a standard operating procedure and funding joint investigations.
- Language and logistics limitations.
- Staff on RRTs come from different departments and have different funding stream.
- Return of investigators to home/unaffected country

- Laboratory support: Participants recognized the need for more laboratory capacity and trained staff and hence the potential need for laboratory support from other MBDS countries and beyond. They also identified the need for rapid laboratory testing in critical areas such as affected border areas. At the same time, they recognized the limitations in the current level of laboratory capacity across MBDS countries and of current rapid tests (with sub-optimal accuracy).

*Actions:*

- Provide more training for laboratory staff.
- Ask for help from within and beyond MBDS countries.
- Send specimens to an MBDS country with appropriate laboratory capacity.
- Conduct rapid testing at border and screening areas.

*Challenges:*

- Laboratory resources may not necessarily be enough.

- Laboratory capacity across MBDS countries has never been assessed or documented.
- Increased laboratory testing will be difficult to implement – not enough tests, not very accurate (sensitivity ~ 70%).

### ***Disease Prevention and Control***

- *Health workforce protection*: Participants suggested a number of strategies to protect the health workforce – medical and public health workers -- including routine infection control practices, PPE, and antiviral drugs, plus seasonal influenza vaccine simply as good practice, not specifically intended to protect against a new potential pandemic viral strain. At the same time, they identified the challenges of health workers who may be afraid to come to work, limited supplies of PPE, limited finances for procuring or sharing PPE, and concerns about misinterpretation of the role of seasonal influenza vaccine.

#### *Actions:*

- Implement protection measures for targeted healthcare workers (HCW), such as infection control practices (e.g., universal precautions), adequate PPE, antiviral drugs.
- Share PPE with the affected country; obtain PPE from the regional stockpile.
- Give seasonal flu vaccine to HCWs.
- Give financial incentive to HCWs in infected areas to come to work.
- Work collaboratively across MBDS countries to develop and implement healthcare workforce training.

#### *Challenges:*

- Limited nursing resources, PPE, training, experience with handling outbreaks.
  - Health staff may be afraid to come to work.
  - Financing PPE that is ultimately shared with other countries.
  - Transporting PPE to be shared.
  - Concerns about seasonal influenza vaccination - Cross immunity between a seasonal influenza strain and a potential pandemic strain should be confirmed before using the seasonal vaccine for purposes of controlling a potential pandemic virus; use of this vaccine should be based on WHO recommendations; not enough seasonal vaccine or budget to buy it.
- *Rapid containment of initial case cluster*: Participants suggested a number of containment actions for the cluster in one MBDS country. These are largely consistent with WHO guidelines, including case management in healthcare

facilities and community interventions focusing on movement restriction. At the same time, they identified the challenges of depleted supplies needed for containment efforts, accessing relevant stockpiles, and implementation of movement restriction in communities.

*Actions:*

- Implement appropriate case management – isolation and special nursing teams for influenza patients, hospital infection control, disinfection, dead body management.
- Treat cases and use prophylaxis for their contacts.
- Work together to investigate close contacts of suspected cases and to track the contacts of cases that have crossed borders.
- Conduct population-based temperature reporting at screening points.
- Keep borders open.
- Implement movement restrictions in the affected country (including quarantine).
- Ask for help from cross-border team for other containment efforts.

*Challenges:*

- Depletion of antiviral drug supplies
- Effectively accessing, mobilizing and using the MBDS stockpile - stockpile will take time to get to; sharing MBDS member stockpiles; sub-regional stockpile; expiration of stockpile materiel.
- Implementation of quarantine of large populations – need help from multiple ministries.

**Communications**

- Communications to the public: At this stage in the scenario, participants proposed more specific actions in terms of communications strategies, content and channels. As before, they identified challenges related to language, consistency and avoiding public panic.

*Actions:*

- Support risk message development for disease prevention and control.
- Educate the public – how to prevent disease, what to look for and when to seek care; encourage public to stay informed (use media especially radio, but also posters, newspapers).
- Hold an MBDS coordinators meeting to establish a communications plan.

*Challenges:*

- Language barriers across MBDS countries.
- Ensuring consistent messages.
- Developing messages that allow non-affected MBDS countries to report the situation to their populations in a way that does not cause panic in the affected country.
- Inability to manage and treat surges in patients to healthcare facilities.

### **Step 3: Early Pandemic**

Dr. Soe Lwin Nyein (Myanmar) chaired the morning session on Day 2, with Dr. Melinda Moore (RAND) as co-chair. During this session, participants discussed Step 3 and shared their thoughts and concerns about pandemic preparedness.

SCENARIO (April 2008)

Despite early containment efforts, over the course of three months, the novel strain of H5N1 begins to spread rapidly throughout Asia and parts of Europe with increased and sustained person-to-person transmission. On April 15, 2008 WHO officially declares the onset of an influenza pandemic. All MBDS countries have one or more regions with H5N1 disease clusters, although some MBDS countries have more extensive outbreaks than others. Yunnan, Laos, and Vietnam have had relatively few confirmed cases compared to Thailand, Cambodia, and Myanmar which all report attack rates of 15-20% and case fatality rates between 5-8%.

#### **Key Questions for discussion**

##### Surveillance and Information Sharing

- What are the key surveillance and information sharing needs across MBDS countries?
- Have priorities changed for surveillance and information sharing?

##### Disease Prevention and Control

- How will you coordinate disease prevention/control effort across MBDS countries?
- How important is consensus? Logistical and financial implications? Which sectors involved, what roles? Control measures in hospitals?
- How will you deal with medical surge capacity needs across MBDS countries?
- How important to cooperate across MBDS on this? How to handle patient flow across borders? Which sectors involved, and what roles?

##### Communications

- What are the communications priorities now?

- Key messages for government ministries? For the public? How to communicate? What actions desired from public? How to deal w/ the media?

### **Highlights of deliberations from the three groups**

For this third step, all three small groups discussed the questions above and again summarized their deliberations in terms of key actions and associated challenge related to relevant capabilities. The following highlights consolidate the three groups' presentations.

#### ***Surveillance and Information Sharing***

- *Sharing surveillance information across MBDS*: With documented cases now in all MBDS countries, participants suggested specific changes in surveillance and the need for more frequent information sharing. They considered the potential merits of an MBDS emergency coordination center, with multi-sector orientation, to share information across their countries. At the same time, they recognized the challenges of establishing a standard reporting format, coordinating with each other and beyond MBDS borders and the broader international community.

##### *Actions:*

- Change case definition (less laboratory confirmation), look for any changes in clinical/epidemiological presentation, monitor drug resistance, report cases by sector.
- Improve information sharing.
- Set standards for surveillance.
- Report morbidity and mortality and geographical areas infected.
- Decide on response measures to be taken.
- Establish an MBDS emergency coordination center to share information. Have "national disaster emergency management" groups communicate across countries. These groups are multi-sector in nature.

##### *Challenges:*

- Determining standard reporting format and items before pandemic occurs so it can be used
- Appropriately involving the Asia Disaster Preparedness Center and coordinating with countries outside of MBDS such as ASEAN+3.
- Deciding on the appropriate mechanism for communication (e.g., internet, video conference, etc.)
- Balancing timely reporting with "over-reporting"
- Effective drug resistance monitoring; existing drug resistance monitoring might be delayed.

#### ***Disease Prevention and Control***

- Workforce capacity and training: Participants specified the need for a health workforce, including surge personnel, that is trained before a pandemic arises, and they offered different approaches to achieve this. They also identified challenges associated with advance training, volunteers, and legal issues such as authorization of paramedical personnel to provide additional services.

*Actions:*

- Potentially call upon military medical personnel.
- Establish an MBDS joint volunteer pool.

*Challenges:*

- Finding ways to appropriately train staff to deal with surges in patients at medical facilities.
- Just-in-time training of volunteers.
- Coordination of government volunteers with NGO volunteers and coordination of volunteers across sectors.
- Possible challenge of mobilizing volunteers from other countries (who are already busy managing the situation in their own country). There is no Memorandum of Understanding (MoU) for sharing volunteers across governments.
- Ensuring essential staff will come to work.
- Legal issues – training/authorization for paramedical personnel to perform duties beyond their normal responsibilities; volunteer willingness to care for patients will affect quality of care – negotiate with, not force voluntary workers.

- Control measures during early pandemic: Participants discussed a number of specific actions appropriate for this stage of the scenario and areas for which MBDS may offer comparative advantage, e.g., focusing on cross-border areas. They also identified the difficult challenges of national versus MBDS-wide decision making, differing laws across MBDS countries, and how to best involve all relevant sectors, e.g., related to border control.

*Actions:*

- Close schools.
- Prevent people from crossing borders between affected/uninfected areas; let embassies move staff from one country to another.
- Consult with WHO for guidance.
- Call upon military to enforce domestic movement restrictions & provide care.
- Establish an MBDS joint border screen program.
- Focus on cross-border areas, which may be MBDS' area of comparative advantage (cf: WHO, ASEAN – entire country), e.g., stockpile.

*Challenges:*

- Determining the appropriate level to make decisions - country-specific or MBDS-wide - especially about border closures and moving embassy staffs.
  - Limited numbers of RRTs.
  - Coordination across multiple sectors for all activities, including border screening, quarantine.
  - Addressing conflicting policies across MBDS countries, e.g., related to quarantine, border screening (IHR should help to solve the latter).
  - Control along long borders without natural barriers
  - Border area case management (patients crossing borders) – need to be consistent with IHR regarding migrant patients, trade.
- Medical surge capacity: Participants identified a number of potential sources of surge medical capacity, both within and across countries, as well as challenges related to manpower, facilities, supplies, and multi-sector cooperation.

*Actions:*

- Each country will need to create surge capacity according to its resources; share information with one another about anything that works.
- Assess capacity of hospitals in the region - decide if allow people to cross borders to get care, take advantage of medical resources in military, call on voluntary/social/religious organizations to help, consider using schools as other hospitals, consider recruiting retirees.
- Draw upon sources of surge capacity such as military medical personnel, military hospitals, local schools used as makeshift hospitals (schools will be closed)
- Multi-sector central committee can help develop policy for managing surge; each ministry has its own hospital.
- Develop “field and satellite hospitals” across MBDS.

*Challenges:*

- Manpower (shortages, fear to come to work); drugs/supplies (PPE).
- Security for supply of drugs/antivirals (need to involve police, military, immigration, customs and transport now).
- No isolation capacity, including space, to cohort patients at regional level.
- Coordination across sectors (e.g., health, defense) and across countries; sharing resources across countries especially when involving the military.
- Finding ways to access NGO networks to establish and adequately staff field hospitals (especially with medically trained individuals).

**Communications**

- Communications among MBDS governments: At this stage in the scenario, with case clusters in all MBDS countries, participants continued to see a need for an MBDS-wide communications center, or some alternative mechanism that could provide daily information across MBDS governments. They suggested that designated MBDS focal points be used for cross-country communications. They also recognized the challenges associated with coordination of country focal points and compromised infrastructure (e.g., power, communications lines), with the implications for involving these government sectors.

*Actions:*

- Maintain the MBDS emergency communications center.
- Use an MBDS focal point for cross-country communications.
- Communicate daily, using either regional MBDS communication center or another MBDS mechanism, provide information to governments which will in turn use their existing communication lines.
- Communicate frequently via website, communications via Ministry of Foreign Affairs or embassies, communicate via central multi-sector (also coordinates media communications).

*Challenges:*

- Communication when the power or internet is down; need satellite phones to communicate—also may need cell phone networks—need to engage telecommunication sector (to provide free sim cards) now; getting sectors to communicate regionally; decide on priority; MBDS regional office welcome central communication point?
- Keeping lines of communication across countries open and avoiding regional conflicts.
- Risk of confusing information from different sources - coordination between IHR & MBDS focal points; access of each MBDS country to other countries' websites and language barriers.

- Communications to the public: As a pandemic spreads across MBDS, participants suggested approaches, messages and channels for public communications. They also identified the continuing, even aggravated, challenges of maintaining public calm, government transparency, and critical infrastructure under such circumstances.

*Actions:*

- Determine key messages and materials ahead of time to change behaviors; select priority behaviors you have to change.
- Provide reliable and updated information through multiple channels (radio, TV, posters, phone hotlines, and public access websites); content: situation updates, government announcements about control measures, instructions

(self-protection, where/when to seek care, how to care for ill family members).

- Use voluntary/social/religious organizations that have connections to the public to help spread messages; message to the public: Stay at home!
- Convene MBDS coordinators meeting to discuss information to provide to the public about crossing borders and seeking care in other countries.

*Challenges:*

- Difficult to normalize day-to-day life if people are isolated.
- Avoiding public panic; involving multiple sectors in risk communication messages.
- Government transparency (e.g., desire to protect tourism industry).
- Ensuring accuracy of information.
- Maintenance of communications and other critical infrastructure.

## **Participant Thoughts and Concerns**

At the beginning of Day 2, all participants and observers were asked to cite their most important concern regarding pandemic influenza preparedness. Below is a summary of their responses, grouped by topic area.

### *Surveillance and Information Sharing*

- Border area screening is a great challenge because of the long borders and difficult terrains; cannot control local people's movements.
- Limitations in rapid diagnostic testing and timely laboratory confirmation.
- Case finding and reporting is challenging, especially in remote and mountainous areas where transportation is difficult.
- Need to improve screening technology so that surveillance is more effective for larger proportion of the population and more feasible in remote areas.
- Information sharing and control measures in early stages are very important.
- It will be difficult to maintain surveillance when outbreaks are extensive.

### *Disease Prevention and Control*

- Need to help people (the general public) prepare for PI.
- Need to have a plan for everybody to follow; need to inform people and partners of the rationale behind what strategies and when to implement them.
- People lack knowledge about PI; need to provide information to them and train government employees in non-health sectors.
- Vaccine and Tamiflu policy: need to develop guidelines to provide vaccine in manner that high-risk groups like HCWs get priority.

- When AI/PI comes, it would spread very fast while human and material resources are limited. It is important to have vaccine available before PI occurs.
- Need practical prevention and protection measures that are easy to implement.
- Assess the potential value of traditional medicine and share this knowledge among MBDS countries.
- Need to focus on development of vaccine and medicine.
- Need to emphasize education for the public.
- Vaccine is never enough. Self-protection is free and is the most important.
- Need to contain bird flu at source or at site.
- People need to keep themselves healthy, to better resist infection.
- Mitigating the human-to-human spread of disease.
- Controlling human contact, and supplying enough PPE for self-protection.
- Human resources will go down while number of patients will go up.
- Need to prepare and strengthen morale among HCWs.

### Communications

- Focus on communication with students so that they can protect themselves and communicate with their family about prevention and self-protection.
- Timely communication and effective information sharing among MBDS countries.
- Giving people the right messages at the right time.
- Getting correct information to keep tourists informed properly.
- What key messages need to be repeatedly delivered to the public and sent to the international community during evolving stages before PI occurs.
- Communicating effectively with each other from our respective countries, especially during an emergency situation.

### Other Areas

- PI preparedness needs a holistic approach.
- Having enough resources to carry out preparedness plan.
- No country alone can prepare for PI effectively and we need to strengthen the cooperation in disease surveillance and control among and beyond MBDS countries.
- Need to prepare our best and work together, but the concern is how we can stand together when PI comes. When facing a life and death situation, it would be difficult for people to continue behaving unselfishly.

- PI is new to everybody. Need more training and provision of resources to prepare for it.
- There are many broad-ranging issues discussed at this TTX, and we need to bring them home to discuss, plan, and implement accordingly.
- MBDS countries are in different economic levels, but PI is borderless; therefore, MBDS countries need to work together.
- Successful lessons in infectious diseases control should be learned, shared, and applied to the next generation of emerging diseases.
- Spread of virus can lead to regional conflict and subsequently international conflict. Hopefully we can to promote a spirit of international cooperation.
- Learning from SARS experience, the impact of PI can be on anything. If PI is to occur with human-to-human cases, we may not be able to implement any cooperation because of the panic. International organizations may evacuate all of their staff, and unaffected countries may not be able to send personnel to infected countries. Regional collaboration is important in the early stages, but we need to focus on building national capacity to respond to PI at late stages.
- Not only government sectors but also non-government organizations and the private sector need to be prepared for PI. Public utility companies like water supply and food services would need to keep functioning, but emergency work plans like working from home and remote communication need to be in place.
- Each country needs to have and update their national preparedness plan.
- Need to learn and apply crisis management from other disasters to PI.
- Need to mechanism to share resources and act responsibly.
- Maintaining public calm, controlling people’s movement, and maintaining public trust in government operation.
- Mitigating PI impact and minimizing mortality.

#### **Step 4: Capabilities-Based Planning**

The small groups summarized their deliberations during Steps 1-3 in terms of actions and associated challenges related to 12 key capability areas. The table below lists them, by topic area.

<b>Surveillance and Information Sharing</b>	<b>Disease Prevention and Control</b>	<b>Communications</b>
1. Early warning, especially from rural and border areas	6. Workforce capacity and training	11. Communications among MBDS governments

2. Enhanced surveillance as human-to-human disease emerges and spreads	7. Health workforce protection	12. Communications to the public
3. Sharing surveillance information across MBDS	8. Rapid containment of initial case cluster	
4. Joint investigation	9. Control measures during early pandemic	
5. Laboratory support	10. Medical surge capacity	

Dr. Nguyen Dang Vung (Vietnam) chaired the Day 2 afternoon session that focused on Step 4 discussions; Dr. Melinda Moore (RAND) served as co-chair. In each of the 12 key capability areas above, the small groups had presented a number of potential actions. During Step 4, one proposed action within each key capability area was selected for illustrative purposes, i.e., to illustrate a more thorough planning process across this range of capabilities. While the plenary format and time available were not conducive to deliberative and definitive planning, the following sections reflect the ideas that emerged during the exercise and were synthesized during this final exercise session.

### ***Surveillance and Information Sharing***

#### 1. Early warning, especially from rural and border areas

- ***Selected capability:*** Internet-based system for regional early warning communications across MBDS countries
- ***Action:*** MBDS Coordinating Office - data manager and auditor (also at country level); assess current technology capacities and needs (e.g., hardware, technical support); may not be nationwide; strengthen current MBDS communications network (e.g., standardize language, format)
- ***Challenge:*** Financial limitations; identify/clarify responsible party; language barriers across countries
- ***How to overcome challenge:*** Financial support; use GIS, e.g., Google
- ***Responsible party:*** MBDS countries and Coordinating Office. Other sectors: Ministries of Defense (military health workers), Communications (media), Tourism, Finance (budget), etc.
- ***Timeline:*** Assessment across countries – by year end 2007
- ***Resources needed:*** Financial and technical

#### 2. Enhanced surveillance as human-to-human disease emerges and spreads

- *Selected capability*: Border/entry screening - Enhanced surveillance at borders & points of entry (by air, train, bus) and follow-up of passengers after entry
- *Action*: Strengthen border health quarantine at check points; increase clinics in border areas (public or private) – making it convenient for people crossing borders and helping with early detection
- *Challenge*: Collaboration across MBDS; limited staff numbers; long borders – difficult to control along long border (including unofficial entry points); large number of people crossing borders
- *How to overcome challenge*: Create or strengthen cross-border activities; use existing cross-border committees; consult with WHO; increase official border entry points (to reduce unofficial ones); build on lessons from border surveillance for other diseases; use current cross-border teams
- *Responsible party*: Health; non-health sectors – police, border control
- *Timeline*: Mid-June 2007 (IHR into effect, next MBDS program phase); start now!
- *Resources needed*: Health workers, financing, material resources

### 3. Sharing surveillance information across MBDS

- *Selected capability*: Internet-based system for sharing surveillance information across MBDS countries
- *NOTE*: Planning process is identical to that of Internet-based system for regional early warning communications

### 4. Joint investigation

- *Selected capability*: Rapid response teams in each country to respond jointly to the outbreak, especially along the border and as requested by another country
- *Action*: Practice cross-border investigation, e.g., non-influenza outbreak (even small) – dengue, typhoid, or simulation exercise at cross-border areas (especially if no actual outbreaks to investigate); all countries to establish RRT for cross-border areas; develop cross-border plan/protocol for each country pair
- *Challenge*: Border crossing for investigation teams; how to take action based on investigation; language barriers; standard cross-border guidelines; different clinical and laboratory protocols on different sides of borders; specimen transport
- *How to overcome challenge*: MBDS to help facilitate easy border crossing; standardize drugs and lab test kits; rapid tests on site
- *Responsible party*: health (affected country – lead); non-health sectors – immigration, customs (e.g., transport of materials across borders)
- *Timeline*: 1 year – at least one practice joint investigation activity; for plan/protocol development for each country pair

- *Resources needed*: Investigation kits for cross-border teams; technical assistance from other MBDS countries & bilateral, multilateral partners; sustainable financial support

#### 5. Laboratory support

- *Selected capability*: Laboratory capacity
- *Action*: Strengthen laboratory capacity at cross-border areas; assess laboratory capacity within and across countries (especially for priority diseases, including influenza); train laboratory workforce
- *Challenge*: Different capacity levels across countries; lab confirmation – logistics, delays; determining how to cooperate across MBDS countries; receiving timely support
- *How to overcome challenge*: Develop capacity first for common diseases and identify capable labs for diagnosing these
- *Responsible party*: MBDS Coordinating Office Health; non-health - ??
- *Timeline*: Assess lab capacity – during the early stage of next MBDS planning; training - align with IHR requirements, or sooner for AI/PI
- *Resources needed*: Equipment, trained workforce

### ***Disease Prevention and Control***

#### 6. Workforce capacity and training

- *Selected capability*: Trained HCW at all levels in advance of pandemic situation.
- *Action*: Develop plan and joint training of HCW on both sides of border areas (or jointly plan curriculum for training on each side of border). Drills/exercises at border areas. Need to train full range of health manpower, not just border areas.
- *Challenge*: Language barriers; curriculum development due to different levels of knowledge, different policies on each side
- *How to overcome challenge*: Interpreters; develop standardized curriculum focusing at first on specific topics – AI/PI; modify current central training protocols for cross-border use; use budgets allocated for translation of training materials; consult WHO materials (or assure consistency w/ WHO guidelines)
- *Responsible party*: Health (central, provincial, local, cross-border); non-health sectors - ??
- *Timeline*: 6-12 months to develop curriculum
- *Resources needed*: technical (e.g., from WHO, FAO); financial

#### 7. Health workforce protection

- *Selected capability*: Adequate protection measures for targeted HCW, e.g., universal precautions and HCW education
- *Action*: Provide training for HCW (how to protect themselves) and distribute sufficient PPE and other protective materials (antiviral drugs; routine seasonal flu vaccine; pandemic vaccine for HCW at pandemic epicenter)
- *Challenge*: Limited PPE & disinfectants for HCW; language barriers (even dialects within countries); limited availability of vaccines (limited, delayed) and antiviral drugs (limited supplies worldwide)
- *How to overcome challenge*: Request materials from WHO and other stockpiles; MBDS to help coordinate stockpile acquisition with other donor organizations especially at border areas; ensure appropriate mechanisms are in place to receive regional or global stockpiles; use national language for training
- *Responsible party*: Health; non-health sectors – national committees for AI/PI
- *Timeline*: 1 year (depends on availability of vaccine)
- *Resources needed*: Financial, vaccines

#### 8. Rapid containment of initial case cluster

- *Selected capability*: System for isolation, quarantine or other movement restrictions (consistent with IHR); keeping borders open; antiviral drugs for cases; help from other MBDS countries, as needed, for containment efforts
- *Action*: Convene joint meeting to begin planning for rapid containment measures. Establish isolation facilities (e.g., field hospital), especially along border areas. Assess needs from stockpile. Test/exercise WHO/ASEAN stockpile procedures. Develop procedures for full range of non-pharmaceutical measures, including hospital infection control. Protocols for infection control and case management. Develop protocols for managing dead bodies. Plan risk communications – public.
- *Challenge*: Shortage of facilities and HCW to run isolation facilities
- *How to overcome challenge*: ASEAN regional stockpile (in Singapore) and protocol for distribution; national stockpiles
- *Responsible party*: Health; non-health sectors – Finance, Defense and police (enforce isolation)
- *Timeline*: 6-12 months
- *Resources needed*: Financial, equipment

#### 9. Control measures during early pandemic

- *Selected capability*: Preparation in advance for pandemic control

- *Action*: Modify or intensify existing plans; establish and activate provincial level committees to establish policy for pandemic control. (No regional plan mentioned)
- *Challenge*: Border control; regional coordination
- *How to overcome challenge*: Use standard protocols across countries (e.g., WHO global influenza preparedness plan, WHO pandemic influenza protocol for rapid response and containment)
- *Responsible party*: Not discussed
- *Timeline*: Not discussed
- *Resources needed*: Not discussed

#### 10. Medical surge capacity

- *Selected capability*: Adequate medical surge capacity, e.g., military medical personnel, medical retirees; military and other sector-specific hospitals, local schools used as makeshift hospitals
- *Action*: Consider minimum requirements for surge across MBDS, conduct assessment across countries. Conduct training for military medical personnel (as surge personnel). Exercise at provincial, national, inter-country levels. Develop recruitment plans, e.g., volunteer retired personnel
- *Challenge*: Regionality. Willingness of medical personnel to participate in exercises. Beds and medical equipment/supplies for non-hospital surge facilities, e.g., schools. Commitment from different sectors.
- *How to overcome challenge*: Agreements to provide help from other countries. Use military personnel and hospitals.
- *Responsible party*: Health; non-health sectors – Defense (surge personnel); WHO - guidance
- *Timeline*: Establish minimum requirements – 12 months
- *Resources needed*: Coordination across donor agencies.

### **Communications**

#### 11. Communications among MBDS governments

- *Selected capability*: Telephone hotlines, satellite phones, uniform reporting system, ability for every country to communicate by phone at any time to designated representative in each country
- *Action*: Establish telephone hotline system across MBDS countries (e.g., mobile phones). Identify focal point in each country.

- Challenge: Technology, telephone coverage. Authorization to release information to other countries. Existing MBDS MoU may not be specific enough to authorize sharing of information across MBDS.
- How to overcome challenge: Designate authorized spokesperson; also via national AI/PI committee – can authorize others in other sectors. Renew and revise MoU among countries to authorize sharing information across MBDS countries (e.g., signed by MoH) – longer time frame, consistent with IHR.
- Responsible party: MBDS Coordinating Committee, MoH, MBDS Coordinating Office
- Timeline: Revise MoU – by September 2007 (or even earlier)
- Resources needed: Financial

## 12. Communications to the public

- Selected capability: Timely and responsible release of clear, accurate information via the media
- Action: Plan and prepare risk communication messages in advance (to be modified for real situation); select credible (MoH) spokesperson; conduct exercises with the media; determine key behaviors to prevent transmission and key behaviors to help manage cases
- Challenge: Avoid public panic; Reaching target audiences; Language barriers among minority/vulnerable populations.
- How to overcome challenge: Heavy public communications in advance to help prevent public panic.
- Responsible party: Health; non-health sectors – national committees, Ministry of Information; WHO, UNICEF
- Timeline: Plan risk communication messages – 6+ months
- Resources needed: Technical guidance on risk communications (UNICEF), case reporting (WHO)

## Post-TTX Meeting

The post-exercise meeting was held in the morning of March 15, 2006 with almost the same group of participants who had attended the pre-TTX orientation (see Participant List for more information). Chaired by Dr. Kumnuan Ungchusak (Thailand), the meeting was aimed to get more direct feedback on the exercise and continue discussion about future MBDS planning. Highlights from this meeting are summarized below.

### Exercise Feedback – What worked well

- Six national TTXs and the regional TTX were conducted in less than one year. This demonstrates the strong commitment of MBDS countries and their partners to collaborate around issues of mutual concern such as pandemic preparedness.
- The desired outputs were achieved: a) identified priorities for revision of national/provincial and sector preparedness plans; b) steps toward an MBDS plan of action to help improve regional preparedness; and c) description of resources needed to undertake these actions and to guide development partner investments.
- Overall, the TTX was a success. It brought together a large number of participants from different countries, sectors, and organizations. Some sectors did not have a preparedness plan, thus learning from this TTX can help them plan within their sectors.
- The TTX design in general and selection of scenarios and topic areas in particular were highly relevant. Steps 1-3 were useful. Participants from all countries could easily exchange views. Many interesting ideas about cross-border work were raised.
- Participants appreciated the idea of identifying the challenges for the proposed actions. It helped the participants think more carefully about the underlying complexities of many issues related to PI.
- Multi-sector engagement in both planning and exercises is critical. While ambitious, it was therefore wise to design this not only as a multi-country but also a multi-sector exercise. There are, however, opportunities to further strengthen discussion on non-health sector issues.

### Exercise Feedback – Opportunities for improvement

- Some non-health participants did not seem to participate effectively as they were not involved in MBDS work to begin with and discussion topics seemed to be oriented mostly toward health.
- Step 4, aimed at developing elements of an initial action plan, is an important goal, but participation was low. Planning requires a longer deliberative process than permitted by the time and plenary format at the exercise. In future exercises, perhaps country delegations could discuss regional planning among themselves before being

able to discuss such planning with the larger group. Also, discussion by a smaller group of stakeholders following the exercise may offer better opportunities for more deliberative planning.

- In order to make real commitments, each country would need to hold several meetings on its own before convening collectively to discuss MBDS sub-regional planning.

### **Future MBDS Activities**

- The 5-year MBDS MoU signed in Kunming in November 2001 expired in October 2006, but the 3-year cross-border project was extended to December 2007. MBDS members need to speed up the planning process to revise and extend the MoU and prepare a new project proposal for the next phase of programming.
- Need to look carefully at the list of the proposed actions from the TTX to select those that are most relevant.
- Need to decide whether or not to conduct more TTXs, and if so, what kind and where. TTX conducted at border sites can be useful. Note that drills, i.e., operational simulations, are useful only after training, tabletop simulations and other preparatory work have taken place.
- Need to determine future cross-border activities and assure that appropriate legal frameworks are in place to facilitate such work.
- When formulating inter-country agreements, determine whether it is most appropriate to focus solely on health or enlarge the scope to encompass other sectors, e.g., agriculture.
- Every MBDS country has developed its national plan. It is important that each country revises, tests, and implements its plan and considers ways to collaborate regionally.
- Different countries are in different stages of preparedness and have different needs (for example, some sources that support other MBDS countries do not support Myanmar).
- Three aspects to consider when planning to improve regional preparedness and capacity to respond: a) Joint activities need to be an integrated part of the national plan and get approval from the central government, b) resources are needed to support joint activities, and c) potential activities must be discussed and prioritized because each country may have different needs.
- Some MBDS countries face serious shortages of healthcare facilities. For instance, in Lao PDR, upgrading hospital capacity remains among the highest priorities. There are isolation squads, but equipment is virtually non-existent. Providing adequate medical treatment is also a great challenge. Planning for future activities needs to take into account the different levels of infrastructure and capacity across member countries.

- The current surveillance system is weak. Planning for cross-border collaboration can focus on groups of countries that share borders, e.g., Vietnam-Laos-Cambodia, China-Laos-Vietnam, China-Laos-Myanmar, Laos-Cambodia-Thailand, Laos-Thailand-Myanmar. There is a great volume of unofficial cross-border movement, making implementation of surveillance in such areas a great challenge. We need to consider training for HCWs in border areas, provide information to local people, and set up feedback mechanisms to collect information from them.
- Need to think further about non-pharmacological interventions – what they should be, and how to implement them, both in countries and across borders.
- Hold exchange meetings between countries to share experience. Meetings can be arranged for personnel of the same ministries/departments from different countries or for multi-sector dialogue.

### **Comments from MBDS Partner Organizations**

- Partner organizations have seen encouraging developments from MBDS collaboration and welcome the opportunity to support future MBDS programming.
- Representative from Kenan institute informed the participants a series of their supported activities related to AI/PI.
- UNICEF is ready to continue providing technical assistance to governments in the area of risk communication to support the development of national risk communication strategies as well as precise and timely messages for public information around avian and pandemic influenza, in collaboration with UN technical partners. While UNICEF usually operates at the individual country level, the TTX has provided the unique opportunity to consider how UNICEF can support a future MBDS joint communication initiative.
- CDC has staff on site and also sends experts to countries to help with technical issues. The opportunity of participating in this TTX was extremely useful for CDC to see the challenges of implementing a regional TTX and improving preparedness in this region.
- RAND also looks forward to opportunities to continue its collaboration with MBDS countries.
- Google can provide technical support for internet-based communication. It can help develop a secure private communication channel among MBDS network through hand-held mobile phones or computers. Google is ready to sign MoU with MBDS countries to provide each country a mobile communications system, called BGAN (Broadband Global Area Network) that can transmit broadband wireless voice and data communications almost anywhere on the earth's surface. The system is a form of Satellite internet and its terminals are capable of supporting multiple users. The electrical power may come from utility lines, batteries, or generators. Connection

speeds will be up to approximately 500 Kbps, depending on the type of terminal. It is a handy equipment to keep the communication in remote areas where there is no power, telephone and internet connection. The package includes training for local staff and limited data transfer. Google is interested in supporting the Command Coordination Center and establishing a long-term relationship with MBDS countries.



## Appendix 1: List of participants and observers

MBDS Countries
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### CAMBODIA

1. Dr. Sok Touch, Director of CDC Department, Ministry of Health<sup>+,++</sup>
2. Dr. Ly Sovann, Deputy Director CDC Department, Ministry of Health<sup>+,++</sup> **Small group leader**
3. Dr. Seng Heng, *Chief of Disease Surveillance Bureau*
4. Dr. Chan Vuthy, Deputy of *Chief of Disease Surveillance Bureau*
5. Mr. Bou Sarin, *Rapid Response Team, Siem Reap Province*
6. Mr. Mao Sambo, *Rapid Response Team, Siem Reap Province*
7. Dr. Eap BunLoeum, *Rapid Response Team, Siem Reap Province*
8. Mr. Eam Pun, *Rapid Response Team, Siem Reap Province*
9. Mr. Penh Choung, *Rapid Response Team, CDC/MoH*
10. Mr. Ly Ratanak, Officer School Health Department, MoEYS.

### LAOS

1. Mr. Phonethavy Boutdara, Ministry of Foreign Affairs
2. Dr. Phachone Bounma, Department of Livestock & Fishery, Ministry of Agriculture & Forestry
3. Mr. Vongdala Khamhoung, Department of Immigration, Ministry of Security
4. Mr. Khanngoun Khamvongsa, Ministry of Communication and Transport
5. Mr. Saly Phimphinith, Tourism
6. Mr. Pinpathana Phanthamaly, Deputy Director General, Department of Mass Media, Ministry of Information & Culture
7. Mr. Suntisouk Phanhthamalay, Technical Officer, Division of International Law, Department of Law, Ministry of Justice.
8. Dr. Nyphonh Chanthakoumane, Technical Officer, Department of Hygiene & Prevention, Ministry of Health<sup>+,++</sup> **Small group leader**
9. Dr. Panom Phongmany, Deputy Director, Savannakhet Province

### MYANMAR

1. Dr. Soe Lwin Nyein, Deputy Director, Department of Health (DOH) **Small group leader**<sup>+,++</sup>
2. Ms. Daw Than Than Yee, Deputy Director, Office of the Attorney General
3. Dr. Win Naing, Epidemiologist, Central Epidemiological Unit, DOH
4. Dr. Kyaw San, Director, Animal Husbandry and Veterinary Department, Ministry of Livestock and Fisheries
5. Mr. U Kyaw Than Tun, Assistant Director, Information and Public Relations Department (Mandalay), Ministry of Information
6. Dr. Tin Tin, Medical Officer, Central Epidemiological Unit, DOH
7. Dr. Htar Htar Lin, Assistant Epidemiologist, Central Epidemiological Unit, DOH
8. Mr. Kyaw Win, Director, Custom Department, Ministry of Finance and Revenue.

## THAILAND

1. Dr. Thawat Suntrajan Director General, Department of Disease Control (CDC), Ministry of Public Health (MOPH)
2. Dr. Kumnuan Ungchusak, Director, Bureau of Epidemiology, CDC, MOPH  
**Small group leader**<sup>++</sup>
3. Dr. Praphasri Jongsuksontigul, Director, Influenza Program Office CDC, MOPH
4. Dr. Preecha Prempre, Chief of Epidemiology, Communicable Disease Section, Bureau of Epidemiology, CDC, MOPH **Small group leader**<sup>+,++</sup>
5. Dr. Thitipong Yingyong, Bureau of Epidemiology, CDC, MOPH
6. Mr. Supachai Saenyudtitham, Policy and Planning Analysis, Department of Disaster Prevention and Mitigation, Ministry of Interior
7. Dr. Orpan Pasavorakul, Senior Veterinary Office, Bureau of disease control and Veterinary services
8. Mr. Pruthipong Poonthrigobol, First Secretary, Department of International Economic Affairs
9. Mrs. Anchana Parsartvit, International Communicable Disease Section, Bureau of General Communicable Disease
10. Dr. Prapas Veerapol, Deputy Director of Mukdahan Provincial Health
11. Ms. Amaraporn Rathavinij, Information Officer, Foreign Office, Public Relations Department
12. Ms. Veena Bhakdisirivichai, Public Health Officer, Influenza Program Office CDC, MOPH, Thailand
13. Dr. Ajchara Vararuk, Public Health Officer, Influenza Program Office CDC, MOPH, Thailand

## VIETNAM

1. Dr. Nguyen Dang Vung, Senior Program Officer, Health Policy Unit, Department Of Planning & Finance, Ministry of Health (MoH) **Small group leader**<sup>+,++</sup>
2. Mr. Luu Hoan Chuan, Senior officer, Planning and Finance Department, MoH
3. Mr. Nguyen Van Doan, General Department of Health, Ministry of Defense
4. Mr. Bui Khanh Toan, Expert, General Department of Preventive Medicine<sup>+</sup>
5. Mr. Nguyen Khac Hien, Director, Hatay Province health service
6. Ngo Xuan Dieu, Director, Provincial hospital, Thai Nguyen Province
7. Mr. Le Lu, Department of Transportation, Ministry of Tourism
8. Mr. Do Huu Dung, General Department of Animal, Ministry of Agriculture & Rural Development
9. Ms. Nguyen Lan Huong, Department of Health Personnel, MoH
10. Ms. Nguyen Thi Quynh Phuong, Ministry of Finance

## YUNNAN-CHINA

1. Mr. Duan Hong, Deputy Director, Yunnan Health Bureau (YHB)
2. Ms. Li He, Deputy Director, Department of Public Health Emergency Preparedness and Response, YHB
3. Ms. Zhang Rong, Senior Staff, Department of Public Health Emergency Preparedness and Response, YHB

4. Mr. Jiang He, Deputy Director , Yunnan Import and Export Inspection and Quarantine
5. Mr. Yang Xuebin, Director, Department of Health Inspection, Yunnan Import and Export Inspection and Quarantine
6. Dr. Ren Lijuan, Deputy Director, Yunnan Centers for Disease Control and Prevention (CDC)
7. Dr. Chang Litao, Director, Department of Acute Infectious Disease, Yunnan CDC
8. Dr. Qin Mingfang, Deputy Director, Department of Public Health Emergency Preparedness and Response, Yunnan CDC<sup>+,++</sup>
9. Dr. Chun Cheng, MBDS Associate coordinator<sup>+,++</sup>

All Others
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#### UN

1. Dr. Brigitte Beyer, UN Country Team AHI focal point in LaoPDR, Office for UN Resident Coordinator, LaoPDR<sup>+,++</sup>
2. Ms. Barbara Orlandini, UN Country Team AHI focal point in Thailand, Office for UN Resident Coordinator, Thailand<sup>+</sup>
3. Ms. Mary Henderson, Regional Avian and Pandemic Influenza Focal Point, UNICEF East Asia and the Pacific Regional Office<sup>+,++</sup>
4. Dr. Inge Neu, Senior Planning Officer, UNOCHA Regional Office for Asia & Pacific, Bangkok, Thailand<sup>+,++</sup>
5. Dr. Koji Nabae, Avian and Human Influenza Regional Coordinating Officer, United Nations System Influenza Coordination (UNSIC) Asia-Pacific Regional Hub<sup>+,++</sup>

#### WHO

1. Dr. James Atkinson, Global Influenza Programme, WHO Geneva
2. Dr. Simon Firestone, Epidemiologist, WHO Cambodia office<sup>+,++</sup>

#### US-CDC

1. Mr. Bill Brady, Cambodia<sup>+,++</sup>
2. Dr. Nicole Smith, Atlanta<sup>++</sup>

#### ROCKEFELLER FOUNDATION

1. Dr. Katherine Bond, Associate Director, Health Equity, Regional Office, Bangkok<sup>+,++</sup>

#### GOOGLE (ORGANIZATION, FOUNDATION)

1. Dr. Mark Smolinski<sup>+,++</sup>
2. Matt Waddell<sup>+,++</sup>

#### INTERNATIONAL NETWORKED SYSTEM FOR TOTAL EARLY DISEASE DETECTION (INSTEDD)

1. Vic Gundotra<sup>+,++</sup>
2. Depak Basu<sup>+,++</sup>

KENAN INSTITUTE

1. Mr. James Hopkins, Regional Public Health Program Manager<sup>++</sup>
2. Ms. Ratikorn Kuptarat, Avian Influenza Coordinator<sup>++</sup>

MEKONG INSTITUTE

1. Ms. Keoamphone Souvannaphoum, Program Coordinator, Regional Policies Formulating meetings Project, Mekong Institute Foundation

NTI

1. Dr. Terence Taylor<sup>+,++</sup>
2. Ms. Brooke Anderson<sup>+</sup>

RAND CORPORATION

1. Dr. Melinda Moore<sup>+,++</sup>
2. Dr. Nicole Lurie<sup>+,++</sup>
3. Dr. David Dausey<sup>+,++</sup>
4. Mr. Khoa Truong<sup>+,++</sup>

MBDS OFFICE

1. Dr. Moe Ko Oo, MBDS Coordinator, c/o CDC, MOPH, Thailand<sup>+,++</sup>
2. Ms. Nattanun Siridiraseth, c/o CDC, MOPH, Thailand<sup>+,++</sup>
3. Dr. Teerasak, Bangkok<sup>+,++</sup>

Notes: <sup>+</sup> Attended the pre-TTX orientation meeting; <sup>++</sup> Attended the post-TTX meeting

## Appendix 2: Participant evaluation

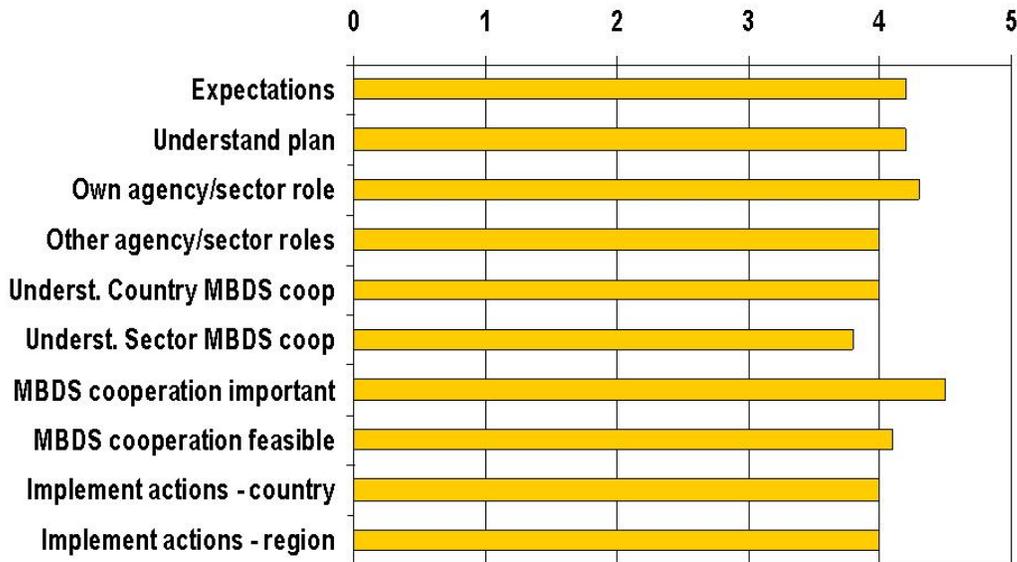
All participants and observers were asked to complete a pre-exercise evaluation on the first morning and a post-exercise evaluation at the end of the second day. A total of 43 participants and 3 observers completed the first evaluation; 38 participants and 3 observers completed the second one. The average scores on key items (on a scale from 0 to 5) are shown in the figures below. In general, participants came to the exercise with high expectations; they reported good understanding of their national preparedness plans, their respective roles, and generally positive views about MBDS regional cooperation.

Based solely on these aggregate scores (presented below) we are unable to detect a statistically significant difference between the pre-exercise scores and the post exercise scores. A number of statistical issues limit our interpretation of this data. First, because in the pre-exercise evaluation most participants unexpectedly selected very high scores (e.g., 4 or 5 out of 5) the scale chosen left essentially no room for improvement when they completed their post-exercise evaluation. One possible way to address this limitation in future exercises is to choose a scale with more units (e.g., 1-10 instead of 1-5) to allow more variation in the scores.

Second, to protect confidentiality we did not collect any information to identify participants on the evaluation forms and therefore we were unable to assess changes in individual scores. Third, participation in the evaluation was not 100% and therefore it is not possible for us to know whether or not all of the individuals that filled out the pre-exercise evaluations were the same individuals that filled out the post exercise evaluations. To address these issues, future exercises may consider having participants select unique confidential ID numbers to put on the evaluation forms. Finally we are only aware of 3 observers that filled out evaluation forms and are therefore unable to analyze these data because of the small sample size. There is the possibility that some observers may have filled out evaluation forms identifying themselves as participants.

Qualitatively, participants and observers offered helpful comments about how they benefited from the exercise and offered a number of constructive ideas for improving future exercises. Many of these ideas surfaced during the post-exercise meeting on March 15 and are reflected in an earlier section of this report.

## MBDS Pre-Exercise Evaluation: Summary



## MBDS Post-Exercise Evaluation: Summary

