

Summary

After a meeting in Bangkok in February 1999, delegates from Ministries of Health in all six Mekong countries agreed to collaborate in disease and outbreak management through the MBDS Network. A Memorandum of Understanding (MOU) formalized this collaboration in 2001, marking the first such regional agreement and framework for collaboration across WHO regional office areas. A new MOU was recently signed on May 15, 2007, reinforcing the partnership.

The MBDS Network not only helps improve health outcomes and empowers health workers in the Mekong Region but it also provides a neutral mechanism for information-exchange and collaboration between countries that do not traditionally share information freely or work together easily.

Partners	Activities	Priority Diseases
<ul style="list-style-type: none"> • Kingdom of Cambodia • Yunnan Province, People's Republic of China • Lao PDR (Laos) • The Union of Myanmar • The Socialist Republic of Vietnam • The Kingdom of Thailand 	<ul style="list-style-type: none"> • Regular, cross-border information exchange • Joint outbreak investigation and response • Training of health personnel • Development and implementation of protocols • Disaster preparedness and response tabletop exercises 	<ul style="list-style-type: none"> • Avian flu • Cholera • Dengue fever (DF)/Dengue hemorrhagic fever (DHF)/Dengue shock syndrome (DSS) • Dysentery • Emerging infectious diseases (EID) • HIV/AIDS • Malaria • Measles • Pneumonia • SARS • Tuberculosis • Typhoid fever

Supporters

The Rockefeller Foundation and WHO provided initial support for the MBDS Network in 1999. Along with the Rockefeller Foundation, the Nuclear Threat Initiative's Global Health Security Initiative provided targeted support for pandemic preparedness exercises. The U.S. Centers for Disease Control and Prevention (CDC) supported the RAND Corporation's technical inputs to these exercises. Funding from the Rockefeller Foundation is expected to continue over the next three years. Participating countries' Ministries of Health have also expressed interest in contributing support for the Network.

Key Technology

MBDSNet is an open-source, Web-based application that serves as a data integration hub for the various surveillance systems used by the six participating MBDS countries. The website was developed after MBDS project coordinators and consultants traveled to each member country to review and collect information on the surveillance systems to ensure compatibility.

Data managers from each country submit surveillance data to their respective MBDS coordinator, who then collates the information within the regional database, making it available to other MBDS members. Each of the six participating countries has one information officer who is responsible for collecting, posting, and translating surveillance information. Currently, all data is posted in English. The next phase of work on the system will explore language translation software.

	MBDSNet
Core functions	<ol style="list-style-type: none"> 1. Collect and upload data files from the different country systems 2. Consolidate parse data and convert to XML for data exchange 3. Generate content for website publishing and data visualization through graphics
Content management	MBDSNet features a content management system to enable country administrators to post news and articles on the website.
System management	The MBDS project coordinator in each country is responsible for maintenance of the system.

Activities

MBDS countries have piloted an integrated approach to disease surveillance and response across borders through the following activities:

Regular, Cross-Border Information Exchange. Data from routine surveillance on priority diseases in each site are exchanged via e-mail or fax to national coordinators and the adjacent province's site coordinator using standard forms.¹ Reports of suspected outbreaks are also conveyed informally by phone. Information exchanges are carried out daily, weekly, monthly, or quarterly (depending on the disease) across border provinces. While country and site coordinators closely monitor these exchanges, the timely and relevant flow of information between surrounding communities, cross-border sites, and district and provincial levels remains a challenge. The details of diseases exchanged are illustrated by Table 1 in the Appendix.

Joint Outbreak Investigation and Response. After cross-border teams made up of health, customs, immigration, and border officials were established in 2006, three activities took place:

1. Joint dengue fever investigation between the Lao and Thai provincial sites, enabling officials to effectively stamp out the cross-border outbreak.
2. Joint typhoid investigation between the Lao and Vietnam provincial sites.

¹ The forms were developed through consensus by MBDS participants.

3. Joint avian influenza investigation of cases in humans, triggered by the discovery of an infected Lao citizen in Thailand. Within less than 24 hours of the initial report from the MBDS coordinator in Thailand to his counterpart in Laos, a team was dispatched from Thailand to Laos to support the Lao investigation.

Development and Implementation of Protocols. Regular meetings are held between the adjacent border teams to discuss standards for common forms.

Training of Healthcare Personnel. The joint Thai-U.S. CDC Field Epidemiology Program, Mahidol University, and SEAMEO-TropMed programs coordinate annual training for MBDS participants.² Participants are selected from central surveillance offices, border provinces, and other peripheral areas essential to a coordinated regional response. As a result of these efforts, participants have enhanced their skills in research, outbreak investigation, and communication, as well as established friendships and mutual trust with officers from adjacent provinces across borders. Progress in 2006 and 2007 includes:

- 45 health workers from the region received training in field epidemiology, disease surveillance, and response.
- An additional 42 workers can now apply skills in geographic information systems and other analytic techniques.
- An additional 23 health workers have undergone in-depth training in the social, political and economic aspects of border health.

People and Communities

The MBDS Network serves the region both by empowering health workers and by preventing the spread of disease throughout the general population. Each implementation site features a border health team of between five to seven public health workers, border control and immigration officers, and community members.

The MBDS Network demonstrates and supports mechanisms for multicountry collaboration and response at two levels: subregional, and provincial/cross-border. Four demonstration sites comprise cross-border collaboration, with Laos at the geographic center of the region (see Table 2 in Appendix). While neither Thailand and Vietnam nor Cambodia and China share common borders, they do share information, strategies, and experiences through the national-level MBDS coordination mechanisms.

Impact and Achievements

The MBDS Network has given birth to new relationships that have influenced the way health officials in the region interact with each other and how much information they share. Additionally, the policy impact of the MBDS in terms of strengthening country-to-country ties and transparency is evident by the increase in the collaborative nature of each new disease detection and response activity and the willingness of each Ministry of Health to help its counterparts build capacity through training.

A Policy Framework for Cross-Border Cooperation. During the 2003 SARS outbreak, the MBDS communications infrastructure and relationships between technical officers in each country's Ministry of Health proved essential to the subregion's coordinated response. The 2001 MBDS Memorandum of Understanding also served as a model for a

² Each country may send an equal number of participants for training.

subsequent collaborative agreement of ASEAN+3.³ Additionally, the Thai Ministry of Public Health hosted an MBDS-facilitated meeting of ASEAN+3 to jointly develop a training plan for disease surveillance.

A Proven Model for Collaboration, Growing in Strength and Capacity.

The Asian Development Bank has committed \$30 million to strengthen surveillance systems in Vietnam, Laos, and Cambodia. The MBDS Network has also facilitated broad regional discussions with regional and international bodies, such as WHO, ASEAN, and PACNET.⁴ Examples include:

- The MBDS Network helped establish a working relationship between WHO-SEARO and WPRO⁵ in Asia.
- The MBDS Network demonstrates systems that facilitate compliance with International Health Regulations through development and testing of guidelines and protocols with multiple sectors at border sites, including customs, immigration, transport, interior, and communities.
- Participating countries' Ministries of Health have allowed bilateral and multilateral investigations of disease outbreaks through MBDS. Efforts now focus on strengthening pandemic preparedness, with the regional simulation exercises that took place in Cambodia in March 2007 (described below).

Tabletop Exercises: Disaster Preparedness and Response

The MBDS Network has held in-country exercises for over six years; in March 2007 participating countries joined forces to test their preparedness as a region.⁶

Senior government officials from the MBDS Network countries, as well as representatives from the UN, UNICEF, UNSIC, and UNOCHA,⁷ participated in the first-ever simulation exercise designed to test responses to a pandemic influenza emergency in the region. Using techniques similar to those in modern war-gaming, the tabletop exercise was designed to foster cooperation within the region seen as the most likely source of a potentially devastating pandemic, such as avian flu. The exercise also helped identify gaps and weaknesses in systems for detecting, monitoring, tracking, and containing the spread of disease.

Throughout the planning process, health officials from neighboring MBDS countries were invited to participate in national exercises, resulting in a rich informal exchange of strategies and approaches to rapid detection, response, and communication later adopted by other countries.

This process—new to most countries—helped catalyze the testing of national pandemic preparedness and response plans in Cambodia, Laos, and Myanmar, and advanced ongoing

³ ASEAN countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. Plus-3 countries: China, Japan, and South Korea.

⁴ Pacific Disease Surveillance Network (PACNET).

⁵ Regional Office for South-East Asia (SEARO) and Regional Office for the Western Pacific Region (WPRO).

⁶ The RAND Corporation helped participants organize and conduct the exercises, which were sponsored by the Nuclear Threat Initiative's Global Health and Security Initiative with additional funding from the U.S. Centers for Disease Control and Prevention and the Rockefeller Foundation.

⁷ UN Children's Fund (UNICEF), UN System Influenza Coordinator (UNSIC), and UN Office for the Coordination of Humanitarian Assistance (UNOCHA).

efforts in China's Yunnan Province, Thailand, and Vietnam. The tabletop exercises also generated interest and support from additional sectors, including agriculture, foreign affairs, finance, defense, tourism, and trade. The ability of country delegations to bring in sectors other than health to participate in these tabletop exercises represents a significant change from only one year ago, when preparedness efforts largely took place within the domain of the health sector.

Challenges

<p>Language Barriers</p>	<p>Information Security</p>
<p>The MBDS Network operates across multiple languages in the region (Thai, Lao, Vietnamese, Burmese, and Mandarin), which presents practical communication challenges—not only between MBDS partner agencies, but also with local communities.</p>	<p>Because public health information can be very sensitive—especially if that information carries potential economic ramifications—security concerns remain a significant barrier to effective data integration across borders. However, the trust and relationships that have developed through the MBDS Network now allow for much greater sharing of information.</p>
<p>Silos Between Animal and Human Health</p>	<p>Infrastructure</p>
<p>MBDS participants recognize a need for closer communication between vertical programs within the health sector, and with other sectors such as veterinary public health. Integration of animal and human health sectors' surveillance and response is at a very early stage.</p>	<p>MBDS participants continue to grapple with limitations in human resources and weak health systems. An additional hurdle includes unreliable communications technologies and systems, especially in rural areas.</p>

Future Direction

Health Situation Analyses. The MBDS Network is in the process of conducting a health situation analysis for each of its implementation sites. The analyses will become baselines for further monitoring of health development in selected provinces. In addition, the analyses create an opportunity to collect in-depth information about the surveillance structure within each province, as well as other tools for outbreak response. MBDS coordinators will communicate results of the analyses to each implementing site so that participants can identify approaches for more effective cooperation.

Scale-Up Models. Effective collaborative cross-border and joint preparedness and planning models have become catalysts for scaled-up models in other border sites with the support of new donors. In order to support such efforts, MBDS participants will share lessons learned about effective regional collaboration with other regional surveillance networks in the Middle East and South Asia.

Network Expansion. The MBDS Network is evolving into a broader platform for regional coordination across sites and donors, and will continue to integrate additional technical aspects of data analysis, forecasting, and policy to assure the region's capacity to comply with International Health Regulations.

Appendix

Table 1: Diseases Exchanged for MBDS Cross-border Project

Project sites	Daily report	Weekly report	Monthly report	Quarterly report
Savannakhet (Laos), Mukdahan (Thailand), and Quang Tri (Vietnam)	Acute Flaccid Paralysis (AFP) SARS Cholera Avian flu	DF/DHF/DSS Typhoid fever Measles	Malaria Pneumonia	HIV/AIDS Tuberculosis
Champassak, (Laos) and Strung Treng (Cambodia)	AFP SARS Cholera Avian Flu	DF/DHF/DSS Measles AFP	Malaria	HIV/AIDS Tuberculosis
Luang Namtha (Laos) and Mengla County (China)	AFP Syndrome ARS Cholera Avian flu	DF/DHF/DSS Dysentery Pneumonia Measles EID	Malaria	HIV/AIDS Tuberculosis

Table 2: MBDS Demonstration Sites

Laos-China	Luang Namtha	Mengla County (Yunnan)
Laos-Cambodia	Champassak	Stung Treng
Laos-Thailand	Savannakhet	Mukdahan
Laos-Vietnam	Savannakhet	Quang Tri