

Emerging Infectious Diseases

1. Emerging infectious diseases are an important public health problem and could become a severe threat to national security, due to the fact that such diseases can cause huge losses in the health and life of the people, and in the national economy. The problem of emerging infectious diseases has increased in seriousness as can be seen in the spread of the new influenza H1N1 2009 which has affected tourism and economies worldwide. And if Thailand does not prepare itself to meet the problem with efficiency, once an epidemic of emerging infectious diseases occurs, it will certainly gravely affect the country's health, social, and economic security.

The situation and trends with regard to emerging infectious diseases

2. Emerging infectious diseases in humans. The World Health Organization has defined emerging infectious diseases as meaning new infectious diseases where reports of patients contracting such diseases have been increasing in the last 20 years. It is also defined to include emerging diseases originating in a particular area, or diseases that have just spread from one area to another. Included in the definition are infectious diseases which once had been successfully controlled by antibiotics but of late have been resistant to drugs. Examples of emerging infectious diseases are avian influenza H5N1, SARS, drug resistant tuberculosis, and influenza H1N1 2009. The World Health Organization has grouped emerging infectious diseases into 5 groups, as follows:

- (1) New infectious diseases such as SARS, avian influenza, influenza H1N1 2009, and encephalitis or Nipah virus.
- (2) Communicable diseases found in new geographical areas, which are diseases originating in one country and spreading to another, or to another continent such as the West Nile virus.
- (3) Re-emerging infectious diseases, that is, diseases that used to be an epidemic but had stopped spreading for a long time and now has re-emerged and spread as an infectious disease, for example, Chikungunya.
- (4) Antimicrobial resistant organisms such as drug resistant tuberculosis.
- (5) Deliberate use of bio-weapons, by using many types of germs and turning them into weapons such as anthrax and small pox.

3. Emerging infectious diseases transmitted from wild animals to humans

3.1 In the past three decades, 75% of emerging infectious diseases were communicable from animals to humans, especially from or connected with wild animals. For example, the avian influenza was connected with migrant birds and wild birds moving about as is their nature. Then there is the SARS epidemic that originated from civets.

3.2 In the present period, the world community is interested in the relationship between humans, animals and the environment, to be used in a particular approach to health management called management for ecological health which consists of taking into consideration the relationship between ecosystem health, human health, and animal health. The approach is integrative in nature, concerned with the relationship between the incidence of disease in humans, the incidence of disease in animals, and the changes in the nature of the environment, all which can convincingly explain the

growth in emerging infectious diseases. For example, the slashing and burning of forests due to economic imperatives has affected wild life habitat, resulting in domesticated animals and wild animals that had been infected transmitting their infections to one another more often. These in turn transmitted diseases to humans, thereby increasing the chances of becoming an emerging infectious disease epidemic. Moreover, changes in the world's environment have resulted in an increase in numbers of and movement of animals that are carriers of diseases due to international trade in animals. The consequence being a spread of new kinds of diseases into various geographical areas.

4. Emerging infectious diseases transmitted from domesticated animals to humans

4.1 In addition to wild animals, there are the phenomena of emerging infectious diseases transmitted from domesticated animals to humans, domesticated animals meaning those raised for consumption and as pets. For example, the discovery of mad cow disease (Bovine Spongiform Encephalopathy) in domesticated animals in England in 1986 was as a result of finding the protein called prion in animals, this protein being a cause of Alzheimer's disease (Variant Creutzfeldt-Jacob) in humans. The cause of mad cow disease was due to people using meat and entrails of artiodactyla or hoofed animals as cattle feed. Then, in 1999, encephalitis or Nipah virus was discovered for the first time in pigs in Malaysia, with fruit-eating bats found to be the carrier. The subsequent spread to humans resulted in loss of life and in great losses to the livestock industry, the economy and society there. In Thailand, there was the first avian influenza H5N1 due to domesticated poultry from January 2004 to August 2006, where 25 were reported ill and 17 died from the disease.

4.2 Due to the avian flu outbreak, countries and international organizations namely the World Health Organization (WHO), World Organization for Animal Health (OIE) and the Food and Agriculture Organization (FAO) have jointly set a new guideline for the management of avian flu and other emerging infectious diseases. This focuses on the importance of developing cooperation among international agencies which offer human and animal health services, in accordance with the principle of One World One Health, conceived during an international ministerial conference in New Delhi, India in 2007.

5. Integrated surveillance in humans and animals

5.1 Disease surveillance network for humans and animals

5.1.1 To make the emerging infectious diseases surveillance better and more efficient, able to detect an outbreak of disease quickly and in a timely manner, participation of all sectors is needed in order to initiate an integrated surveillance system for both humans and animals. This can be done by extension of the epidemiological surveillance system already in place to cover emerging infectious diseases. Also needed is the establishment of a national center to coordinate surveillance of emerging infectious diseases between the tasked agencies and networks such as the network of laboratories and of related agencies, in order to obtain up-to-date data and promptly notice unusual happenings or abnormalities that indicate occurrence of an emerging infectious disease. Therefore, there has to be coordination between the laboratory network and those agencies that treat and care patients so that any suspicious illnesses and deaths could be investigated and samples collected to find the causes of illness or death in a prompt and efficient manner. For

these efforts, it is necessary to develop staff capability in the various pertinent agencies.

5.1.2 The Department of Livestock is responsible for surveillance of diseases in domesticated animals, including being vigilant on emerging infectious diseases originating from animals that can be transmitted to humans. The Department is doing surveillance both on a reactive and proactive basis. Reactive by receiving data on disease occurrence from networks in the state sector such as those of Department of Livestock officials, the Ministry of Public Health, village headmen, village elders, and from networks in the private sector such as privately owned animal farms. The proactive element is by doing for example integrated style surveillance of avian influenza.

5.1.3 As for the work of the Ministry of Public Health, there is implementation of surveillance in medical care establishments in both the state and private sector networks, being done with the support of laboratories of the emerging infectious diseases network.

5.1.4 There is a limitation of resources, human and otherwise, in the agencies responsible for surveillance in animals and for monitoring emerging infectious diseases. Moreover, such diseases are proliferating at present. This makes single agency surveillance difficult, and there needs to be surveillance done in a united way by the agencies, especially for the case of disease transmission from animals to humans. Such a merged effort can be implemented by: first, building up the strength and capability of the public health volunteer corps, so they are able to do surveillance of behavior of animals in the front line, right in the community itself; and second, by creating a data dissemination system among the pertinent agencies in an efficient, transparent, and timely manner. The guiding principle in this effort is to be the security of the people's health.

5.2 The network of laboratories

5.2.1 When an epidemic of emerging infectious diseases occurs, it is necessary in the first instance to do diagnosis to verify the cause of the disease. This can be done by using a laboratory or laboratories that have the capability to investigate and analyze microbes and other disease inducing substances. The results should then be sent to another laboratory within the domestic or foreign network for further corroboration.

5.2.2 The objectives and efficiency of the surveillance system, and the factors of causation of some diseases, are different for humans than for animals. The result is that one is able to discover diseases in humans before one discovers diseases in animals. Or, in some cases, one is able to discover disease in animals but do not realize that such disease can carry over to humans, especially in the case of emerging infectious diseases. Therefore, investigation of causes of diseases cannot avoid joint diagnosis of problems in both humans and animals, especially if one is dealing with wild animals which are a repository of many types of diseases that are communicable to humans. It is thus necessary to link data from laboratories specializing in humans with data from those specializing in animals, to form one inclusive network. This is so that one can assess and analyze the chances of the infectious microbes spreading, including the chances of them spreading cross-species. Such data and analysis will form the basis for designing the right preventive measures for what could be a new disease epidemic or a repeat of an older disease epidemic. The measures are to be implemented through the coordinating center for surveillance of emerging infectious diseases whose tasks and responsibilities have been clearly specified.

6. Cooperation and preparation at the community, national and international level for prevention and control of the spread of disease from animals to humans, and the spread of disease in humans.

6.1 Preparation for prevention and control of diseases

6.1.1 The strategy of prevention and control of the spread of disease from animals to humans and its continuing spread among humans put emphasis on development cooperation at every level in matters of surveillance, prevention, and control. The strategy relies on cooperation of every ministry related to the problem. Two examples can be cited: 1. the 2005-07 strategic plan to solve the avian flu problem; 2. The 2008-2010 strategic plan for prevention, cure, and preparation to cope with problems of avian flu and influenza epidemics in general. These plans involve cooperation among the Ministry of Public Health, Ministry of Agriculture and Cooperatives, Ministry of Natural Resources and Environment, and Ministry of Interior. They are designed as plans integrating efforts by the various connected agencies and ministries. The strategy of preparation should be implemented in concurrence with the development and promotion of public health volunteers working permanently in the villages. In addition to cooperation from the agencies mentioned above, the participation by the community, enterprise owners, and other business organizations should be encouraged, drawing them in to help solve the problems in a concrete, practical way.

6.2 Preparation for treatment of diseases

6.2.1 In preparing for the aspect of treatment, the responsible agencies must perform an analysis, an estimation of the possibilities in the epidemiological situation of emerging infectious diseases. It must then form reserves of medicine and appropriate medical supplies as appropriate to the scenarios envisaged. Or, it could build up a database of the medicine and medical supplies needed for when there occurs a newly infectious disease epidemic, so that the authorities can quickly utilize the data and source what is needed. In addition, a working group comprised of doctors who are expert in clinical studies should be set up to give advice in case an unknown emerging infectious disease occurs and no one knows how to treat the patients.

6.2.2 In addition, it is necessary that Thailand create a mechanism to ensure that access to needed medicines among the population is universal and fair. This is to prevent a condition of scarcity in medicine or medical supplies that are necessary to cope with severe emerging infectious diseases. A mechanism for monitoring the use of drugs especially in the private sector is also needed, so as to ensure appropriate use of the drugs and that they are used in the most efficient manner, without wasting scarce medicine. In the long run, it is necessary to promote the development of the country's capability in synthesizing and producing the basic drugs that can cure emerging infectious diseases.

6.3 Mechanism for cooperation in surveillance, prevention, and control of the spread of emerging infectious diseases, relying on participation from all sections of the society

6.3.1 The creation of a mechanism to bring about cooperation in the surveillance of emerging infectious diseases must rely on people from various disciplines working together. They have to set up a mutually supporting network of agencies tasked with control of diseases in both animals and humans, which will benefit surveillance work both in the field and in the laboratory. The aim of such surveillance is to find the causes of diseases and ways to control its spread. Reliance on experts in various fields is necessary in order to push forward this difficult work.

Core experts are for example medical personnel, border disease control officers, veterinarians, laboratory scientists, biologists, and ecologists who work in natural settings. In addition, networks to induce cooperation from the people sector needs to be set up, the idea being to encourage local governmental organizations and the community to participate in surveillance, and implementing preventive and control measures on a continuing and serious basis. A system also has to be established whereby databases for study and research to develop medicines and vaccines are built up. Such databases are, for example, epidemiological data and regional level data on immunity of patients, which will help develop an efficient management mechanism. In addition, what needs to be done is to provide support for training of doctors, veterinarians, and public health personnel to gain up to date knowledge on the current status of diseases and to understand the way to write reports on patients suspected of contracting emerging infectious diseases.

6.4 Cooperation on research, knowledge management, and preparing databases on emerging infectious diseases

6.4.1 Confronting emerging infectious diseases is a difficult task but this is to be expected, given the novel nature of such diseases. Moreover, one cannot say when and where the epidemic will occur. So in order to deal with the situation appropriately, it is necessary to take action based on a pillar of knowledge that comes from research. The knowledge has to lead to understanding of the nature of such communicable diseases, of the mechanism to cope, of the role of and coordination among the relevant agencies, and of the behavior of people in crisis situations. Topics for research have to cover all connected issues such as those in medical science, animals, environment, ecology, communications, society and the economy. The knowledge has then got to be integrated by creating a network of knowledge builders. These people have to assist in promoting the development of cooperation among relevant agencies, both on the operational and the academic side. The builders also have to jointly analyze and craft a knowledge building plan that has as its objective accurate estimates of future situations concerning emerging infectious diseases and contingency plans to meet them.

6.4.2 What needs to be done is to develop a knowledge management system to facilitate exchange of knowledge, to disseminate it, to extend it further, by interchange among people in the knowledge builder network referred to above. Databases necessary for planning, preventive, and control work must be prepared. Also needed is a system of knowledge provision to the public and concerned organizations, and such provision to be supported by information technology.

7. Public communication

7.1 Public communication is seen as an idea that aims to use bodies of knowledge as a tool in communication, with the final aim of prodding society towards beneficial change. The results of public communication efforts will be a desire for change and social awareness, which will lead to participation by all levels of society. It should be noted that this will happen more in a society that emphasizes the value of knowledge and encourages the use of information and communications technology. The idea of promoting participation is in order to give people and community the opportunity to jointly develop knowledge and creative activities and become part of the problem-solving process. Some activities envisaged are: creating health communicators embedded in the community in order to communicate how people can enhance their health and how to take preventive action against diseases specific to the

locality; campaigning; arranging community forums; and using new forms of communication specifically effective in particular target groups.

7.2 It is important to provide information and knowledge on emerging infectious diseases to the public in general, to specific at-risk groups, and to relevant professionals, in order to make possible a system of surveillance and prevention against diseases. Such information must consist of messages that are correct, clear, and up to date, and are able to be sent through the mass media at both the national and community level. In this regard, coordination between the relevant agencies must be implemented. Moreover, there has to be a core agency taking responsibility for communicating information and knowledge to the public in an appropriate way and in a timely manner, especially in a situation of crisis due to an emerging infectious disease epidemic.

7.3 Public communication will support the work of the agencies affiliated with the Ministry of Public Health which is responsible for controlling and preventing emerging infectious diseases in Thailand. The agencies will function as the source or upstream of the communications flow to the society, the flow moving through the various mass media channels with the objective that such communications are up to date on situations that are rapidly changing and in flux, as it tends to be the case in epidemics. Communications systems are necessary if a surveillance system is to be set up, if a disease prevention programme for the general public and for specific at risk groups is to be rapidly implemented. The communication message must be easy to understand. Communications must also be directed to professionals connected with solving the problems so that they can manage them correctly and efficiently. The conduct of communication must also be undertaken carefully so that it does not create excitement and panic to the extent that it leads to violation of human rights and human dignity. Failure to heed this point will lead to conflict and will aggravate social and economic problems.

8. Problems and obstacles in coping with emerging infectious diseases.

8.1 Emerging infectious diseases are a public health problem as well as causing a public calamity which in turn threaten the security of the country, and the trend is one of increasing seriousness of such diseases. Managing them is a complex undertaking and there are more problems and obstacles than in ordinary communicable diseases. This is because the problems in emerging infectious disease are different in nature, in that one tends not to be able to estimate the size of the problems and the timing of the epidemic's occurrence. This uncertainty impacts on the preparation and efficiency aspects of management. In addition, in the beginning phases of an epidemic of emerging infectious disease, knowledge and facts are not so clear, thereby easily leading to alarm and panic among the populace and responsible personnel. In any case, efficient management of emerging infectious diseases must adhere to the principle of transparency of information and must give priority to health of the people rather than to economic interests.

8.2 Management of emerging infectious diseases still lack systematic integration and cooperation among all sections of society. It is necessary to establish a national center to manage emerging infectious diseases and to prepare a strategic plan for an integrated management of emerging infectious diseases, both efforts having to rely on the cooperation of all sections of society in order to achieve efficient surveillance, prevention, control, and treatment. In particular, it has to be emphasized that there is no clear national strategic plan concerning public communication on emerging infectious diseases at this time.

8.3 Laws that are relevant and useful for the management of emerging infectious diseases are still under the supervision of the agencies of different ministries (see annex). The laws in question have many provisions that are supportive of action and some that are obstacles. Therefore, there should be a review and improvement of the laws, and also enactment of additional laws to help make efforts to cope more efficient.

8.4 An urgent priority is to develop the capacity of laboratories inside the country such as that of the Department of Medical Science, the universities and other educational institutions. What is also needed is improvement of the capabilities of medical scientists who work in the laboratories so that they can diagnose new strains of infectious microbes speedily. Also needed is the establishment of a central body to coordinate data from the laboratories, to underpin surveillance efforts.

8.5 In addition, there are constraints of resources, budget, personnel, management of critical situations, and policy at various levels on the roles and functions when an emerging infectious disease breaks out. This is partly due to competition among administrators and politicians on who is to be the key player. The results are a lack of unity in direction and little understanding of the significance of emerging infectious diseases by agencies concerned, e.g. the Budget Bureau and various ministries.

8.6 Communication of knowledge and information to the general public is necessary for the management of emerging infectious diseases, and public communication must be elevated to be a priority. At present, a clear strategic plan on public communication for emerging infectious diseases does not exist. In public communication strategy for these diseases, it is necessary to draw up in advance a work plan, identify who is to shoulder the responsibilities, to gather the required data, to determine the message content, and the strategy of delivering the messages to the public. All plans must be able to be put in operation immediately once an emerging infectious disease epidemic occurs in Thailand, and operations must be conducted with the cooperation of all agencies doing work in communications. The goal here is to build up among the people a realization of what is happening and inculcate a sense of social responsibility in them. Once an epidemic of emerging infectious disease occurs, it is very important to contain its spread, and the success of all the measures in prevention and control depend on how successful the efforts are in creating faith and a sense of confidence in the people.

Issues for consideration of the National Health Assembly.

The Assembly is requested to consider Document Health Assembly 2/ Draft Resolution 2.