

## Highlight summary of disease situation in 2013

In 2013, some concerning disease events such as Middle East Respiratory Syndrome (MERS-CoV) emerged and led to increased awareness not only in Thailand, but also worldwide. One of the significant threats for health identified in 2013 in Thailand were deaths related to gas water heaters in the Northern region, which had not been a concern until it was discovered by careful epidemiological investigation which brought it to attention as a major public health problem. Editor's pick are summarized below;

### **MERS-CoV**

The World Health Organization (WHO) reported two confirmed cases of a novel coronavirus from Saudi Arabia and one case from Qatar in September 2012. The source of the virus was mysterious. Symptoms included severe pneumonia with fever, cough, shortness of breath, breathing difficulty and infection often resulted in death. Initial reports were mostly from cases with a history of travel or residence around in countries in the Arabian peninsula. From a retrospective cohort study, adult, elderly and persons with underlying diseases, were most at risk and vulnerable. On May 23, 2013 WHO gave it the more specific name "Middle East Respiratory Syndrome Coronavirus (MERS-CoV)". The distribution of cases was throughout the Arabian Peninsula including Saudi Arabia, United Arab Emirates and Qatar. Also, there were reported cases in other regions such Germany, United Kingdom (England), France, Tunisia and Italy linked to travel to the Arabian peninsula. Total of cases and confirmed deaths were 178 cases and 76 deaths as of the end of 2013. Mode of transmission was probably from exposure to infected animals in local areas, contamination with the infectious agents in the environment and person-to-person transmission. Virologically MERS-CoV is in the genus Betacoronavirus that

shares close genetic relationship with MERS-CoV-related viruses in bats and is related to the coronavirus responsible for Severe Acute Respiratory Syndrome (SARS) which caused outbreaks in 2003. Special surveillance among pneumonia cases with a history of travel to affected areas, especially countries in Arabian Peninsula, and active surveillance after the Hajj pilgrimage from October to December were conducted in Thailand. Up to now, no MERS-CoV cases have been detected in Thailand.

### **Avian influenza**

Highly Pathogenic Avian Influenza (H5N1) was globally reported in every month of year 2013. Influenza A H7N9 (Low Pathogenic Avian Influenza) has been reported from China since April 1<sup>st</sup>, 2013. That month, WHO officially reported three confirmed of Influenza A H7N9 cases in humans and two deaths from severe pneumonia. Subsequently there were waves of outbreaks from April to May, 2013 with a case fatality rate 22%. Men made up 67% of cases and the median age of cases and deaths was 58 and 66 years. Most of outbreaks occurred in 11 counties and 2 major cities in the Eastern region of China. One case in Taipei City, Republic of China and one case in Hong Kong were found after travel to Influenza A H7N9 affected areas. Mode of transmission appears to be from exposure to infected animals or contaminated environments within live poultry markets. Closing the live poultry markets and environmental disinfection were major prevention and control measures in China. Sporadic cases occurred however until the end of year and increased throughout the year. In Thailand, collaborative surveillance activities included severe acute pneumonia surveillance in humans conducted by Ministry of Public Health and active surveillance in poultry farms, backyards and wild birds by Ministry of Agriculture and Cooperatives

and Ministry of Natural Resources and Environment. There were no confirmed Influenza A H7N9 cases in humans in Thailand.

### **Listeriosis**

On December 4<sup>th</sup>, 2013, two pregnant women from Phuket were reported to Bureau of Epidemiology with a diagnosis of Listeriosis. One of these women was affected by stillbirth and the other with severe sepsis. A third case was in a boy aged 11 years that resulted in his death from meningitis. Listeriosis is a communicable bacterial disease that causes septicemia and central nervous system infection. The route of transmission is usually parenteral via ingestion of contaminated food. Listeriosis infection in pregnancy can result in abortion and severely affected infants. In the United States, the leading cause of death from gastrointestinal infection was due to infection by *Listeria monocytogenes*. There have been reported cases of Listeriosis in Thailand among persons with chronic diseases, immunodeficiency, elderly persons and pregnant women. Many laboratories lack the capacity for species identification. Of food poisoning cases that were reported to national disease surveillance system, 99.4% did not have an identified causative agent. Development of laboratory surveillance to identify pathogens, especially for *Listeria spp*, development of outbreak notifications and situation alerts and treatment guidelines for physicians, and press releases in the community on the importance of consuming well-cooked frozen food would be important actions to prevent and control the disease.

### **Dengue fever**

The number of cases of dengue fever in 2013 demonstrated five-year high for most of the year, except for a period of October and December of 2013. A morbidity rate of 239.51 per 100,000 population was the highest rate in the past 10 years. There were 136 deaths for a case fatality rate of 0.09%. The dengue fever outbreak from October to December 2012 had an effect on the outbreaks in early year of 2013. Other supportive evidence of a country-wide outbreak in 2013 was the dominance

of dengue serotype 3 for which there is less protection against this serotype among Thais.

### **Zika virus**

A new emerging vector-borne disease in Thailand, Zika fever, was found in Thailand in 2013. Zika virus is a flavivirus related to dengue and Japanese encephalitis. It is carried by *Aedes mosquitoes*. In 2013, two tourists from Canada and Germany were infected with Zika virus while travelling in Thailand. Laboratories in USA and Canada confirmed positive results of Zika virus by PCR techniques; molecular typing revealed Asian type from those cases. The Bureau of Epidemiology conducted a retrospective study on exanthematous fever with unknown cause; there were four events identified in Ratchaburi, Amnatcharoen, Srisaket and Lamphun provinces. Samples collected from blood bank were sent to laboratories at the Division of Vector-Borne Diseases US, CDC and AFRIMs. The CDC and AFRIMs determined Zika virus to be located in Amnatcharoen, Srisaket and Lamphun provinces. Antibody testing by PRNT technique confirmed Zika virus was in samples from Ratchaburi province.

### **Pertussis**

Pertussis is a vaccine-preventable disease and the incidence of pertussis had decreased following the strengthening of immunization programs. Although there were only six cases in 2010, the number of pertussis cases has increased to 12 cases in 2011, 17 cases in 2012 and 25 cases in 2013. There were two deaths in 2012, the first deaths from pertussis in Thailand since 2003.

### **Encephalitis**

The number of encephalitis cases in Thailand has continually increased since 2010. There were 723 cases and 17 deaths in 2013. Most of cases (> 90% of cases) were reported as unspecified encephalitis. Very few investigation reports (16 cases) were sent to Bureau of Epidemiology though all cases of encephalitis must be investigated as per surveillance and investigation guidelines. Only six of 16 cases from the investigations reported a caus-

ative agent. Local health services should conduct intensive individual case investigations and collect specimens for laboratory testing. Laboratory surveillance should be strengthening for monitoring the disease situation and early detection of other emerging diseases such as Nipah virus.

### **Rabies**

Reaching zero cases of rabies seemed to be a possibility in Thailand because less than ten cases per year has been observed since 2011. The majority of rabies cases occurred repeatedly in specific provinces. Incidence of human cases were correlated to the number of animal heads tested for rabies in the same areas including Samutprakarn, Prachinburi, Chonburi, Kanchanaburi and Songkhla provinces. Rabies vaccination of dog and cat populations should be strengthened to the goal of 80% vaccination coverage of total dog-cat population by survey. A strong collaboration of physicians and veterinarian officers to promote the sending animal heads for rabies testing and receiving rabies post-exposure prophylaxis in all cases after exposure are the cornerstone for a successful rabies elimination program.

### **Deaths from gas water heater**

Data from winter weather surveillance in 2012 and 2013 revealed asphyxia from poorly functioning gas water heaters as an important cause of death. A history of alcohol consumption was identified in 60%, likely due to a mistaken belief that liquor relieves the effect of cold, when in fact alcohol increases the risk of complications from underlying disease and death. Unqualified gas water heater, incorrect setup and poor ventilation in bathroom contribute to hypoxia as products of incomplete combustion form carbon dioxide (CO<sup>2</sup>), carbon monoxide (CO), propane (C<sup>3</sup>H<sup>8</sup>), etc. Because use of gas water heaters is common, public communication on correct use of gas water heater in traveler's lodge, especially in cold province in Thailand would be important measure to prevent any deaths from gas water heater. Safety advice for travelers and

education on correct first-aid are other important public health messages. Surveillance for the cause of death during cold weather should be conducted and monitored in the following year.

### **Non Communicable Diseases**

Development from 12 folders in a system of hospital records to 21 folders in past three years, seven of 21 folders contain details of non-communicable diseases. There was a stable incidence of diabetes of 550 – 650 cases per 100,000 population per year between 2008 and 2013. While there was a high prevalence of cases (2,673,684 cases) of diabetes or 4,536.17 cases per 100,000 populations, the prevalence of overall cases for the entire country of Thailand is unknown. Individuals with diabetes exude a tremendous burden the nation's health care system since the condition must be controlled and treated for the affected person's lifetime. There are many complications from diabetes and led to fatal. The Thai Ministry of Public Health should raise awareness of the rise in the number of cases of diabetes in addition to diabetes prevention and control.

### **Notifiable disease surveillance (report form 506)**

The overall coverage of the report form 506 by week was 88%. A distribution of the coverage included a large number of different facilities reporting cases in central hospitals/general hospitals when compared to the number of reports from community hospitals. Monitoring and evaluation activities revealed low coverage and incomplete reporting, for example of polio and yaws (reported without verifying data), changing diagnosis of dengue death in several times and duplicate case reporting. Provincial epidemiologists should check the completeness and validity of hospital data before submitting the reports to the Bureau of Epidemiology. With these processes, they could analyze and monitor disease situations in the provinces optimally.

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