

# Communicable Diseases

## WATCH



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### FEATURE IN FOCUS

## Plague outbreak in Madagascar

Reported by Ms Doris CHOI, Scientific Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.

Plague is a communicable disease caused by the bacterium, *Yersinia pestis* (*Y. pestis*), that is usually found in small mammals (mainly rodents) and their fleas. There are three main forms of plague infection: bubonic, pneumonic and septicemic. Bubonic plague is the most common form of plague and is caused by the bite of an infected flea. It is rarely transmitted directly from person to person unless there is direct contact with infected tissue. Pneumonic plague is transmitted between humans by inhalation of respiratory droplets from an infected person and is highly contagious. The incubation period of bubonic plague is usually two to six days while the incubation period for primary pneumonic plague is usually one to four days. Patients with bubonic plague typically experience a sudden onset of illness with headache, shaking chills, fever, malaise and painful swelling of the affected regional lymph nodes. The infection can progress to septicemic plague when the bacteria invade the blood stream. The infection can be spread to other organs and cause serious complications. Patients with pneumonic plague typically present with chills, fever, headache, body pains, weakness, chest discomfort, cough with blood-stained sputum, difficulty in breathing and may die shortly after infection if not treated immediately. The patient is highly infectious in this most serious form of plague. Plague is a very severe disease in human, with a case-fatality ratio of 30% to 60% for the bubonic type and 30% to 100% for the pneumonic and septicemic types, if left untreated. Antibiotic treatment is effective against plague bacteria, and therefore, lives can be saved with early diagnosis and treatment<sup>1</sup>.

Plague is an animal disease that was found in all continents, except Oceania. In recent years, most human cases mainly occur in Africa. According to the World Health Organization (WHO), 3 248 cases were reported worldwide between 2010 and 2015, including 584 deaths<sup>2</sup>. Currently, the three most endemic countries are Democratic Republic of the Congo, Madagascar and Peru. Madagascar has been experiencing a large epidemic since August 2017, and this article reports the latest situation of the outbreak<sup>1</sup>.

In Madagascar, plague is endemic on the Plateaux of Madagascar, including Ankazobe District, where the current outbreak originated. A seasonal upsurge, predominantly of the bubonic form, usually occurs annually between September and April and a total of 7 757 cases were reported between 1997 and 2001, giving an average of 1 511 cases per year<sup>3</sup>. However, for the current outbreak, it began in August and is predominantly pneumonic, affecting both endemic and non-endemic areas, including major urban centres<sup>4</sup>.

According to WHO's External Situation Report issued on November 6, 2017, a total of 1 947 suspected cases of plague were reported from August 1 to November 3, 2017, including 143 deaths (case fatality rate: 7%) were reported. A total of 1 437 cases (74%) were clinically classified as pneumonic plague, 295 (15%) were bubonic plague, one (0.0%) was septicemic, and 211 (11%) were unspecified as classification of these cases were in progress. A total of 71 healthcare workers were affected but no fatal case was recorded. Of note, among those 1 473 clinical cases of pneumonic plague, 364 (25%) were laboratory confirmed either by polymerase chain reaction (PCR) or bacteriological culture, 555 (39%) were classified as probable after testing positive on rapid diagnostic tests (RDT) and 518 (36%) remained suspected as additional laboratory results are in progress. Among those laboratory confirmed cases, twenty-three strains of *Y. pestis* have been isolated and all were sensitive to antibiotics recommended by the National Program for the Control of Plague. Confirmed and probable pneumonic plague cases have been reported from 16 of 22 (73%) regions and the Analamanga Region has been the most affected, with 72% (1405) of all recorded cases<sup>4</sup> (Figure 1). Since mid- October 2017, the incidence of pneumonic plague and the overall hospitalisations due to plague infection have been declined across the country.



Figure 1 - Affected areas of plague in Madagascar, as of November 3, 2017. The small diagram indicates the most affected area (District of Antananarivo Renivohitra in Analamanga Region).

This outbreak is currently confined in Madagascar. Previously, there was a probable case of pneumonic plague reported to WHO from Seychelles MoH. The patient's specimen was tested negative on October 17, 2017. As of November 2, no plague cases have been confirmed in Seychelles or among other travelers from Madagascar.

Due to the increased risk of further spread and the severe nature of the disease, WHO considers the overall risk at the national level in Madagascar as very high. However, the risk of regional spread is moderate considering the occurrence of frequent travel by air and sea to neighbouring Indian Ocean islands and other southern and eastern African countries, and the observation of a limited number of cases in travellers. Based on the available information to date, the risk of international spread of plague appears very low. WHO advises against any restriction on travel or trade on Madagascar based on the available information.

At present, there is no airline with direct flight from Madagascar to Hong Kong. As a preventive measure, the Port Health Office (PHO) of the Centre for Health Protection (CHP) of the Department of Health regularly conducts body temperature screening at boundary control points with thermal imaging systems on inbound travellers. Suspected cases will be assessed and referred to healthcare facilities for further management. PHO provides the latest plague situation to travel agencies through the Travel Industry Council (TIC) of Hong Kong. Travel agencies were alerted about the outbreak of plague in Madagascar and to take appropriate precautionary measures in line with WHO's latest advice. Information was also published on the Security Bureau's Outbound Travel Alert webpage to remind travellers of the outbreak of plague in Madagascar, and to urge travellers to observe heightened vigilance on rodents, anti-flea precautions and strict environmental hygiene.

In Hong Kong, plague was epidemic from 1895 to 1929. Since then, Hong Kong has been free from plague. Plague is a notifiable infectious disease under the Prevention and Control of Disease Ordinance (Cap. 599) and doctors are required to report suspected or confirmed cases to CHP for investigations and control. CHP has been, and will continue to monitor the development of the disease outside Hong Kong and maintain a close communication with international health authorities for updated information as necessary.

In consideration of the growth in international travel and trade and the recent spread of disease to non-endemic areas, all travellers should be cautious about the disease especially when visiting Madagascar. Travellers should take heed of the health advice below during travel:

- ◆ Prevent flea bites by wearing long-sleeved shirts and trousers, and applying insect repellent/insecticide. DEET-containing insect repellent can be applied to exposed skin and clothing, while insecticide containing permethrin can be applied to clothing, not the skin;
- ◆ Avoid going to rural areas, camping or hunting;
- ◆ Never touch rodents, dead animals and their tissues or contaminated materials;
- ◆ Avoid close contact with patients, especially those with cough or chest infection;
- ◆ Avoid going to crowded areas;
- ◆ Seek medical care immediately in case of sudden onset of fever, chills, painful lumps, shortness of breath with coughing and/or blood-tainted sputum; and
- ◆ Consult a doctor immediately after contact or exposure to pneumonic plague patients or high-risk exposures, such as bites from fleas or direct contact with body fluids or tissues of potentially infected animals, for prompt assessment of the need for preventive medication.

## References

<sup>1</sup>World Health Organization. Plague - fact sheet, 2017. Available at: <http://www.who.int/mediacentre/factsheets/fs267/en/>, accessed on October 26, 2017.

<sup>2</sup>World Health Organization. Plague around the world, 2010-2015. Weekly epidemiological record. 2016;91(8):89-104.

<sup>3</sup>Migliani R et. al. (2006) Epidemiological trends for human plague in Madagascar during the second half of the 20th century: a survey of 20 900 notified cases. Tropical Medicine and International Health. 2006; 11(8): 1228-1237.

<sup>4</sup>World Health Organization. Plague Outbreak Madagascar: External Situation Report 08; November 3, 2017.

Available at: <http://apps.who.int/iris/bitstream/10665/259407/3/Ex-PlagueMadagascar07112017.pdf>, accessed on November 8, 2017.

## Recommendations on the Prevention and Control of Japanese Encephalitis (JE)

*Reported by Dr Gladys YEUNG, Senior Medical and Health Officer, Enteric and Vector-borne Disease Office, Surveillance and Epidemiology Branch, CHP.*

The Scientific Committee on Vector-borne Diseases (SCVBD) under the Centre for Health Protection (CHP) of the Department of Health has recently discussed the local epidemiology of JE and examined the current prevention and control measures, including JE vaccination and mosquito control.

### Situation in Hong Kong

In Hong Kong, CHP recorded a total of 13 local JE cases from 2008 to 2017 (as of October 7, 2017), with the annual number ranging from zero to five (Figure 1). The territory-wide incidence for local JE cases was 0.017 per 100 000 population, which was lower than the JE incidence in Mainland China, Taiwan and Thailand after introduction of JE vaccination programme (0.07 to 0.12 per 100 000 population). SCVBD considered the territory-wide incidence rate of local JE cases in Hong Kong to be low.

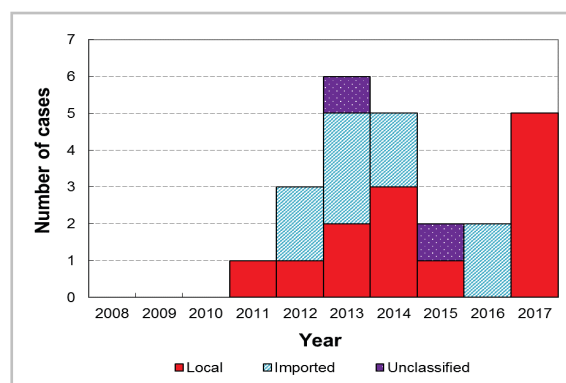


Figure 1 - Annual number of JE cases recorded by CHP from 2008 to 2017 (as of October 7, 2017).

In 2015, the World Health Organization (WHO) recommended that JE vaccination should be integrated into the immunisation programme where JE is recognised as a public health priority<sup>1</sup>. For the most affected age group in endemic areas, namely children under 15 years old, an incidence target of less than 0.5 per 100 000 was proposed. In Hong Kong, the incidence of local JE cases for the population living within 2 km of pig farms in Hong Kong (0.13 per 100 000 population) was 20 times higher than the incidence for population living outside 2 km from pig farms in Hong Kong (0.0062 per 100 000 population). Even for this high-risk area, the incidence rate was comparable to the incidence rates in some countries and areas where JE vaccination has been used to prevent JE after incorporation of the JE vaccine into the immunisation programmes in those countries and areas and lower than the target incidence of 0.5 per 100 000.

### JE vaccine

Currently, an inactivated Vero cell derived JE vaccine (JE-VC) and a live recombinant JE vaccine (JE-CV) are registered in Hong Kong. Both vaccines were found to have acceptable safety profiles by WHO. Although serious side effects are uncommon with these modern JE vaccines, the number of such serious side effects is directly proportional to the number of people vaccinated. A post-marketing surveillance study for JE-VC indicated that the rate of serious adverse events, hypersensitivity, and central nervous system adverse events were 1.8, 4.4 and 1.1 per 100 000 doses distributed, respectively<sup>2</sup>.

SCVBD estimated that the number of serious side effects due to the JE vaccine may outweigh the protective benefits of the vaccine in preventing JE in areas where JE occurs infrequently. SCVBD has thus concluded that the risks of using JE vaccine in the Hong Kong population (including the population living within 2 km of pig farms) to prevent JE outweigh its benefits.

In Hong Kong, mosquito control is important for prevention of JE. An integrated approach, including using a JE vector surveillance programme for proactive response, and heightening of public awareness via annual anti-mosquito campaigns, which includes advice on personal protection, as well as adulticiding and larviciding at potential breeding places is adopted. In order to reduce number of adult mosquitoes and contact between mosquitoes and their hosts, the use of mosquito trapping devices would be further extended to housing estates, parks, and pig farms.

SCVBD recommended that measures for JE control should target areas around pig farms. Efforts for mosquito control for prevention of JE should continue with special attention to areas where pig farms, Ardeid birds and vector mosquitoes are known to be present. The current recommendation for travellers to endemic areas of JE should be maintained, i.e., JE vaccination is recommended for travellers who plan to stay one month or longer in endemic areas during the JE transmission season, and for short-term (less than one month) travellers if they plan to have significant extensive outdoor or night-time exposure in rural areas during the transmission season. CHP will continue to keep abreast of relevant scientific literature on JE and review the recommendations in due course.

The Consensus Statement on Prevention and control of JE can be accessed from the CHP website at:  
[http://www.chp.gov.hk/files/pdf/consensus\\_statement\\_japanese\\_encephalitis\\_oct\\_2017.pdf](http://www.chp.gov.hk/files/pdf/consensus_statement_japanese_encephalitis_oct_2017.pdf).

### References

<sup>1</sup>Japanese Encephalitis Vaccines:WHO position paper - February 2015. Weekly epidemiological record. February 27 2015;90(9):69-87.

<sup>2</sup>Rabe IB, Miller ER, Fischer M, Hills SL. Adverse events following vaccination with an inactivated, Vero cell culture-derived Japanese encephalitis vaccine in the United States, 2009-2012. Vaccine. Jan 29 2015;33(5):708-712.

## NEWS IN BRIEF

### Human myiasis reported from May 1 to October 31, 2017

From May 1 to October 31, 2017, the Centre for Health Protection (CHP) of the Department of Health recorded seven cases of human myiasis, affecting three females and four males with age ranging from 40 to 99 years (median: 62 years). All of them had underlying illnesses. Most of patients (6, 85.7%) stayed in institutions including hospitals (3), elderly home (2), and rehabilitation centre (1), while one of them lived at home. Activities of daily living (ADL) of one patient and five patients were partially dependent and dependent respectively and one was ADL independent. Maggots were found from chronic wounds (2), tissue of gangrene toes (2), tracheostomy wounds (2) and ear external auditory canal (1) of the patients respectively. Six patients required hospitalisation and all patients were in stable condition. None of them have any recent travel history. Health advice on wound care as well as personal and environmental hygiene was given to the patients and the institutions.

### A local sporadic case of listeriosis

On October 27, 2017, CHP recorded a case of listeriosis affecting a 38-year-old pregnant woman at 36 weeks of gestation with good past health. She presented with fever, chills, headache, myalgia, cough and runny nose on October 20. She was admitted to a public hospital on October 24. Her blood culture yielded *Listeria monocytogenes* and she was treated with antibiotics. Her condition remained stable and fetal assessment revealed no abnormalities. She had no recent travel history. She had consumed cream cheese during the incubation period and further investigation is underway. Her home contact was asymptomatic.

### A probable case of sporadic Creutzfeldt-Jakob disease

CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) on November 1, 2017, affecting a 57 year-old man with underlying illnesses. He presented with dizziness and blurred vision on September 1, 2017, and was admitted to a public hospital on September 11. Subsequently, he developed progressive cognitive decline, visual disturbance, extrapyramidal symptoms, myoclonus and cerebellar signs. Findings from electroencephalography and magnetic resonance imaging of the brain were compatible with CJD. His condition was stable. No risk factors for either iatrogenic or variant CJD were identified. He was classified as a probable case of sporadic CJD.