Plague is a communicable disease that affects rodents (including rats), some animals and humans. It is caused by the bacteria *Yersinia pestis*, which is transmitted from an infected animal (mainly rodents) to humans through the bite of infected animal's fleas. Besides, people can also contract plague when cuts or other breaks in their skin come into contact with the body fluid or tissues of infected animals, or through inhalation of respiratory droplets from infected patients. There are three main forms of plague infection: bubonic, pneumonic and septicemic. Plague patients should be isolated and treated with appropriate antibiotics.

Historically, a large outbreak of plague occurred in Hong Kong in the late 19th century and early 20th century. Hong Kong was affected with its first case recorded in May 1894. In the 36 years from 1894 to 1929, over 20,000 cases were reported in Hong Kong, with a mortality rate of around 90%. Hong Kong recorded the last two cases of plague in 1929, and no cases have been recorded since then.

Plague may be seen as a disease belonging to the past, but the continued reporting of cases throughout the world shows a clear evidence of its presence. Plague continues to be a threat because vast areas of natural plague foci exist where wild rodents are infected, particularly in endemic areas in Africa, Asia and the Americas. Globally, the total number of human plague cases reported to the World Health Organization (WHO) from 1999 to 2008 was on average 2,334 cases annually. A decade later in 2018, as reported in WHO’s latest review of global situation, the total number of cases worldwide decreased about tenfold to 243 cases. Yet, outbreaks of plague are still reported occasionally.

From 2013 to 2018, a total of 2,886 cases were reported worldwide to WHO and the top five countries were: Madagascar (2,323 cases; 80%), Democratic Republic of the Congo (DRC) (410 cases; 14%), Peru (40 cases; 1%), the United States of America (USA) (40 cases; 1%) and United Republic of Tanzania (36 cases; 1%). Other countries with small number of cases detected in the period included Uganda (22 cases), Mainland China (5 cases), Mongolia (5 cases), Bolivia (3 cases), Kyrgyzstan (1 case) and Russian Federation (1 case). Among all the strains isolated, all remained susceptible to antimicrobial agents.

Plague is highly endemic in Madagascar with about 100 to 700 cases of mostly (88%) bubonic plague annually, which greatly outnumbered the cases in other countries. Cases mainly occurred between September and April. Small outbreaks of pneumonic plague did occur in rural areas (20-20 cases) and in the capital city Antananarivo (81 notified cases in 2004). In 2017, a large outbreak of plague occurred between late August and November. The outbreak was exceptional due to its extent and its urban character. A total of 2,414 confirmed, probable and suspected plague cases were reported between August 1 and November 26. The cases were predominately of pneumonic form (1,878 cases, 78%), with only 16% (395 cases) as bubonic plague. The pneumonic plague cases occurred mostly in a densely populated urban setting in the capital city Antananarivo (69%) and the main port city Toamasina (15%). A total of 135 fatal cases were recorded. After this large outbreak, the number of cases reported in the subsequent two seasons decreased markedly. For the plague season from August 19, 2018 to April 21, 2019, only 257 cases of plague including 50 deaths were reported. For the current season which started in early August 2019, a total of 88 cases have been reported with the majority being bubonic plague (77 cases; 88%).

DRC is mainly affected by sporadic cases while epidemics affecting dozens of people have been occurring from time to time. From 2013 to 2018, there were about 20 to 130 cases annually. As of December 8, a total of 50 cases of bubonic plague including eight deaths have been reported in the province of Ituri in 2019.

In Madagascar and DRC, plague is a disease of poverty, due to the nature of the rodent reservoir. However, USA, which is a developed country, is also affected by plague. Plague was introduced into USA in 1900 by rat-infested steamships that had sailed from affected areas, mostly from Asia. Since then, it has been circulating among wild rodents in rural and semi-rural areas in western USA, resulting in an average of seven human plague cases reported each year in recent decades (range: 1-17 cases per year). Four, five and one cases were reported in 2016, 2017 and 2018 respectively. As of December 7, one case has been reported this year.
In the Mainland, natural plague foci exist in the north-western and south-western regions of the country. From 2009 to 2018, a total of 26 cases with 11 deaths were recorded in Qinghai province (13 cases), Tibet Autonomous Region (6 cases), Gansu province (5 cases), Sichuan province (1 case) and Yunnan province (1 case). This year since November, four cases of plague infected in Inner Mongolia Autonomous Region have been confirmed in the Mainland. These include two cases of pneumonic plague confirmed in Beijing, involving a couple from Inner Mongolia; and two cases of bubonic plague confirmed in Inner Mongolia. The last time plague case was reported in Inner Mongolia was in 2004.

For the two pneumonic plagues cases, according to the Chinese Center for Disease Control and Prevention, investigation found that the male patient had most likely acquired the infection from aerosol exposure to infective droplets while digging on his farm located in a natural plague focus in Inner Mongolia, and he subsequently transmitted the infection to his wife. For the two bubonic cases, one became infected after skinning and eating a dead hare found in a field whereas the other patient had been to a place where plague was known to occur before onset of symptoms. According to the latest information from the National Health Commission and the Health Commission of the Inner Mongolia Autonomous Region, all close contacts of the four patients remained asymptomatic and were released from medical surveillance. The two bubonic cases recovered and were discharged. Apart from the above four plague cases, no additional cases have been reported in the Mainland thereafter.

Plague is a statutorily notifiable disease in Hong Kong under the Prevention and Control of Disease Ordinance (Cap 599). Given the potential risk of introduction of plague to Hong Kong, more information on preventive measures and latest news are available on the Centre for Health Protection of the Department of Health's designated webpage and Travel Health News (https://www.travelhealth.gov.hk/english/travel_related_diseases/news.html#Plague).

References
7 World Health Organization. Actions Taken to Reduce Plague Burden in Madagascar—and Recent Cases Show Decline. Available at: https://extranet.who.int/sph/news/actions-taken-reduce-plague-burden-madagascar-%E2%80%94and-recent-cases-show-decline.

NEWS IN BRIEF

A local confirmed case of human myiasis

On December 15, 2019, the Centre for Health Protection of the Department of Health recorded a case of human myiasis involving a 76-year-old man with underlying illnesses. The patient had a chronic non-healing wound over the left face. He presented with fever and increased wound discharge on December 13, 2019 and was admitted to a public hospital on the same day. On admission, maggots were identified from his facial wound and were removed. The clinical diagnosis was myiasis. The maggot specimen collected was confirmed to be *Chrysomya bezziana* larvae. The patient was treated with antibiotics. His condition remained stable and he was transferred to rehabilitation ward on December 29, 2019 for management of his underlying medical conditions.

The patient had no travel history during the incubation period. He lived with his family who remained asymptomatic. Health advice on wound care, personal and environmental hygiene was given to the patient and his family.