**FEATURE IN FOCUS**

**Review of Human Metapneumovirus Infection in Hong Kong**

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Human metapneumovirus (HMPV) is a single stranded RNA virus that belongs to the Paramyxoviridae family. It can cause upper and lower respiratory infections in people of all ages, especially young children, elderly and immunocompromised people. HMPV has been reported worldwide since it was first reported in 2001.

The clinical presentations of HMPV are similar to other viruses that cause upper and lower respiratory infections. In children, HMPV causes symptoms such as fever, cough, nasal congestion, difficulty in breathing or shortness of breath. Some children may also present with otitis media, diarrhoea, vomiting, rash, and febrile convulsion. In adults, HMPV usually causes mild disease characterised by cough, hoarseness, runny nose and sputum production. HMPV infection may progress to bronchiolitis or pneumonia.

We reviewed the institutional outbreaks caused by HMPV recorded by the Centre for Health Protection (CHP) of the Department of Health from 2013 to June 2018.

CHP recorded a total of 69 institutional outbreaks related to HMPV from 2013 to June 2018, including two outbreaks with both HMPV and other respiratory pathogens identified. There were six to ten outbreaks each year from 2013 to 2017. In 2018 (as of June 2018), 24 outbreaks have been recorded (Figure 1). Relatively more outbreaks occurred from March to May in the past five years (Figure 2). Among the 69 outbreaks, 29 outbreaks (42%) occurred in residential care homes for the elderly, 16 (23%) in hospitals, 9 (13%) in kindergartens/child care centres, 2 (3%) in primary schools and 13 (19%) in other institutions.

The duration of the outbreaks, which was defined as the interval between the onset dates of the first and last cases of an outbreak, ranged from one to 37 days (median: ten days). The number of persons affected in each outbreak ranged from three to 42 (median: seven). The attack rate ranged from 1% to 51% (median: 10%). Among the 689 affected persons, 313 (45%) required hospitalisation, 123 (18%) developed complications and two (0.3%) died of pneumonia.

HMPV can be transmitted by direct or indirect contact. It is most likely spread from an infected person to others through: secretions from coughing and sneezing, close personal contact, such as touching or shaking hands, and touching the mouth, nose or eyes after touching contaminated articles. There is no specific treatment for HMPV infection.
To prevent HMPV infection, members of the public are advised to:

**Maintain good personal hygiene**
- Perform hand hygiene frequently, especially before touching the mouth, nose or eyes, after touching public installations such as handrails or door knobs or when hands are contaminated by respiratory secretion after coughing or sneezing. Wash hands with liquid soap and water for at least 20 seconds, then dry with a disposable paper towel or hand dryer. When hands are not visibly soiled, clean them with 70 to 80% alcohol-based handrub as an effective alternative;
- Cover nose and mouth with tissue paper when sneezing or coughing. Dispose the soiled tissues into a lidded rubbish bin, then wash hands thoroughly;
- Avoid sharing cups and eating utensils with others;
- When having respiratory symptoms, wear a surgical mask, avoid going to crowded places and seek medical advice promptly; and
- Exclude infected persons from providing care to children, elderly and immunocompromised people.

**Maintain good environmental hygiene**
- Regularly clean and disinfect frequently touched surfaces such as furniture, toys and commonly shared items with 1:99 diluted household bleach (mixing one part of 5.25% bleach with 99 parts of water), leave for 15 to 30 minutes, and then rinse with water and keep dry. For metallic surface, disinfect with 70% alcohol;
- Use absorbent disposable towels to wipe away obvious contaminants such as respiratory secretions, and then disinfect the surface and neighbouring areas with 1:49 diluted household bleach (mixing one part of 5.25% bleach with 49 parts of water), leave for 15 to 30 minutes and then rinse with water and keep dry. For metallic surface, disinfect with 70% alcohol; and
- Maintain good indoor ventilation. Avoid going to crowded or poorly ventilated public places.

**Update on Diphtheria in Hong Kong**

Reported by Dr CHAN Hong-lam, Medical and Health Officer, Vaccine Preventable Disease Office, and Dr YH LEUNG, Senior Medical and Health Officer, Communicable Disease Division, Surveillance and Epidemiology Branch, CHP.

Diphtheria is an acute infectious disease caused by the bacterium *Corynbacterium diphtheriae*. It affects mainly the respiratory tract, causing respiratory diphtheria. Persons with respiratory diphtheria usually present with fever, sore throat with patches of greyish membrane adhered to the throat, and breathing difficulty. In serious cases, it can cause airway obstruction, heart failure and nerve damage. Fatal cases can occur. Occasionally the bacterium can affect skin, causing cutaneous diphtheria. *C. diphtheriae* can replicate on the surface of mucous membrane. Aural, vaginal, conjunctival and cutaneous diphtheria account for approximately 2% of diphtheria cases.

Morbidity and mortality of the infections are mainly due to diphtheria toxin produced by the bacterium. Exotoxin produced by the bacterium can be absorbed from skin lesions, and causes toxic damage to organs such as heart, kidneys and nervous system. Diphtheria is mainly transmitted by coming into contact with droplets from the respiratory tract of an infected person (e.g. from coughing or sneezing), and less commonly through physical contact with the wounds or skin lesions of an infected person.

**Global epidemiology and re-emergence**

According to the latest information from World Health Organization (WHO), reported diphtheria cases globally declined from almost 10 000 cases per year during 2000-2004 to 5 288 per year during 2005-2009 and leveled off since then. South-East Asia region, particularly India, accounted for the majority of global diphtheria burden in recent years. India reported 18 350 cases in 2011-2015, followed by Indonesia which reported 3 203 cases. Some other Asian countries including Nepal (1 440 cases), Lao People's Democratic Republic (344 cases), Pakistan (321 cases), Myanmar (180 cases) and Thailand (157 cases) were also among countries reporting most cases of diphtheria in 2011-2015 worldwide.

Although cases of diphtheria are rarely reported in developed countries, people who have not received immunisation with diphtheria toxoid are susceptible to the disease. For instance, in Singapore, a 21-year-old foreign worker from Bangladesh presented to a hospital in August 2017 with fever, sore throat and neck swelling. His respiratory sample tested positive for toxigenic *C. diphtheriae*. The patient passed away five days after symptoms onset. He did not have recent travel history out of Singapore before his onset, and hence he was likely infected in Singapore. According to the Ministry of Health of Singapore, prior to this case, the last local and imported cases of diphtheria had been recorded in 1992 and 1996 respectively. The occurrence of this recent case in Singapore highlighted the potential of re-emergence of diphtheria and importance of immunisation and continuous surveillance.

Although cutaneous diphtheria occurs rarely and data are not routinely reported in many surveillance systems (for example the Joint Reporting Form of WHO), cases of cutaneous diphtheria have been reported in Australia (two cases in 2014) and New Zealand (one to two cases annually in 2014-2016) in recent years. Most of the cases had travel history to Asia or South Pacific region during the incubation period.
Local immunisation

In Hong Kong, diphtheria-containing vaccine was first introduced in 1956 with diphtheria, tetanus & whole cell pertussis vaccine (DTwP) given to children at 2-4 months, 3-5 months, 4-6 months and 18 months of age, and diphtheria and tetanus (DT) vaccine given at Primary one. Currently, the Hong Kong Childhood Immunisation Programme provides free diphtheria, tetanus, acellular pertussis and inactivated poliovirus (DTaP-IPV) vaccines to eligible children at two, four and six months of age, followed by booster doses at 18 months, Primary one and Primary six (reduced dose).

Local epidemiology

The annual number of reported diphtheria cases fell drastically since the early 1960s from nearly 1500 cases per year to no more than two cases per year after 1972 (Figure 1). No respiratory diphtheria cases were recorded locally since the last fatal case occurring in 1982.

In April 2018, a sporadic case of cutaneous diphtheria affecting an 81-year-old Hong Kong born Chinese man with underlying illnesses was reported to the Centre for Health Protection (CHP) of the Department of Health. This is the first case of cutaneous diphtheria with isolation of toxigenic C. diphtheriae recorded by CHP in the past 10 years. The patient had presented with a spontaneous left ankle swelling with wound and discharge since March 24, 2018. He was admitted to a public hospital on March 31 and physical examination showed two wounds over his left anterolateral and posterolateral ankle respectively. The clinical diagnosis was left leg cellulitis. He was given a course of antibiotics and was discharged on April 3.

Subsequently, his left anterior ankle wound swab collected on March 31 yielded toxigenic C. diphtheriae, Streptococcus pyogenes and Staphylococcus aureus. He did not have fever or any respiratory symptoms all along and his clinical diagnosis was cutaneous diphtheria. He was called back by the hospital to complete a two-week course of antibiotics. Wound swab collected from the patient’s left ankle on April 18 was cultured negative and his left ankle wounds were found to have healed upon follow-up on May 15.

Epidemiological investigation revealed that the patient lived with his wife who had underlying illnesses. She also presented with a painful left ankle swelling on February 9 while she did not have fever, wound or respiratory symptoms. She was admitted to the same public hospital from February 12 to 13 with a clinical diagnosis of swollen ankle. No clinical specimen was collected from her and she was treated with a course of antibiotics with uneventful recovery.

The couple had travelled to the Philippines for four days in mid-September 2017 to meet their relatives. Their relatives were asymptomatic and the couple denied any contact history of patients with diphtheria or wound there. The couple’s vaccination history for diphtheria was unknown. Health advice on transmission, prevention and control of diphtheria was given to the couple and the patient’s wife declined chemoprophylaxis offered by CHP.

References


**An imported confirmed case of brucellosis**

On June 30, 2018, the Centre for Health Protection (CHP) recorded a confirmed case of brucellosis affecting a 52-year-old woman with underlying illnesses. The patient lives in Fujian with her husband and she used to be a butcher before mid-February 2018. She had history of neuro-brucellosis diagnosed in Fujian in 2014 and had received antibiotics. She presented with left knee swelling in July 2017. She attended a hospital in Fujian and was told that the swelling was one of the manifestations of her underlying illness. While the left knee swelling persisted, she then developed right thumb swelling on June 12, 2018. She came to Hong Kong on June 17 and was admitted to a public hospital on June 19. Aspiration of her left knee joint and right thumb swelling was done and she was discharged on June 22. Aspirate specimens of both sites yielded *Brucella melitensis* and she was called back for admission on June 29. She was treated with antibiotics and her condition was stable. She had history of slaughtering goat and handled goat internal organs when she worked as a butcher. Her home contact was asymptomatic.

**A sporadic case of psittacosis**

On July 5, 2018, CHP recorded a case of psittacosis affecting a 36-year-old male with good past health. He had presented with fever, cough with sputum and runny nose since June 29 and was admitted to a public hospital on July 2. His chest X-ray showed left lower zone haziness. The clinical diagnosis was pneumonia. His sputum taken on July 3 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). He was treated with antibiotics and was discharged on July 7. He had no recent travel history and no history of direct contact with birds, bird droppings or bird carcasses during the incubation period. He lived with his wife and son. His wife remained asymptomatic whereas his son had fever and cough since July 4. His son sought medical attention from a general practitioner. He was diagnosed to have upper respiratory tract infection and had recovered.

**A local sporadic case of listeriosis**

On July 10, 2018, CHP recorded a case of listeriosis affecting a 56-year-old man with underlying illness. He was admitted to a public hospital for management of his underlying illness on July 3. He developed fever on July 5 and his blood culture collected on July 7 yielded *Listeria monocytogenes*. He was treated with antibiotics and his condition was stable. The patient had no history of high risk food consumption during the incubation period. He lived with his wife who was asymptomatic.

**A sporadic case of necrotising fasciitis due to *Vibrio vulnificus* infection**

On May 6, 2018, a 44-year-old male with pre-existing medical conditions presented with chills and rigors, left foot painful swelling with redness and pus discharge on May 9. He was admitted to a public hospital on May 10. The clinical diagnosis was necrotising fasciitis. He was treated with antibiotics and surgical debridement. Left foot wound swab collected on July 11 was tested positive for *Vibrio vulnificus*. He had cut injury over left foot while walking on shallow water of a beach on July 2. He had no recent travel history and his home contacts were asymptomatic.

**CA-MRSA cases in June 2018**

In June 2018, CHP recorded a total of 109 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 70 males and 39 females with ages ranging from three months to 78 years (median: 35 years). Among them, there were 79 Chinese, 12 Filipinos, 3 Caucasian, 3 Pakistani, 2 Indian, 2 Nepalese and 8 of unknown ethnicity.

One hundred and eight cases presented with uncomplicated skin and soft tissue infections while the remaining case had severe CA-MRSA infection. The severe case affected a 61-year-old man who presented with fever and left calf pain since April 20. He sought medical advice from a general practitioner but symptoms persisted. He attended the Accident and Emergency Department of a public hospital on May 6 and was admitted for management on the same day. Ultrasonography of his left leg suggested the presence of an abscess. He was treated with antibiotics, incision and drainage of his left leg abscess and excisional debridement of his left leg. Pus from his left leg abscess collected on May 19 and necrotic tissues of his left leg collected on June 1 were cultured positive for CA-MRSA. The clinical diagnosis was left leg intramuscular abscess. He remained in a stable condition and was discharged on June 21.

Among the 109 cases, one was a radiographer working in a private clinic. Investigation did not reveal any epidemiologically linked cases. Besides, five clusters, with each affecting two persons, were identified in June.

**Scarlet fever update (June 1, 2018 – June 30, 2018)**

Scarlet fever activity continued to increase in June. CHP recorded 196 cases of scarlet fever in June as compared to 124 cases in April and 167 cases in May. The cases recorded in June included 121 males and 75 females aged between 10 months and 37 years (median: five years). There were seven institutional clusters occurring in kindergartens or child care centres, affecting a total of 21 children. No fatal cases were reported in June.