

Communicable Diseases

WATCH



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FEATURE IN FOCUS

Update on situation of scarlet fever

Reported by Dr Ashley FONG, Medical and Health Officer, Respiratory Disease Office, Surveillance and Epidemiology Branch, CHP.

Scarlet fever (SF) is a bacterial infection caused by Group A *Streptococcus* (GAS) and is a notifiable disease in Hong Kong. Before 2011, the annual number of SF cases reported to the Department of Health (DH) was below 250 cases. There has been a significant increase in the number of reported SF cases since the territory-wide outbreak of SF in the first half of 2011. The annual number of SF cases reported to the Centre for Health Protection (CHP) of DH ranged between 1 100 and 1 526 from 2011 to 2016 (Figure 1).

While SF occurred throughout the year locally, there was a seasonal pattern for SF in Hong Kong with its activity higher from November to March and from May to June in the past few years (Figure 2).

In the past few months, the activity of SF remained at a high level. It followed the seasonal trend and started to increase since November 2016. The activity remained at a high level in December 2016 and January 2017, and slightly decreased in February. The monthly number of SF cases recorded from November 2016 to February 2017 was 182, 222, 176 and 168 respectively. However, the SF activity increased again in March with a total of 249 cases recorded. This was higher than the number recorded in the same period in previous years and was also the greatest monthly number of cases ever recorded by CHP. The number of SF cases has decreased to 187 in April.

The clinical and epidemiological features of the SF cases recorded during the first four months of 2017 were largely similar to those recorded from 2012 to 2016 (Table 1). Among the 780 cases reported in the first four months of 2017, the proportion of male cases was 57%. Their ages ranged from two months to 31 years (median: five years). The majority affected were children under ten years old (762 cases, 98.0%). Two hundred seventy-four patients (35.1%) required hospitalisation and among them, there was one severe case requiring admission to intensive care unit. This was a five-year-old girl with good past health. She presented with fever, vomiting and rash over chest and abdomen on March 23, and was admitted to a public hospital on March 26. She was diagnosed to have chickenpox and streptococcal pneumonia complicated with toxic shock syndrome. She was treated with antibiotics and discharged on April 3. No fatalities were recorded during this period.

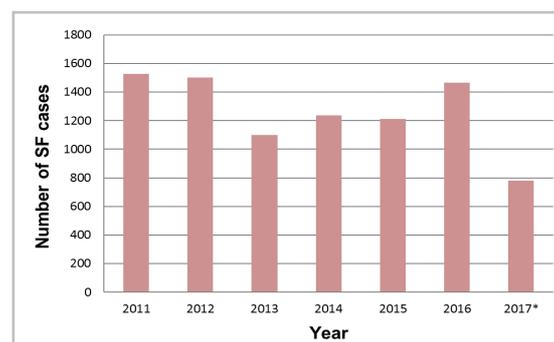


Figure 1 - Annual number of SF cases reported to CHP, 2011-2017 (as of April 30, 2017*).

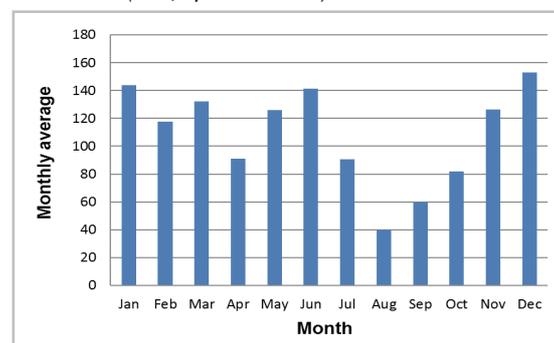


Figure 2 - Average monthly number of SF cases reported to CHP, 2012-2016.

Table 1 - Characteristics of SF cases, 2012-2017 (as of April 30, 2017).

	2012 - 2016	January - April, 2017
Number of reported cases	6 514	782
Sex ratio (M:F)	1.4:1	1.3:1
Age range (median)	1 months - 64 years (6 years)	2 months - 31 years (5 years)
Number requiring hospitalisation	2 720 (42%)	274 (35%)
Number of severe cases (%)	15 (0.23%)	1 (0.13%)
Number of deaths (case fatality rate)	1 (0.02%)	0
Number of clusters recorded	Institutions: 138 Households: 85	Institutions: 24 Households: 13
Number of persons involved in each cluster (median)	2 - 6 (2)	2 - 5 (2)
Percentage of cases involved in clusters (%)	7.7%	10.8%

In the first four months of 2017, there were 24 institutional clusters involving 17 kindergartens/child care centres and seven primary schools, and 13 household clusters. A total of 84 persons (10.8% of all the cases) were affected, with two to five patients (median: two patients) affected in each cluster.

In summary, the SF activity in Hong Kong had increased since November 2016 following the seasonal pattern, and it further increased to a higher than usual level in March before it started to decrease in April. There was no evidence of changes in the epidemiology of the SF cases recorded in the past few months. CHP will continue to closely monitor the SF situation.

As SF can be treated with appropriate antibiotics effectively, people who are suspected to have SF should consult their doctor promptly for effective treatment. Children suffering from scarlet fever should refrain from attending school or child care setting until fever has subsided and they have been treated with antibiotics for at least 24 hours. To prevent SF, members of the public should:

- ◆ Maintain good personal and environmental hygiene;
- ◆ Keep hands clean and wash hands properly;
- ◆ Wash hands when they are dirtied by respiratory secretions, for example, after sneezing;
- ◆ Cover nose and mouth while sneezing or coughing and dispose of nasal and mouth discharge properly; and
- ◆ Maintain good ventilation.

Facts on Scarlet Fever

SF usually starts with a sore throat, headache and fever and may be followed by a fine red, erythematous rash, which gives the skin a sand-paper-like texture. The rash may occur at any part of the body such as the upper trunk, armpit and neck, but spare the face, palms of the hands and sole of the feet. The tongue of the infected person may appear swollen, red and bumpy, and have a “strawberry”-like appearance with a whitish coating.

It usually runs a mild course, but complications may develop occasionally. Potential complications include otitis media, throat abscess, pneumonia, meningitis, acute rheumatic fever, acute glomerulonephritis, sepsis and toxic shock syndrome. SF can be effectively treated with antibiotics. Prompt treatment helps alleviate symptoms faster, prevents rare but serious complications, and minimises the risk of transmission.

Global and local updates on pertussis

Reported by Ms Fanny WS HO, Scientific Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.

Pertussis, commonly known as whooping cough, is an acute, highly contagious respiratory infection caused by the bacterium *Bordetella pertussis*. It is spread by droplets when an infected person coughs or sneezes, or via direct contact with respiratory secretions. The illness affects people of all ages, especially infants who are too young to be vaccinated. In adolescents and adults, the disease may have a mild and nonspecific course. However, in unprotected young children and particularly infants, morbidity is more often substantial and the disease may be fatal.

Since the last decade, pertussis has been a cause of concern in several developed countries, where resurgence of the disease was noted despite high vaccination coverage. Epidemics have been observed in Australia, Canada, the United Kingdom and the United States, leading to significant morbidity and mortality among young infants and children. In Australia, an increase in pertussis cases was reported in preschool-aged children from 2008 which might have been attributable to the removal of the 18-month booster dose of diphtheria, tetanus and acellular pertussis (DTaP) vaccine in the country in 2003¹. In 2012, increases in incidence were observed in Canada across all age groups nationally, with the highest incidence rates in those less than one year and those 10 to 14 years of age². At the same time, England and Wales also experienced a nationwide pertussis outbreak with over 9 300 cases and 14 infant deaths³. Large multi-state outbreaks were reported in the United States resulting in more than 48 000 cases in the most recent peak year of 2012, predominantly among school-aged children (seven to 10 years)^{4,5}.

Similarly in Asia, increased pertussis activity was seen in Mainland China with a substantial rise from 1 743 cases in 2013 to 6 744 cases in 2015⁶. In Japan, pertussis incidence rates have been rising among adolescents and adults since the early 2000s, and a large epidemic occurred with 17 349 cases reported between 2008 and 2010⁷.

In an effort to provide indirect protection to vulnerable young infants, different vaccination strategies targeting adolescents and adults, in addition to children, were recommended in these countries, including additional booster for adolescents, vaccination of pregnant women and household contacts of infants (cocoon strategy). Further in 2014, in the light of recent pertussis resurgence in some countries, the World Health Organization (WHO) Strategic Advisory Group of Experts on Immunization (SAGE) Working Group on Pertussis Vaccines reviewed the epidemiological situation in selected countries and the impact of different vaccination strategies in reducing infant mortality⁸. Relevant recommendations were made and incorporated into the updated WHO position paper on pertussis vaccines published in August 2015⁹.

While the reasons for the increase in cases of pertussis are not fully understood, some studies suggest that the apparent resurgence was largely driven by waning of immunity and renewed susceptibility to infection within the birth cohorts of children vaccinated with acellular vaccines¹⁰. There are also some other explanations for this increasing trend, such as increased disease awareness, improved diagnostics using polymerase chain reaction (PCR) testing, lower vaccine effectiveness of acellular pertussis vaccine compared with whole cell pertussis vaccine, and possible genetic changes in circulating strains of *Bordetella pertussis*^{11,12}.

In Hong Kong, pertussis occurs in cyclical peaks every three to five years. The number of annual notifications increased from 20 cases in 2012 to a high of 50 cases in 2015. Although the number dropped to 31 cases in 2016, the activity increased again this year, with 26 cases reported in the first four months of 2017 (Figure 1).

Between 2012 and the first four months of 2017, a total of 177 pertussis cases were reported to the Centre for Health Protection (CHP) of the Department of Health. Cases were almost evenly distributed between the two sexes (88 females and 89 males), with ages ranging from 19 days to 92 years (median: three months). One hundred forty-nine (84%) cases were locally acquired infection while 24 of them were imported from Mainland China (22), India (1) and Russia (1). Two cases were unclassified due to trans-border movement during the incubation period, while two other patients could not be reached for further investigation and thus the source of infection remained unknown.

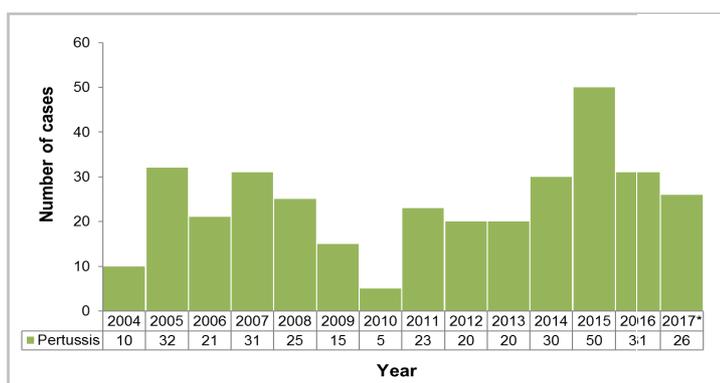


Figure 1 - Annual notifications of pertussis in Hong Kong, 2004-2017* (as of April 30).

All the reported cases were laboratory confirmed by either culture (7%) or PCR (93%). Positive specimen types included pernasal swabs (48%), nasopharyngeal swabs (34%), nasopharyngeal aspirates (11%), sputum (4%), bronchoalveolar lavage (2%) and tracheal/endotracheal aspirate (1%). *Bordetella pertussis* was also detected in the nasopharyngeal/pernasal swabs from ten asymptomatic household contacts of the cases during active case finding and contact tracing.

Clinically, the most common presenting symptom was persistent cough (100%), followed by post-tussive vomiting (49 cases, 28%), runny nose (48 cases, 27%), shortness of breath (30 cases, 17%) and fever (23 cases, 13%). One hundred fifty (80%) cases required hospitalisation, among which nine of them required treatment at the intensive care unit. No pertussis-related fatalities were recorded over the period of review.

Infants aged less than one year, who are at greatest risk for severe disease and death, accounted for two-third of overall cases (104 cases, 60%). Infection was most prevalent among infants under six months of age (100 cases, 56%) for whom the primary series of DTaP vaccination was not completed. Among these cases, 48 (27%) of them were aged less than two months and had not reached the recommended age for the first dose of DTaP vaccine under the Hong Kong Childhood Immunisation Programme (HKCIP). Except one four-year-old Russian boy who was unsure of his vaccination status, 14 children aged one to 12 years reported to have received the primary series and subsequent boosters at appropriate age. For the 58 adult cases (16 to 92 years), most of them (53 cases, 91%) were either unvaccinated or had unknown vaccination status.

Locally, large pertussis outbreaks were uncommon. From 2012 to April 2017, 16 outbreaks were identified. These outbreaks were generally small in size (ranging from two to seven persons), mostly affecting young infants, their parents, siblings, other household members and caregivers. Among these 42 epidemiologically linked cases, 14 (33%) were infants aged less than six months who were not fully vaccinated, seven (17%) of which were younger than two months old and not yet due for vaccination.

Since 1956, pertussis vaccination has been included in the childhood immunisation programme in Hong Kong. The coverage rates with three doses in children aged two to five years have exceeded 95% for many years. The current pertussis vaccine provided in the Maternal and Child Health Centres for infants and young children and by the School Immunisation Teams for primary school children is in the form of combined diphtheria, tetanus, acellular pertussis and inactivated poliovirus 4-in-1 vaccine. The

three doses of primary series are administered to infants at two, four and six months of age, whilst the three boosters are given to children at 18 months of age, Primary One and Primary Six respectively. Completion of the primary series with acellular pertussis vaccine is expected to confer 85% protective efficacy, and up to 90% following booster vaccination¹³.

In view of the current pertussis resurgence, the Scientific Committee on Vaccine Preventable Disease under CHP will keep abreast of the latest epidemiological trends and revisit local vaccination strategies from time to time.

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NEWS IN BRIEF

A sporadic confirmed case of brucellosis

On April 22, 2017, the Centre for Health Protection (CHP) recorded a confirmed case of brucellosis affecting a 74-year-old woman with underlying illnesses. She presented with fever, headache and fatigue on March 25, 2017. Her fever subsided after a few days but other symptoms persisted. On April 15, she developed dizziness and syncope and was admitted to a public hospital on the same day. She was discharged on April 17 with a diagnosis of syncope. Her blood specimen collected on April 16 grew *Brucella melitensis*. She was called back for re-admission to the same public hospital on April 20. She was treated with antibiotics and her condition was stable. The patient recalled history of injury to her left palm while preparing raw pork at home in mid-February and she also had history of handling raw mutton at home during the incubation period. She had no travel history outside Hong Kong except for a day trip to Macau in January. Her home contacts were asymptomatic. Investigations are on-going.