

Communicable Diseases

WATCH



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FEATURE IN FOCUS

Update on the dengue fever outbreak in Hong Kong in 2018

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Further to the review on the local dengue fever (DF) outbreak recorded in summer this year published on August 30, 2018, this article provides an update on the latest situation of DF in Hong Kong. As of September 11, 2018, the Centre for Health Protection (CHP) of the Department of Health recorded a total of 106 confirmed DF cases this year with 29 and 77 being local and imported cases respectively.

The local outbreak of DF in 2018

The first four confirmed local DF cases in 2018 were notified to CHP on August 14. Epidemiological investigations and control measures have been carried out immediately. Subsequently, more local cases were recorded. A total of 29 cases have been confirmed during the period from August 14 to September 11. The 29 cases involved 16 males and 13 females, with ages ranging from 17 to 84 years (median: 59 years). Their dates of symptom onset ranged between July 31 and August 28 (Figure 1). Fever was the commonest presenting symptom (28 cases, 96.6%), followed by myalgia (24 cases, 82.8%), headache (21 cases, 72.4%), rash (16 cases, 55.2%) and arthralgia (14 cases, 48.3%). Twenty-four patients (82.8%) required hospitalisation and all of them have been discharged. All patients have remained in stable condition and there were no severe cases so far.

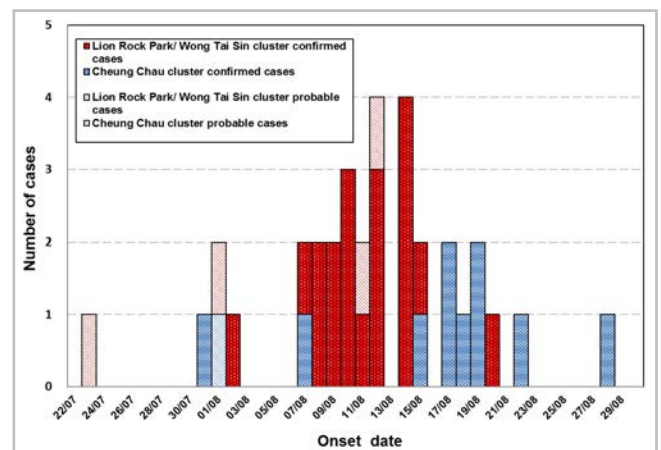


Figure 1 - Epidemic curve by date of onset of symptoms.

While these 29 local DF cases lived in various districts in Hong Kong, epidemiological investigations found that they were linked to two separate clusters, one in Lion Rock Park/ Wong Tai Sin (19 cases) and the other in Cheung Chau (ten cases). The genetic sequencing results were compatible with the epidemiological findings.

Among the 19 cases involved in the Lion Rock Park/ Wong Tai Sin cluster, 18 had been to Lion Rock Park during the incubation period, including four patients who worked at the park and another 14 patients visiting the park. The remaining patient reported that he had not visited Lion Rock Park but had visited the vicinity of Wong Tai Sin MTR Station during the incubation period. The last case in this cluster had onset of illness on August 20.

Among the ten cases involved in the Cheung Chau cluster, eight live in various places in Cheung Chau while the other two had visited Cheung Chau during the incubation period. Unlike the Lion Rock Park/ Wong Tai Sin cluster, the places visited by the patients scattered over Cheung Chau in particular the Southern part of the island. There was no single hotspot for acquiring DF in Cheung Chau. The last case of this cluster had onset of illness on August 28 and the patient was isolated in mosquito-free environment since August 29.

Separately, five probable local DF cases have been recorded in this period. These were clinically compatible cases with supportive serological test results but without any positive confirmatory laboratory test. Among the five cases, three sought medical advice due to clinical symptoms while the other two were identified through active case finding. The five cases involved three males and two females, with ages ranging from 44 to 77 years (median: 63 years). Their dates of symptom onset ranged between July 23 and August 12 (Figure 1). Fever was the commonest presenting symptom (four cases, 80%), followed by headache (three cases, 60%), arthralgia (two cases, 40%), myalgia (two cases, 40%) and rash (two cases, 40%). Two patients (40%) required hospitalisation and both of them have been discharged.

Among the five probable local cases, four had been to Lion Rock Park during the incubation period, including one who worked at the park and another three who visited the park, while the remaining case lived in Cheung Chau. The blood samples of all the five patients were tested positive for immunoglobulin M (IgM) antibodies to dengue virus but negative for dengue virus by polymerase chain reaction. For dengue virus antigen test, four samples were tested negative while the remaining one could not be tested due to insufficient quantity. The paired serum samples of four patients did not demonstrate a four-fold or greater change in antibody titres to dengue virus antigens while the remaining patient refused further blood testing for antibody titres. In summary, these laboratory findings suggest that the patients probably had recent dengue fever infection, but laboratory investigations could not confirm the diagnosis.

Risk assessment of the current situation and health advice to the public

This is the first local outbreak of DF of this scale since the major local outbreak in Ma Wan in 2002. Two distinct sources have been identified. With the implementation of prompt, continuous and intensive anti-mosquito operations, the number of new cases has been decreasing markedly in the past two weeks, with the date of onset of the last case on August 20, 2018 in Lion Rock Park/Wong Tai Sin cluster, and August 28, 2018 in the Cheung Chau cluster. It is essential to continue the intensive anti-mosquito measures in the coming months in all districts to prevent DF from taking root in Hong Kong.

Apart from the Government's prevention and control measures, the prevention of secondary spread of DF as well as the carrying out of anti-mosquito measures by members of the public are equally important. Members of the public can help in the prevention of DF by taking part in mosquito control actions and adopting personal protective measures against mosquito bites. The following preventive measures should be taken to prevent accumulation of stagnant water and eliminate mosquito breeding sites:

- ❖ Thoroughly check all gully traps, roof gutters, surface channels and drains to prevent blockage;
- ❖ Scrub and clean drains and surface channels with an alkaline detergent compound at least once a week to remove any deposited mosquito eggs;
- ❖ Properly dispose of refuse, such as soft drink cans, empty bottles and boxes, in covered litter containers;
- ❖ Completely change the water of flowers and plants at least once a week.; the use of saucers should be avoided if possible;
- ❖ Level irregular ground surfaces before the rainy season; and
- ❖ Avoid staying in shrubby areas.

Members of the public are also advised to protect themselves from mosquito bite by taking the following measures:

- ❖ Wear loose, light-coloured, long-sleeved tops and trousers, and apply effective mosquito repellent containing DEET to exposed parts of the body and clothing;
- ❖ Use mosquito screens or bed nets when the room is not air-conditioned; and
- ❖ Place anti-mosquito devices near entrances such as windows and doors to prevent mosquitoes from entering indoor.

People who reside in or visit Cheung Chau are advised to apply insect repellent during their stay and continue applying for 14 days after their last day of stay to prevent infection or secondary spread.

More information on preventive measures could be found in the website of CHP at <http://www.chp.gov.hk/en/content/9/24/19.html>. For the latest situation of the DF outbreak, please visit the designated DF website at <https://www.chp.gov.hk/en/features/38847.html>.

Tuberculosis among Educational Institutions in Hong Kong in 2017

Reported by Dr WS LAW, Senior Medical and Health Officer, and Dr CK CHAN, Consultant Chest Physician i/c, Tuberculosis and Chest Service, Public Health Services Branch, CHP.

Introduction

Despite a marked decrease in notification rate in the past few decades, tuberculosis (TB) is still a relatively common disease in Hong Kong. A total of 4 306 TB cases (provisional figure) were notified to the Department of Health (DH) in 2017, corresponding to a notification rate of 58.27 per 100 000 population. The number of TB cases notified to DH among subjects in the usual school age of three to 24 was 283 (6.6% of all notifications) in 2017¹, which represents a 38.1% reduction compared to the corresponding figure of 457 in 2008. Being an airborne infectious disease, clustering of TB cases in educational institutions does occur from time to time, as in other congregational settings²⁻⁴. This article gives a brief overview of clustering of TB cases in the school setting in Hong Kong in 2017. Summary data on the epidemiological pattern and molecular characterisation of the various school clusters will be presented.

TB Cluster in the School Setting in 2017

A total of 15 clusters of TB cases were reported among educational institutions in 2017. The majority (13 clusters, 86.7%) occurred in secondary and post-secondary schools (Table 1). The cluster size ranged from two to 15 cases, with a median of four cases (data as of May 31, 2018). Of the 15 primary cases, 12 (80.0%) were students. The rest were either teaching or supporting staff.

Table 1 - Characteristics of clusters among educational institutions in 2017.

School Cluster	1	2	3	4	5
Primary case	Student	Student	Student	Student	Student
Institution	Secondary School	Post-Secondary school	Secondary School	Secondary School	Secondary School
Cluster size	3	4	15	5	4
Number with a positive sputum and/ or other specimen culture	3	4	8	4	3
VNTR result*	Indistinguishable VNTR pattern 2 Different VNTR pattern 1	Indistinguishable VNTR pattern 2 Different VNTR pattern 2	Indistinguishable VNTR pattern	Indistinguishable VNTR pattern 3 Different VNTR pattern 1	Indistinguishable VNTR pattern

School Cluster	6	7	8	9	10	11	12	13	14	15
Primary case	Student	Student	Student	Student	Student	Student	Student	Staff	Staff	Staff
Institution	Post-Secondary school	Post-Secondary school	Secondary School	Post-Secondary school	Post-Secondary school	Post-Secondary school	Post-Secondary school	Kindergarten	Primary school	Secondary School
Cluster size	7	4	3	6	4	3	3	2	2	2
Number with a positive sputum and/ or other specimen culture	2	2	3	5	3	3	3	1	0	1
VNTR result*	Different VNTR pattern	Different VNTR pattern	Different VNTR pattern	Different VNTR pattern	Different VNTR pattern	Different VNTR pattern	Different VNTR pattern	NA	NA	NA

*VNTR: molecular typing with variable number tandem repeat; NA:VNTR result not available as there were less than two culture positive cases in that cluster

Molecular characterisation

To establish any possible bacteriological link between the cases in individual school clusters, molecular typing with variable number tandem repeat (VNTR) on positive isolates from the microbiologically confirmed cases were retrospectively performed by the TB laboratory of the Public Health Laboratory Centre using standard procedures⁵. An indistinguishable VNTR pattern was detected among some or all of the bacteriologically confirmed TB cases in five clusters (Cluster 1 to 5), suggesting that at least some of the cases in these individual clusters were genotypically related and that there had been transmission between the cases (Table 1). On the other hand, different VNTR patterns were detected among the bacteriologically confirmed TB cases in seven clusters (Cluster 6 to 12), suggesting that the cases in these individual clusters were unlinked and were more likely to be part of a larger network of community transmissions. Molecular characterisation to establish any bacteriological link between the cases in individual cluster was not possible for the remaining three clusters (Cluster 13 to 15) as there were fewer than two culture-confirmed tuberculosis cases.

Characteristics of primary cases among the five clusters with cases that were genotypically linked

The epidemiological and clinical presentations of the primary cases among the five clusters with cases that were genotypically linked were shown in Table 2. The primary case and the secondary cases in these five clusters either studied in the same class or were epidemiologically linked in other school activities. All of them were students. Majority were studying in secondary schools (80%) and had prolonged cough for two months or more (80%). All primary cases had a positive sputum and/or bronchial aspirate smear for acid fast bacilli. One primary case (20.0%) had bacillary drug resistance to streptomycin. Four (80.0%) primary cases had cavitary lung disease on initial chest radiograph. The extent of lung parenchymal lesion was moderate in two (40.0%) and extensive in two (40.0%) primary cases. None of the primary cases had a family history of TB within the past two years prior to the diagnosis of TB.

Discussion

A substantial number of TB cases still occurred among subjects in the usual school age of three to 24 in 2017, although the situation has significantly improved as compared with a decade ago. While clustering of TB cases in the school setting occurred, molecular typing, supplemented with standard contact investigation, showed that the TB cases in the individual clusters were possibly linked in less than half of the clusters. Among the latter, delayed presentation of the primary cases, as exemplified by a rather long median interval of symptoms of two month before TB was diagnosed, a high proportion with a positive sputum and/ or bronchial aspirate smear for acid fast bacilli, and a high proportion with moderate to extensive cavitary lung disease on initial chest radiograph, probably accounted for the TB spread in these clusters. The school environment might have been one of the predisposing factors, as the close proximity of students in small congested classrooms might facilitate transmission of TB, especially if ventilation was insufficient. Early identification of TB cases and prompt initiation of anti-TB treatment remain the mainstay of TB control among educational institutions, while mass contact screening and post-exposure chemoprophylaxis for

exposed contacts documented to have acquired the infection might play a supplementary role⁶. To facilitate early diagnosis and timely treatment of this airborne infectious disease at the source, it is important to promote awareness of TB in schools, the general community as well as the healthcare sector, and to reduce social stigma against TB patients⁷.

Table 2 - Characteristics of primary cases among the five clusters with cases that were genotypically linked.

School Cluster	1	2	3	4	5
Primary case	Student	Student	Student	Student	Student
Institution	Secondary School	Post-Secondary school	Secondary School	Secondary School	Secondary School
Sex	F	M	M	M	M
Age	16	19	16	17	17
Symptoms	Cough	Cough, fever	Cough, haemoptysis, fever, weight loss	Cough, fever	Cough, weight loss
Duration of symptoms	2 months	3 weeks	4 months	2 months	3 months
CXR extent*	II	III	III	II	II
Cavitary lesion	Yes	Yes	Yes	Yes	No
Sputum or BAL smear†	+	+	+	+	+
Sensitivity test‡	Favourable ST	Resistant to S, sensitive to HRE	Favourable ST	Favourable ST	Favourable ST
Contact history of TB	No	No	No	No	No
Epidemiological link with secondary cases	Yes	Yes	Yes	Yes	Yes
Number of secondary cases	2	3	14	4	3

*Extent I: total radiographic extent smaller than the equivalent of right upper lobe; extent II: total radiographic extent greater than the equivalent of right upper lobe but smaller than the equivalent of right lung; extent III: total radiographic extent greater than the equivalent of right lung

†BAL: Bronchial alveolar lavage

‡ST: sensitivity test; S: streptomycin; H: isoniazid; R: rifampicin; E: ethambutol

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⁶Outbreak of Pulmonary Tuberculosis in a Chinese High School, 2009-2010. Y Fang, L Zhang, C Tu et al. J Epidemiol 2013;23(4):307-12.

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NEWS IN BRIEF

A local case of *Streptococcus suis* infection

On August 29, 2018, the Centre for Health Protection (CHP) recorded a case of *Streptococcus suis* infection affecting a 98-year-old woman with underlying illnesses. She presented with fever, vomiting and diarrhoea on August 25, and was admitted to a public hospital on August 27. Her blood culture collected on August 27 yielded *Streptococcus suis* and she was treated with antibiotics. Her condition remained stable. She had no recent travel history, and had no high risk exposure or recent wound. Her home contact was asymptomatic.

Four sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus*

From August 29 to September 4, 2018, CHP recorded four sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus*. The first case was an 82-year-old female with underlying illnesses. She presented with fever and left forearm painful swelling on August 27, and was admitted to a public hospital on the same day. The clinical diagnosis was necrotising fasciitis. Wound debridement and left upper limb amputation was done on August 27 and 28 respectively. Necrotic tissue collected from her left forearm on August 27 grew *Vibrio vulnificus*. She was treated with antibiotics and remained in stable condition. The patient recalled history of a prick injury resulting in bleeding by an unknown sharp object in another person's shopping bag while walking in a wet market in Wong Tai Sin on August 26.

The second case was a 58-year-old male with good past health who presented with fever and right arm painful swelling on August 29. He was admitted to a public hospital on the same day and the clinical diagnosis was necrotising fasciitis. Wound debridement was performed on August 29 and right arm fascial fluid collected during the operation grew *Vibrio vulnificus*. He was treated with antibiotics and remained in stable condition. The patient had bought a fish from another wet market in Wong Tai Sin on August 28 and prepared it at home. He did not report recent injury or wound.

The third case was an 85-year-old woman with underlying illnesses. She presented with fever, left ankle swelling and pain on August 30, and was admitted to a public hospital on August 31. She developed septic shock and was transferred to the intensive care unit for further management on the same day. The clinical diagnosis was necrotising fasciitis and wound debridement was performed on September 1. Blood culture and left leg tissue collected on August 31 and September 1 respectively grew *Vibrio vulnificus*. She was treated with antibiotics and her condition remained stable. She did not report recent injury or wound.

The fourth case was an 88-year-old woman with underlying illnesses. She swam daily in a beach in Mui Wo and recalled having had sustained a right shin contusion at a friend's home on August 31. She developed increased pain and swelling over her right leg on September 3 and was admitted to a public hospital on the same day. The clinical diagnosis was necrotising fasciitis and right above knee amputation was performed on September 5. Her right leg wound swab collected on September 3 grew *Vibrio vulnificus*. She was treated with antibiotics and her condition was critical.

All four patients had no recent travel history and their home contacts were asymptomatic. Investigation so far did not identify epidemiological linkage among the cases.

Ad Hoc Infectious Disease Forum: An Update on Dengue Fever

An ad hoc Infectious Disease (ID) Forum was held on August 31, 2018 in view of the rise in local dengue fever cases in Hong Kong. Speakers from the Surveillance and Epidemiology Branch of CHP, adult and paediatric infectious disease specialists and representative from the Hospital Authority (HA) shared with healthcare workers about the current situation in Hong Kong and reminded them of the warning signs and symptoms to be alert of and gave update on the latest diagnosis and management logistics in HA.

Participation was keen with up to 180 frontline clinical staff, DH colleagues and HA senior executives, including hospital chief executives and department chiefs of service joining the forum.

During the talks, participants were informed of the current two separate clusters of cases identified. Enhanced measures including prevention, control, and active case identification were shared. Presentations also highlighted the management in pregnant women and the difficulty in differentiating from pre-eclampsia.

Real clinical cases with illustrating photos made a strong impression on the audience to have high index of suspicion in febrile patients with compatible clinical features. Lastly, all were reassured that there were updated protocols and contingency plans to cater for potential upsurge. Blood donors' management was also explained.

A sporadic case of psittacosis

On September 7, 2018, CHP recorded a sporadic case of psittacosis affecting a 68-year-old woman with underlying illnesses. She had presented with fever, cough, difficulty breathing, muscle pain and headache since August 27. She attended the Accident and Emergency Department of a public hospital on August 31 and was admitted for management on the same day. Her chest X-ray showed left sided consolidation and the diagnosis was pneumonia. Her nasopharyngeal aspirate collected on September 1 was tested positive for *Chlamydophila psittaci* DNA by polymerase chain reaction. She was treated with antibiotics. Her condition remained stable and was discharged on September 8. She lives with her husband, daughter and son and has travelled to Huizhou from August 22 to 23. She did not recall any direct contact with birds or their excreta there and elsewhere in Hong Kong during the incubation period. Her home contacts and travel collaterals were asymptomatic.

CA-MRSA cases in August 2018

In August 2018, CHP recorded a total of 115 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 60 males and 55 females with ages ranging from two years to 83 years (median: 36 years). Among them, there were 85 Chinese, 9 Filipinos, 5 Caucasian, 3 Indian, 3 Pakistani, 1 Bangladeshi, 1 Korean, 1 Nepalese, and 7 of unknown ethnicity. All cases presented with uncomplicated skin and soft tissue infections.

Eight household clusters, with each affecting two persons, were identified. No cases involving healthcare worker were reported during this period.

Scarlet fever update (August 1, 2018 – August 31, 2018)

Scarlet fever activity further decreased in August. CHP recorded 69 cases of scarlet fever in August as compared with 153 cases in July. The cases recorded in August included 37 males and 32 females aged between 18 months and 32 years (median: five years). There was one institutional cluster occurring in a kindergarten-cum-child care centre, affecting two children. No fatal cases were reported in August.



Photo - An ad hoc ID Forum was held on August 31, 2018. A total of 180 participants attended the forum and it was well received by the participants.