Communicable Diseases Watch

Communicable Diseases Watch (CDW) is an online monthly publication on communicable diseases published by the Centre for Health Protection (CHP). The publication aims at providing healthcare professionals with up-to-date infectious disease news and knowledge relevant to Hong Kong. It is also an indication of CHP's commitment to responsive risk communication in addressing the growing com- munity interest on infectious diseases.

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Communicable Diseases Watch

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FEATURE IN FOCUS

Review on *Mycoplasma pneumoniae* infection in Hong Kong

Reported by Dr Katie LAI, Medical and Health Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP

A recent increase in activity of *Mycoplasma pneumoniae (M. pneumoniae)* infection had been reported in Mainland China, as well as South Korea and Europe (including Denmark, France, Ireland, the Netherlands, Norway, and Sweden) in the latter half of 2023. The Centre for Health Protection (CHP) of the Department of Health closely monitors the situation of respiratory infections in Hong Kong through multiple surveillance systems, including laboratory testing, hospital admissions, and outbreak data. Below we reviewed the local activity of *M. pneumoniae* infection in recent years.

M. pneumoniae infection can occur at any time of the year. Historical data showed that cyclical high activity of *M. pneumoniae* was recorded every few years, with the last period of high local activity occurring in 2016 and 2019. The latest local surveillance data showed increased activity of *M. pneumoniae* during September to December 2023, but the level was lower than the peak levels in 2016 and 2019.

According to the Hospital Authority (HA) data, the majority of *M. pneumoniae* associated admissions to public hospitals were cases aged below 18 years. In 2016 and 2019, increased paediatric *M. pneumoniae* associated admissions were recorded with an annual total of about 1 600 to 1 700 episodes, as compared to fewer than 1 000 episodes in 2017-2018 and 2020-2022. Of note, between April 2020 and 2022, only few admissions were recorded likely due to stringent control measures related to COVID-19. In 2023, the annual total number of paediatric admission was about 700. The weekly paediatric admissions was maintained at a low level of zero to five from January to July. The activity increased since early August and the weekly admission fluctuated at an elevated level between 20 to 40 from September to December, at a level lower than 50 to 80 recorded in the peak months of 2016 and 2019 (Figure 1).

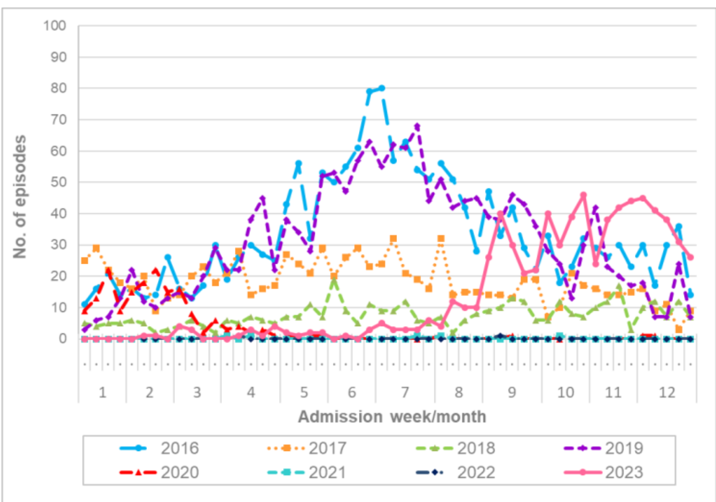


Figure 1 – Weekly number of paediatric (age <18 years old) M. pneumoniae associated admissions to public hospitals under HA, 2016-2023.

Regarding outbreak notifications, except for a relatively high number (total 19) of outbreaks recorded in year 2019, the number of outbreaks recorded from 2016 to 2023 ranged from zero to four per year (Figure 2). In 2023, there were four *M. pneumoniae* outbreaks recorded in November, affecting two primary schools and two special schools, and no reports in the rest of the year.

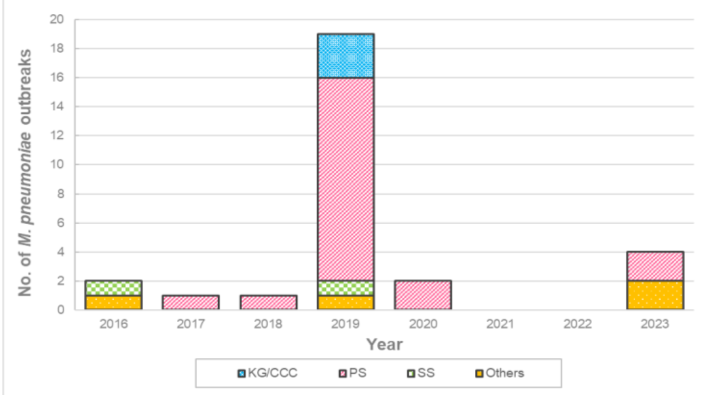
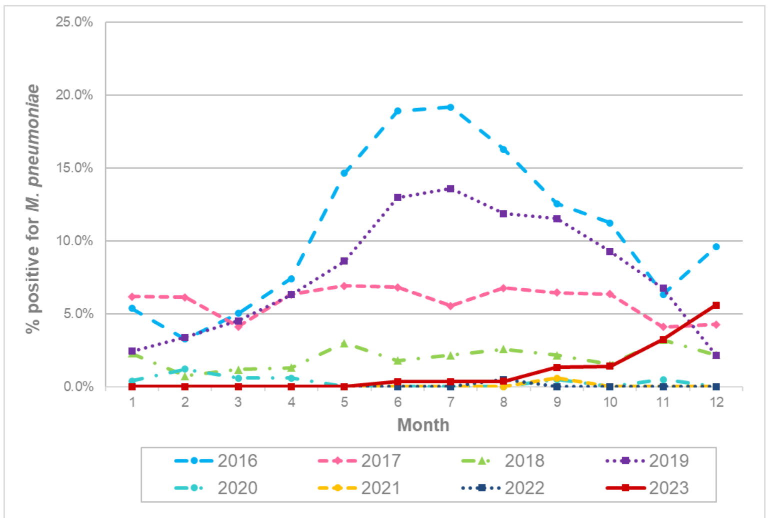


Figure 2 – Annual number of M. pneumoniae outbreaks, by type of institution, 2016-2023.

Remark: KG/CCC: Kindergartens/child care centres; PS: Primary schools; SS: Secondary schools; Others: Other institutions such as special schools and residential child care centres.

The monthly positive percentage as tested by the Public Health Laboratory Services Branch (PHLSB) among respiratory specimens of patients with clinical diagnosis of community-acquired pneumonia ranged from below 5% to 20% in 2016-2022. In 2023, the percentage increased since August from less than 1% to about 5% in December (Figure 3a).

Similarly, the weekly positive percentage among paediatric patients as tested by the HA laboratories has started to increase since August 2023. It fluctuated between about 2% and 4% from September to December (Figure 3b).



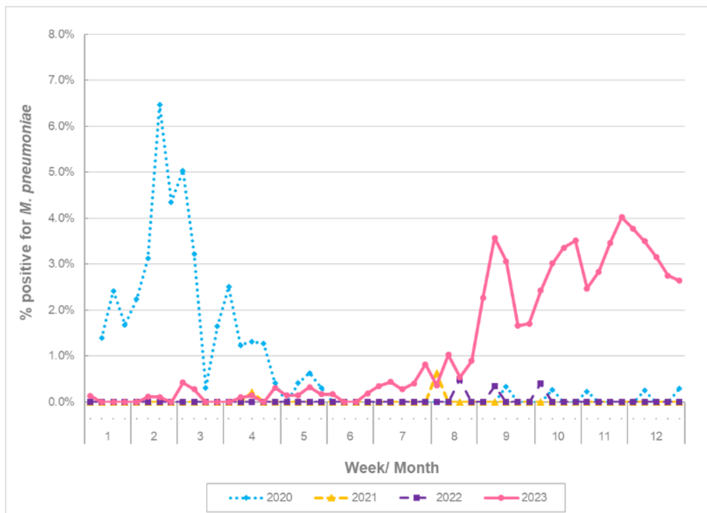


Figure 3 – (a) Monthly percentages tested positive for M. pneumoniae among clinical specimens by PHLSB, 2016-2023 (left); (b) Weekly percentages tested positive for M. pneumoniae among paediatric clinical specimens by the multiplex PCR system by HA, 2020-2023 (right).

In summary, there was cyclical increase in activity of *M. pneumoniae* in 2023 locally, during September to December, but the level was lower than the peak activity in years 2016 and 2019. Respiratory infections are generally more active in the winter and constitute a huge public health burden. As further lowering of temperature and increased travel during holidays create favourable conditions for the circulation and transmission of respiratory pathogens, a winter surge of respiratory infections in the community is anticipated. CHP continues to closely monitor the activity of respiratory infections, and members of the public are urged to remain vigilant against respiratory infections.

Facts on *M. pneumoniae* and health tips

The bacterium *M. pneumoniae* commonly causes mild infections of the respiratory system presenting with mild upper respiratory tract symptoms, in particular children and adolescents, but 5-10% of infected patients can develop atypical pneumonia. Most people recover from mild infections spontaneously, while pneumonia or severe infections can be treated with antibiotics. It was observed that about 30-70% of paediatric respiratory specimens tested positive for *M. pneumoniae* by PHLSB were macrolide resistant in 2019[1].

To prevent respiratory infections including influenza, COVID-19 and *M. pneumoniae*, members of the public should maintain good personal, hand, and environmental hygiene at all times. Persons with respiratory symptoms, even if the symptoms are mild, should wear a surgical mask, refrain from work or attending classes at school, avoid going to crowded places, and seek medical advice promptly. They should perform hand hygiene before wearing and after removing a mask. High risk persons are reminded to wear a surgical mask when visiting public places, and the public should also wear a surgical mask when taking public transportation or staying in crowded places.

As many respiratory pathogens, including influenza viruses, are expected to be active with community transmission during the winter, while vaccination is safe and effective in preventing seasonal influenza and COVID-19, members of the public, especially high-risk groups, are highly advised to receive vaccination as soon as possible. In general, most of upper respiratory infections do not require antibiotic treatment. Proper use of antibiotics following doctor's advice is important to prevent antimicrobial resistance.

Reference

1 Detection of *Mycoplasma pneumoniae* in respiratory specimens in 2019. Available at: https://www.chp.gov.hk/en/statistics/data/10/641/642/6827.html

Review of mpox in Hong Kong

Reported by Ms Wendy CHIU, Scientific Officer; Dr Wenhua LIN, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Section, Surveillance Division, Communicable Disease Branch, CHP

After our previous report[1] on the global and local situation of mpox (also known as monkeypox), Hong Kong has recorded a wave of mpox cases in the second half of 2023. We report the latest local situation of mpox and update the recent trend of the multi-country outbreak of mpox.

Local situation

As of January 13, 2024, a total of 54 mpox cases has been recorded in Hong Kong, including 44 locally acquired and 10 imported infections since it was made statutorily notifiable on June 10, 2022 (Figure 1). There was a remarkable upsurge in the number of mpox cases from July to September 2023. After reaching a peak of 21 cases in August 2023 (19 locally acquired and two imported infections), a downtrend of mpox cases was observed with only three cases recorded in November 2023 and none from December 2023 to January 13, 2024.

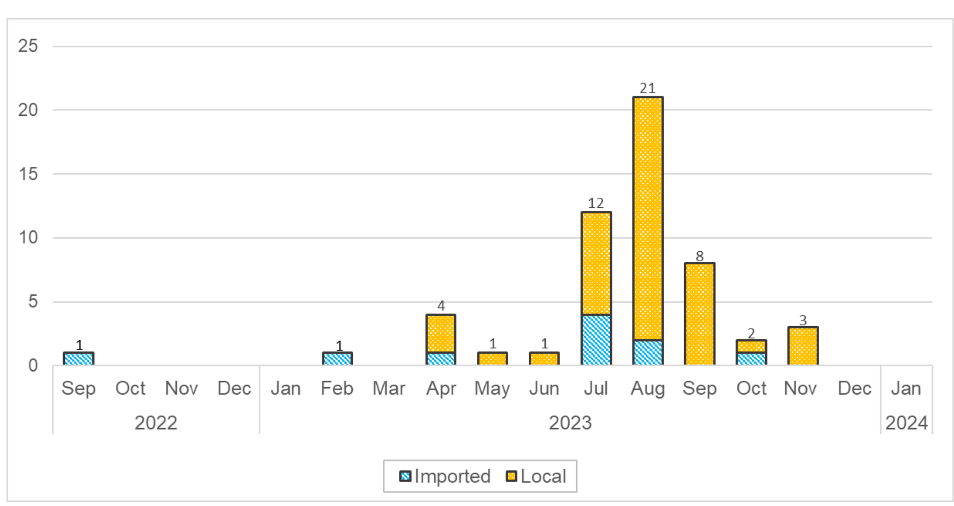


Figure 1 – Confirmed mpox cases in Hong Kong by notification month (as of January 13, 2024).

All 54 cases were men, aged from 20 to 59 years with a median age of 37 years. Among them, 48 cases (88.9%) were ethnic Chinese (Table 1). Most cases (81.5%) acquired the infection locally. Over 95% of them involved males engaging in men who have sex with men (MSM) or bisexual behavior, and over 90% of cases admitted having sex with strangers during the incubation period. Among the 54 cases, 38.9% of them were persons living with human immunodeficiency virus (HIV) (29.6% were known HIV carrier and 9.3% were newly diagnosed HIV-positive after admission for the mpox episode). The commonest presenting symptoms were rash affecting genital area (79.6%) and non-genital areas (44.4%). Around half (46.3%) presented with systemic symptoms defined as fever, malaise, headache or muscle pain. The clinical conditions of all cases were stable. Only two cases required mpox treatment with antiviral drug tecovirimat and none required intensive care. No death related to mpox had been recorded. More than half of cases (57.4%, 31 cases) did not receive mpox or smallpox vaccine, and among them about 80.6% (25 cases) presented with systemic symptoms, suggesting that vaccination may reduce the severity of the mpox symptoms.

Table 1 – Mpox cases recorded in Hong Kong as of January 13, 2024.

Parameter		Number of cases	%
Ethnicity	Chinese	48	88.9
	Non-Chinese	6	11.1
Importation status	Local	44	81.5
	Imported	10	18.5
Sexual orientation	MSM	45	83.3
	Bisexual	7	13.0
	Heterosexual	2	3.7
HIV status	HIV positive	21	38.9
	HIV negative	29	53.7
	Unknown	4	7.4
Vaccination	Unvaccinated	31	57.4
	1 dose Mpox vaccine	4	7.4
	2 doses of mpox vaccines or equivalent	19	35.2

The main route of mpox transmission was through sexual contact. Epidemiological investigation revealed three clusters involving a total of six cases. Each cluster involved two persons who met via geospatial apps or sauna. No definite epidemiological linkage could be found among the other 48 cases, but the majority of cases were engaging in MSM behaviors with anonymous sex partners who met via geospatial apps, suggesting transmission among these high-risk individuals. As many cases refused to disclose or engaged in sexual activities with unidentifiable sex partners, traditional epidemiological investigation and contact tracing were difficult and even impossible to carry out.

Since the first mpox case reported in September 2022, the Government has activated the alert response level under the Preparedness and Response Plan for Monkeypox. Despite the overall downward trend in recorded cases, there is still risk of ongoing transmission among the high risk individuals locally. Members of the public are urged to heighten vigilance against mpox

and avoid close physical contact with persons suspected of contracting the disease. Overseas studies have shown that mpox vaccination can prevent infection and reduce the severity of infection[2,3,4,5]. High-risk individuals are urged to receive mpox vaccination early. For more information on mpox and related vaccination programme, please visit the Centre for Health Protection (CHP)'s thematic webpage at www.chp.gov.hk/en/features/105683.html.

Multi-country outbreak of mpox

Although the World Health Organization (WHO) announced that the multi-country outbreak of mpox that occurred since 2022 no longer constituted a Public Health Emergency of International Concern on May 11, 2023, the WHO issued standing recommendations[6] for the multi-country outbreak of mpox and continued to monitor the global risk. From January 1, 2022 to November 30, 2023, a total of 92 783 laboratory-confirmed cases and 660 probable cases have been reported to the WHO, including 171 deaths[7]. A monthly average of 828 cases were reported globally from June to November 2023. There were 906 cases reported in November 2023, with the recent resurgence of mpox in the Region of Americas (308 cases, 34.0%) and the European Region (259 cases, 28.6%).

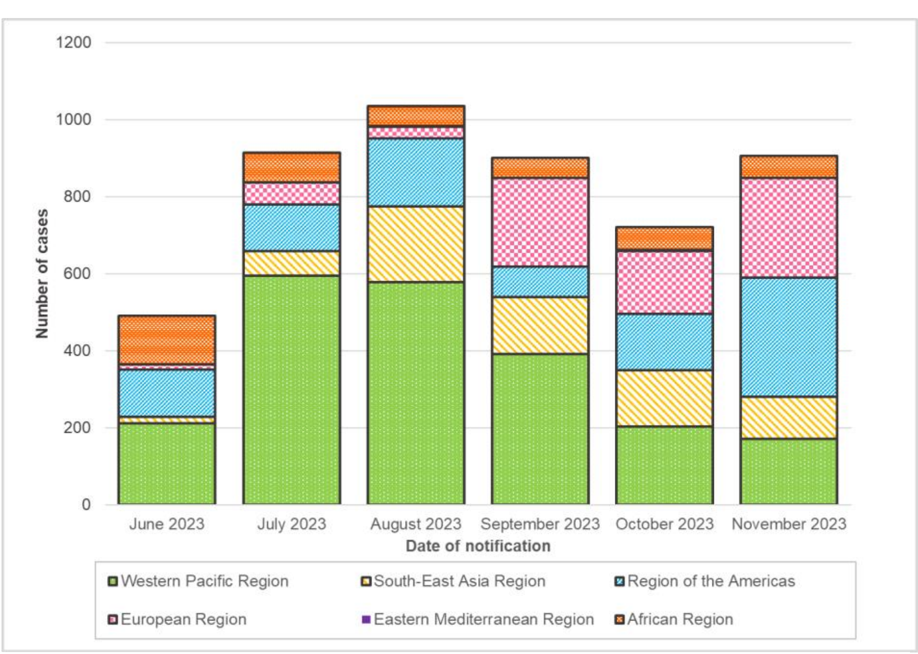


Figure 2 – Epidemic curve of monthly number of confirmed mpox cases in WHO regions from WHO, May 1 – November 30, 2023[7]. (data as of November 30, 2023).

According to the WHO, the number of cases reported in the Western Pacific Region was declining from August 2023 as shown in Figure 2, with 172 cases reported in November 2023 (a total of 2 760 cases reported from 2022 to November 2023). A low level of mpox transmission was observed in the Western Pacific and new mpox cases have been reported from China, Viet Nam, Singapore, Japan, Republic of Korea and Malaysia in November 2023. The WHO assesses the long-term mpox risk for the general population in countries not affected prior to the current outbreak as low. However, the risk for gay men, bisexual men, other MSM, trans and gender diverse people, and sex workers, is assessed as moderate.

Tips for prevention of mpox infection

To reduce the risk of mpox infection, members of the public should implement the following preventive measures:

- Avoid close, skin-to-skin contact with sick people or people with a rash that looks like mpox;
- Avoid contact with objects and materials that a person with mpox has used, such as eating utensils or cups, bedding, towels, or clothing;
- Seek medical advice promptly for any suspicious symptoms;
- Sexually active people are advised to have safer sex and maintain a mutual monogamous relationship with an uninfected partner and avoid casual sex; and
- High-risk individuals are also urged to receive mpox vaccination early.

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NEWS IN BRIEF

A cluster of imported dengue fever related to a school tour returning from Thailand

On December 6, 2023, The Centre for Health Protection (CHP) of the Department of Health identified two epidemiologically linked cases of imported dengue fever affecting one secondary student and his teacher who both returned from a recent school trip from Thailand with activities such as hiking and water sports in outskirts. Active case finding by means of phone interview and self-administered questionnaires as well as offering serological testing to tour group participants identified further three epidemiologically linked cases. Collectively, the cluster affected four students and one teacher. They presented with fever (five), rash (four), myalgia (four), malaise (two) and vomiting (one). Five tested positive for dengue virus IgM and three tested positive for NS1 antigen. All remained in stable condition. Three required hospitalisation and all have been discharged.

Pest Control Advisory Section of the Food and Environmental Hygiene Department and Port Health Division of CHP were notified to take necessary action as deemed necessary. Education Bureau was also informed to alert schools to stay vigilant, and take into account infectious disease outbreaks, particularly the situation of regions where mosquito-borne diseases are endemic, into their risk assessment when planning overseas trip in future.

Three sporadic cases of Creutzfeldt-Jakob disease

CHP recorded three sporadic cases of Creutzfeldt-Jakob disease (CJD) on December 28, 2023, January 10, 2024 and January 12, 2024 respectively.

The first case involved a 59-year-old male with underlying illnesses. He presented with rapid cognitive decline with gait and visual disturbance in September 2023 and was admitted to a public hospital on October 11, 2023. He was found to have cerebellar ataxia, reduced visual acuity, myoclonus and akinetic mutism. Findings of the electroencephalogram (EEG), magnetic resonance imaging (MRI) of the brain and cerebrospinal fluid were compatible with CJD. He was classified as a probable case of sporadic CJD.

The second case involved a 61-year-old female with underlying illnesses. She presented with progressive limb weakness in November 2022 with rapid deterioration in cognition and memory in March 2023. She also had unsteady gait, dysphasia and dysarthria. She was admitted to a public hospital on May 23, 2023 after fall with head injury. EEG and MRI of the brain were compatible with CJD. She was classified as a probable case of sporadic CJD. She deteriorated further and succumbed on August 5, 2023.

The third case involved a 74-year-old female with underlying illnesses. She developed unsteady gait with vertigo and visual disturbance in November 2023 and was admitted to a public hospital on December 13, 2023. Findings of the EEG and MRI of the brain were both compatible with CJD. She was admitted again on January 6, 2024 with increased confusion, decline in short-term memory and inability to recognise family. 14-3-3 assay in cerebrospinal fluid was found positive. She was classified as a probable case of sporadic CJD.

All cases had no known family history of CJD and no risk factors for either iatrogenic or variant CJD were identified.

EDITORIAL BOARD **Editor-in-Chief** *Dr SK Chuang* **Members** *Dr KH Kung / Dr Tonny Ng / Dr Hong Chen / Dr Taron Loh / Dr Wenhua Lin / Jason Chan / Doris Choi / Chloe Poon* **Production Assistant** *Joyce Chung.* *This monthly publication is produced by the Centre for Health Protection (CHP) of the Department of Health, 147C, Argyle Street, Kowloon, Hong Kong* **ISSN** *1818-4111* **All rights reserved** *Please send enquiries to cdsurinfo@dh.gov.hk.*

FEATURE IN FOCUS

Latest situation of melioidosis in Hong Kong

Reported by Ms Wendy CHIU, Scientific Officer; Dr Wenhua LIN, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Section, Surveillance Division, Communicable Disease Branch, CHP; Dr Zenith WU, Senior Medical and Health Officer, Epidemiology Division, Communicable Disease Branch, CHP

Melioidosis is an infectious disease caused by the bacteria *Burkholderia pseudomallei (B. pseudomallei)*. Melioidosis is prevalent in tropical and subtropical regions worldwide, primarily Southeast Asia, South Asia, Northern Australia, and some parts of the Americas.[1] The disease is also endemic in Hong Kong.

As *B. pseudomallei* survives in soil and water, the bacteria can be transmitted to humans and animals through direct contact with the contaminated soil and water (e.g. inhalation of contaminated dust or water droplets, ingestion of contaminated water, ingestion of soil-contaminated food or direct contact with contaminated soil, especially through skin abrasions). Person-to-person transmission has been reported but it is rare[2]. The risk of exposure and infection of melioidosis varies with season and overseas studies reported that rainfall, windy conditions and tropical storms were correlated with the increased number of confirmed melioidosis cases[3,4,5]. *B. pseudomallei* buried in the soil and muddy water may be exposed to the ground after typhoons or storms, and the bacteria would spread more easily with strong winds and storms. As such, human infection cases are more common following extreme weather conditions.

The incubation period of melioidosis varies from one day to a few years, but usually from two to four weeks. The clinical manifestations of melioidosis infection are variable and patients may present with localized infection (such as cutaneous abscess), pneumonia, meningoencephalitis, sepsis, or chronic suppurative infection. Depending on the site of infection, common symptoms include fever, headache, localized pain or swelling, ulceration, chest pain, cough, haemoptysis, and swelling of regional lymph nodes. Individuals with underlying diseases are at increased risk for developing melioidosis, such as patients with diabetes, lung disease, liver disease, renal disease, cancer, or immunosuppression. A definitive diagnosis of melioidosis is made by isolating *B. pseudomallei* from clinical specimens. Melioidosis can be treated with antibiotics. Some chronic infection cases may need long-term treatment. The mortality rate ranges from around 40-75%.

Local situation

In Hong Kong, the first human case was reported in 1983[6] and another five cases identified among immunocompromised patients were reported in 1984[7]. Another local study identified 61 culture-confirmed hospitalized cases of melioidosis during 1998 to 2017[8]. According to the Hospital Authority records, the annual number of melioidosis ranged from three to 17 during 2017 to 2021. Between August and November 2022, an upsurge of melioidosis cases, mainly involving patients residing in Sham Shui Po was reported to the Centre for Health Protection (CHP) of the Department of Health. In order to enhance surveillance capability and facilitate early intervention and prevention, melioidosis was included in the list of statutorily notifiable infectious diseases on November 11, 2022[9].

From August to December 2022, a total number of 37 cases were recorded, with 30 of them residing in Sham Shui Po. These 30 cases had an age range of 42 to 94 years (median: 71). Twenty one (70.0%) of them were male. All had chronic diseases and 18 (60.0%) of them had diabetes mellitus. The main clinical presentation included pneumonia (20; 66.7%) and sepsis (10; 33.3%). Nine (30%) patients passed away due to melioidosis. Their residences clustered within a diameter of about one kilometer. Whole genome sequencing of clinical samples revealed that 28 cases (93.3%) had the same sequence type (ST-1996).

Environmental samples were collected from residence of the cases residing in Sham Shui Po and their vicinity, nearby construction sites

and fresh water service reservoirs (FWSRs) supplying Sham Shui Po. Some environmental samples collected from residence of a case, soil from a nearby construction site as well as soils from the rooftop or surface swabs of air vents related to FWSRs were tested positive by PCR. All water samples collected from cases' residences and FWSRs supplying Sham Shui Po were tested negative indicating that the water supply system was not contaminated. Although the water quality fully complied with Hong Kong drinking water standards, for prudence sake, the Water Supplies Department implemented additional measures, including increasing the residual chlorine level and installing filters at the air vents of the reservoirs upon CHP's advice. With the above efforts and increased awareness among the public, a notable drop in the number of melioidosis cases was observed with only 17 cases recorded in 2023 and only one case was recorded in 2024 (as of February 19, 2024) (Figure 1). All these 18 cases were Chinese adults (100.0%) with ages ranging from 47 to 94 years (median: 67.5 years), involving 12 (66.7%) males and six (33.3%) females. All cases were locally acquired infections without family clustering identified. Among them, there were five deaths (27.8%) recorded (three cases died of melioidosis) and all five fatal cases had pre-existing chronic diseases or immunodeficiency conditions. In terms of residential district distribution, the top three residing districts were Sham Shui Po (six cases), Eastern (four cases), Islands (two cases) and Wong Tai Sin (two cases).

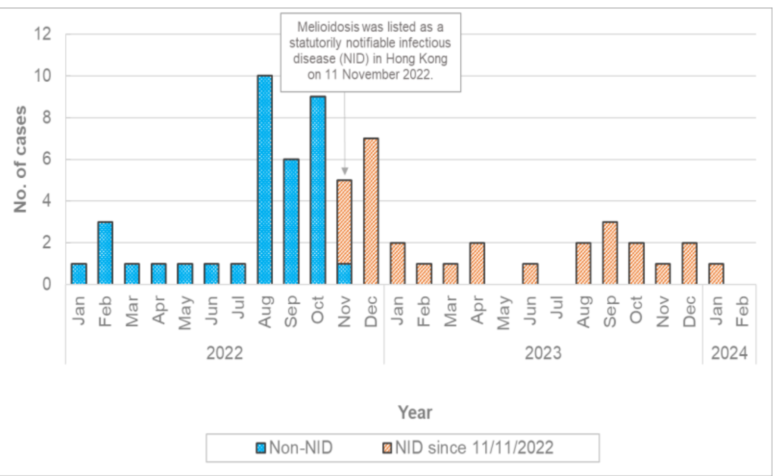

Figure 1 – Confirmed melioidosis cases in Hong Kong since 2022 (as of February 19, 2024).

Tips for prevention of melioidosis infection

To reduce the risk of melioidosis infection, members of the public should implement the following preventive measures, especially individuals with underlying diseases:

- Avoid contact with contaminated soil;
- Wear appropriate protective clothing or footwear when participating in activities with possible contact with soil or water, e.g. use gloves and wear boots. High-risk individuals may consider wearing a surgical mask for additional protection;
- Wash or shower after exposure to contaminated water or soil;
- Always clean any wounds as soon as possible and cover any cuts or grazes with waterproof dressings; and
- Observe food hygiene and only drink boiled or well-treated water.

Members of the public are also reminded to stay indoors during typhoons and storms, avoid travelling to areas with potential flooding, and not wade or contact with muddy water and soil. Additionally, high-risk individuals should avoid paths near stormwater drains where aerosols may be generated from contaminated water. When there is an inevitable exposure, high-risk individuals are highly advised to wear a surgical mask, gloves and boots.

The CHP will continue to monitor local situation of meliodosis and provide update to the members of the public timely for better preparation on precautionary works.

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Review of Legionnaires' disease in Hong Kong in 2023

Reported by Dr Katie LAI, Medical and Health Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Legionnaires' disease (LD) is primarily caused by the *Legionella* bacteria, which are commonly found in aqueous environment and grow well at warmer temperatures (20°C to 45°C). The Centre for Health Protection (CHP) of the Department of Health recorded a cumulative total of 121 LD cases in 2023, resulting in an incidence rate of 1.61 per 100 000 population. The total number of cases reported in 2023 was slightly higher than that in the previous five years (Figure 1). In terms of monthly numbers reported in 2023, more were recorded in July (21 cases) and September (23 cases) (Figure 2).

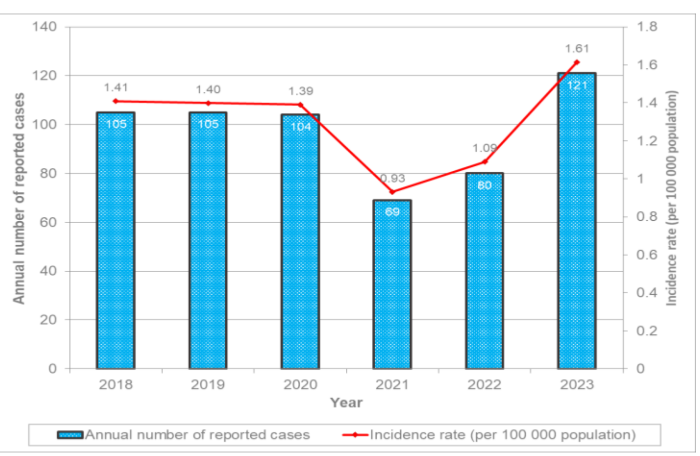

Figure 1 – Annual number and incidence rate of reported LD cases, 2018 – 2023.

Clinical and epidemiological characteristics

Among the 121 LD cases recorded, their ages ranged between 27 and 95 years (median: 70 years), with the majority (114, 94.2%) affecting persons aged 50 years or older. Males were more affected (male-to-female ratio of 4.8:1), and 87.6% (106 cases) had a history of at least one underlying medical condition. In terms of smoking history, amongst the 102 cases with relevant information available, 27 (26.5%) were current smokers and 25 (24.5%) were ex-smokers.

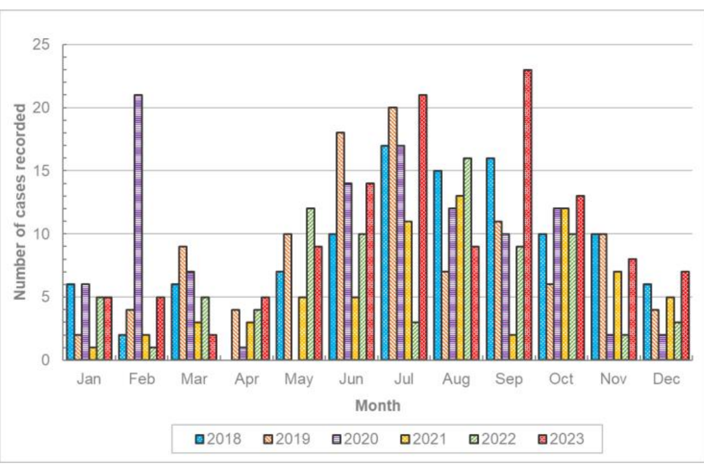

Figure 2 – Monthly number of reported LD cases, 2018 – 2023.

The common presenting symptoms included fever (85.1%), cough (66.1%), and shortness of breath (50.4%). All cases developed pneumonia and required hospitalisation. Twenty nine cases (24.0%) required intensive care and 12 out of the 121 cases passed away, accounting for a case fatality rate of 9.9%. As to laboratory diagnosis, 80 (66.1%) and 40 (33.1%) cases were initially diagnosed as LD by urinary antigen test (UAT) and polymerase chain reaction (PCR) of respiratory specimens respectively, while the remaining one case was confirmed by sputum culture.

Upon epidemiological investigations, the majority of cases (110, 90.9%) reported in 2023 were classified as locally acquired infections. The residential places of these locally acquired cases were distributed in various districts in Hong Kong (Figure 3). Environmental investigation for those who resided geographically in close proximity did not identify common sources of infection in the community. There were four definite nosocomial cases and one possible nosocomial case with positive environmental samples collected from the water systems in wards or the water tanks of the hospitals. Three out of the five cases had the same sequence-based typing among their respiratory specimens and the environmental isolates. The respective hospitals carried out disinfection of the water supply systems, and no further cases were identified afterwards. Four cases were residential care home residents (three cases involved residents of residential care homes for the elderly (RCHE) while the remaining case was a resident of a residential care home for persons with disabilities (RCHD)). Positive environmental samples were detected in the water systems in one RCHE and the RCHD, while control measures were reinforced in all the residential care homes concerned and no further cases were identified thereafter.

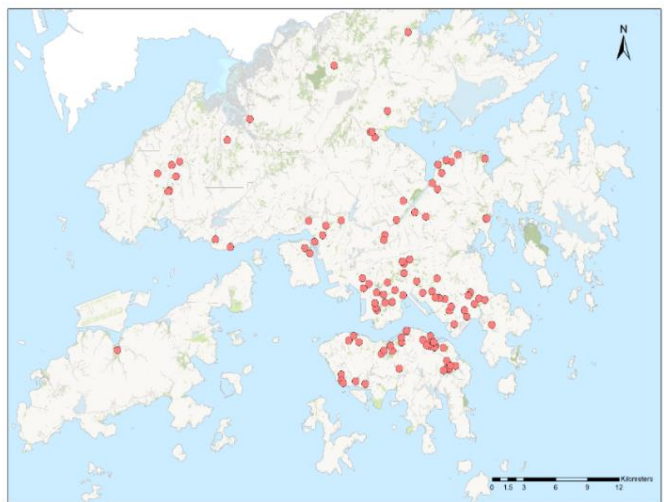

Figure 3 – Geographic distribution of the residential places of the 110 locally acquired LD cases (Source: Communicable Disease Information System).

Discussion

The number of LD cases recorded in 2023 was slightly higher than that recorded in the previous five years. The distribution of cases by month was similar to previous years in that more cases occurred between June and October, with peaks recorded in July and September 2023. Most of the reported cases were sporadic without epidemiological linkage. As *Legionella* bacteria are ubiquitous in aqueous environments including man-made water systems, people may acquire LD through breathing in contaminated droplets or mist generated by artificial water systems, as well as when handling garden soils, compost and potting mixes, etc. Other than the above-mentioned nosocomial cases, no definite sources of infection were identified through epidemiological and environmental investigations for other cases in the year.

Studies suggest that LD risk increases in warmer weather[1,2,3]. According to the Hong Kong Observatory's information, year 2023 was the second warmest years on record for Hong Kong since 1885, with the annual mean temperature reaching 24.5°C, 1.0°C above the 1991 to 2020 normal. In particular, Hong Kong experienced the hottest summer on record from June to August 2023, with a record-breaking high mean temperature of 29.7°C, while the mean maximum temperature of 32.4°C and the mean minimum temperature of 27.6°C were both the second highest on record for the same period[4].

A rising trend in the incidence of LD was also observed in some overseas countries and regions. For example, the European Center for Disease Prevention and Control reported that, the Europe Union/European Economic Area witnessed the highest annual notification rate of LD in 2021, with 2.4 cases per 100 000 population[5]. The cause of the increased reported incidence observed during that period in Europe remains unclear. Other than climates, changes in testing policies and surveillance systems, an ageing population, etc. can be possible factors[6].

To prevent LD, it is important to operate and maintain properly designed man-made water systems to prevent LD. Members of the public, especially immunocompromised persons, should adopt preventive measures to decrease the risk of LD infection. More information on LD is available on the CHP website (https://www.chp.gov.hk/en/view_content/24307.html).

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NEWS IN BRIEF

A local sporadic confirmed case of listeriosis

On January 19, 2024, the Centre for Health Protection (CHP) of the Department of Health recorded a case of listeriosis affecting a 71-year-old man with lung cancer. He presented with fever and cough since January 8 and was admitted to a public hospital on January 15. His blood specimen collected on January 16 grew *Listeria monocytogenes*. He was treated with antibiotics but died of unrelated cause on February 10. He had no travel history during incubation period. He had no high risk exposure. His household contact remained asymptomatic.

A sporadic imported case of brucellosis

On February 2, 2024, CHP recorded a sporadic imported case of brucellosis affecting a 78-year-old woman with underlying disease and residing in Sha Tin. She presented with painful swelling over her pacemaker site at chest wall in mid-December 2023. She sought medical attention at a private hospital and was subsequently admitted to a public hospital on January 19, 2024. Her blood and pus specimens were both cultured positive for *Brucella melitensis*. The clinical diagnosis was brucellosis and she was treated with antibiotics and chest wall wound debridement. Her condition remained stable and was discharged on February 17, 2024. She consumed undercooked lamb while travelling in New Zealand during the incubation period. Other relatives who consumed the same meal were so far asymptomatic. No other high risk exposures were identified.

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FEATURE IN FOCUS

Resurgence of measles after the COVID-19 pandemic: A global and local update

Reported by Fanny WS HO, Scientific Officer, Vaccine Preventable Disease Section, Surveillance Division, Communicable Disease Branch, CHP

(Last updated March 26, 2024)

Measles is an acute viral infection characterised by a prodrome of fever, cough, coryza, conjunctivitis, white spots inside the mouth (Koplik spots), followed by a generalised maculopapular rash. The disease is highly contagious, usually spread through airborne droplets or by direct contact with nasal or throat excretions of infected persons. Measles can be severe in pregnant women and leads to an increased risk of miscarriage, stillbirth or preterm delivery, whereas infected neonates are at an increased risk of complications such as subacute sclerosing panencephalitis (a very rare but fatal disease of the central nervous system) in later life.

Global situation

Measles activity reduced dramatically from a worldwide resurgence in 2019 to low level during the first two years of COVID-19 pandemic due to the implementation of wide ranging travel and social restrictions. However, the incidence has increased globally since 2022, with outbreaks reported not only in endemic regions but also in countries that already achieved elimination including the United Kingdom (UK) and the United States (US)[1,2,3]. Such resurgence was a consequence of low levels of measles vaccination uptake associated with disruptions in routine immunisation during the pandemic. According to the provisional data from the World Health Organization (WHO), as of March 12, 2024, the number of measles cases had risen worldwide with 171 countries reporting over 315 000 cases in 2023, roughly 85% increase from 2022[4]. In the Western Pacific region, a similar upward trend was observed in 2023 (over 5 000 cases compared to about 1 400 cases in 2022) with majority of cases reporting from the Philippines and Malaysia where measles remains endemic.[5]

Local situation

Hong Kong was certified by the WHO as having achieved measles elimination status in 2016. The annual totals have remained low since then despite a surge of cases in 2019 including an outbreak of 33 cases at the Hong Kong International Airport (HKIA). The outbreak was quickly interrupted and the number of cases decreased substantially following a territory-wide measles mop-up vaccination campaign for non-immune adults that lasted till September 2020.

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During the years of COVID-19 pandemic from 2020 to 2023, measles remained at low activity level, with one to three cases reported annually (0.1 – 0.4 cases per million population) (Figure 1). As of March 16, 2024, three measles cases have been recorded this year.

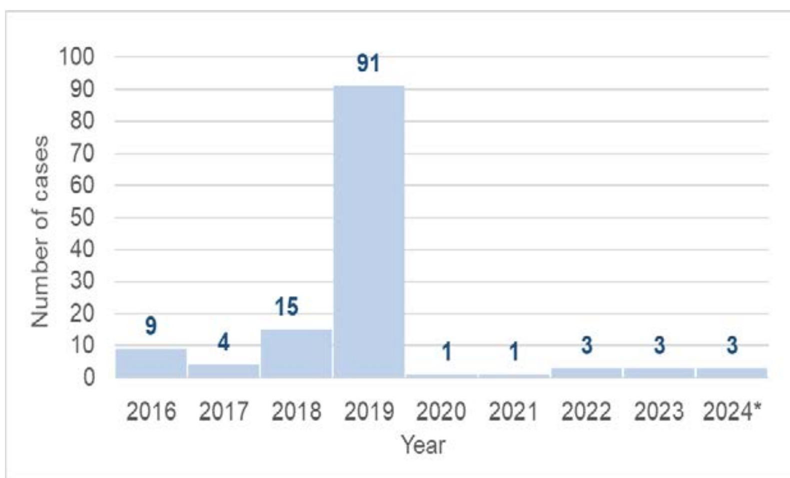

Figure 1 – Measles cases in Hong Kong after elimination, 2016 – 2024 (data as of March 16, 2024).*

Of the 11 measles cases reported between 2020 and 2024 so far, all were sporadic infections involving local residents. The 11 cases had ages ranged from 11 months to 55 years (median age = 36 years), majority being adults (8 cases, 73%) while the remaining three cases were children aged three years or below including an infant under one year. Clinically, eight out of 11 cases (73%) presented with typical symptoms such as rash, fever, cough, coryza and conjunctivitis while the remaining three cases developed modified measles with milder symptoms. None of them reported complications. Seven cases were classified as local infections, and four were imported cases (one each from Japan, Indonesia, India, and Malaysia).

For the eight adult cases aged between 20 and 55, five of them were born in Hong Kong. Only one local-born adult had documented receipt of two doses of combined measles, mumps and rubella (MMR) vaccine. For the remaining cases, one was unvaccinated and the other six had uncertain vaccination status (including all the three foreign-born adults).

For the three paediatric cases aged between 11 months and three years, all were local born children. Regarding measles vaccination history prior to exposure, one three-year-old child was fully vaccinated while another one-year-old child received one dose only. The remaining unvaccinated case was an 11-month-old infant not yet due for measles vaccination under the Hong Kong Childhood Immunisation Programme (HKCIP).

Closing immunity gaps to sustain elimination

For years, measles has been successfully controlled in Hong Kong through a sustained high level of two-dose vaccination coverage of at least 95% under the HKCIP, robust surveillance systems and rapid response to outbreaks. During the COVID-19 pandemic over the past three years, parents, schools and healthcare workers in Hong Kong continued to support childhood immunisations, striving to maintain the MMR immunisation coverage rates at a high level of at least 95%. In addition, seroprevalence rates of measles virus antibodies in the local population have been maintained at a very high level (at least 95%) among all age groups in recent years, indicating that the majority of the local population already had immunity against measles, either through past infection or vaccination. As such, the risk of a large-scale measles outbreak in Hong Kong is considered to be low.

Measles importations remain an ongoing risk to places that have achieved elimination, especially from neighbouring countries and popular travel destinations where outbreaks are occurring or vaccination coverage is suboptimal. Despite the high local population immunity and low risk of sustained outbreaks, Hong Kong must remain vigilant as there might be small pockets of susceptible individuals accumulated over time, especially among non-local born persons who might not have been fully vaccinated in the past. The measles outbreak occurred at the HKIA in 2019 had underscored this continued threat from international travel posing the risk of local transmission following importations.

In response to the recent measles resurgence globally, the Department of Health has stepped up efforts to raise public awareness through multiple channels including press releases, webinar and social media messages. The Port Health Division of the Centre for Health Protection (CHP) delivered messages to alert the airport community and cruise ship agents to the latest measles situation and remind them to stay vigilant. The CHP issued letters to remind all medical practitioners to remain vigilant and report suspected measles cases timely, and provide vaccination to non-immune individuals if necessary. In addition, the CHP also issued letters to all employment agencies for foreign domestic helpers (FDH) to encourage non-immune FDH to receive measles vaccination. Relevant information was uploaded to the dedicated webpage of measles on the CHP website, the Immigration Department's website and the Labour Department's information portal for FDH. Likewise, letters were sent to local universities to encourage MMR vaccination to non-immune university staff and students from overseas.

As vaccination schedule varies across countries, non-local born individuals residing in Hong Kong for residence, work or study

including new immigrants, foreign workers and students should review their immune status and receive measles vaccination if they are non-immune (Box). Two doses of the measles-containing vaccine provide effective protection for individuals and the wider community. As remarkably high herd immunity levels (≥95%) are needed to prevent measles virus transmission, elimination can only be sustained going forward by maintaining high two-dose MMR vaccine coverage in children and accelerating efforts to catch up older children and adults who had missed out on vaccinations in the past. For more information on measles and MMR vaccination, please visit the CHP's designated webpage: https://www.chp.gov.hk/en/features/100419.html

Evidence of Measles Immunity

People born in Hong Kong before 1967 when measles was endemic are considered to have acquired immunity to measles through natural infection.

In general, persons who are born on or after 1967 are considered as non-immune to measles if they –

- Have never been vaccinated with two doses of measles-containing vaccine or have unknown vaccination status; AND
- Did not have laboratory confirmed measles infection in the past; AND
- Did not have laboratory evidence of immunity (i.e. no laboratory test ever done or tested negative/indeterminate for measles immunoglobulin G

Non-immune individuals are advised to receive two doses at least four weeks apart. Only one dose is required for those who had already received one dose of measles vaccination in the past.

Review of hand, foot and mouth disease activities in Hong Kong

Reported by Dr KONG Wai-chi, Scientific Officer, Dr Taron LOH, Senior Medical and Health Officer, Enteric and Vector-borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Hand, foot and mouth disease (HFMD) is commonly seen in children that is caused by enteroviruses. In Hong Kong, HFMD occurs throughout the year, with the usual peak season occurring from May to July and a smaller upsurge from October to December. HFMD activity decreased drastically and maintained at a very low level during the COVID-19 pandemic. After resumption of normalcy in early 2023, HFMD activity re-surged, with a high level observed in October and November before returning to baseline in January 2024. This article summarises the HFMD activities from 2014 to 2023 in Hong Kong.

Seasonal trend as observed from sentinel surveillance data

Before the COVID-19 pandemic, seasonal pattern of HFMD activity was observed from surveillance data collected through the sentinel surveillance system based at CCC/KG, private medical practitioner (PMP), and Accident and Emergency Departments (AED) communicable diseases syndromic surveillance system (Figure 1 to 3). HFMD activity usually increased from May to July and October to December although there were variations from year to year. Throughout the COVID-19 pandemic, the HFMD activity decreased drastically and maintained at unusually low levels as a result of all the prevention and control measures (e.g. stringent personal, hand and environmental hygiene) and school suspension. In 2023, data from sentinel surveillance systems showed an increase in HFMD activity since June and peaked around October/ November of the year.

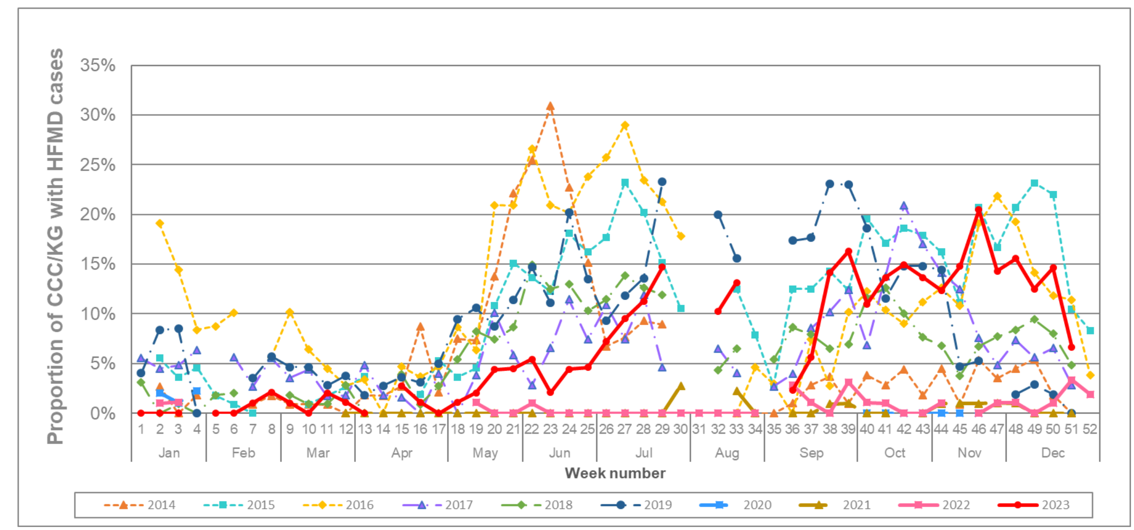

Figure 1 – Occurrence of HFMD in sentinel child care centres/kindergartens (CCC/KG) under sentinel surveillance of infectious diseases, 2014 to 2023.

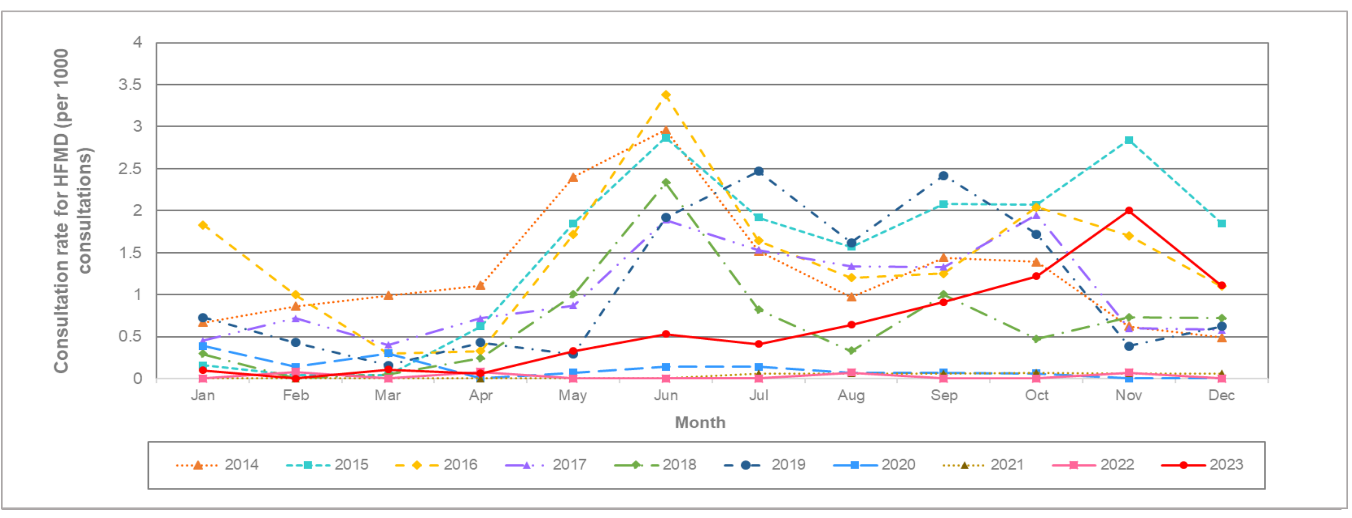

Figure 2 – Occurrence of HFMD in sentinel Private Medical Practitioner (PMP) under sentinel surveillance of infectious diseases, 2014 to 2023.

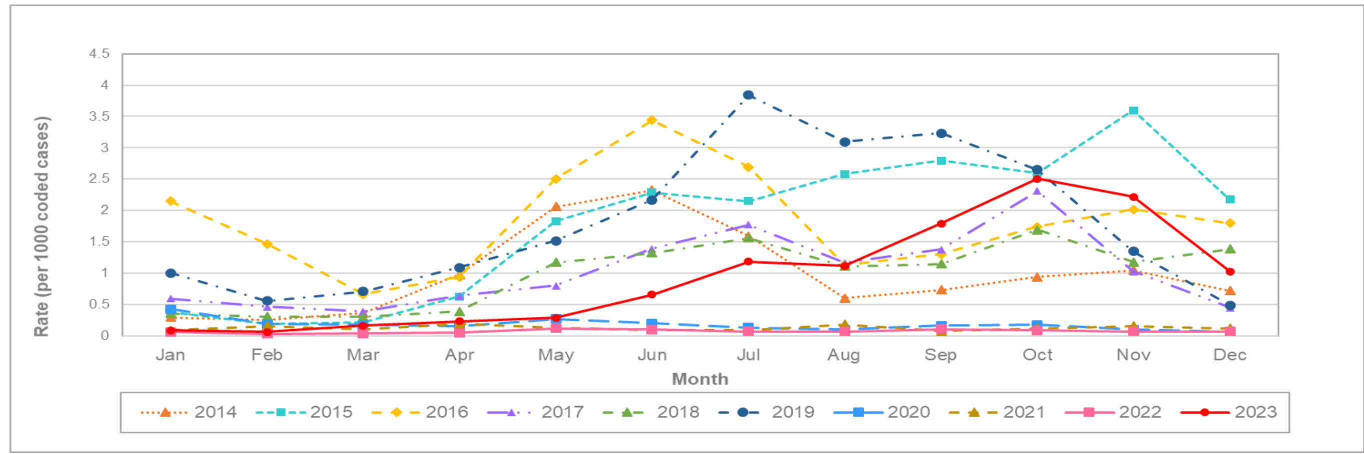

Figure 3 – Consultation rates of HFMD syndrome group at Accident and Emergency Departments in public hospitals under the Hospital Authority, 2014 to 2023.

HFMD institutional outbreaks

From 2014 to 2019, the annual number of HFMD outbreaks ranged from 346 to 875 (median=560). During the pandemic period from 2020 to 2022, only seven outbreaks were recorded (three and four in 2020 and 2022 respectively). Subsequent to the resumption of normalcy, HFMD outbreaks re-surged in 2023 with a total of 404 outbreaks recorded affecting 2 125 persons (Figure 4), largely returning to the pre-pandemic level.

In 2023, the number of HFMD outbreaks first showed a small increase in June and July, then an upsurge in September, peaked in late November and returned to baseline in late December (Figure 5). The pattern was similar to the pre-pandemic period. Most of the outbreaks occurred in child care centres/kindergartens (CCC/KG) (223, 55.2%), followed by primary schools (PS) (133, 32.9%), and secondary schools (SS) (35, 8.7%). The remaining 13 outbreaks (3.2%) occurred in other institutions including special schools, hospitals, residential care home for persons with disabilities and a university hall. The size of outbreaks was generally small, with a median of four persons (ranged from two to 73 persons). Among them, 49 outbreaks (12.1%) had causative agents confirmed, including coxsackievirus A16 (8, 16.3%), coxsackievirus A6 (seven, 14.3%), coxsackievirus A2 (one, 2.0%), and other unspecified enteroviruses (33, 67.4%).

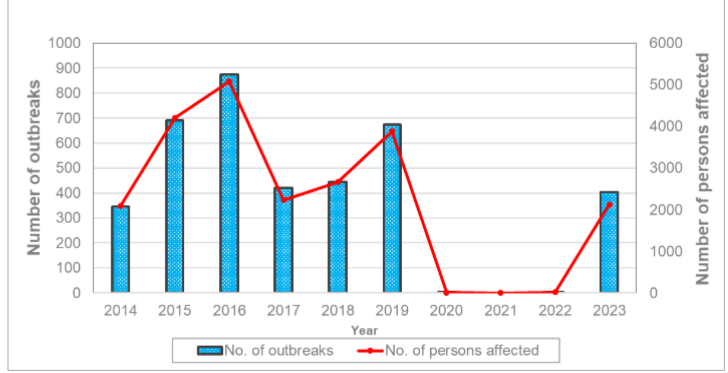

Figure 4 – Number of HFMD institutional outbreaks and persons affected, 2014 to 2023.

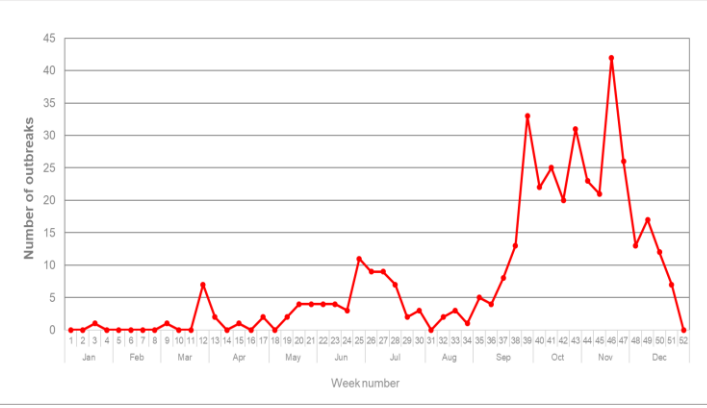

Figure 5 – Number of HFMD institutional outbreaks recorded in 2023.

EV71 infection

EV71 is one of the causative agents for HFMD and is a notifiable disease. Before the COVID-19 pandemic (2014 - 2019), the annual number of reported EV71 infection ranged from six to 68 cases (median=52.5) (Figure 6). During the pandemic, the number of cases decreased drastically with only one case recorded in 2021 affecting an 11-year-old girl; no more EV71 case has been recorded thereafter. In the past ten years, a total of 280 cases were recorded. Their ages ranged from nine days to 50 years (median: 2.6 years). Only one fatal case was recorded in 2014 involving a two-year-old girl with good past health; she lived with her parents and elder sister in Mainland China and did not attend school or playgroup.

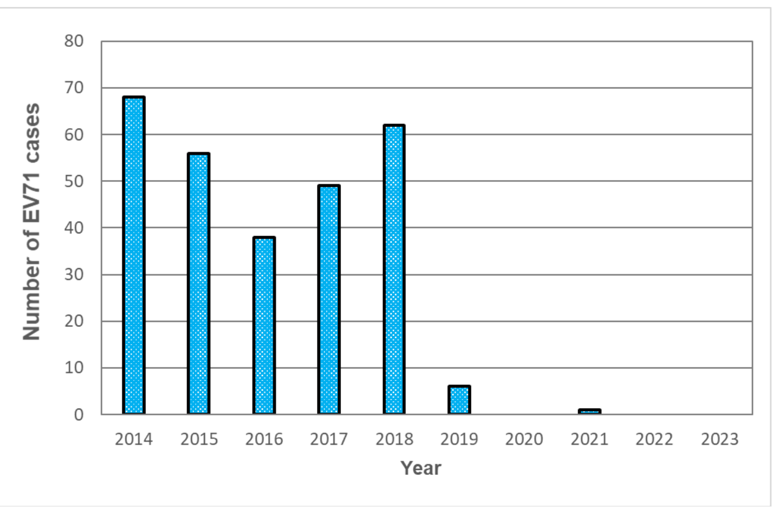

Figure 6 – Annual number of EV71 cases reported to CHP.

Severe paediatric enterovirus infection

For severe paediatric enterovirus infection (other than EV71 and poliovirus) (SE), the annual number of reported cases ranged from six to 21 cases (median = 8) before COVID-19 pandemic. No SE cases were recorded since 2020. In the past 10 years, a total of 62 cases were recorded. Their ages ranged from six days to 11 years (median: 2.5 months). Majority of the cases developed complications of meningitis (47 cases, 75.8%), followed by encephalitis (four cases, 6.5%) and other complications e.g. meningoencephalitis and transverse myelitis. No fatal case has been recorded in the past 10 years.

In summary, the HFMD activity had decreased to a historic low level during the three years of COVID-19 pandemic but returned to the pre-pandemic level after relaxation of control measures and resumption of normalcy in 2023. Similar situation also occurred in some neighboring areas (e.g. some provinces in Mainland China and Taiwan) following relaxation of non-pharmaceutical interventions such as school closure. Currently, the HFMD activity in Hong Kong is at a baseline level. Members of the public are reminded to continue to stay vigilant and observe good personal and environmental hygiene to prevent the disease. The latest surveillance data on HFMD and EV71 is published in the weekly "EV Scan" (http://www.chp.gov.hk/en/guideline1_year/29/134/441/502.html). Further information can be found on the CHP website at http://www.chp.gov.hk/en/view_content/16354.html.

Prevention of HFMD

1. Maintain good personal hygiene

- Perform hand hygiene frequently, especially before and after touching the mouth, nose or eyes; before eating or handling food; after touching blister; and after using the toilet;
- Wash hands with liquid soap and water, and rub for at least 20 seconds; then rinse with water and dry with either a clean cotton towel or a paper towel. Alcohol-based handrub should not substitute hand hygiene with liquid soap and water, as alcohol does not effectively kill some viruses (e.g. EV71) causing HFMD;
- Cover your mouth and nose with tissue paper when coughing or sneezing; dispose of the soiled tissue paper into a lidded rubbish bin, then wash hands thoroughly;
- Use serving chopsticks and spoons at meal time. Do not share food and drinks with others;
- Do not share towels and personal items with others;
- Avoid close contact (such as kissing, hugging) with infected persons;
- Refrain from work or attending class at school, and seek medical advice if feeling unwell; and
- Exclude infected persons from handling food and from providing care to children, elderly and immunocompromised people.

2. 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 - 30 minutes, and then rinse with water and keep dry;
- ✦ Use absorbent disposable towels to wipe away obvious contaminants such as respiratory secretions, vomitus or excreta, 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 - 30 minutes and then rinse with water and keep dry; and
- ✦ Avoid group activities when HFMD outbreak occurs in the school or institution. Besides, minimise staff movement and arrange the same group of staff to take care of the same group of children as far as possible.

NEWS IN BRIEF

Two local sporadic cases of psittacosis

The CHP of the Department of Health recorded two local sporadic cases of psittacosis on February 25 and 27, 2024 respectively.

This first case affected a 53-year-old male residing in North Point. He presented with fever and chills on February 7. His condition deteriorated later and was admitted to a public hospital on February 14. His chest X-ray revealed pneumonia and he had required support from Intensive Care Unit. His condition improved after treatment. He was extubated and transferred to general medical ward for further management. His endotracheal aspirate collected on February 14 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). The case had no travel history during the incubation period and he mainly stayed at home and reportedly kept no pets. Despite no known direct contact with poultry or birds during the incubation period, there were pigeons flocked around his flat's window in close proximity to index's desk. Although there was no definite history of handling bird droppings, the patient had cleaned the window without wearing face mask or gloves shortly prior to disease onset. Household contact remained asymptomatic at time of report. CHP mounted a joint visit with Agriculture, Fisheries and Conservation Department and Food and Environmental Hygiene Department to his residence on February 29 and found evidence of haunting of feral pigeons in the residential complex concerned. Environmental samples, including bird droppings directly outside the concerned flat windows, were obtained and were all negative for *Chlamydia psittaci*. As part of anti-pigeon flocking measures, an ad hoc pavement cleansing to regional blackspot where feral pigeons wandered was undertaken on top of usual regular street cleansing. Education on anti-feeding and measures of roosting and nesting were delivered to the property management, patient's family, and the buildings nearby. Anti-littering posters / pamphlets were disseminated to buildings nearby and banner related to feeding of feral pigeons were also erected in the region to warn the public against feeding of wild birds.

The second case involved a 52-year-old female residing in Tuen Mun. She presented with fever, shortness of breath and tiredness on February 4. Her condition deteriorated later and she was admitted to a public hospital on February 10. Clinical diagnosis was acute respiratory distress syndrome and pneumonia. Her nasopharyngeal aspirate collected on February 14 was tested positive for *Chlamydia psittaci* DNA by PCR. Her condition improved and she was discharged on February 20. She was a housewife with no travel history during incubation period. She kept eight parrots at home and they were tested negative for *Chlamydia psittaci*. She had also visited Yuen Po Street Bird Garden and exposed to various birds there during incubation period. Health advice had been given to the staff of concerned bird stalls who remained asymptomatic. Her home contacts remained asymptomatic.

A local sporadic confirmed case of listeriosis

On March 14, 2024, CHP recorded a sporadic case of listeriosis affecting a 39-year-old woman with gestational diabetes mellitus residing in Tai Po. She presented with fever and cough since March 9. She noted decreased fetal movements on March 11 and was admitted to a public hospital on the same day. She gave birth to a pair of full-term twins on March 12 with normal delivery. Her blood specimen collected grew *Listeria monocytogenes* on March 13. Swabs and blood culture collected from both twins were negative for *Listeria monocytogenes*. She was treated with antibiotics while the twins were given prophylactic antibiotics. Their conditions were all stable. She had no travel history during incubation period. She did not recall high-risk exposure including raw or undercooked food. Her household contacts remained asymptomatic.

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FEATURE IN FOCUS

Severe Fever with Thrombocytopenia Syndrome (SFTS) – A review

Reported by Mr Ian YAU, Scientific Officer and Dr Taron LOH, Senior Medical and Health Officer, Enteric and Vector-borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Background

Severe Fever with Thrombocytopenia Syndrome (SFTS) is an emerging infectious disease caused by a bunyavirus (SFTS virus or SFTSV in short) belonging to the genus *Phlebovirus* in the family *Phenuiviridae*, order *Bunyavirales*[1]. Transmission is predominantly via bites by ticks carrying the virus. According to the Centers for Disease Control and Prevention of the United States, four tick species are known vectors for SFTSV, namely *Haemaphysalis longicornis, Amblyomma testudinarium, Rhipicephalus microplus,* and *Ixodes nipponensis*[2]. Rarely, human-to-human transmission occurs through direct contact with or ocular exposure to blood of patients[3,4,5,6].

Figure 1 – Image of a common vector of SFTS, Haemaphysalis longicornis[7].

With an incubation period usually between six and 14 days, symptoms of SFTS include fever and gastrointestinal manifestations (e.g. nausea, vomiting, diarrhoea and tarry stool), and are sometimes accompanied by abdominal pain, muscle pain, neurological symptoms, lymph node swelling, and bleeding[4]. Patients may also present with thrombocytopenia, leukocytopenia and lymphadenopathy. Severe infections can cause haemorrhagic fever and multiple organ failure with a mortality rate of 10-30%[1,2,4], which is comparable to other bunyavirus infections like Crimean-Congo haemorrhagic fever and hantavirus infection that could reach a mortality rate of 35%[8]. Poor prognostic factors include older age, high serum viral loads, substantial elevation of liver enzymes, haemorrhagic symptoms, neurological manifestations, disseminated intravascular coagulation and multiple organ dysfunction[9].

Management of patients primarily focuses on symptomatic treatment. For patients with severe SFTS, hospitalisation with supportive management is often necessary.

Global situation

The pathogen of SFTS was first identified in Mainland China in 2010[10,11], but retrospective studies traced the earlier cases back to 1996 in Jiangsu of Mainland and also 2005 in the Nagasaki Prefecture of Japan[3,11,12]. The disease was subsequently found to be endemic in several Asian countries including South Korea, Japan, Vietnam and Myanmar[13]. Thereafter, SFTS has become prevalent in the Asia-Pacific region, with cases reported annually in South Korea, Japan, Vietnam, Myanmar, Pakistan, Thailand, and the United Arab Emirates[3,14]. Some SFTS-like cases have also been reported in the United States and Australia[14].

Mainland China

In Mainland China, national data showed increasing prevalence of SFTS in the last decade. In 2011, 571 confirmed cases from 13 provinces, including 59 fatal cases were reported, the number gradually increased year by year and reached 18 902 cases, including 966 deaths (case fatality ratio (CFR): 5.1%) across more than 19 provinces by the end of 2021[11,15,16] . These cases were mainly

found in the mountainous and hilly areas of Henan, Hubei, Shandong, Anhui, Liaoning, Jiangsu and Zhejiang provinces[17,18]. The number of SFTS cases continued to increase and the geographical distribution spread from central area to the northeast and from the west to the south[16]. SFTS cases were reported all year round but majority occurred from April to October, with the incidence peaking from May to June[16]. The risk of infection and mortality increased with age, with most cases occurred in age group 50-74 years (69%) and fatality in age group over 60 years (80%)[16]. High-risk populations for SFTS include those who live and work in the hills, mountains and forests, as well as tourists engaging in outdoor activities in these regions, as they are more likely to get tick bites. Farmers in endemic areas and older females are also more susceptible to the infection, accounting for more than 80% of the total caseload[18,19].

Japan

In Japan, SFTS was first detected and reported in 2013, though the first case could be traced back to 2005[12]. Recent statistics showed an increasing trend of SFTS cases, with cases ranged from 40 to 132 per year[20]. As of January 2024, 939 cases including 104 deaths have been reported since 2013, with CFR of 11.1%. The male-to-female ratio was 1:1, and the median age at the time of notification was 75 years. Geographically, majority of the cases were found in the western part of Japan, including Miyazaki, Hiroshima, and Yamaguchi prefectures[20]. Notably, Japan reported a case of SFTS affecting a doctor who acquired the infection from a deceased patient in March 2024.

On March 19, 2024, Japan's National Institute of Infectious Diseases confirmed the first SFTS case of human-to-human infection in the country[21]. According to the report, a doctor attended a patient in his 90s who was later diagnosed with SFTS. On initial consultation, the doctor wore a surgical mask but performed physical examination without gloves. Subsequently, the patient's condition rapidly deteriorated and passed away. The same doctor performed various procedures on the deceased including removal of his catheter post-mortem with a mask and gloves on during the procedure but reported not wearing goggles. Nine days after the patient's death, the doctor developed fever and headache, and was diagnosed with SFTS. Human-to-human transmission was confirmed after sequencing and comparing the SFTSV genes with the patient's, which were found to be identical.

South Korea

In South Korea, the first SFTS case was reported in 2013. Over the past decade, the number of patients with SFTS increased from 36 cases in 2013 to 272 in 2017, thereafter the trend remained stable in recent years with around 200 to 250 cases per year[22,23]. Between 2013 and 2022, a total of 1 697 cases and 317 deaths were reported, with a CFR of 18.7%. The older age group and those with underlying diseases were found to have higher risk of death. Most of the SFTS patients had been involved in farming (49.7%) and other outdoor activities such as hiking, walking and camping (45.1%). Geographically, most of the infections were found in the Yeongdeok-gun, Gyeongsangbuk-do, Yangyang-gun, Gangwon-do and Inje-gun, Gangwon-do regions[24].

Local situation

In Hong Kong, tick-borne diseases (TBDs) including spotted fever and relapsing fever are statutorily notifiable under the Prevention and Control of Disease Ordinance (Cap 599). In the past decade (2014-2023), the Centre for Health Protection recorded 205 cases of spotted fever, ranging from 13 to 34 cases per year, and five deaths. Among them, 193 cases were locally acquired, three were imported and the origin of nine others was unknown. For relapsing fever, the last case was reported in 1950. Although SFTS per se is not a notifiable disease in Hong Kong, viral haemorrhagic fever (which can be a presentation of SFTS) was made notifiable on July 14, 2008. So far, there has been no confirmed case of SFTS recorded in Hong Kong.

According to the Pest Control Advisory Section of the Food and Environmental Hygiene Department, there have been no recorded instances of the classical vectors of SFTS being found in the environment. However, some potential vectors of *Haemaphysalis sp.* such as *H. hystricis, H. sinesis*, and *Rhipicephalus sp.* including *R. sanguineus* and *R. pumillio* as well as some *Ixodes sp.* are present.

As Hong Kong is a metropolitan city with abundant international travels, imported cases of TBDs are expected and have been recorded. Together with frequent travel of local people to Mainland China, Japan and South Korea, the wide distribution of *H. longicornis* in East Asia, and the presence of potential vectors in the locality including *Haemaphysalis sp. and Rhipicephalis sp.*, the risk of contracting SFTS remains a possibility. It is important that members of the public and healthcare professionals should take reference of health advice below for personal protection. Preventive measures are also important to avoid tick exposure when travelling abroad especially for older people, people with underlying diseases and those who would frequently engage in outdoor activities.

Prevention and Control Measures

Preventive measures should be taken when visiting rural areas to avoid being bitten by the vectors.

- Pre-visit preparation:
  - Wear loose, light-coloured, long-sleeved tops and trousers.
  - Wear shoes that cover the entire foot, avoid wearing sandals or open shoes.
  - Tuck trousers into socks or boots to prevent arthropods from reaching the skin.
  - Use DEET-containing insect repellent on exposed parts of the body and clothing.
  - Pregnant women and children of 6 months or older can use DEET-containing insect repellent.
  - Avoid using fragrant cosmetics or skin care products.
  - If both insect repellents and sunscreen are used, apply insect repellents after sunscreen.
- During the visit:
  - Stay on footpaths and avoid walking through vegetation. Do not brush along the vegetation at the sides of footpaths.
  - Avoid resting on vegetation, or at humid and dark places.
  - Do not hang clothing on trees or vegetation.
  - Do not feed wild or stray animals.
  - Re-apply insect repellents according to instructions.
- After the visit:
  - Inspect body parts and clothing. Clear any attached arthropods carefully.
  - Take a soapy shower and wash the clothes.
  - Inspect and clean the bodies of accompanying pets.
- If an attached tick is found on the body:
  - Gently remove it by grasping its head with tweezers or fine-tipped forceps close to the skin, then disinfect the bite area and wash hands with soap and water.
  - Do not crush or twist the tick during removal.

In view of potential human-to-human transmission in nosocomial setting, healthcare workers and carers who might need to handle blood or bodily secretions of patients with SFTS are recommended to put on appropriate personal protective equipment (PPE) with eye protection and gloves.

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Updates on Infection Control Guidelines on Nephrology Services in Hong Kong

Reported by Dr Leo LUI, Associate Consultant; Mr Anthony NG, Senior Nursing Officer; Ms Jane LEUNG, Advanced Practice Nurse; Ms Candy TSANG, Advanced Practice Nurse and Dr Hong CHEN, Consultant and Head, Infection Control Branch, CHP.

Infection control in renal dialysis

Infection is a major risk factor of morbidity and mortality in renal dialysis patients because they are more vulnerable due to immunosuppression and are frequently hospitalised with an increased exposure and risk to healthcare associated infections. Haemodialysis may require prolonged period of vascular access with multiple patients receiving treatment concurrently. As a result, haemodialysis patients have a higher rate of bloodstream and other infections compared to patients not on haemodialysis[1]. Proper infection control in dialysis setting is crucial to prevent infections before, during and after the process.

In order to identify gaps and training needs on infection control issues for public and private renal units and dialysis centres in Hong Kong, Infection Control Branch (ICB) of Centre for Health Protection (CHP) and Central Renal Committee (CRC) of Hospital Authority (HA) had launched a programme since 2008 to promote infection control in local renal units and nephrology services. The goals and objectives were to i) systematically look into the infection control context and existing practice in renal units across the territory; ii) develop and standardise guideline on infection control to safeguard patients and staff members; and iii) provide training to staff on infection control and occupational health and safety issues in renal units.

Infection Control Guidelines on Nephrology Services in Hong Kong
2023

4th Edition

Jointly prepared by
Infection Control Branch, Centre for Health Protection,
Department of Health
and
Central Renal Committee, Hospital Authority

Figure 1 – Cover page of the guideline (4th edition).

To drive the programme forward, a collaborative working group was formed consisting of the representatives from relevant parties including the CRC of HA, private nephrology specialists, hepatologist, Hong Kong Association of Renal Nurses, Hong Kong Infection Control Nurses Association, Hong Kong Kidney Foundation, Chief Infection Control Officer (CICO) office of HA, Electrical & Mechanical Services Department (EMSD) and ICB of CHP.

One of the most important deliverable of the group is to formulate infection control guideline. The first edition of the Infection Control Guidelines on Nephrology Services in Hong Kong (referred to as "the guideline" hereafter) was published in year 2010, and since then has

become an important reference for both public and private dialysis service providers to upkeep the infection control standards in dialysis settings.

The major areas covered by the guideline include viral and bacterial infective risks, ways to prevent or minimise these risks, serology screening for bloodborne viruses (BBV), immunisations, water treatment systems, infection control practices, home dialysis, occupational safety and health, as well as surveillance and quality measures.

Guideline revision (4th edition 2023 update)

Every several years, the guideline is revised and updated according to latest local and international recommendations. The last edition (3rd edition version 3.2) was revised in October 2019 before the COVID-19 pandemic. With the infection control experience gained after the battle of COVID-19, as well as updates of major international guidelines, the working group renewed the local infection control guideline in December 2023.

Figure 2 – Home haemodialysis machine.

The working group reviewed latest scientific evidence and discussed on areas to be revised, taking reference from international health authorities and societies including but not limited to the Centers for Disease Control and Prevention (CDC), Association for the Advancement of Medical Instrumentation (AAMI), Department of Health of the United Kingdom, Ministry of Health of Singapore, International Society of Peritoneal Dialysis (ISPD), Infectious Diseases Society of America (IDSA) and local sources such as Scientific Committee of Infection Control (SCIC) and Scientific Committee of Vaccine Preventable Disease (SCVPD) of CHP, CRC and Central Committee on Infectious Disease and Emergency Responses (CCIDER) of HA. In order to gain deeper understanding of detailed operation for haemodialysis in different settings, site visits were arranged to a haemodialysis centre in public hospital, a community haemodialysis centre and the home of a patient performing "home haemodialysis". The guideline has incorporated the observations of the practice and the review of workflow during these visits.

Major updates in the 4th edition

The revised guideline is available on the CHP website in both English and Chinese. The below highlighted the major changes comparing with the last version.
English version: https://www.chp.gov.hk/files/pdf/ic_gu_nephrology_services_in_hk.pdf
Chinese version: https://www.chp.gov.hk/files/pdf/ic_gu_nephrology_services_in_hk_chi.pdf

- Chapter 1 Viral Hazards: Measures for respiratory viruses including COVID-19 e.g. placement, ventilation and isolation precautions, etc. are emphasised in the new edition. These recommendations are made in consideration of the fact that normalcy of the society has resumed, with a need to balance stringent infection control measures against practicality and disease severity of infection.
- Chapter 2 Bacterial & Fungal Hazards: *Candida auris*, which has caused a number of outbreaks in local hospitals and elderly homes since 2019 are included in the guideline as one of the multidrug-resistant organisms (MDROs). Medical equipment including haemodilaysis machines must be undergone proper cleaning and disinfection after use.
- Chapter 3 Prevention of Dialysis-Associated Risks: Chlorhexidine-impregnated dressings may be considered for short-term, non-tunneled central venous catheters to protect the insertion site in dialysis units with high infection rates. For prevention of peritoneal dialysis-related infections, the guideline advocates daily topical application of antibiotic cream or ointment (mupirocin or gentamicin) to the catheter exit site. Exit site should be cleaned at least twice weekly and every time after a shower or vigorous exercise.
- Chapter 4 Serology Screening for Blood-borne Viruses: Serology screening is a key issue in dialysis centre but its interpretation could be challenging. The revised edition includes a table of HBV and HCV serology interpretation and suggested actions to facilitate decision-making. Frequently-asked questions related to hepatitis serology have also been revised.
- Chapter 5 Immunisations: This chapter covers various types of vaccinations for dialysis patients. Latest recommendations from CHP regarding pneumococcal, seasonal influenza and COVID-19 have been updated according to recommendations by the CHP.
- Chapter 6 Water Treatment System: Sample collection, sampling frequency and limit levels of dialysis fluids have been updated.
- Chapter 7 Infection Control Practices in Renal Units: Minimise storage of equipment close to dialysis machines and patients. Do not handle and store medications or clean supplies in the same or adjacent area that used equipment or blood samples are handled.

- ✦ Chapter 10 Surveillance and Audit: Renal units should regularly audit the compliance of infection control practices e.g. hand hygiene using standardised methods and definitions for data collection and analysis. For example, the centre can adopt the surveillance methodology suggested by National Healthcare Safety Network (NHSN) of CDC in the United States.
- ✦ Appendix A: Frequently asked questions (FAQs) have been updated to enrich the contents on serology testing for bloodborne viruses (BBV).

Promulgation and Training Forum

To promulgate the new edition of the guideline and to enhance clinical staff's knowledge and awareness of infection control in renal dialysis, a training forum was organised by ICB on February 22, 2024 as a hybrid (in-person plus zoom) session. During the forum, Dr Lui Sing Leung (HA CRC Chairman) highlighted the rationale of updating the guideline and Prof Yuen Man Fung (Department of Medicine, HKU) explained on the topic of viral hepatitis serology testing with active discussion during the Q&A session. The forum was well received with a total of 400 attendance comprising doctors, nurses, allied health and others from both the public and private sectors. The training materials have been uploaded and all who are interested are welcome to view from the IDIC portal (https://icidportal.ha.org.hk/Trainings/View/183)

Figure 3 – Training forum organised on February 22, 2024.

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NEWS IN BRIEF

Two linked cases of listeriosis

The first case affected a 30-year-old pregnant woman with no underlying illness. She presented with vaginal bleeding, abdominal pain and decreased fetal movement on March 24, 2024. She was admitted to obstetric ward of a public hospital on the same day. Clinical diagnosis was preterm premature rupture of membrane and she had uneventful delivery on the same day. Placental swab collected on March 24 showed heavy growth of *Listeria monocytogenes*. She was given a course of oral antibiotics and was discharged on March 27. She recalled history of consumption of ice creams during pregnancy. She had no recent travel. Her home contacts were asymptomatic.

The second case affected the newborn girl who was the daughter of the first case. She was born by normal spontaneous delivery at a gestational age of 31 weeks and 4 days. Her blood collected on March 24 was cultured positive for *Listeria monocytogenes*. Clinical diagnoses were *Listeria monocytogenes* bacteremia and respiratory distress syndrome due to prematurity. She was in stable condition.

Two sporadic cases of Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) recorded two sporadic cases of Creutzfeldt-Jakob disease (CJD) on April 2, 2024.

The first case involved a 70-year-old retired man with underlying illnesses residing in Tai Po. He presented with rapid cognitive decline in January 2024 and was admitted to a public hospital on March 18, 2024. He was found to have myoclonus and akinetic mutism. Findings of the electroencephalogram (EEG) and magnetic resonance imaging (MRI) of the brain were compatible with CJD. He was classified as a probable case of sporadic CJD.

The second case involved a 68-year-old woman with underlying illnesses. She presented with vision colour change and blurred vision, confusion and rapid cognitive decline in mid February 2024 and was admitted to a hospital in mainland in February 2024 for investigation. She was admitted to a public hospital in Hong Kong on March 30, 2024 due to persistent confusion and was found to have myoclonus and progressive dementia. She was classified as a possible case of sporadic CJD.

Both cases had no known family history of CJD and no risk factors for either iatrogenic or variant CJD were identified.

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

On April 19, 2024, CHP recorded a sporadic case of necrotising fasciitis caused by *Vibrio vulnificus*. The case involved a 73-year-old male with underlying illnesses. He presented with acute left leg swelling and pain on April 17, 2024 and was admitted on the same day with rapid development of erythema and bullae. The patient underwent multiple operations including wound debridement and above knee amputation. The diagnosis was necrotising fasciitis. *Vibrio vulnificus* was recovered from wound tissue and wound swab. The patient's condition deteriorated and he succumbed on April 22, 2024.

A sporadic case of brucellosis

On April 19, 2024, CHP recorded a sporadic case of brucellosis affecting a 49-year-old man with good past health. He presented with fever, headache, musculoskeletal pain, malaise and reduced appetite on March 25, 2024. He was admitted to a public hospital on April 11. His blood specimen collected on April 14 was cultured positive for *Brucella melitensis*. The clinical diagnosis was brucellosis. He was stable and discharged on April 14, 2024. He worked as a chef in mainland and handled raw sheep regularly. He injured his hand in February this year. His home contact and colleagues were asymptomatic.

World Immunization Week 2024 - *Humanly Possible: Saving Lives through Immunization*

World Immunization Week (WIW) is a global event held annually in the last week of April to highlight and recognise the importance of immunisation. This year's theme "Humanly Possible" celebrates the 50 years of the World Health Organization (WHO)'s Expanded Programme on Immunization (EPI) – recognising collective efforts to reach everyone with lifesaving vaccines and calling attention to the need to further protect more children, adults and their communities.

The EPI was an initiative launched by the WHO in 1974 as a global endeavor to ensure equitable access to life-saving vaccines for every child, regardless of their geographic location or socioeconomic status. Over the past five decades, EPI has saved 154 million lives and benefited people of all ages in every region. In Hong Kong, a comprehensive immunisation programme has been provided for all children for decades in line with the principles set out in the EPI. Under the Hong Kong Childhood Immunisation Programme, children receive different types of vaccines and boosters from birth to Primary Six for protection against vaccine preventable diseases including measles, poliomyelitis, and hepatitis B. In addition to the childhood vaccines, the Government also provides immunisation against influenza, pneumococcal disease and COVID-19 for populations that are considered at risk.

Immunisation is one of the safest and cost-effective public health interventions, and for decades, vaccine has been proven to be a powerful tool in reducing childhood mortality. Amid the recent resurgence of vaccine preventable diseases such as measles across the globe, parents are reminded to maintain up-to-date immunisation for their children for timely and comprehensive protection, as delays in vaccination will weaken the protection for the children against relevant infectious diseases. For more information on the WIW, please visit the CHP's thematic webpage: https://www.chp.gov.hk/en/features/107809.html.

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FEATURE IN FOCUS

Update on the regional and local situations of pertussis

Reported by Dr Ilima YS POON, Medical Officer and Dr SK MAK, Senior Medical and Health Officer, Vaccine Preventable Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Background

Pertussis, also known as whooping cough, is caused by the bacterium *Bordetella pertussis*. People infected with pertussis may initially present with non-specific symptoms, such as runny nose, sneezing, low-grade fever and mild cough. The cough gradually becomes more severe and spells of violent coughing can interfere with eating, drinking and breathing. Symptoms such as a cough which lasts for at least two weeks with paroxysms of coughing, inspiratory whoop or post-tussive vomiting are suggestive of pertussis. Pertussis spreads from one to another through droplets produced by coughing or sneezing and via direct contact with respiratory secretions. The disease can cause severe morbidity and mortality among newborn babies and infants. The disease can be treated by antibiotics, while active immunisation with pertussis-containing vaccine is a safe and effective way to prevent severe disease as the disease is milder in those who are infected after immunisation[1]. A study shows that the vaccine effectiveness of three primary doses of pertussis-containing vaccine against severe disease is high (over 85%)[2]. However, this immunity gradually wanes over the years and booster vaccines are required[3]. Hence, in Hong Kong, pertussis childhood immunisation consists of three doses of primary series and three boosters. As infants not yet fully immunised are at particularly higher risk of complications, pregnant women are advised to receive a dose of acellular pertussis-containing vaccine between 26 to 34 weeks of pregnancy to prevent pertussis infection in their newborn babies in Hong Kong.

Global and regional situation

Cyclical increase in the number of pertussis usually occurs every few years[4]. In the post-COVID-19 pandemic era, pertussis is a concern in many countries globally because the COVID-19 pandemic lockdowns hampered routine vaccination and the susceptible populations were build-up due to decreased exposure of pertussis during the COVID-19 pandemic[5].

An increase in the number of pertussis cases has been observed across some European countries since mid-2023, with data showing more than 10-fold increase in cases[6]. For instance, Denmark recorded 6 063 pertussis cases in 2023 as compared to 82 cases in 2021 and 54 cases in 2022[7]; and Czech Republic recorded over 3 000 pertussis cases in the first three months of 2024 compared to 51 and 96 pertussis cases in 2021 and 2022 respectively[8,9]. England also reported an upsurge in pertussis cases, with 2 793 cases reported in first three months of 2024 compared to 858 cases for the whole year of 2023, and such increase could be the result of reduction in pertussis vaccine uptake levels in pregnant women, babies and young children in recent years[10]. According to a recently published report from the European Centre for Disease Prevention and Control, more than 25 000 cases of pertussis were reported in 2023, and more than 32 000 cases had already been reported between January and March 2024 in Europe. From 2023 to March, 2024, in 17 Europe or European Economic Area countries, infants who are under the age of one year represented the group with the highest reported incidence, whereas in six countries, the highest incidence was reported in adolescents aged from 10 to 19 years. The majority of deaths occurred in infants younger than one year of age. Various factors such as expected epidemic peaks, presence of unvaccinated or not up to date vaccinated individuals, waning immunity, decreased contribution of natural boosting in the overall population during the COVID-19 pandemic period may contribute to the observed surge in pertussis cases[11].

Within the western pacific region, Mainland China and the Philippines recorded upsurge of pertussis cases since the start of

2024. In Mainland China, after the COVID-19 pandemic disruption, the annual number of pertussis cases bounced back from below 10 000 in 2021 to over 38 000 in 2022 and 2023. In the first three months of 2024, Mainland China experienced a significant upsurge in pertussis cases, with 59 458 cases and 13 deaths reported which surpassed pre COVID-19 era[12,13]. In the Philippines, a total of 2 521 pertussis cases, including 96 deaths, were reported since the start of 2024 (as of May 11)[14], compared to 20 and four pertussis cases in 2021 and 2022 respectively[15].

Local situation

In Hong Kong, pertussis occurs all year round without obvious seasonal patterns. Cyclical peaks every three to five years have been observed, with peaks in 2007, 2011, 2015 and 2018 in the past. There had been significant increase in the number of pertussis cases since 2017, possibly due to the widespread use of polymerase chain reaction (PCR) test. During the COVID-19 pandemic period, the number of pertussis was very low (two cases in 2021 and three cases in 2022). As pandemic control measures were gradually lifted in 2023, the number of pertussis started to climb up. In the first four months of 2024, a total of 28 cases were recorded (Figure 1).

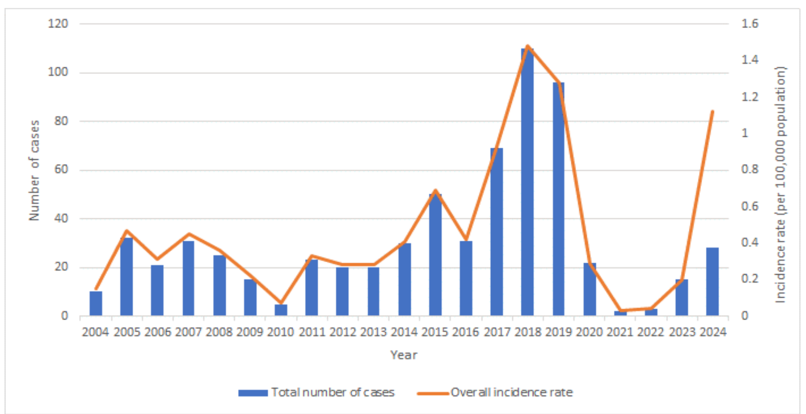

Figure 1 – Incidence rate and number of cases of pertussis by year from 2004 to 2024 (As of April 30, 2024).

The 28 cases reported in 2024 comprised of 18 male and 10 female with age ranged from two months to 71 years (median age nine years). Three were children under the age of six months who had not yet completed the primary series of three doses of pertussis vaccine. For the 16 children aged between six months and 17 years, 15 had received vaccination according to Hong Kong schedule and one had unknown vaccination history. The nine adults were aged between 24 and 71 years, of which six (67%) were unvaccinated or with unknown vaccination status. Only one case which affected a two-month-old boy who had developed respiratory distress but subsequently recovered, the rest of the cases had no complications nor require intensive care unit (ICU) admission. Six were imported from Mainland/overseas places and the rest were locally acquired infection. Upon epidemiological investigations, there was an outbreak affecting two primary school students who studied in the same class. All others were sporadic infections.

Following the cyclical pattern of the disease with the last peak in 2018 , low incidence during the COVID-19 period and the global resurgence of pertussis incidence, it is not unexpected to see increasing number of cases in 2024. It is therefore essential to ensure all recommended pertussis-containing vaccines are received on time, as delay in vaccination may increase the susceptibility period for the infection. Parents are reminded to maintain up-to-date immunisation for their children according to the HKCIP for timely and comprehensive protection. Furthermore, pregnant women should receive one dose of acellular pertussis-containing vaccine during each pregnancy as they will develop and pass the antibodies to the foetus before delivery, providing direct protection for infants against pertussis. Apart from receiving routine pertussis vaccination to prevent pertussis infection,

Under the current Hong Kong Childhood Immunisation Programme (HKCIP), a combined diphtheria, tetanus, acellular pertussis and inactivated poliovirus vaccine (DTaP-IPV) is used for preschoolers (given as three primary doses at two months, three months, four months and six months of age and one booster dose at age of 18 months) and primary one students (given as a booster dose). A booster dose of diphtheria (reduced dose), tetanus, acellular pertussis (reduced dose) and inactivated poliovirus vaccine (dTap-IPV) is provided to primary six students. A total of six doses of pertussis-containing vaccines are received by children under the current HKCIP.

In 2019, pregnant women in Hong Kong were recommended to receive one dose of acellular pertussis-containing vaccine at any time in the second or third trimester, preferably before 35 weeks of gestation during each pregnancy as part of routine antenatal care regardless of previous vaccination and natural infection history against pertussis[16]. This would provide direct protection for infants against pertussis through transplacental transfer of vaccine-induced antibodies from the mother before they receive pertussis vaccination. Pertussis Vaccination Programme for pregnant women (26 to 34 weeks gestation) in Hong Kong was launched at Maternal and Child Health Centres (MCHCs) under the Department of Health and at antenatal clinics of the Hospital Authority since July 2, 2020[17,18].

The vaccination coverage of DTaP-IPV in children have maintained at above 95% for many years[19]. During the COVID-19 pandemic over the past three years, parents, schools and healthcare workers in Hong Kong continued to support childhood immunisations, striving to maintain the immunisation coverage rates at a high level.

members of the public are advised to observe personal hygiene (e.g. cover the nose and mouth while sneezing or coughing, wash hands with liquid soap and water properly, etc.) and environmental hygiene (e.g. maintain good indoor ventilation, avoid going to crowded or poorly ventilated public place). When having respiratory symptoms, members of the public should wear a surgical mask, refrain from work or attending classes at school, avoid going to crowded places and seek medical advice promptly.

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Latest situation of dengue fever, chikungunya fever and Zika virus infection

Reported by Ms Chloe POON, Scientific Officer; Mr Ian YAU, Scientific Officer and Dr Constance LIAO, Medical and Health Officer, Enteric and Vector-Borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Dengue fever, chikungunya fever and Zika virus infection are mosquito-borne diseases with similar clinical manifestations that are transmitted to humans through the bites of infected *Aedes* mosquitoes. The principal vector for these diseases, *Aedes aegypti*, is not found in Hong Kong, but *Aedes albopictus*, which can also spread these infections, is widely distributed locally. This article provides an update on the global and local situations of these salient mosquito-borne diseases.

Dengue Fever

Global situation

According to the World Health Organization (WHO), the largest annual number of dengue fever (DF) cases reported globally ever was in 2023, with over 6.5 million cases affecting more than 80 countries[1]. Spread to areas that were previously free of DF has also been observed. The increase in DF cases and global spread are likely due to a combination of factors including climate change leading to higher temperature and rainfall, complex humanitarian crises fragilising health systems, and high population movements[2].

The Americas, including Argentina, Brazil, and Peru, have recorded over four million infections in 2023, contributing the largest proportion of the global burden[3]. Between January and mid-April of 2024, the Americas have already reported over six million suspected cases, representing over 330% increase compared to the same period in 2023[4,5]. In Southeast Asia, several countries are experiencing a surge in DF cases, such as Indonesia and Thailand[6].

Local situation

Dengue fever has been a notifiable disease in Hong Kong since March 1994. In the past 10 years (2014 to 2023), the annual number of cases ranged from two to 198 (median: 107 cases). The cases in the past 10 years involved 488 male and 437 female aged between three and 87 years (median: 39 years). Over 95% of the cases were imported from other countries (Figure 1). Local clusters involving two or more cases were recorded in 2014 (two cases), 2015 (two cases), 2016 (three cases) and 2018 (29 cases), while local sporadic cases were recorded each year between 2014 and 2020, except for year 2018. No fatal case was recorded.

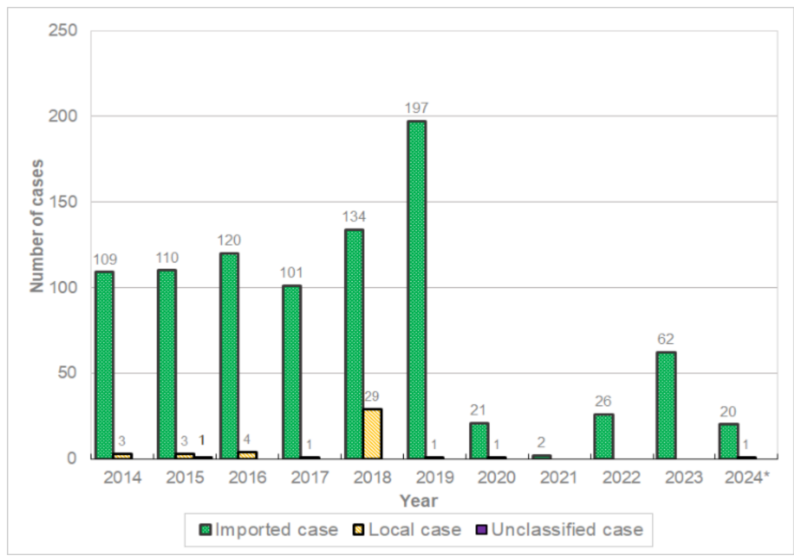

Figure 1 – Number of DF cases in Hong Kong from 2014 to 2024 (as of May 11, 2024).*

In 2024 (as of May 11, 2024), the Centre for Health Protection (CHP) of the Department of Health recorded 21 DF cases, including one local and 20 imported infections. The imported cases travelled to or stayed in Indonesia (eight cases), Malaysia (five cases), Thailand (two cases), Vietnam (two cases), India (one case) and Sri Lanka (one case); the remaining case had travel history to multiple countries during the incubation period. Places of infection of imported DF cases in Hong Kong and the latest situation of DF in neighbouring and overseas countries are accessible via the following hyperlink: www.chp.gov.hk/files/pdf/df_imported_cases_and_overseas_figures_eng.pdf

Regarding the local case, it was recorded in April involving a 28-year-old man with good past health. Investigation revealed that the patient lived in Siu Sai Wan. He had no travel history within the incubation period. His three household contacts were asymptomatic and tested negative for recent dengue infection upon laboratory testing. In response to the detection of local DF, the CHP worked closely with the Pest Control Advisory Section (PCAS) of the Food and Environmental Hygiene Department (FEHD) to assess risk of vector infestation and carry out anti-mosquitos measures to curtail possible spread of infection. The CHP conducted active case finding in the vicinity where the case lives and works, including making phone calls to all residents of the housing estate where the index lives and arranging blood tests for those who have symptoms, administration of questionnaires and setting up enquiry hotline. Joint site visits with FEHD to the index's residence and workplace were conducted and mosquito control measures were implemented by respective management in accordance to the advice given by CHP and FEHD (Figure 2). Environmental surveys conducted by PCAS identified vectors (*Aedes albopictus*) in multiple locations where index had stayed or passed by during the incubation period or communicable period. Nevertheless, all vector samples collected were tested negative for DF virus. Anti-mosquito control was initiated by FEHD at the same time and will continue for a month at the key areas stayed or visited by the index. The CHP also stepped up efforts to raise public awareness through multiple channels, including press releases, social media posts, media interviews and free offline platforms. A joint health talk was also held with the FEHD for the residents of Siu Sai Wan (Figure 3). In addition, the CHP issued letters to medical practitioners, schools and institutions to remind all parties to remain vigilant against DF. As of May 11, no additional case has been detected.

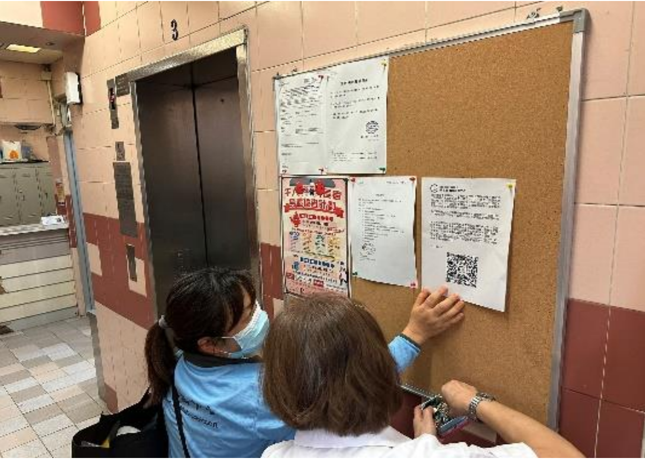

Figure 2 – CHP was putting up health information at index's residence.

Figure 3 – CHP was conducting health talk at Siu Sai Wan Community Hall.

Among the 21 cases recorded this year, there was one case of non-fatal dengue hemorrhagic fever. The case of dengue haemorrhagic

fever was recorded in April involving a 33-year-old woman with good past health. She travelled to Kuala Lumpur, Malaysia between April 9 to 17 with short-sleeve clothes and did not use insect repellent. The patient started presenting with fever one day prior to her return, and developed headache, myalgia and vomiting and subsequently developed mucosal bleeding, hypotension, deranged liver function and thrombocytopenia by the time she was admitted on April 21. There was plasma leakage as evidenced by a drop in the haematocrit from 38 to 20% following volume-replacement treatment. She had no known previous dengue fever infection. All other cases presented with classical dengue fever symptoms, such as fever (19 cases, 95.0%), headache (15 cases, 75.0%), myalgia (12 cases, 60.0%) and rash (eight cases, 40.0%).

Chikungunya Fever

Global situation

Local transmission of chikungunya virus infection has been reported in 110 countries across all six WHO regions, exposing about four billion people to risk of infection[7].

The Americas, including Argentina, Brazil, and Paraguay, have recorded a notable increase in chikungunya fever (CF) cases since 2022[8]. This increasing trend continued into 2023, culminating over 0.4 million CF cases – nearly a 50% increase from the numbers reported in 2022. The significant rise has positioned the Americas as the region contributing the largest disease burden globally.

In Southeast Asia, CF has been a recurring health concern since the 1950s, with notable outbreaks in India, Thailand, and the Philippines[9,10,11,12]. In India, despite fluctuations, the annual numbers have ranged around 6 000 to 12 200 since 2018[13]. In Thailand, over 27 000 CF cases were recorded between 2018 and 2020. The number showed a large decline to about 600 in 2021, and gradually increased to over 1 400 in 2023[14]. The Philippines also saw a significant outbreak in 2023, with a near 400% increase in cases compared to 2022[15,16], highlighting the escalating concern over CF in Southeast Asia.

Local situation

CF has been a notifiable disease in Hong Kong since March 6, 2009. In the past ten years (2014 to 2023), the CHP recorded 25 confirmed imported cases with annual number of cases ranged from zero to eleven and the last case was recorded in 2019. None of them were locally acquired infections (Figure 4).

The cases involved 12 male and 13 female aged between eight and 69 years (median: 45 years). All had travel history to Southeast Asian countries during the incubation period. Except for a family cluster consisting of four people with travel history to Thailand recorded in 2019, all cases were sporadic infections with travel history to India, Thailand, the Philippines, Myanmar and Indonesia. The majority of cases presented with fever (100%), joint pain (92%) and rash (56%).

Figure 4 – Number of CF cases in Hong Kong from 2014 to 2024 (as of May 11, 2024).*

Zika Virus Infection

Global situation

Following the 2015 to 2016 epidemic in the Americas, cases of Zika virus infection (ZVI) declined globally from 2017 onwards, but transmission persists at low levels in several countries in the Americas and other endemic regions, with sporadic increases observed in some countries in recent years[17]. Globally, more than 80 countries and territories in five of the six WHO regions (except Eastern Mediterranean) have evidence of local transmission of Zika virus (ZIKV).

Furthermore, 61 other countries and territories across all six WHO regions have evidence of established and competent *Aedes aegypti* vector populations (but no known cases of ZIKV transmission), meaning these areas have the potential of sustaining local transmission and outbreaks[18].

The Americas remains the WHO region with the highest number of reported ZVI cases annually, with about 27 000 cases recorded between 2014 and 2023 while Brazil, Colombia and Venezuela were the top three countries with most cases[19].

In Asia, there has been an increase in disease activity in Thailand, with 818 ZVI cases recorded in 2023, compared to an annual range of 63 to 273 between 2019 and 2022[20]. As of May 2, 2024, Thailand has recorded 126 cases in 2024[21]. In Singapore, the Ministry of Health recorded 30 cases of ZVI in 2023, compared to zero to 12 cases recorded annually between 2019 and 2022. As of April 27, six cases have already been recorded in 2024, compared to one case during the same period in 2023 and a median of one case during the same period in the last five years[22].

Local situation

As of May 11, 2024, the CHP has recorded eight laboratory-confirmed imported cases of ZVI since it became a notifiable disease on February 5, 2016 (Figure 5). No locally acquired ZVI infection has been recorded so far. The eight cases involved four male and four female aged between 16 and 60 years (median: 38 years) with travel history to countries or areas with current or previous ZIKV transmission including Thailand (three cases), India (two cases) and Saint Barthélemy (one case); the remaining two cases had travel history to multiple countries during the incubation period.

Three of the eight cases of ZVI were recorded in 2024, all had travel history to Thailand during the incubation period. Among them, two cases were epidemiologically linked, involving a 16-year-old male (who was also co-infected with DF) and a 19-year-old male.

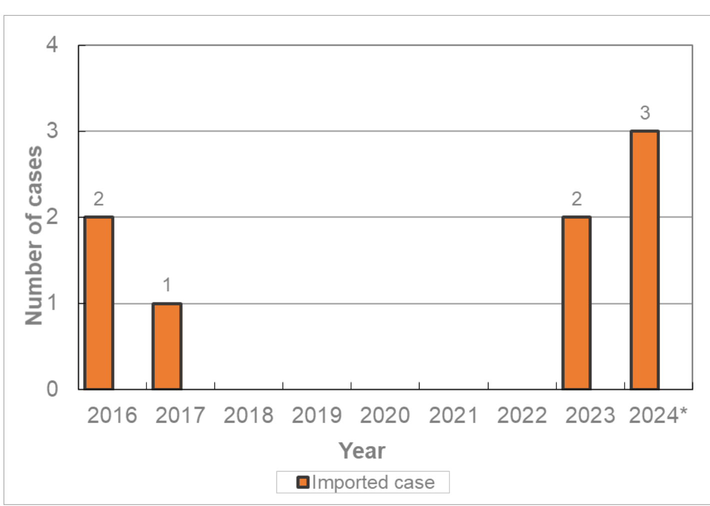

Figure 5 – Number of ZVI cases in Hong Kong from 2016 to 2024 (as of May 11, 2024).*

All eight cases of ZVI presented with mild symptoms, such as rash (seven cases, 87.5%), fever (five cases, 71.4%), arthralgia (four cases, 57.1%) and headache (four cases, 57.1%). No fatal cases have been recorded.

Summary

The rising incidence of mosquito-borne diseases globally is a concern, which is likely attributed to climate change that has played a significant role in the expansion of mosquito populations. Hong Kong has a high risk of importation of these diseases due to extensive international travel, and the presence of a viable vector creates the risk of continuous local transmission, which currently does not exist. Hence, it is crucial that members of the public remain vigilant and proactively implement the anti-mosquito measures as outlined below. In the meantime, the CHP continues to actively monitor the situation both locally and abroad in order to provide timely updates and health advice.

Tips for prevention of mosquito-borne diseases

To prevent mosquito-borne diseases, members of the public need to protect themselves from mosquito bites and prevent their proliferation.

Prevention of mosquito bites

- Wear loose, light-coloured long-sleeved tops and trousers
- Use DEET-containing insect repellent on exposed parts of the body and clothing
  - Pregnant women and children of six months or older can use DEET-containing insect repellent. In general, use DEET of up to 30% for pregnant women and up to 10% for children
- Take additional preventive measures when engaging in outdoor activities
  - Avoid using fragrant cosmetics or skin care products
  - Re-apply insect repellents according to instructions
  - If both insect repellents and sunscreen are used, apply insect repellents after sunscreen

Prevention of vector proliferation

- Prevent accumulation of stagnant water
  - Change the water in vases once a week
  - Avoid using saucers underneath flower pots
  - Cover water containers tightly
  - Ensure air-conditioner drip trays are free of stagnant water
  - Put all used cans and bottles into covered dustbins
- Control vectors and reservoir of the diseases
  - Inspect and disinfest pets and pet beddings regularly
  - Trim vegetation particularly the grass in your premises
  - Store food and dispose of garbage properly to prevent rat infestation. Holes at the wall and ceiling should be repaired and filled

Advice for travelers

- ✦ Take preventive measures to avoid mosquito bites. For children who travel to countries or areas where mosquito-borne diseases are endemic or epidemic and where exposure is likely, children aged two months or above can use DEET-containing insect repellents with a concentration of DEET up to 30%. For details about the use of insect repellents and the key points to be observed, please refer to 'Tips for using insect repellents' (https://www.chp.gov.hk/en/features/38927.html).
- ✦ If you are travelling to areas where vector-borne diseases are common, arrange travel health consultation with your doctor at least six weeks before the journey for risk assessment. During the consultation, the need for any vaccinations, chemoprophylaxis and vector preventive measures will be determined.
- ✦ If travelling in endemic rural areas, carry a portable bed net and apply permethrin (an insecticide) on it. Permethrin should NOT be applied to the skin. Seek medical attention promptly if feeling unwell.
- ✦ If you feel unwell during your visit abroad or after return, seek medical advice immediately and provide travel details to the doctor. Urgent blood tests may be necessary and prompt treatment is vital.

For disease-specific prevention measures, please visit the respective webpages on the CHP website:

- ✦ Dengue fever: https://www.chp.gov.hk/en/healthtopics/content/24/19.html
- ✦ Chikungunya fever: https://www.chp.gov.hk/en/healthtopics/content/24/6122.html
- ✦ Zika virus infection: https://www.chp.gov.hk/en/healthtopics/content/24/43088.html

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NEWS IN BRIEF

Two cases of sporadic Creutzfeldt-Jakob disease

The Centre for Health Protection (CHP) of the Department of Health recorded two sporadic cases of Creutzfeldt-Jakob disease (CJD) on May 1 and 10, 2024 respectively. The first case involved a 70-year-old man with good past health. He presented with rapid cognitive decline in January 2024 and was admitted to a public hospital in January and again in April 2024. He was also found to have rigidity and gait disturbance. Findings of magnetic resonance imaging (MRI) of the brain were compatible with CJD though electroencephalogram (EEG) did not reveal typical features. His condition was stable and he was discharged. He was classified as a possible case of sporadic CJD.

The second case involved a 66-year-old woman with good past health. She presented with memory impairment in May 2023. She also had deterioration in cognitive function, involuntary limb movements and repeated falls who required multiple admission to public hospitals in November 2023, February and April 2024. EEG conducted on April 22 showed features compatible with CJD. She remained stable and was discharged. She was classified as a probable case of sporadic CJD.

Both cases had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified.

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

On May 17, 2024, CHP recorded a sporadic case of necrotising fasciitis due to *Vibrio vulnificus* infection in Yau Tsim Mong. The case affected a 78-year-old male with history of hypertension, diabetes mellitus, coronary artery disease and fatty liver. He presented with left thumb pain, swelling and fever on May 7 after sustaining an injury to the left thumb by raw saltwater fish at home during food preparation on the same day. He attended the Accident and Emergency Department of a public hospital on May 8 and was admitted on the same day. The clinical diagnosis was necrotising fasciitis. Excisional debridement of left thumb was performed. Specimens of left thumb wound collected on May 8 grew *Vibrio vulnificus*. His current condition was stable. He lived with his wife who remained asymptomatic.

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FEATURE IN FOCUS

Review of scarlet fever and invasive Group A Streptococcus infection in Hong Kong

Reported by Dr Hei Tung LAM, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Group A streptococcus (GAS), *Streptococcus pyogenes*, are bacteria that can be found in the throat and on the skin. People may carry GAS without having any symptoms, while some may develop infections with various severity. The bacteria can be transmitted through either respiratory droplets or direct contact with infected respiratory secretions. Scarlet fever (SF) is caused by GAS and it is a notifiable disease in Hong Kong. It often starts with a fever and sore throat and may be followed by some distinct features such as strawberry tongue (a red and swollen tongue covered in little bumps) and sandpaper rash (a fine red, erythematous rash which gives the skin a sand-paper-like texture). SF usually runs a mild course, but complications may develop occasionally.

There was a change in the incidence of SF in other regions during and after COVID-19 pandemic. In Mainland China, SF activity plummeted during COVID-19 pandemic but it started to rebound to pre-pandemic level in 2024, with about 18 000 cases recorded in the first four months[1]. A similar upsurge of SF cases was seen in a number of European countries in 2022, following a period of reduced incidence of GAS infections observed during COVID-19 pandemic[2]. The phenomenon is also observed in Hong Kong and this article aims to review the local situation of SF and invasive group A streptococcal (iGAS) infection in recent years across the pandemic.

Prior to the start of COVID-19 pandemic in 2020, the annual number of SF cases reported to the Centre for Health Protection (CHP) of the Department of Health ranged from 1 466 to 2 353 in 2016 to 2019. The number plunged to a low level ranged from 41 to 262 cases between 2020 and 2022 when a series of anti-epidemic measures were deployed. After the resumption of normalcy in early 2023, the number of SF cases gradually rose to a level comparable to pre-pandemic period. For the first five months of 2024, 644 cases have been recorded by CHP (Figure 1).

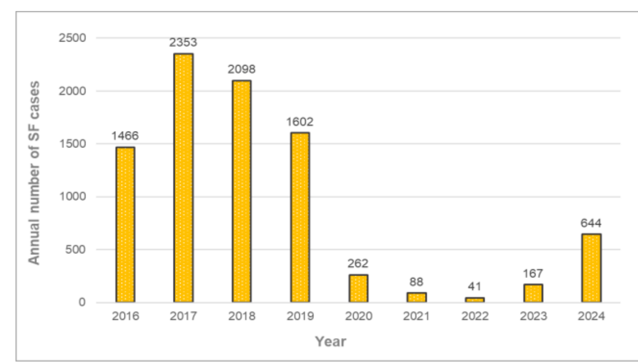

Figure 1 – Annual number of SF cases recorded, 2016 – 2024 (as of May 31, 2024).

While SF occurred throughout the year, there was usually a seasonal pattern in Hong Kong with its activity higher from May to June and from November to December in pre-pandemic years. In 2024, the activity of SF is observed to be following the seasonal trend shown by the increasing number of cases recorded from February to May (Figure 2).

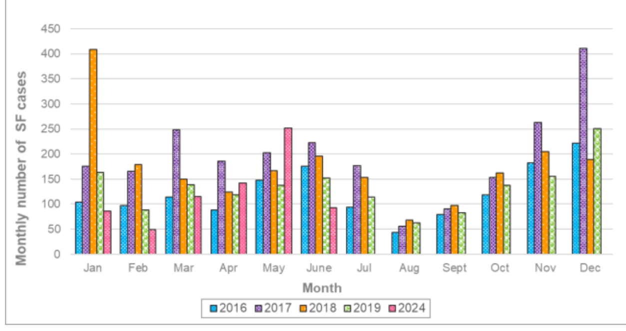

Figure 2 – Monthly number of SF cases recorded, 2016-2019 and 2024 (as of May 31, 2024).

The clinical and epidemiological features of the SF cases recorded during the first five months this year were broadly similar to those recorded in the pre-pandemic (2016 to 2019) and pandemic period (2020 to 2023) (Table 1). Among the 644 cases recorded in 2024, the male to female ratio was 1.9:1. Their ages ranged from one to 71 years (median: seven years). The majority affected were children under 12 years old (621 cases, 96.4%). 183 cases (28.4%) required hospitalisation but no severe cases or fatal cases were recorded. Seven household clusters and 12

institutional clusters were recorded this year so far, involving five kindergartens/child care centres and seven primary schools and affecting a total of 41 persons, with two to four patients (median: two patients) affected in each cluster.

Table 1 – Characteristics of SF cases, 2016 – 2024 (as of May 31, 2024).

	2016-2019 (Pre-pandemic years)	2020-2023 (Pandemic years)	2024 (As of 31 May)
Number of reported cases	7 519	558	644
Sex ratio (M:F)	1.4:1	1.5:1	1.9:1
Age range (median) Number of cases aged <12 years old (%)	16 days - 64 years (6 years) 7 241 (96.3%)	3 months - 66 years (5 years) 509 (91.2%)	1 year - 71 year (7 years) 621 (96.4%)
Number requiring hospitalisation (%)	2 538 (33.8%)	189 (33.9%)	183 (28.4%)
Number of severe cases Note	13 (0.17%)	1 (0.18%)	0 (0%)
Number of deaths (case fatality rate)	2 (0.03%)	0 (0%)	0 (0%)
Number of clusters recorded	Institutions: 202 Households: 73	Institutions: 4 Households: 5	Institutions: 12 Households: 7
Number of persons involved in each cluster (median)	2-7 (2)	2 (2)	2-4 (2)
Percentage of cases involved in clusters (%)	8.8%	3.2%	6.4%

Note: Severe cases of SF including cases with severe pneumonia, toxic shock syndrome, septic shock and deaths

Apart from SF, GAS can cause a spectrum of diseases from mild throat or skin infections to severe and even life-threatening diseases. When the bacteria enter the blood, muscle or cerebrospinal fluid, they can cause severe and even life threatening diseases such as necrotising fasciitis, streptococcal toxic shock syndrome (STSS) and meningitis, collectively termed iGAS infection. In 2022, France, Ireland, the Netherlands, Sweden, and the United Kingdom of Great Britain and Northern Ireland, increases in iGAS cases were observed, particularly during the second half of the year[3]. There has been an upsurge of STSS cases in Japan since summer 2023 which may be associated with relaxation of COVID-19 counter-measures[4]. Locally, CHP has also been monitoring the activities of iGAS infection through public hospital laboratory surveillance. The monthly detection of iGAS cases with positive specimen in the first five months of 2024 ranged from 11 to 29, which is comparable to the corresponding months in the pre-pandemic period (ranged from five to 39) (Figure 3).

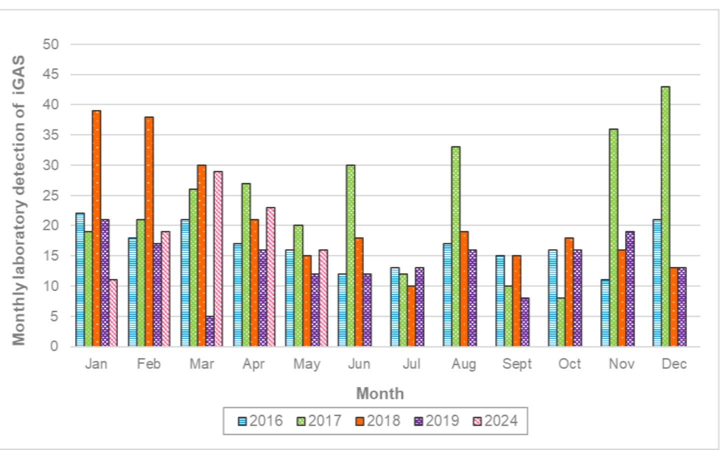

Figure 3 – Monthly detection of iGAS cases with positive specimen in public hospitals, 2016-2019 and 2024 (as of May 31, 2024).

To prevent SF or other GAS infections, it is important to maintain good personal, hand, and environmental hygiene. Symptomatic patients should wear a surgical mask, refrain from work or attending classes at school, avoid going to crowded places, and seek medical advice promptly. SF can be effectively treated with antibiotics. Prompt treatment helps alleviate symptoms faster, prevents rare but serious complications, and minimises the risk of transmission.

In summary, the SF activity in Hong Kong previously decreased to a low level during the COVID-19 pandemic period but soon returned to the pre-pandemic level after relaxation of control measures and resumption of normalcy in 2023 and is expected to follow the seasonal trend as before. CHP continues to closely monitor the SF situation. More information on SF (https://www.chp.gov.hk/en/healthtopics/content/24/41.html) and GAS infection (https://www.chp.gov.hk/en/healthtopics/content/24/107780.html) are available on the CHP website.

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Review of B virus infection

Reported by Ms Ka Yi LAW, Research Officer; Dr Wenhua LIN, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Section, Surveillance Division, Communicable Disease Branch, CHP

B virus, also known as *herpes simiae virus*, *Macacine herpesvirus 1* or *Cercopithecine herpesvirus 1*, is an alphaherpesvirus belonging to the family of *Herpesviridae* under the genus of *Simplexvirus*. Macaques are the natural reservoir for B virus, and they are commonly found in some countryside areas of Hong Kong (Figure 1).

Figure 1 – Rhesus macaque in Hong Kong (with special thanks to the Agriculture, Fisheries and Conservation Department for sharing the photo).

B virus infection has been reported most commonly in the rhesus and long-tailed macaque (*M. fascicularis*). Most infected macaques are usually asymptomatic or having mild disease. The virus can be latent in the infected macaque for a long time, then be reactivated and shed from the oral, nasal, or genital mucosa without signs of clinical illness. The infection is mainly transmitted through mating, scratching or biting among macaques.

Human infection of B virus is rare, with about 50 human cases have been documented worldwide thus far. The first human case of B virus infection was documented in 1932 that involved a researcher whose fingers were bitten by an apparently normal rhesus macaque while he was engaging in experimental work, and the researcher died of progressive encephalomyelitis 15 days after the injury[1]. Since then, human cases have been reported in the United States[2,3], Japan[4] and Mainland China[5]. Most cases were caused by scratches or bites from infected macaques, mucosal contact with infected macaques' body fluid or tissue, or injury from contaminated materials. Human-to-human transmission of B virus is very rare but one case had been documented in 1987 in the United States. The case involved a wife contracting B virus from her husband when she applied hydrocortisone ointment to her husband's infected wounds as well as her contact dermatitis lesions on her finger[2].

Symptoms of B virus infection usually occur within one month after the exposure, which may initially present with flu-like symptoms such as fever, myalgia, fatigue and headache. Vesicular skin lesions may then occur at the bite or scratch site. As disease progresses, the virus can spread to the central nervous system resulting in neurological symptoms, such as hyperesthesia, ataxia, diplopia, agitation and ascending flaccid paralysis[6]. The fatality rate of untreated human infections of B virus was reported as approximately 70%[7]. Human case of B virus infection with central nervous system complications may die even with treatments. Those who survive usually suffer from serious long term neurologic problems[7].

The first human case of B virus infection in Hong Kong

The Centre for Health Protection (CHP) of the Department of Health first recorded a case of human infection of B virus on April 3, 2024. The case involved a 37-year-old man with good past health, who presented with fever, coryzal symptoms and right upper eyelid swelling on March 18. He was admitted through the accident and emergency department on March 21 due to fever and decreased conscious level. He was later transferred to Intensive Care Unit (ICU) of the hospital due to further deterioration and he required tracheostomy and mechanical ventilation in ICU. His cerebrospinal fluid specimen taken on March 22 was tested positive for B virus by the Public Health Laboratory Services Branch of the CHP. The clinical diagnosis was B virus encephalitis. He was comatose and his condition remained serious. Epidemiologic investigation revealed that he had contacts with wild monkeys and was wounded by them during his visit at Kam Shan Country Park in late February.

In response to the confirmation of this human case, the CHP stepped up efforts to raise public awareness of B virus infection through several channels, including press releases, social media posts and media interviews. To enhance surveillance, B virus infection was added to the list of "Other communicable diseases of topical public health concern". The CHP also issued letters to remind medical practitioners to remain vigilant against B virus infection and report suspected cases promptly.

Currently no vaccine is available for prevention against B virus infection. Personnel who work with macaques or their specimens, such as laboratory workers and veterinarians, are at a higher risk of exposure and infection. They are recommended to adhere to appropriate laboratory and animal facility protocols and use appropriate personal protective equipment, including gloves and a face shield[8,9]. If a person is exposed, he should wash the exposure site immediately and seek medical attention promptly. Timely first aid and post-exposure antiviral prophylaxis as appropriate is important to prevent B virus infection and its life-threatening outcome.

Prevention of B virus infection

To minimize the risk of infection, members of the public are advised to:

- Stay away from wild monkeys
- Avoid touching or feeding any wild monkeys

In case there are wounds caused by monkeys:

- Wash the wound with a plenty of running water and seek medical attention immediately

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NEWS IN BRIEF

Four local sporadic cases of psittacosis

The Centre for Health Protection (CHP) of the Department of Health recorded four sporadic cases of psittacosis residing in different districts of Hong Kong on May 22, 24, 30 and June 14, 2024 respectively.

The first case affected a 62-year-old man with underlying illnesses residing in Kwun Tong. He presented with fever, headache, cough, dizziness and shortness of breath on May 8, and was admitted to a public hospital on May 16 due to worsening of symptoms. Chest X-ray showed left sided haziness. He was transferred to Intensive Care Unit due to respiratory failure and was intubated and put on extracorporeal membrane oxygenation support. His condition improved with antibiotic treatment, and he was extubated and transferred to general ward on June 1. Bronchoalveolar lavage collected on May 18 was positive for *Chlamydia psittaci* DNA. He did not keep any birds at home. There were no other reported sources of bird or poultry exposure. All home contacts were asymptomatic.

The second case affected a 69-year-old woman with underlying illnesses residing in Wan Chai. She presented with fever, headache and cough on May 6, and was admitted to a private hospital on May 13 due to desaturation. CT thorax showed extensive consolidative changes consistent with pneumonia. She was transferred to Intensive Care Unit due to septic shock and was intubated and given inotropic support. Her condition improved with antibiotic treatment, and she was extubated and transferred to general ward on May 23. Bronchoalveolar lavage collected on May 18 was positive for *Chlamydia psittaci* DNA. She kept a pet turtle dove at home. She also visited her mother's house daily, where a parrot was kept. The two birds which reportedly stayed indoor without history of contacting other wild birds were both tested negative for *Chlamydia psittaci* by Agriculture, Fisheries and Conservation Department. There were no other reported sources of bird or poultry exposure. All home contacts were asymptomatic.

The third case affected a retired 81-year-old man with underlying illnesses residing in Kwai Tsing. He presented with fever on May 23 and was admitted to a public hospital on the same day. His chest X-ray showed pneumonia. His sputum and nasopharyngeal aspirate collected on May 26 were tested positive for *Chlamydia psittaci* DNA. His condition improved after treatment and he remained hospitalized for rehabilitation. He had travelled to Foshan in Guangdong during incubation period. He could not recall history of contact with bird's dropping or carcasses and he had no pet bird at home. His household contact remained asymptomatic.

The fourth case affected a retired 65-year-old man with underlying illnesses residing in Sha Tin. He presented with fever, cough and shortness of breath on June 1, and was admitted to a public hospital on June 2. His condition improved with antibiotic treatment and was discharged on June 9. His sputum collected on June 8 was tested positive for *Chlamydia psittaci* DNA. He had travelled to Shenzhen during incubation period. He did not keep any bird at home, and denied contact with any birds or poultry, or birds' droppings or carcasses. All household contacts were asymptomatic.

Two local sporadic cases of listeriosis

CHP recorded two sporadic cases of listeriosis on May 21 and May 27, 2024 respectively.

The first case affected a 52-year-old woman with history of hyperthyroidism residing in Sai Kung. She presented with fever, vomiting and diarrhoea on April 11 and was admitted to a public hospital on the same day. Blood culture collected on May 18 yielded *Listeria monocytogenes*. She was treated with intravenous antibiotics and her condition has remained stable. She had no recent travel history and there was no known high risk exposure during the incubation period. Her household contacts remained asymptomatic.

The second case affected a 64-year-old woman who was a known case of metastatic breast cancer and nasopharyngeal carcinoma on active chemotherapy residing in Southern. She presented with diarrhoea, fatigue and myalgia on May 20, followed by fever two days later. She was admitted to a private hospital on May 23 and her blood collected on the same day grew *Listeria monocytogenes*. Her condition became stable after initiation of intravenous antibiotic treatment. She had no recent travel history and there was no other known high risk exposure during the incubation period. Her family members remained asymptomatic so far.

Infectious Disease and Infection Control Forum: B virus (herpes simiae virus) Infection

An infectious disease and infection control forum on B virus (herpes simiae virus) Infection was organised on May 30, 2024 by the Infection Control Branch of Centre for Health Protection (ICB, CHP) and Infectious Diseases Control Training Centre of Hospital Authority (IDCTC, HA).

The first B virus human infection case in Hong Kong was recorded by the CHP in April 2024. The forum was organised aiming to update healthcare professionals the situation of B virus infection. The forum has covered 1) Global and local epidemiology by Dr. Christina LIN from Communicable Disease Branch (CDB) of CHP; 2) Clinical Management by Dr. Thomas CHIK from Infectious Disease Centre (IDC), HA; and 3) Wild Monkeys in Hong Kong by Mr. SHEK Chung Tong from Agriculture, Fisheries and Conservation Department (AFCD).

Over 380 healthcare professionals from across public and private sectors had attended the forum either on-site or by zoom webinar. The forum has been well received. You can visit the IDCTC training portal https://icidportal.ha.org.hk/Trainings/View/187 for the materials of the forum.

Photo 1 – From left to right: Dr. Jacky CHAN, Consultant, HA IDC; Dr. Leo LUI, Associate Consultant, CHP ICB; Dr. Christina LIN, Senior Medical Officer, CHP CDB; Dr. Hong CHEN, Head, CHP ICB; Dr. Thomas CHIK, Associate Consultant, HA IDC; Mr. Chung Tong SHEK, Senior Fauna Conservation Officer, AFCD; and Dr Owen TSANG, Medical Director, HA IDC joined the Forum on B virus infection on 30 May 2024.

EDITORIAL BOARD **Editor-in-Chief** Dr SK Chuang **Members** Dr KH Kung / Dr Tonny Ng / Dr Hong Chen / Dr Taron Loh / Dr Wenhua Lin / Jason Chan / Doris Choi / Chloe Poon **Production Assistant** Joyce Chung. This monthly publication is produced by the Centre for Health Protection (CHP) of the Department of Health, 147C, Argyle Street, Kowloon, Hong Kong **ISSN** 1818-4111 **All rights reserved** Please send enquiries to cdsurinfo@dh.gov.hk.

FEATURE IN FOCUS

Investigation of two local cases of dengue fever in Hong Kong, 2024

Reported by Dr YEUNG Pui-shan, May, Medical and Health Officer and, Dr FUNG Wing-fai, Benjamin Senior Medical and Health Officer, Epidemiology Division, Communicable Disease Branch, CHP.

The Centre for Health Protection (CHP) of the Department of Health (DH) confirmed two local cases of dengue fever in Tin Shui Wai in 2024. We summarise below the epidemiological investigation and actions taken in response to the cases.

The first patient was a 54-year-old woman with underlying illnesses. She developed fever and retro-orbital pain on June 6 and consulted a private doctor on June 9. She attended the Accident and Emergency Department (AED) of a public hospital on June 11, and was admitted for treatment on the same day. The blood specimen collected on June 15 was tested positive for dengue virus NS1 antigen and dengue virus IgM. She recovered and was discharged on June 19. She lived with her family in Tin Shui (I) Estate. She worked in the Hong Kong International Airport and claimed to have mosquito bite while on public transport to and from workplace. Investigation revealed that she had only left Hong Kong for Shenzhen for a few hours during the incubation period.

The second local case of dengue fever was a 44-year-old man, who lived in a building next to the first case's residence of the same public housing estate. He presented with fever on June 21. He attended the AED of a public hospital on June 22 without admission. Later, he attended the AED on June 25 again due to persistent fever, gum bleeding and skin rash, and was admitted for treatment on the same day. The blood specimen collected on June 25 was tested positive for dengue virus RNA, dengue virus NS1 antigen and dengue virus IgM. He was discharged on July 2. Investigation revealed that he had only left for Shenzhen for a short duration during the incubation period. Except for close proximity of their residence, there was no overlap in local movements between the first and second local dengue fever cases. These two cases were considered epidemiologically linked and was the first local outbreak of dengue fever detected since the last one back in 2018. Considering the date of symptom onset of the patient and the incubation period of dengue fever (ranges from three to 14 days), it is possible that the second case had already been bitten by the vector and infected before the enhanced anti-mosquito work which started on June 18.

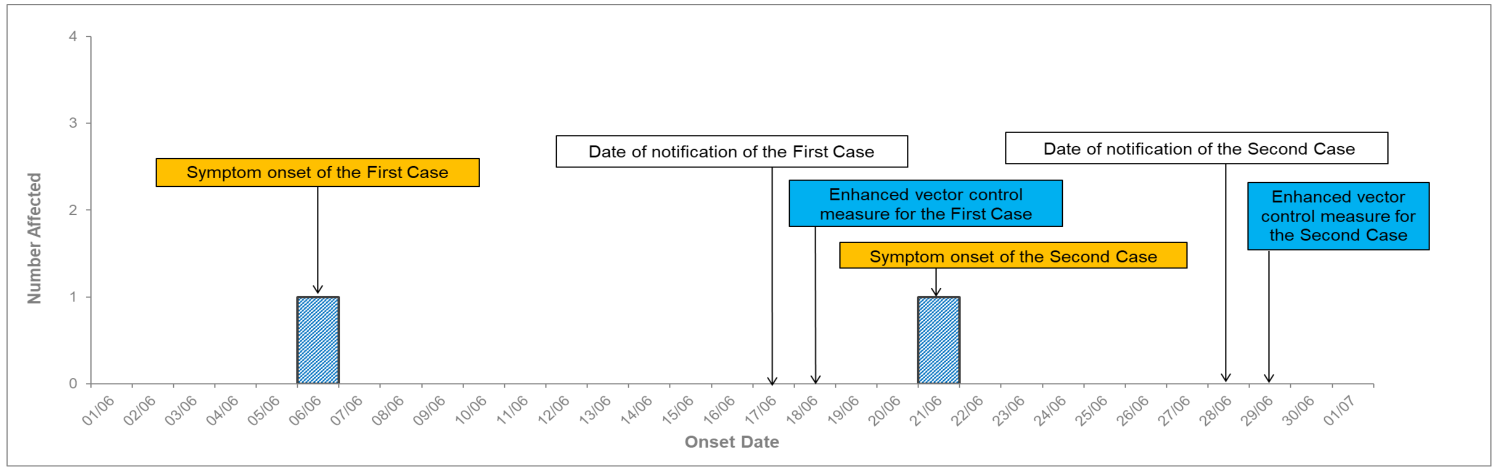

Figure 1 – Epidemic curve of the two local cases of dengue fever.

The CHP conducted epidemiological investigation and visited the patients' residence, jointly with the Pest Control Advisory Section (PCAS) of the Food and Environmental Hygiene Department (FEHD) (Figure 1). Active case finding was carried out in Tin Shui

(1) Estate, the CHP had contacted the residents of the estate by phone and survey with questionnaires was done. A hotline was set up for local residents to report symptoms. The management of other premises concerned such as schools, hospitals and public utilities were also reminded to report suspected cases to CHP. The Hospital Authority (HA) and private doctors were alerted of the incident and advised to report suspected cases. The household members of the two cases and some residents were tested negative for recent dengue fever infection (Figure 2). No other case was identified so far.

To raise the awareness of local residents to adopt anti-mosquito measures and seek medical advice early if they develop symptoms, health talks were conducted jointly with PCAS (Figure 3). Pamphlets were distributed to community members. Home Affairs Department and District councilors were engaged to alert residents in the district about the risk of dengue fever and to deliver health promotion messages. Five press releases were issued to update members of the public about the progress of the incident. Radio interviews were conducted and Facebook messages were posted to heighten public awareness.

Figure 2 – Blood screening tests were conducted for the residents in Tin Shui Wai.

PCAS of FEHD had carried out vector investigation and mosquito control measures in the vicinity of the patients' residence, their workplaces and areas that the patients had visited. So far, all adult mosquito samples collected were tested negative for dengue virus.

To eliminate potential breeding sites of mosquitoes and to avoid mosquito bites remain the best measures for the prevention and control of dengue fever. Travellers who return from affected areas should apply insect repellent for 14 days after arrival in Hong Kong to prevent mosquito bites. If they feel unwell, they should seek medical advice promptly, and provide travel details to the doctor. Members of the public may visit CHP's dengue fever page (https://www.chp.gov.hk/en/features/38847.html) or DH's Travel Health Service (https://www.travelhealth.gov.hk/eindex.html) for further information on dengue fever.

Figure 3 – CHP held a health talk jointly with the FEHD on June 29 in Tin Shui Community Centre.

Review of community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infection in Hong Kong, 2016 – 2024

Reported by Dr Shirley TSANG, Scientific Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) is different from the healthcare-associated methicillin-resistant *Staphylococcus aureus (S. aureus)* strains found in healthcare settings in terms of antibiotic resistance pattern and molecular feature. Most *S. aureus* infections can be effectively treated with antibiotics. However, MRSA is a strain of *S. aureus* that is resistant to antibiotics including methicillin and other commonly used beta-lactam antibiotics such as oxacillin, penicillin, amoxicillin and cephalosporins. In addition, patients with CA-MRSA infections may not have a history of stay in hospitals or residential institutions within a year prior to symptom onset. CA-MRSA has primarily been associated with skin and soft tissue infections (SSTIs) such as pimples, boils, abscesses or wound infections, but can also cause rapidly progressive necrotising pneumonia and necrotising fasciitis, often in otherwise healthy children and young adults.

CA-MRSA infection has been made a notifiable disease since January 5, 2007 with a view to strengthening surveillance as well as prompt implementation of preventive and control measures against the disease. The Centre for Health Protection (CHP) of the Department of Health (DH) had previously published a situation review of CA-MRSA infection from 2012 to 2015 at the

Communicable Diseases Watch in 2015. This article reviews the characteristics of the CA-MRSA cases reported to the CHP from 2016 through 2024 (up to June 30, 2024).

CA-MRSA incidence in Hong Kong

The annual number of reported cases had been on an increasing trend during 2007 to 2017 (Figure 1). The incidence of CA-MRSA infection based on notifications was 15.9 cases per 100 000 population in 2016, despite it was still grossly lower than the incidence overseas at the same time. The incidence in 2017 reached 17.0 cases per 100 000 population, and then stabilised in 2018 and 2019 (16.3 and 16.5 cases per 100 000 respectively) before the arrival of the COVID-19 pandemic. The incidence of CA-MRSA dropped drastically from 10.9 cases per 100 000 population in 2020 to 5.7 cases per 100 000 population in 2022 during the COVID-19 pandemic (2020-2022) and remained at a low level in 2023 (6.2 cases per 100 000 population) (Figure 2). For the absolute number of cases, a total of 7 437 cases of CA-MRSA infection were recorded from 2016 to June 2024. Notably, the annual reported number of CA-MRSA cases markedly decreased from about 1 200 cases during 2016 to 2019 to between 400 and 800 cases during the pandemic period from 2020 to 2022 (Figure 2). After resumption of normalcy in early 2023, the number of cases remained low at 469 in 2023 and 281 cases were recorded in 2024 up to June (Figure 2). Recent studies have demonstrated that the COVID-19 pandemic had a significant impact on the epidemiology of other infectious diseases especially diseases mainly caused by pathogens transmitted by droplet or close contact[1,2]. The implementation of public health and social measures against COVID-19 including constant use of masks in crowded places as well as frequent hand washing, and social distancing likely contributed significantly to the decline in the number of CA-MRSA infections during the intra-pandemic period.

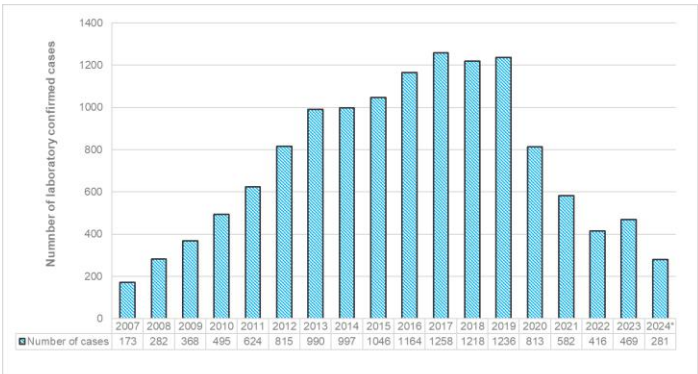

Figure 1 – Number of reported CA-MRSA cases by year in Hong Kong, 2007 – 2024 (up to June 30, 2024).*

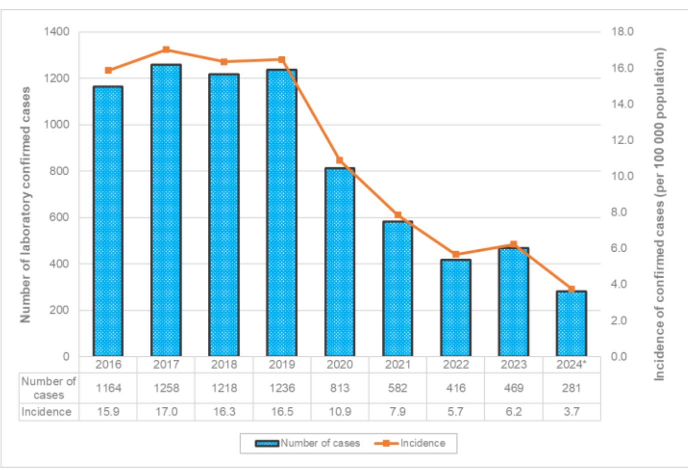

Figure 2 – Number of laboratory confirmed CA-MRSA cases and incidence of CA-MRSA infection in Hong Kong by year, 2016 – 2024 (up to June 30, 2024).*

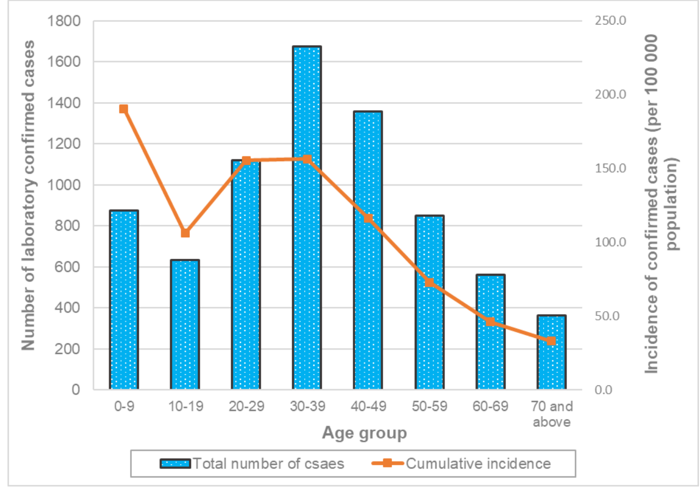

Figure 3 – Age distribution and cumulative incidence of the CA-MRSA cases reported from 2016-2024 (up to June 30, 2024).

Clinical features

Out of the 7 437 cases, about two-third required hospitalisation while the remaining were managed in outpatient settings. Clinically, 7 300 cases (7 300/7 437; 98.2%) presented with non-severe infections. Among them, 99.8% presented with uncomplicated skin and soft tissue infections (SSTIs) encompassing skin abscess, boil, carbuncle and impetigo, etc. The most commonly affected sites of SSTIs were lower limbs region (28.7%), followed by buttock, groin / perineum (20.7%), head and neck (18.1%), back / trunk / abdomen (16.5%), and upper limbs / axilla (15.9%). 5 517 (74.2%) of these cases required surgical management such as aspiration, incision and drainage, and surgical debridement of the lesions. Another 14 cases of non-severe CA-MRSA infection involved upper/lower respiratory tract infection (11), urinary tract infection (two), and conjunctivitis (one).

The remaining 137 cases (137/7 437; 1.8%) presented with severe CA-MRSA infections. The presenting conditions include septicaemia (71), pneumonia (34), osteomyelitis (nine), necrotising fasciitis (four), and severe SSTI infections (19). Among the severe CA-MRSA cases, 33 cases required intensive care. Twelve cases (0.2%) died of CA-MRSA, with cause of death including pneumonia (three), septic shock (three), sepsis (three), necrotising fasciitis (two), and osteomyelitis (one).

Epidemiological features

There were no significant changes in the epidemiological characteristics over the years (Table 1). Overall, the male-to-female ratio was 1.4:1. The cases aged from nine days to 100 years (median: 36 years). Those aged between 20 and 49 years constituted 55.8% of the cases (Figure 3). The cumulative incidence in this reporting period was highest in children aged below ten years and

adults between 20 and 39 years. Recurrent infections accounted for 606 (8.1%) cases. Regarding the ethnicity, the majority (77.0%) of the cases were Chinese, followed by other Asian (10.8%), Filipinos (7.3%), Caucasian (3.6%), and other ethnicities (1.3%) (Table 1). The monthly number of CA-MRSA cases notifed ranged from 20 to 123, with relatively more (44.4%) recorded during the summer months from May to September. In addition, 29 cases (0.41%) stayed in correctional facilities and 38 cases (0.64%) were residents of other institutions such as residential care homes for the elder persons or persons with disability.

Table 1 – Characteristics of CA-MRSA cases from 2016 to 2024 (up to June 30, 2024).

	2016 - 2019 (Pre-pandemic)	2020-2022 (Pandemic)	2023*	2024 (up to June 30, 2024)	2016-2024 (up to June, 30 2024)
Number of laboratory confirmed CA-MRSA cases	4 876	1 811	469	281	**7 437**
Sex ratio (Male:Female)	1.4:1	1.5:1	1.6:1	1.6:1	**1.4:1**
Age range (median)	9 days to 100 years (36 years)	15 days to 99 years (37 years)	10 days to 99 years (36 years)	15 days to 95 years (37 years)	**9 days to 100 years (36 years)**
Cases with known ethnicity	Chinese: 76.2% Other Asians: 10.4% Filipino: 8.7% Caucasian: 3.8% Others: 0.9%	Chinese: 80.0% Other Asians: 10.3% Filipino: 4.6% Caucasian: 3.5% Others: 1.7%	Chinese: 73.8% Other Asians: 16.2% Filipino: 5.1% Caucasian: 2.2% Others: 2.7%	Chinese: 76.8% Other Asians: 11.2% Filipino: 5.4% Caucasian: 3.9% Others: 2.7%	**Chinese: 77.0% Other Asians:10.8% Filipino: 7.3% Caucasian: 3.6% Others: 1.3%**

*The World Health Organization declared an end to the global Public Health emergency for COVID-19 on May 5, 2023. (https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic)

Epidemiological investigation revealed that most cases (97.3%) were sporadic infections and that a total of 200 clusters affecting 421 persons were recorded between 2016 and June 2024. Among the clusters, 194 were small household clusters with two to four persons affected in each cluster. The remaining six were institutional outbreaks involving three hospitals, one drug treatment and rehabilitation centre, one university residential hall, and one residential care homes for persons with disabilities. The number of cases in each outbreak ranged from two to three persons. Separately, a total of 102 (1.4%) sporadic CA-MRSA cases affected healthcare workers. Contact tracing did not reveal any other epidemiological linked cases in the concerned healthcare settings.

Antibiotic susceptibility

There were no significant changes in the antibiotic resistance pattern over the years. Majority of the CA-MRSA isolates remained sensitive to vancomycin (99.9%), fusidic acid (98.0%), cotrimoxazole (98.2%), and gentamicin (91.6%). The percentage of the isolates which were sensitive to clindamycin and erythromycin were 67.6% and 55.2%, respectively. Separately, from 2016 to 2024 (up to June 30, 2024), 36 isolates (0.5%) were found to be resistant to mupirocin.

Discussion

In Hong Kong, the "search and destroy" strategy is employed as one of the measures to prevent further spread of CA-MRSA in the community. For every reported case, decolonization therapies would be offered to the case and their close contacts irrespective of their CA-MRSA carriage status. To improve the acceptable rate of decolonization, the CHP has provided more convenient venues such as public and private hospitals to facilitate patients to collect the prescription items for decolonization since 2017. The proportion of cases receiving decolonization therapy has been maintained to over 80% since 2018, which could have contributed to the stabilised trend since 2017.

Conclusion

In summary, the recorded high number of CA-MRSA cases had decreased to a low level during the COVID-19 pandemic (2020 to 2022) and remained low after the resumption of normalcy in 2023. Despite that, as the main mode of transmission of CA-MRSA infections is through direct contact (with wounds, discharge, and contaminated surfaces of shared items), the risk of CA-MRSA infection persists in the community. Thus, members of the public are reminded to continue to stay vigilant and observe good personal and environmental hygiene to prevent the disease.

Prevention of CA-MRSA infection

To prevent CA-MRSA infection, the public are advised to:

- ✦ Use antibiotics only under medical advice. The frequency and dosage as prescribed by doctors should be strictly followed and the whole course of therapy should be completed;
- ✦ Maintain good personal hygiene including proper hand hygiene, avoidance of sharing personal items such as towels, clothing or uniforms, razors or nail-clippers;
- ✦ Disinfect wounds promptly and cover the wounds properly with waterproof adhesive dressings until healed. Avoid contacts sports and visiting public bathrooms if there is an open wound, and consult a doctor promptly if symptoms of infection develop; and
- ✦ Maintain good environmental hygiene including regular cleaning and disinfecting surfaces of shared items (e.g. athletic equipment and mats) in public places such as sports centres and public bathrooms.

Further information on CA-MRSA can be found on the CHP website at: http://www.chp.gov.hk/en/content/9/24/5392.html

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NEWS IN BRIEF

Six local sporadic cases of psittacosis

The Centre for Health Protection (CHP) of the Department of Health (DH) recorded six sporadic cases of psittacosis residing in different districts (Sham Shui Po (one), Kowloon City (one); Kwai Tsing (one); North Point (one); Shatin (one); Kwun Tong (one)) of Hong Kong from mid June to mid July.

The first case affected a 73-year-old retired man with underlying illnesses residing in Sham Shui Po. He presented with cough and shortness of breath on June 2, and was admitted to a public hospital on June 9 due to worsening of symptoms. Chest X-ray showed diffuse left and right lower zone consolidations. He was intubated due to respiratory failure, requiring intensive care. His condition improved with antibiotic treatment, and he was extubated and transferred to general ward on June 17. Endotracheal aspirate collected on June 11 was positive for *Chlamydia psittaci* DNA. He had travelled to Macao and Zhuhai during the incubation period but denied contact with birds or bird droppings there. He did not keep any birds at home, but reported presence of pigeons around his residential area. All home contacts were asymptomatic. The case was referred to Agriculture, Fisheries and Conservation Department (AFCD) and Food and Environmental Hygiene Department (FEHD) for follow-up.

The second case affected a 72-year-old part-time domestic clearning worker with underlying illnesses residing in Kowloon City. She worked in Wan Chai District. She presented with fever, headache, myalgia, dry throat and shortness of breath on June 16 and was admitted to a public hospital on June 17 due to worsening of symptoms. Chest X-ray showed right upper zone consolidation. She was intubated due to respiratory failure, requiring intensive care. Her condition was still critical. Tracheal aspirate collected on June 24 was positive for *Chlamydia psittaci* DNA. She did not travel outside Hong Kong during the incubation period. She did not keep any birds at home and did not recall other possible exposure to bird or bird droppings. Her home contact was asymptomatic.

The third case affected a 73-year-old retired man with underlying illnesses residing in Kwai Tsing. He presented with fever, cough, shortness of breath and generalised weakness on June 19, and was admitted to a public hospital on the same day. Chest X-ray showed left-sided haziness. His condition improved with antibiotic treatment. Sputum collected on June 20 was tested positive for *Chlamydia psittaci* DNA. During the incubation period, he had no travel history. He did not keep any birds at home and denied any contact with birds, their droppings or carcasses. However, he reported seeing flocks of pigeons at a park in Sham Shui Po where he visited every day. His home contacts were asymptomatic. The case was referred to AFCD, FEHD and Leisure and Cultural Services Department for follow-up.

The fourth case affected a 70-year-old retired man with underlying illnesses in North Point. He presented with fever, cough, rhinitis and malaise on June 15, and was admitted to a public hospital on June 16 due to worsening of symptoms. He was intubated due to respiratory failure, requiring intensive care. He was extubated on June 27, but remained in serious condition. Endotracheal

aspirate collected on June 21 was positive for *Chlamydia psittaci* DNA. He travelled to Thailand during the incubation period but denied bird exposure. He did not keep any birds at home. He did not recall other possible exposure to bird or bird droppings. His home contacts were asymptomatic.

The fifth case affected a 75-year-old retired man with underlying illnesses residing in Sha Tin. He presented with fever and cough on June 13, and was admitted to a public hospital on June 16. His sputum collected on June 18 was tested positive for *Chlamydia psittaci* DNA. Computed Tomography of thorax on June 19 showed consolidative change at left lower lobe. He improved with antibiotic treatment and was discharged on July 3. He had no travel history during incubation period. He did not keep any birds at home, but reported presence of flocks of cranes at a park in Sha Tin where he took daily stroll but he denied direct contact with them. All home contacts were asymptomatic. The case was referred to AFCD and FEHD for follow-up.

The sixth case affected a 61-year-old retired man with underlying illnesses in Kwun Tong. He presented with fever, cough, headache, dizziness, malaise, and shortness of breath on June 24, and was admitted to a public hospital on July 3 due to worsening of symptoms. Computed Tomography of thorax on July 10 showed lobar pneumonia with left upper and lower lobe consolidation, right upper lobe ground glass opacities, and moderate pleural effusion. Sputum collected on July 7 was positive for *Chlamydia psittaci* DNA. His condition improved with antibiotics treatment. During the incubation period, he had no travel history. He did not keep any birds at home, but reported presence of pigeons around his residential area. He also reported contact of bird droppings on his clothes with bare hands. All home contacts were asymptomatic. The case was referred to AFCD and FEHD for follow-up.

Three sporadic cases of necrotising fasciitis due to *Vibrio vulnificus* infection

The first case involved a 59-year-old housewife with underlying illnesses residing in Tuen Mun. She developed fever and right hand redness on June 28, and was admitted to a public hospital on the same day in serious condition. The clinical diagnosis was necrotising fasciitis and surgical debridement of her right hand was performed. Her right hand wound swab grew *Vibrio vulnificus*. According to her family, she sustained a puncture injury at right hand when preparing a marine fish for meal on June 27. She had no history of recent travel.

The second case involved a 91-year-old housewife with underlying illnesses including diabetes mellitus, hypertension and heart failure residing in Shau Kei Wan. She presented with pain and swelling over left lower limb on July 3 and was admitted to a public hospital on July 4. The clinical diagnosis was necrotising fasciitis of left lower limb. Her condition deteriorated rapidly and was complicated with septic shock. Emergency left above-knee-amputation was performed. The wound tissue and fluid grew *Vibrio vulnificus*. She succumbed on July 5. According to her family, she handled sea fish and went to the wet market before the symptom onset on July 2 and July 3 despite no trivial injury or trauma was reported. She did not consume any uncooked seafood. She had no history of recent travel.

The third case involved an 85-year-old housewife with underlying illnesses residing in Kwai Tsing. She developed fever and left lower limb swelling on July 8, and was admitted to a public hospital on July 11 in serious condition. The clinical diagnosis was necrotising fasciitis and surgical debridement of left lower limb was performed. Her left lower limb wound swab grew *Vibrio vulnificus*. According to her friend, she visited a wet market in Tsuen Wan and purchased fish every day, but she did not recall any injury at left lower limb. There was no history of recent travel.

A possible case of sporadic Creutzfeldt-Jakob disease

On July 5, 2024, the CHP of the DH recorded a possible case of sporadic Creutzfeldt-Jakob disease (CJD) affecting a 78-year-old male with good past health. He presented with cognitive impairment in April 2024, and unstable gait in May 2024. He was admitted to a public hospital on May 29, 2024 and was found to have rapidly progressive dementia, cerebellar disturbance and akinetic mutism. His clinical presentation was compatible with CJD although electroencephalogram did not reveal typical features. His condition was critical. He had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. He was classified as a possible case of sporadic CJD.

Exercise "Kyanite" tests Government's response against measles

In June 2024, the CHP of the DH organised a public health exercise, codenamed "Kyanite", to assess the readiness of government departments and relevant organisations in responding to imported measles cases with subsequent local transmission.

About 40 participants from the DH, the Leisure and Cultural Services Department, the Social Welfare Department, the Hospital Authority (HA) and the Airport Authority participated in the exercise as players or observers. The exercise consisted of two parts: a table-top exercise on June 5, 2024 and a ground movement exercise on June 13, 2024.

During the table-top exercise, the participants discussed and coordinated response measures for a simulated scenario in which two cases of measles infection occurred in an international youth leadership programme held in a holiday village, with subsequent disease transmissions on a flight and in a hospital.

The ground movement exercise simulated the HA's notification of a measles case. The CHP promptly commenced epidemiological investigations, conducted a site visit to the holiday village, performed contact tracing and set up a vaccination booth for post-exposure vaccination. The CHP also inspected the environment and implemented infection control measures.

To date, the CHP has coordinated 30 public health exercises, simulating situations such as novel influenza, plague and disease "X". The CHP will continue to organise such exercises to enhance the readiness of individuals and organisations in managing future outbreaks swiftly and effectively.

Photo 1 – The Director of Health, Dr Ronald Lam (front row, second right), and the Controller of the CHP of the DH, Dr Edwin Tsui (front row, third right), observing officers of the CHP providing post-exposure vaccination for a non-immune contact.

Photo 2 – Officers of the CHP conducting a site visit.

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FEATURE IN FOCUS

Summary of the 2023/2024 influenza season in Hong Kong

Reported by Ms Vera CHOW, Scientific Officer, Respiratory Disease Section, Communicable Disease Branch, CHP

In 2024, Hong Kong experienced a prolonged influenza season from early January to late July, which spanned for more than six months (28 weeks). This is the third influenza season encountered after resumption of normalcy since early 2023. The duration of this season was much longer than the usual winter influenza seasons in the pre-COVID era that ranged from about two to four months. One reason for such a prolonged season was change of the predominating influenza virus subtypes sequentially, from influenza A(H3) virus in the first phase to influenza A(H1) virus in latter phase. The previous prolonged season was the winter season in 2012, lasting 28 weeks with shifting of the predominating subtype from influenza B to influenza A (H3).

Figure 1 – Percentage of respiratory specimens tested positive for influenza viruses, Jan 2023 – Aug 2024.

Laboratory surveillance

Among the respiratory specimens received by the Hospital Authority (HA) and Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP), the weekly percentage tested positive for seasonal influenza viruses started to increase in late December 2023 and exceeded the baseline threshold of 9.21% in early January 2024. It decreased to a lower level transiently between February and March, and then rose again in April due to upsurge of influenza A(H1). The influenza detection positivity reached the peak level of 15.16% in mid-May, and subsequently dropped to 3.69% in late July (Figure 1). The peak level was comparable to the range of 14.94% to 18.20% in the past two seasons in 2023 but lower than those recorded in major influenza seasons in pre-pandemic years (2017 to 2019) which ranged from 26.53% to 40.59%.

Figure 2 – Percentage of respiratory specimens tested positive for influenza virus subtypes, Jan 2023 – Aug 2024.

Regarding the circulating influenza viruses, 63% of all influenza detections recorded in January and February were influenza A(H3) viruses (Figure 2). Influenza A(H1) activity began to increase in March and became predominating, accounting for over 78% of the detections during the remainder of the season.

Influenza-associated hospital admission rates in public hospitals

A similar pattern was observed for influenza-associated admission rates in public hospitals in this season (Figure 3). The weekly admission rate with principal discharge diagnosis of influenza increased and exceeded the baseline threshold of 0.25 per 10 000 population in mid-December 2023. Although the rate remained above the threshold, it had decreased to a

Figure 3 – Weekly admission rates with principal diagnosis of influenza in public hospitals, Jan 2022 – Aug 2024.

lower level between February and March due to decreasing activity of influenza A(H3). It rose rapidly in April due to increasing activity of influenza A (H1), and reached the peak of 1.22 per 10 000 population in May, and finally returned to the baseline threshold in late July. The peak rate was slightly higher than those rates recorded during the 2023 April and 2023 summer seasons (1.12 and 0.93 per 10 000 population respectively) but lower than those recorded during the three major influenza seasons in 2017 to 2019 (ranging from 1.50 to 1.91 per 10 000 population).

Figure 4 (upper) shows the weekly influenza-associated admission rates amongst different age groups in the past three years. Similar to previous pattern, the most affected age group in this season was young children aged five years or below, followed by elders aged 65 year or above and children aged six to 11 years. For children aged five years or below, the rate reached a peak level of 5.51 per 10 000 population in early May. It was much lower than the range of 9.03 to 11.66 recorded in pre-pandemic years during 2017 to 2019 (Figure 4, lower). The trend of admission rate of children aged 6-11 years also followed this pattern with a peak rate of 1.97, which was within the ranged of 1.65 to 3.69 recorded during 2017-2019. For elderly aged 65 years or above, the rate reached 3.25 in early May, which was higher than 1.78 and 2.28 in 2023 seasons but was within the range of 2.96 to 6.39 recorded during 2017 to 2019.

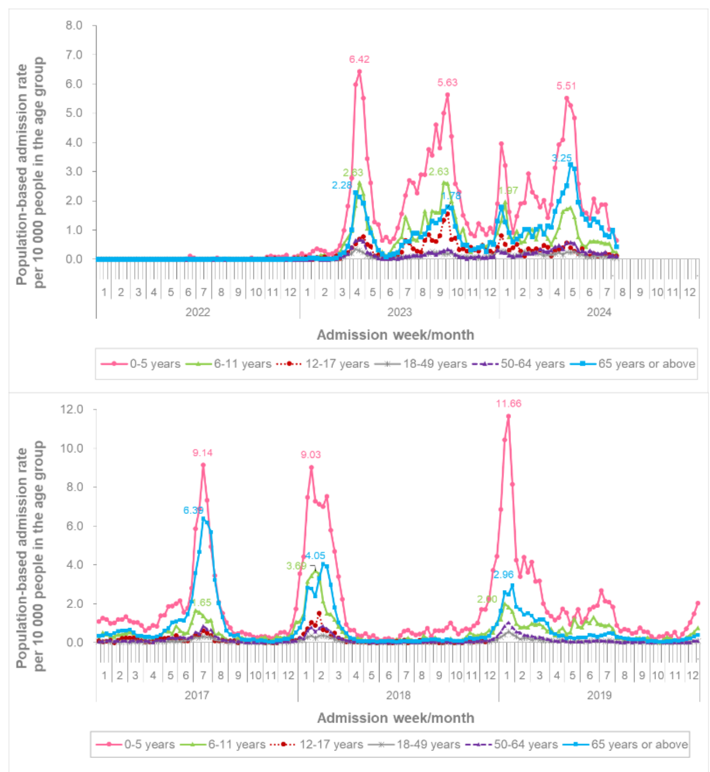

Figure 4 – Weekly admission rates with principal diagnosis of influenza in public hospitals by age groups, 2022-2024 (upper) and 2017-2019 (lower).

Influenza-like illness (ILI) outbreaks in schools and institutions

The institutional ILI outbreaks reported to CHP, mainly affecting schools, showed a stepwise increasing pattern from January 2024 with intermittent drops related to school holidays including Lunar New Year, Easter and Ching Ming holidays (Figure 5). The weekly number of ILI outbreaks reached the peak of 57 in late April.

A total of 616 ILI outbreaks were recorded in this prolonged season (28 weeks), which was higher than those recorded in the two seasons in 2023 (154 within 7 weeks and 367 within 10 weeks respectively). During this season, the cumulative numbers of ILI outbreaks reported in January to March and April to July were 230 and 386 respectively. Figure 6 shows the number and proportion of ILI outbreaks by type of institutions during these two periods. During first half of the season where influenza A(H3) viruses predominated, over 70% of the outbreaks were reported from schools (including kindergartens/child care centres (KG/CCC), primary schools (PS) and secondary schools (SS)). The proportion of outbreaks reported from residential care homes for the elderly (RCHE) was 9%. In contrast, an increased number of ILI outbreaks were reported from RCHE during the second half of the season predominated by influenza A (H1) with the proportion increased to 33%.

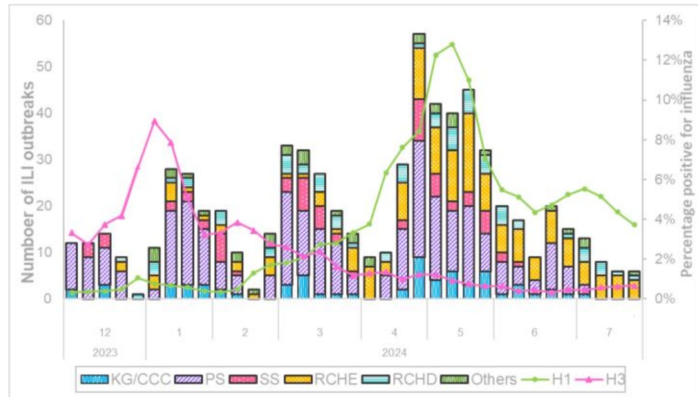

Figure 5 – The weekly number of ILI outbreaks by type of institutions and the weekly percentages of influenza A(H1) and A(H3), December 2023 – July 2024.

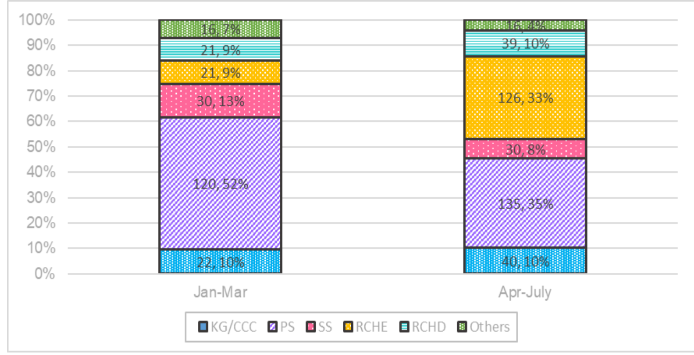

Figure 6 – The proportion of ILI outbreaks by type of institutions during January to March and April to July in 2024.

Severe influenza cases

For adult severe cases, CHP collaborates with the HA and private hospitals to monitor intensive care unit (ICU) admissions and deaths with laboratory confirmation of influenza among adult patients. For surveillance purpose, the cases include all laboratory-confirmed influenza patients who require ICU admission or die

within the same admission of influenza infection. It should be noted that their causes of ICU admission or death may be due to other acute medical conditions or underlying diseases.

Table 1 – Numbers of adult and paediatric severe influenza cases reported during major influenza seasons in 2017-2019 and 2023-2024.

Season (predominating virus)	Duration (weeks)	Number of adult severe cases (including deaths)	Average weekly number of adult cases	Number of paediatric severe cases (including deaths)	Average weekly number of paediatric cases
2024 season (H3, then H1)	28	1 167	41.7	32	1.1
2023 summer (H3)	10	308	30.8	15	1.5
2023 April (H1)	7	274	39.1	3	0.4
2019 winter (H1)	14	601	42.9	24	1.7
2018 winter (B)	12	570	47.5	20	1.7
2017 summer (H3)	18	582	32.3	19	1.1

During this season, 1 167 cases of ICU admission or death with laboratory confirmation of influenza (including 791 deaths) were recorded among adult patients aged 18 years or above (data as at August 12, 2024). Due to the prolonged season, the cumulative number of adult severe cases was much higher than those recorded in previous seasons in 2017 to 2019 and 2023, but the average weekly number (41.7) of cases was within the range recorded previously (Table 1). For the paediatric patients, 32 severe cases were reported in this season. The number was the highest amongst previous seasons but the average weekly number (1.1) was also within the historical range.

Among the 1 167 adult severe cases, their ages ranged from 18 to 106 (median 77 years), and most (73%) affected elderly aged 65 years or above. For adult fatal cases, 89% of them affected elderly aged 65 years or above.

Regarding the influenza vaccination status of the adult severe cases, majority (179, 85%) of the cases aged 50-64 years and more than half (471, 55%) of the elderly aged 65 years or above were not known to have received the seasonal influenza vaccine (SIV) for the current season. Among persons aged 50 years or above residing in RCHE and in the community (based on available residential information; N = 1 051), 67% (195) and 29% (218) of the cases were known to have received the SIV respectively. Given that the 2023/24 SIV coverage among approximately 59 900 RCHE residents being 81.8% (data as of August 11, 2024), the risk of becoming a severe case among RCHE residents who received the SIV was reduced by 56% (p-value < 0.001) as compared with non-vaccination group. For the age group of 18-49 years, only 4% (four) of the severe cases were known to have received the SIV.

Separately, 32 paediatric cases of influenza-associated severe complication were reported during this season, of which six were fatal. They involved 16 boys and 16 girls with ages ranging from five months to 16 years (median six years). Seventeen cases (53%) contracted influenza A(H1), 10 (31%) had influenza A(H3) and five (16%) had influenza B infection. Regarding the complications reported (note: a case may have more than one complication), 15 cases (47%) had severe pneumonia, followed by neurological complications (10; 31%), shock (five; 16%), sepsis (two; 6%) and myocarditis (one; 3%). One fatal case with acute necrotising encephalopathy had COVID-19 co-infection. Eight cases (25%) had underlying diseases. Majority (74%) of the cases did not receive the SIV for the current season.

Summary

Hong Kong entered the winter influenza season in early January this year, similar to the timing in pre-pandemic years. The sequential upsurge of activities of different influenza viruses during this season resulted in a prolonged season that spanned for more than six months. Increases in cumulative disease burden including influenza infection, outbreaks in school and institutions, hospitalisation, and severe cases were observed in this season. Similar to previous seasons, severe influenza illnesses mainly affected young children, elderly and/or persons with pre-existing chronic medical diseases, especially those who did not receive SIV. Given that SIVs are safe and effective, all persons aged six months or above except those with known contraindications are recommended to receive SIV to protect themselves against seasonal influenza and its complications, as well as related hospitalisations and deaths.

A review of local COVID-19 situation

Reported by Ms Lok Tung WONG and Ms Kam Suen CHAN, Research officers, Outbreak Intelligence Centre, Surveillance Division, Communicable Disease Branch, CHP

Introduction

From January 2020 to January 2023, Hong Kong experienced five waves of COVID-19 epidemic. The Centre for Health Protection (CHP) of the Department of Health recorded over three million cases and over nine thousand deaths during the period. With Omicron becoming the predominating variant, coupled with the enhancement of prevention and treatment capacities of the healthcare system and the handling capacity of society as a whole, the risk posed by COVID-19 to the local community has decreased, allowing rooms for gradual resumption of normalcy. On January 30, 2023, the Government announced the cancellation of isolation orders and the cessation of mandatory reporting of individual COVID-19 cases[1]. In May 2023, the World Health Organization (WHO) declared the COVID-19 situation no longer constituted a Public Health Emergency of International Concern[2]. COVID-19 is now managed as an upper respiratory tract infection in a manner similar to other respiratory viruses such as seasonal influenza. This article reviews the local COVID-19 situation from January 30, 2023 to July 2024 (data up to July 27, 2024).

The local COVID-19 situation from January 30, 2023 to July 2024

Since January 30, 2023, the CHP has been monitoring the trend of COVID-19 activity through a set of surveillance indicators, including laboratory detections and positivity percentage, consultation rates in sentinel clinics, number of reported institutional outbreaks and viral loads in sewage samples. Overall, the activity had been increasing shortly after the lifting of mandatory mask-wearing requirements on March 1, 2023[3], reaching the peak in late May 2023. Since then, the activity had been decreasing to a lower level and fluctuating with smaller upsurges every four to six months without any predictable seasonal pattern. For laboratory surveillance, the percentage of specimen tested positive for SARS-CoV-2 virus at the Public Health Laboratory Services Branch (PHLSB) of the CHP (Figure 1) increased from 4.85% in Week 13 (March 26 to April 1, 2023) to the peak at 36.55% in Week 21 (May 21 to 27, 2023). There were two noticeable surges around August to October 2023 (peaked at 10.59% in Week 40 (Oct 1 to 7, 2023)) and around February to March 2024 (peaked at 16.76% in Week 10 (March 3 to 9, 2024)). These surges were likely due to the transition of predominating SARS-CoV-2 variants circulating in the community (XBB.1.9 sublineages emerged in July 2023, overtaken by JN.1 from January 2024 onwards).

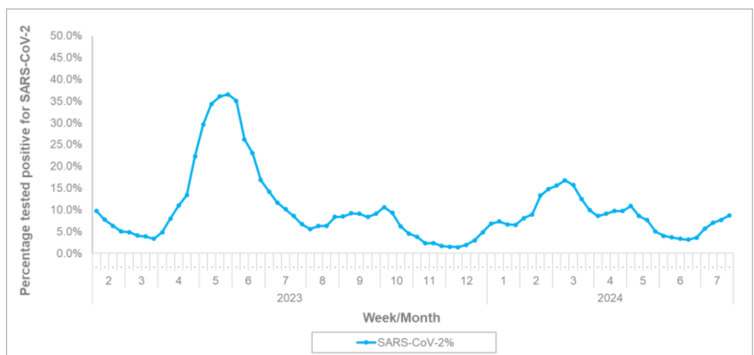

Figure 1 – Percentage tested positive for SARS-CoV-2 virus among all respiratory specimens at PHLSB (Jan 30, 2023 to Jul 27, 2024).

Similar trend pattern was also reflected in sewage surveillance for monitoring the viral load of SARS-CoV-2 (Figure 2). Following the peak of 7-day geometric mean per capita viral load of over 1.5 million copies/L in Week 21 of 2023 (May 21 to 27, 2023), there were two peaks amounting over 0.35 million copies/L in early October, 2023 and over 0.45 million copies/L between mid-February and early-March, 2024.

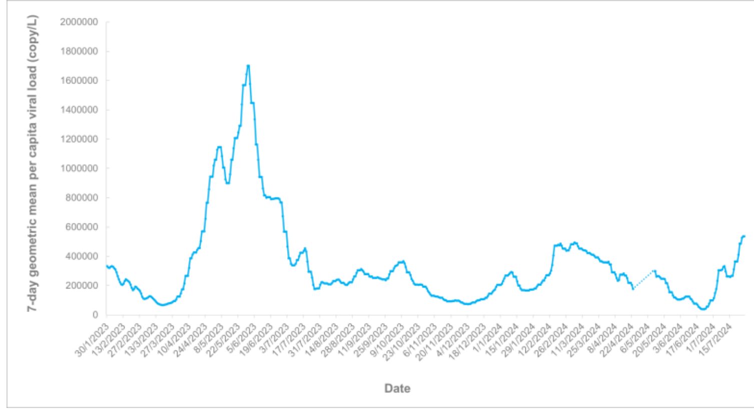

Figure 2 – 7-day geometric mean per capita viral load of SARS-CoV-2 virus from sewage surveillance (Jan 30, 2023 to Jul 27, 2024).

Another upswing has been emerging since late-June 2024 and is still ongoing. The specimen positivity rate for SARS-CoV-2 virus increased from 3.60% in Week 26 (June 23 to 29, 2024) to 8.72% in Week 30 (July 21 to 27, 2024), likely corresponding to the increased local circulation of KP.2, a descendent lineage of JN.1 classified as a variant under monitoring (VUM) by the WHO.

Surveillance of severe and fatal COVID-19 cases

According to the WHO, the overall public health risk imposed by the circulating variants should remain low as there is so far no evidence indicating an increase in clinical severity. The CHP's surveillance data on severe and fatal COVID-19 cases showed a pattern aligned with this assessment. The upsurges in sewage viral load (as a surrogate of the actual number of infection in the community) resulted in much less increases in the number of severe and fatal cases related to COVID-19, as compared to the

data recorded in the fifth wave of epidemic when Omicron first emerged in Hong Kong. From January 30, 2023 to July 27, 2024, there were 3 650 severe and fatal cases with cause of death preliminary assessed to be related to COVID-19 (including 1 340 fatal cases), as compared with 9 287 registered local deaths in 2022[4] (as of December 31, 2022). After resumption of normalcy, over 100 cases per week were recorded in the first upsurge during late April to mid-June, 2023, and subsequently decreased to a level between zero to 69 cases per week between July 2023 and July 2024 (Figure 3).

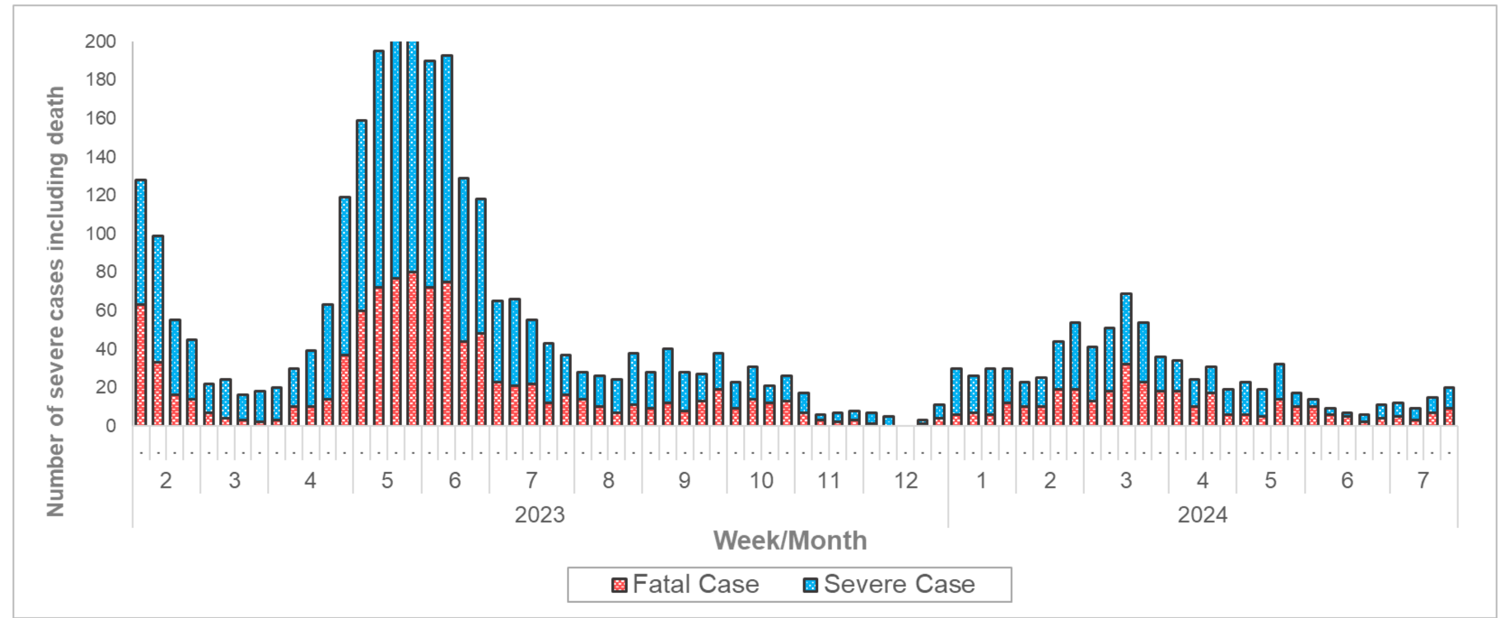

Figure 3 – Weekly number of severe and fatal cases with cause of death preliminarily assessed to be related to COVID-19 (Jan 30, 2023 to Jul 27, 2024).

Regarding age and vaccination status among these cases, elderly aged 60 or above represented 87.1% (2 013 cases) of severe cases and 96.9% (1 298 cases) of fatal cases. In particular, 72.0% (965 cases) of the fatal cases were elderly aged 80 or above. Only 14.6% (534 cases) of the severe cases and fatal cases received their latest dose of COVID-19 vaccine within 180 days (Figures 4a and 4b).

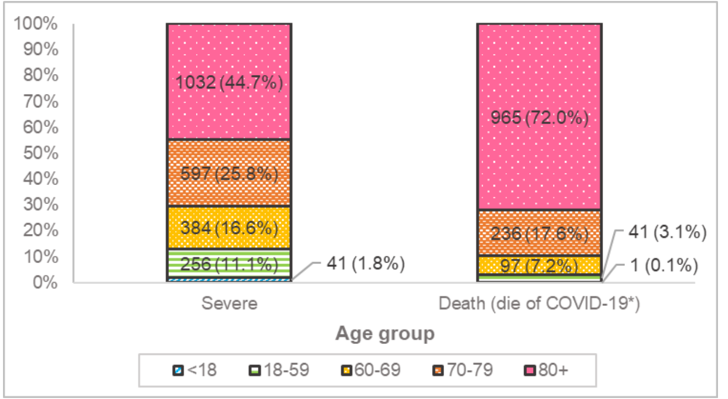

Figure 4a – Age distribution of severe and fatal cases (Jan 30, 2023 to Jul 27, 2024).

Figure 4b – Vaccination status of severe and fatal cases (Jan 30, 2023 to Jul 27, 2024).

Surveillance of SARS-COV-2 variants

The CHP closely monitors the emergence of new variants around the globe by keeping track of WHO's list of VUMs, variants of interest (VOIs), and variants of concern (VOCs)[5]. To keep track of the local circulating SARS-CoV-2 variants, the CHP conducts variant testing in sewage samples biweekly, while the PHLSB performs genetic characterisation on human specimens (both severe and fatal COVID-19 cases, and a sample of non-severe cases).

Figure 5 shows the transition of circulating variants in Hong Kong from January 2023 to July 2024 among sewage samples. BA.2 and BA.5 (both sublineages of Omicron) were co-circulating at the start of 2023. Subsequently, the prevalence of the emerging XBB.1.5 rose quickly and became the predominant strain in Hong Kong in March 2023. It was then gradually replaced by the XBB.1.9 sublineages (including XBB.1.9.1, XBB.1.9.2 and EG.5) in June 2023. The wave for XBB.1.9 sublineages lasted for about six months from July 2023 to December 2023. In mid-November 2023, JN.1 appeared in Hong Kong and then rapidly taken root and became the predominant strain between January 2024 and June 2024. Since the beginning of July 2024, KP.2, a sublineage of

JN.1, has started to take over. KP.2 is believed to be one of the contributing factor for the recent upsurge of cases, and is expected to remain as the predominant strain in the coming months.

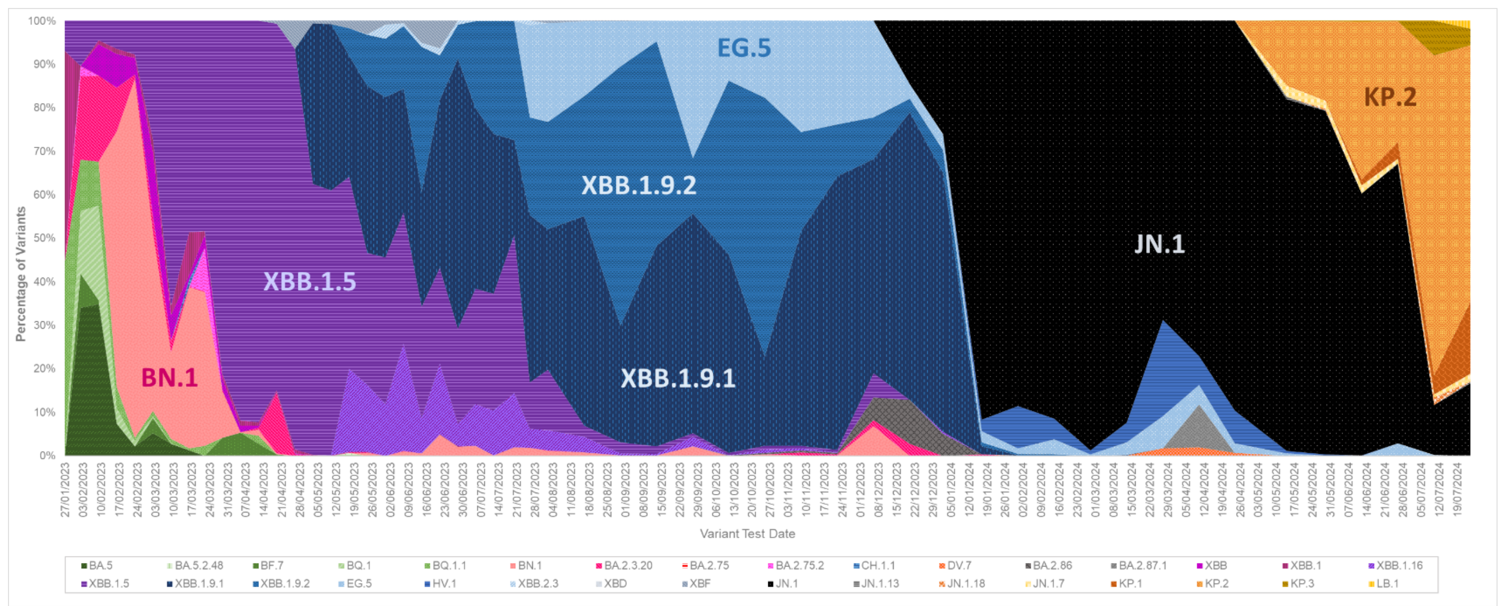

Figure 5 – SARS-CoV-2 variants circulating in Hong Kong among sewage samples (Jan 30, 2023 to Jul 27, 2024).

The risk assessment and the prevention of COVID-19 infection

Despite there is no current evidence indicating an increase in clinical severity for the current circulating variants, new variants with immune escape potential evolve from time to time due to the frequent mutation of SARS-CoV-2 viruses, posing continuous challenges in the fight against COVID-19. Vaccination remains the most effective measure to prevent severe manifestation, hospitalisation and death due to COVID-19 infection. Members of the public are advised to take note of the latest recommendations on the use of COVID-19 vaccines in Hong Kong to protect themselves from serious outcomes of COVID-19. High-risk priority groups are recommended to receive a dose of COVID-19 vaccine at least six months since the last dose or infection, regardless of the number of doses received previously. For more details, please visit: https://www.chp.gov.hk/en/features/106934.html. Besides, maintaining strict personal and environmental hygiene is crucial for the personal protection against COVID-19 infection and the prevention of the spread of the disease in the community. High risk people, including persons with underlying medical conditions or being immunocompromised, should adopt additional measures such as proper mask wearing when going to public places. For more details, please visit the COVID-19 information page (https://www.chp.gov.hk/en/healthtopics/content/24/102466.html).

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NEWS IN BRIEF

A local confirmed case of *Streptococcus suis* infection

On July 23, 2024, the CHP recorded a sporadic case of *Streptococcus suis* infection involving a 38-year-old woman with good past health. She was a domestic helper and had handled raw pork without wearing protective gloves during the incubation period. She developed fever and left knee pain on July 21 and was admitted to a public hospital on the following day. Blood culture confirmed the presence of *Streptococcus suis*. She was treated with antibiotics and her condition was all along stable. She did not have other exposure to livestock, farms, abattoirs, or butcher shops before onset of her symptoms.

Two local sporadic cases of psittacosis

The CHP recorded two sporadic cases of psittacosis on August 7 and 13, 2024 respectively.

The first case involved a 78-year-old retired man with underlying illnesses residing in Sha Tin. He presented with fever, cough and shortness of breath on July 30, and was admitted to a public hospital on August 1. His nasopharyngeal aspirate collected on August 2 was tested positive for *Chlamydia psittaci* DNA. Chest X-ray showed consolidative change at right middle and lower zones. His condition improved with antibiotic treatment and he was discharged on August 13. He had no travel history during incubation period. He did not keep any birds at home, but reported the presence of pigeons and sparrows in the leisure area near his home. All home contacts were asymptomatic. The case was referred to Agriculture, Fisheries and Conservation Department (AFCD) and Food and Environmental Hygiene Department (FEHD) for follow-up. No epidemiological linkage with previous cases were identified.

The second case involved a 61-year-old man with underlying illnesses residing in Tai Kok Tsui. He presented with fever on August 7, and was admitted to a public hospital on the same day. His nasopharyngeal aspirate collected on August 8 was tested positive for *Chlamydia psittaci* DNA. Chest X-ray showed consolidative change at left middle zone. His condition improved with antibiotic treatment. He had no travel history during incubation period. He worked in a vegetable wholesale market in Cheung Sha Wan where no live poultry was sold, but he reported presence of doves and birds near the market. He did not keep any birds at home. He had no household contacts. The case was referred to AFCD and FEHD for follow-up. No epidemiological linkage with previous cases were identified.

Sewage surveillance for COVID-19 won International Water Association Project Innovation Awards

Standing out from 108 submissions worldwide, the territory-wide sewage surveillance programme for COVID-19 in Hong Kong, which was a showcase of collaboration among Government departments including the Environmental Protection Department, CHP of the Department of Health, and Drainage Services Department, was awarded with the Gold Award of the 2024 Int ernational Water Association Project Innovation Awards under the category of "Performance Improvement and Operational Solutions" on August 13, 2024. This award fully recognises the Government's innovative spirit and outstanding technological achievements in using sewage surveillance to help combat COVID-19.

The interdepartmental team, comprising the aforesaid Government departments, has implemented a unique territory-wide sewage surveillance programme that combated COVID-19 by using sewage COVID-19 virus concentration to assist in the planning of anti-epidemic measures and monitoring/ forecasting disease activity during the containment and mitigation phase of COVID-19 pandemic respectively.

Looking ahead, the scope of sewage surveillance will be expanded to cover other infectious diseases in a stepwise manner, such as seasonal influenza, with a view to early identification of risks arising from different infectious diseases to formulate appropriate public health response measures.

Photo – The Director of Environmental Protection, Dr Samuel Chui (third left); the Deputy Director of Drainage Services, Mr Robin Lee (first left); and Principal Medical & Health Officer of the CHP Dr Kung Kin-hang (third right) leading the interdepartmental delegation to receive the award during the Awards Gala Dinner.

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

On August 20, 2024, CHP recorded a sporadic case of necrotising fasciitis due to *Vibrio vulnificus* infection in Yuen Long. The case involved a 61-year-old female with good past health. She presented with fever, left leg pain and swelling on August 14 and was admitted to a public hospital on August 15. Clinical diagnosis was necrotising fasciitis involving left foot and left leg, and excisional debridement was performed. Tissue taken from left foot fascia grew *Vibrio vulnificus*. Before symptom onset, she got stung by a marine fish at her left foot in a wet market in Sheung Shui on August 14. She did not consume any uncooked seafood. There was no history of recent travel.

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FEATURE IN FOCUS

Leprosy (Hansen's disease): a curable condition

Reported by Dr Ho Ching-kong, Senior Medical and Health Officer, Social Hygiene Service, Department of Health

Background

Leprosy, also known as Hansen's disease, has been recognised since ancient times. It is is a chronic infectious disease caused by the bacterium *Mycobacterium leprae* (*M. leprae*) which primarily affects the nerves and skin. The bacteria are transmitted through droplets from the mouth and nose or through wounds on the skin. Of note, leprosy does not spread easily among people. Close contact with an untreated patient over a prolonged period of time (e.g. months to years) is necessary for transmission. The disease does not spread easily through social contact such as shaking hands or sharing meals and is also not transmitted through sexual contact or via the mother to the foetus during pregnancy.

The incubation period varies from one to five years but can be as long as 10 to 20 years. Susceptibility to leprosy is genetically determined, with over 90% of people being naturally immune to leprosy and able to clear the infection without treatment.

Diagnosis of leprosy is based on clinical presentation, skin biopsy, and skin smear. In susceptible individuals, the clinical manifestations of leprosy depend on the cell-mediated immunity (CMI) [1]. Cases with a strong CMI response will be able to suppress *M. leprae*, resulting in milder forms with fewer skin lesions. These forms are known as paucibacillary (PB) leprosy and are of lower infectivity. *M. leprae* bacilli are not seen in the skin smear or skin biopsies of PB leprosy. In contrast, patients with a weak CMI are less able to suppress the infection and develop the multibacillary (MB) forms of leprosy which are of higher infectivity. These cases present with extensive skin lesions and *M. leprae* bacilli are seen on skin biopsy and skin smear. A common feature of all forms of leprosy is the presence of persistent lesions with sensory impairment, and occasional impaired sweating. However, sensory impairment may not be obvious in facial lesions, due to the rich nerve supply in the face.

Nerve damage caused by *M. leprae* results in loss of pain and tactile sensation, leading to deformities from repeated injury or infection from wounds. The disease may cause progressive and permanent disabilities if left untreated. However, if leprosy is treated before the onset of nerve damage, deformities can be prevented. Since 1981, the World Health Organization multi-drug therapy (WHO-MDT), consisting of a course of three antibiotics (dapsone, clofazimine and rifampicin) for at least six months for PB leprosy and for at least 12 months for MB leprosy has been available and is highly effective. The affected persons become non-infectious shortly after starting WHO-MDT. The treatment is now provided in an out-patient setting and the patients are no longer required to be isolated.

Global situation

According to the World Health Organization (WHO), leprosy is found globally in over 120 countries, with over 200 000 new cases reported annually. Most new cases are from South-East Asia. Despite a gradual decline in the number of cases globally, Brazil, India and Indonesia over 10 000 new cases were reported annually between 2018 and 2022. During this period, other countries such as the Nepal, the Philippines, Myanmar, the annual incidence was 1 000 to 10 000.

Epidemiology and current situation in Hong Kong

With improved living conditions and general health of the population, the incidence of leprosy in Hong Kong has declined significantly since the 1960s (Figure 1). Over 200 new cases were recorded each year before 1960s. The annual incidence of reported cases has declined significantly from 3.2 per 100 000 population in 1970 to 0.5 per 100 000 population in 1985. The annual incidence during 1990s ranged between 0.4 and 0.24 per 100 000 population, decreasing to a range of 0.16 to 0.088 per 100 000 population during 2000s. In recent years, leprosy cases are rare in Hong Kong and there have been no paediatric (under 15 years of age) cases since 2001. During 2010 to 2024 (as of August), three to nine adult new cases were reported per year [3].

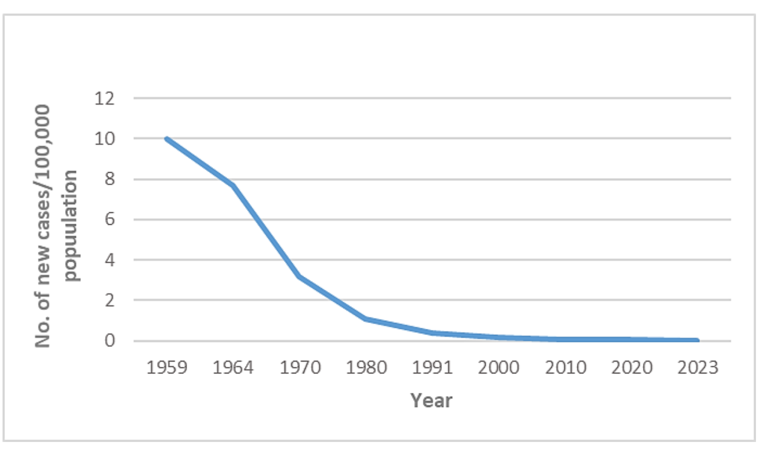

Figure 1 – Annual incidence of leprosy in the public sector in Hong Kong.

Between 2018 and 2023, among the 20 reported cases managed by Social Hygiene Service, the majority were imported cases coming from outside Hong Kong, mainly involving females from Indonesia, the Philippines, Mainland China and Nepal. Their ages ranged from 27 to 86 years (median age: 36 years). As these cases were diagnosed early, deformities were uncommon. The cure rate has been high (>90%) but some of these cases have left Hong Kong before completion of treatment or defaulted. The relapse rate continues to remain low with less than five cases per year.

Prevention

According to the WHO, there is definitive evidence that Bacillus Calmette–Guérin (BCG) vaccination is effective in preventing leprosy, thus aiding the decline in the incidence of the disease. In Hong Kong, as BCG is given at birth with coverage rates approaching 100% all along, the risk of transmission of leprosy in Hong Kong has been reduced to a very low level.

As leprosy is now treatable, with early detection and treatment, deformities can be avoided and the risk of transmission reduced. Early diagnosis is therefore important.

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2024/25 Seasonal Influenza Vaccination Programmes to start on September 26, 2024

Reported by Programme Management and Vaccination Division of Emergency Response and Programme Management Branch and Vaccine Preventable Disease Section of Communicable Disease Branch, CHP

The 2024/25 Seasonal Influenza Vaccination Programmes, including the Government Vaccination Programme, Vaccination Subsidy Scheme, Seasonal Influenza Vaccination School Outreach Programme and the Residential Care Home Vaccination Programme (RVP), begins on September 26, 2024.

Seasonal influenza vaccination (SIV) is one of the most effective means to prevent seasonal influenza and its complications. All persons aged six months or above, except those with known contraindications, are recommended to receive the SIV for personal protection.

Table 1 – Coverage in 2022/23 and 2023/24 seasons.

Priority group	2022/23	2023/24
Children of age 6 months to under 2 years	9.1%	22.1%
Children of age 2 to under 6 years	45.8%	56.3%
Children of age 6 to under 12 years	60.2%	68.0%
Children of age 12 to under 18 years	19.3%	40.9%
Persons of age 50 to 64 years	17.8%	19.2%
Persons of age 65 years or above	48.3%	51.5%

In the 2023/24 season, about 1 870 000 doses of seasonal influenza vaccines, an increase of about 20 per cent compared with the 2022/23 season, were administered under various programmes. Thanks to the concerted efforts of all stakeholders and parties, the number of doses administered reached a historical high. Vaccination coverage has significantly increased across various priority groups (Table 1). Notably, coverage among community-dwelling elderly individuals has reached about 52%. In contrast, the coverage among young children remains relatively low at 22%, although this represents a doubling compared to the 2022/23 season.

Effectiveness of SIV in 2023/24

The Centre for Health Protection (CHP) of the Department of Health (DH) has been collaborating with private medical practitioners (PMPs) participating in the sentinel surveillance system to estimate the vaccine effectiveness (VE) of the seasonal influenza vaccine at the local primary care setting using the test-negative case-control method. In the 2023/24 influenza season, among 653 respiratory specimens submitted by sentinel PMPs from November 2023 to July 2024, 27.3% were tested positive for influenza viruses. The overall VE among all ages was 60.7% against all influenza viruses, 51.4% against influenza A(H1), and 62.8% against influenza A(H3). The results showed that the 2023/24 seasonal influenza vaccine remained moderately effective against laboratory-confirmed influenza at primary care level.

Seasonal Influenza Vaccination Programmes

Eligible members of the public can receive free or subsidised SIV under the 2024/25 Seasonal Influenza Vaccination Programmes. Eligible persons and the recommended vaccination venues are as follows (Figure I):

- Persons aged 50 years or above:
  - General persons: Vaccination by family doctors or District Health Centres
  - Persons with chronic illness: Vaccination by public or private clinics providing regular follow-ups
- Persons aged 18 to 49 years who are mentally handicapped/disabled or Comprehensive Social Security Assistance recipients with chronic illness:
  - Vaccination by family doctors or public/private clinics providing regular follow-ups
- Children and adolescents aged two to under 18 years:
  - General children: Vaccination through the Seasonal Influenza Vaccination School Outreach Programme or by family doctors
  - Children with chronic illness: Vaccination by public or private clinics providing regular follow-ups
- Children aged six months to under two years:
  - Vaccination by family doctors or Maternal and Child Health Centres (MCHCs)
- Pregnant women:
  - Vaccination by family doctors, public, or private antenatal clinics

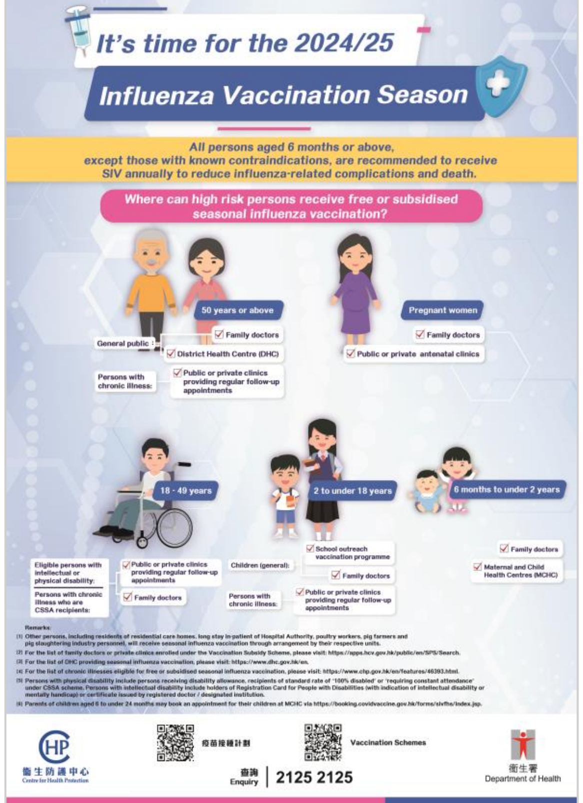

Figure I – Poster of 2024/25 Seasonal Influenza Vaccination Programme.

To make vaccinations more accessible this year, the Government will introduce additional vaccination venues, including the DH's MCHCs for all children aged six months to under two years, and District Health Centres/District Health Centre Expresses, providing more choices for the public.

Seasonal Influenza Vaccination School Outreach Programme

Under the Seasonal Influenza Vaccination School Outreach Programme, secondary schools, primary schools, kindergartens, and child-care centres can arrange outreach vaccination teams to provide SIVs to schoolchildren. To improve vaccine coverage among schoolchildren, the DH will implement special arrangements for this season. Kindergartens and child-care centres can choose both injectable inactivated influenza vaccines (IIV) and live attenuated influenza vaccines (LAIV) (i.e., nasal vaccines) for the same or different outreach vaccination activities. In addition, LAIV will be provided to selected primary and secondary schools as a pilot scheme.

Residential Care Home Vaccination Programme

Under the RVP, the DH will deliver vaccines for free to care homes. Visiting medical officers enrolled in the programme are invited by institutions to provide vaccination services to eligible residents. Residents and staff of residential care homes for the elderly and persons with disabilities, non-institutionalised persons with intellectual disabilities (PID) receiving services, staff working in designated institutions serving PID, and residents and staff of residential child-care centres can receive vaccination services from outreach teams starting from September 26.

The Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the CHP of DH has recommended that the composition of vaccines for the 2024/25 influenza season should align with the World Health Organization's latest

recommendations. For the 2024/25 season, both IIVs and LAIV are recommended for use in Hong Kong by the SCVPD. Depending on the brand, most IIVs are recommended for use in people aged six months or older, including healthy individuals, pregnant women, and those with chronic medical conditions. LAIV can be used for people aged two to 49 (except those who are pregnant, immunocompromised, or have other contraindications).

More information about the 2024/25 Seasonal Influenza Vaccination Programme can be found in the CHP's Vaccination Schemes webpage: https://www.chp.gov.hk/en/features/17980.html.

NEWS IN BRIEF

Two local sporadic confirmed cases of listeriosis

The Centre for Health Protection (CHP) of the Department of Health (DH) recorded two local sporadic cases of listeriosis on August 20 and September 4, 2024 respectively.

The first case involved a 60-year-old man with good past health residing in Sha Tin. He presented with confusion and fall on August 18 and was admitted to a public hospital on the same day. His cerebrospinal fluid collected on August 19 grew *Listeria monocytogenes*. He was treated with antibiotics and discharged on September 13. He had no travel history during incubation period. There was no known high-risk exposure. His household contact remained asymptomatic.

The second case affected a newborn girl, who was born by caesarean section at a gestational age of 39 weeks and six days. She presented with recurrent apnoea since birth. Her blood collected on August 30 was cultured positive for *Listeria monocytogenes*. The clinical diagnoses included *Listeria monocytogenes* sepsis, meconium aspiration pneumonia and *E. coli* meningitis. She was treated with antibiotics and was in stable condition. Her mother was asymptomatic all along during pregnancy. The mother recalled history of consumption of salad, raw vegetables, and cheese during pregnancy. Her home contacts were asymptomatic.

Two local sporadic cases of psittacosis

The CHP recorded two sporadic cases of psittacosis on August 21 and September 20, 2024 respectively.

The first case involved a 50-year-old male with underlying illnesses residing in Tin Shui Wai. He presented with fever, headache, runny nose, cough with sputum, and shortness of breath since August 5, and was admitted to a public hospital on August 10. Chest X-ray showed consolidation at right lower zone. His sputum collected on August 14 was tested positive for *Chlamydia psittaci* DNA. His condition improved with antibiotic treatment and he was discharged on August 16. He had no travel history during incubation period. He did not keep any birds at home, but reported the presence of pigeons in a park near his workplace.

The second case involved a 71-year-old female with good past health residing in Shatin. She presented with fever and hypoglycemia on September 9, and was admitted to a public hospital on the same day. Chest X-ray showed consolidation at right lower zone. Her sputum collected on September 13 was tested positive for *Chlamydia psittaci* DNA. Her condition improved with antibiotic treatment and was currently in stable condition. She had no travel history during incubation period. She did not keep any birds at home, but reported the presence of pigeons in a carpark near her home.

For both cases, all their home contacts were asymptomatic. No epidemiological linkage with previous cases was identified. Both cases were referred to Agriculture, Fisheries and Conservation Department and Food and Environmental Hygiene Department for necessary follow-up.

Two cases of sporadic Creutzfeldt-Jakob disease

The CHP recorded two probable cases of sporadic Creutzfeldt-Jakob disease (CJD) on August 28 and September 7, 2024 respectively.

The first case involved a 67-year-old man with underlying illnesses residing in Yuen Long. He developed cognitive decline, unsteady gait and lower limb weakness in April 2023, but did not seek medical attention. He was admitted to a public hospital for presyncope on May 11, 2024. Findings of magnetic resonance imaging of the brain and electroencephalogram (EEG) conducted in August 2024 were compatible with CJD. He remained stable and was discharged.

The second case involved a 66-year-old woman with underlying illnesses residing in Tuen Mun. She presented with rapid cognitive decline, unsteady gait and slurred speech in July 2024. Her condition deteriorated and was admitted to a public hospital on August 5, 2024. She was also found to have myoclonus and akinetic mutism. EEG showed features compatible

with CJD. She remained stable in hospital.

Both patients had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. They were classified as probable cases of sporadic CJD. His household contact remained asymptomatic.

Joint meeting of senior health officials of Mainland, Hong Kong and Macao held in Hong Kong on August 29, 2024

The Director of Health, Dr Ronald Lam, joined the delegation led by the Secretary for Health, Professor Lo Chung-mau, to attend the 19th Joint Meeting of Senior Health Officials of the Mainland, Hong Kong and Macao hosted by the National Health Commission in Dunhuang, Gansu Province on August 29, 2024. The Joint Meeting has long been a platform for senior medical and health officials as well as experts from the Mainland, Hong Kong and Macao to exchange views, share experiences and enhance co-operation on medical and public health issues. In this meeting, members of the three delegations engaged in sharing and some discussions over major public health topics including the review of the COVID-19 epidemic and the way forward for prevention and control of infectious diseases.

Photo – Joint meeting of senior health officials of Mainland, Hong Kong and Macao held in Gansu.

A new milestone in partnership with Singapore to bolster public health protection

The Director of Health, Dr Ronald Lam, led a delegation from the CHP of the DH to visit the public health authorities of Singapore in late August 2024. During the visit, CHP signed a Memorandum of Understanding (MOU) on collaboration on prevention and control of communicable diseases with the interim Communicable Diseases Agency of Singapore.

The MOU provides a solid foundation for strengthening collaboration between Hong Kong and Singapore in areas of mutual interest concerning communicable diseases, which includes further enhancing communicable diseases information exchanges and experience sharing within the regions. The delegation also conducted work exchanges with the Ministry of Health of Singapore, and also visited the National Centre for Infectious Diseases, National Environment Agency and Health Promotion Board to reinforce mutual ties and strengthen exchanges and cooperation on public health between the two places.

Photo – The Director of Health, Dr Ronald Lam (fifth left), led a delegation from CHP to visit the health authorities of Singapore.

Vice-minister of the National Health Commission and the Director of the National Disease Control and Prevention Administration, Mr Wang Hesheng visited the Department of Health of HKSAR

Mr WANG Hesheng, Vice Minister of the National Health Commission and Director of the National Disease Control and Prevention Administration (NDCPA), led a delegation to visit Hong Kong from September 2 to 3, 2024. During the visit, Director Wang had a meeting with Prof Lo Chung-mau, the Secretary for Health, and Ms Ao Ieong U, the Secretary for Social Affairs and Culture of the Macao Special Administrative Region. They also signed the "Co-operation Agreement on Response Mechanism for Public Health Emergencies caused by Infectious Disease”. The three parties agreed to further strengthen co-operation and communication in tackling significant public health emergencies caused by infectious diseases, covering areas such as: the notification of information regarding infectious diseases; co-ordination of efforts in emergency responses; technical issues, training and scientific research on public health emergency responses to infectious diseases. Director of Health and other senior officials met with the delegation on September 3, 2024. They had in-depth exchanges on various areas including the strengthening of collaboration between the Mainland and Hong Kong on joint prevention and control of communicable diseases in particular with regard to the Greater Bay Area, and the application of innovative technology.

Photo – Director of Health and other senior officials met with the delegation from the NDCPA led by Director Wang Hesheng on September 3, 2024.

Infectious Disease and Infection Control Forum: invasive Group A Streptococcus (GAS) infection and Streptococcal Toxic Shock Syndrome (STSS)

The Infection Control Branch (ICB) of the CHP and Infectious Diseases Control Training Centre (IDCTC) of the Hospital Authority (HA) jointly organised an infectious disease and infection control forum on invasive GAS Infection and STSS on August 21, 2024.

An increase in STSS cases has been observed since 2023 in Japan. In addition, there has been a rise in invasive GAS disease and scarlet fever in selected European countries. The forum aimed to inform healthcare professionals about the current situation, review on clinical management and infection control regarding invasive GAS infection and STSS.

The forum was attended by over 500 healthcare professionals from across public and private sectors, either in person or through a Zoom webinar. The event was highly regarded and well-received. The materials from the forum can be accessed on the IDCTC training portal at https://icidportal.ha.org.hk/Trainings/View/188.

Photo – From left to right: Dr Leo LUI, Associate Consultant, CHP ICB; Dr Dawin LO, Senior Medical Officer, CHP CDB; Dr Hong CHEN, Head, CHP ICB; Dr Daphne LAU, Associate Consultant, PMH; Dr Jacky CHAN, Consultant, HA IDC joined the Forum on Invasive GAS infection and STSS on August 21, 2024.

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FEATURE IN FOCUS

A local outbreak of invasive infection of Group B Streptococcus ST283 related to freshwater fish, September – October 2024

Reported by Dr WONG Hoi-kei, Senior Medical and Health Officer, Epidemiology Division, Communicable Disease Branch, CHP; Mr. Ian Siu-kiu YAU, Scientific Officer, Enteric and Vector-Borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Background

Streptococcus agalactiae, commonly known as Group B Streptococcus (GBS), is a bacterium widely distributed among diverse species including humans, mammals, amphibians, reptiles, and fish. GBS colonises the gastrointestinal and genitourinary tracts of about 20% to 40% of healthy adults as commensal.[1]

A specific strain of GBS, known as sequence type 283 (ST283), is among the more virulent strains and has been associated with invasive diseases in otherwise healthy adults or those with relatively few underlying co-morbidities. The presence of ST283 has been reported in freshwater fish, in particular farmed fish, in Southeast Asian countries, with prevalence ranging from 12.5% to 100%.[2] Although the exact mode of transmission remains unclear, literature suggests that invasive GBS infection is related to consumption of raw or undercooked freswater fish contaminated with ST283 or improper handling of freshwater fish.

This article aims to describe the investigation and findings of a recent outbreak of invasive GBS ST283 infections in Hong Kong and the control measures taken.

Global situation and previous local outbreaks

The first confirmed human case of ST283 infection could be traced back to 1995. A major outbreak was reported in Singapore in 2015[3], involving at least 146 cases. Epidemiological investigations revealed a strong linkage with the consumption of raw freshwater fish, leading to the banning of sales of dishes made with raw freshwater fish in Singapore since December 2015.

Following the Singapore outbreak, invasive ST283 disease continued to be reported, mainly in Southeast Asia. Affected areas included Mainland China, Hong Kong, Laos, Singapore, Thailand, Vietnam and Myanmar.[4]

In the summer of 2021 (during September and October), Hong Kong recorded a cluster of more than 50 cases of ST283 infection. Investigations by the Centre for Health Protection (CHP) of the Department of Health revealed an association with contact with raw freshwater fish especially when having hand wounds. The CHP subsequently enhanced surveillance on invasive GBS cases in collaboration with the Hospital Authority (HA).

Local outbreak in summer of 2024

Ongoing enhanced surveillance on invasive GBS cases conducted by the CHP and the HA showed an upward trend in the number of in-patients tested positive for GBS from sterile sites including blood, joint fluid and cerebrospinal fluid (CSF) since late August 2024. Upon recognising the surge in cases, the CHP promptly initiated epidemiological investigations and performed genetic analyses on patient specimens. Whole genome sequencing conducted by the CHP's Public Health Laboratory Services Branch confirmed that the increase in invasive GBS cases was attributable to the ST283 strain.

Genetic analyses of specimens collected from invasive GBS cases admitted to public hospitals from August to early October detected a total of 131 ST283 cases. The patients comprised 61 males and 70 females, aged between 29 and 97 years (median: 69). They had onset of symptoms from August 8 to September 30, 2024 (Figure 1). Their clinical presentations mainly included sepsis (68; 52%), joint abscesses (39; 30%) and meningitis (10; 8%). Among them, 100 (76%) had underlying illnesses. Four (3%) had died of invasive GBS infection.

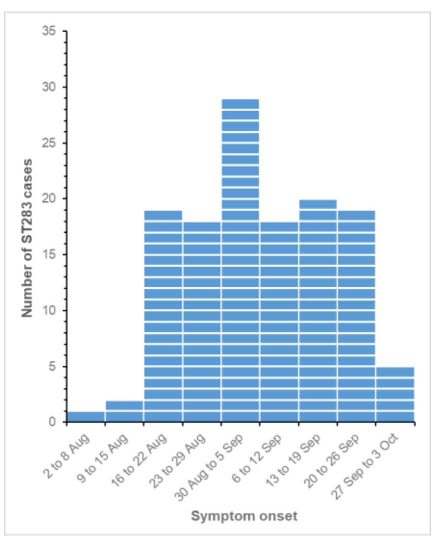

Figure 1 – Epidemic curve of the outbreak of ST283.

The CHP promptly collected detailed information from the cases, including demographic data, medical history, food and travel history, and exposure to freshwater fish. The patients included both retirees and individuals from various occupations. Among the 131 ST283 cases, 106 (81%) reported handling or contact with raw freshwater fish before onset of symptoms, with some reporting frequent handling. We inquired in detail about how the fish was handled, including purchasing, washing/rinsing, rubbing, descaling, chopping, cooking processes, and whether gloves were worn. They either visited freshwater fish stalls in wet markets to buy freshwater fish or prepared raw freshwater fish at home. Among those who prepared fish at home, nearly three fourths handled the fish with bare hands without wearing gloves. Fifteen of these 106 cases reported having wounds on their hands during handling. For another 18 patients, they could not confirm whether the freshwater fish consumed had been thoroughly cooked.

None of the 131 patients were fishmongers or individuals engaged in fish culture-related jobs, likely because they were equipped with proper protective gear during work. A single common source was ruled out. The patients resided in all 18 districts throughout the territory with no geographical clustering. The freshwater fish concerned were bought from 58 different markets across 18 districts and there were no common food premises patronised by the cases.

In-depth analysis was performed using logistic regression, with invasive GBS cases of other sequence types as controls. The multivariable model that controlled for age, sex, occupation, medical conditions, locations of residence and consumption, and other exposures showed that handling raw freshwater fish was a highly significant risk factor with adjusted odds ratio 9.2 (95% confidence interval 1.5 – 56.9), indicating a strong association with ST283 infection.

In light of the epidemiological findings, the CHP carried out environmental sampling at the Freshwater Fish Market in Cheung Sha Wan Wholesale Food Market (CSWWFM), four wet markets including Shek Wu Hui Market (Figure 2), Shek Wu Hui Farmers' Produce Retailing Point, Yeung Uk Road Market and Pei Ho Street Market, and three local fish farms in Yuen Long. Two freshwater fish samples and three environmental swabs collected from a freshwater retail stall in Shek Wu Hui Market were tested positive for ST283 while the other freshwater fish samples and environmental swabs taken were tested negative for ST283 (Table 1). Genome sequencing showed that the positive samples matched those from the human cases, indicating that they might share the same origin. Relevant sales and supply documents were inspected by the investigation teams, and the information suggested that the concerned batch of fish was supplied by a wholesaler in CSWWFM.

Figure 2 – A freshwater fish stall in Shek Wu Hui Market.

Table 1 – Result of environmental sampling.

	Number of freshwater fish samples (number positive for ST283)	Number of environmental swabs (number positive for ST283)	Total (number positive for ST283)
Fish farms	9 (0)	0 (0)	9 (0)
Wholesale market	12 (0)	15 (0)	27 (0)
Retail markets	30 (2*)	37 (3*)	67 (5*)
Total (number positive for ST283)	51 (2*)	52 (3*)	103 (5*)

* Collected from Shek Wu Hui Market.

The Agriculture, Fisheries and Conservation Department (AFCD) and the Food and Environmental Hygiene Department (FEHD) carried out immediate cleansing and thorough disinfection in the relevant markets. The FEHD inspected all fish stalls, licensed Fresh Provision Shops and Permitted Premises selling freshwater fish in Hong Kong, provided education on hygiene to relevant operators and advised them to carry out deep cleaning and disinfection work at their premises after business hours. Furthermore, the FEHD has also stepped up the publicity and health education work by advising the public via different channels (e.g. social media, pamphlets, short videos, webpage) not to eat raw or undercooked freshwater fish, and to pay attention to personal and environmental hygiene when handling fresh water fish. The CHP stepped up territory-wide publicity and health education to raise public awareness of invasive GBS ST283 infection through various channels, including press releases, social media posts and media interviews. Additionally, the CHP advised the public to consult a doctor immediately if they experienced relevant symptoms. We also alerted medical

practitioners to stay vigilant against invasive GBS ST283 infection and collaborated with the HA to monitor new cases daily to identify as many patients as possible.

With these rapid and effective measures and the concerted efforts of the Government, the trend of invasive GBS cases has been decreasing stepwise after the peak in early September. The number of GBS cases has now largely returned to the level observed in early August, prior to the outbreak.

Conclusion

This outbreak of ST283 was strongly associated with handling of raw freshwater fish based on the epidemiological findings and statistical analysis. The outbreak demonstrated effective interdepartmental coordination between the CHP, FEHD and AFCD in implementing various measures to control the outbreak. The existing surveillance system swiftly detected the surge in cases, prompting an immediate epidemiological investigation to identify associated factors. Intensive publicity and public education carried out in September effectively changed the behaviour of the general public, resulting in reduced exposure and a rapid decline in the number of cases.

The scientific literature on GBS ST283 remains relatively limited, with significant data gaps. Some overseas studies suggest that the proliferation of GBS ST283 may be influenced by environmental conditions such as elevated temperature. GBS isolates from freshwater fish have been observed to exhibit optimal growth at 30°C, and invasive GBS ST283 cases are predominantly reported from Southeast Asia, where the climate is hot. Coupled with large local outbreaks that occurred in Hong Kong during the summer months of 2021 and 2024, it remains uncertain whether similar increases in GBS ST283 activity associated with freshwater fish would recur during future summer months.

Therefore, it is imperative to enhance interdepartmental collaboration to raise public awareness about related preventive measures (see the box below), as well as to continue strengthening surveillance to detect abnormal or unusual signals before the summer season. This proactive approach will enable the timely implementation of specific preventive measures modelled from the effective practices employed during the recent outbreak response.

Health advice on GBS ST283

To prevent invasive GBS ST283 infection, members of the public are reminded to maintain personal, food and environmental hygiene and should keep their hands clean and practise good wound care at all times. The public should wear gloves when touching or handling raw freshwater fish. If symptoms such as an inflamed wound and fever develop, medical attention should be sought promptly. Freshwater fish sashimi has been banned in Hong Kong. The public should refrain from consuming raw or undercooked freshwater fish.

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A Knowledge, Attitudes, and Practice (KAP) survey on prevention of mosquito-borne diseases in Hong Kong

Reported by Dr LI Wang-kit, Senior Medical and Health Officer and Ms Virginia TAO Wing-yan, Scientific Officer, Health Promotion Branch; and Dr Sam LI Wing-sum, Medical and Health Officer, Field Epidemiology Training Programme Section, Communicable Disease Branch, CHP

Introduction

Globally, over 17% of human infectious diseases were acquired from vectors (e.g. mosquitoes), causing more than 700 000 deaths yearly.[1] Mosquito-borne diseases (MBD) such as malaria, dengue, and Zika are of major public health concerns.

One example is dengue fever. Since early 2023, increased number of dengue outbreaks have been reported worldwide including some popular travel destinations for Hong Kong people.[2] There is a continuous risk of disease importation. As one of the vectors

Aedes albopictus is widely distributed in Hong Kong especially during summer season, imported cases may potentially lead to local transmission. Public health efforts and behavioural changes are crucial in combating these threats.[1]

The previous survey encompassing Knowledge, Attitudes, and Practice (KAP) of vector-borne diseases prevention was conducted in 2014. A new round of survey was conducted in 2024 to inform the strategy of health education and publicity programme planning.

Method

A telephone survey with dual sampling approach involving both landline and mobile phone numbers was conducted between January to February 2024 among Hong Kong residents aged 18 or above. Socio-demographic data, as well as KAP regarding the transmission and prevention of MBD were collected. The data were weighted to align with the sex and age distribution of the Hong Kong population. Bivariate analysis was used for identifying the associated factors which were then put into multivariable logistic regression to identify socio-demographic factors associated with KAP on MBD.

Results

A total of 2 002 eligible respondents were successfully interviewed (response rate: 21.3%). About 5% respondents did not know any MBD. For the rest, the awareness was higher for dengue fever (97.4%), Japanese encephalitis (87.3%), and malaria (72.1%); while lower for Zika virus infection (52.9%) and chikungunya fever (12.6%) (Figure 1). 63.9% of all respondents correctly identified dengue, Japanese encephalitis and malaria as MBD, which is higher than the corresponding finding in the previous survey (41.3%) conducted in 2014. Only 29.9% recognised that asymptomatic individuals infected with dengue fever can transmit the virus to mosquitoes, and 17.7% knew that sexual contact is one of the transmission routes of Zika virus infection.

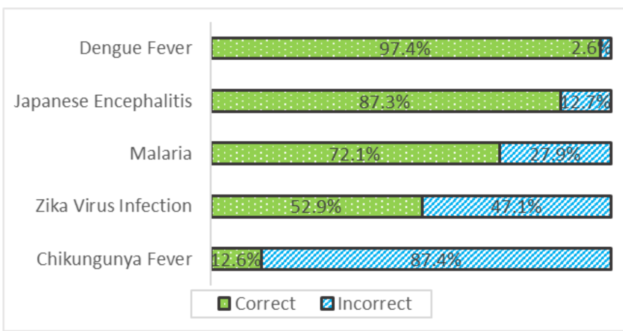

Figure 1 – Percentage of respondents correctly identifying diseases being transmitted by mosquitoes (excluding those answered "don't know").

Regarding the knowledge and attitude on the use of insect repellents, 64.7% of the respondents believed that insect repellents can protect them against mosquito bites and MBD, but 77.6% and 98.8% were unaware of the effective ingredients (Figure 2) and the recommended concentration of DEET, respectively. Multivariable analysis found that those with primary or below education level (adjusted OR: 2.34, 95% CI: 1.49 – 3.66) and those who were living in public rental housing (adjusted OR: 1.50, 95% CI: 1.14 – 1.98) were less likely to be aware of any effective insect repellent ingredients.

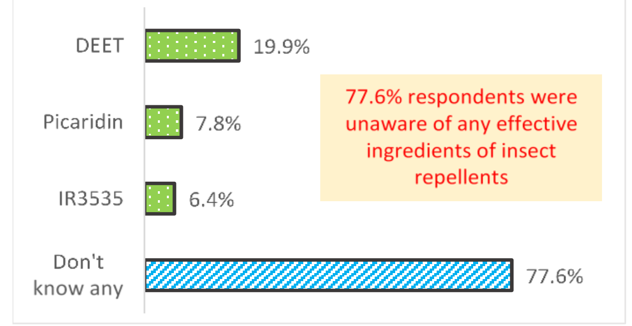

Figure 2 – Awareness of effective ingredients in insect repellents among respondents.

For the practice of using insect repellents, 70.0% of the respondents would not check the ingredients when purchasing insect repellents, and 49.8% never applied it to exposed body parts and clothing to prevent mosquito bites. The proportion of respondents who would (always / often / sometimes) apply insect repellent to exposed body parts and clothing (50.2%) is slightly higher than the corresponding finding (45.9%) of the previous survey conducted in 2014.

Besides, multivariable analysis found that respondents of age 65 or above, with household income below HK$10 000, with negative attitude on the protective effect of insect repellent, and those who are working were shown to be significantly associated with the practice of NOT using insect repellent to the exposed parts of the body and clothing to prevent insect bites (Table 1).

Table 1 – Predictors of using insect repellents to exposed parts of the body and clothing to prevent insect bites.

Predictors	Adjusted OR (95% C.I.)	p-value
Age (65 or above)	1.38 (1.01-1.90)	<0.05
Household income < $10 000	2.00 (1.32-3.01)	<0.01
Work status (working)	1.32 (1.00-1.74)	<0.05
Negative attitude on protective effect of insect repellent *	1.48 (1.04-2.10)	0.03

* Responded "disagree" to the statement: "I think insect repellent can protect me from mosquito bites and diseases transmitted by mosquitoes."

Limitation

This is a cross-sectional observational study and causal relationship could not be established. Reliance on self-reported data might result in response bias including under-reporting socially undesirable behaviours and over-reporting desirable ones. Moreover, the study was conducted between January to February 2024 when mosquitos were less active and hence awareness may be lower.

Conclusion and recommendations

While there is a satisfactory awareness of MBD and a positive attitude towards the use of insect repellents among the public, a gap exists between their knowledge/attitude, and the utilisation of insect repellents. These findings highlight the need of enhancing education on appropriate use of insect repellents in future MBD health promotion activities.

To enhance public health preparedness, the Centre for Health Protection (CHP) of the Department of Health will continue to develop targeted educational initiatives to clarify misconceptions and boost public awareness about various MBD with a focus on accurate information regarding disease transmission, symptoms, and prevention, and reach out to those living in public rental housing in liaison with community networks.

Additionally, it is crucial to raise public awareness on insect repellents and stress the importance of understanding the effective ingredients and recommended DEET concentrations. The CHP will continue to promulgate guidelines on choosing and using insect repellents for optimal protection against mosquito bites and associated diseases.

Furthermore, CHP has collaborated with the Food and Environmental Hygiene Department (FEHD) on targeted educational activities, such as tailoring health education materials to bridge knowledge gaps on insect repellents and chikungunya fever, and conducting roving exhibitions in wet markets to reach residents living in public rental housing (Figure 3-6).

Figure 3 – New infographic of "Proper use of insect repellents" highlighting the need to check for the effective ingredient of insect repellents and the recommended concentration.

Figure 4 – Roving exhibition on mosquito-borne diseases in a wet market.

Figure 5 – Press conference held on July 18, 2024 on the prevention against mosquito-borne diseases together with FEHD.

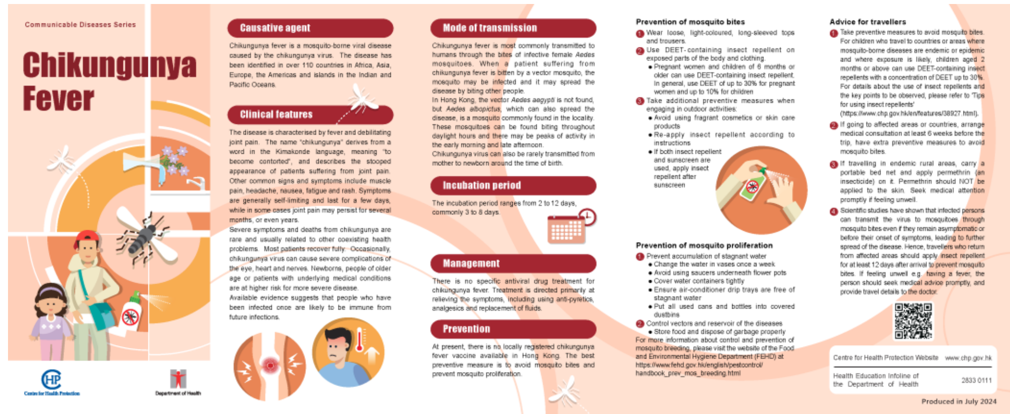

Figure 6 – New pamphlet on chikungunya fever.

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NEWS IN BRIEF

Infectious Disease and Infection Control (IDIC) Forum: Invasive Group B Streptococcus Infection

The Infection Control Branch (ICB) of the Centre for Health Protection (CHP) and Infectious Diseases Control Training Centre (DICTC) of the Hospital Authority (HA) jointly organised an IDIC training forum on Invasive Group B Streptococcus (GBS) Infection. The forum was conducted as a Zoom webinar on September 24, 2024.

The objective of the IDIC forum was to update the latest situation and epidemiology of invasive GBS infection, its clinical and microbiological features, management and prevention, thereby aiming hoping to raise the audience's awareness to this infection and its treatment. The topics covered included: 1) Update on the Latest Situation and Epidemiology by Dr Albert AU from the Emergency Response and Programme Management Branch (ER&PMB) of the CHP; 2) Clinical Presentation, Management and Prevention by Dr David LUNG from the Queen Elizabeth Hospital (QEH) and Dr Kristine LUK from the Princess Margaret Hospital (PMH) of the HA. The question-and-answer (Q&A) session was moderated by Dr Leo LUI from the ICB of the CHP.

The forum was well received by an attendance of over 460 healthcare professionals across public and private sectors. Details of the forum and available training materials can be accessed on the IDCTC training portal at https://icidportal.ha.org.hk/Trainings/View/190.

Photo – From left to right: Dr. David LUNG, Consultant Microbiologist, Queen Elizabeth Hospital, HA; Dr Kristine LUK, Chief-of-Service (Pathology), PMH, HA; Dr Leo LUI, Associate Consultant, ICB, CHP; Dr. Albert AU, Head of ER&PMB, CHP).

Two local sporadic confirmed cases of listeriosis

The CHP recorded two local sporadic cases of listeriosis on September 27 and September 28, 2024 respectively.

The first case involved a 66-year-old man residing in Tuen Mun. He had end-stage renal failure requiring continuous ambulatory peritoneal dialysis. He noted cloudy dialysis effluent on September 23. He attended the Accident and Emergency Department of a public hospital and was admitted on September 23. His peritoneal dialysate collected on September 23 grew *Listeria monocytogenes*. He was treated with antibiotics and his condition remained stable. He had no travel history during incubation period. There was no known high-risk exposure. His household contact remained asymptomatic.

The second case involved a 68-year-old woman on chemotherapy for cancer residing in Southern. She presented with fever, shortness of breath and malaise on September 26 and was admitted to a public hospital on the same day. Her blood sample collected on September 27 grew *Listeria monocytogenes*. She was treated with antibiotics and was in stable condition. She had no travel history during incubation period. There was no high risk exposure identified. Her household contact remained asymptomatic.

A probable case of sporadic Creutzfeldt-Jakob disease

On October 5, 2024, the CHP recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) affecting a 75-year-old female with underlying illnesses. She presented with cognitive impairment, blurred vision, dysphagia, myoclonus and right sided weakness since August 20, and was admitted to a public on August 23. Findings of electroencephalogram were compatible with CJD. Her condition was stable. She had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. She was classified as a probable case of sporadic CJD.

A sporadic case of *Streptococcus suis* infection

On September 27, 2024, the CHP recorded a sporadic case of *Streptococcus suis* infection affecting a 80-year-old man with underlying illnesses. He presented with fever, headache, confusion and right lower limb weakness on September 25, and was admitted to a public hospital on the same day. His blood was cultured positive for *Streptococcus suis*. His condition remained stable upon treatment. He could not recall high-risk exposure nor had recent wound. His home contact was asymptomatic.

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FEATURE IN FOCUS

Department of Health to launch one-off catch up programme for HPV vaccination

Reported by Dr CHENG Leung Li, Nanley, Senior Medical and Health Officer, Programme Management and Vaccination Division, Emergency Response and Programme Management Branch, CHP.

A one-off catch-up programme (first phase) for human papillomavirus (HPV) vaccination will be launched on December 2, 2024 aiming to boost the herd immunity of the community against high-risk HPV infection, thereby preventing cervical cancer (Figure 1).

Figure 1 – Poster of HPV Vaccination Catch-up Programme.

Cervical cancer was the seventh most common cancer among females in Hong Kong and accounted for 3.1% of all new cancer cases in females in 2021. In 2022, a total of 167 women died from this cancer, accounting for 2.6% of female cancer deaths. Almost all cervical cancers are caused by persistent infection with high-risk HPV. HPV vaccines are very effective against high-risk HPV, including HPV genotypes 16 and 18, with a vaccine efficacy of over 90%[1]. The World Health Organization (WHO) recommends that all countries introduce HPV vaccines for girls aged nine to 14 before their sexual debut[2].

The Centre for Health Protection (CHP) of the Department of Health has been providing HPV vaccination to Primary Five and Primary Six school girls under the Hong Kong Childhood Immunisation Programme (HKCIP) since the 2019/20 school year. The vaccination coverage rate for Primary Five and Primary Six school girls has remained at a high level. In the school years 2022/23 and 2023/24, the two-dose coverage rates of HPV vaccination for Primary Six school girls reached 91%, which greatly exceeded the interim target coverage of 70% for completion of two doses of HPV vaccination as stated in the Hong Kong Cancer Strategy 2019.

In 2022, the WHO updated its recommendations on HPV vaccination, prioritising catch-up HPV vaccinations for girls up to 18 years old who missed their initial vaccination, when feasible and affordable. This aims to achieve a faster and greater population impact through both direct protection and herd immunity[3]. Besides, the WHO considered the available scientific evidence supporting the recommendation of a two-dose schedule for girls aged nine to 14 years and for all older age groups. Having reviewed related scientific evidence and taking into account of the WHO's updated recommendations and overseas practices, the Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the CHP recommended expanding the target group of HPV vaccinations to older girls aged 18 or below. While maintaining the current two-dose schedule for girls aged nine to 14 years old, the SCVPD recommended a two-dose schedule (an off-label use) instead of the three-dose schedule for older girls.

Based on the recommendation of the SCVPD, the CHP will launch a one-off catch-up vaccination programme in phases starting from December 2, 2024, for all female Hong Kong residents born between 2004 and 2008 (i.e. girls aged 18 or below as of 2022, and not covered by the existing HKCIP) to receive free HPV vaccinations. Each eligible participant can receive two doses of vaccination, while immunocompromised participants have to receive three doses of vaccination (all three doses are free of charge). This programme will last for around two years until December 2026 and will be implemented in three phases (Table 1).

Table 1 – Target groups of the programme and implementation schedules for each target group.

Phase	Target Group	Implementation Schedule
1	Full-time female students (including secondary sections of special schools) studying Secondary Five or above (or an equivalent grade) in Hong Kong	From December 2, 2024
2	Female Hong Kong residents studying in local post-secondary institutions or universities who were born between 2004 and 2008	1st quarter of 2025
3	Female Hong Kong residents born between 2004 and 2008 who have completed their studies in Hong Kong	1st half of 2025

Phase 1 targets full-time female students (including those in secondary sections of special schools) studying Secondary Five or above (or an equivalent grade) in Hong Kong. Similar to the arrangement of Seasonal Influenza Vaccination School Outreach Programme, public-private-partnership vaccination teams will be arranged to visit the participating secondary schools to provide free outreach HPV vaccination services to female students. Briefings for schools and doctors have been conducted and a media briefing was arranged on November 6, 2024 to announce details of the programme (Figure 2).

Figure 2 – Media briefing on 6 November 2024 chaired by Controller, CHP Dr Edwin TSUI (second right).

Phase 2 will target female Hong Kong residents studying in local post-secondary institutions or universities who were born between 2004 and 2008, and will be launched in the first quarter of next year. Phase 3 will cover the remaining eligible female Hong Kong residents born between 2004 and 2008 who have completed their studies in Hong Kong and is planned to start in the first half of 2025. Details of Phases 2 and 3 will be announced in due course.

All eligible participants must have been registered with eHealth. Details of the programme are available at its designated webpage (https://www.chp.gov.hk/en/features/108084.html).

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General public's knowledge, attitude and practice survey on antibiotic resistance 2023

Reported by Dr. Lok-sum KO, Medical and Health Officer and Dr. Andrea TW LIU, Senior Medical and Health Officer, Infection Control Branch, CHP

The Centre for Health Protection (CHP) of the Department of Health conducts regular surveys to monitor the trend of the general public's knowledge, attitude and practice on antibiotic resistance (KAP Survey), and to evaluate the effectiveness of public health interventions. As formulated in the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023-2027), regular survey is one of the priority interventions that enables the Government to develop effective strategies against antimicrobial resistance (AMR). The latest 2023 KAP survey was conducted from November 27, 2023 to January 8, 2024, and the full report is now available on the CHP website (https://www.chp.gov.hk/en/static/108316.html) (Figure 1).

Figure 1 – Report on the Telephone Opinion Survey on General Public's Knowledge, Attitude and Practice on Antibiotic Resistance 2023.

The KAP Survey adopted the same method as the previous survey in 2022, which was derived from the World Health Organization's "Antibiotic resistance: Multi-country Public Awareness Survey" with modifications made to take account of the local context. The target population consisted of non-institutional Hong Kong residents aged 15 or above who could speak Cantonese, Putonghua or English (excluding foreign domestic helpers). The survey was conducted through landline and mobile telephone interviews via random sampling. A sample size of 1 083 successful interviews (426 through landline numbers and 657 from mobile numbers) was achieved, with an overall response rate of 50.1%.

The key findings of the KAP Survey included:

- Knowledge and Awareness
  - More than half of all respondents have heard of the terms "drug-resistant bacteria" (66.6%) and "antibiotic resistance" (66.7%) in either Chinese or English.
  - The majority of the respondents (83.8%) correctly answered that cold and flu does not need to be treated by antibiotics.
  - Less than half of the respondents (39.2%) correctly answered that bacteria which were resistant to antibiotics could be spread from person-to-person.
  - Among those whose last course of antibiotics was prescribed by doctors, only 19.7% reported that they had noticed the health advice (e.g. disinfecting and covering all wounds) on the antibiotic medicine bag.
  - In terms of awareness of food safety, only 71.4% of respondents correctly understood that thorough cooking is effective in killing drug-resistant bacteria in food. About three-quarters (73.7%) of the respondents correctly understood that if high-risk individuals (including pregnant women, young children, the elderly and immunocompromised persons) avoid consuming raw or undercooked ready-to-eat food, their risk of being infected by drug-resistant bacteria from food will be reduced.

  - ❖ Elderly are also found to have lower health literacy on antimicrobial resistance (AMR) including the conditions requiring antibiotics, risk of AMR in food and person-to-person transmission of resistant bacteria
- ✧ Attitude
  - ❖ When a doctor's initial assessment indicated that antibiotics are not needed, the vast majority of respondents (94.7%) would accept the doctor's advice to observe for a few more days or to wait for the diagnostic test result before deciding whether to prescribe antibiotics or not.
  - ❖ Less than half of all respondents (49.5%) wished their doctor to share decision making on antibiotics prescription with them.
- ✧ Practice
  - ❖ Among respondents who had ever taken antibiotics, the vast majority (97.1%) reported that their last course of antibiotics was prescribed by doctors.
  - ❖ Among respondents (46.7% of all respondents) who reported that they had consulted a doctor (for cold or flu) in the past 12 months, only 3.6% requested antibiotics during that consultation.
  - ❖ Among respondents whose last course of antibiotics was prescribed by a doctor, 7.1% did not complete the whole course of treatment as instructed, with the main reason (59.3%) being symptom improvement.

Results from the 2022 and 2023 KAP Surveys were compared. Statistically significant differences were tabulated as below (Table 1):

The survey revealed an increase in antimicrobial use after the COVID-19 pandemic; the proportion of respondents who had taken antibiotics increased from 26.1% in 2022 to 36.6% in 2023. This is likely due to a rebound of respiratory infections as reflected in the increase in the percentage of respondents having consulted doctors for cold or flu (from 21.6% in 2022 to 46.7% in 2023), which may reflect in both appropriate use of antibiotics to treat bacterial infections and inappropriate use for viral illnesses. Despite this rebound, it was encouraging to note a significant improvement in the respondents' knowledge, from 49.7% in 2022 to 83.3% in 2023 that cold and flu does not require antibiotics, after launching the publicity campaign on AMR. The general public's awareness of personal hygiene likely improved following the pandemic, as exemplified by the common habit (77%) of wearing mask when experiencing respiratory symptoms.

Table 1 – Comparison of 2022 and 2023 KAP Survey Results.

Questionnaire Item	2022	2023
Antibiotics last taken within one year	26.1%	36.6%
Consulted doctors for cold/flu in last 12 months	21.6%	46.7%
Correctly answered that cold and flu do not need to use antibiotics	49.7%	83.8%
When doctor's initial assessment indicated that antibiotics are not needed, accept doctor's advice to observe for a few more days or to wait for the diagnostic test result before deciding whether to prescribe antibiotics or not	96.4%	94.7%
Wished doctors to share decision making on antibiotics prescription	66.3%	49.5%
Have heard of the term Antibiotic Resistance/抗生素耐藥性	76.0%	66.7%
Have heard of the term Antimicrobial Resistance/抗菌素耐藥性	40.3%	22.6%
Bacteria which were resistant to antibiotics could be spread from person to person	44.1%	39.2%
Always wear surgical mask if they have respiratory symptoms when taking last course of antibiotic	72.3%	77.3%

However, there were decreases in the percentage of respondents who had heard of the terms "Antibiotic Resistance/抗生素耐藥性" (from 76.0% to 66.7%), and "Antimicrobial Resistance/抗菌素耐藥性" (from 40.3% to 22.6%). Of note, only around 40% of respondents knew that antibiotic-resistant bacteria could be spread from person-to-person. The survey also revealed that a significant proportion of respondents did not wish to share decision-making with doctors on antibiotics prescription (66.3% in 2022 and 49.5% in 2023). However, the vast majority (95%) would accept a doctor's advice to observe when the initial assessment indicated that antibiotics were not needed.

The KAP Survey findings provided valuable insights and guided the strategies employed in the upcoming publicity campaign for the World AMR Week in 2024. To enhance awareness on AMR and promote appropriate use of antibiotics among the general public, the CHP has leveraged on a variety of platforms, such as the social media, broadcast media, mobile applications and public transport advertising to reach a wider audience. Recognizing the knowledge deficit among the elderly population, the campaign also engaged the District Health Centres, Elderly Health Centres of the Department of Health, elderly and community centres under the Social Welfare Department, and Care teams under the Home Affairs Department.

NEWS IN BRIEF

A local sporadic case of *Streptococcus suis* infection

On October 24, 2024, the Centre for Health Protection (CHP) of the Department of Health recorded a local sporadic case of *Streptococcus suis* infection affecting a 60-year-old female with underlying illnesses residing in Sha Tin. She had handled raw pork without wearing protective gloves at home during the incubation period. She developed fever, left thigh and shoulder pain on October 21, and was admitted to a public hospital on October 22. Her blood was cultured positive for *Streptococcus suis*. She was treated with antibiotics and her condition was all along stable. She did not have other exposure to livestock, farms, abattoirs or butcher shops before onset of symptoms. Her home contacts were asymptomatic.

Three sporadic cases of psittacosis

The CHP recorded three sporadic cases of psittacosis on October 30, November 1 and November 20, 2024 respectively.

The first case involved a 38-year-old woman with good past health residing in Sha Tin. She presented with fever, cough and shortness of breath on October 17. She sought medical attention on October 19 and was admitted to a public hospital on October 26. Her chest X-ray showed right lower zone hazziness. She was treated with antibiotics. She remained stable and was discharged on October 30. Her sputum collected on October 27 was tested positive for *Chlamydia psittaci* DNA by PCR. She did not keep any birds at home, but reported flock of birds and droppings near her workplace in Tai Wai.

The second case involved a 63-year-old man with underlying illnesses residing in North. He presented with fever and sore throat on October 15. He sought medical attention on October 16 and was admitted to a public hospital on October 19. His chest X-ray showed left lower zone hazziness. He was treated with antibiotics. He remained stable and was discharged on October 22. His sputum collected on October 22 was tested positive for *Chlamydia psittaci* DNA by PCR. He did not keep any birds at home, but reported the presence of birds flying around his workplace in Diamond Hill .

For both cases, there was no travel history during incubation period. All their home contacts were asymptomatic. No epidemiological linkage with previous cases was identified. Both cases were referred to Agriculture, Fisheries and Conservation Department and Food and Environmental Hygiene Department for follow-up.

The third case affected a 65-year-old male with underlying illness residing in Tin Shui Wai. He presented with fever, cough, headache and dizziness since November 4 and was admitted to a public hospital on November 11 due to worsening of symptoms. Chest X-ray showed right sided haziness. His sputum collected on November 14 was tested positive for *Chlamydia psittaci* DNA. His condition was stable and he had been discharged. During incubation period, he had travelled to Australia and reported having seen doves there. He could not recall history of contact with bird's dropping or carcasses and he had no pet bird at home. His travel collaterals and household contact remained asymptomatic.

Two linked cases of listeriosis

The first case affected a 37-year-old pregnant woman with no underlying illness. She presented with fever and decreased fetal movement on November 3, 2024 at about 35 weeks of gestation. She was admitted to obstetric ward of a public hospital on November 4. Clinical diagnosis was preterm premature rupture of membrane and she had uneventful delivery on the same day. Placental swab collected grew *Listeria monocytogenes*. She was given antibiotics and in stable condition. She resided in Shenzhen during incubation period. She claimed that she had not taken high risk food.

The second case affected the newborn son of the first case. He was born by normal spontaneous delivery at a gestational age of 35 weeks and six days. His umbilical swab collected on November 4 was cultured positive for *Listeria monocytogenes*. Clinical diagnoses were *Listeria monocytogenes* bacteremia and respiratory distress syndrome due to prematurity. He was given antibiotics and in stable condition.

Imported case of food poisoning related to mushroom consumption

The CHP recorded a case of food poisoning related to mushroom consumption affecting two persons on October 27, 2024. One of the patients, a 47-year-old woman, travelled to Yunnan from October 13 to 25 where she purchased mushrooms from a wholesale market in Lijiang. The packaging bore no identifiable brand or shop name. She stored the mushrooms at room temperature at home after returning to Hong Kong. On October 26, she soaked the mushrooms in water and fried three pieces of mushrooms with garlic and green pepper for around 25 minutes. The dish was consumed by her and her son (20-year-old man) at home at around noon that day. Approximately six hours later, both individuals experienced symptoms including nausea, vomiting, diarrhea, and abdominal pain. They were subsequently admitted to a public hospital and received supportive treatment for suspected mushroom poisoning. Both were discharged on October 27. Mushrooms remnants were sent to Toxicology Reference Laboratory for analysis, which was identified as *Neoboletus venenatus*, a toxic mushroom species known to cause severe gastrointestinal illnesses.

DH participated in WHO's IHR Exercise Crystal 2024

The Communicable Disease Branch and Emergency Response and Programme Management Branch under the CHP participated in the annual International Health Regulations (IHR) Exercise Crystal organised by the World Health Organization (WHO)'s Regional Office for the Western Pacific (WPRO) on November 13. Representatives of Environmental and Ecology Bureau (EEB) and the Food and Environmental Hygiene Department (FEHD) also joined the exercise. The IHR Exercise Crystal 2024 simulated the occurrence of a vector-

Photo – CHP colleagues participated in the annual IHR Exercise Crystal organised by the WPRO, together with the representatives of the EEB and the FEHD, to enhance public health emergency preparedness and response systems.

borne disease locally. The Exercise tested the responses of each unit, including soliciting key information to facilitate immediate risk assessment, reporting and notifying the emergence of relevant local cases, and assessment on cross-border spread of the disease. Representatives of the CHP, the EEB and the FEHD co-ordinated the cross-sectoral response and reported to the WHO. Representatives from Hong Kong also shared their experiences with the host of WPRO and other participants during the debriefing and experience-sharing session.

CHP launches official Instagram account. Follow us!

The CHP has officially launched its Instagram account to enhance communication with the public. By engaging with the community on this new social media platform, the CHP aims to help all sectors of the society to gain a better understanding on how CHP safeguards public health.

Meanwhile, the CHP has produced a series of WhatsApp stickers (https://whatsticker.online/p/744757EiG70e5/HK/zh) to promote our new Instagram account to the public. Follow us to get latest public health information!

Photo 1 – Instagram of CHP

Photo 2 – WhatsApp stickers of CHP

New Recommendations by the Scientific Committee on AIDS and STI (Sexually Transmitted Infections)

In recent years, although the number of new HIV cases has decreased, the proportion of late presenters among newly reported cases in Hong Kong has increased significantly from 28.5% in 2014 to 47% in 2023. Late presentation indicates that individuals were not diagnosed and started on treatment in a timely manner at an earlier stage of infection. This delay results in a weakened immune system. Late presentation can lead to an increased risk of opportunistic infections and malignancies, resulting in a higher mortality rate. Additionally, due to an unsuppressed viral load, late presenters contribute to an increased risk of HIV transmission within the community.

Photo – The Consultant (Special Preventive Programme) of the Public Health Services Branch of the Centre for Health Protection (CHP) of the Department of Health, Dr Bonnie Wong (right), and the Chairman of the Scientific Committee on AIDS and STI, Dr Lee Cheuk-kwong (left), held a press conference on November 26 to provide the public with an update on the situation of HIV/AIDS and the latest recommendations for HIV testing in Hong Kong respectively.

The Scientific Committee on AIDS and STI recently published the "Recommendations on HIV Testing in Hong Kong" (The Recommendations), taking into consideration the latest local epidemiology, scientific evidence, recommendations from the World Health Organization, and overseas practices. It provides guidance on who should get tested, how to test, consent procedures, post-test care, and referral pathways, serving as a reference and practical guide for healthcare professionals and frontline service providers in the community.

Details of the Recommendations are available on the CHP's website at www.chp.gov.hk/en/static/24003.html. More information on HIV/AIDS could be found at the Virtual AIDS Office (www.aids.gov.hk), the Red Ribbon Centre (www.rrc.gov.hk), the HIV Testing Service website (www.hivtest.gov.hk), and the Gay Men HIV Information website (www.21171069.gov.hk).

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EDITORIAL BOARD ***Editor-in-Chief*** *Dr Albert Au* ***Members*** *Dr KH Kung / Dr Tonny Ng / Dr Hong Chen / Dr Taron Loh / Dr Wenhua Lin / Jason Chan / Doris Choi / Chloe Poon* ***Production Assistant*** *Joyce Chung.* *This monthly publication is produced by the Centre for Health Protection (CHP) of the Department of Health, 147C, Argyle Street, Kowloon, Hong Kong* ***ISSN*** *1818-4111* ***All rights reserved*** *Please send enquiries to cdsurinfo@dh.gov.hk.*

FEATURE IN FOCUS

An update on the latest situation of human cases infected with avian influenza A(H5N1) virus

Reported by Ms CHONG Sin-nae, Sheree, Scientific Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Introduction

Avian influenza is caused by influenza A viruses that mainly affect birds and poultry, such as chickens or ducks. Among avian influenza A viruses, highly pathogenic avian influenza (HPAI) A(H5N1) virus (clade 2.3.4.4b) has been in the spotlight in recent years as this subtype has led to unprecedented numbers of deaths in wild birds and poultry since 2020 and has evolved to infect a wide range of mammalian hosts since 2022[1]. Humans mainly become infected with avian influenza virus through direct contact with infected animals or contaminated environments. This year the number of human cases infected with avian influenza A(H5N1) virus has an obvious increase attributed to new cases associated with exposure to infected dairy cattle and poultry in the United States of America (USA). This article updates the global and local situation of the human infections of avian influenza A(H5N1) virus.

Global situation of human avian influenza A(H5N1) virus infections

According to the World Health Organization (WHO) and health authorities outside Hong Kong, as of December 18, 2024, at least 919 human cases of avian influenza A(H5N1) virus infections, including 464 deaths, have been reported from 24 countries worldwide[2,3]. In the recent five years, from January 2020 to December 18, 2024, there were 58 cases with about 82% of them reported from the USA (41%, 24), Cambodia (28%, 16), the United Kingdom (9%, 5), and China (5%, 3) (Figure 1). The number of cases began to increase since 2022, which was doubled in 2023, and the figure in 2024 (up to December 18) was tripled of that reported in 2023.

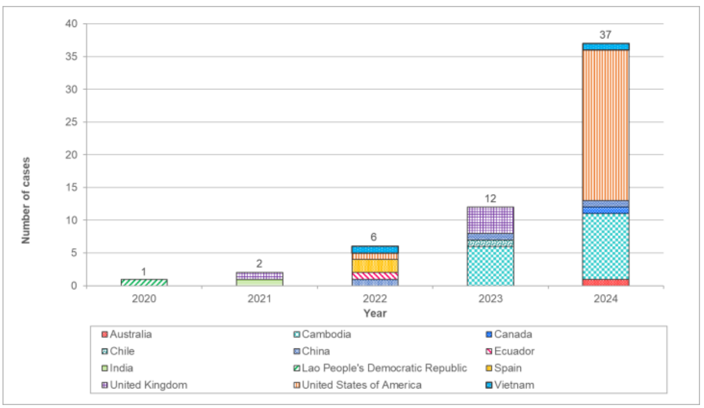

Figure 1 – Confirmed human cases of avian influenza A(H5N1) virus infection reported to WHO and by overseas health authorities between January 2020 and December 18, 2024.

For the USA, the first human case of avian influenza A(H5N1) virus infection was reported in April 2022, in a person in Colorado, who was involved in culling poultry with presumptive H5N1 avian influenza. Since January 2022, HPAI A(H5) viruses have been detected in US wild aquatic birds, commercial and backyard or hobbyist flocks with 50 states affected so far[4]. Sporadic detections of HPAI A(H5N1) viruses in mammals have also been reported since then. The US Centers for Disease Control and Prevention (CDC) reported the world's first human infection following exposure to infected dairy cattle on April 1, 2024 and the second person reported to have tested positive for avian influenza A(H5N1) viruses in the country since 2022[5]. Since 2022 until December 18, 2024, according to the reporting date, 62 people in eight states of the USA have been tested positive for avian influenza A(H5) virus (Figure 2)[4]. About 90% of them were reported in California (55%, 34), followed by Washington (18%, 11) and Colorado (18%, 11).

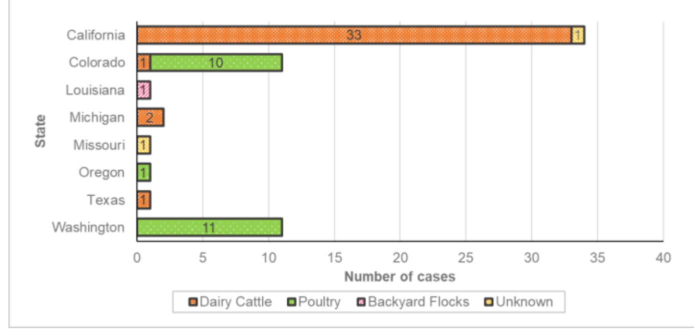

Figure 2 – Confirmed human cases of avian influenza A(H5) virus infection in the USA since 2022, by state and exposure source.

All human cases of avian influenza A(H5) virus infection were adults except for one case in California. These individuals mostly exhibited

mild symptoms, including many with conjunctivitis and some with upper respiratory tract infections. Majority of them were not hospitalised except for two cases reported in Missouri and Louisiana. Among these cases, 37 (60%) were associated with exposure to infected dairy cattle whereas 22 (35%) were linked to exposure to infected poultry. There was one case reported in Louisiana with exposure to sick and dead birds in backyard flocks. The remaining two cases had unknown exposure source, including a child in California and an adult in Missouri.

For cases with genome sequencing information available, the viruses causing the human infections were H5N1 viruses from clade 2.3.4.4b with two different genotypes identified. The H5 viruses from patients with exposure to infected dairy cattle and those with exposure to infected poultry in Colorado belonged to the B3.13 genotype. For those H5 viruses from patients with exposure to infected poultry in Washington, and sick and dead birds in backyard flocks in Louisiana, they belonged to the D1.1 genotype, which is known to circulate in wild birds and poultry in the country.

Risk assessment

Avian influenza A(H5N1) viruses might spread from cows to people in several ways. Studies have shown that high concentration of viable virus is shed in the milk and the virus can persist and remain infectious on milking equipment surface for a period of time[6,7]. The US CDC speculates that dairy farm workers might be infected if raw milk contaminated with H5N1 virus splashes into their eyes when milking cows or working in a milking parlour[8]. Besides, dairy farm workers could be infected if they touch something contaminated with live virus (e.g. milking equipment) and then touch their eyes, nose or mouth.

When mammals, including humans, are infected with avian influenza A(H5N1) virus, the virus may undergo intra-host evolution resulting in genetic changes that allow more efficient replication in the host cells. Some genetic changes have been detected in a few human cases reported in the USA. Despite that, there is no evidence showing that these changes are associated with enhanced transmissibility of the virus to humans, and are associated with reduced susceptibility to available antiviral treatments (such as oseltamivir) in clinical settings[9-13].

With continuous circulation of avian influenza A(H5N1) viruses among wild birds, poultry and mammals, both WHO and US CDC commented that additional sporadic human infections after direct exposure to infected animals and contaminated environment are anticipated. However, the latest WHO's assessment reveals that the H5 viruses detected in mammals, including in human cases, largely retain the genomic and biological characteristics of avian influenza viruses and have not acquired the capacity for sustained transmission between humans. Based on available information, the global public health risk of avian influenza A(H5N1) infection is considered to be low[14,15].

Locally, novel influenza A infection (including avian influenza) is one of the statutorily notifiable infectious diseases in Hong Kong. A total of 22 human cases, including seven death cases (case-fatality rate of 32%), have been recorded in Hong Kong since 1997. The last case in Hong Kong was reported on June 2, 2012. With local surveillance, prevention and control measures in place, the Centre for Health Protection (CHP) of the Department of Health (DH) will remain vigilant and work closely with WHO and relevant health authorities to monitor the latest development. To minimise the risk of contracting avian influenza, members of the public should maintain strict personal and environmental hygiene, and may visit the CHP's thematic page for more information on avian influenza: https://www.chp.gov.hk/en/features/24244.html.

Health advice for prevention of avian influenza

- Avoid touching poultry, birds, animals or their excrement, or contaminated environment;
- When buying live chickens, do not touch them and their droppings. Do not blow at their bottoms. Wash eggs with detergent if soiled with faecal matter and cook and consume the eggs immediately. Always wash hands thoroughly with soap and water after handling chickens and eggs;
- Eggs should be cooked well until the white and yolk become firm. Do not eat raw eggs or dip cooked food into any sauce with raw eggs. Poultry should be cooked thoroughly. If there is pinkish juice running from the cooked poultry or the middle part of its bone is still red, the poultry should be cooked again until fully done;
- Do not consume unpasteurized milk and raw milk products as they can be contaminated with pathogens that can cause serious illness;
- Perform hand hygiene frequently, especially before touching the mouth, nose or eyes, before handling food or eating, and after going to the toilet, touching public installations or equipment such as escalator handrails, elevator control panels or door knobs, or when hands are dirtied by respiratory secretions after coughing or sneezing; and
- When having respiratory symptoms, wear a surgical mask, refrain from work or attending class at school, avoid going to crowded places and seek medical advice promptly.

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Update on local epidemiology of chickenpox

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Background

Chickenpox (varicella) is an acute, highly contagious infectious disease caused by the varicella-zoster virus (VZV), which can be transmitted via droplets, aerosols, direct or indirect contact with discharges from vesicles and respiratory secretions. Affected persons usually have fever and itchy skin rashes, evolving from flat spots to vesicles which eventually dry out and form scabs. Chickenpox is usually a mild childhood disease, but it can be severe and fatal in neonates, adults and immunocompromised individuals. Besides, VZV may remain dormant in the nervous system and reactivate many years later causing herpes zoster (shingles). Before the availability of chickenpox vaccination, the majority of people were infected during childhood.

Chickenpox (varicella) vaccine and coverage in local population

Chickenpox vaccine is safe and highly effective in preventing varicella infection. A local study published in 2020 demonstrated that the vaccine effectiveness of a two-dose chickenpox vaccination was 93.4% (95% confidence interval: 91.7 – 94.7%)[1]. However, individuals who have received chickenpox vaccination may still develop breakthrough infection, which presents with milder or atypical symptoms and lasts for a shorter duration compared with those who are unvaccinated.

Chickenpox vaccine has been incorporated into the Hong Kong Childhood Immunisation Programme (HKCIP) for children born on or after January 1, 2013. The vaccination schedule comprises of two-dose chickenpox vaccine, with the first dose given at 12 months of age. The programme started in 2014 when the first cohort of eligible children reached 12–month old. Children born between January 1, 2013 and June 30, 2018 were offered the second dose of chickenpox vaccine at primary one. For those born on or after July 1, 2018, the second dose has been advanced to 18 months of age since 20202.

According to the immunisation coverage surveys conducted by the Centre for Health Protection (CHP) of the Department of Health, the vaccination coverage of the first dose of chickenpox vaccine in pre-school children has maintained at above 95% since its introduction into the HKCIP.

Changing local epidemiology

In the decade before the incorporation of chickenpox vaccine into the HKCIP (2004 to 2013), the annual number of reported chickenpox cases ranged from about 6 800 to 17 900, showing a cyclical pattern of increased activity every few years (Figure 1).

The annual number of chickenpox cases remained relatively stable between 2014 and 2017, ranging from about 7 800 to 9 300 cases, and started to decrease from 2017 onwards. During the COVID-19 pandemic from 2020 to 2022, the number of chickenpox cases dropped significantly to around 1 000 to 2 000 cases per year due to masking, enhanced personal hygiene and social distancing measures. In the post-COVID-19 period in 2023 and 2024, unlike other common respiratory diseases, no obvious resurgence of chickenpox cases was observed. The number of reported cases has remained at a low level in 2024 (1 529 cases as of November 30).

In the pre-COVID-19 era, higher numbers of chickenpox cases were observed during winter with a smaller peak in summer, a pattern usually seen in places with subtropical climate[3,4,5]. However, such seasonality has not been observed since 2020 (Figure 2).

Following the implementation of universal chickenpox vaccination for children born in 2013 and afterwards, a shift in age distribution of chickenpox cases among children has been observed (Figure 3). Before 2014, young children aged one to five years had the highest incidence, followed by those aged six to 11 years. Starting from 2014 when universal chickenpox vaccination for children at 12 months was launched, there was substantial and continuous decrease in the incidence among young children aged one to five years, reaching a low level by 2019. However, the incidence among children aged six to 11 years remained stable between 2014 and 2019, surpassing that among young children aged one to five years since 2015, and then started to decrease gradually to a low level since 2020. The incidence rates of both age groups remained at a very low level in recent years and surpassed by that among infants aged less than one year from 2021 onwards.

On the other hand, the incidence among adolescents aged 12 to 17 years increased from 58.3 per 100 000 in 2022 to 141.8 per 100 000 in 2024, which surpassed the incidence rates of younger age groups. In 2024, 30.5% of cases affected adolescents aged 12-17 years as compared to 2.8%, 10.2% and 11.1% among children aged less than one year, one to five years and six to 11 years respectively.

The observed increase in the incidence rate of chickenpox among adolescents in the recent two years is likely due to the fact that most were born before 2013 when universal chickenpox vaccination was not yet available under the HKCIP. Besides, these adolescents were less likely to have acquired natural infection over the past decade when there was a decreasing incidence of chickenpox, in particular during the COVID-19 pandemic period.

The incidence rate of chickenpox among adults has remained at a very low level from 2004 to 2024, ranging from 8.9 to 29.7 per 100 000 for adults aged 18 to 64 years and from 0.4 to 1.7 per 100 000 for those aged 65 years and above (Figure 4).

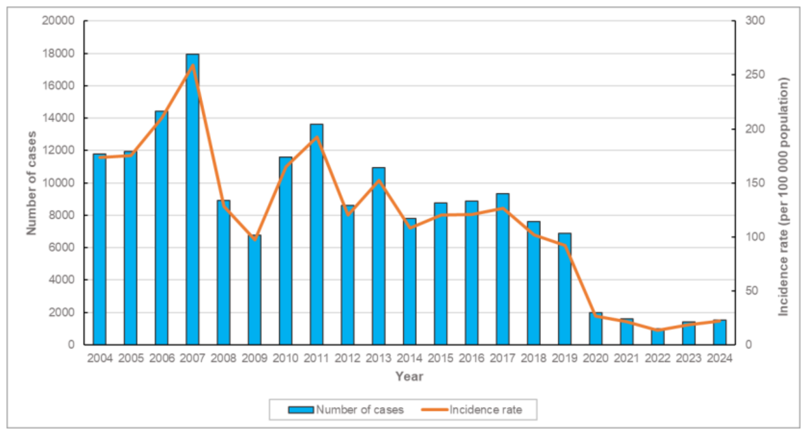

Figure 1 – Number of cases and incidence rate of chickenpox by year from 2004 to 2024 (As of November 30, 2024).

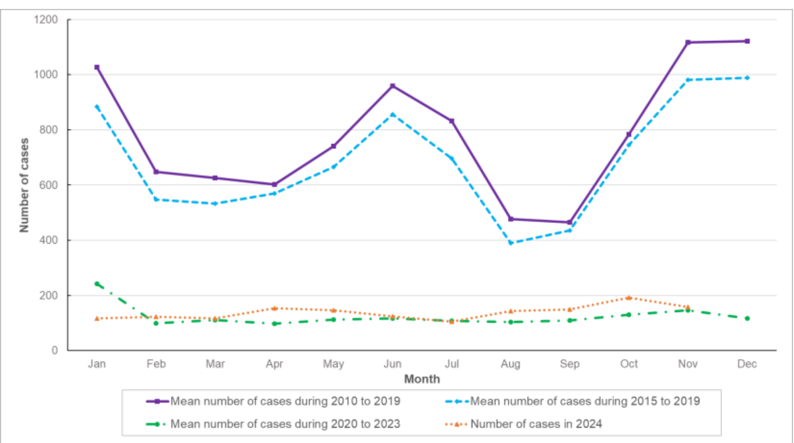

Figure 2 – Number of chickenpox cases by month, in 2010-2019, 2015-2019, 2020-2023, 2024 (As of November 30).

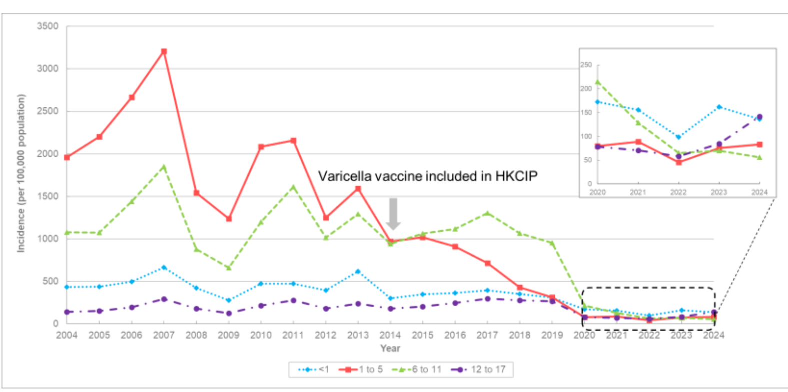

Figure 3 – Age-specific incidence of chickenpox among children in Hong Kong, 2004 to 2024 (As of November 30).

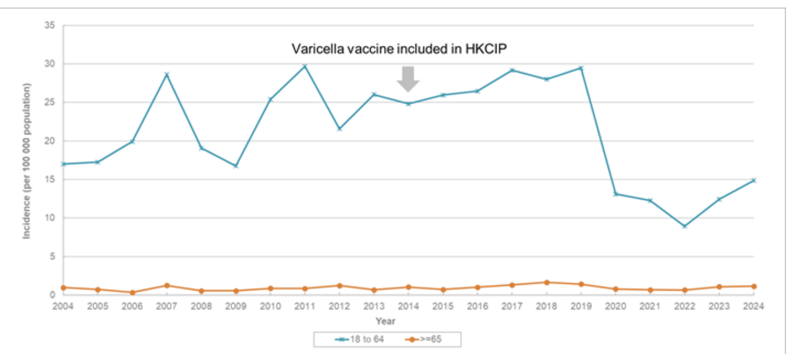

Figure 4 – Age-specific incidence of chickenpox among adults in Hong Kong, 2004 to 2024 (As of November 30).

Chickenpox Outbreak

The CHP monitors chickenpox outbreaks in institutions and schools. Before the inclusion of chickenpox vaccine in the HKCIP, the annual number of reported institutional outbreaks in Hong Kong between 2007 and 2013 ranged from 487 to 1 072 (Figure 5). The annual number of institutional outbreaks remained stable between 2014 and 2017, ranging between 466 and 557, and then dropped to 446 in 2018 and 342 in 2019. Following the emergence of COVID-19 and class suspension during the COVID-19 pandemic, the number of institutional outbreaks further decreased to less than 40 per year. The number has remained at a low level in 2023 and 2024 (as of November 30) with 34 and 35 institutional outbreaks recorded respectively.

Figure 5 – Number of institutional outbreaks of chickenpox from 2007 to 2024 (As of November 29, 2024).

This decrease was mainly due to reduced outbreaks in kindergartens and child care centres (KG/CCC) which constituted 47.0% of the chickenpox institutional outbreaks during 2007 to 2019. Between 2007 and 2015, the majority (51.6%) of chickenpox outbreaks occurred in KG/CCC. Since 2015 when the first cohort of vaccinated children started to enter KG/CCC, the number of outbreaks in KG/CCC has been decreasing gradually, and was surpassed by the number of outbreaks occurring in primary schools from 2016 onwards. In 2024, secondary schools have constituted the highest proportion of institutional outbreaks, accounted for 62.9% of all reported outbreaks. This observation aligned with the higher incidence recorded among adolescents aged 12 to 17 years in the recent two years. The shift in the relative proportion of KG/CCC and primary schools amongst all outbreaks reported is attributable to the protection conferred by chickenpox vaccination for eligible birth cohorts under the HKCIP.

Prevention

Eligible children should follow the vaccination schedule recommended in the HKCIP. Parents are reminded to maintain their children's immunisation up-to-date according to the HKCIP for timely and comprehensive protection.

To prevent chickenpox infection, it is important to maintain good personal, hand, and environmental hygiene. Parents are encouraged to take their children to seek medical advice if their children develop skin rash and to report any sickness to the school promptly. Sick children should stay at home and be excluded from schools until all vesicles have dried up, usually about one week after appearance of rash to prevent spreading the disease to others.

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NEWS IN BRIEF

The 21st Tripartite Meeting on Prevention and Control of Communicable Diseases

The 21st Tripartite Meeting on Prevention and Control of Communicable Diseases was held in Dongguan on December 13, 2024. Around 60 representatives from the three places attended the meeting, including representatives from the Centre for Health Protection (CHP) of the Department of Health (DH) led by the Director of Health as well as those from the Hospital Authority (HA). The meeting discussed three major agenda items, namely prevention and control of major communicable diseases and dengue fever; prevention and management of communicable diseases in healthcare institutions; and prevention and control of viral hepatitis and HIV infection. Following in-depth exchange, a meeting minutes was signed with consensus reached in eight areas. It is hoped that the three places, following the establishment of the Guangdong Provincial Disease Control and Prevention Administration, will further strengthen collaboration in the future, especially reinforcing areas such as communicable disease surveillance and forecasting, and risk assessment and notification mechanisms in order to attain higher efficiency in disease prevention and control for the three places.

Photo 1 – Photo shows the Deputy Director-General of the Guangdong Provincial Health Commission and Director of the Guangdong Provincial Disease Control and Prevention Administration, Dr Song Tie (centre); the Director of Health of Hong Kong, Dr Ronald Lam (left); and the Director of the Health Bureau of Macao, Dr Lo Iek-long (right), after signing the meeting minutes.

Photo 2 – Delegates of Hong Kong participated in the 21st Tripartite Meeting on Prevention and Control of Communicable Diseases.

Exercise "Amazonite" enhances Government's response to human case of avian influenza

The CHP, in collaboration with relevant government departments and the HA, conducted a public health exercise, code-named "Amazonite" (天河石) in November 2024, to enhance its response capabilities in dealing with human case of avian influenza infection.

The first part of the exercise was a table-top exercise in which four relevant government departments (including DH) and the HA discussed and co-ordinated the response measures required in a simulated scenario in which a chicken stallholder in Hong Kong was infected with avian influenza A (H5N1) virus.

The second part of the exercise was a ground movement exercise held at the Cheung Sha Wan Temporary Wholesale Poultry Market. The CHP co-ordinated with relevant departments to carry out investigation and control measures, which included contact tracing and prescription of prophylactic antiviral therapy; chicken, environmental and sewage sampling; culling of chickens and environmental disinfection.

Photo – An officer of the relevant government department explaining the procedure of sewage sample collection to the Director of Health, Dr Ronald Lam (right), the Controller of the CHP of the DH, Dr Edwin Tsui (centre), and expert observers from the Mainland, Macao and Singapore health authorities.

Approximately 30 personnel from four government departments participated in the ground movement exercise, along with over 30 experts from the Mainland, Macao and Singapore health authorities, who were invited to attend as observers.

Seminar on Application of Artificial Intelligence (AI) on Infectious Diseases and Infection Control

Recognising the increasingly important role played by artificial intelligence (AI) in healthcare, Infection Control Branch (ICB) of the CHP and Infectious Diseases Control Training Centre (IDCTC) of the HA jointly organised a seminar on "Application of AI on Infectious Diseases and Infection Control" on November 13, 2024.

The seminar aimed at addressing potential application on the use of AI in the field of infectious diseases and infection control, covering topics on overview of AI applications in healthcare; use of AI for infection surveillance; harnessing AI to optimize antibiotic use and discover novel antibiotics; as well as to predict emerging infections and aid laboratory diagnostics. The target group of the seminar includes healthcare professionals in HA, DH and private settings.

Photo – Seminar on "Application of AI on Infectious Diseases and Infection Control" on November 13, 2024.

The seminar was well received with an attendance of over 370 healthcare professionals across public and private sectors. Details of the seminar and available training materials were posted on the IDCTC training portal at https://icidportal.ha.org.hk/Trainings/View/191.

DH launches inaugural HIV Testing Month in December 2024

The World Health Organization has designated December 1 as the World AIDS Day, a reminder for people worldwide to unite in the fight against HIV/AIDS and to support those affected by the disease. In alignment with this initiative, the DH has launched the inaugural HIV Testing Month in December 2024 to promote the normalisation of HIV testing. Normalising HIV testing is crucial for enabling individuals who are unaware of their infection status to receive timely diagnosis and treatment, and at the same time, reducing the stigma associated with HIV and testing.

The HIV Testing Month is a new initiative by the Red Ribbon Centre of the DH, in partnership with 12 collaborating and 10 supporting organisations including non-governmental organisations and professional bodies. In addition to enhancing public's awareness of HIV testing through a variety of publicity campaigns, this initiative will provide various testing options at multiple locations, making it easier and more convenient for the public to access HIV testing services in Hong Kong. For details about the Testing Month, please visit the thematic webpage at https://www.hivtest.gov.hk/en/hiv_testing/testingmonth.html.

Three sporadic cases of Creutzfeldt-Jakob disease

The CHP recorded three sporadic cases of Creutzfeldt-Jakob disease (CJD) on November 25, December 13 and December 18, 2024 respectively.

The first case affected a 68-year-old male with underlying illnesses residing in Kowloon City. He presented with cognitive impairment, auditory hallucination, myoclonus and right hand involuntary movement since May 2024, and was admitted to a public hospital on November 14. Findings of electroencephalogram were compatible with CJD. His condition was stable. He was classified as a probable case of sporadic CJD.

The second case affected a 76-year-old male with underlying illness residing in Shatin. He presented with progressive impaired memory in April 2024 and emotional change, visual disturbance and clumsiness in November 2024. He was admitted to a public hospital on December 9. Findings of magnetic resonance imaging of the brain were compatible with CJD. His condition was stable. He was classified as a possible case of sporadic CJD.

The third case affected a 64-year-old female with underlying illness residing in Yuen Long. She presented with rapidly progressive dementia, myoclonus, akinetic mutism and unsteady gait since October 15. She was admitted to a private hospital on December 6. Findings of electroencephalogram and magnetic resonance imaging of the brain were compatible with CJD. Her condition was stable. She was classified as a probable case of sporadic CJD.

The three cases had no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified.

A local sporadic case of psittacosis

On December 5, 2024, the CHP record a local sporadic case of psittacosis affecting a 58-year-old bus driver with underlying illnesses residing in Aberdeen. He presented with fever, runny nose, headache and myalgia on November 19, and was admitted to a public hospital on November 23. His sputum collected on November 26 was tested positive for *Chlamydia psittaci* DNA. His condition improved with antibiotic treatment. His wife bought a parrot from Yuen Bo Street Bird Garden in Hong Kong on October 19 and kept it as a pet. The bird appeared to be healthy throughout this time, and all home contacts showed no symptoms. The case was referred to Agriculture, Fisheries and Conservation Department (AFCD) and Food and Environmental Hygiene Department for follow-up. Site visits were performed on December 6 and 9 to the patient's home and to the bird shop respectively. The pet parrot was surrendered to AFCD. The patient's family members and the worker at the bird shop were put under medical surveillance.