Communicable Diseases Watch

Communicable Diseases Watch (CDW) is an online monthly 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 community interest on infectious diseases.

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Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

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FEATURE IN FOCUS

Recent increases in respiratory infectious disease activities in Hong Kong

Reported by Ms Vera CHOW, Scientific Officer; and Dr Katie LAI, Medical and Health Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

The activities of respiratory infectious diseases in Hong Kong have dramatically decreased since the start of COVID-19 pandemic in early 2020, which was likely related to the intensive preventive measures adopted by the whole community such as hand hygiene, mask wearing and social distancing. However, following the progressive resumption towards normalcy with gradual relaxation of control measures coupled by lifting of mandatory mask-wearing requirement, an increasing trend of upper respiratory infection (URI) activity has been observed. The Centre for Health Protection (CHP) of the Department of Health also recorded an increased number of institutional URI outbreaks and circulations of respiratory syncytial virus (RSV), rhinovirus/enterovirus and parainfluenza viruses in the community.

Outbreak surveillance

The weekly number of institutional URI outbreaks reported to CHP started to increase after the Chinese New Year holiday, especially after the resumption of whole-day face-to-face classes in secondary schools and primary schools on February 1 (Wednesday of week 5) and February 15 (Wednesday of week 7) respectively (Figure 1). The number of outbreaks increased from fewer than 10 outbreaks per week in mid-February (week 6) to more than 20 (ranged from 21 to 32) per week in the following five weeks (week 7 to 11). In view of increased reporting of URI outbreaks picked up in the second half of February, CHP issued letter to schools on February 22 to remind principals or persons in-charge to remain vigilant against the infections.

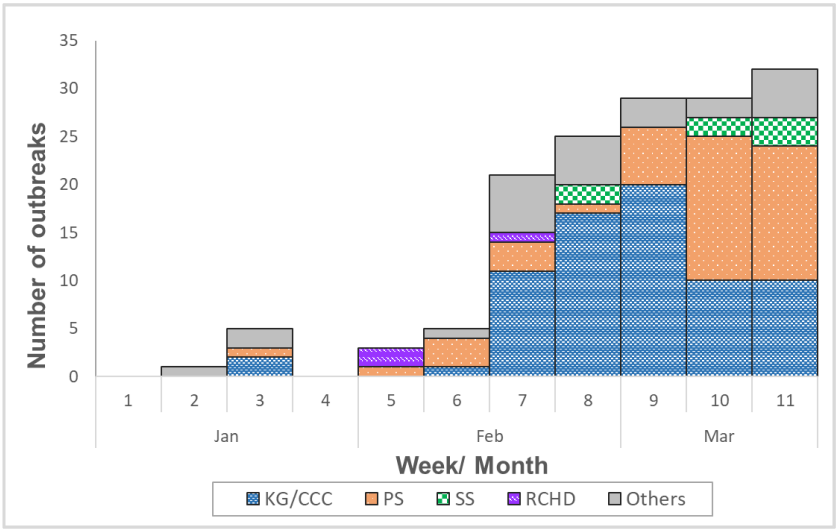

Figure 1 – Weekly number of institutional URI outbreaks, by type of institutions, 2023

During week 7 to week 11 (from February 12 to March 18), a total of 136 outbreaks were recorded. About half of them involved kindergartens/child care centres (KG/CCC) (50.0%), followed by primary schools (PS) (28.7%), residential CCC, special CCC and special schools (14.0%), secondary schools (SS) (5.2%), a residential care home for persons with disabilities (RCHD) (0.7%), a day activity centre (0.7%) and a hospital (0.7%). The sizes of these outbreaks ranged from 3 to 51 persons. There were 15 outbreaks each affected 20 persons or more, majority of which (12, 80.0%) occurred in KG/CCC, two in PS (13.3%) and the remaining one in a residential CCC.

Among the 136 outbreaks mentioned above, 37 (27.2%) outbreaks had respiratory pathogen identified. Twenty-two of these 37 outbreaks (59.5%) had cases with respiratory specimens tested positive for RSV, 12 (32.4%) with parainfluenza viruses and 12 (32.4%) with rhinovirus/enterovirus, whereas an outbreak can be associated with multiple causative agents.

Laboratory surveillance

For monitoring of respiratory infections other than seasonal influenza and COVID-19, CHP monitors the percentage of positive laboratory detections from respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) from the hospitals and community, as well as the percentage of positive laboratory detections from paediatric clinical specimens tested positive by multiplex PCR system by the Hospital Authority (HA). Increases in activities of RSV, rhinovirus/enterovirus and parainfluenza viruses among tested respiratory specimens have been observed recently (data as of March 22). Regarding RSV, the weekly percentage of specimens tested positive by HA and PHLSB both showed increases to peak levels of about 30% and 5% respectively in week 7 (week ending February 18), and then decreased to 13.7% (HA) and 1.9% (PHLSB) in week 11 (week ending March 18). (Figures 2a and 2b)

RSV

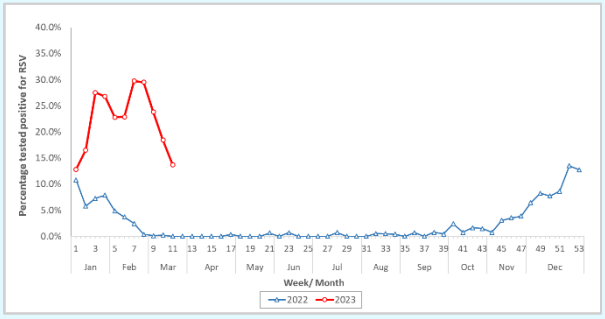

Figure 2a – Weekly percentages tested positive for RSV among paediatric respiratory specimens received by HA, 2022-2023

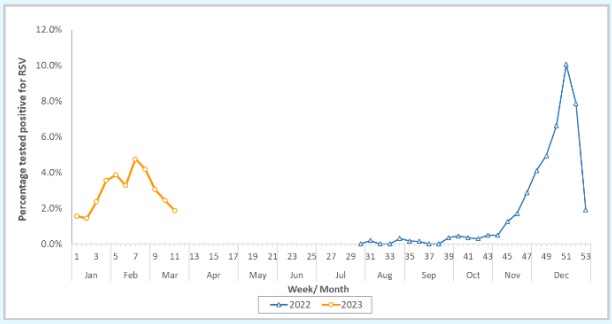

Figure 2b – Weekly percentages tested positive for RSV among respiratory specimens received by PHLSB, week 30 of 2022-2023

An obvious increase was also observed for the percentage of specimens tested positive for rhinovirus/enterovirus. For specimens received by HA, the corresponding percentage increased from 8.0% in week 5 (first week of February) to 38.3% in week 11. That from PHLSB also increased from around 1.0% to 5.3% during the same period. (Figures 3a and 3b)

Rhinovirus/ enterovirus

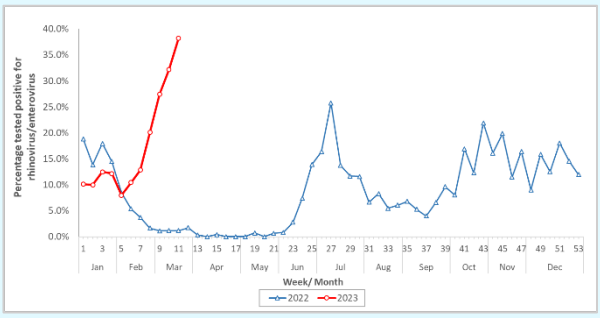

Figure 3a – Weekly percentages tested positive for rhinovirus/enterovirus among paediatric respiratory specimens received by HA, 2022-2023

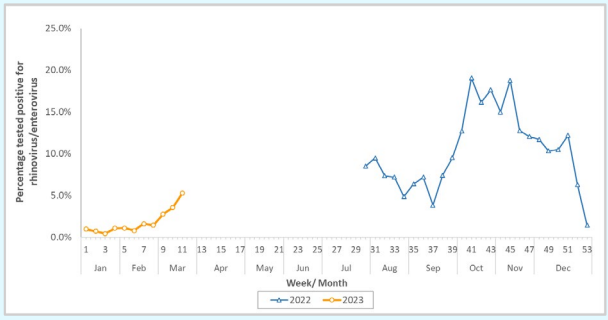

Figure 3b – Weekly percentages tested positive for rhinovirus/enterovirus among respiratory specimens received by PHLSB, week 30 of 2022-2023

Regarding parainfluenza virus, the percentage of specimens tested positive by HA started to increase from 6.8% in first week of 2023 to a peak of 17.6% in early March, and then decreased to 14.5% in week 11. For the specimens tested by PHLSB, the corresponding percentage increased to 2.3% in week 11 from a low level of 0.2% in week 1 of 2023. (Figures 4a and 4b)

Parainfluenza

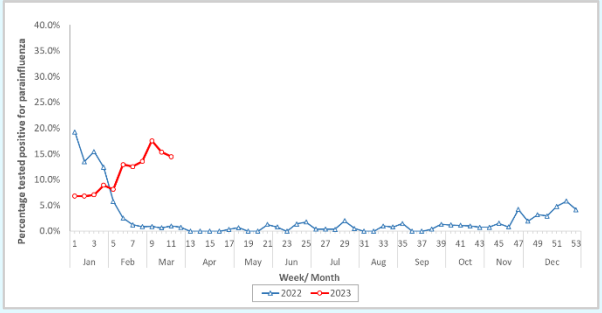

Figure 4a – Weekly percentages tested positive for parainfluenza virus among paediatric respiratory specimens received by HA, 2022-2023

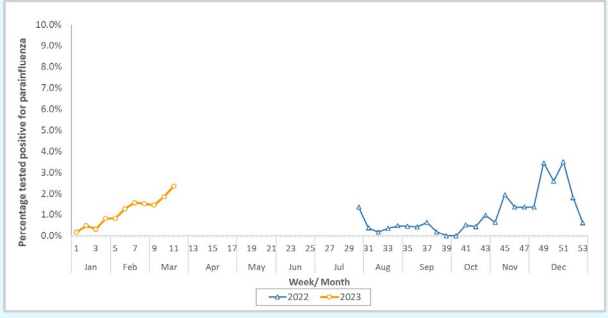

Figure 4b – Weekly percentages tested positive for parainfluenza virus among respiratory specimens received by PHLSB, week 30 of 2022-2023

In comparison, the weekly percentage of specimens tested positive for adenovirus and human metapneumovirus remained at relatively low levels in 2023. For specimens received by HA, the percentage positive for adenovirus fluctuated between 1.8% and 3.9% in 2023, comparable with the same period last year, while that of human metapneumovirus fluctuated between 0.6% and 1.4% in 2023. (Figures 5a and 6a) For specimens received by PHLSB, the corresponding percentages for adenovirus and human metapneumovirus fluctuated at levels below 0.3% and below 0.6% in 2023 respectively. (Figures 5b and 6b)

Adenovirus

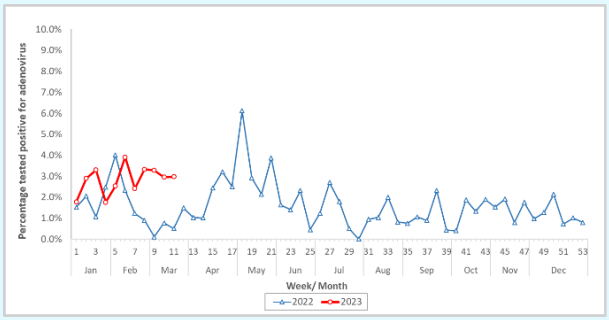

Figure 5a – Weekly percentages tested positive for adenovirus among paediatric respiratory specimens received by HA, 2022-2023

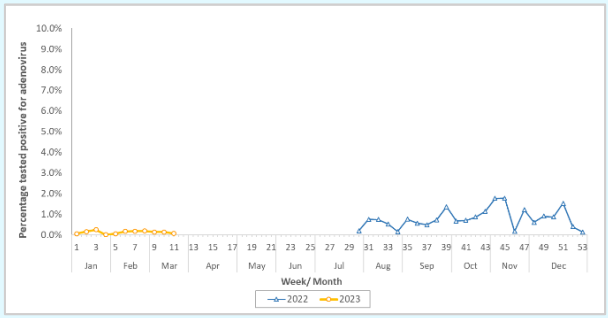

Figure 5b – Weekly percentages tested positive for adenovirus among respiratory specimens received by PHLSB, week 30 of 2022-2023

Metapneumovirus

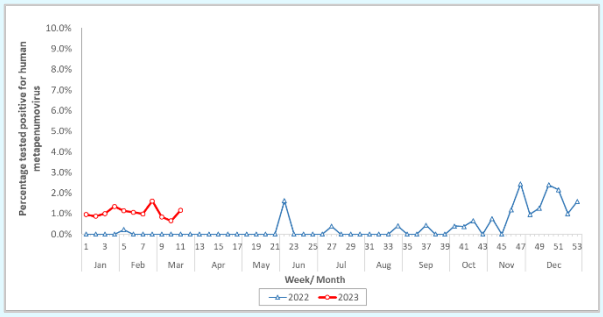

Figure 6a – Weekly percentages tested positive for human metapneumovirus among paediatric respiratory specimens received by HA, 2022-2023

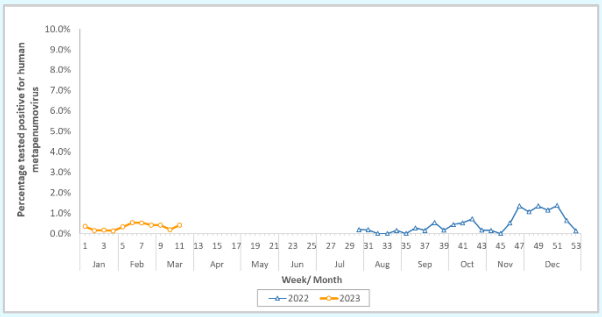

Figure 6b – Weekly percentages tested positive for human metapneumovirus among respiratory specimens received by PHLSB, week 30 of 2022-2023

In addition, the local seasonal influenza activity has slightly increased in the past two weeks. Among the respiratory specimens tested by PHLSB and HA, the weekly positive percentage of seasonal influenza viruses slightly increased from below 1% in early March to 3.3% in week 11. Majority (78%) of the detections in the past two weeks were influenza A(H1) viruses. Slight increase in the hospital admission for influenza was also noted, with the rate slightly increasing from 0.014 to 0.074 per 10 000 population in the same period. Such increases were mainly found with children aged under 12 years, adult aged 50-64 years and elderly aged 65 years or above. Regarding severe influenza infection, 9 cases have been reported in March so far (as of March 22), as compared with a total of 5 cases in January to February. For details about the latest situation of seasonal influenza, please refer to the weekly publication COVID-19 & Flu Express at https://www.chp.gov.hk/en/resources/29/100148.html.

Following the resumption of normalcy, challenges from the return of different respiratory infectious diseases are expected. The CHP will continue to closely monitor the respiratory infectious disease activities through multiple surveillance systems and the public should remain vigilance against respiratory infections.

Health tips for prevention of respiratory infectious diseases

Members of the public are advised to maintain strict personal and environmental hygiene at all times for personal protection against infection and prevention of the spread of the respiratory diseases in the community.

- Perform hand hygiene frequently. Wash hands with liquid soap and water when soiled, or use 70 to 80% alcohol-based handrub as an alternative when hand washing facilities are unavailable;
- Maintain good indoor ventilation;
- When having respiratory symptoms, wear a surgical mask, refrain from work or school, avoid going to crowded places and seek medical advice promptly;
- Build up good body immunity by having a balanced diet, regular exercise, adequate rest, avoiding overstress, do not smoke and avoid alcohol consumption; and
- Get seasonal influenza vaccination (except for those with known contraindications).

Update on food poisoning

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

Situation in 2023

Food poisoning is a notifiable disease under the Prevention and Control of Disease Ordinance (Cap. 599) in Hong Kong.

Throughout January 1 till March 11 2023, the Centre for Health Protection (CHP) of the Department of Health recorded a total of 99 suspected outbreaks of food poisoning affecting a total of 343 persons, while only seven food poisoning outbreaks affecting 16 persons were recorded during the same period last year. Based on information available, persons affected in 99 food poisoning outbreaks recorded in 2023 (size of outbreak ranged from two to 17) had male-to-female ratio of around 0.83, age ranging from one to 73 years, while four of them (1.2%) required hospitalisation and all have recovered. In terms of settings, 86 outbreaks (87%) were associated with food premises, while eight (8%) and four (4%) were associated with domestic settings and institutions respectively. In terms of causative agents, 69% of outbreaks were attributed to norovirus, followed by *Vibrio parahaemolyticus* (21%), *Salmonella* species (9%) and *Clostridium perfringens* (4%)*.

Among the 67 outbreaks attributed to norovirus, epidemiological investigation revealed that 62 outbreaks (93%) were related to consumption of raw oysters, affecting a total of 212 persons (86, 91 and 35 in January, February and March, as of March 11. respectively). Norovirus was detected in stool of affected persons in 12 clusters. The largest cluster comprising ten outbreaks affecting 41 persons (19 male and 22 female, aged 22 to 64) notified to the CHP between January 17 and 20 was traced to a buffet restaurant where raw oysters were identified to be the incriminated food items.

Upon receiving notification of these food poisoning outbreaks, the Centre for Food Safety (CFS) of the Food and Environmental Hygiene Department conducted investigations at the restaurants concerned immediately. Investigation included field investigation to the food premises and conduction of source tracing of the concerned raw oysters. A total of nine samples of raw oysters from the same catchment areas were collected from the concerned food premises for norovirus PCR testing and five samples of oysters were collected for testing of *Vibrio parahaemolyticus* and the results were all negative. That said, source tracing investigation and epidemiological findings of some epi-linked raw oysters' food poisoning outbreaks could be traced to a common catchment area or a processing plant from exporting countries. For the sake of prudence, the CFS issued press releases in January 2023 to temporarily suspend the import into and sale within Hong Kong of all raw oysters harvested in the affected catchment area or processing plant in Ireland and France respectively. CFS has also instructed the local suppliers and restaurants concerned to stop supplying and selling the affected raw oysters immediately.

Review of food poisoning outbreaks in past ten years (2013 – 2022)

Between 2013 and 2022, the CHP recorded a total of 2,176 outbreaks of food poisoning affecting 8,808 persons, with 652 (7.4%) requiring hospitalisation. The median number of persons affected was three, and the largest outbreak reported in 2016 affected 149 persons associated with the consumption of cooked garlic and honey beef, with *Clostridium perfringens* as the suspected causative agent. The annual number of persons affected during the period showed a decreasing trend, while that of outbreaks remained relatively stable, ranging from 133 to 316 (Figure 1). The decrease in the past few years might be related to various social-distancing restrictions, change of dining habits and heightened awareness of hygiene due to the COVID-19 pandemic.

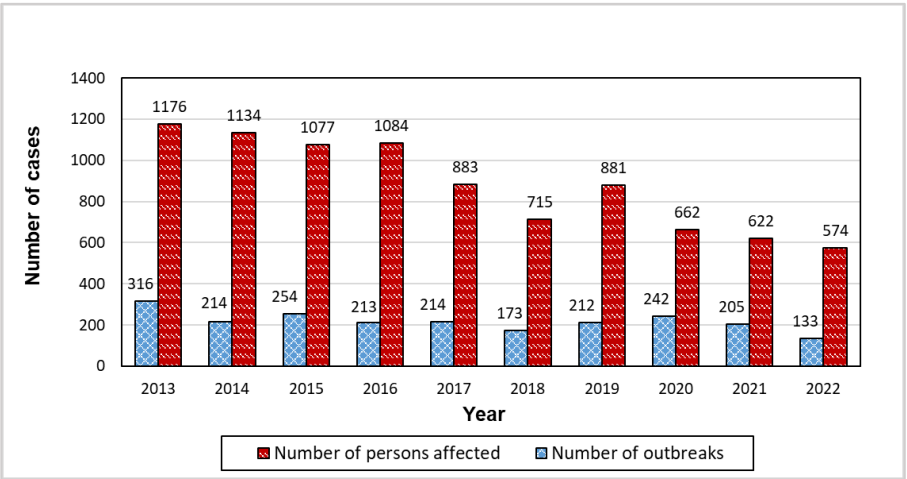

Figure 1 – Number of food poisoning outbreaks and number of persons affected from 2013 to 2022

Review of surveillance data between 2013 and 2022 also showed a seasonal pattern of food poisoning cases in Hong Kong with more outbreaks recorded during May to August (Figure 2). This could be due to the higher temperatures and humidity during the summer months, which can increase the risk of bacterial growth in food (common bacteria causing food poisoning, such as *Salmonella* species, *Vibrio parahaemolyticus* and *Staphylococcus aureus*, grow more readily in summer months)[1]. On the other hand, norovirus, another common causative agent, is more active in the winter[2], resulting in a relatively high number of persons affected during January and February (Table 1).

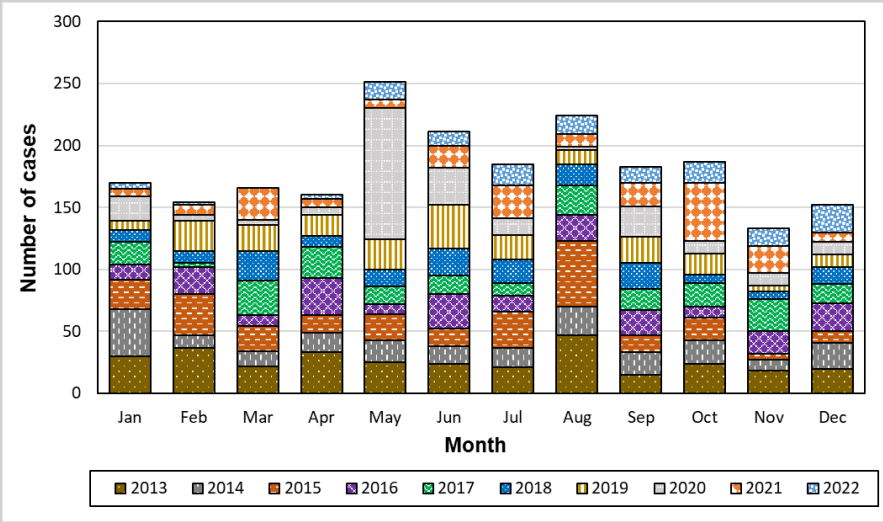

Figure 2 – Number of food poisoning outbreaks, by year and month from 2013 to 2022

Table 1 – Number of persons affected in food poisoning outbreaks, by year and month from 2013 to 2022.

Month / Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2022	12	4	0	5	39	35	118	71	38	98	66	88	**574**
2021	18	29	72	16	26	52	70	24	60	149	71	35	**622**
2020	72	13	10	18	254	89	46	4	74	30	24	28	**662**
2019	26	216	90	62	74	90	86	26	60	102	12	37	**881**
2018	86	56	89	45	44	67	61	44	97	31	57	38	**715**
2017	55	11	99	71	81	33	138	117	66	54	93	65	**883**
2016	196	96	32	99	30	132	51	199	73	30	71	75	**1084**
2015	85	145	76	72	66	39	102	168	173	113	13	25	**1077**
2014	222	30	36	62	57	137	106	74	61	143	71	135	**1134**
2013	99	146	67	99	84	82	68	216	43	70	84	118	**1176**
Total	**871**	**746**	**571**	**549**	**755**	**756**	**846**	**943**	**745**	**820**	**562**	**644**	**8808**

The majority of food poisoning cases could not be confirmed as no food remnant or sample was available for laboratory investigation. Among the 2,176 outbreaks, non-typhoidal *Salmonella* was suspected or confirmed to be the most common causative agent, accounting for 728 outbreaks (33%) which affected a total of 2,881 persons, followed by *Vibrio parahaemolyticus* (29%), norovirus (11%) and *Bacillus cereus* (6%)*. Epidemiological investigation found that 74% of outbreaks occurred at food premises, followed by 20% in domestic setting, and about 2% in institutions (e.g. schools and residential homes). Available information on the contributing factors suggested contaminated raw food and inadequate cooking were the primary contributing factors for the outbreaks.

**Some outbreaks might involve more than one causative agents.*

Health tips for preventing food poisoning

Food poisoning is a common illness that occurs when contaminated food or water is consumed. According to the World Health Organization (WHO), an estimated 600 million people worldwide fall ill each year due to food poisoning, with 420,000 deaths reported annually[3].

Food poisoning can be caused by various agents, including bacteria, viruses, parasites, or toxins in biochemical or chemical in nature[3]. Examples of causative agents include *Salmonella, Staphylococcus aureus*, ciguatera fish poisoning, pesticide, etc. While most cases of food poisoning are mild and resolve on their own, severe cases can lead to hospitalisation, long-term health complications, or even death; seeking prompt medical attention is crucial when food poisoning is suspected[4].

To prevent food poisoning and foodborne illnesses, members of the public are advised to adopt the "Five Keys to Food Safety" advocated by the WHO. These five simple and effective keys for safe food handling are[5]:

1. Choose (Choose safe raw materials);
2. Clean (Keep hands and utensils clean);
3. Separate (Separate raw and cooked food);
4. Cook (Cook thoroughly); and
5. Safe Temperature (Keep food at safe temperature).

References

[1] KOVATS, R. S., EDWARDS, S. J., HAJAT, S., et al. The effect of temperature on food poisoning: a time-series analysis of salmonellosis in ten European countries. Epidemiology & Infection. Cambridge University Press; 2004; 132(3), 443-453. doi:10.1017/S0950268804001992.

[2] Centers for Disease Control and Prevention. Norovirus Worldwide. Available at: https://www.cdc.gov/norovirus/trends-outbreaks/worldwide.html#:~:text=Norovirus%20illnesses%20and%20outbreaks%20are,norovirus%20may%20be%20less%20seasonal. Accessed on 10 March 2023.

[3] World Health Organization. Food Safety. Available at: https://www.who.int/news-room/fact-sheets/detail/food-safety. Accessed on 9 March 2023.

[4] Centre for Health Protection. Food Poisoning. Available at: https://www.chp.gov.hk/en/healthtopics/content/24/43.html. Accessed on 9 March 2023.

[5] Centre for Food Safety. Five Keys to Food Safety. Available at: https://www.cfs.gov.hk/english/consumer_zone/safefood_all/five_keys.html. Accessed on 10 March 2023.

NEWS IN BRIEF

Three sporadic cases of psittacosis

On March 3 and March 17, CHP recorded three sporadic cases of psittacosis residing in different districts. The first case affected a 60-year-old housewife with hypertension, diabetes and hyperlipidemia who lived in Wong Tai Sin. She presented with cough with blood stained sputum, headache and myalgia on February 20, followed by fever and shortness of breath on February 23 and 24 respectively. She was admitted to a public hospital the following day where her chest X-ray was suggestive of pneumonia. She was later admitted to ICU and was intubated due to progressive respiratory distress. Her condition gradually improved after antibiotics treatment. The tracheal aspirate collected on February 27 tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). There was no travel history and the patient kept no pets. She volunteered that wild pigeon excreta had been found in balcony outside her kitchen. The patient became stable and was discharged on March 14.

The second case affected a 69-year-old housewife who had history of asthma, atrial fibrillation and goitre and was living in Yuen Long with her spouse. The lady sought treatment from traditional Chinese medicine practitioner after she developed fever, cough with sputum, shortness of breath and malaise on March 6. Due to persistence of symptoms, she went to a public hospital where she was diagnosed with pneumonia. Sputum collected on March 9 was tested positive for *Chlamydia psittaci* DNA by PCR. She recalled seeing pigeons outside living room windows at home, but had no direct contact with their excreta or carcasses of animals. Her household contact remained asymptomatic and the patient was discharged on March 13.

The third case affected a 70-year-old retired but ambulatory female who lived alone in Wan Chai. She presented with headache since February 26 which later turned into a febrile illness. The lady initially received herbal treatment from a Chinese medical practitioner, but she was later admitted to a public hospital on March 8 due to dizziness and weakness, where she was diagnosed with pneumonia. Sputum collected on March 9 was tested positive for *Chlamydia psittaci* DNA by PCR. The patient had no travel history. She reported seeing many birds in a park on way she paid daily visit to Southorn Playground in Wan Chai, but she had no direct contact with the excreta or carcasses of animals. Her condition improved and she was discharged on March 15.

A local case of human myiasis

On March 6, 2023, CHP recorded a case of human myiasis affecting a 64-year-old man with diabetes residing in Sham Shui Po district. He presented with fever and wound pain over his chronic right leg ulcer and was admitted to a public hospital on March

1, 2023. Upon admission maggots were found in the wound which were subsequently identified as larvae of *Chrysomya bezziana*. He was treated with antibiotics and surgical debridement of the wound. The patient lived with his sister who was asymptomatic and did not travel during the incubation period. Health advice on personal and environmental hygiene was given to the patient.

A sporadic case of Creutzfeldt-Jakob disease

On March 8, 2023, CHP recorded one case of sporadic Creutzfeldt-Jakob disease (CJD), affecting a 64-year-old man with underlying illnesses. He presented with decreased social response, slurred speech and left upper limb numbness since February 23. Difficulty walking and drooling of saliva were also noted. He was admitted to a public hospital on February 25. He was found to have rapidly progressive dementia, rigidity and akinetic mutism. Findings of EEG were compatible with CJD. He is currently hospitalised and in serious condition. He had no known family history of CJD. No risk factors for either iatrogenic or variant CJD were identified. He was classified as a probable case of sporadic CJD.

Two local sporadic cases of listeriosis

On March 10, 2023, CHP recorded a sporadic case of listeriosis affecting a 64-year-old immunocompromised woman who had end stage breast cancer and was receiving chemotherapy. She lived in Sham Shui Po. She had presented with fever and myalgia since March 1. She was noted to have decreased general condition on March 6 and was admitted to a public hospital on the same day. Her blood culture collected on March 6 yielded *Listeria monocytogenes*. She was treated with antibiotics but her condition deteriorated and succumbed on March 8. The cause of death was breast cancer. She had no travel history during the incubation period. Her family did not recall her consumption of any high risk food. No secondary cases were identified.

On March 16, 2023, CHP recorded another sporadic case of listeriosis affecting a 92-year-old female with no obvious immunocompromised condition. She lived in North District. She was admitted to a public hospital on March 4 for low back pain. She developed fever and vomiting in ward on March 14. Her blood culture collected on the same day yielded *Listeria monocytogenes*. She was treated with antibiotics and her condition has been stable. During incubation period, she had no travel history nor history of consumption of any high risk food. No secondary cases were identified.

Two sporadic cases of scrub typhus

On March 13, 2023, CHP recorded a sporadic case of scrub typhus affecting a 32-year-old woman with good past health. She was a housewife and presented with fever since Feb 1. She consulted a general practitioner twice for persistent fever and skin rashes and was referred to a private hospital on Feb 5 with admission on the same day. She was seen by both specialists in dermatology and infectious disease and the clinical impression was viral or atypical bacterial infection. The fever and skin rashes subsided since Feb 9 after antibiotics treatment with rocephin and doxycycline. She remained stable and was discharged on Feb 11. Blood collected on Feb 6 and Feb 20 showed a 4-fold rise in *Orientia Tsutsugamushi* antibody. She lived in rural area in Tai Po with her family and recalled history of being bitten by mites when she visited the parks and markets in her neighbourhood before onset. Her home contacts remained asymptomatic. She had no travel history during the incubation period and did not keep any pets at home. Pest Control Advisory Section of Food and Environmental Hygiene Department (FEHD) was informed on March 13 and has initiated vector surveys; FEHD would conduct vector control work as appropriate.

On March 15, 2023, CHP recorded another sporadic case of scrub typhus affecting a 34-year-old man with good past health. He was a bank staff and presented with fever, maculopapular rash over four limbs, headache, myalgia, lymphadenopathy and an eschar over the right posterior upper arm since Feb 14. He attended a public hospital and was admitted same day on Feb 20. He was treated with doxycycline. He remained stable and was discharged on Feb 24. Blood collected on Feb 20 and Mar 3 showed a 4-fold rise in *Orientia tsutsugamushi* antibody. He engaged in mountain running weekly. He did not use insect repellents and mostly only wore short pants when mountain running. He did not recall insect bites. He lived alone in Sham Shui Po. He had no travel history during the incubation period and did not keep any pets at home. Pest Control Advisory Section of FEHD was informed on March 16 and has initiated vector surveys; FEHD would conduct vector control work as appropriate.

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Communicable Diseases WATCH

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FEATURE IN FOCUS

World Immunisation Week 2023 – the big catch-up

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

World Immunisation Week, celebrated globally each year in the last week of April (24 – 30 April), brings together partners across the world to promote the importance of immunisation in protecting people of all ages against vaccine-preventable diseases.[1] This year's theme "The Big Catch-Up" calls for a renewed global effort to accelerate rapid progress in getting routine vaccination back on track to ensure more people, particularly children, are protected from diseases that can cause serious illness and disability.

The disruption of essential health services triggered by the COVID-19 pandemic has set back progress on routine immunisation activities worldwide. According to estimates from the World Health Organization (WHO), 25 million children missed at least one essential vaccine and 18 million children received no vaccines at all in 2021 alone.[2] Global coverage with the first dose of measles-containing vaccine (MCV1) dropped to 81% in 2021 while coverage with three doses of polio vaccine (Pol3) further reduced to 80%, both the lowest level since 2008.[3] Inadequate coverage levels as a consequence of strained health systems and service disruptions have resulted in outbreaks of measles and polio in the African region in 2022, signaling an urgent need to intensify efforts for catch-up vaccination.

The Western Pacific region also witnessed a backslide in vaccination rates during the COVID-19 pandemic. Both MCV1 and Pol3 coverage dropped from 94% to 91% and 90% respectively during 2019–2021.[4,5] There were likewise substantial declines in coverage for other childhood vaccines such as bacillus Calmette-Guérin vaccine (BCG)[-7%, 96%→89%], hepatitis B [-4%, 94%→90%] and diphtheria-tetanus-pertussis containing vaccine (DTP3)[-3%, 94%→91%] over this period.[4,5] In the Philippines, measles cases surged to 225 cases from 1 January through 18 March 2023 when compared with 48 cases reported during the same period in 2022, following a drop in vaccination uptake during the pandemic.[6,7] Vietnam is also accelerating efforts to vaccinate children against polio, especially those born in 2021 and 2022, after being moved from the list of low risk countries to countries at high risk of wild polio import or having cases of polio caused by genetically modified viruses by the WHO Regional Commission for the Certification of Poliomyelitis Eradication in the Western Pacific.[8]

In Hong Kong, the notification rates of certain vaccine-preventable diseases such as measles, rubella, influenza and pertussis were much lower than in pre-pandemic years. Despite the challenges posed by the pandemic, Hong Kong maintained its status of having eradicated polio and eliminated measles and rubella. Whilst responding to COVID-19, immunisation services for infants and children in the Department of Health (DH)'s Maternal and Child Health Centres (MCHCs) have been maintained as usual. The School Immunisation Teams (SIT) continued vaccination activities targeting primary school students and arranged vaccination at their sub-district offices during times of school closure. Schools and parents have been reminded by letters through the Education Bureau of the importance of keeping vaccinations up-to-date according to the Hong Kong Childhood Immunisation Programme (HKCIP). Staff from the MCHC and SIT contacted parents of children who have not yet received or completed the age-appropriate vaccinations under the HKCIP by phone, letter and SMS, and reminded them to arrange vaccination as soon as possible. Catch-up immunisation was also provided by the Student Health Service Centres (SHSCs) for enrolled secondary school students who missed any of the recommended vaccine doses under the HKCIP. With these tailored interventions and efforts, the coverage rates for most childhood vaccines administered under the HKCIP have been gradually restored to pre-pandemic high levels by end of 2022.

In the past two years, safe and effective COVID-19 vaccines have been developed in record time, bringing the world closer to ending the pandemic. COVID-19 vaccination has underscored the importance of protecting people at high risk of severe disease and death, in particular older people as well as those with co-morbidities and immunocompromising health conditions. In Hong Kong, nearly 6.8 million people had received at least two doses of COVID-19 vaccine, roughly 93% of the eligible population.[9] However, vaccination uptake remained low among the elderly particularly those aged 80 and above. By the end of March 2023, around 111 000 (28%) people aged 80 and above remained unvaccinated, putting them at greater risk of severe disease and fatality. Local data showed that over 95% fatalities were among those over the age of 60, majority of whom aged 80 or older, indicating the need for vaccinating this vulnerable population while SARS-CoV-2 remains circulating in the community.

Sustaining high vaccination coverage levels is now more important than ever to prevent potential outbreaks of infections such as measles and polio following importation. Achieving this as a global priority requires reinforcing routine immunisation alongside catch-up activities to ensure vaccination at the earliest opportunity of those eligible individuals who missed immunisation due to COVID-19. The continued efforts of building up coverage and rectifying immunity gaps will be vital in our road to pandemic recovery and regaining the lost ground in our fight against vaccine-preventable diseases.

Get up-to-date, each vaccine counts. For more information about the World Immunisation Week 2023, please visit the CHP's designated webpage: https://www.chp.gov.hk/en/features/106780.html.

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Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023-2027) launched

Reported by Dr Billy CH HO, Senior Medical and Health Officer and Dr Edmond SK MA, Consultant (Antimicrobial Resistance), Infection Control Branch, CHP.

The Government recognises the threat posed by antimicrobial resistance (AMR) and has all along attached great importance in tackling this public health problem. The High Level Steering Committee on Antimicrobial Resistance (HLSC) was set up in May 2016 to formulate AMR strategies and implement actions. Chaired by the then Secretary for Health, the HLSC comprises representatives from relevant Government departments, public and private hospitals, healthcare organisations, academia and relevant professional bodies. Under a "One Health" framework as advocated by the World Health Organization (WHO), HLSC formulated the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2017-2022) (Action Plan) in July 2017 for prevention and control of AMR in Hong Kong.

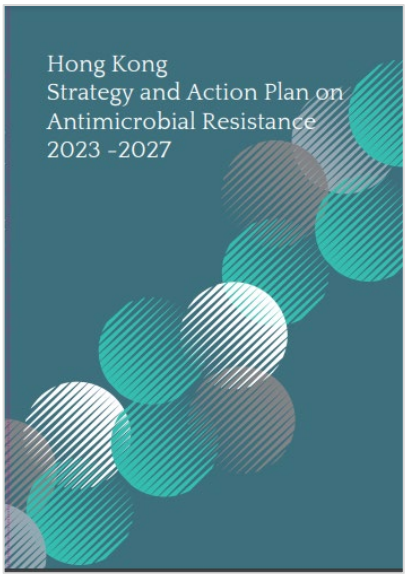

Figure 1 – Framework of the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023-2027)

Since the launch of the Action Plan, a series of actions against AMR have been implemented in accordance with the strategies laid out in the plan by different action parties and good progresses have been made. These include the establishment of One Health AMR Information System, stepping up of regulatory actions against illegal sale of antimicrobials, the launch of pilot programme on universal decolonisation of multi-drug resistance organisms in residential care homes for the elderly, implementing Antibiotics Stewardship Programme in public hospitals, issuance of guidance notes in management of common infectious diseases and promulgation of appropriate antibiotic use in primary care, support of AMR-related research through the Health and Medical Research Fund, organising publicity campaigns to raise public awareness of the threat of AMR, and strengthening the collaboration and partnership among different stakeholders. The surveillance data has reflected a continuous drop in the supply of antimicrobials to community pharmacies from 18.5 per cent in 2016 to 5.7 per cent in 2021. In addition, the proportion of the antimicrobials under the WHO's "Access" classification (i.e. those with less tendency of resistance) reached 61.9 per cent and 65.8 per cent of the total antimicrobial supply in Hong Kong respectively in 2020 and 2021, exceeding the 60 per cent target set by the WHO.

As stipulated in the Chief Executive's Policy Address 2021 and 2022, the Government have reviewed the implementation experience and draw up the second Action Plan to map out response strategies for the next phase, covering the years from 2023 to 2027. The second Action Plan continues with the six key areas of the first Action Plan, which include –

1. Strengthen knowledge through surveillance and research;
2. Optimise use of antimicrobials in humans and animals;
3. Reduce incidence of infection through effective sanitation, hygiene and preventive measures;
4. Improve awareness and understanding of AMR through effective communication, education and training;
5. Promote research on AMR; and
6. Strengthen partnerships and foster engagement of relevant stakeholders.

Figure 2 – Framework of the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023-2027)

Apart from the existing objectives and interventions, the Action Plan also features a number of priority interventions and time-bound indicators to enable the Government and stakeholders to pool resources for addressing the threat of AMR more effectively.

List of priority interventions in early years of Action Plan:

- Amending relevant Ordinance(s) to mandate recording of antimicrobial prescription and dispensing data systematically through electronic means, with a view to deter illegal sales of antimicrobials without prescription
- Further enhancement of Antibiotics Stewardship Programme in public hospitals
- Roll out territory-wide decolonisation programme in Residential Care Homes for the Elderly (RCHEs) to tackle the vicious cycle of transmission of multi-drug resistant organisms between hospitals and RCHEs
- Surveillance and control of AMR in ready-to-eat food
- Regular survey with general public on AMR to inform strategies on health promotion

The Action Plan provides guidance not only for public health and veterinary partners, but also co-ordinates efforts from all sectors of the community. The Department of Health will continue to keep abreast of and assess international and local developments and closely work with relevant bureaux/departments and organisations, including the Health Bureau, the Food and Environmental Hygiene Department, the Agriculture, Fisheries and Conservation Department, the Hospital Authority, private hospitals, professional bodies, academia and other stakeholders in implementing the interventions in phases to combat the challenge of AMR. We hope that this Action Plan can drive steadily towards achieving the ultimate goal of reversing the trend of emergence of AMR in Hong Kong. The full text of the Action Plan has been uploaded to the CHP website at: www.chp.gov.hk/en/features/104142.html.

NEWS IN BRIEF

A sporadic case of listeriosis

On March 21, 2023, Centre for Health Protection (CHP) of Department of Health recorded a sporadic case of listeriosis affecting a 91-year-old woman with underlying illness who lived in Wong Tai Sin. She developed fever and fatigue on March 16. She attended Accident and Emergency Department (AED) of a public hospital on March 17 and was admitted on the same day. Blood collected on March 17 was cultured positive for *Listeria monocytogenes*. She did not travel outside Hong Kong during the incubation period. She did not recall consumption of high risk food. She lived with her daughter who remained asymptomatic.

A sporadic case of scrub typhus

On March 22, 2023, CHP recorded a sporadic case of scrub typhus affecting a 52-year-old woman with underlying illness who lived in Wong Tai Sin. She developed fever on February 20. She attended AED of a public hospital on the same day and was admitted. She developed generalized erythematous rash on March 2. Blood collected on March 3 and March 13 showed more than four-fold rise in *Orientia tsutsugamushi* antibody titre. Her condition was critical due to a non scrub typhus related condition. She regularly hiked at Tsz Wan Shan.

Two local sporadic cases of psittacosis

On March 24, 2023, CHP recorded two local sporadic cases of psittacosis.

The first case affected a 58-year-old male with history of ulcerative colitis, epilepsy, congestive heart failure, atrial fibrillation and hypertension. He lived with three family members in Tuen Mun. He complained of cough, sore throat, headache and myalgia since March 10. He attended AED of a public hospital on March 13 and was admitted for management. He was diagnosed to have pneumonia and treated with antibiotics. Tracheal aspirate taken on March 16 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). He had no travel history during the incubation period. He did not keep any pets at home. There was no history of contact with birds' droppings or carcasses nor high risk exposure at work. His household contacts were asymptomatic. His condition was stable.

The other sporadic case of psittacosis affected a 58-year-old male driver with hypertension and Parkinson's disease who lived in Mongkok. He had fever, cough and shortness of breath since March 7 and presented to a public hospital on March 14. He required intubation and was admitted into intensive care unit. His chest X-ray showed bilateral haziness. The clinical diagnosis was pneumonia and he was treated with antibiotics. *Chlamydia psittaci* DNA was detected by PCR in his tracheal aspirate collected on March 15. He was transferred to convalescent hospital for rehabilitation on April 4 and his condition is now stable. He had no recent travel history. He did not keep any pets at home and did not recall any contact with birds or bird droppings during the incubation period. His household contacts were asymptomatic.

A sporadic case of brucellosis

On March 28, 2023, CHP recorded a sporadic case of brucellosis affecting a 53-year-old male construction site worker who lived alone in Sham Shui Po. He had developed persistent fever for 5 days since March 15, followed by cough, headache, abdominal pain and myalgia on March 21. He attended AED of a public hospital on March 22 and was admitted on the same day. Blood collected on March 22 was cultured positive for *Brucella melitensis*. He was treated with antibiotics. His condition remained stable and he was discharged on April 4. He travelled alone to mainland China during the incubation period but denied consumption of high risk food or exposure to animals.

Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

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FEATURE IN FOCUS

Update on global and local situation of mpox

Reported by Dr Karen KW CHEUNG, Medical and Health Officer and Dr Wenhua LIN, Senior Medical and Health Officer, Communicable Disease Surveillance and Intelligence Section, Surveillance Division, Communicable Disease Branch, CHP.

Mpox (Monkeypox) is a zoonosis caused by monkeypox virus. Firstly reported in humans in 1970, most reported mpox outbreaks occurred in Central and West Africa. Mpox can spread from person to person or occasionally from animals to people. While the infection is usually a self-limited disease with symptoms such as fever, intense headache, swollen lymph nodes and rash, severe conditions could occur, more commonly among children. The case fatality rate (CFR) in previous outbreaks in Africa varied between 1% and 10%.

Global situation

Since May 2022, cases of mpox have been reported to the World Health Organisation (WHO) from different countries in widely disparate geographical areas resembling a multi-country outbreak. With the exception of countries in the African Region, the outbreak primarily affected men who identify themselves as gay, bisexual and other men who have sex with men (MSM), and those who have reported recent sex with one or multiple partners. The number of cases increased rapidly from 3,040 cases from 47 countries as of early May 2022 (since January 1, 2022) to 14,533 probable and laboratory-confirmed cases from 72 countries across all six WHO Regions reported to WHO as of July 20, 2022[1]. The WHO, on July 23, 2022, declared this outbreak a public health emergency of international concern (PHEIC). Between January 1, 2022 and May 16, 2023, a total of 87,479 laboratory-confirmed cases of mpox and 140 deaths have been reported to WHO from 111 countries/territories/areas in all six WHO Regions (CFR: 0.16%)[2].

Subsequent to global mobilisation and rapid response of most affected areas, a significant and steady decline in the number of reported cases was recorded. In recent months, weekly number of cases has declined substantially from the global peak of 7,576 cases observed in the week of August 8, 2022 to an average of 119 cases between February 20 and May 14, 2023 (Figure 1). WHO announced that the multi-country outbreak of mpox no longer constituted a PHEIC on May 11, 2023. While the WHO still assessed the global risk of mpox transmission as moderate, the risk was assessed to be moderate in the African Region, Eastern Mediterranean Region, European Region and Region of the Americas, and low in the South-East Asia Region and Western Pacific Region.

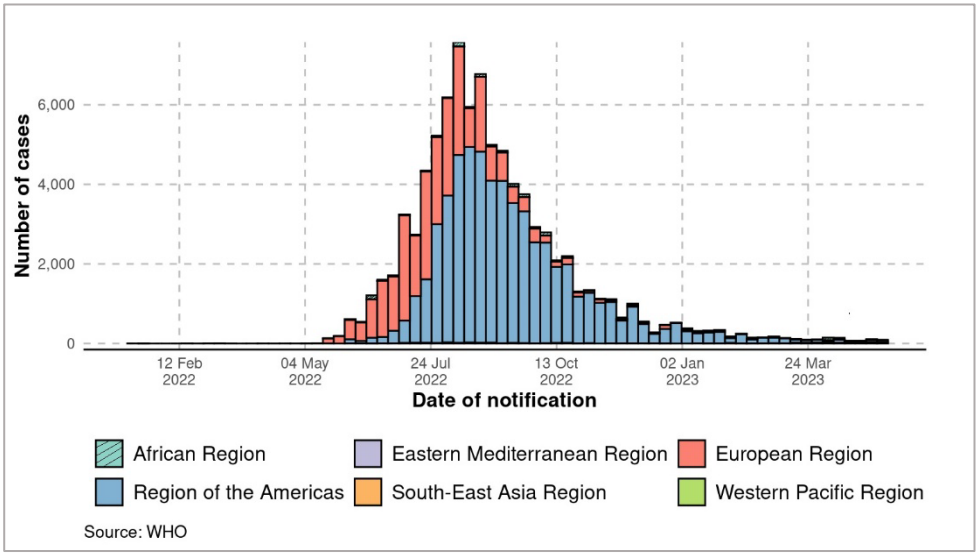

Figure 1 – Epidemic curve (January 1, 2022 to May 14, 2023) shown for cases reported up to May 14, 2023[2].

According to the latest data of WHO, the multi-country mpox outbreak continued to affect young males (96.2%) with a median age of 34 years and 84.1% of cases had self-identified as gay, bisexual and other MSM. Among cases with known HIV status, 52.3% were HIV-positive. Of all settings of likely exposure, the most common was in the party setting with sexual contacts. The most common symptom was any rash, reported in 81% of cases, followed by fever (59.2%), and systemic or genital rash (47.5% and 44.0% respectively)[3].

While the mpox cases declined globally, the Western Pacific Region reported more cases that accounted for 36.4% of all the new cases reported to WHO in the past 4 weeks worldwide. As of May 16, 2023, more than 520 confirmed cases have been reported from 12 countries and areas in the Western Pacific Region without any death reported (Table 1). The number of cases has been increasing in Japan, Taiwan and Republic of Korea with ongoing local transmission recorded[4,5,6].

*Table 1 – Mpox cases reported by countries and areas in the Western Pacific Region**

Country		Number of Cases (From Jan 1, 2022 to May 16, 2023)	Number of Cases in the past 12 weeks (From Feb 20 to May14, 2023)
Japan		135	115
China	Taiwan	91	75
	Hong Kong	7	5
	Mainland	1	0
Republic of Korea		75	71
Singapore		25	4
Australia		145	1
Philippines		5	1
Guam		1	0
New Caledonia		1	0
New Zealand		41	0
Viet Nam		2	0

** Source of data mainly from the WHO[2], while data related to Taiwan was taken from published information from the Taiwan Centers for Disease Control, with the latest one dated May 16, 2023. https://www.cdc.gov.tw/Bulletin/Detail/yrXY2_1sj3_UGevVmjQcVA?typeid=9*

Local situation

The Government has listed monkeypox as a scheduled infectious disease on June 10, 2022. By May 18, 2023, the Centre for Health Protection (CHP) of the Department of Health recorded a total of seven cases of mpox, with the first case confirmed in September 2022 and latest case confirmed on May 10, 2023. All affected patients were Chinese males, aged from 25 to 59 years with the median age of 34 years. While one case reported to be heterosexual, the remaining six (85.7%) were self-identified as MSM. Two out of the seven (28.6%) had history of mpox vaccination and were known HIV positive, while the other 5 cases were unvaccinated. All cases presented with rash, with genital rash and generalized rash accounting for 57.1% and 42.9% respectively. Other symptoms included lymphadenopathy (42.9%), fever (28.6%), myalgia (28.6%) and oral ulcer (28.6%). All have recovered. All the seven cases had high risk behaviors during the incubation period. Among them, there were three imported cases (from the United States, Japan and Taiwan/ Republic of Korea respectively), one possible local case with travel history of Shenzhen during the incubation period, and three locally acquired cases. There were two epidemiologically-linked clusters with each involving two patients.

Subsequent to the confirmation of the first case, the Government activated the alert response level under relevant preparedness and response plan and implemented a number of preventive measures including enhanced surveillance, strengthening health surveillance measures at boundary control points, quarantine preparedness and hospital preparedness. The mpox vaccination programme for high-risk target groups commenced in October 2022, under which target groups could receive vaccination on a voluntary basis. Examples of target groups include people at high risk sexual practices (e.g. multiple sexual partners, sex workers, history of sexually transmitted infection within the past 12 months), healthcare workers responsible for caring of mpox patients and laboratory personnel working with zoonotic pox viruses. By May 14, 2023, over 9,000 doses of mpox vaccine have been administered.

Despite the lifting of PHEIC status, mpox is still an infectious disease with public health significance. In Hong Kong, some of the recent cases had conducted high risk sexual practices in the local community, which reflected risk of spread of mpox disease locally. Members of the public are urged to heighten vigilance against mpox and avoid close physical contact with persons suspected of contracting the disease. Sexually active people are advised to have safer sex and maintain a mutual monogamous relationship with an uninfected partner and avoid casual sex. While proper use of condoms could reduce the risk of sexually transmitted infections in general, condoms alone may not prevent all exposures to mpox since the rash can occur on other parts of the body. CHP has also set up an mpox telephone hotline (2125 2373) for those who suspect or are concerned that they have had high-risk contact with confirmed patients to make enquiries and receive relevant health advice. High-risk individuals are also urged to receive mpox vaccination early. For more information on mpox and related vaccination programme, please visit the CHP's thematic webpage at www.chp.gov.hk/en/features/105683.html.

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Latest situation of human infection of rat hepatitis E virus in Hong Kong

Reported by Ms. Poon Ho-yee Chloe, Scientific Officer; and Dr. Taron LOH, Senior Medical and Health Officer, Enteric and Vector-Borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Hepatitis E is a liver disease caused by Hepatitis E virus (HEV). The usual HEV causing human infection belongs to *Orthohepevirus A* (HEV-A). Apart from HEV-A, the *Orthohepevirus* genus has three other species, namely *Orthohepevirus B* that circulates in birds, *Orthohepevirus C* (HEV-C) in rats and ferrets, and *Orthohepevirus D* in bats[1]. HEV-C, also known as rat HEV, shares only 50% to 60% nucleotide identity with HEV-A such that it was previously not considered to have the ability to infect human[2,3]. In December 2018, the Department of Microbiology of the University of Hong Kong (HKU) published the first report of human case of rat HEV infection[4].

HEV-A is mainly transmitted through the faecal-oral route, for example, following faecal contamination of drinking water. Foodborne transmission of HEV-A is also possible given the virus has been detected in pig livers[5,6]. As for HEV-C, there is no scientific information to determine the exact mode of transmission to human at the moment[7]. Possible routes of transmission include ingestion of food/ water and exposure to environment/ objects contaminated by rodents or their excreta, and direct contact with rodents or their excreta.

Most hepatitis E infections are asymptomatic or self-limiting. However, HEV infection in high-risk individuals such as elderly with major underlying illnesses (especially transplant patients), pregnant women, people with chronic liver diseases and glucose-6-phosphate dehydrogenase ("G6PD") deficiency may develop severe illness[8,9]. As for rat hepatitis E infection, currently there is insufficient literature on its clinical features, but some suggested that it is clinically indistinguishable with general HEV infection[10].

Local situation

Viral hepatitis (including hepatitis E) is a statutorily notifiable disease in Hong Kong. All medical practitioners are required to report suspected or confirmed cases of hepatitis E to the Centre for Health Protection (CHP) of the Department of Health (DH) for investigation and follow-up actions. For the past 10 years, the annual number of hepatitis E cases ranged from 43 to 96 cases (median 82 cases) (Figure 1). There has been no apparent upsurge of hepatitis E infection observed since the first report of human rat hepatitis E infection in 2018.

As of May 20, 2023, a total of 19 cases of human infection of rat HEV have been recorded by the CHP since 2018 (Figure 1). The 19 cases involved 15 male and four female aged between 17 and 89 years (median 67 years). All cases had underlying illnesses, with 14 of them (73.7%) had immunocompromised conditions. Nearly half of the patients (47.4%) were asymptomatic, while the remaining patients presented with typical viral hepatitis symptoms such as anorexia (26.3%), malaise (26.3%), fever (15.8%) and jaundice (10.5%). Among them, three patients passed away due to unrelated causes.

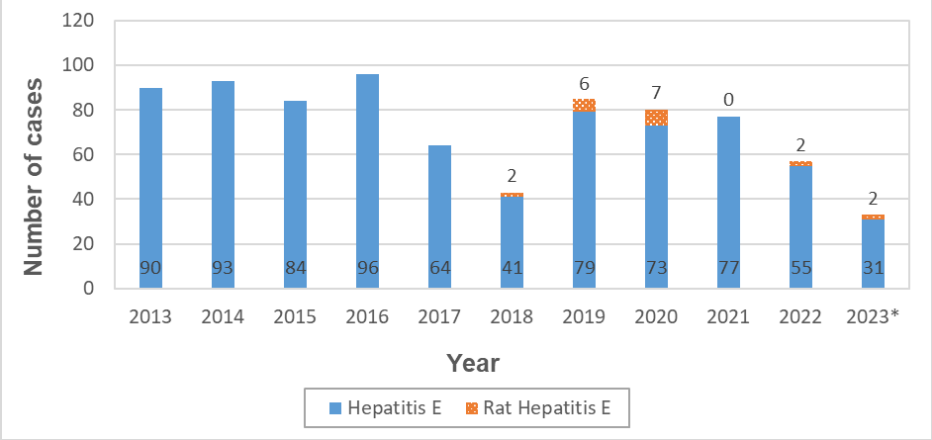

Figure 1 – Number of hepatitis E and rat hepatitis E cases since 2013 (as of May 20, 2023)

According to the CHP's epidemiological investigations, the 19 patients resided in eight different districts in Hong Kong, including Wong Tai Sin (five cases), Kowloon City (four cases), Kwai Tsing (two cases), Southern (two cases), Tuen Mun (two cases), Tai Po (two cases), Kwun Tong (one case) and Yuen Long (one case). Majority (84.2%) had no travel history during the incubation period; one patient had travelled to Taiwan and Korea and the other one to Shenzhen regularly, and there was one patient with unknown travel history due to loss to follow-up. None of the patients reported to have consumed raw pork or pork offal, but three patients reported contacting raw pork at wet market or during cooking process. All patients did not recall having direct contact with rodents or their excreta, but three reported having seen rodents or suspected rodent excreta in the vicinity of their residence, workplace or restaurant visited. Investigations by the CHP revealed that they were all sporadic cases with no epidemiological linkage, and no symptomatic home contacts were identified.

Prevention and control measures

The CHP will conduct epidemiological investigation for all notified viral hepatitis E cases and implement relevant control measures if possible sources of infection are acertained. For all cases of human infection with rat HEV, the CHP would also inform the Pest Control Advisory Section of the Food and Environmental Hygiene Department (FEHD) to carry out rodent survey and control measures as deemed necessary.

With the discovery of the first human case of rat HEV infection, HKU has also reported rat HEV infection in street rats which were caught as early as in 2012[4]. Therefore, rodent control is important in the prevention and control of human rat hepatitis E infection. The Government has all along attached great importance to anti-rodent work, including continued territory-wide anti-rodent campaign and strategic anti-rodent operations in target areas spearheaded by the FEHD. To target rat hepatitis E infection in rats, FEHD has on-going collaboration with the HKU's team to screen for rat HEV in rat samples captured in Hong Kong. In 2022, out of the 175 rats screened, 15 rats (8.6%) were tested positive for rat HEV RNA. Follow-up rodent control operations had been conducted in the surrounding areas of location where rat HEV positive rodents were captured.

To prevent rat HEV infection, members of the public are urged to maintain good personal, food and environmental hygiene, and to actively participate in rodent prevention and control work. The CHP will continue its concerted efforts with other government bureaux/departments, relevant stakeholders and the community in disease notification and surveillance, source investigation, rodent monitoring and infestation control.

Tips for prevention of rat HEV infection

To prevent rat HEV infection, members of the public should maintain good personal, food and environmental hygiene. They should wash hands thoroughly before eating, store food properly or in the refrigerator, not leave food at room temperature for a long time, and use 1:99 diluted household bleach for general household cleaning and disinfection. High-risk individuals, such as elderly persons with a major underlying illness (especially those who have undergone organ transplantation), pregnant women, patients with chronic liver disease and patients with G6PD Deficiency, may develop a serious illness if infected with rat HEV, so they should exercise extra caution.

The Five Keys to Food Safety should be adopted when handling food, i.e. Choose (choose safe raw materials), Clean (keep hands and utensils clean), Separate (separate raw and cooked food), Cook (cook thoroughly) and Safe Temperature (keep food at a safe temperature), to prevent food-borne diseases.

Rodents (such as rats) can transmit multiple diseases to humans directly and indirectly. Members of the public should stay vigilant and are advised to adopt the following measures:

- Eliminate sources of food and nesting places for rodents in the living environment;
- Store food in covered containers and handle pet food properly to prevent it from becoming food for rodents;
- Store all refuse and food remnants in dustbins with well-fitted covers. Dustbins must be emptied at least once a day;
- Keep premises, especially refuse rooms and stairways, clean. Avoid accumulation of articles; and
- Inspect all flower beds and pavements for rodent infestation regularly.

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NEWS IN BRIEF

Three probable cases of sporadic Creutzfeldt-Jakob disease

Centre for Health Protection (CHP) of the Department of Health recorded three possible cases of sporadic Creutzfeldt-Jakob disease (CJD) on April 18, May 12 and 19, 2023 respectively.

The first case affected a 75-year-old man with hypertension, hyperlipidamia and benign prostate hyperplasia living in Eastern District. He first presented with poor memory since August 2022, which worsened significantly since February 2023. He was admitted to a public hospital on March 16, 2023 and was found to have rapid cognitive decline, gait disturbance and akinetic mutism. Findings of MRI were compatible with CJD. He is currently hospitalised and in stable condition. He had no known family history of CJD, and no risk factors for either iatrogenic or variant CJD had been identified so far. He was classified as a possible case of sporadic CJD.

The second case affected a 59-year-old man with unremarkable past health living in Kwun Tong. He initially presented with blurring of vision in early October 2022. He subsequently developed unsteady gait and slurring of speech. He was brought to Accident and Emergency Department (AED) of a public hospital for agitation on November 18, 2022 and was admitted for management. After admission, he was found to have rapid progressing dementia, myoclonus, visual disturbance, pyramidal dysfunction and akinetic mutism. The findings of cerebrospinal fluid testing was compatible with CJD. He deteriorated and eventually succumbed on January 16, 2023. No risk factors for either iatrogenic or variant CJD were identified. He was classified as a possible case of sporadic CJD.

The third case affected a 58-year-old woman with history of paroxysmal atrial fibrillation, hyperlipidaemia, obstructive sleep apnoea, insomnia and depression. She presented with memory impairment and disorientation in June 2021. She attended a private hospital with investigation done. MRI findings were compatible with CJD. In December 2021, she attended a public hospital with lumbar puncture done. Cerebrospinal fluid testing was compatible with CJD. She later developed gait disturbance, akinetic mutism and myoclonus. She ran a downhill course and succumbed on February 2, 2023. She had no known family history of CJD. No risk factors for iatrogenic or variant CJD had been identified. She was classified as a possible case of sporadic CJD.

Two sporadic cases of psittacosis

CHP recorded two sporadic cases of psittacosis on April 28 and May 5, 2023 respectively.

The first case affected a 57-year-old male kitchen worker who was a hepatitis B carrier and had history of hypertension and diabetes. He lived with his wife in Kwun Tong. He presented with fever, cough with sputum, poor appetite and diarrhoea on April 18 and shortness of breath and transient loss of consciousness on April 19. He attended AED of a public hospital on the same day and was admitted for management of pneumonia. He subsequently developed septic shock requiring intubation and intensive care. He recovered after treatment with antibiotics and was discharged on April 29. The tracheal aspirate collected on April 22 tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). He had no travel history during the incubation period. He did not report any high risk exposure such as contact with birds. His household contact remained asymptomatic.

The second case affected a 66-year-old retired man with history of psoriasis and polycythaemia. He lived alone in Kwun Tong. He presented with fever, cough and shortness of breath on April 25. He was found unconscious at home in the evening on the same day. He was sent to AED of a public hospital and was admitted for management of pneumonia. His condition subsequently deteriorated and required intubation and intensive care. His condition improved after treatment with antibiotics. The tracheal aspirate collected on April 26 tested positive for *Chlamydia psittaci* DNA by PCR. He travelled to Guangdong with family from March 30 to April 10. His family members remained asymptomatic. During the incubation period, he did not report high risk exposures such as contact with birds. He is currently in stable condition.

Two sporadic cases of listeriosis

CHP recorded two sporadic cases of listeriosis on May 5 and May 8, 2023 respectively.

The first case affected an 89-year-old woman with history of hypertension, hyperlipidaemia, chronic kidney disease, anaemia of chronic illness and rectal prolapse. She lived with her son in Kwun Tong. She presented with cough with sputum, decreased appetite and responsiveness since mid-April 2023. She developed fever on April 28. She was brought to AED of a public hospital on April 29 and was admitted for management. Her condition deteriorated rapidly despite antibiotics and fluid resuscitation. She eventually succumbed on May 3. Her blood collected on April 30 was cultured positive for *Listeria monocytogenes*. The cause of death was Listeria septicaemia. She had no travel history during the incubation period. She had no exposure to animals or their excreta. Her family members did not recall her having high-risk food consumption. Her household contact remained asymptomatic.

The second case affected a 78-year-old man with history of diabetes with neuropathy and retinopathy, hypertension, hyperlipidaemia, obesity, gout, benign prostate hypertrophy, and history of pituitary tumour on hormonal replacement and steroid. He lived with his wife and daughter in Kwun Tong. He had watery diarrhoea since April 6 and was admitted to hospital during April 13 – 27, 2023. He developed fever, cough with sputum on May 5. He attended AED of a public hospital on the same day and was admitted for management. His condition improved after treatment with antibiotics. His blood collected on May 6 was cultured positive for *Listeria monocytogenes*. He had no travel history during the incubation period. He did not recall high-risk food consumption. His household contacts remained asymptomatic.

A sporadic case of necrotising fasciitis caused by *Vibrio vulnificus* infection

CHP recorded a sporadic case of necrotising fasciitis caused by *Vibrio vulnificus* infection in Kwun Tong district on May 19, 2023.

The case affected a 73-year-old retired man with multiple chronic diseases including diabetes and adrenal insufficiency. He presented on May 17 with decreased general condition, fever and erythema of the left lower limb and was admitted to a public hospital on the same day. The clinical diagnosis was necrotising fasciitis of the left lower limb. Emergency debridement with left above-knee amputation was done. Post-operatively, he required treatment with antibiotics and intensive care. His condition failed to improve and he passed away on May 19. Left leg fascia tissue culture grew *Vibrio vulnificus*. During the incubation period, he had not travelled outside Hong Kong. His family members recalled that he would visit the wet market daily but there was no known history of injury or wounds. He would handle raw seafood during meal preparation but did not consume any uncooked seafood.

The 20th Tripartite Meeting strengthens co-operation against communicable diseases in the Bay Area

The 20th Tripartite Meeting on Prevention and Control of Communicable Diseases was successfully held in Macao on April 20 and 21, 2023. Representatives from health authorities of Guangdong, Hong Kong and Macao shared the experiences in the prevention and control work on COVID-19 in the past three years, and exchanged views on clinical treatment after infection and the future prevention and control plan. There were also in-depth and fruitful discussions on combating other public health issues faced by the three places such as seasonal influenza, antimicrobial resistance and viral hepatitis. Guangdong, Hong Kong and Macao reached consensus at the meeting in various areas of co-operations in relation to communicable disease prevention and control with a view to further improving health levels in the Bay Area.

Photo 1 - Participants at the 20th Tripartite Meeting on Prevention and Control of Communicable Diseases.

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Communicable Diseases WATCH

衞生防護中心 Centre for Health Protection 衞生署 Department of Health

FEATURE IN FOCUS

Summary of the 2023 influenza season in Hong Kong

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

Hong Kong experienced an influenza season from April to May this year after the very low influenza activity recorded in the past three years related to the stringent hygiene and social distancing measures during COVID-19 pandemic. The local influenza activity started to increase in mid-March and continued to rise to a peak in late April. It then gradually decreased, and returned to a low level in late May. The season spanned for seven weeks from early April to late May, arrived few months later than the previous winter influenza seasons that commonly occurred from January to March or April with shorter duration than the range of 12 to 16 weeks recorded in three major influenza seasons (2017 to 2019) prior to the COVID pandemic.

Laboratory surveillance

The weekly positive percentage of influenza detections among respiratory specimens received by the Hospital Authority (HA) and Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP) started to increase since late-March, rose rapidly exceeding the baseline threshold of 9.2% in early April. It peaked at 18.2% in the week ending April 22 and then declined significantly to below the threshold in late May (Figure 1). The peak percentage was below the range recorded in the major seasons from 2017 to 2019 (26.5% to 40.6%).

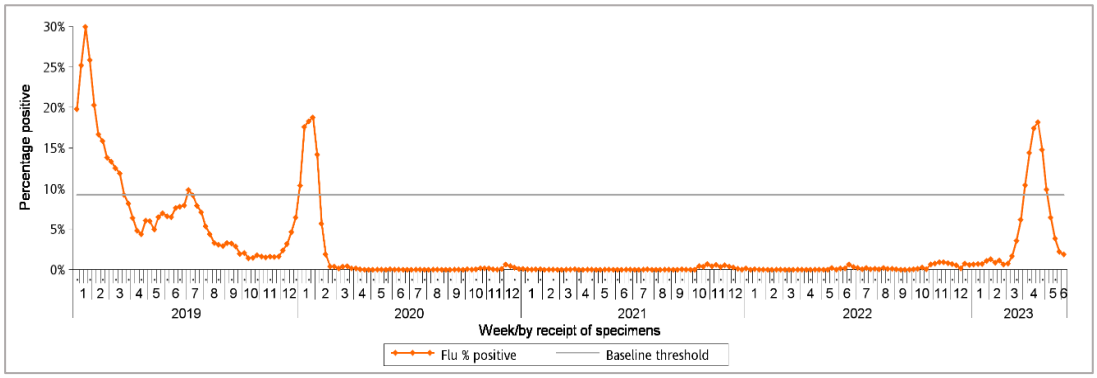

Figure 1 - Percentage of respiratory specimens tested positive for influenza viruses, 2019-2023 June.

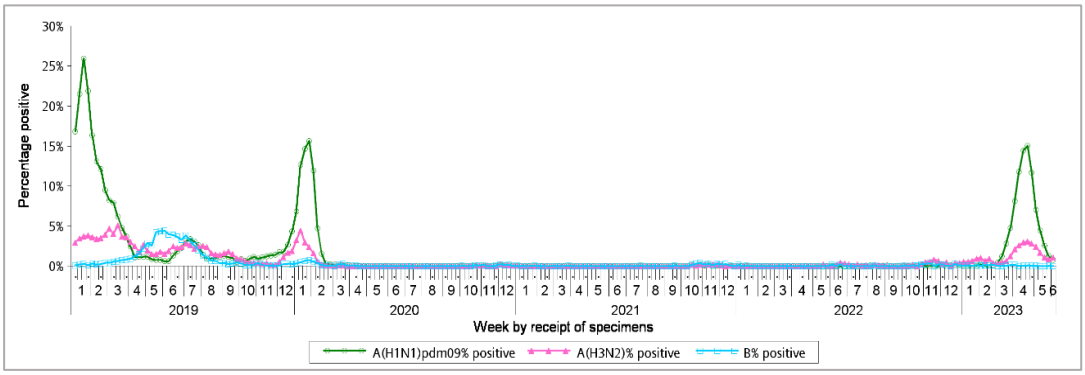

Figure 2 - Percentage of respiratory specimens tested positive for influenza virus subtypes, 2019-2023 June.

Influenza A(H1) viruses predominated in this season (Figure 2). From April 2 to May 20, the majority of influenza detections were influenza A(H1) (80%), followed by influenza A(H3) (20%). The activity of influenza B remained at a low level throughout this season. Both influenza A(H1) and A(H3) viruses remained antigenically similar to the strains contained in the seasonal influenza vaccine (SIV) recommended for the 2022-23 Northern Hemisphere season.

Influenza-associated hospital admission rates in public hospitals

The overall admission rate with principal discharge diagnosis of influenza in public hospitals also started to increase since late March, exceeding the baseline threshold of 0.25 per 10 000 population in early April, reaching a peak of 1.14 in the week ending April 22 (Figure 3a), and then returned to a low level in late May. The peak weekly rate reached the medium intensity level according to the assessment by moving epidemic method (MEM)* (Figure 3b).

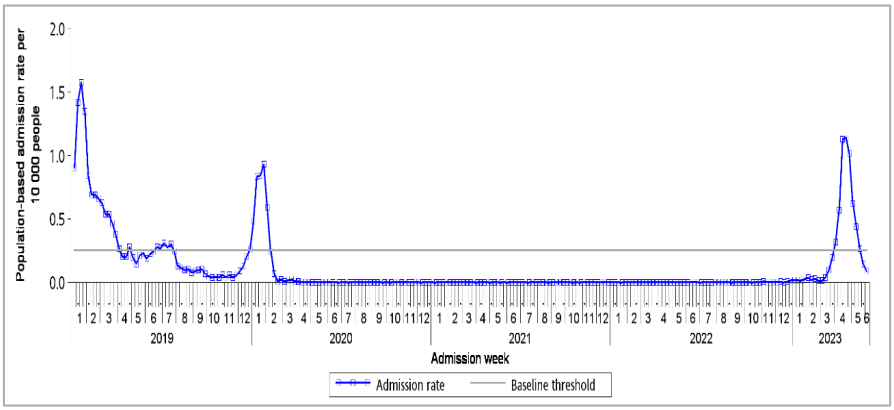

Figure 3a - Weekly admission rates with principal diagnosis of influenza in public hospitals, 2019-2023 June.

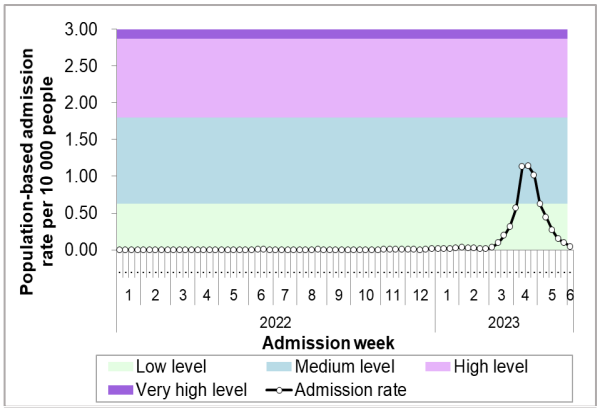

Figure 3b - Weekly admission rates with principal diagnosis of influenza in public hospitals, 2022-2023 June.

The peak weekly admission rate of this season (1.14) was lower than those recorded in three major influenza seasons from 2017 to 2019 (ranging from 1.50 to 1.91) (Table 1). The most affected age groups were children aged 5 years or less (6.03), followed by children aged 6-11 years (2.65) and elders aged 65 years or above (2.44) (Figure 4). The peak rates of both children aged 0-5 years and elders 65 years or above were lower than those in three previous major seasons, whereas that of children of age 6-11 years (2.65) was within the range of 1.65 to 3.69 cases in the prepandemic years (Table 1). While comparing the peak rates recorded during 2018/19 winter season which had the same predominating virus type (influenza A(H1)) as this year, the peak admission rates across all age groups were lower this year, except for the age group of 6-11 years (Table 1).

Table 1 – Peak weekly admission rates recorded during major influenza seasons, 2023, as compared with 2017-2019.

Season (predominating virus)	Peak weekly admission rate (per 10,000 population)						
	0-5	6-11	12-17	18-49	50-64	≥65	All ages
2023 (H1)	6.03	2.65	0.85	0.35	0.67	2.44	1.14
2018/19 winter (H1)	11.66	2.00	1.14	0.57	1.04	2.96	1.58
2017/18 winter (B)	9.03	3.69	1.50	0.36	0.86	4.05	1.50
2017 summer (H3)	9.14	1.65	0.61	0.31	0.69	6.39	1.91

Note: The peak rate of various age groups might be recorded in different weeks of the same season.

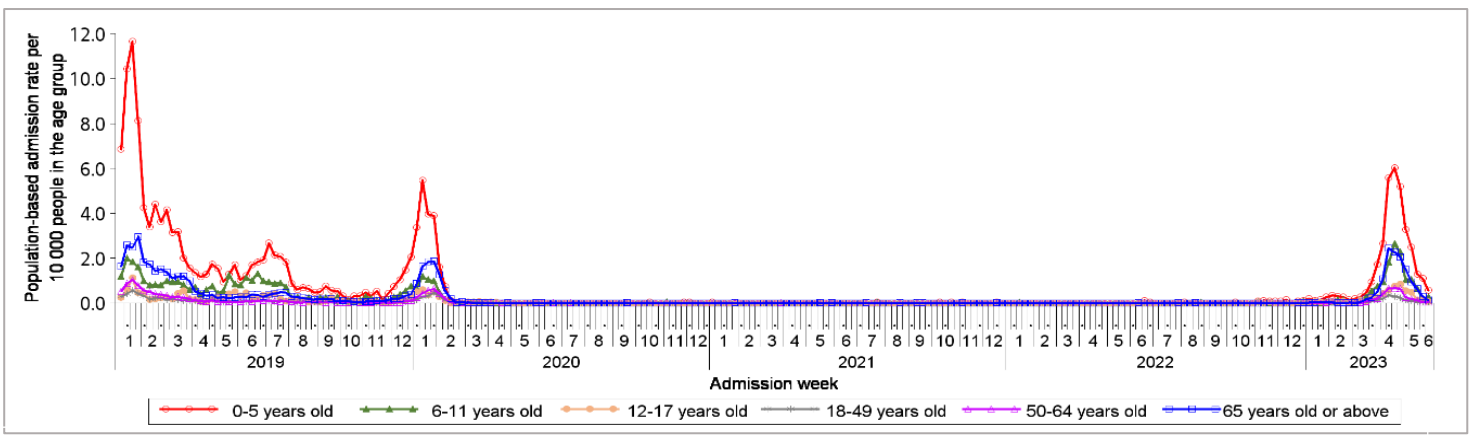

Figure 4 - Weekly admission rates with principal diagnosis of influenza in public hospitals by age groups, 2019-2023 June.

** Details are available from: https://www.chp.gov.hk/files/pdf/explanatory_note_for_flux_mem_eng.pdf*

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

While Hong Kong entered influenza season in early April, the weekly number of institutional ILI outbreaks reported to CHP started to increase since mid-April after the Easter holiday. The weekly number of outbreaks increased to a peak of 59 in the last week of April, and declined to a low level afterwards (Figure 5). The peak reached the medium intensity level according to the assessment by MEM (Figure 6). It was lower than 113 and 209 outbreaks recorded in 2017/18 and 2018/19 winter seasons respectively but was higher than that (44) in 2017 summer season. In this season from April 2 to May 20, 157 outbreaks were recorded with totally 997 persons affected. The mostly affected type of institutions was primary school and residential care home for elderly which constituted 39% and 22% of the reported outbreaks respectively (Table 2).

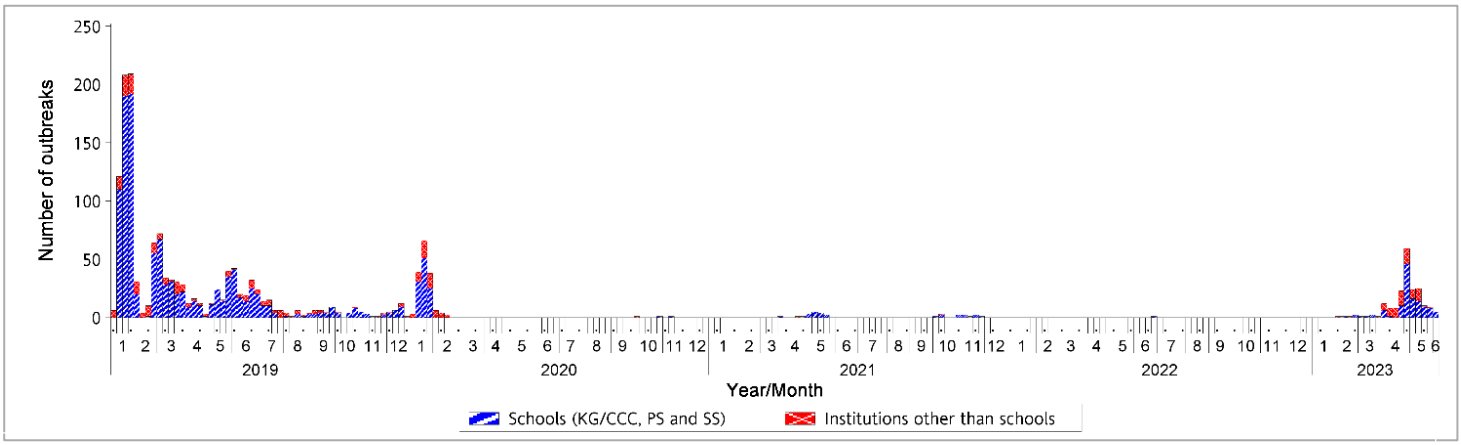

Figure 5 - Weekly number of institutional ILI outbreaks reported to CHP, 2019-2023 June.

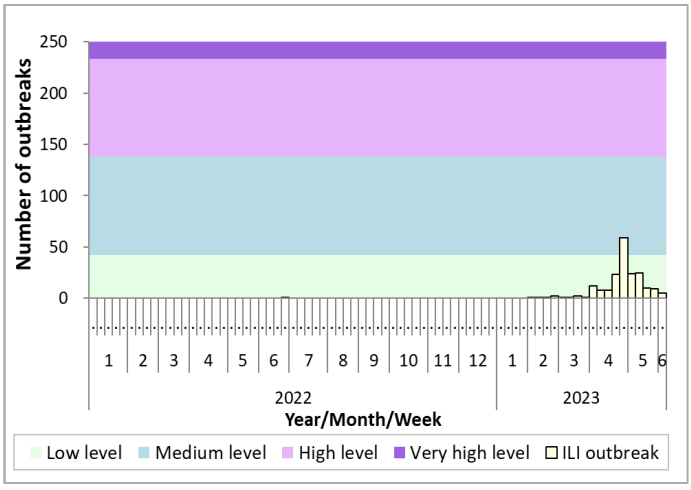

Figure 6 - Weekly number of institutional ILI outbreaks, 2022-2023 June.

Table 2 - Numbers and percentages of ILI outbreaks in schools and institutions during the 2023 influenza season.

Type of institutions	Cumulative number of ILI outbreaks reported from April 2 to May 20 (% total)
Primary school (PS)	61 (39%)
Residential care home for elderly persons (RCHE)	34 (22%)
Secondary school (SS)	19 (12%)
Residential care home for persons with disabilities (RCHD)	19 (12%)
Kindergarten/ child care centre/ (KG/CCC)	16 (10%)
Others	8 (5%)
Total	157

Severe influenza 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.

During this influenza season, 274 cases of ICU admission or death with laboratory confirmation of influenza (including 172 deaths) were recorded among adult patients aged 18 years or above. The number was lower than the range of 570 to 601 cases (356 to 430 deaths) recorded during the major influenza seasons from 2017 to 2019. The peak number of cases recorded in a week was 48, which was also lower than the range of 72 to 83 cases recorded in previous seasons. Their ages ranged from 20 to 105 years (median 74 years). Majority of the cases and deaths (73% and 87% respectively) were elders aged 65 years or above (Table 3). About 18% affected persons aged 50-64 years, which was lower than 26% in the 2018/19 season while both seasons were predominated by the same virus type. The corresponding figures in 2017 summer season predominated by influenza A(H3) and 2017/18 winter influenza seasons predominated by influenza B were 15% and 20% respectively. Nonetheless, most of the deaths (87%) still affected elders aged 65 years or above. The cumulative incidences of severe cases and deaths were 42.8 and 26.9 cases

per million population respectively, which were lower than the corresponding figures in 2018/19 winter influenza season (92.8 and 55.0 cases per million population respectively). Similarly, the incidences across the age groups in this season were also found to be lower than those recorded in 2018/19 winter season (Table 4). About 85% of the elders aged 65 years or above had pre-existing chronic medical diseases in this season, and most of them (59%) were not known to have received the 2022/23 SIV.

Table 3 - Age distribution of adult severe/fatal cases recorded in 2023 influenza season.

Age group in years	Number of severe cases (including deaths) (%)	Number of deaths (%)
18 – 49	24 (9%)	5 (3%)
50 – 64	50 (18%)	18 (10%)
≥65	200 (73%)	149 (87%)
Total	274	172

Table 4 - Cumulative incidences of adult severe influenza cases (per million population) by age groups in 2023 influenza and 2018/19 winter influenza seasons (both predominated by influenza A(H1))

Age group in years	Severe case (including death)		Death	
	2018/19 winter	2023	2018/19 winter	2023
18 – 49	18.5	7.8	1.8	1.6
50 – 64	85.4	27.6	23.3	9.9
≥65	291.2	130.8	233.0	97.5
Total	92.8	42.8	55.0	26.9

Regarding the paediatric cases of influenza-associated severe complications and deaths, 3 cases (including 2 deaths) were recorded in this season, which was lower than the range of 19 to 24 cases (1 – 3 deaths) recorded during the major influenza seasons from 2017 to 2019. The cases involved two girls and a boy, and their ages were 19 months, 13 year and 17 year respectively. Two of them enjoyed good past health, and all did not receive the 2022/23 SIV. The cumulative incidence of the children aged 0 to 17 years was 3.2 cases per million population, much lower than the range of 18.7 to 23.2 cases per million population recorded during the major influenza seasons in 2017 to 2019.

In summary, the 2023 influenza season in Hong Kong from April to May was short and mild, which started few months later than the usual winter influenza seasons (January to March/April). It was predominated by influenza A(H1) viruses, which also predominated in the Mainland, Guangdong and Macao during the upsurges of influenza activities within the same period. The peaks of influenza detections, influenza-associated hospitalization, ILI outbreaks as well as the cumulative incidence of severe influenza cases were all lower than the three major influenza seasons prior to the COVID-19 pandemic. However, the influenza-associated hospitalization rate of the children group of age 6 to 11 years was higher than that recorded in the 2018/19 season (2.65 versus 2.00 per 10,000 population) while most ILI outbreaks reported in this season involved primary schools.

General public's knowledge, attitude and practice survey on antibiotic resistance 2022

By Dr. Grace TSOI, Medical and Health Officer and Dr. Billy CH HO, Senior Medical and Health Officer, Infection Control Branch, CHP.

As formulated in the second *Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023 -2027)*[1] launched in November 2022, the Centre for Health Protection (CHP) of the Deparment of Health conducts regular survey to monitor the trend of general public's knowledge, attitude and practice (KAP) on antibiotic resistance and assess the effectiveness of interventions. This was the second round of its kind and the last round was conducted in 2016/17[2]. The full report on *General Public's Knowledge, Attitude and Practice Survey on Antibiotic Resistance 2022* (the Survey), was published by CHP (Figure 1) on April 13, 2023 at https://www.chp.gov.hk/en/static/106705.html.

The target population of this telephone survey was non-institutional Hong Kong residents aged 15 or above who could speak Cantonese, Putonghua or English (excluding foreign domestic helpers). The survey was conducted from September 7, 2022 to October 6, 2022 through landline and mobile telephone interviews via random sampling. The questionnaire was developed by revising the one used in previous survey, which was based on the questionnaire in WHO's *Antibiotic resistance: Multi-country public awareness survey*[3] published in year 2015 and modified by taking into account local contexts. Sample size of 1,076 successful interviews (493 from landline numbers and 583 from mobile numbers) was achieved with a combined response rate of 32.7%.

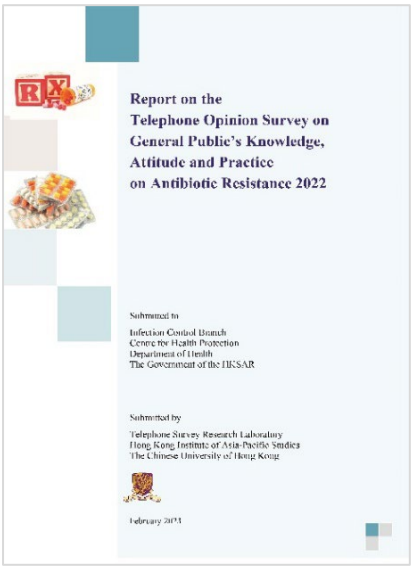

Figure 1– Report on the telephone Opinion Sirvey on general Public's Knowledge, Attitude and Practice on Antubiotic Resistane 2022

Key findings of the Survey included the followings:

- ✧ Knowledge
  - ❖ Among those last taken antibiotics prescribed by doctors, only 20.6% reported that they had noticed the health advice (e.g. disinfect and cover all wounds) on antibiotic medicine bag.
  - ❖ A large proportion of respondents have heard of the respective terms of superbugs (超級細菌) (81.4%), and antibiotic resistance (抗生素耐藥性) (76.0%) in either Chinese or English.
  - ❖ Less than half of all respondents (49.7%) correctly answered that cold and flu should not be treated by antibiotics.
  - ❖ Less than half of respondents (44.1%) correctly answered that bacteria which were resistant to antibiotics could be spread from person to person.
  - ❖ Less than half of the respondents (42.7%) correctly understood that raw or undercooked ready-to-eat (RTE) foods such as salad and sashimi were more easily contaminated by drug-resistant bacteria than cooked food, with the younger respondents showing an even lower rate (32.7%) of correct understanding.
- ✧ Attitude
  - ❖ When a doctor's initial assessment indicated that antibiotics are not needed, the vast majority of respondents (96.4%) 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.
  - ❖ The majority of respondents (66.3%) wished their doctor to share decision making on antibiotics prescription with them.
- ✧ Practice
  - ❖ Among those respondents who had ever taken antibiotics, a vast majority of them (95.4%) reported their last taken antibiotics were prescribed by doctors.
  - ❖ Among respondents (21.6% of all respondents) who reported that they had consulted a doctor (for cold or flu) in the past 12 months, majority (97.2%) did not request antibiotics during that consultation.

Response of the same questions asked in both 2022 and 2016/2017 round of Survey were compared and the results were tabulated as below.

	2016/17	**2022**
Consulted doctors for cold/flu in last 12 months	59.7%	21.6%
Antibiotics last taken within 1 year	48.1%	26.1%
Wished doctors to share decision making on antibiotics prescription	76.0%	66.3%
Agreed with the statement: "Cold and flu could not be treated with antibiotics." *(correct)*	37.3%	49.7%
Agreed with the statement: "It is okay to buy the same antibiotics, or request them from a doctor, if you were sick and they helped you get better when you had the same symptoms before." *(wrong)*	93.1%	79.0%
Agreed with the statement: "People should not keep antibiotics and use them later for other illnesses." *(correct)*	83.5%	61.7%

This Survey was conducted amidst the COVID-19 pandemic in year 2022, when people in Hong Kong were practicing stringent infection control measures e.g. mask wearing, hand hygiene, social distancing, etc., leading to drastic decrease in other respiratory tract infections in the community. This might explain the substantial drop in the percentage of respondents having consulted doctors for cold/flu (from 59.7% to 21.6%); and taken antibiotics (from 48.1% to 26.1%) in the preceding year.

There was some improvement in public's knowledge on AMR, as reflected by a higher percentage of correct answer on the statement "cold and flu could not be treated with antibiotics" despite the absolute figure (49.7%) was still low. Besides, we also found a lower percentage of respondents considered that it was okay to buy the same antibiotics or request them from a doctor if you were sick and they helped you get better when you had the same symptoms as before (from 93.1% to 79.0%).

However, knowledge deficit was identified, particularly in the older age group which generally has a lower level of understanding on correct use of antibiotics. For example, less respondents from older age group in 2022 Survey correctly understood that they should not keep antibiotics to be used later for other illnesses.

To further publicise the Survey findings, a press release[4] and a letter-to-doctors[5] were also issued on 13 April 2023. Health promotion activities including radio interview and publicity through different media were conducted to enhance public awareness of appropriate antibiotic use and infection control measures. CHP also collaborated with professional bodies including Hong Kong Medical Association, Hong Kong Academy of Medicine, Hong Kong Private Hospitals Association and Hong Kong College of Family Physicians to promulgate survey findings and to solicit assistance from doctors on patient education on AMR through their network to their members, and the publications. Doctors were encouraged to order hard copies of health education materials to disseminate AMR-related information and messages during clinical encounters (Figure 2).

Figure 2 – Antibiotic Cue Card to alert patients on tips when taking antibiotics

For further information about AMR, please visit the CHP thematic website at https://www.chp.gov.hk/en/features/47850.html.

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NEWS IN BRIEF

An imported case of psittacosis

On May 25, 2023, Centre for Health Protection (CHP) of the Department of Health recorded an imported case of psittacosis affecting a 55-year-old male with good past health living in Tuen Mun. He had fever, cough and shortness of breath since April 28. He attended the Accident and Emergency Department (AED) of Tuen Mun Hospital on May 12 and was admitted for management. The diagnosis was pneumonia and he was treated with antibiotics. Sputum collected on May 18 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction. His condition was critical. He had stayed in Meizhou, Guangdong during the whole incubation period. According to his family, there was a bird nest on the ceiling of patient's house in Meizhou and they noticed bird droppings occasionally fell from it. He did not keep any pets. His household contacts in Hong Kong remained asymptomatic.

Two sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus* infection

CHP recorded two sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus* infection on May 30 and June 7, 2023 respectively.

The first case affected a 68-year-old retired man with chronic diseases including diabetes, hypertension and hyperlipidaemia. He presented with fever and painful swelling on right leg on May 27 and was admitted to Yan Chai Hospital on May 28. Clinical diagnosis was necrotising fasciitis of right leg. Urgent debridement and above-knee amputation were performed. His condition deteriorated rapidly and he succumbed on June 2. Tissue fluid grew *Vibrio vulnificus*. Before symptom onset, he sustained a puncture injury at his right leg by a shrimp when he shopped at a wet market in Tsuen Wan on May 26. His family member also recalled he had pre-existing wounds over both legs. He did not consume any uncooked seafood. There was no history of recent travel.

The second case affected a 74-year-old retired woman with history of hypertension. She lived with her family in Sai Kung. She presented with left leg swelling on June 4 and was admitted to a public hospital on June 5. Clinical diagnosis was necrotising fasciitis of left leg. Emergency excisional debridement of wound was done on both June 5 and June 7, and the left leg fascia wound culture grew *Vibrio vulnificus*. Her condition improved after treatment and she is now in stable condition. Before symptom onset, she sustained a puncture injury at her left leg by the fin of a fish she bought at a wet market in Sai Kung on June 4. She did not consume any uncooked seafood. There was no history of recent travel.

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FEATURE IN FOCUS

An update on the epidemiology of COVID-19 in Hong Kong (Jan 23, 2020 to Jan 29, 2023)

Reported by Dr Serana SO and Ms Cathy FUNG, Research officers; Mr Jason CHAN, Statistician, Surveillance Division, Communicable Disease Branch, CHP

Introduction

Hong Kong has experienced five waves of COVID-19 since early 2020. During the first four waves (till December 30, 2021), all cases were confirmed by nucleic acid test (PCR) and the Centre for Health Protection (CHP) conducted epidemiological investigation to verify the details of every reported case. In the fifth wave starting from December 31, 2021 with a massive number of persons getting infected, the CHP included cases tested positive by PCR and/or rapid antigen test (RAT) as confirmed COVID-19 cases. Members of the public reported RAT positive tests through online self-reporting systems implemented since March 7, 2022 and confirmatory PCR testing were arranged to some of them to ensure valid reporting. The CHP performed deduplication of incoming notification records from multiple sources and verified the details of the reported cases with the databases kept by the Hospital Authority (HA) and other databases such as the vaccination records.

For surveillance of fatal cases of COVID-19, deaths within the same episode of COVID-19 admission were regarded as COVID-19 associated deaths in the first four waves. With increasing number of notifications reported during the fifth wave, taking reference from overseas practice, death in a person within 28 days of the first positive specimen collection day was regarded as COVID-19 associated death to allow rapid assessment of the situation in Hong Kong. Using the above approaches, the underlying cause of death as reported in the death certificate may or may not be related to COVID-19.

The mandatory reporting of individual COVID-19 cases have been ceased since January 30, 2023 and the CHP continued to monitor the trend of COVID-19 activity through a combination of surveillance indictors. Subsequent to this change in surveillance strategy and decreased COVID-19 activity since May 2023, the CHP conducted a comprehensive data review and validation exercise on case-based data of the fifth wave up to January 29, 2023. The exercise involved addition of cases which were self-reporting by members of the public after verification, inclusion of reporting of COVID-19 cases by medical practitioners after clinical reassessment, removal of RAT tested positive cases with negative confirmatory PCR results, as well as adjustment of recorded cases following matching, de-duplication and validation in collaboration with the HA.

Following the data review and validation exercise, the CHP also adjusted the number of deaths by matching with death certificates issued by attending doctors/coroner during January 2020 to December 2022. The determination of COVID-19 as the underlying cause of death in the death certificates was based on the criteria of the World Health Organization (WHO)[1], which could be regarded as the finalised assessment for the deceased. Such registered death figures derived from death certificates (comprising only cases die of COVID-19 infection) differed from the previously published surveillance death figures, the latter of which also captured fatal cases died of causes other than COVID-19 (i.e. cases die with COVID-19 infection).

We presented the key findings of the revised figures in the following paragraphs.

Summary of the local situation of COVID-19 from January 23, 2020 to January 29, 2023

After the validation exercise, the total number of COVID-19 cases recorded (January 23, 2020 to January 29, 2023) was revised to 3,106,579 from 2,876,106 published on January 29, 2023. No adjustment was required for the number of COVID-19 cases

recorded during the first to fourth wave (January 23, 2020 to December 30, 2021). The adjustment on number of case reported were reflected on the fifth wave (December 31, 2021 to January 29, 2023), which was revised to 3,093,948 from 2,863,475.

Among the 3,106,579 cases, 3,022,236 (97.3%) were classified as locally acquired infection, of which 1,156,787 were tested positive by PCR while 1,865,449 cases were tested positive by RAT. The remaining 84,343 cases were classified as imported infection, of which 69,680 were tested positive by PCR and 14,663 were tested positive by RAT. The epidemic curves (Figures 1a and 1b) showed the daily number of cases. During the first to fourth wave, the daily number of cases ranged from 1 to 144. The number of cases recorded during the fifth wave ranged from 10 to 103,356 with two peaks. The first peak occurred between February and April 2022. The number of cases recorded increased exponentially from early February 2022 from a scale of hundreds to a scale of ten thousands at the end of February 2022 and peaked at 103,356 recorded on February 28, 2022. This pattern indicated the existence of multiple person-to-person transmission chains in the community associated with the emergence of the Omicron variant. With the implementation of robust control measures and immunity built up by vaccination and natural infection, the daily number of cases dropped sharply from first week of March 2022 and maintained at a scale of a few hundreds per day at the end of April 2022. Despite another upsurge of cases from June 2022 that peaked at 28,473 on December 28, 2022, probably associated with the emergence of new Omicron subvariants, the upward trend was much less steep than the first peak, and the daily number of cases then went downslope sharply from early January 2023. This drop might be contributed by the successful development of population-wide hybrid immunity in the community acquired from vaccination and natural infection.

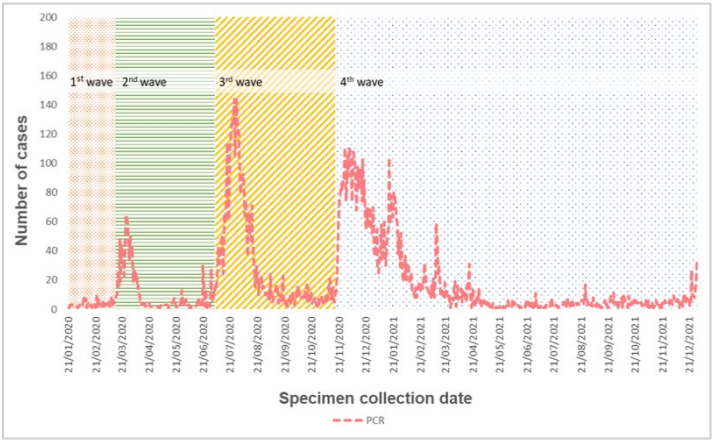

Figure 1a. COVID-19 epidemic curve of Hong Kong (during the first to fourth wave)

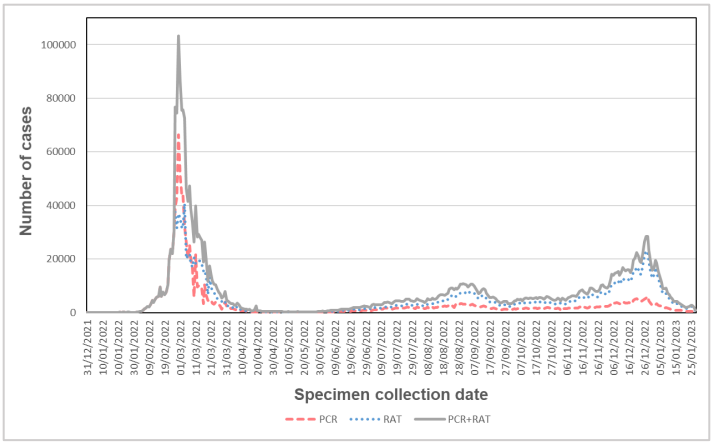

Figure 1b. COVID-19 epidemic curve of Hong Kong (during the fifth wave up to Jan 29, 2023)

Figures 2a and 2b showed the age and gender distribution of local cases during the first to fourth wave, and the fifth wave. During the first to fourth wave, children aged below 12 years and adults aged 60 years or above contributed to 5.0% and 29.1% respectively. The male-to-female ratio was 1:1.1. During the fifth wave, children aged below 12 years and adults aged 60 years or above accounted for 8.2% and 26.2% respectively. The male-to-female ratio was 1:1.2.

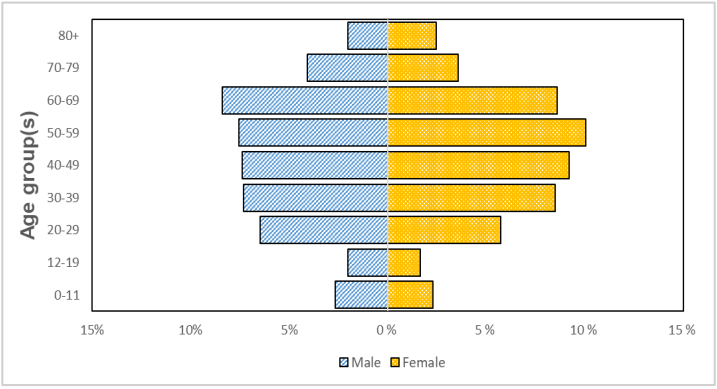

Figure 2a. Age and gender distribution of the local cases (during the first to fourth wave)

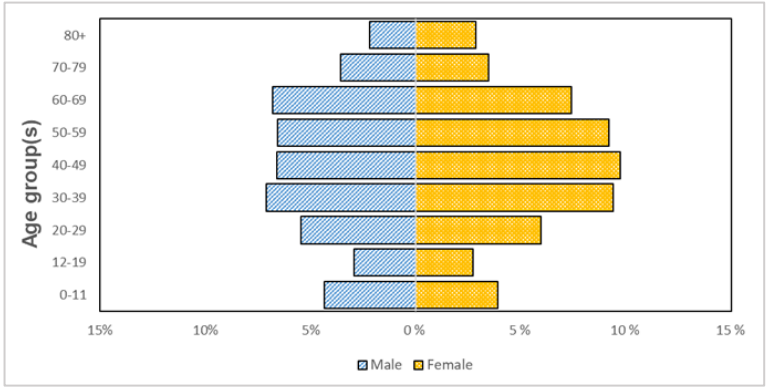

Figure 2b. Age and gender distribution of the local cases (during the fifth wave up to Jan 29, 2023)

Registered deaths for 2020 to 2022 with cause of death being COVID-19

The death registry of Hong Kong recorded a total of 9,486 deaths with COVID-19 being the cause of death, with 125, 70 and 9,291 cases with respective death certificates issued in 2020, 2021 and 2022 respectively. Out of the 9,486 deaths, 197 had date of death before 2022 (i.e. passed away during the first four waves, including two cases with death certificate issued in 2022), of which 191 were locally acquired cases and 6 were imported cases. The 191 local cases, with a male-to-female ratio of 1: 0.6, had age ranged from 38 to 98 years and 93.7% aged 60 or above. As for the remaining 9,289 deaths with death certificates issued in the same year, 9,287 were locally acquired cases and two were imported cases. Among the 9,287 registered deaths from local cases with COVID-19 being the cause of death, the deceased had a male-to-female ratio of 1: 0.7 with age ranged from 1 to 112 years, and 97.0% were aged 60 or above. 44.7% of the deceased were residential care home elderly residents, while 88.1% of the deceased had at least one known chronic illness.

In 2022, the estimated case fatality rate (CFR) of local cases was about 0.3% overall, that in unvaccinated (1.49%) was much higher than those who had history of COVID-19 vaccination (0.2% in those received 1 or 2 doses, and 0.05% in those received 3 or more doses). In particular, among those aged 80 or above, the estimated CFR of the unvaccinated (9.79%) was about 9.7 times those who received at least three doses (1.01%), and about 3 times those who received 1 or 2 doses (3.40%) (Table 1). The estimated CFR should be interpreted with caution due to delays in death registration (e.g. cases under investigation by the coroner and some deaths occurring in the last quarter of year 2022 may have death certificates issued in 2023 or later). On the other hand, due to the relatively mild presentation of cases especially during the fifth wave, the actual number of COVID-19 cases could be underestimated. For instance, a modelling study by local university suggesting four million to five million people were actually infected during the massive COVID-19 outbreak at the beginning of year 2022[2].

Table 1. Number and estimated CFR of local cases reported and having death certificates issued in 2022 stratified by age group and vaccination status

Age group(s)	Number of local cases reported and having death certificates issued in 2022 (Estimated CFR)			
	All cases	History of receiving ≥ 3 doses of COVID-19 vaccine	History of receiving 1 or 2 dose(s) of COVID-19 vaccine	Unvaccinated
0-9	8 (0.00%)	0 (0.00%)	2 (0.00%)	6 (0.01%)
10-19	1 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.00%)
20-29	11 (0.00%)	0 (0.00%)	5 (0.00%)	6 (0.02%)
30-39	13 (0.00%)	1 (0.00%)	2 (0.00%)	10 (0.02%)
40-49	49 (0.01%)	3 (0.00%)	13 (0.01%)	33 (0.09%)
50-59	203 (0.05%)	13 (0.01%)	66 (0.04%)	124 (0.36%)
60-69	676 (0.17%)	37 (0.02%)	209 (0.14%)	430 (0.97%)
70-79	1433 (0.74%)	100 (0.12%)	388 (0.52%)	945 (2.79%)
80+	6893 (5.01%)	419 (1.01%)	1559 (3.40%)	4915 (9.79%)
Overall	9287 (0.34%)	573 (0.05%)	2244 (0.20%)	6470 (1.49%)

Remarks:

(1) Vaccine doses were considered valid 14 days after administration.

(2) The estimated CFR is computed with numerator being the number of fatal cases passed away in 2022 with death certificates issued on or before December 31, 2022 having COVID-19 as the cause of death, while the denominator refers to COVID-19 tested positive cases with report date within 2022.

The way forward

The CHP has put new surveillance mechanism in place to keep track of the local COVID-19 activity, as one of the endemic respiratory infections, since January 30, 2023. Following the WHO's declaration that the COVID-19 situation no longer constituted a Public Health Emergency of International Concern in early May 2023 and the HKSAR Government stood down the response level for COVID-19 from emergency level to alert level in late May. COVID-19 transmission persists but with decreased activity in Hong Kong recently. Latest findings are available in the CHP's weekly publication "COVID-19 & Flu Express" accessible at https://www.chp.gov.hk/en/resources/29/100148.html. Members of the public are encouraged to stay tuned to the latest COVID-19 situation and observe strict personal and environmental hygiene to prevent COVID-19 and other respiratory infections.

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Review of global and local situation of chikungunya fever, dengue fever and Zika virus infection

Reported by Enteric and Vector-Borne Disease Section, Surveillance Division, Communicable Disease Branch, CHP.

Chikungunya fever, dengue fever and Zika virus infection are mosquito-borne diseases transmitted to humans through the bites of infective *Aedes* mosquitoes. The principle vector for these diseases, *Aedes aegypti*, is not found in Hong Kong. However, *Aedes albopictus*, which can also spread these infections, is widely distributed locally. In this article, we provide an update on the global and local situations of these salient mosquito-borne diseases.

Chikungunya fever

Global situation

Autochthonous mosquito-borne transmission of Chikungunya virus (CHIKV) has been reported in 110 countries across all six World Health Organization (WHO) regions, exposing about 4 billion people to risk of infection[1].

From the 1950s to 2017, CHIKV outbreaks and/or epidemics most frequently occurred in India, Indonesia, Thailand, and the Philippines[2]. Between October 2018 and February 2020, a large CHIKV outbreak with co-infections of dengue virus and Zika virus occurred in Thailand[3]. Cambodia also reported a nationwide outbreak of CHIKV in 2020, affecting both urban and rural areas of the country[4].

Local situation

Chikungunya fever (CF) has been listed as a notifiable infectious disease in Hong Kong since March 6, 2009. In the past ten years (2013-2022), the Centre for Health Protection (CHP) of the Department of Health recorded 30 confirmed cases, ranged from zero to 11 cases per year. All of them were imported infection.

The cases involved 16 male and 14 female aged between 8 and 77 years (median: 46.5 years), all had travel history to Southeast Asian countries during the incubation period. Except a family cluster consisting of four cases with travel history to Thailand recorded in 2019, all cases were sporadic infection with no other epidemiologically linked cases. The most recent case was recorded in November 2019, involving an individual with travel history to India. The majority of cases presented with fever (100%), joint pain (90%) and rash (60%).

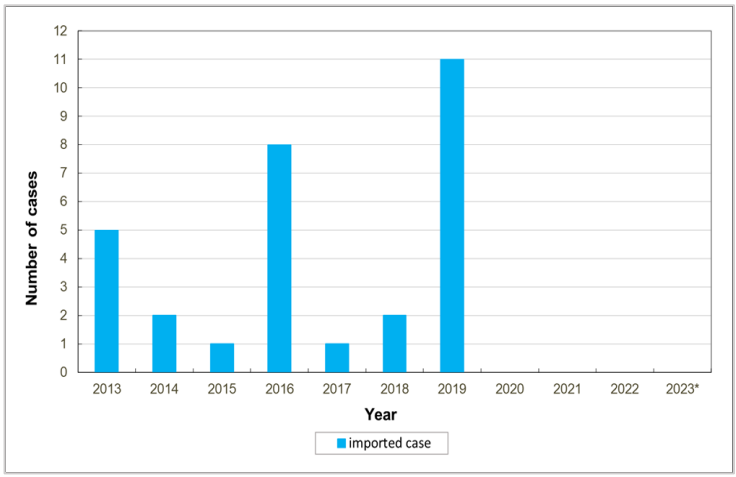

Figure 1 – Number of CF cases in Hong Kong from 2013 to 2023 (as of July 10, 2023)*

Dengue fever

Global situation

According to information from the WHO, it is estimated that 100-400 million dengue virus infections occur each year, with around 70% of the cases being found in Asia[5]. The largest number of dengue fever (DF) cases ever reported globally was in 2019. The total number of cases and reported deaths seemingly decreased during 2020 and 2021, but the COVID-19 pandemic could have hampered case reporting as well as caused changes in population movement and behaviours[6]. According to health authorities of

respective neighbouring countries and areas, the disease activity has been on the rise since 2022. In 2023, the disease activity has continued to increase globally. During the initial months of 2023, outbreaks of high magnitude were recorded in South America, including Argentina and Brazil[7]. In Asia, Thailand has recorded a staggering increase in DF cases since January 2023[8], whilst Taiwan is currently experiencing an upsurge of DF cases with 298 local cases recorded as of July 10, 2023[9].

Local situation

Dengue fever has been a notifiable disease in Hong Kong since March 18, 1994. In the past ten years (2013-2022), the annual number of cases ranged from two to 198 (median: 108 cases). The cases involved 513 male and 453 female aged between 3 and 84 years (median: 39 years).

Over 95% of the cases were imported from other countries (Figure 2). The last local case was recorded in 2020, which involved an 84-year-old man who lived in Yuen Long. In 2023 (as of July 10, 2023), the CHP recorded 16 DF cases, all were imported infection. The cases were imported from Indonesia (five cases), Philippines (three cases), Malaysia (two cases), Singapore (two cases), Laos (one case) and Thailand (one case), and the remaining two cases had travel history to multiple countries during their respective incubation periods. So far, all presented with classical dengue fever symptoms and no case of dengue hemorrhagic fever has been reported.

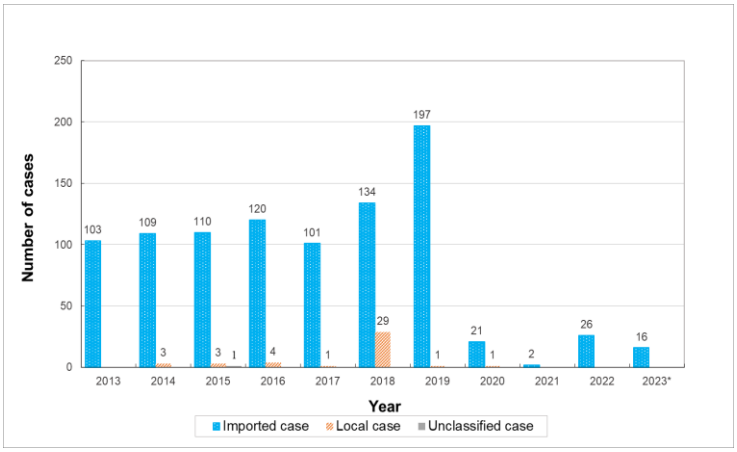

Figure 2 – Number of DF cases in Hong Kong from 2013 to 2023 (as of July 10, 2023)*

Zika virus infection

Global situation

"Microcephaly, other neurological disorders and Zika virus" was considered a Public Health Emergency of International Concern by the WHO during February to November 2016[10]. Zika virus transmission continues to persist in several countries, but remains at low levels from 2018 to the present[11]. As of December 2021, a total of 89 countries and territories across five of the six WHO regions (except the Eastern Mediterranean Region) had documented evidence of autochthonous mosquito-borne transmission of Zika virus[12]. Among them, the latest two countries with documented autochthonous transmission were France and Kenya. In addition, 61 other countries and territories across all six WHO regions have evidence of established and competent *Aedes aegypti* vector populations but no documented autochthonous Zika virus transmission as of December 2021[11].

In Asia, Taiwan has recorded two Zika virus infection (ZVI) cases in 2023 (as of July 13), with zero to 13 cases recorded annually in previous years (2016-2022)[13]. The disease activity in Thailand appears comparable to prior years, with 79 cases recorded as of July 8, 2023, compared to a range of 63 to 273 cases recorded annually (2019-2022). In Singapore, the Ministry of Health reported a cluster of three local cases of ZVI on May 12, 2023[14]. All three cases either reside or work in the Kovan area. As of July 7, 2023, there were 15 cases associated with the cluster[15], and a total of 22 cases have been reported in 2023[16]. This is a notable increase compared to the past three years during the COVID-19 pandemic where the number of annual cases ranged from zero to two[17].

Local situation

As of July 10, 2023, the CHP has recorded three laboratory-confirmed imported cases of ZVI since it became a notifiable disease on February 5, 2016. The most recent case was reported in April 2017, and no fatal cases have been recorded. Two of the three cases were female. One was non-pregnant, as confirmed by urine pregnancy test, but the other's pregnancy status was unknown. All three cases had travel history to countries and areas with current or previous Zika virus transmission during the incubation period, namely, Saint Barthelemy; Antigua and Barbuda, St Maarten and Anguilla; and Ecuador and Peru. No locally acquired case of ZVI has been recorded thus far. With no suspected case reported after August 2019 and absence of the principal vector in Hong Kong, the Government decided and announced on June 15, 2023 to stand down the Alert Response Level under the Preparedness and Response Plan for Zika Virus Infection[18].

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 6 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 2 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:

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

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NEWS IN BRIEF

Three sporadic cases of human myiasis

The Centre for Health Protection (CHP) recorded three sporadic cases of human myiasis on March 6, May 26 and July 11, 2023 respectively.

The first case affected a 64-year-old man with diabetes living in Sham Shui Po. He presented with fever and wound pain over his chronic right leg ulcer and was admitted to a public hospital on March 1. Upon admission, maggots were found in the wound which were subsequently identified as larvae of *Chrysomya bezziana*. He was treated with antibiotics and surgical debridement of the wound. He recovered and was discharged on March 10. The patient lived with his sister who was asymptomatic and did not travel during the incubation period. Health advice on personal and environmental hygiene was given to the patient.

The second case affected a 69-year-old bed bound man living in a residential care home for the elderly (RCHE) in Tai Po. He had multiple underlying illnesses including diabetes, dementia, recurrent strokes and right foot gangrene with right above knee amputation done. He presented with increased bleeding over his chronic left fourth toe ulcer and was admitted to a public hospital on May 21. Upon admission, maggots were found in the wound which were subsequently identified as belonging to the family Sarcophagidae. He received left above knee amputation on May 25. He recovered and was discharged on June 2. Site visit revealed that not all the windows of the RCHE were covered with protective nets. The Licensing and Regulation Office for RCHEs, the Agriculture, Fisheries and Conservation Department (AFCD) and the Pest Control Advisory Section (PCAS) of the Food and Environmental Hygiene Department (FEHD) were informed for follow-up actions. Health advice on personal and environmental hygiene was given to the patient and RCHE staff.

The third case affected a 98-year-old wheelchair bound woman living in a RCHE in North district. She had multiple underlying illnesses including hypertension, dementia and fracture hip with surgery done. She presented with a scalp wound with progressively increased bleeding and discharge for months. Worms were seen and she was then admitted to a public hospital on July 9. Upon admission, maggots were found in the wound which were subsequently identified as belonging to the family Sarcophagidae. Maggots were removed and she was discharged on July 11. Site visit revealed that some of the protective nets at the windows were worn out. The Licensing and Regulation Office for RCHEs, AFCD and PCAS of FEHD were informed for follow-up actions. Health advice on personal and environmental hygiene was given to the patient and RCHE staff.

A sporadic case of brucellosis

On July 11, 2023, CHP recorded a sporadic imported case of brucellosis affecting a 47-year-old man with good past health. He presented with fever, scrotal swelling, haematuria and dysuria since June 25 and was admitted to a public hospital on June 29. His blood specimen collected on June 30 was cultured positive for *Brucella melitensis*. The clinical diagnosis was brucellosis and he was treated with antibiotics. He recovered and was discharged on July 3. He travelled to Hong Kong on April 2 and was

institutionalised since April 10. He consumed internal organs of sheep outside of Hong Kong during the incubation period. No other high risk exposures were noted.

Two sporadic cases of *Streptococcus suis* infection

The CHP recorded two sporadic cases of *Streptococcus suis* infection on July 12 and 13, 2023 respectively.

The first case affected a 70-year-old man with underlying illness residing in Tsuen Wan. He presented with fever and chills since July 5 and was admitted to a public hospital on the same day. His blood culture grew *Streptococcus suis*. He was treated with antibiotics and remained in stable condition. During incubation period, he had travelled to Mainland China from June 29 to July 5 during which he had consumed dried raw pork cured with salt in a hotel. He had no other high-risk exposure or recent wound. His home contacts were asymptomatic.

The second case affected a 74-year-old retired man with underlying illness residing in Sha Tin. He presented with fever, chills and confusion since July 9 and was admitted to a public hospital on July 11. His blood and cerebrospinal fluid was cultured positive for *Streptococcus suis*. He was treated with antibiotics and remained in stable condition. He had no travel history during the incubation period. He did not keep any pet at home. He had no recent wound, and had no known exposure to pigs, pork or swine products at home or during his visits to markets or other places. He did not consume any undercooked pork. He lived with his wife who was asymptomatic.

A sporadic case of necrotising fasciitis caused by *Vibrio vulnificus* infection

CHP recorded a sporadic case of necrotising fasciitis caused by *Vibrio vulnificus* infection in Tuen Mun on July 14, 2023.

The case involved a 70-year-old male with chronic conditions including hypertension, diabetic nephropathy and renal transplant. On July 11, 2023, he developed fever, chills, myalgia, headache and gastrointestinal symptoms and was admitted to Tuen Mun Hospital on the same day. He was noted to have swelling over both upper limbs. Clinical diagnosis was necrotising fasciitis of upper limbs. Debridement was performed. Wound swab grew *Vibrio vulnificus*. Before symptom onset, he went swimming at a beach in Tuen Mun on 10 July, 2023 while having a pre-existing wound at left forearm. He did not consume any uncooked seafood. There was no history of recent travel.

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FEATURE IN FOCUS

Control of multi-drug resistant organisms (MDROs) in residential care homes of elderly

Reported by Dr. SY SHING, Medical and Health Officer; Dr. Leo LUI, Associate Consultant; Dr. Billy CH HO, Senior Medical and Health Officer and Dr CHEN Hong, Consultant and Head, Infection Control Branch, CHP

The prevalence of multi-drug resistant organisms (MDROs) is increasing worldwide after the global pandemic of coronavirus disease 2019 (COVID-19). Studies have shown an increase in the rate of infection/ colonisation of methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant enterococci (VRE) and carbapenem-resistant Enterobacteriaceae (CRE) during the pandemic[1]. In Hong Kong, the number of newly diagnosed emerging MDRO carriers (including CPE, VRE, *C. auris*, VISA, VRSA, MRPA[*]) planned to be discharged from public hospitals to Residential Care Homes for the Elderly (RCHEs) increased from 339 cases in 2020 to 1,170 cases in 2022, and 1,270 cases in 2023 (as of July 31).

To prevent and control the spread of MDROs in RCHEs, CHP has collaborated closely with various stakeholders to implement and strengthen infection control measures targeting MDROs.

Education, guidelines and training

An annual flagship training programme on infection control has been organised, mainly targeting staff working at RCHEs and infection control nurses since 2005. Each year, expert speakers from various departments and services are invited to deliver talks on topics related to infection control. "Control of MDROs in RCHEs" has been included and remained a popular topic in the programme since 2012. The 2023 annual infection control training took place in June and July, offering both face-to-face and online training sessions. The programme covered various topics, including outbreak control, common infectious disease, annual integrated assessment, infection control advice in the control of MDRO, and improving ventilation. Since 2012, a total of 93 training sessions have been conducted, training over 20,000 RCHE staff members[**]. Past infection control training materials can be accessed on the Hong Kong Training Portal on Infection Control and Infectious Disease (https://icidportal.ha.org.hk/, under "IC Programs").

CHP produces guidelines on infection control advice for RCHEs. These guidelines include general infection control advice that all RCHEs should adopt and additional infection control measures specifically recommended for residents with MDRO. The guidelines are regularly reviewed and revised to incorporate the latest evidence and reflect the local situation. (https://www.chp.gov.hk/files/pdf/infection_control_advice_on_mdro_for_rche_eng.pdf).

Visits and assessments

In order to better support RCHEs and assess their adherence compliance of practices to infection control advices, CHP conducts visits to RCHEs on various occasions.

Compliance visits are arranged every 3 to 6 months for all RCHEs with residents who are carriers of emerging MDROs. These visits aim to assess the knowledge and practices of the RCHE staff regarding infection control. During these visits, on-demand refresher training courses are also offered to the staff of the RCHEs.

[*] Abbreviations: CPE – Carbapenemase-producing Enterobacteriaceae; *C. auris* – *Candida auris*; VISA & VRSA – vancomycin-intermediate/resistant Staphylococcus aureus; MRPA – multi-drug resistant Pseudomonas aeruginosa

[**]Training statistics including figures from 2012 – 2022

If a newly diagnosed emerging MDRO carrier to be discharged from a hospital to a RCHE, joint preparation visits with colleagues from the Hospital Authority are arranged based on risk assessment. The aim of such preparation visits is to ensure that the RCHE is adequately prepared to receive the MDRO carrier in terms of both physical infrastructure (e.g. placement of resident, setting up of personal protective equipment donning and doffing areas) and operational aspects (e.g. designated manpower, staff awareness, knowledge and practice). The goal is to prevent the spread of the MDRO within the RCHE. In 2022 and 2023 (up to July 31, 2023), we have conducted compliance visits to 489 RCHEs and preparation visits to 72 RCHEs.

When an outbreak is suspected at an RCHE, CHP would assess the infection control practices of the RCHE to identify any potential lapses in practice and areas for improvement. Infection control advice, especially on the placement and precautions when caring of confirmed carriers and close contacts will be provided to support the RCHEs with an aim to control the outbreak and limit further spread of MDROs in the institution.

Universal decolonisation for MDRO carriers in RCHEs

As one of the priority interventions in the Hong Kong Strategy and Action Plan on Antimicrobial Resistance (2023-2027), a phased programme on universal decolonisation for MDRO carriers in RCHEs was commenced in September 2021. The programme aims to break the cycle of transmission between RCHEs and hospitals. Appropriately 300 RCHEs within the catchment areas of Queen Mary Hospital, Queen Elizabeth Hospital, Princess Margaret Hospital, North Lantau Hospital, Caritas Medical Centre and Yan Chai Hospital are covered by this programme.

The decolonisation regimen involves the use of a 2% chlorhexidine gluconate solution for bathing, following routine practice in RCHEs, and the application of 10% povidone iodine ointment to nostrils once daily, on Monday to Friday, in alternate week. As of July 31, 2023, ICB has conducted 1,176 visits and 325 phone interviews with the participating RCHEs to monitor overall compliance and the progress of implementation. The carriage rate of MRSA and CRA among RCHE residents would be monitored through admission screening in participating hospitals. This monitoring will help track the trend of MDRO carriage among RCHE residents.

Conclusion

The successful control of MDROs in RCHEs relies on close collaboration and joint efforts among different stakeholders, including various government departments (e.g. Department of Health, Social Welfare Department.), public hospitals, healthcare workers, and RCHE staff. The compliance of residents in maintaining good personal hygiene and the support from their family members are also crucial for achieving a synergistic effect in MDRO control. Through education and training, we hope to increase the awareness of MDROs and promote the effective implementation of infection control measures. By concerted efforts, we strive to minimise the risks of MDRO spread and protect the health and well-being of the frail individuals within RCHEs.

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Immunisation coverage of vaccines under the Hong Kong Childhood Immunisation Programme - findings of the 2021 immunisation survey on preschool children

Reported by Ms Wendy CHIU, Scientific Officer; Dr SK MAK, Senior Medical and Health Officer, Vaccine Preventable Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Introduction

Under the Hong Kong Childhood Immunisation Programme (HKCIP), the Government provides a number of vaccines free-of-charge to eligible children in Hong Kong[1]. The incidence of vaccine preventable diseases in Hong Kong has decreased markedly in the past few decades after the introduction of universal vaccination programmes for children. Maintaining high immunisation coverage is essential for the prevention of vaccine-preventable diseases. The Centre for Health Protection (CHP) of the Department of Health (DH) conducted territory-wide immunisation surveys to estimate the immunisation coverage among children attending pre-primary institutions (PPI). Seven rounds of immunisation surveys had been conducted in 2001[2], 2003[3], 2006[4], 2009[5], 2012[6], 2015[7] and 2018[8] , covering birth cohorts of 1995 to 2014. The survey results showed that the overall immunisation coverage for vaccines included in the HKCIP was consistently high (above 95%). However, it was noted that children

born or resided outside Hong Kong before two years of age had relatively lower immunisation coverage. A new round of immunisation coverage survey was conducted in 2021, targeting children born from 2015 to 2017.

Method

In 2021, we conducted another round of cross-sectional survey to assess the coverage and timeliness of vaccination for vaccines under HKCIP among preschool children. The study population was children aged three to five (defined as children born between 2015 and 2017) attending PPI in Hong Kong. The subjects were selected by stratified cluster sampling of kindergarten (KG) and kindergartens-cum-childcare centres (KG-cum-CCC). For all the children in the sampled PPI, we obtained written consent from parents/guardians, collected demographic information of their children through a self-administered questionnaire, and collected copies of their immunisation records for vaccination history since birth. We also obtained the children's electronic immunisation record in DH's Maternal and Child Health Centres (MCHCs) for cross checking. We followed up with parents of children with incomplete immunisation records to obtain all relevant documentation.

We calculated the coverage for each vaccine as the proportion of children vaccinated divided by the total number of children with immunisation record submitted. Immunisation coverage was stratified by year of birth (cohort) and local versus non-local children. We defined local children as those who were born in Hong Kong, resided in Hong Kong before two years of age and lived in Hong Kong at the time of the survey. All other children who did not fulfil all the above three criteria were defined as non-local children. Risk ratio of coverage (i.e. ratio of immunisation coverage of local children over that of non-local children) and their 95% confidence intervals (95% CI) among local and non-local children were computed for different vaccines. To study the timeliness of vaccination, we compared the actual age of vaccination with the recommended age of vaccination.

Results

We recruited 25 local and international institutions which covered about 2.4% of the 1,025 preschool institutions with enrolment in the school year 2019/20. Among the 5,076 children attending these 25 institutions, 2,728 (53.7%) responded to our survey. Of these 2,728 respondents, 123 (4.5%) children who were outside target birth cohort between 2015 and 2017 and 40 (1.5%) children who did not submit vaccination record were excluded from the analysis. Overall, 2,565 children were included in the analysis on immunisation coverage. Of these valid respondents, 67.5% and 32.5% attended KG and KG-cum-CCC respectively. 89.6% of them were local children and 53.4% were male (Table 1).

Table 1 – Descriptive characteristics of the survey participants (n = 2,565), Hong Kong Immunisation Coverage Survey 2021

Characteristics		Number of participants	(%)
Year of birth	2015	799	31.2
	2016	946	36.9
	2017	820	32.0
Gender	Male	1369	53.4
	Female	1196	46.6
Birth & residential status*	Local	2297	89.6
	Non-local	268	10.4
Institution type	Kindergarden	1732	67.5
	Kindergarden-cum-CCC	833	32.5
Total no. of participants		2565	100.0

**Local children were defined as those who were born in Hong Kong, resided in Hong Kong before two years of age and lived in Hong Kong at the time of the survey. Children who did not fulfil all the above three criteria were defined as non-local children.*

Note: percentage may not add up to 100% due to round off to 1 decimal place.

For children born between 2015 and 2017, except for the third and booster doses of pneumococcal vaccines, the immunisation coverage rates of all vaccines under HKCIP were above 95% (Table 2). The coverage of the second, third and booster doses of PCV were 95.3%, 94.9% and 94.4% respectively, which were slightly lower than the range of 97.7% to 99.6% for other vaccines under HKCIP. This was accounted by the much lower immunisation coverage of PCV (second, third and booster dose) in the non-local children. Local children had higher immunisation coverage (about 99%) than non-local children (about 50-60%) for all doses of PCV, especially for the booster dose (risk ratio = 1.87, 95%CI: 1.61-2.13). With the exclusion of PCV, the overall immunisation coverage among children born between 2015 and 2017 was 96.6%.

Table 2 – Immunisation coverage for vaccines included in HKCIP, of children from birth cohorts 2015-2017, Hong Kong Immunisation Coverage Survey 2021

Type of vaccine	2015 birth cohort			2016 birth cohort			2017 birth cohort			2015-2017 birth cohort			Risk ratio (95%CI)
	Local (n=713)	Non-local (n=86)	Total (n=799)	Local (n=853)	Non-local (n=93)	Total (n=946)	Local (n=731)	Non-local (n=89)	Total (n=820)	Local (n=2,297)	Non-local (n=268)	Total (n=2,565)	Local vs. Non-local
B.C.G.	99.8	100.0	99.9	99.9	95.8	99.5	99.7	96.0	99.3	99.8	97.2	99.6	1.03 (1.00-1.06)
Hepatitis B 3rd dose	99.4	100.0	99.5	99.3	97.9	99.2	99.3	95.9	98.9	99.3	97.9	99.2	1.01 (1.00-1.03)
Polio Booster	98.8	90.6	98.0	98.4	92.6	97.9	97.7	94.8	97.4	98.3	92.7	97.7	1.06 (1.00-1.12)
DTP Booster	98.8	97.7	98.7	98.4	93.8	98.0	97.9	94.9	97.5	98.4	95.4	98.1	1.03 (1.00-1.07)
Measles*	99.8	100.0	99.9	99.2	96.9	99.0	99.2	97.9	99.1	99.4	98.2	99.3	1.01 (1.00-1.03)
Mumps*	99.8	100.0	99.9	99.2	96.9	99.0	99.2	97.9	99.1	99.4	98.2	99.3	1.01 (1.00-1.03)
Rubella*	99.8	100.0	99.9	99.2	96.9	99.0	99.2	97.9	99.1	99.4	98.2	99.3	1.01 (1.00-1.03)
Varicella^	99.7	94.3	99.1	99.1	94.8	98.7	99.1	95.8	98.7	99.3	95.0	98.8	1.05 (1.00-1.09)
PCV 1st dose	99.7	76.6	97.3	99.6	85.2	98.2	99.7	91.7	98.8	99.7	84.7	98.1	1.18 (1.12-1.24)
PCV 2nd dose	99.3	52.2	94.3	99.6	60.4	95.8	99.7	62.3	95.6	99.5	58.5	95.3	1.7 (1.49-1.91)
PCV 3rd dose	99.2	51.1	94.1	99.4	56.3	95.3	99.5	61.3	95.3	99.4	56.4	94.9	1.76 (1.54-1.98)
PCV Booster	99.0	46.5	93.5	99.2	52.1	94.7	99.2	60.2	94.9	99.2	53.1	94.4	1.87 (1.61-2.13)
Complete Immunisation#	98.4	77.7	96.2	97.9	84.1	96.6	97.6	90.8	96.9	98.0	84.4	96.6	1.16 (1.09-1.24)
Complete Immunisation+	97.6	45.4	92.1	97.9	49.0	93.2	97.6	58.3	93.3	97.7	51.0	92.9	1.92 (1.62-2.21)

DTP – Diphtheria,Tetanus and Pertussis

Remarks:

Those with unknown residential status were not included in the above table.

**In Hong Kong, children receive Measles, Mumps and Rubella vaccine according to HKCIP.*

^Varicella vaccine has been included in HKCIP for children born on or after 1 January 2013.

#Excluding PCV

+Including PCV

Regarding the place of receiving the vaccines for the 2015 to 2017 birth cohorts, 90.1% of local children received their vaccines in MCHCs, 9.7% received in private practitioners' clinics and other places and 0.1% received in Mainland. In contrast, 54.3% of non-local children received their vaccines in MCHCs whilst 30.9% received them in Mainland, and 14.8% received the vaccines in private practitioners' clinics and other places (Figure 1).

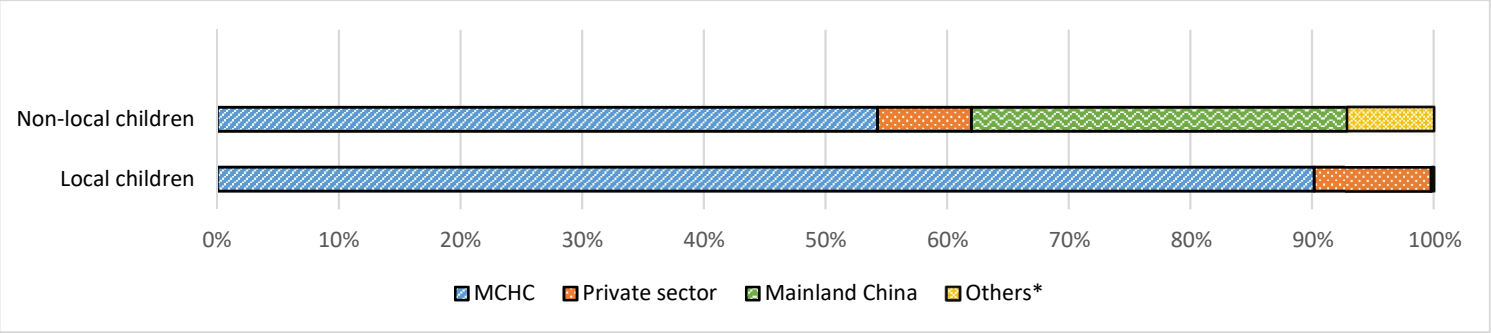

Figure 1 – Descriptive characteristics of the survey participants (n = 2,565), Hong Kong Immunisation Coverage Survey 2021

Footnotes

**Others include those vaccinated at facilities under the Hospital Authority, Macao, other overseas places and unknown. Vaccines received included HKCIP vaccines scheduled before two years of age, except those given at birth (BCG and Hepatitis B 1st dose)*

Majority of local and non-local children received vaccines included in the HKCIP according to the recommended ages, except the first dose of PCV and MMR vaccine among non-local children. Regarding the first dose of PCV, local children received the vaccine at the median (range) of time of vaccination at 2.1 (2.1 – 2.2) months. However, among non-local children, one fourth of them received the first dose of PCV at age 16.6 months or older, which was much longer than the recommended age of 2 months.

Subgroup analysis showed that 31.0% of non-local children received only one dose of PCV and all of them received the vaccine beyond one year of age, with the median (range) of time of vaccination at 23.1 (12.3 – 69.6) months. Regarding the first dose of MMR, one fourth of non-local children received the vaccine at 18.5 months or older, suggesting delay in receiving MMR at the recommended schedule under HKCIP of one year old while local children received MMR at the median (range) of time of vaccination at 12.3 (12.2 – 12.5) months.

Discussion

A high coverage for routine childhood vaccines has been maintained in Hong Kong over the years. Local children had higher routine immunisation coverage when compared to non-local children and the difference was most prominent for PCV. With the introduction of PCV into the HKCIP since September 1, 2009, the coverage of PCV among local children has been maintained high since the birth cohort 2009. Similar to previous round, the coverage of four doses of PCV among all non-local children was found to be lower than local children, at a level below 85% in the 2021 survey. Among non-local children who received PCV, subgroup analysis showed that 31.0% of them had received only one dose of PCV, at an age older than one year old. When compared to local children, more non-local children received vaccines in Mainland China (30.9% among non-local children vs 0.1% among local children). Non-local children were less likely to adhere to the HKCIP compared to local children. As PCV is not included in the National Immunisation Programme (NIP) of Mainland China, non-local children who resided in Mainland China before attending PPI in Hong Kong were less likely to complete their PCV immunisation before two years old. In view of this, since July 2019, DH has implemented the catch-up PCV vaccination for children before they are six years old following an updated recommendation on PCV13 catch-up vaccination made by the Scientific Committee on Vaccine Preventable Disease in March 2019. As noted from this survey, quite a significant proportion of non-local children were likely to have been covered by the catch-up PCV vaccination programme.

There are several limitations to the survey. Some parents might not have submitted all the immunisation records (i.e., potential incomplete documentation) such that the immunisation coverage contributed by the vaccines received in places other than MCHCs (e.g. private health sector, Mainland China) may have been underestimated. Secondly, a relatively low response rate for this round of survey was recorded (53.7% as compared to above 75% in previous rounds) which was likely attributable to the difficulties encountered during data collection against the background of COVID-19 pandemic in Hong Kong in 2021 with repeated school closures. In addition, school closures might also have affected willingness of schools to participate in the survey due to administrative difficulties and reduced chance of contacting students in person. Last but not least, with only children attending PPI being sampled, findings from this study may not be generalised to those children who were not attending PPI as early childhood education in PPI is not mandatory.

In conclusion, a high coverage of routine immunisation of HKCIP vaccines has been maintained, and the vaccines were generally received in a timely manner while non-local children had relatively lower documented coverage of PCV. To protect the public from vaccine preventable diseases, medical practitioners / teachers are advised to take note of the findings of this survey and help provide / arrange immunisation for eligible children, especially those who are non-local to ensure the overall high coverage in the community.

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NEWS IN BRIEF

A local sporadic case of leptospirosis

On July 21, 2023, the Centre for Health Protection (CHP) of the Department of Health recorded a local sporadic case of leptospirosis affecting a 54-year-old male with underlying illness. He presented with fever, malaise, myalgia and low urine output on June 25. He was subsequently admitted to a public hospital on July 2 and was diagnosed as acute renal failure. His condition improved with continuous renal replacement therapy and he was discharged on July 10. Paired sera taken on July 4 and July 10 showed a four-fold increase in antibody titre against *Leptospira*. He noticed rodents at the planters in his residential unit. He had not travelled outside Hong Kong during incubation period. His family member remained asymptomatic.

A local confirmed case of human myiasis

On July 25, 2023, CHP recorded a sporadic case of human myiasis affecting an 83-year-old bed-bound man with multiple underlying illnesses living in Wong Tai Sin. He has been staying in a public hospital since December 2022. Maggots were noted in his right upper gum and left posterior auricular region on July 20, 2023. Maggots collected belong to the family Sarcrophagidae upon taxonomic examination. The public hospital infection control team, Agriculture, Fisheries and Conservation Department (AFCD), and the Pest Control Advisory Section of the Food and Environmental Hygiene Department were informed for follow-up actions. Pest control measures were enhanced in the public hospital.

Two probable cases of sporadic Creutzfeldt-Jakob Disease and a case of genetic human Transmissible Spongiform Encephalopathies

The CHP recorded two cases of sporadic Creutzfeldt-Jakob Disease (CJD) on July 25 and August 11, 2023 respectively.

The first case affected a 57-year-old man with good past health. He presented with insomnia in September 2022. He later developed dysphagia, rigidity, gait disturbance and akinetic mutism in November. He was subsequently admitted to a public hospital in December. His condition was complicated by sepsis and respiratory failure. Cerebrospinal fluid testing and electroencephalography showed features compatible with CJD. He is currently hospitalised in stable condition. There was no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. He was classified as a probable case of sporadic CJD.

The second case affected an 80-year-old man with underlying illness. He presented with impaired memory and unsteady gait in June 2023. He was subsequently admitted to a public hospital in July. He was found to have rapidly progressive cognitive impairment, myoclonus, rigidity, dysphasia and akinetic mutism. Findings of electroencephalography and brain imaging were compatible with CJD. He is hospitalised and currently stable. There was no known family history of CJD. No risk factors for iatrogenic or variant CJD were identified. He was classified as a probable case of sporadic CJD.

On August 8, 2023, the CHP recorded a case of genetic human Transmissible Spongiform Encephalopathies (TSEs), affecting a 73-year-old man with history of hyperlipidaemia and ischemic heart disease. He presented with rapidly progressive cognitive impairment and gait imbalance in October 2022. He also developed hypersomnolence and visual hallucination. He was subsequently admitted to a private hospital in December. Cerebrospinal fluid testing and magnetic resonance imaging showed features compatible with CJD. Genetic test showed a pathogenic variant identified in PRNP. He was recently hospitalised and currently stable. He was classified as a probable case of genetic human TSEs.

A local sporadic case of *Streptococcus suis* infection

On August 9, 2023, CHP recorded a sporadic case of *Streptococcus suis* infection affecting an 87-year-old woman with underlying illness. She presented with fever, malaise and confusion on August 1 and was admitted to a public hospital on August 5. Her blood culture grew *Streptococcus suis*. She was treated with antibiotics and remained in stable condition. During incubation period, she visited a wet market regularly and handled raw pork without wearing gloves. She did not notice any recent wound. There was no history of recent travel. Her home contacts were asymptomatic.

A local case of psittacosis

On August 17, 2023, CHP recorded a case of psittacosis affecting a 56-year-old sales woman with good past health residing alone in Sai Kung. She presented with fever, cough and shortness of breath on July 23 and was admitted to a private hospital on August 6 where her chest X-ray showed pneumonia. The bronchoalveolar lavage was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction on August 16. Her condition gradually improved after antibiotics treatment and she was discharged on August 16. She had no travel history. Investigation revealed that she had visited the bird market on both June 29 and July 2, and bought a parrot from a bird shop there on July 2. Joint visit with the AFCD to the patient's home and the bird market was conducted on August 18. All workers of the bird shop remained asymptomatic.

Communicable Diseases WATCH

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FEATURE IN FOCUS

Review of *Candida auris* infection in Hong Kong

Reported by Dr Cynthis LAM, Dr Wenhua LIN, Dr Benjamin WF Fung and Dr Zenith HY Wu from Communicable Disease Branch, and Dr SY SHING and Dr Leo LUI from Infection Control Branch, CHP.

Candida auris (*C. auris*) is an emerging multidrug-resistant fungus which presents serious threat to public health. It was first reported in 2009 after being isolated from external ear canal of a patient in Japan. *C. auris* is harmless for most healthy people, and it may colonise carriers without causing symptoms and persist in the environment for a long time. However, it may cause severe and fatal infections, especially in vulnerable groups such as the immunocompromised. *C. auris* is posing severe burden for healthcare settings worldwide as it has caused outbreaks in healthcare facilities, including hospitals and residential care homes, in various countries. The known characteristics of *C. auris* (rapid acquisition and spread within affected facilities, challenging environmental decontamination, and long and intermittent carriage) has made the control of *C. auris* spread particularly challenging.

Local situation of *C. auris* in Hong Kong

In Hong Kong, following detection of the first imported case of *C. auris* carrier in a public hospital in June 2019, public hospitals have been implementing active screening including admission screening of high-risk patients, screening of close contacts, performing stringent infection control measures, and reporting every positive case to the Centre for Health Protection (CHP) of the Department of Health.

From 2019 to September 19 2023, the CHP recorded 470 *C. auris* cases. They included 319 males and 151 females with age ranged from 20 to 105 years. Upon investigation, three were found to be sporadic cases and 467 cases were involved in a total of 49 epidemiologically linked clusters. An increasing trend of number of cases recorded has been observed since 2023 (Figure 1). Majority (41, 83.7%) of the clusters occurred in hospitals affecting a total of 400 persons while the remaining (8, 16.3%) occurred in residential care homes for the elderly (RCHEs) affecting a total of 67 persons. The number of persons affected in each cluster ranged from 2-51 (median: 6 persons) in hospital clusters and 3-31 (median: 4 persons) in RCHE clusters.

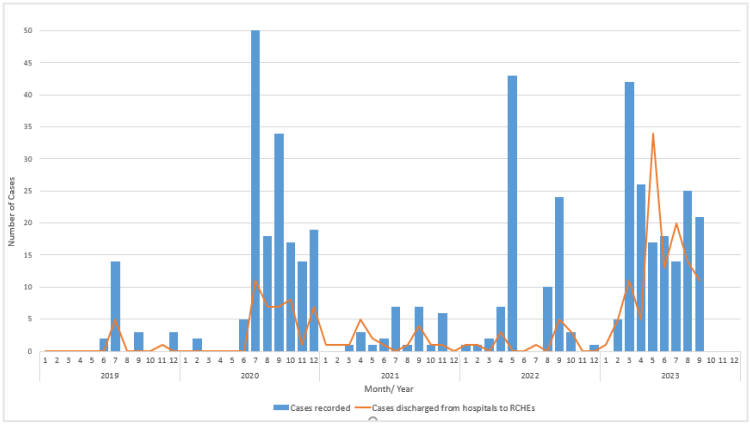

Figure 1 – Monthly number of C. auris cases recorded in Hong Kong and monthly number of cases discharged from hospitals to RCHEs, since 2019 (up to September 19 2023)

Management of *C. auris* carriers discharged from hospitals to RCHEs

RCHE residents who were found to be C.auris carriers in hospitals with no active illness requiring hospital treatment will be discharged to their respective RCHEs. Since July 2019, 186 *C. auris* carriers were discharged from hospitals to respectively 97 RCHEs, with a range of one to six carriers discharged to each RCHE. The number increased since 2023, following closely the overall trend of recorded cases (Figure 1).

To empower the community institutions for preventing spread of this emerging multi-drug resistant organism (MDRO), the CHP and Social Welfare Department have jointly provided training to staff from all RCHEs on how to manage *C. auris* carriers. Staff

of RCHEs are advised to follow the infection control advice on management of MDROs in RCHEs on proper hand hygiene, palcement, contact precaution, using dedicated equipment and dedicated facilities.

(CHP guideline) Infection control advice on management of MDROs in RCHEs include*:

1. Proper hand hygiene of staff and residents.
2. Proper placement: the resident should preferably be placed in a single room. If single rooms are not available, residents with the same MDRO should be cohorted in the same room or partitioned area.
3. Infection control precautions: contact precautions should be adopted for caring procedures and the environment needs to be cleaned and disinfected with 1: 49 diluted bleach at least twice daily. The frequency needs to be increased for frequently touched areas.
4. Dedicated equipment: the resident should have dedicated equipments like wheelchair, blood pressure (BP) cuff for him/herself. If shared equipment is used, it needs to be thoroughly cleaned and disinfected after each use.
5. Dedicated facilities: it is preferred that the resident to have his/her own toilet and bathing facilities. If shared facilities are used, they need to be thoroughly cleaned and disinfected after each use.

The CHP also works closely with the Hospital Authority (HA) and RCHEs to monitor the management of *C. auris* in RCHEs. CHP and Community Geriatric Assessment Team (CGAT) of HA will conduct joint site visits to the RCHE to better prepare the RCHEs for receiving and managing the *C. auris* carriers.

Since it may take months before clearance of the carriage status after patients were discharged to RCHEs (mean and median duration of carriage: 164 days and 135 days respectively), CHP and CGAT will provide continuous support by paying regular visits to the concerned RCHEs, offering advice and guidance, and checking of compliance of RCHE staff on proper infection control measures during the carriage phase. In 2023, CHP has so far conducted 114 visits to 68 RCHEs, located mainly in the KWC and KCC regions.

During these visits, staff of RCHEs were observed to be working deligently to comply with the infection control advice. Although many homes do not have optimal infrastructure such as single rooms to isolate *C.auris* carriers, majority of the RCHEs with *C. auris* carriers comply satisfactorily with the various infection control measures. Occasionally lapses of infection control practice can be observed during care process (e.g. diaper change) and reprocessing of cleansing tools, which were rectified during the visits. With increasing hospitals outbreaks and increasing number of *C auris* carriers discharge from hospitals to RCHEs, the transmmision pressure in RCHE would increase. Suboptimal infrastructure (e.g. lack of adequate isolation facilities) and software (e.g. manpower insufficiency and high turnover rate of staff resulting in lapses in contact precautions) are the main constraints in these RCHEs that could lead to transmission.

Outbreaks of *C. auris* infection in hospitals and RCHEs

From July 2019 to December 2022, a total of 26 hospital outbreaks affecting 289 in-patients were reported and the trend was relatively stable. Twenty-four (92.3%) of them occurred in hospitals under Kowloon West Cluster (KWC) of HA. Two (7.7%) outbreaks occurred in Kowloon Central Cluster (KCC) of HA (Figure 2).

During the same period, CHP also recorded two outbreaks of *C. auris* in RCHEs affecting 3 residents in Kwai Chung in 2021 and 3 residents in Tung Chung in 2022 respectively that were under the catchment area of KWC.

A significant increase in number of hospital outbreaks was observed in 2023. From January to August 2023, a total of 15 outbreaks of *C. auris* affecting 111 in-patients have been reported in public hospitals. The number of persons affected in each outbreak ranged from 2 to 26 (median: 6 persons). Except for one outbreak affecting a hospital in KWC, the other 14 outbreaks were all from hospitals in KCC.

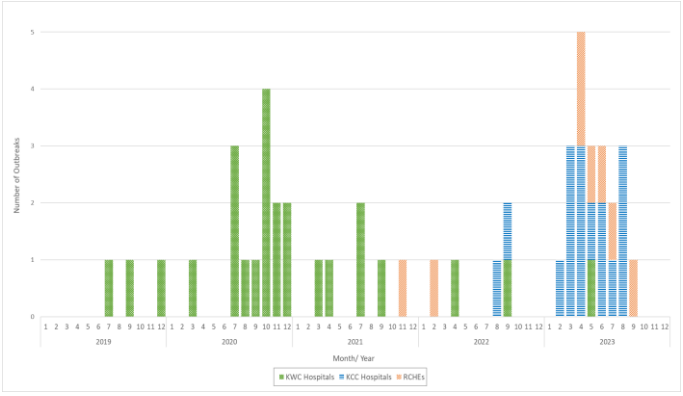

Figure 2. Monthly number of C. auris outbreaks recorded in Hong Kong since 2019 (up to September 19, 2023).

* Infection control advice on Multi-Drug Resistant Organisms (MDROs) for RCHEs. Centre for Health Protection. Available at: https://www.chp.gov.hk/files/pdf/infection_control_advice_on_mdro_for_rche_eng.pdf

Similarly, CHP also recorded an increased number of outbreaks of *C. auris* in RCHEs in 2023 (Figure 2). A total of 6 outbreaks affecting 61 residents in 6 separate RCHEs were recorded so far. The affected RCHEs were located in Sham Shui Po (2), Kowloon City (1), Kwai Chung (2) and Tsuen Wan (1). The number of persons affected in each outbreak ranged from 3 to 31 (median: 6.5 persons). Among them, the index cases of 5 outbreaks could be traced back as residents who were found to be carriers of *C. auris* discharged from public hospitals of KWC back to RCHEs, while that of the remaining one outbreak was discharged from a public hospital of KCC.

Outbreak control and infection control measures in RCHEs

Upon receiving a report of suspected outbreak of *C. auris* in RCHEs, CHP will conduct epidemiological investigation including identification of potential source and contributing factors, and conduct screening for contacts aiming to contain further spread. Infection control measures including isolation/ cohorting of carriers, contact precautions for RCHE staff, environmental cleaning and disinfection, and use of dedicated facilities (such as BP cuff) for carriers will be implemented in the RCHEs.

In addition, CHP will provide for RCHEs infection control advice and tools of audits on different aspects including hand hygiene and environmental hygiene as appropriate, to facilitate self-compliance monitoring by the RCHE staff. Follow-up visits will also be arranged to ensure timely rectifications and improvements.

In view of upsurge of *C. auris* cases that have to be managed in RCHEs, CHP organised two sessions of infection control training on *C. auris* in early 2023 targeting RCHE staff, a total of 2,338 representatives from 217 institutions attended the sessions**. The topics covered updated situation of *C. auris* in Hong Kong, infection control measures in RCHEs applicable to *C. auris*, follow-up screening arrangements for known *C. auris* carriers at RCHEs and various support and resources for RCHEs.

Conclusion

With increasing number of *C. auris* outbreaks occurred in hospitals, the caseload of *C. auris* carriers discharged back to the community has posed increased pressure to RCHEs. Outbreaks of *C. auris* in RCHEs have become more frequent in 2023 especially among those homes with suboptimal capacity. Overseas experience have shown that *C. auris* outbreaks are difficult to be controlled. CHP has been working with the public hospitals to formulate and implement additional measures including use of ultra-violet-C (UV-C) and hydrogen peroxide to enhance environmental disinfection in hospital wards, screening of residents before discharging to RCHEs from hospitals with outbreaks, decolonisation therapy to *C.auris* carriers in RCHEs, in an attempt to better prevent and control of outbreaks in hospitals and RCHEs.

Review of Legionnaires' disease in Hong Kong in 2023

Reported by Dr Lai Shuk-mui, Katie, Medical and Health Officer, Respiratory Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Legionnaires' disease (LD) is one of the statutory notifiable diseases in Hong Kong. It is a type of bacterial pneumonia caused by *Legionella*, most commonly *Legionella pneumophila* serogroup 1 (Lp1). The bacteria has optimal growth within the temperature range around 20°C to 45°C, particularly in the range of 35°C to 43°C. More cases are usually observed in the warmer season, but it can happen any time throughout the year. This article reviews the LD cases reported to the Centre for Health Protection (CHP) of the Department of Health in the first eight months of 2023.

CHP recorded a total of 70 LD cases in the first eight months of 2023, higher than 43 and 56 cases recorded in the same period in 2021 and 2022 respectively (Figure 1), but comparable with the same period in years from 2018 - 2020 (63 to 78 cases).

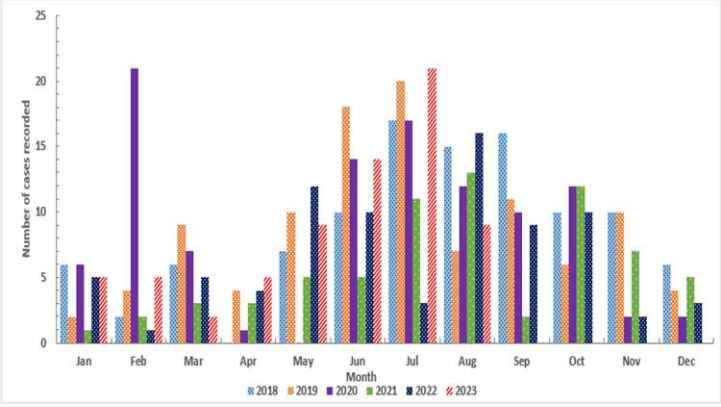

Figure 1 – Monthly number of reported Legionnaires' disease cases, 2018 – 2023, as of August 31, 2023.

** The training materials is available for review online at the Hong Kong Training Portal on Infection Control and Infectious Disease (https://icidportal.ha.org.hk/Contents/View/460)

There was a marked increase in LD cases reported in June to July 2023, accounting for half (35 cases) of the cases reported in the first eight months.

Clinical and epidemiological characteristics

Among the 70 LD cases recorded in the first eight months of 2023, their ages ranged between 27 and 95 years (median: 70 years), with vast majority (65, 92.9%) affecting persons aged 50 years or above. There were more males with male-to-female ratio of 5.4:1. Out of the 70 LD cases, 61 cases (87.1%) had history of at least one underlying medical condition. For 63 cases with information of smoking history available, 20 cases (28.6%) were current smokers and 17 cases (24.3%) were ex-smokers.

Their common presenting symptoms included fever (84.3%), cough (70.0%) and shortness of breath (51.4%). All cases developed pneumonia and required hospitalisation. Sixteen cases (22.9%) required intensive care. Among the 70 cases, seven died within the same admission for LD, among them four died of LD.

Regarding laboratory diagnosis, 49 (70.0%) and 20 (28.6%) cases were initially diagnosed as LD by urinary antigen test (UAT) and polymerase chain reaction (PCR) of respiratory specimens respectively, while the remaining case was confirmed by sputum culture.

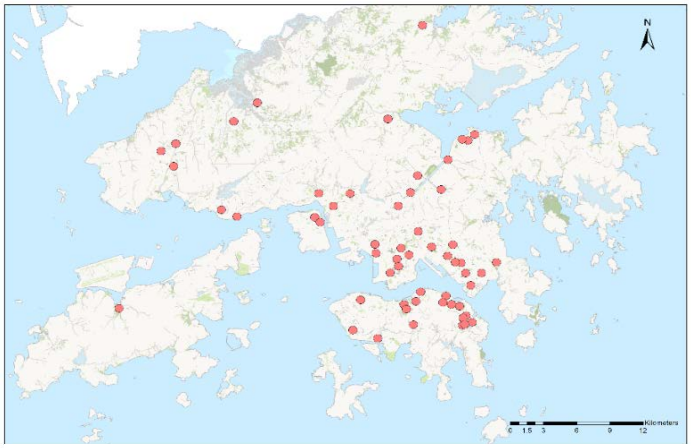

Figure 2 – Geographic distribution of the residential places of the 57 locally acquired LD cases
(Source: Communicable Disease Information System).

Fifty-seven (81.4%) cases were classified as locally acquired infections. The residential places of the 57 locally acquired cases were distributed in various districts in Hong Kong (Figure 2). Two cases resided within the same residential building in Wanchai, whereas the remaining local cases were residing at different places. Three cases were nosocomial infection as the patients stayed in three respective hospitals for the whole incubation period. The respective hospitals carried out disinfection of the water supply systems and no other related cases were identified. One case was resident of a residential care home for the elderly and another one was resident of a residential home for the disabled. The respective homes also carried out disinfection of the irregularities found. Environmental investigation of the two cases who resided in the same building did not support common source outbreak so they likely to be two sporadic cases acquring the infection from separate sources from the community. The other 50 cases did not have obvious epidemiological linkage or staying in high risk settings and likely to be sporadic infection acquiring from various sources from the community.

Discussion

In summary, the number of LD cases recorded in the first eight months in 2023 was higher than that in the same period in 2021 and 2022 but comparable with the years between 2018-2020. Epidemiological investigations did not reveal any community or nosocomial outbreaks as of present. As *legionellae* are ubiquitous in aqueous environments including man-made water systems, it is important to operate and maintain properly designed man-made water systems to prevent LD. The public, especially immunocompromised persons, should adopt preventive measures so as to decrease the risk of LD infection. Further information on LD is available from the designated webpage of the CHP (https://www.chp.gov.hk/en/view_content/24307.html). Information about the good practices in handling man-made water systems is detailed the Code of Practice for Prevention of LD and the Housekeeping Guidelines for Cold and Hot Water Systems for Building Management published by the Prevention of LD Committee (available on the website of the Electrical and Mechanical Services Department at https://www.emsd.gov.hk).

NEWS IN BRIEF

A probable case of sporadic Creutzfeldt-Jakob disease in Kwun Tong

On August 28, 2023, the Centre for Health Protection (CHP) recorded a probable case of sporadic Creutzfeldt-Jakob disease (CJD) affecting an 83-year-old woman with underlying illness. She presented with significant decline in general condition and rapid progressive dementia in May 2023. She was admitted to public hospital on June 15, 2023 after falling at home on June 14, 2023. She was found to have myoclonus and extrapyramidal dysfunction. Electroencephalogram (EEG) showed features typical of CJD and 14-3-3 protein was detected in her cerebrospinal fluid. Her condition was stable. There was no known family history of CJD and no reported risk factors for iatrogenic CJD. She was classified as a probable case of sporadic CJD.

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

On September 16 and 18, 2023, CHP recorded two sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus*.

The first case involved a 64-year-old male with underlying illnesses. He presented with right hand pain and swelling to a public hospital on September 13, 2023 and was admitted on the same day. Clinical diagnosis was necrotising fasciitis complicated by shock and acute kidney injury. Surgery was performed and *Vibrio vulnificus* was cultured from necrotic tissue. According to his family, the patient went fishing on the sea a few days before symptom onset, during which he sustained an injury at right hand. He did not report consumption of uncooked seafood.

The second case was a 74-year-old male fisherman residing on fishboat stayed mostly in Hong Kong waters. He presented with right forearm pain and swelling to a public hospital on September 16, 2023 and was admitted on the same day. A clinical diagnosis of necrotising fasciitis was made and surgery was performed soon after hospitalisation. Intra-operative forearm fluid swab grew *Vibrio vulnificus*. The index was known to have prepared a marine fish for dinner on September 15.

A local sporadic case of *Streptococcus suis* infection

On September 18, 2023, CHP recorded a sporadic case of *Streptococcus suis* infection affecting a 74-year-old woman with underlying illness residing in Sha Tin. She presented with fever, neck stiffness and confusion on September 16 and was admitted to a public hospital on September 17. Both her cerebrospinal fluid and blood culture grew *Streptococcus suis*. She was treated with antibiotics and remained in stable condition. During incubation period, she handled raw pork without wearing gloves. She had no recent wound or other high-risk exposure. There was no history of recent travel. She lived with her husband who was asymptomatic.

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FEATURE IN FOCUS

2021 questionnaire survey on attitudes to childhood vaccination among parents of preschool children in Hong Kong

Reported by Ms Wendy CHIU, Scientific Officer; Dr SK MAK, Senior Medical and Health Officer, Vaccine Preventable Disease Section, Surveillance Division, Communicable Disease Branch, CHP

Background

Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services[1]. It was listed by the World Health Organisation (WHO) as one of the ten threats to global health in 2019[2]. Vaccine hesitancy is regarded as a complex and context specific issue that varies across time, place and vaccines. Factors such as complacency, convenience and confidence are believed to influence vaccine hesitancy[1].

The Centre for Health Protection of the Department of Health assessed the parental attitudes to childhood vaccines/vaccination among parents/guardians of preschool children as part of the 2018 Immunisation Survey on Preschool Children in Hong Kong[3] and results affirmed a low tendency of vaccine hesitancy among local parents/guardians. Another round of Immunisation Survey on Preschool Children was conducted in 2021 and the part on immunisation coverage of the vaccines under the Hong Kong Childhood Immunisation Programme (HKCIP) was reported in a previous article[4]. We report the results of the part on parental attitudes to childhood vaccines/vaccination in this article.

Methods of the survey on parent attitudes to childhood vaccines/vaccination

The study population was children aged three to five (defined as children born between 2015 and 2017) attending 25 pre-primary institutions (kindergartens and kindergarten-cum-childcare centres) in Hong Kong selected by stratified cluster sampling. A bilingual (Chinese and English) self-administered questionnaire on Parent Attitudes about Childhood Vaccines (PACV) was distributed to the parents/guardians of all the children in the sampled pre-primary institutions.

This questionnaire consisted of three main parts: (1) questions on demographics; (2) questions on the top three channels and sources for acquiring vaccination information; and (3) a total of 15 PACV questions on belief, perceptions and behaviour related to vaccination. The 15 PACV questions, referencing from a published Asian study[5], and the scoring scheme were the same as those used in last round in 2018[3]. Each PACV question was scored from 1 to 5, with 1 being most positive attitude towards vaccination (least hesitant), 5 being most negative attitude (most hesitant) towards vaccines/vaccination and 3 being neutral. For each parent/guardian, the scores for these 15 questions were summed up and then divided by 15 to derive an average PACV score ranging from a minimum of 1 to a maximum of 5. The lower the average PACV score means the more positive attitude the parents were towards childhood vaccines/vaccination.

Results

Among the 5 076 children attending the 25 pre-primary institutions, a total of 2 565 parents/guardians with children in the targetted birth cohort (50.5%) responded to the PACV questionnaire survey. The children of the respondents were mostly local children who were born and resided in Hong Kong before and after entering preschools (Table 1). Most of them had 1 or 2 siblings (65.2%).

Majority of the respondents were mothers (77.7%), aged 25 to 44 years (88.4%) and ethnic Chinese (95.6%) (Table 1). Over 95% (97.0%) of the respondents attained secondary education or above. About half (51.3%) and one tenth (9.6%) were working full-time and part-time respectively. About half (50.2%) of the respondents' monthly household income was less than $30 000, comparable to the general population.

Less than 3% of the respondents reported that they had delayed (51 respondents; 2.0%) or refused (17 respondents; 0.7%) to arrange their children to receive vaccines under HKCIP for reasons other than illness or allergy. For the channels for acquiring vaccination information, "internet/ search engines" (23.4%) and "TV/radio" (16.8%) were the most common channels, followed by "social media" (16.1%) and "health promotion activities and materials" (15.7%) (Table 2). The most common sources of vaccination information were healthcare professionals (34.6%) and family/ friends/ social networks (33.6%), followed by non-healthcare professionals (16.6%) and vaccine manufacturers (11.5%) (Table 2).

For the scores of the 15 PACV questions, 88% respondents had an average PACV score <3 (i.e. positive attitudes towards vaccination). The mean score for all the respondents was 2.5. The mean scores for individual PACV question were summarised in Figure 1. Among the 15 questions raised in the 2021 survey, only one question *"concern about serious side effects from vaccination"* had a mean PACV score of 4.0 (i.e. hesitant to vaccines/vaccination) while the other questions had mean PACV scores below 4.0. Notably, the mean PACV score was above 3 but below 4 (leaning towards hesitant side) for four questions: *"too many vaccines may not incur extra benefits"* (mean score: 3.4), *"it is better to have fewer vaccines at the same time"* (mean score: 3.3), and *"concern that some HKCIP vaccines are not safe"* (mean score: 3.2), and *"concern that vaccines are not able to prevent diseases"* (mean score: 3.1)

Compared to the previous survey in 2018, the mean score for respondents in both surveys were similar at around 2.4 (in 2018) and 2.5 (in 2021), which indicated the parental attitudes to childhood vaccines/vaccination were positive as a whole. As regard to individual question, the findings on mean PACV score were also similar for all except for two questions (Figure 1). *"Concern about serious side effects from vaccination"* had higher mean PACV score in the current survey (4.0 in 2021 vs 3.7 in 2018) while the reverse was noted for the item *"Better to develop immunity after getting sick than getting vaccination"* (3.0 in 2021 vs 3.1 in 2018).

Similar to the previous round, the same set of limitations applied in this study. First, the respondents might not be the major decision-maker in the family for their children's vaccination. Second, respondents of the sampled group might not be representative of preschool parents in general. Third, some PACV questions in the survey might indicate commonplace

Table 1 – Demographics of children and parents/guardian (the respondents) (n = 2 565)

Characteristics of Children		%
Birth year	2015	31.2
	2016	36.9
	2017	32.0
Sex (female)		46.6
Local status*	Local	89.6
	Non-local	10.4
No. of siblings	0	31.1
	1	54.2
	2	11.0
	3	1.4
	≥4	0.7
	Unknown	1.6
Characteristics of Parents/Guardian (the respondents)		**%**
Relationship with child	Father	20.3
	Mother	77.7
	Grandparent	0.7
	Guardian	1.3
Age group	Under 25	0.6
	25-44	88.4
	45-64	8.9
	65 or above	0.4
	Unknown	1.6
Ethnicity	Chinese	95.6
	Filipino	0.9
	Indian	0.8
	Pakistani	0.6
	Nepalese	0.3
	White	0.2
	Other	0.4
	Unknown	1.1
Education level	Pre-primary/ Primary	1.6
	Secondary	53.5
	Post-secondary	43.5
	Unknown	1.4
Employment status	Full-time	51.3
	Part-time	9.6
	Unemployed	37.2
	Unknown	1.9
Average monthly household income	<$10000	6.4
	$10000-$19999	21.5
	$20000-$29999	22.3
	$30000-$39999	14.3
	>=$40000	31.2
	Unknown	4.2

*Local children were defined as those who were born in Hong Kong, resided in Hong Kong before two years of age and lived in Hong Kong at the time of the survey. Children who did not fulfil all the above three criteria were defined as non-local children.
Note: percentage may not add up to 100% due to round off to 1 decimal place.

parental concerns rather than real concern for being hesitant to vaccines/vaccination, such as serious side effects of vaccines and administration of multiple vaccines in the same visit.

Conclusion

In summary, the 2021 immunisation survey on preschool children supported a continual positive attitude towards vaccine/vaccination among local parents/guardians, similar to the findings of 2018. This was echoed by the high uptake of HKCIP vaccines shown by this survey. However, vaccine safety, vaccine effectiveness and too many vaccines given to young children remain as the major concerns for some parents. Healthcare professionals may consider to take every chance to explain the importance and safety to parents/guardians by highlighting the items with mean PACV score above 3.0 to ensure their children could undergo up-to-date vaccination in a timely manner.

Table 2 – Channels and Sources of receiving vaccine information of the respondents (n=2 565)

Channel	Percent (%)
Internet / search engines	23.4
TV/Radio	16.8
Social media (e.g. Facebook, online forum, Youtube, Instagram, Twitter, Weibo, etc.)	16.1
Health promotion activities and materials (e.g. forum, pamphlet, poster, etc.)	15.7
Personal communication software/app(e.g. WhatsApp, LINE, Facebook messenger, Skype, Telegram, WeChat, etc.)	10.8
Face to face	8.5
Print media (e.g. newspapers, magazines, books, etc.)	5.1
Others	3.7
Source	**Percent (%)**
Healthcare professionals	34.6
Family / friends /social network	33.6
Non-healthcare professionals (celebrities/ bloggers/ writers/ columnists)	16.6
Vaccine manufacturers	11.5
School	1.0
Others	2.7

Remarks: Parents were asked to list the top three channels they acquired vaccination information from. The percentage shown in the above table was the percentage of parents who picked that item as one of their top 3 channels.

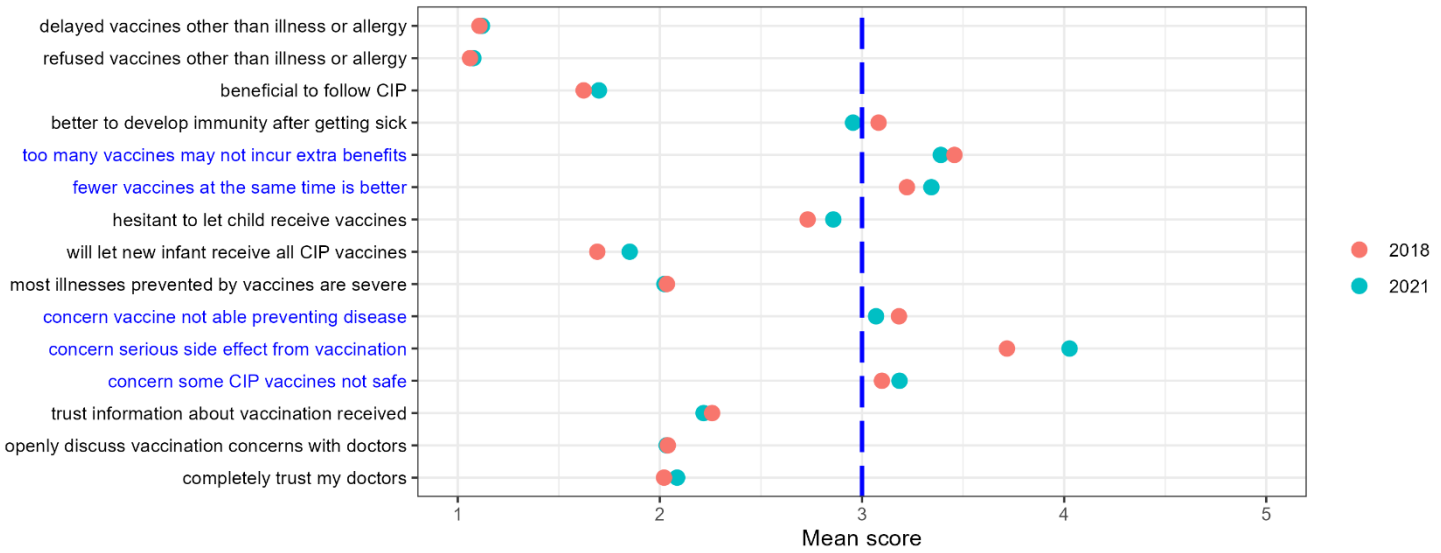

Figure 1 – Mean score of each PACV question in 2018 and 2021 questionnaire survey

Remarks:
Responses of 15 PACV questions were scored from 1 to 5, with 1 being least hesitant (most confident) and 5 being most hesitant (least confident) to vaccines/ vaccination

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Updated situation of invasive pneumococcal disease in Hong Kong and recommendations on the use of pneumococcal conjugate vaccines

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

Background

Pneumococcal infections is caused by the bacteria *Streptococcus pneumoniae* (pneumococcus), which may be manifested as a range of non-invasive and invasive diseases. Non-invasive diseases are more common, examples include acute otitis media, sinusitis and pneumonia while invasive pneumococcal diseases (IPD) include meningitis, pneumonia with bacteraemia, empyema, septic arthritis, osteomyelitis, endocarditis and sepsis. The disease is transmitted by direct contact with respiratory droplets. Nasopharyngeal carriage of *Streptococcus pneumoniae*, especially in young children, is related to its spread. Children younger than 5 years old and adults 65 years or older are at increased risk of suffering from IPD. Other risk factors of IPD include previous history of IPD, having cochlear implant, suffering from cerebrospinal fluid leakage, weakened immunity due to asplenia, malignancy, human immunodeficiency virus infection, immunosuppressant, chronic illnesses such as diabetes mellitus, chronic lung disease and chronic kidney disease, etc.

Streptococcus pneumoniae bacteria has more than a hundred serotypes. The serotypes are determined by the capsular polysaccharides expressed by the bacteria, which is recognised as its major virulence factor and targets for vaccine development.

As at October 15, 2023, four different pneumococcal vaccines are registered in Hong Kong. Besides 13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (23vPPV) that have been used in Hong Kong for a few years, two newer vaccines, 15-valent pneumococcal conjugate vaccine (PCV15) and 20-valent pneumococcal conjugate vaccine (PCV20) are registered for use in individuals 6 weeks or above, and in adults aged 18 years or above respectively.

In order to evaluate the impact of IPD and pneumococcal vaccination programme, ongoing surveillance of IPD has been implemented since 2007 and the disease has become a notifiable infectious disease in 2015.

The use of pneumococcal vaccines in Hong Kong under government programme

Pneumococcal vaccine was incorporated into the Hong Kong Childhood Immunisation Programme (HKCIP) in September 2009 and PCV13 has been the recommended vaccine in HKCIP since 2011. The schedule of PCV13 under HKCIP was updated in 2019 to two doses of PCV13 as primary series given at 2 and 4 months, followed by a booster dose of PCV13 at 12 months.

23vPPV was first introduced to high risk individuals 2 years of age and older and elders 65 years of age and older in Hong Kong in 2007[1]. In adults aged 65 years or above, a single dose of either PCV13 or 23vPPV was recommended in 2014[2]. Besides, high-risk individuals aged 2 years or above have been recommended to receive a single dose of PCV13, followed by a single dose of 23vPPV 12 months later since 2016[3].

Local epidemiology of invasive pneumococcal disease

In Hong Kong, the number of IPD cases was relatively stable during pre-COVID period, but dropped significantly during COVID-19 pandemic, and then increased in 2023 to a level lower than pre-COVID era. During 2007 to 2019, 117 to 205 IPD cases per year were recorded (annual incidence from 1.67 to 2.84 per 100,000 population). Due to implementation of COVID-19 containment measures from 2020 to 2022, the number of IPD cases dropped drastically, with a total of 47, 25 and 28 cases in 2020, 2021 and 2022 respectively (annual incidence from 0.34 to 0.63 per 100,000 population). As pandemic control measures were gradually lifted in 2023, the number of IPD cases has been rising but to a level lower than pre-pandemic era. As of end of September 2023, 67 IPD cases (including 15 paediatric cases) were recorded, an

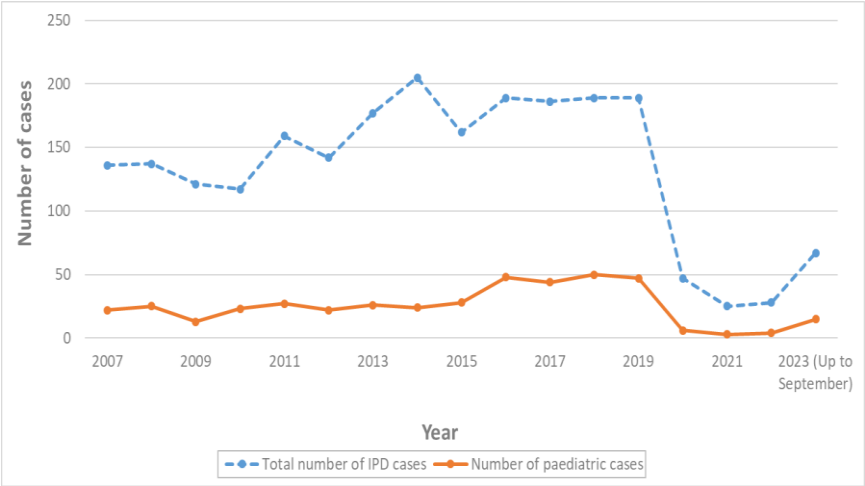

Figure 1 – Number of IPD cases by year

annualised incidence rate of 1.19 per 100,000 population (Figure 1).

Consistent with other places, IPD was more prevalent in children under five years and elderly aged 65 years or above in Hong Kong. The incidence among young children aged under two years decreased gradually from about 10 per 100,000 population in 2007 and 2008 to less than 3 per 100,000 population in 2015 to 2017, likely due to the inclusion of PCV into the HKCIP in 2009. The incidence among these young children remained low (about 4 per 100 000 population) in 2018 to 2019 (Figure 2). On the other hand, the incidence of IPD among children aged two to four years apparently increased since 2015, which may be partly due to an increase in the number of cases detected by PCR since 2015[4]. The incidence among children aged 2 to 4 years remained the highest (9.73-15.93 per 100 000 population) from 2015 to 2019. The incidence among elders aged 65 years or above fluctuated during 2007 to 2014 (at around 5 to 10 per 100 000 population)[4] and slightly decreased from 6.73 per 100 000 population in 2015 to 5.57 per 100 000 population in 2019 (Figure 2).

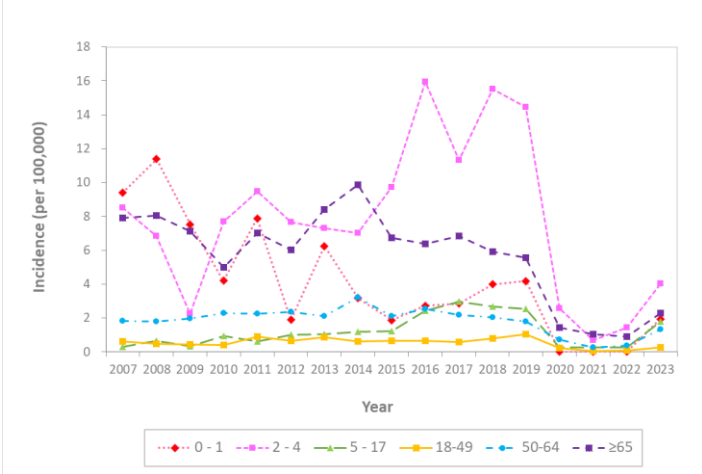

Figure 2 – Age-specific incidence of IPD in Hong Kong, 2007 to September 2023

In terms of mortality, there were a total of nine paediatric death cases reported from 2015 to 2022, with case fatality rate of IPD ranged from 0% to 6.8%. The mean age of paediatric death cases was 3, ranging from 2 to 5. Seven of them received four doses of PCVs, one received 3 doses of PCVs and one with unknown vaccination history. On the other hand, 124 death cases were reported in adults aged 65 years or above from 2015 to 2022, with case fatality rate of IPD ranged from 21.4% to 40.0%. Regarding pneumococcal vaccination among these elderly fatal cases, 34.7% received at least 1 dose of 23vPPV, while 1.6% received at least 1 dose of PCV13.

Serotypes covered by PCV13 accounted for 48% to 75% of IPD cases each year during 2015 to September 2023 (Figure 3). Overall, 69.9% of all reported IPD cases and 79.6% of all paediatric IPD cases turned out to have serotypes covered by PCV13 respectively (Figure 3). Notably, during the COVID-19 pandemic, especially in 2021, the serotype distribution of IPD differed from other years, mainly due to smaller number of cases at that time. Despite being covered in PCV13, serotype 3 remains the most common serotype, accounting for 46.2% of all IPD cases and 64.5% of all paediatric IPD cases recorded from 2015 to end of September in 2023. The second most common serotype reported was 19A (6.8%) of all IPD cases, followed by serotype 14 (5.7%). Both serotypes 19A and 14 are also covered by PCV13.

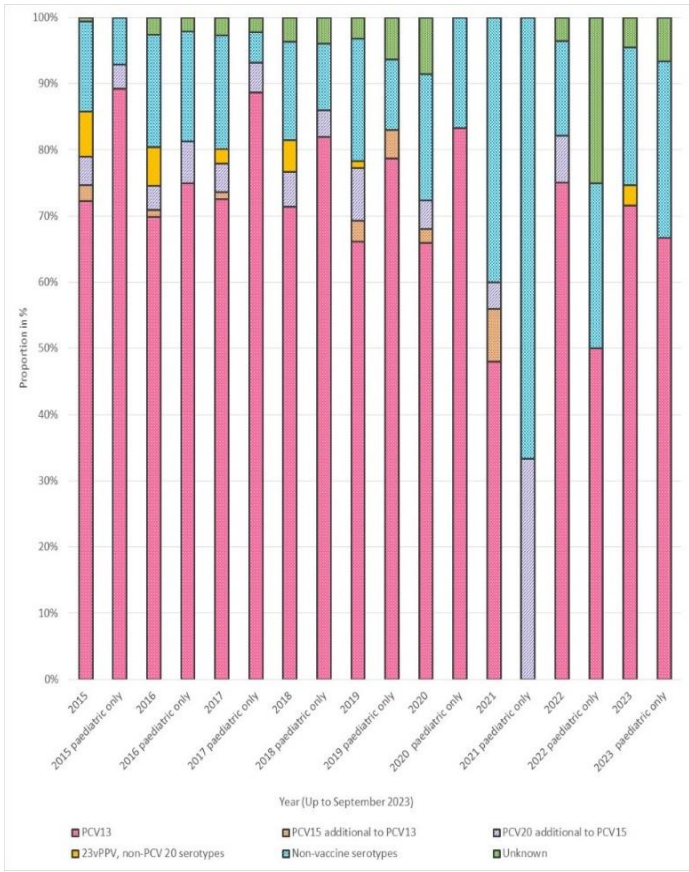

Figure 3 – Proportion of IPD cases by serotypes

Serotypes 22F and 33F are the unique PCV15 serotypes in addition to PCV13. From 2015 to September 2023, 17 (1.6%) IPD cases, including 2 paediatric cases, were attributable to serotype 22F. No IPD case caused by serotype 33F was notified during the reporting period.

Seven serotypes (8, 10A, 11A, 12F, 15B, 22F and 33F) are unique to PCV20 in addition to those in common with PCV13, which attributed to 6.4% IPD cases recorded from 2015 to September 2023 and 4.5% of all paediatric IPD cases.

On the other hand, non-vaccine serotypes accounted for 17.2% of all IPD cases and 12.2% of paediatric IPD cases recorded until September 2023. Among the non-vaccine serotypes, the most prevalent serotype was 23A (25.3%), followed by 15A (22.6%) and 6C (10.8%).

Recommendations on the use of pneumococcal conjugate vaccines

According to the available scientific data, the safety profiles of the three PCVs (PCV13, PCV15 and PCV20) are comparable, and both PCV15 and PCV20 should confer an overall non-inferior protection against IPD serotypes covered by PCV13. Compared to PCV13/PCV20, PCV15 induced higher immunogenicity against serotype 3 which may potentially be more effective in preventing IPD caused by serotype 3, although further evidence on clinical effectiveness and impact is still pending. In view of the persistent disease burden of serotype 3 IPD locally, scientific evidence and international recommendations, in September 2023, the Scientific Committee on Vaccine Preventable Diseases under the Centre for Health Protection of the Department of Health recommended to replace PCV13 with PCV15 under both the HKCIP and the Government Pneumococcal Vaccination Programme[5]. Pneumococcal vaccination schedules in children and high risk groups remain unchanged. PCV13 and PCV15 can be administered interchangeably at any point during the course of immunisation. Individuals may discuss with their own healthcare provider if they wish to receive PCV20 to protect themselves against IPD.

As there are more than 100 serotypes of pneumococci, vaccination may not offer absolute protection against IPD. Members of the public are strongly advised to keep personal and environmental hygiene for prevention of IPD. Regardless of vaccination history, everyone especially those who are immunocompromised are advised to wear masks when there are symptoms of respiratory tract infection and seek medical attention promptly, in addition to maintaining good indoor ventilation.

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NEWS IN BRIEF

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

The Centre for Health Protection (CHP) has recorded four sporadic cases of necrotising fasciitis caused by *Vibrio vulnificus* infection on September 24, September 27, October 6 and October 19, 2023 respectively.

The first case affected a 71-year-old female. She had a history of hypertension. She presented with left leg painful swelling and fever on September 21. She was sent to a public hospital on September 22 for decreased general condition and was admitted. The clinical diagnosis was severe septic shock and necrotising fasciitis of left leg. Surgery was performed and her left thigh tissue biopsy showed heavy growth of *Vibrio vulnificus*. According to her family, the patient was suspected to sustain left leg injury during her visit to a market in Mong Kok on September 21. She did not handle or consume any uncooked seafood otherwise.

The second case affected a 76-year-old man with underlying illness. He presented with left lower limb pain and swelling to a public hospital on September 22 and was admitted on the same day. The clinical diagnosis was necrotising fasciitis and surgery was performed soon after hospitalisation. Blood culture and left leg tissue grew *Vibrio vulnificus*. He subsequently passed away on September 24. According to his family, his left shin was punctured by a shrimp on the way home from local wet market in Sham Shui Po district on September 20. There was no report of consumption of uncooked seafood.

The third case affected a 79-year-old-man with underlying illness. He presented with fever and right lower limb cellulitis with bullae to a public hospital on October 1 and was admitted on the same day. The clinical diagnosis was necrotising fasciitis of right lower limb. Surgery was performe and the pus swab grew *Vibrio vulnificus*. His family member recalled that he purchased shrimps at a wet market in Tsuen Wan two days before symptom onset but there was no known history of injury or wounds.

The fourth case involved a 54-year-old female restaurant owner with undiagnosed diabetes mellitus. She presented with chills, rigor and myalgia on October 13 and was admitted to a public hospital on October 17. She was noted to have a cellulitic area with blisteration and crepitus over the abdomen. The clinical diagnosis was necrotising fasciitis of left abdominal wall. Excisional debridement was performed and the wound tissue grew *Vibrio vulnificus*. Her condition improved after treatment and she is now in stable condition. Before symptom onset, she swam alone in seawater at Po Toi O Pier every day while having a pre-existing wound at the same abdominal region since October 9. She did not handle or consume any uncooked seafood. Her family members and co-workers were asymptomatic. There was no history of recent travel.

Two sporadic cases of *Streptococcus suis* infection

On October 6, 2023, CHP recorded two sporadic cases of *Streptococcus suis* infection.

The first case involved an 88-year-old retired man with multiple comorbidities. He presented with fever and chest pain on October 4 and was admitted to a public hospital. His chest x-ray showed right lower zone haziness. His blood culture grew *Streptococcus suis*. His condition was stable. During incubation period, he visited nearby wet market in Sham Shui Po district for grocery shopping. He did not handle any raw pork or related products. He reported a chronic wound at his right knee. There was no recent travel history. He lives with his wife who remained asymptomatic.

The second case was a 74-year-old housewife with hypertension. She presented with fever, chills and rigor on September 30. She attended a public hospital on October 3 and was admitted for constipation and loin pain. Her blood culture grew *Streptococcus suis*. She was put on antibiotics and her condition remained stable. She was discharged on October 5. During incubation period, she has no travel history. She purchased raw pork from local market in Sham Shui Po district and handled the pork at home without gloves. She lives with her husband who was asymptomatic.

A local case of psittacosis

On October 17, 2023, CHP recorded a case of psittacosis affecting a 37-year-old housewife with good past health residing with her family in Sha Tin. She presented with fever, headache and myalgia on September 27 and was admitted to a public hospital on October 4 and her chest X-ray showed pneumonia. Her sputum was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction. Her condition gradually improved after antibiotic treatment and she was discharged on October 10. She had no travel history during the incubation period. She did not keep any pets at home. She denied any contact with birds, their droppings or carcasses. Her household contacts were asymptomatic.

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Communicable Diseases WATCH

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FEATURE IN FOCUS

Review of necrotising fasciitis associated with *V. vulnificus* infection in Hong Kong, January 2018 to October 2023

Reported by Dr Sam LI Wing-sum, Medical Officer, Field Epidemiology Training Program Section, CHP

Vibrio vulnificus (V. vulnificus) is a gram-negative rod that can cause diarrheal illness, septicemia, or wound infection. These bacteria thrive in warmer waters – especially during the summer when water temperatures are high. Serious infection due to *V. vulnificus* is more common among individuals with chronic underlying illnesses – including liver disease, diabetes mellitus, chronic renal failure, cancer, or other immunocompromising conditions. Necrotising fasciitis (NF), an infection of the deep soft tissues that results in progressive destruction of the muscle fascia and overlying subcutaneous fat, can be caused by more than one type of bacteria including Group A *Streptococcus, V. vulnificus, Klebsiella, Clostridium, Escherichia coli, Staphylococcus aureus* and *Aeromonas hydrophila*. For *V. vulnificus*, it may be associated with NF typically in the setting of traumatic injury associated with seawater. Prompt treatment with appropriate antibiotic is often needed. In order to stop the infection from spreading, surgical removal of dead tissue and/or amputation may be required.

In this article, we reviewed the epidemiology of NF associated with *V. vulnificus* infection (NFVV) recorded by the Centre for Health Protection (CHP) of the Department of Health (DH) between 2018 and 2023 (as of October 31).

From January 1, 2018 to October 31, 2023, a total of 91 cases of NFVV were recorded. Three-quarters of the NFVV cases (69 out of 91) were recorded in summer months between May and September (Figure 1).

All 91 cases were adults with ages ranging from 41 to 99 years (median: 73 years). Sixty three (69%) males and 28 (31%) females were affected. Over half (67%) of the cases were aged 65 or above.

Eighty (88%) of the patients had underlying medical conditions such as diabetes mellitus, liver disease, and renal impairment. Four of the 11 patients with good past health were noted to be alcohol drinker.

The patients commonly presented with pain (89%) and swelling (89%), followed by fever (73%), erythema (68%) and skin blistering (53%). Most of the cases involved lower limbs only (52%) or upper limbs (41%) only. Around 3% cases had both upper and lower limbs involved, and 4% had trunk involved.

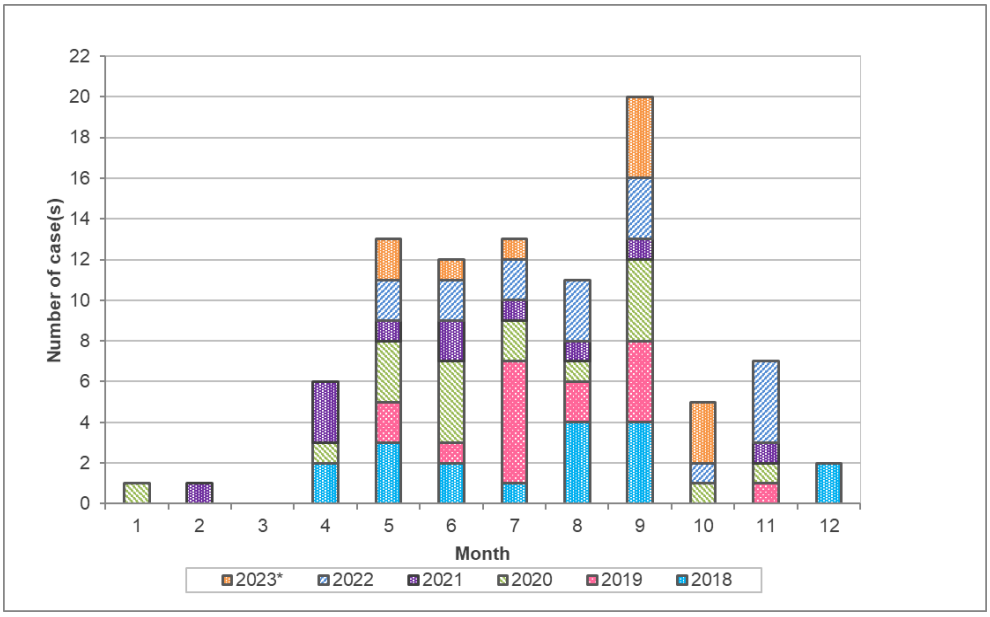


Figure 1 - NFVV recorded by the CHP of the DH between 2018 and 2023.
(*Provisional figures as of November 15, 2023)

All patients required hospitalization, among them 74 (81%) cases required intensive care admission, 76 (84%) required wound debridement, and 40 (44%) required amputation. Sixty (66%) cases were discharged from hospitals with median length of stay of 46 days (range: 10 to 152 days), twenty-eight (31%) cases passed away due to the infection.

The annual case fatality rate (Figure 2) ranged from 18% to 44% between 2018 and 2022 (median: 33%). The provisional case fatality rate for 2023 with data available up to Oct 2023 is 27%.

Epidemiological investigation revealed that during the 7 days preceding onset of symptoms, 62 (68%) cases had visited wet market; 49 (54%) involved pre-existing wound or sustained new injury, 48 (53%) cases had handled raw seafood; 21 (23%) cases had contacted seawater during swimming or fishing, while 16 (18%) of them also had pre-existing wound or sustained new injury. As for the two cases who had history of consuming raw seafood, both had underlying illnesses.

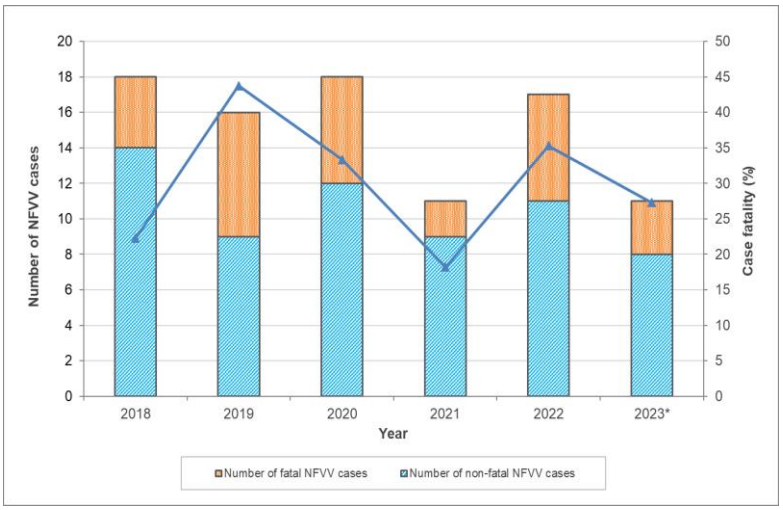


Figure 2 – NFVV annual case fatality rate between 2018 and 2023
(*Provisional figures as of November 15, 2023)

NFVV is a serious infection, associated with intensive care admission and high fatality. Doctors are encouraged to report NFVV to CHP. Vigilance should be maintained against the disease especially during summer months.

Tips for prevention of *V. vulnificus* infection

To prevent *V. vulnificus* infection, members of the public, in particular people with impaired immune response or with underlying medical illnesses, are advised as follows:

Proper wound management

- Clean wounds immediately and cover properly with waterproof adhesive dressings until healed
- Prompt first aid care of even minor, non-infected wounds
- Perform hand hygiene before and after touching wounds
- Avoid having wounds coming into contact with seawater or raw seafood
- Consult doctor promptly if symptoms of infection develop, such as increasing redness, swelling and pain on the skin

Proper food handling

- Avoid skin contact with dirty water when visiting a wet market
- Be careful with sharp parts of seafood, such as fish fins, shrimp heads and crabs to prevent cuts
- Wear protective gloves when handling raw shellfish or other seafood
- Cook seafood thoroughly; for shellfish (e.g. oysters, clams, mussels), cook until the shells open
- Avoid eating raw oysters or shellfish
- Avoid mixing ready-to-eat food and raw seafood

Summary of the 2023 summer influenza season in Hong Kong

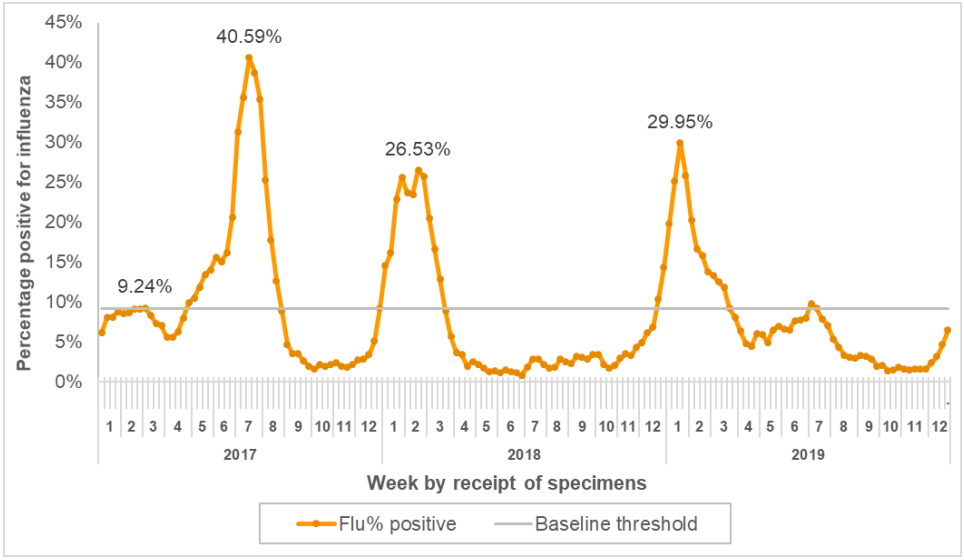
Reported by Ms Vera CHOW, Scientific Officer, Respiratory Disease Section, Communicable Disease Branch, CHP

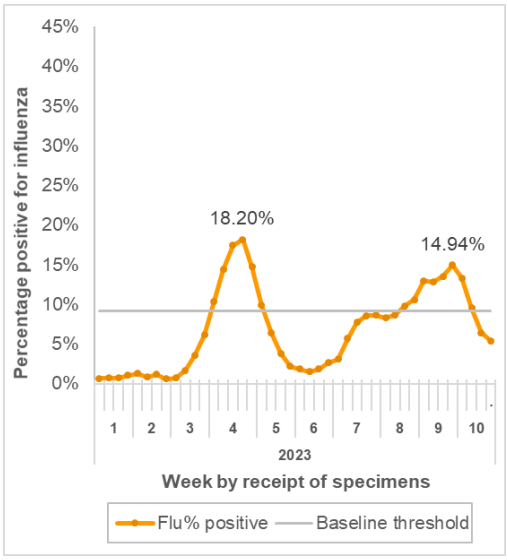
Hong Kong experienced the 2023 summer influenza season from late August to October, which was the second influenza season after the COVID-19 pandemic. Subsequent to the end of April 2023 influenza season, the local influenza activity started to increase in July and exceeded the seasonal epidemic threshold in late August. After peaking in late September, the activity gradually decreased and returned to a low level in late October. The arrival time of this summer season was slightly later than the previous summer seasons (usually started in July). The duration of this season (10 weeks) was a bit longer than the April 2023 season (7 weeks) while shorter than previous major seasons in 2017 to 2019 (12-16 weeks).

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 increased from 2.65% in late June to above the baseline threshold of 9.21% since August 19. It reached the peak level of 14.94% in last week of September, and then returned to baseline level subsequently (Figure 1). The peak level was lower than that of 18.20% recorded during April 2023 season, and also lower than the peaks recorded during the major seasons in 2017 to 2019 (26.53% to 40.59%).

Influenza A(H3) viruses predominated in this summer season, while A(H1) predominated in the April 2023 season. During the 10-week period from August 20 to October 28, the majority of influenza detections were influenza A(H3) (85%), followed by influenza A(H1) (11%) and influenza B viruses (4%)





Influenza-associated hospital admission rates in public hospitals

The overall weekly admission rate with principal discharge diagnosis of influenza in public hospitals, expressed as number per 10,000 population, started to increase in July. It exceeded the baseline threshold of 0.25 on July 8 and continued to increase to the peak of 0.93 in the last week of September. The rate gradually declined and returned to the baseline level in late October. Using the Moving Epidemic Method (MEM)* as assessment tool, the rate peaked at the medium intensity level in September (Figure 2)

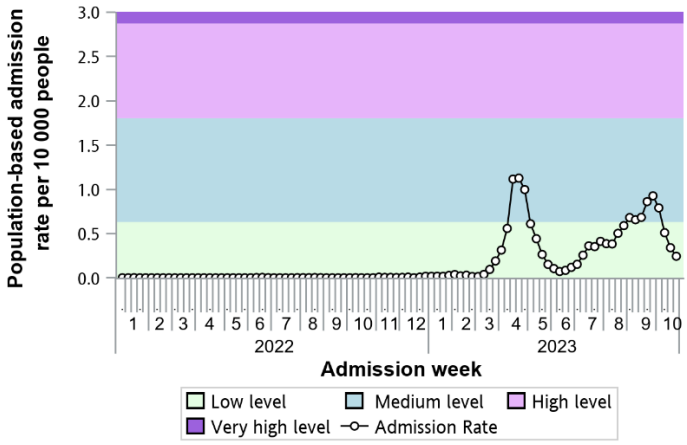


Figure 2 – Weekly admission rates with principal diagnosis of influenza in public hospitals, 2022 – October 2023

The peak weekly admission rate of this season (0.93) was not only lower than the corresponding rates recorded in the three major influenza seasons from 2017 to 2019 (ranging from 1.50 to 1.91), but also lower than that in the April 2023 season (1.12) (Table 2). The most affected age groups in the 2023 summer influenza season were children aged 0-5 years, followed by children aged 6-11 years and elders aged 65 years or above (peak weekly admission rates of 5.61, 2.69 and 1.78 respectively). The peak admission rates of both children aged 0-5 years and elders 65 years or above were lower than those in major seasons of previous 3 years, whereas that of children of age 6-11 years was within the range (1.65-3.69) of the pre-pandemic years (Table 2). Both primary and secondary school aged children were affected more this year with peak rates of 2.69 and 1.55, as compared to 1.65 and 0.61 in the 2017 summer season which was also predominated by influenza A(H3) viruses. On the other hand, the rates of young children of age 0-5 years (5.61) and elderly aged 65 years or above (1.78) were much lower than the 2017 summer season with rates of 9.14 and 6.39 respectively (Table 1).

* Details are available from: https://www.chp.gov.hk/files/pdf/explanatory_note_for_flux_mem_eng.pdf

Table 1 – Peak weekly admission rates recorded during influenza seasons in 2023, as compared with 2017 to 2019

Season (predominating virus)	Peak weekly admission rate (per 10,000 population)						
	0-5	6-11	12-17	18-49	50-64	≥65	All ages
2023 summer (H3)	5.61	2.69	1.55	0.27	0.34	1.78	0.93
2023 April (H1)	6.44	2.66	0.80	0.35	0.67	2.29	1.12
2018/19 winter (H1)	11.66	2.00	1.14	0.57	1.04	2.96	1.58
2017/18 winter (B)	9.03	3.69	1.50	0.36	0.86	4.05	1.50
2017 summer (H3)	9.14	1.65	0.61	0.31	0.69	6.39	1.91

Note: The peak rate of various age groups might be recorded in different weeks of the same season

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

The weekly number of institutional ILI outbreaks reported to CHP started to increase in September after the resumption of schools from summer holiday. It rose from a low level to a peak of 91 outbreaks in late September, and the peak reached the medium intensity level by MEM. A total of 367 outbreaks were recorded in this season with 2364 persons affected, which was higher than corresponding number recorded in the April 2023 season (157) but lower than the major seasons in 2017 to 2019 (401-862). Most ILI outbreaks involved schools with primary schools, secondary schools and child care centre/kindergarten constituting 51%, 22% and 9% respectively (Table 2). The weekly number of ILI outbreaks in primary school was the only institution type reaching a high intensity level by MEM during its peak in mid-September (data not shown).

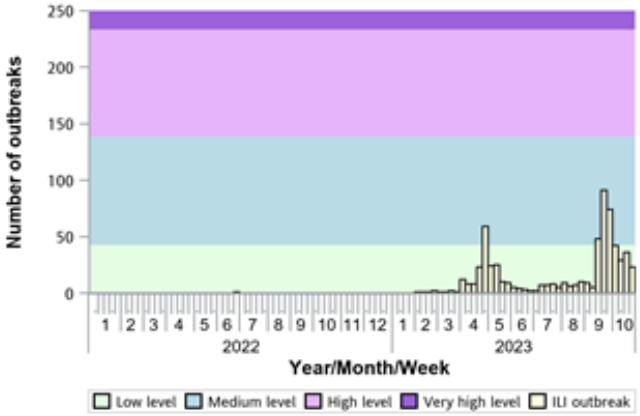


Table 2 – Numbers and percentages of ILI outbreaks in schools and institutions during the 2023 summer influenza season

Type of institutions	Cumulative number of ILI outbreaks reported from August 20 to October 28 (% total)
Primary school (PS)	188 (51%)
Secondary school (SS)	82 (22%)
Residential care home for elderly persons (RCHE)	35 (10%)
Child care centre/ kindergarten (CCC/KG)	33 (9%)
Residential care home for persons with disabilities (RCHD)	10 (3%)
Others	19 (5%)
Total	367

Severe influenza cases

CHP collaborates with 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.

During this summer influenza season, 308 cases of ICU admission or death with laboratory confirmation of influenza (including 203 deaths) were recorded among adult patients aged 18 years or above (data as at 13 November 2023). The number was higher than 274 cases recorded during the April 2023 season but was lower than that recorded during the major influenza seasons from 2017 to 2019 (570-601 cases with 356-430 deaths). The peak week had 48 severe cases reported, which was the same as that of the April 2023 season but was much lower than the range of 72 to 83 cases reported in previous seasons.

The severe cases recorded in the 2023 summer season had age ranged from 18 to 103 years (median 76 years), with most (77%) belonging to elders aged 65 years or above (Table 3). The elder proportion was comparable to 80% recorded in 2017 summer season and 73% in the April 2023 season. For the 203 fatal cases reported in the 2023 summer season, most (about 88%) affected elders aged 65 years or above, which was also comparable with the situation in major seasons in 2017 to 2019 (87%-91%).

Table 3 – Age distribution of adult severe/fatal cases recorded in 2023 summer influenza season

Age group in years	Number of severe cases (including deaths) (%)	Number of deaths (%)
18 – 49	25 (8.1%)	1 (0.5%)
50 – 64	47 (15.3%)	24 (11.8%)
≥65	236 (76.6%)	178 (87.7%)
Total	308	203

The cumulative incidences of severe cases and deaths in the 2023 summer season were 47.0 and 31.0 cases per million population respectively, which were higher than 41.8 and 26.3 in the April 2023 season respectively. However, these figures were much lower than those recorded in the 2017 summer season (Table 4). Similarly, the incidences of adults aged 50-64 years and elders aged 65 years or above in this season were found to be much lower than those recorded in the 2017 summer season. About 86% of the elders aged 65 years or above in this season had pre-existing chronic medical diseases, and most of them (59%) were not known to have received the 2022/23 seasonal influenza vaccine.

Table 4 - Cumulative incidences of adult severe influenza cases (per million population) by age groups in 2017 summer (H3 predominated), 2023 April (H1 predominated) and 2023 summer influenza (H3 predominated) seasons

Age group in years	Severe case (including death)			Death		
	2017 summer (H3)	2023 April (H1)	2023 summer (H3)	2017 summer (H3)	2023 April (H1)	2023 summer (H3)
18 – 49	8.6	7.8	8.1	2.7	1.6	0.3
50 – 64	49.9	27.4	25.8	17.4	9.9	13.2
≥65	381.9	122.1	144.1	321.0	91.0	108.7
Total	91.2	41.8	47.0	67.4	26.3	31.0

Separately, 15 cases of paediatric cases of influenza-associated severe complications and deaths (including 1 death) were recorded in the 2023 summer season. The number was higher than that of the 2023 April season (3 cases including 2 deaths), but was lower than that recorded in the major influenza seasons from 2017 to 2019 (19-24 cases with 1-3 deaths). The cases involved 8 girls and 7 boys, and their ages ranged from 14 months to 16 years (median 9 years). All of them contracted influenza A(H3) infections, and developed complications of severe pneumonia, shock and/or neurological manifestation. Most of these cases (73%) enjoyed good past health, and 11 (73%) did not receive the 2022/23 seasonal influenza vaccine. The cumulative incidence of children aged 0-17 years was 15.9 cases per million population. It was higher than 3.2 recorded in 2023 April season but was lower than the range of 18.7 to 23.2 recorded during the major influenza seasons in 2017 to 2019.

In summary, Hong Kong experienced a 10-week summer influenza season from late August to October 2023, which was later than the usual timing of summer seasons from July to August in the past. Although the duration of this season was longer than the April 2023 season, both peaks of influenza detection and influenza-associated hospitalization rates were lower than those of the April 2023 season. Young children aged under 0-5 and 6-11 years were the most affected groups in this season, as reflected by the highest hospitalization rates and highest number of ILI outbreaks reported from schoos after the resumption from summer holiday in September.

The winter influenza season usually arrives in winter months (January to March/April) based on historical data. With atypical timing of influenza seasons earlier this year, it is difficult to predict the exact arrival time of the coming influenza season. Given that seasonal influenza vaccines are safe and effective, and it takes about two weeks to develop antibodies, all persons aged 6 months or above except those with known contraindications are recommended to receive influenza vaccine to protect themselves against seasonal influenza and its complications, as well as related hospitalisations and deaths.

NEWS IN BRIEF

A local sporadic case of psittacosis

On October 27, 2023, the Centre for Health Protection (CHP) of the Department of Health (DH) recorded a case of psittacosis affecting a 54-year-old female with good past health residing in Sha Tin. She presented with fever, cough and myalgia on October 4 and was admitted to a public hospital on October 18. Her chest X-ray showed pneumonia. The nasopharyngeal aspirate collected on October 19 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). Her condition gradually improved after antibiotic treatment and she was discharged on October 30. She was a vegetable vendor and had taken care of ill wild pigeons near her workplace in Sai Wan, and had contact with their droppings and carcasses. She had no travel history during the incubation period. She did not keep any pets at home. Her household contacts and co-workers were asymptomatic.

A possible case of sporadic Creutzfeldt-Jakob disease

On October 31, 2023, CHP recorded a possible case of sporadic Creutzfeldt-Jakob disease (CJD), affecting a 77-year-old man with underlying illnesses residing in Sha Tin. He presented with rapidly progressive cognitive impairment in June 2022. He was admitted to a public hospital on October 6 for seizure and was found to have myoclonus and akinetic mutism. Findings of Magnetic Resonance Imaging (MRI) were compatible with CJD though electroencephalogram (EEG) did not reveal typical features. His condition was stable and he was discharged. He had no known family history of CJD, and no risk factors for either iatrogenic or variant CJD were identified. He was classified as a possible case of sporadic CJD.

Two local sporadic cases of leptospirosis

The CHP recorded two local sporadic cases of leptospirosis on November 8 and 10, 2023 respectively.

The first case affected a 48-year-old man with underlying illness residing in North District. He presented with diarrhoea, vomiting and malaise on September 5. He was subsequently admitted to a public hospital on September 9 and found to have deranged liver function. His condition was all along stable and he was discharged on September 13. Paired sera taken on September 13 and October 11 showed a four-fold rise in antibody titre against *Leptospira*. He was a chef. He reported having no wound and no exposure to rodents, stray dogs or cats, or contaminated water. He had not travelled outside Hong Kong during incubation period. His family members and co-worker were asymptomatic.

The second case affected a 42-year-old woman with underlying illness residing in Tai Po. She sustained leg lacerations at work on October 14 and developed fever, rash and leg swelling on October 16. She was subsequently admitted to a public hospital on October 17. Her condition was complicated by shock and desaturation requiring intensive care. Paired sera taken on October 17 and October 24 showed an eight-fold increase in antibody titre against *Leptospira*. Her condition improved afterwards and she was discharged on October 31. She was a butcher and recalled seeing rats in workplace. She reported no exposure to contaminated water. She had not travelled outside Hong Kong during incubation period. Her family members and co-worker were asymptomatic.

A sporadic case of listeriosis

The CHP recorded a sporadic case of listeriosis on November 10, 2023. The case affected an 88-year-old man with multiple comorbidities including diabetes mellitus, renal impairment and fatty liver. He lived with his wife in North Point. Since September 21, he had been hospitalised for fluid overload. He later developed fever on November 7. His blood collected on the same day was cultured positive for *Listeria monocytogenes*. The patient's condition deteriorated despite antibiotics and he eventually succumbed on November 14. The patient had no travel history during the incubation period. According to his family member, he did not consume high-risk food due to poor appetite nor had exposure to animals or their excreta. His wife remained asymoptomatic all along.

World Antimicrobial Resistance Awareness Week 2023

The Infection Control Branch of the CHP of the DH echoed the call from the World Health Organization and launched a series of publicity activities at around the World Antimicrobial Resistance (AMR) Awareness Week on November 18-24, 2023. New TV and radio Announcements in the Public Interest and poster themed "Use Antibiotics Properly Always Consult a Doctor" (Figure 1) were produced to raise public awareness on the issue of AMR and promote proper use of antibiotics.

A joint press conference with the Hong Kong Medical Association was held on November 17 to alert the public on risk of AMR, including the risk in consuming ready-to-eat foods, potential threats due to multiple drug resistant pathogens, and public health importance. Members of the public were encouraged to take appropriate actions in combating the threat of AMR.

Health care professionals are welcomed to broadcast and post up the health education materials at clinics and hospitals to raise public awareness. The materials are accessible at the World AMR Awareness Week thematic webpage at https://www.chp.gov.hk/en/features/107408.html.

Figure 1 – Poster for "Use Antibiotics Properly Always Consult a Doctor"

Photo shows the Consultant (AMR) of the Infection Control Branch, Dr Edmond Ma (left), and the President of the Hong Kong Medical Association, Dr Cheng Chi-man (right), who attended the press conference on November 17.

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Communicable Diseases WATCH

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FEATURE IN FOCUS

A cluster of invasive Group B Streptococcus ST283 cases

Reported by Dr Wong Hoi-kei, Senior Medical and Health Officer, Epidemiology Division, Communicable Disease Branch, CHP

Background of invasive Group B Streptococcus and ST283

Group B Streptococcus (GBS), also known as *Streptococcus agalactiae*, is widely distributed among diverse species including humans, mammalian animals, amphibians, reptiles and fishes. GBS is found in 20% to 40% of healthy adults and colonises in human gastrointestinal and genitourinary tract as commensals.

GBS has 10 capsular types, of which Sequence Type 283 (ST283) belongs to serotype III-4. ST283 is among the more virulent strains of GBS and causes invasive diseases in many otherwise healthy adults or adults with relatively few underlying comorbidities. Presence of ST283 was reported in freshwater fish in Southeast Asian countries with prevalence reported to be ranging from 12.5% to 100%[1].

In 2015, ST283 caused a major invasive foodborne outbreak in Singapore. Epidemiological investigation showed that the outbreak had a strong link with the consumption of raw freshwater fish including raw Asian bighead carp and snakehead. Singapore has subsequently banned the use of raw freshwater fish in all ready-to-eat raw fish dishes. Thereafter, invasive GBS ST283 disease has also been reported in other countries and areas in and around Southeast Asia.

In 2021, there had been a marked upsurge in invasive GBS ST283 cases in Hong Kong since September (orange arrow in Figure 1). Epidemiological investigation revealed handling raw freshwater fish and consuming undercooked freshwater fish as possible risk factors. In response, the Centre for Health Protection (CHP) of the Department of Health actively engaged with stakeholders to enhance public awareness and education, and the Food and Environmental Hygiene Department (FEHD) also carried out thorough cleansing and disinfection for the market concerned. As a result of these concerted efforts, the number of cases had declined since November 2021.

Recent upsurge of invasive Group B Streptococcus infection

Since the outbreak in 2021, Hospital Authority (HA) has been monitoring the number of patients detected with GBS in blood or cerebrospinal fluid (CSF) under its care. On October 27, 2023, CHP was alerted by HA of an upsurge in the number of patients detected with GBS since September 2023. A slight increase in overall number of GBS from an average of 18 cases per month to 29 cases in September 2023 was observed. This was mainly attributed to the increase in GBS cases under the care of hospitals in New Territories East Cluster (NTEC) (yellow arrow in Figure 1). The baseline of invasive GBS cases was zero to six cases per

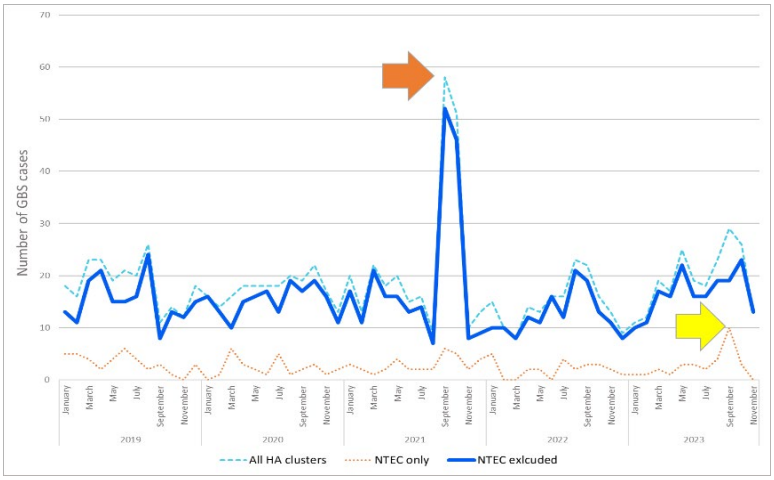

Figure 1 – Number of patients detected with GBS in blood or CSF by HA

month in NTEC since 2019. From September 1 to October 31, 2023, however, 17 patients (13 cases detected in blood and CSF, and the other four cases detected in deep tissue or joint fluid) had been identified by the NTEC hospitals (catchment areas include Sha Tin, Tai Po and North District).

Sequence typing of the NTEC cases had been performed by the Public Health Laboratory Services Branch (PHLSB) of CHP and eight cases of which were found to be ST283.

These eight ST283 cases comprised six males and two females. Their ages ranged from 49 to 85 years (median: 66.5 years). Four cases were retired and the other four cases worked as a cook, a driver, a construction worker or decoration worker respectively. Four cases resided in Sheung Shui, two resided in Fanling and the other two resided in Ma On Shan.

Three of the eight cases enjoyed good past health while the other five had underlying illnesses. Two of the eight cases presented as meningitis, another two presented as septic arthritis, and the other four cases presented as sepsis, spondylodiscitis, pyelonephritis and necrotising fasciitis respectively. Two died of the disease and the other six cases had already recovered and discharged. The epidemic curve (Figure 2) shows that the number of cases peaked in late September 2023 and the symptom onset date of the last case was October 7, 2023. No new case has been identified as of December 10, 2023.

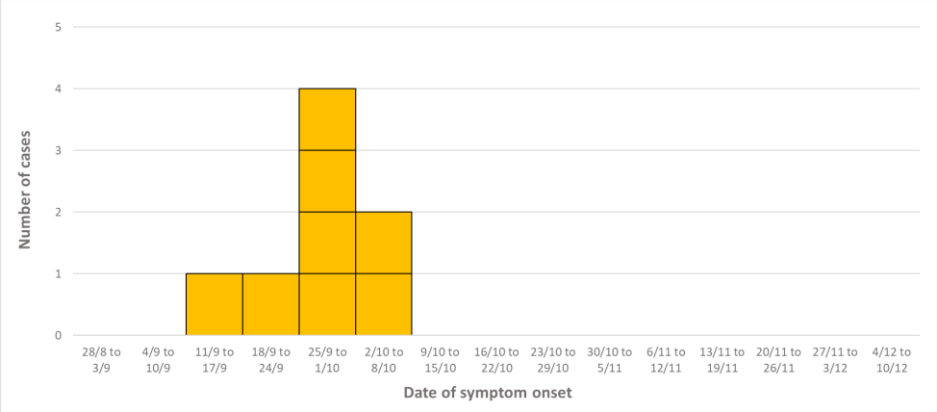

Figure 2 – Epidemic curve by date of symptom onset of the 8 GBS ST283 cases

Epidemiological investigation showed that seven of the eight cases had history of recent freshwater fish intake bought from a market in Sheung Shui. While one of them recalled eaten undercooked mud carp, the other seven cases recalled eaten well cooked grass carp or bighead carp; or both. All of them denied taken freshwater sashimi. Seven of the eight cases had handled the freshwater fish before onset of symptoms; five reported handling the fish with bare hands and three had pre-existing wounds or sustained injury in hands during handling. No other family members of the cases were affected.

CHP collected seven fish samples and 22 environmental swabs (Figure 3) on November 1, 2023 for testing by PHLSB from the two freshwater fish stalls in the wet market from which the freshwater fish had been handled or consumed by the cases. ST283 was not detected in any of the samples collected. That said, the stalls had carried out thorough cleansing and disinfection.

Epidemiological investigation suggested the cluster of infection could be related to handling or consumption of undercooked freshwater fish bought from a market in Sheung Shui in September.

Figure 3 – An environmental swab taken during field investigation at a local wet market

CHP also conducted active case finding and health education for all the freshwater fish stall workers in the market concerned. CHP had worked with FEHD to carry out thorough cleansing and disinfection. Similar to Singapore, the sale of "freshwater fish sashimi" is prohibited in Hong Kong.

CHP will continue to closely monitor invasive GBS cases reported by HA to identify risk factors and epidemiological linkage.

Tips for prevention of invasive GBS infection

To prevent invasive GBS infection associated with freshwater fish, members of the public are reminded to maintain personal, food and environmental hygiene and should keep their hands clean and practice good wound care at all times, especially:

- Wear gloves while handling raw freshwater fish or seafood and avoid having wounds coming in contact with raw freshwater fish or seafood;
- Avoid eating raw freshwater fish or freshwater aquatic products; and
- Avoid skin contact with dirty water when visiting wet market and maintain good hand hygiene.

Reference

[1] Barkham T, Zadoks RN, Azmai MNA, et al. One hypervirulent clone, sequence type 283, accounts for a large proportion of invasive Streptococcus agalactiae isolated from humans and diseased tilapia in Southeast Asia. PLoS Negl Trop Dis. 2019 Jun 27;13(6):e0007421.

Exercise "Prehnite" tests Government's response against plague

Reported by Dr HY LO, Medical and Health Officer; Dr Geeta SHARMA , Senior Medical and Health Officer, Emergency Preparedness and District Relations Division, Emergency Response and Programme Management Branch, CHP

On November 27, 2023, the Centre for Health Protection (CHP) of the Department of Health (DH) organised a public health exercise, codenamed "Prehnite", to assess the readiness of various government departments in responding to an imported plague case with subsequent local transmission. The key objectives of this exercise were to evaluate the local capability in managing an imported plague case, strengthen the coordination across all involved government departments, and enhance awareness among stakeholders about effective management of public health emergencies.

Photo 1 – The Director of Health, Dr Ronald Lam (second right), and the Controller of the CHP of the DH, Dr Edwin Tsui (first right), with experts from the Mainland and Macao health authorities observing the gowning process during the exercise.

The exercise was divided into two parts. The first part was a table-top exercise conducted on November 20, 2023, involving nine relevant departments and the Hospital Authority (HA). The participants discussed and co-ordinated the necessary response measures for a simulated scenario where plague was transmitted within a residential building.

The second part, conducted on November 27, 2023, was a ground movement exercise. Under the exercise simulation, the CHP was notified by the HA of a case of plague, and immediately commenced epidemiological investigations. An initial investigation revealed that the patient had visited a place experiencing outbreak of plague during the incubation period. Upon returning to Hong Kong, the patient resided in a residential building with family and interacted with neighbours after onset of symptoms. The CHP, in collaboration with relevant government departments, conducted a site visit to the building concerned, traced the contacts of the index case, and carried out evacuation and quarantine operations after confirmation of disease spread in the building. The Food and Environmental Hygiene Department (FEHD) also carried out surveys for rodent and flea infestations in the building and its surrounding area, and implemented preventive and control measures promptly. About 70 participants from relevant government

Photo 2 – Officers conducting a visit to a patient's residence.

departments took part in the ground movement exercise, with 30 experts from the Mainland and Macao health authorities attending as observers.

Plague is a zoonotic disease, caused by the bacterium *Yersinia pestis*, affecting both animals and humans. It manifests in three main forms: bubonic, pneumonic, and septicaemic. Since the 1990s, most human cases have been reported in Africa. Plague is transmitted from an infected animal (mainly rodents) to humans through the bite of its fleas. Plague can also be contracted when cuts or other breaks in the skin come into contact with the body fluids or tissue of infected animals. Consumption of infected animal tissue and inhalation of infected respiratory droplets are also possible modes of transmission. Plague in a human is a serious disease with a case-fatality ratio of 30% to 60% for the bubonic type, and is usually fatal for the pneumonic and septicaemic types if left untreated. According to the World Health Organization, 2 886 cases were reported in 11 countries worldwide from 2013 to 2018, including 504 deaths. Among them, over 90% of cases were from sub-Saharan Africa.

Photo 3 – An officer of FEHD placing an alcohol rodent trapping device at a patient's residence.

Hong Kong experienced a significant plague outbreak in May 1894, with at least 5 000 cases reported. From 1894 to 1929, over 20 000 cases were recorded, with a mortality rate around 90%. While there have been no recorded plague cases since 1929, the presence of rats and rat fleas in Hong Kong, high volume of global traffic (both human and goods), as well as the presence of plague in certain areas outside Hong Kong, necessitate ongoing vigilance and preparedness.

To date, the DH has coordinated a total of 29 exercises, including "Prehnite", simulating situations such as novel influenza, Middle East Respiratory Syndrome, and Ebola virus disease. These exercises aim to test the efficiency and coordination of different government departments and stakeholders, and promote vigilance and preparedness among the community and healthcare personnel against potential epidemics. As we live in an increasingly globalised world where diseases can easily cross borders, constant preparedness, vigilance, and learning from these exercises are our best defense against future outbreaks. Going forward, the DH will continue to organise such exercises to enhance the readiness of individuals and organisations in effectively managing future outbreaks swiftly and effectively.

Photo 4 – Officers of FEHD explaining the use of thermal cameras in the prevention and control of rodents.

Photo 5 – A command post officer providing a wristband to an evacuee.

Photo 6 – An officer of the Auxiliary Medical Service scanning the QR code from a resident's wristband to verify identity.

NEWS IN BRIEF

Two local sporadic cases of psittacosis

The Centre for Health Protection (CHP) of the Department of Health recorded two sporadic cases of psittacosis on November 29 and December 13, 2023 respectively.

The first case affected a 58-year-old male with underlying medical diseases residing in Kowloon City. He presented with fever, productive cough and shortness of breath in mid-November and was admitted to a public hospital on November 27. His chest X-ray showed feature of pneumonia. His clinical condition deteriorated and was later transferred to intensive care unit for further management. His endotracheal aspirate collected on November 28 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). He cannot recall history of contact with birds' droppings or bird carcasses and he has no pets at home. He works as a lo-mei chef and all poultry handled at work were frozen. He had no travel history during the incubation period. His household contacts and co-workers were asymptomatic.

The second case affected a 52-year-old male with underlying medical diseases residing in Yuen Long. He presented with fever, cough and malaise on November 21 and was admitted to a public hospital on December 5. His chest X-ray showed pneumonia and he was treated with antibiotics. His bronchoalveolar lavage collected on December 8 was tested positive for *Chlamydia psittaci* DNA by PCR. His condition improved and was discharged against medical advice on December 12. He recalled cleaning bird's dropping on his outdoor bike without gloves or surgical mask during the incubation period. He was a part-time kitchen worker in a restaurant that only received frozen or roasted products. He had no travel history during the incubation period. His household contacts and co-workers were asymptomatic.

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

On December 1, 2023, CHP recorded a sporadic case of necrotising fasciitis caused by *Vibrio vulnificus*.

The case involved an 84-year-old female with underlying illnesses. She presented with fever, left foot pain and swelling to a public hospital on November 27, 2023 and was admitted on the same day. The clinical diagnosis was necrotising fasciitis complicated by septic shock. Above knee amputation was carried out and *Vibrio vulnificus* was recovered from tissue swab. The index was known to have sustained injury whilst preparing a marine fish for dinner on November 27.

A local sporadic confirmed case of listeriosis

On December 1, 2023, CHP recorded a case of listeriosis affecting a 58-year-old man with multiple comorbidities including alcohol dependence syndrome, recurrent pancreatitis, diabetes mellitus and liver cirrhosis. He presented with vomiting and diarrhea on November 26 and was found unconscious at home by his wife and was sent to a public hospital on November 29. He was noted to have fever and confusion after admission. The clinical diagnosis was meningitis and his cerebrospinal fluid was cultured positive for *Listeria monocytogenes*. His condition was serious, requiring ICU care. He had no travel history during the incubation period and according to his family members, he did not consume high risk food. His family members were asymptomatic.

An imported sporadic confirmed case of tetanus

On November 29, 2023, CHP recorded an imported case of tetanus affecting a 54-year-old man with good past health. The patient developed generalised weakness was found collapsed on the street with head injury in Sham Shui Po on November 27 and was admitted to a public hospital. On November 28, he developed sudden onset of increased muscle tone, trismus and opisthotonus and was transferred to intensive care unit for further management. Computer tomography of brain was unremarkable. He was intubated and was on ventilator. As clinical features were suggestive of tetanus infection, he was given benzodiazepine, tetanus immunoglobulin, Augmentin, Metronidazole and vaccination with tetanus toxoid. His condition was serious. The patient was reported to have entered Hong Kong from mainland in late November. Vaccination history against tetanus was unknown. The patient reported before intubation that he had sustained injuries on toes of left foot on November 19 in mainland. Based on the history of injury and incubation period (usually 3-21 days), he was classified as an imported case of tetanus.