

COVID-19 & FLU EXPRESS



COVID-19 & Flu Express is a weekly report produced by Surveillance Division of the Communicable Disease Branch of the Centre for Health Protection. It monitors and summarizes the latest local and global COVID-19 and influenza activities.

Local Situation of COVID-19 Activity (as of Apr 3, 2024)

Reporting period: Mar 24 – Mar 30, 2024 (Week 13)

- The latest surveillance data showed that the overall COVID-19 activity has been eased.
- Concerning the monitoring of SARS-CoV-2 variants, the latest surveillance data showed that JN.1 has become the most prevalent variant. However, the current evidence does not suggest JN.1 will cause a more severe disease than the previous prevalent XBB and its descendant lineages.
- Members of the public are advised to maintain strict personal and environmental hygiene at all times for personal protection against COVID-19 infection and prevention of the spread of the disease in the community. High risk people (e.g. persons with underlying medical conditions or persons who are immunocompromised) should adopt additional measures to protect themselves such as wearing mask properly when going to public places. For other details, please visit the COVID-19 information page (<https://www.chp.gov.hk/en/healthtopics/content/24/102466.html>).
- Members of the public are advised to take note of the latest recommendations on the use of COVID-19 vaccines in Hong Kong to protect themselves from serious outcomes of COVID-19. High-risk priority groups are recommended to receive a dose of COVID-19 vaccine at least six months since the last dose or infection before a possible COVID-19 winter surge in the coming months, regardless of the number of doses received previously. For more details, please visit https://www.chp.gov.hk/files/pdf/consensus_interim_recommendations_on_the_use_of_covid19_vaccines_in_hong_kong_11oct.pdf.
- For the latest information on COVID-19 and prevention measures, please visit the thematic website of COVID-19 (<https://www.coronavirus.gov.hk/eng/index.html>).

Laboratory surveillance for COVID-19 cases

Positive nucleic acid test laboratory detections for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus

In week 13, the weekly number of newly recorded positive nucleic acid test laboratory detections for SARS-CoV-2 virus was 804 as compared to 1,129 in the preceding week. (Figure 1.1)

In the first 4 days of week 14 (Mar 31 – Apr 3), the daily number of newly recorded positive nucleic acid test laboratory detections for SARS-CoV-2 virus ranged from 89 to 117.

Since Jan 30, 2023, the cumulative number of positive nucleic acid test laboratory detections was 61,001 (as of Apr 3, 2024).

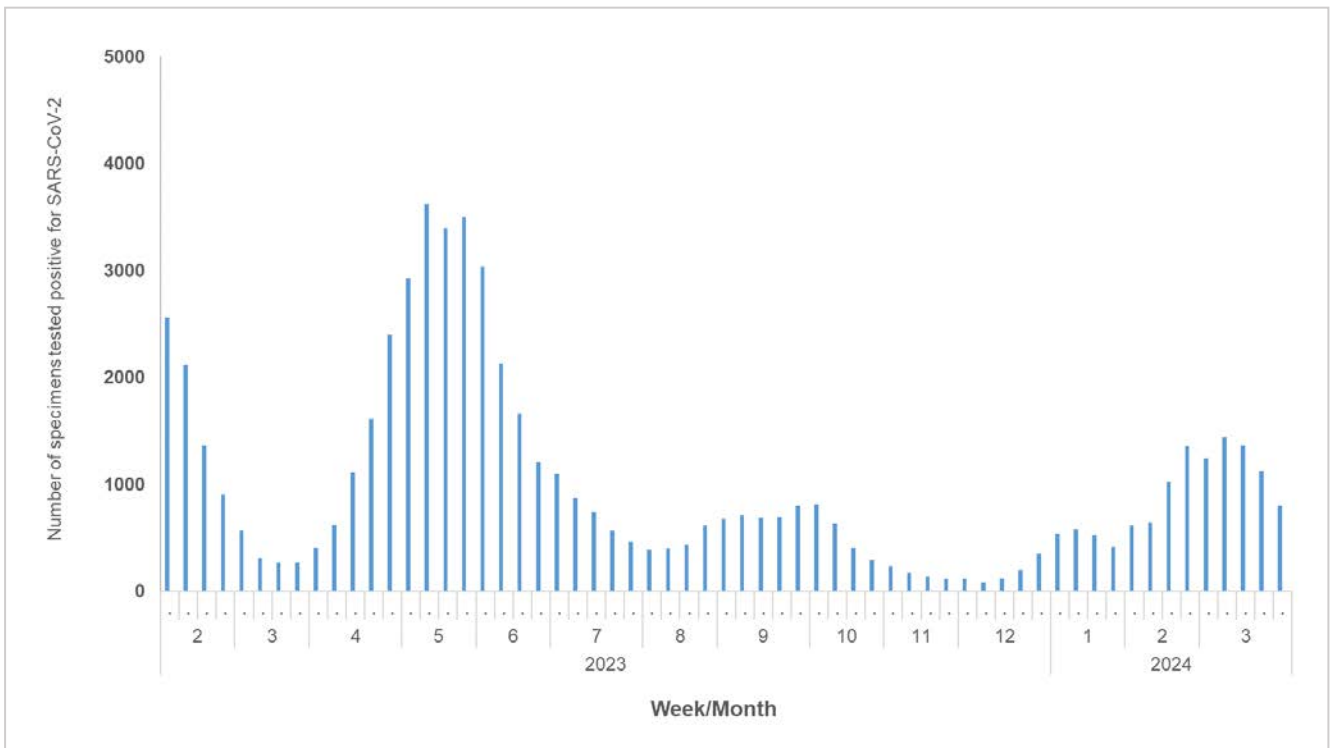


Figure 1.1 Weekly number of positive nucleic acid test laboratory detections for SARS-CoV-2 virus

Positive detection rate of specimens tested positive for SARS-CoV-2 virus at the Public Health Laboratory Services Branch

Among the 7,999 respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) in week 13, 797 (9.96%) were tested positive for SARS-CoV-2 virus as compared to 1,106 (12.52%) in the preceding week. (Figure 1.2)

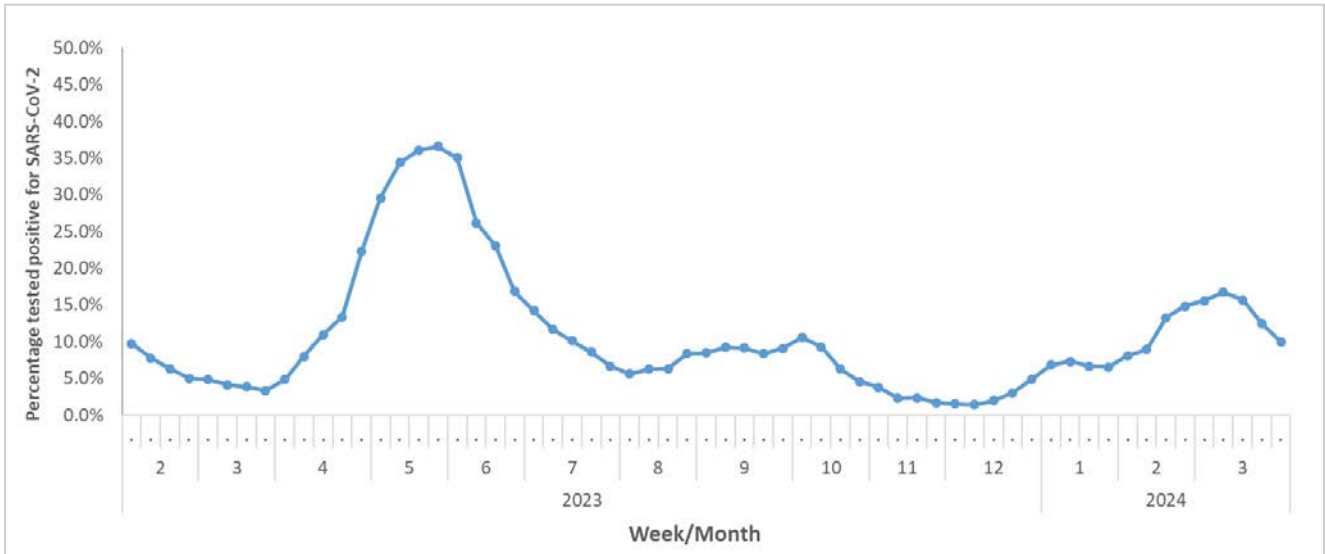


Figure 1.2 Percentage of specimens tested positive for SARS-CoV-2 virus at PHLSB

COVID-19 outbreak surveillance

In week 13, 5 COVID-19 outbreaks occurring in schools/institutions were recorded (affecting 24 persons), as compared to 8 outbreaks recorded in the previous week (affecting 50 persons). (Figure 1.3)

In the first 4 days of week 14 (Mar 31 – Apr 3), 1 COVID-19 outbreak occurring in schools/institutions was recorded (affecting 6 persons).

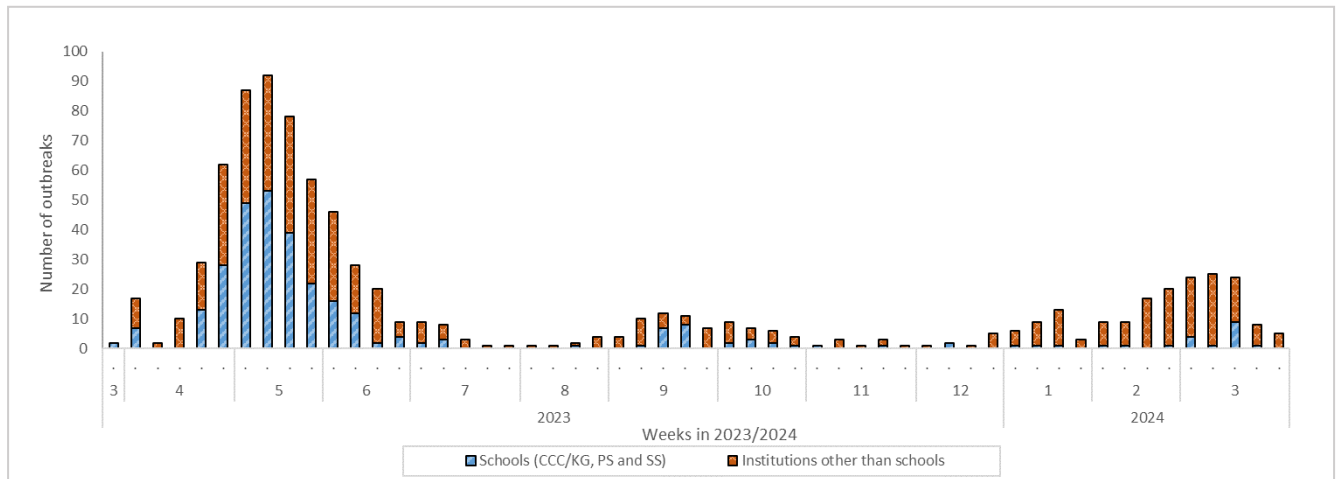


Figure 1.3 COVID-19 outbreaks in schools/institutions

Type of institutions	Week 12	Week 13	First 4 days of week 14 (Mar 31 – Apr 3)
Child care centre/ kindergarten (CCC/KG)	0	0	0
Primary school (PS)	1	0	0
Secondary school (SS)	0	0	0
Residential care home for the elderly	7	2	1
Residential care home for persons with disabilities	0	1	0
Others	0	2	0
<i>Total number of outbreaks</i>	8	5	1
<i>Total number of persons affected</i>	50	24	6

Surveillance of severe and fatal COVID-19 cases

(Note: The data reported are provisional figures and subject to further revision.)

In week 13, the weekly number of severe COVID-19 cases including deaths with cause of death preliminarily assessed to be related to COVID-19 was 36 as compared to 54 in the preceding week. (Figure 1.4)

Since Jan 30, 2023, the cumulative number of fatal cases with cause of death preliminarily assessed to be related to COVID-19 was 1,202 (as of Mar 30, 2024).



Figure 1.4 Weekly number of severe COVID-19 cases including deaths

Sewage surveillance of SARS-CoV-2 virus

In week 13, the 7-day geometric mean per capita viral load of SARS-CoV-2 virus from sewage surveillance was around 359,000 copy/L as compared to around 393,000 copy/L in the preceding week. (Figure 1.5)

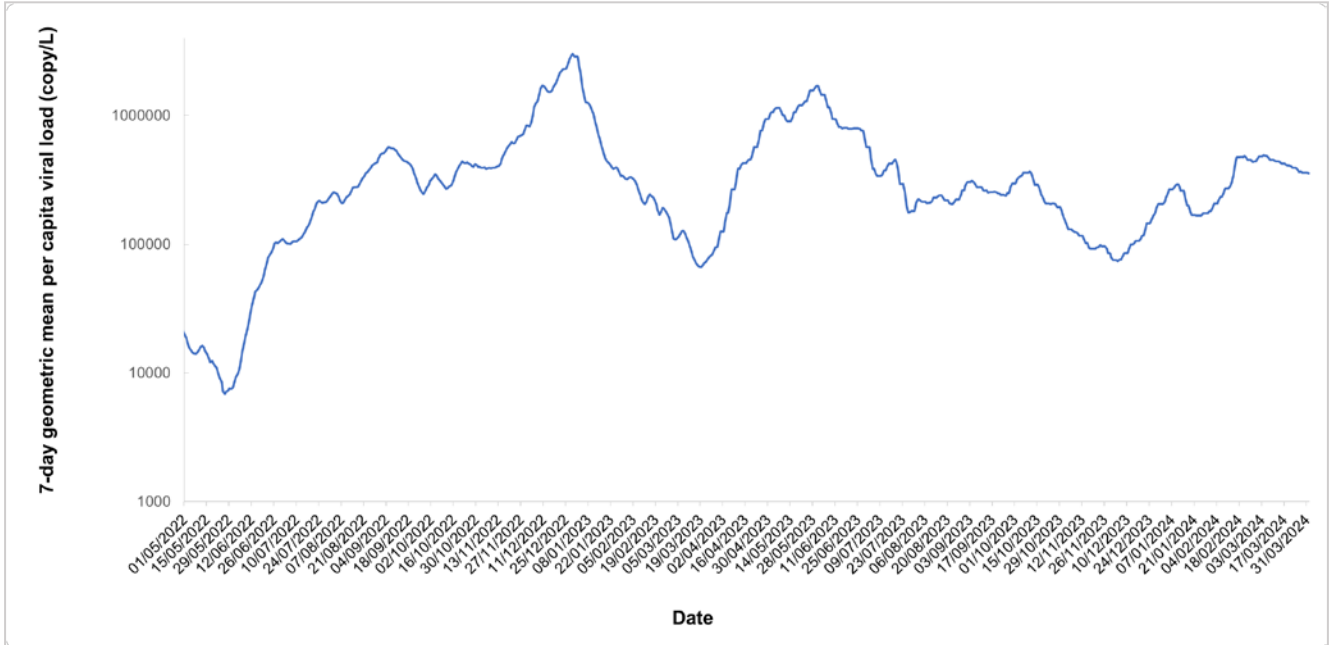


Figure 1.5 7-day geometric mean per capita viral load of SARS-CoV-2 virus from sewage surveillance since May 1, 2022

COVID-19 surveillance among sentinel general out-patient clinics and sentinel private medical practitioner clinics

In week 13, the average consultation rate for COVID-19 among sentinel general out-patient clinics (GOPC) and sentinel private medical practitioner clinics were 42.3 (Figure 1.6) and 29.7 (Figure 1.7) COVID-19 cases per 1,000 consultations, respectively.

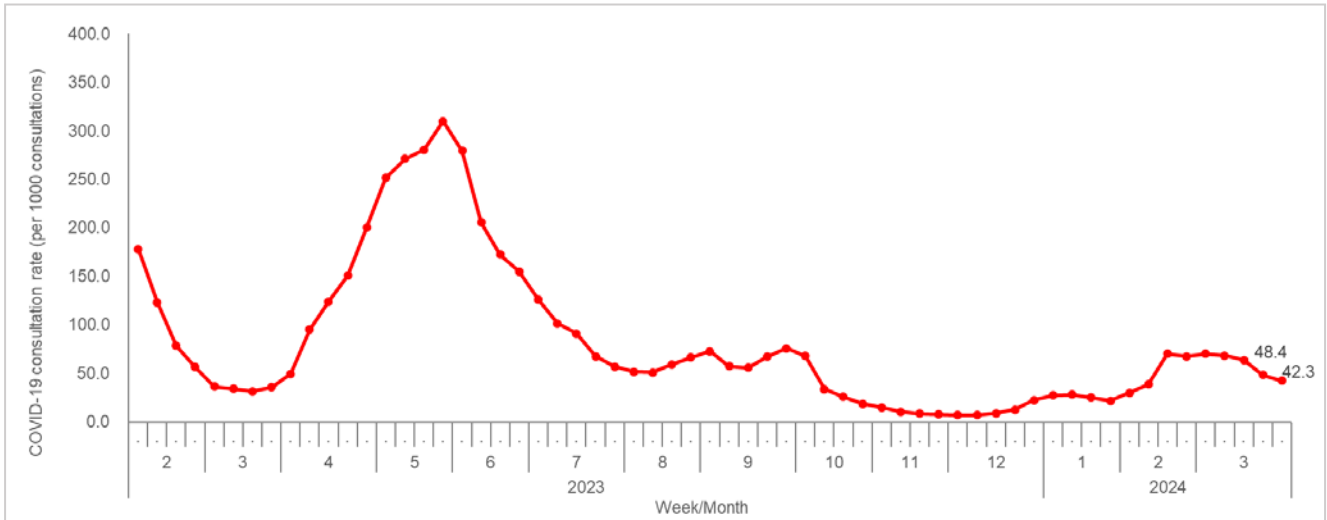


Figure 1.6 Average consultation rate of COVID-19 cases in GOPC

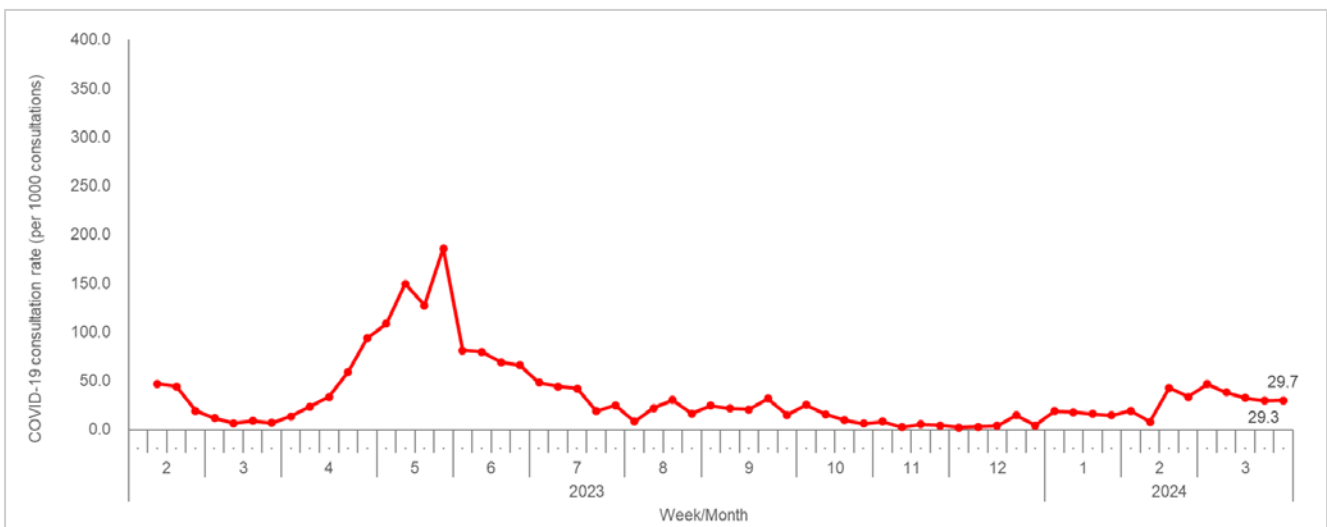


Figure 1.7 Average consultation rate of COVID-19 cases in private medical practitioner clinics

Surveillance on SARS-CoV-2 variants

The Centre for Health Protection (CHP) conducts surveillance on SARS-CoV-2 variants from sewage samples. The latest surveillance data (as of Mar 27, 2024) showed that JN.1 and its descendant lineages remained the most prevalent variant, comprising around 68.8% of all characterised specimens. At the same time, the prevalence of XBB.1.9.2[^] comprised about 29.6% of all specimens. (Figure 1.8)

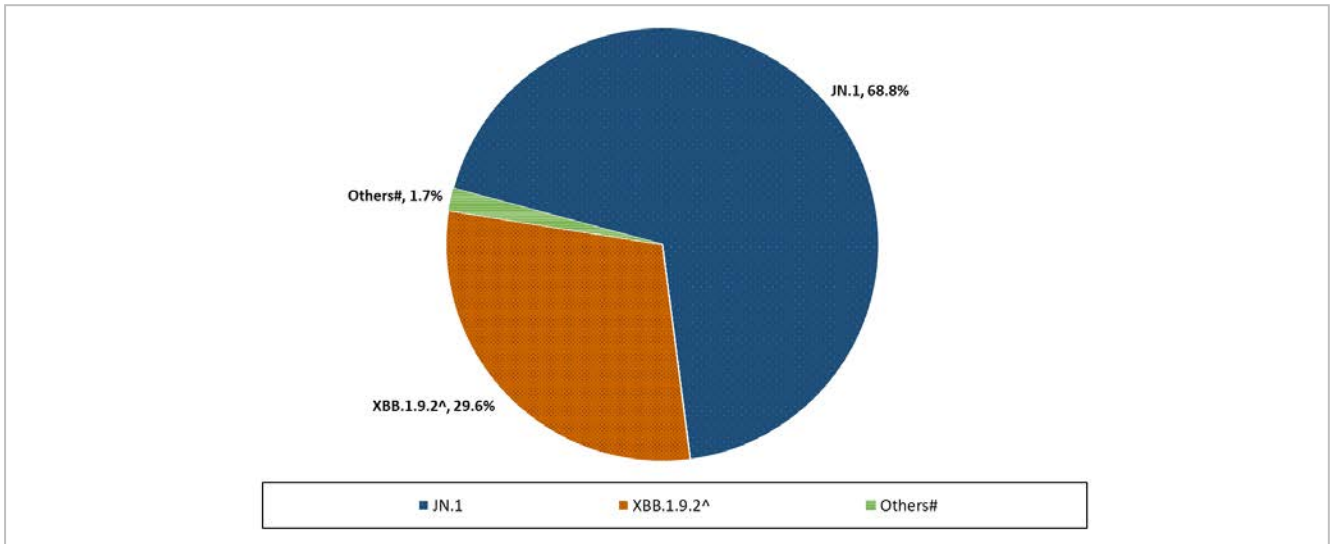


Figure 1.8 Estimated proportion of variants among sewage samples

[^] Including EG.5, HV.1 and their descendant lineages

[#] Those SARS-CoV-2 variants not classified as VOIs/ Variants Under Monitoring (VUMs) by World Health Organization (WHO)

CHP also conducted genetic characterisation of 101 specimens obtained from reported severe and fatal cases of COVID-19 between Mar 13 and Mar 26, 2024. The results showed that JN.1 and its descendant lineages remained the most prevalent variant, comprising 100% of all characterised specimens (101 cases). (Figure 1.9)

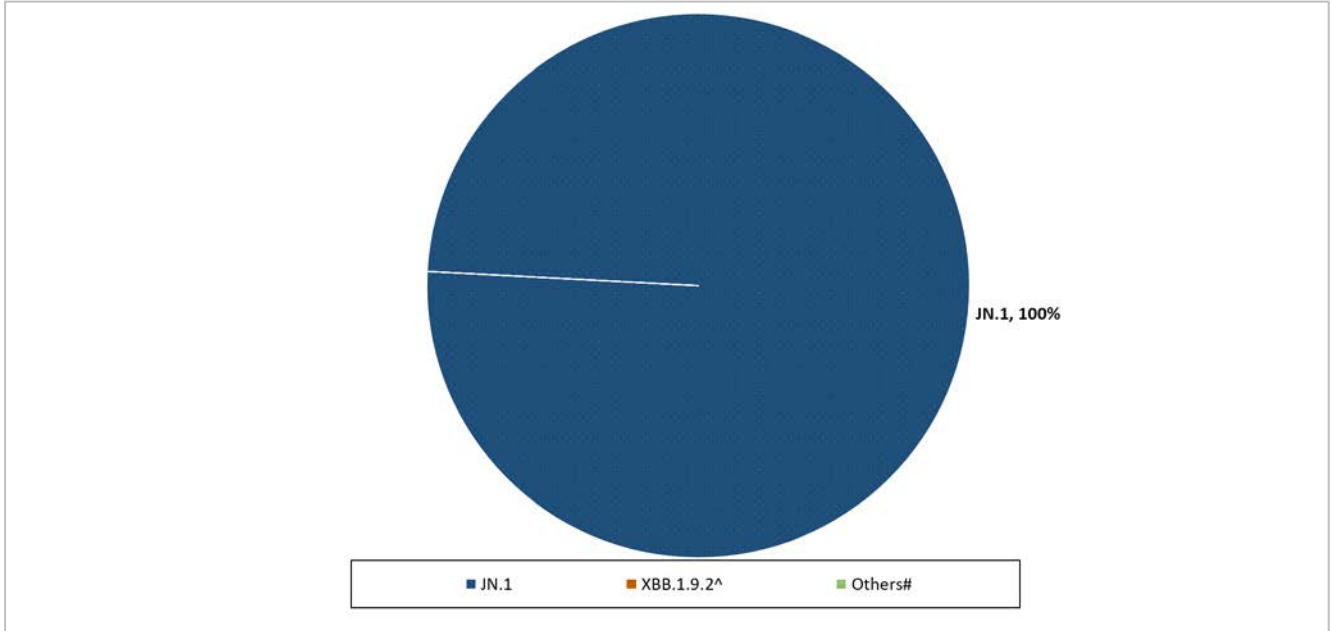


Figure 1.9 Proportion of variants among specimens obtained from reported severe and death cases for COVID-19

^ Including EG.5, HV.1 and their descendant lineages

Those SARS-CoV-2 variants not classified as VOIs/ Variants Under Monitoring (VUMs) by WHO

Besides, CHP conducted genetic characterisation for the specimens obtained from some non-severe cases of COVID-19 during the same period. The results showed that JN.1 and its descendant lineages are the most prevalent variant, comprising 100% of all characterised specimens.

Global situation of COVID-19 activity

- Globally, as of Mar 17, 2024, there have been 774,954,393 confirmed cases of COVID-19, including 7,040,264 deaths, reported to WHO.
- According to WHO COVID-19 epidemiological update last published on Mar 15, 2024,
 - ◆ Over 0.29 million new cases and over 6,200 deaths were reported in the last 28 days (Feb 5 to Mar 3, 2024) globally.
 - ◆ The highest numbers of new 28-day cases were reported from Russia, Australia, Chile, New Zealand and Argentina. The highest numbers of new 28-day deaths were reported from the USA, Russia, Australia, Italy and Chile.
 - ◆ WHO commented that current trends in reported COVID-19 cases were underestimates of the true number due to the reduction in testing and delays in reporting in many countries. Therefore, related data should be interpreted with caution.
 - ◆ Currently, WHO is monitoring five VOIs, which are BA.2.86, EG.5, JN.1, XBB.1.5 and XBB.1.16, and three VUMs, which are XBB, XBB.1.9.1 and XBB.2.3.
 - ◆ Between Feb 26 and Mar 3, 2024, JN.1 is the most prevalent variant globally, accounting for 90.3% compared to 89.4% between Feb 5 and 11, 2024. The updated risk evaluation for JN.1 suggested an overall evaluation of low public health risk at the global level based on available evidence. During the same period, the prevalence of BA.2.86, EG.5, XBB.1.5 and XBB.1.16 decreased from 3.0%, 2.7%, 0.6% and 0.2% to 2.2%, 2.2%, 0.6% and <0.1% respectively. All VUMs showed decreasing trends over the reporting period.

Sources:

1. [WHO COVID-19 dashboard](#), accessed on Apr 5, 2024
2. [World Health Organization COVID-19 epidemiological update](#)

Local Situation of Influenza Activity (as of Apr 3, 2024)

Reporting period: Mar 24 – 30, 2024 (Week 13)

- Hong Kong has entered winter influenza season since early January. According to the latest surveillance data, the overall influenza activity slightly decreased but remained above the epidemic threshold.
- Influenza can cause serious illnesses in high-risk individuals and even healthy persons. Given that seasonal influenza vaccines are safe and effective, 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.
- The Seasonal Influenza Vaccination Subsidy Scheme (VSS) 2023/24 has been launched since September 28, 2023, whereas the Government Vaccination Programme (GVP), Seasonal Influenza Vaccination School Outreach (Free of Charge) Programme and the Residential Care Home Vaccination Programme have been launched since October 5, 2023. The public may visit the CHP's Vaccination Schemes page for more details of the vaccination programmes (<https://www.chp.gov.hk/en/features/17980.html>).
- Apart from getting influenza vaccination, members of the public should always maintain good personal and environmental hygiene.
- For the latest information on seasonal influenza and its prevention, please visit the Centre for Health Protection's Seasonal Influenza page (http://www.chp.gov.hk/en/view_content/14843.html).

Influenza-like-illness surveillance among sentinel general out-patient clinics and sentinel private medical practitioner clinics, 2020-24

In week 13, the average consultation rate for influenza-like illness (ILI) among sentinel general outpatient clinics (GOPC) was 6.7 ILI cases per 1,000 consultations, which was lower than 8.4 recorded in the previous week (Figure 2.1, left). The average consultation rate for ILI among sentinel private medical practitioner (PMP) clinics was 44.9 ILI cases per 1,000 consultations, which was lower than 55.2 recorded in the previous week (Figure 2.1, right).

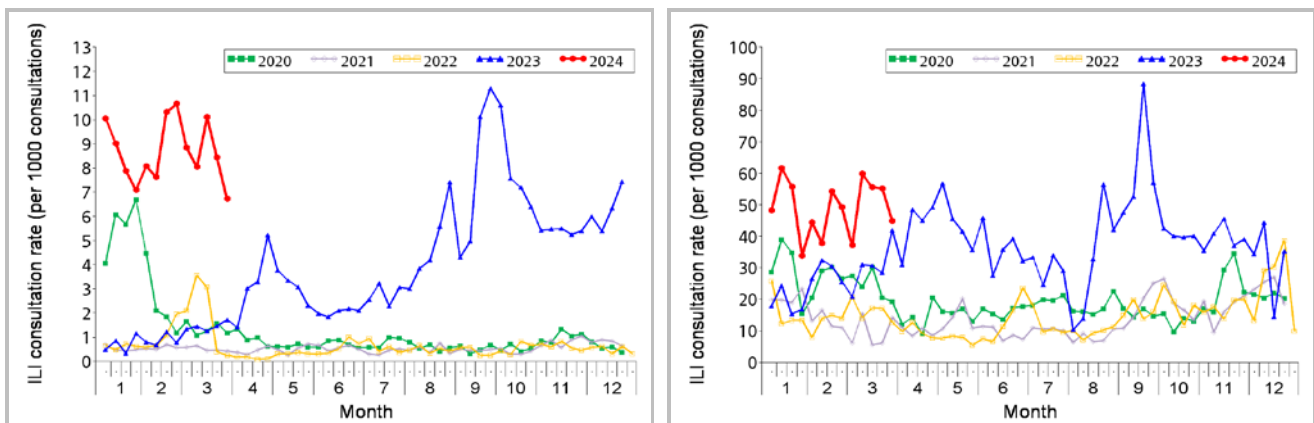


Figure 2.1 ILI consultation rates at sentinel GOPC (left) and PMP clinics (right), 2020-24

Note: The CHP has started to use electronic data on diagnosis coding of patients of the Hospital Authority's GOPC for sentinel surveillance since January 2020, replacing manual data collection in the past.

Laboratory surveillance, 2020-24

Among the 9,456 respiratory specimens received in week 13*, 532 (5.63%) were tested positive for seasonal influenza A or B viruses. Among the subtyped influenza detections, there were 315 (62%) influenza A(H1), 111 (22%) influenza A(H3) and 79 (16%) influenza B viruses. The positive percentage (5.63%) was below the baseline threshold of 9.21% and was lower than 5.94% recorded in the previous week (Figure 2.2).

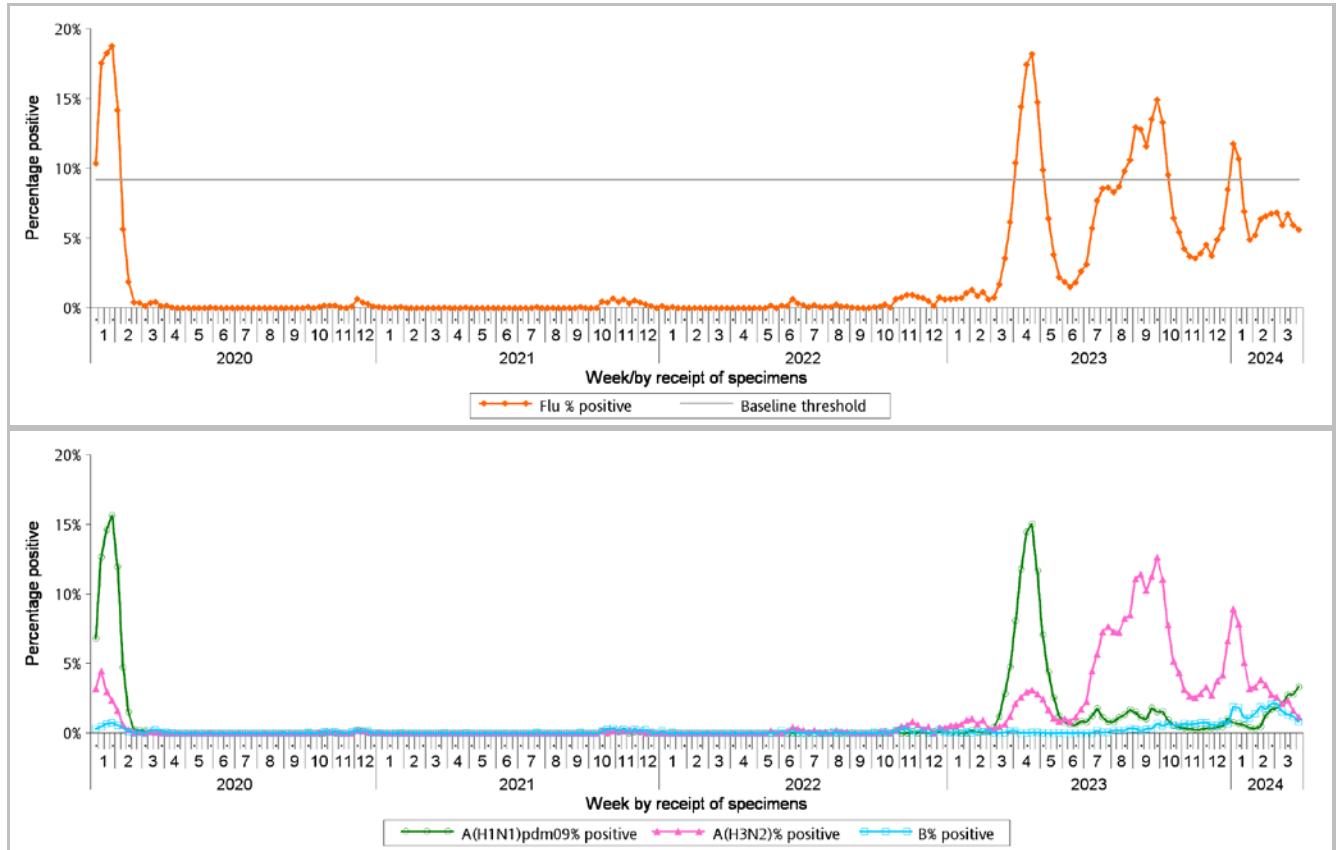


Figure 2.2 Percentage of respiratory specimens tested positive for influenza viruses, 2020-24 (upper: overall positive percentage, lower: positive percentage by subtypes)

[Note: The baseline threshold is 1.96 standard deviation above the average weekly positive percentage during non-season periods from 2014 week 49 to 2019 week 48.]

Remarks: Some specimens may contain vaccine strains from people with recent history of receiving live-attenuated influenza vaccine

Surveillance of oseltamivir resistant influenza A and B viruses

- In February 2024, there were no new reports of oseltamivir (Tamiflu) resistant influenza A and B viruses.
- For the results of previous months, please refer to the following webpage:
<https://www.chp.gov.hk/en/statistics/data/10/641/695/7068.html>

* Including 7,999 specimens received by Public Health Laboratory Services Branch, Centre for Health Protection and 1,457 specimens received by the Hospital Authority

Influenza-like illness outbreak surveillance, 2020-24

In week 13, 14 ILI outbreaks occurring in schools/institutions were recorded (affecting 62 persons), as compared to 19 outbreaks recorded in the previous week (affecting 107 persons) (Figure 2.3). The overall number was at the low intensity level currently (Figure 2.4*). In the first 4 days of week 14 (Mar 31 to Apr 3), 6 ILI outbreaks occurring in schools/institutions were recorded (affecting 39 persons). Since the start of 2023-24 winter influenza season in week 2, 252 outbreaks were recorded (as of Apr 3).

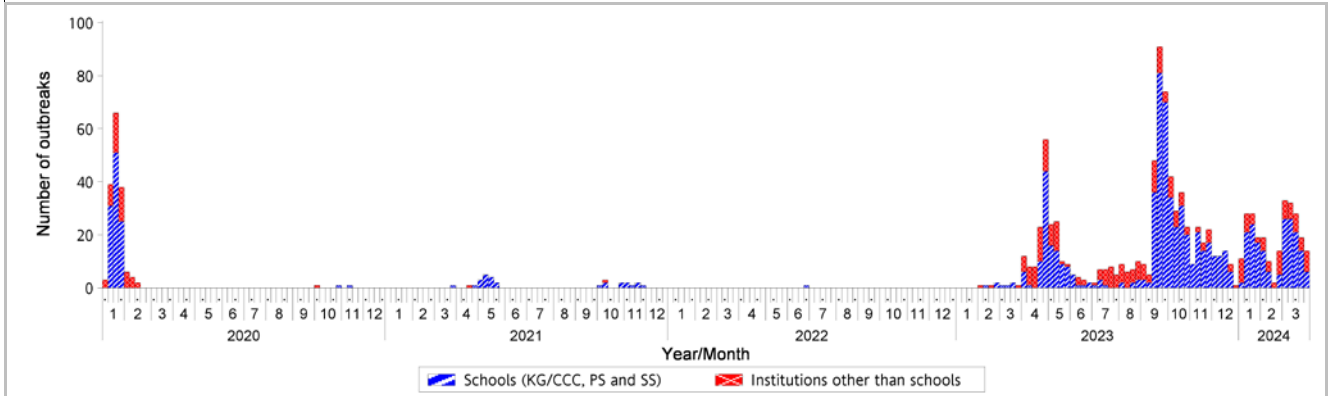


Figure 2.3 ILI outbreaks in schools/institutions, 2020-24

Type of institutions	Week 12	Week 13	Cumulative number of outbreaks since week 2 (as of Apr 3)
Child care centre/ kindergarten (CCC/KG)	1	1	24
Primary school (PS)	11	4	124
Secondary school (SS)	2	1	31
Residential care home for the elderly	1	5	32
Residential care home for persons with disabilities	3	1	22
Others	1	2	19
<i>Total number of outbreaks</i>	19	14	252
<i>Total number of persons affected</i>	107	62	1537

In comparison, 600 and 822 outbreaks were recorded in the same duration of surveillance (12 complete weeks) in the 2017/18 winter and 2018/19 winter seasons respectively, as compared with 246 outbreaks in the current season (Figure 2.5).

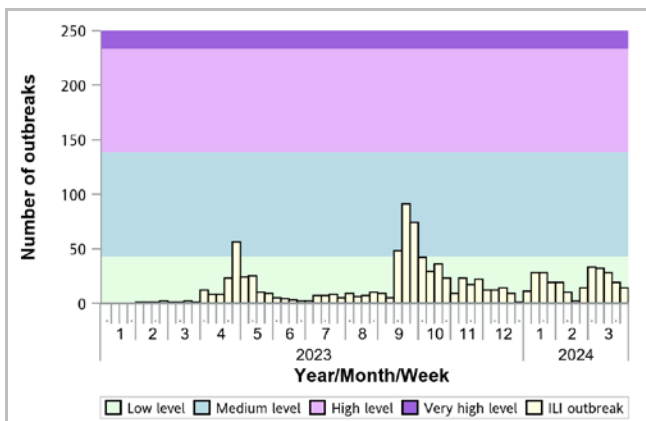


Figure 2.4 ILI outbreaks in schools/institutions, 2023-24

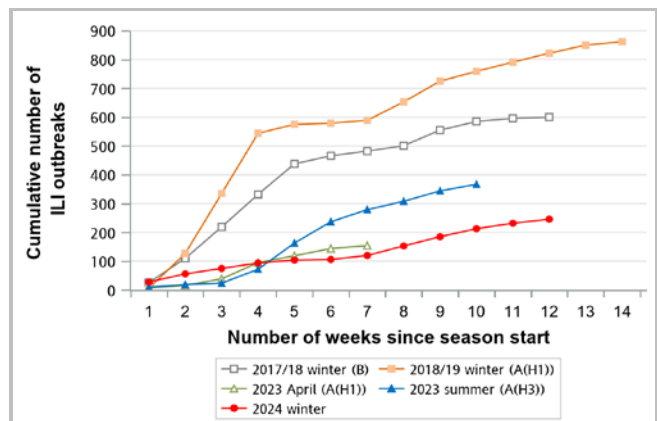


Figure 2.5 Cumulative numbers of ILI outbreaks reported during major influenza seasons, 2018–19 and 2023–24

Note: The predominating virus was shown in bracket.

* Various intensity levels applicable for this year were calculated with the moving epidemic method (MEM) based on the relevant historical data recorded from 2010 week 49 to 2019 week 48. For details, please refer to this webpage:

https://www.chp.gov.hk/files/pdf/explanatory_note_for_flux_mem_eng.pdf

Influenza-associated hospital admission rates in public hospitals based on discharge coding, 2020-24

In week 13, the overall admission rate in public hospitals with principal diagnosis of influenza was 0.37 (per 10,000 population) as compared to 0.42 recorded in the previous week (Figure 2.6). It was above the baseline threshold of 0.25 but at the low intensity level (Figure 2.7*). The influenza-associated admission rates for persons aged 0-5 years, 6-11 years, 12-17 years, 18-49 years, 50-64 years and 65 years or above were 1.23, 0.69, 0.31, 0.14, 0.20 and 0.82 cases (per 10,000 people in the age group) respectively, as compared to 1.94, 0.89, 0.45, 0.13, 0.27 and 0.78 cases in the previous week (Figure 2.6).

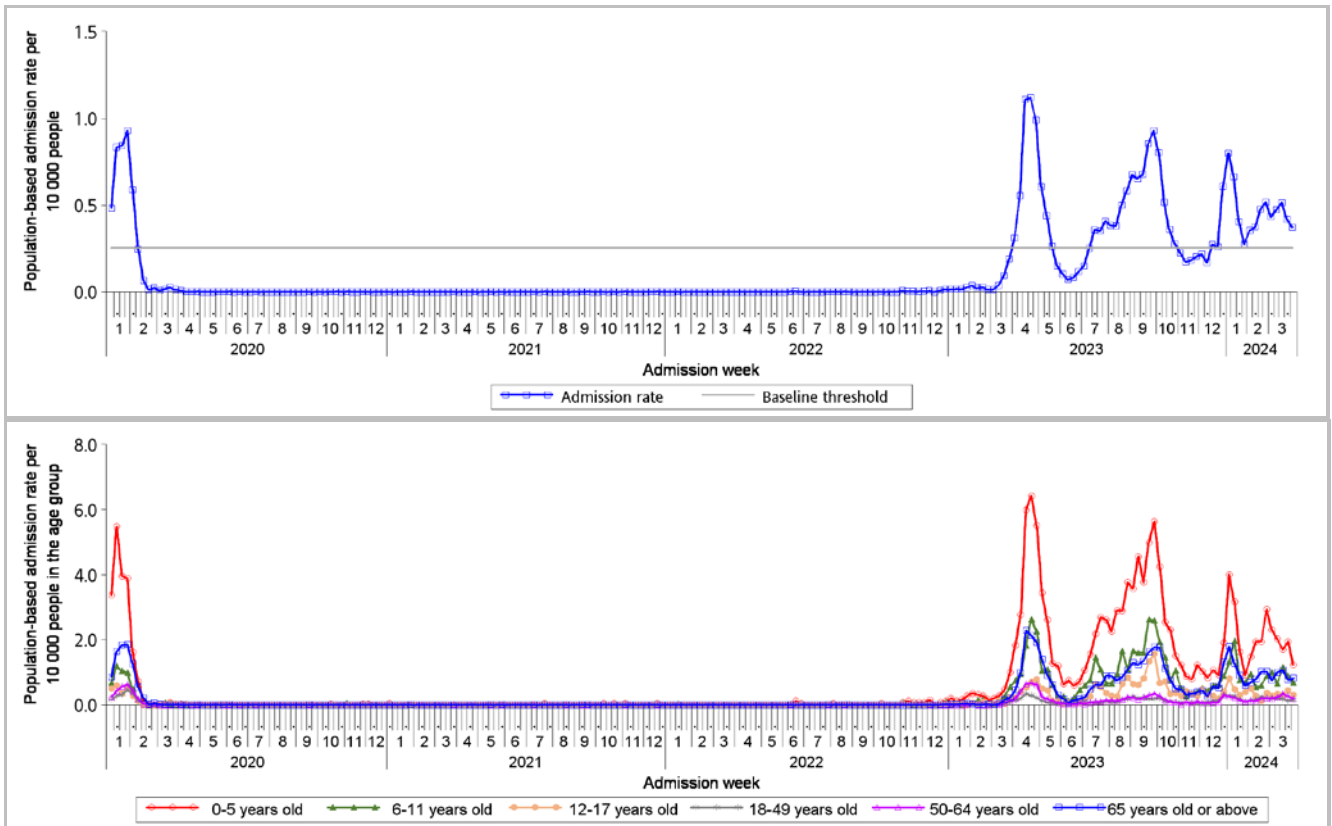


Figure 2.6 Influenza-associated hospital admission rates, 2020-24 (upper: overall rate, lower: rates by age groups) [Note: The baseline threshold is 1.96 standard deviation above the average weekly admission rate during non-season periods from 2014 week 49 to 2019 week 48.]

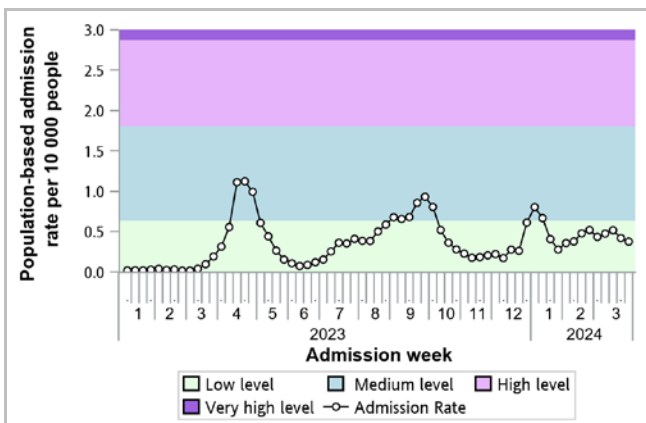


Figure 2.7 Influenza-associated hospital admission rates, 2023-24

*Various intensity levels applicable for this year were calculated with the moving epidemic method (MEM) based on the relevant historical data recorded from 2010 week 49 to 2019 week 48. For details, please refer to this webpage: https://www.chp.gov.hk/files/pdf/explanatory_note_for_flux_mem_eng.pdf

Rate of ILI syndrome group in accident and emergency departments, 2020-24[#]

In week 13, the rate of the ILI syndrome group in the accident and emergency departments (AEDs) was 197.4 (per 1,000 coded cases), which was higher than the rate of 195.9 in the previous week (Figure 2.8).

#Note: This syndrome group includes codes related to ILI such as influenza, upper respiratory tract infection, fever, cough, throat pain, and pneumonia.

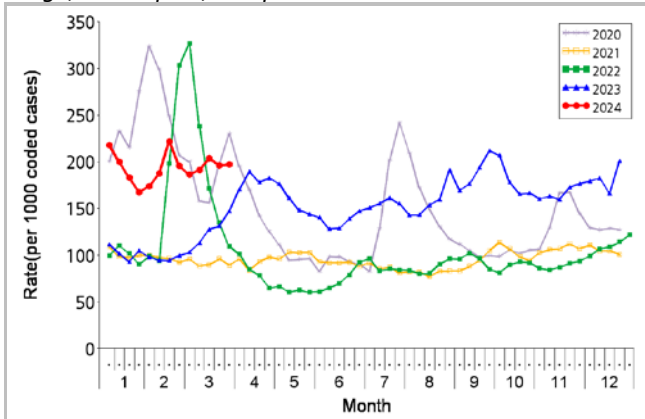


Figure 2.8 Rate of ILI syndrome group in AEDs, 2020-24

Fever surveillance at sentinel child care centres/ kindergartens, 2020-24

In week 13, 0.79% of children in the sentinel child care centres / kindergartens (CCCs/KGs) had fever (38°C or above) as compared to 1.15% recorded in the previous week (Figure 2.9).

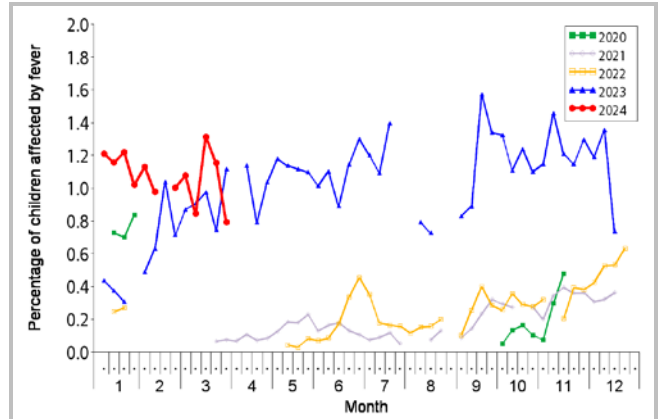


Figure 2.9 Percentage of children with fever at sentinel CCCs/KGs, 2020-24

Fever surveillance at sentinel residential care homes for the elderly, 2020-24

In week 13, 0.14% of residents in the sentinel residential care homes for the elderly (RCHes) had fever (38°C or above), compared to 0.16% recorded in the previous week (Figure 2.10).

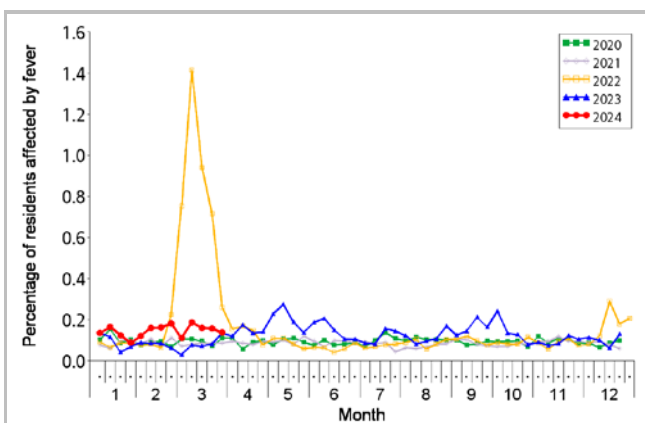


Figure 2.10 Percentage of residents with fever at sentinel RCHes, 2020-24

Influenza-like illness surveillance among sentinel Chinese medicine practitioners, 2020-24

In week 13, the average consultation rate for ILI among Chinese medicine practitioners (CMPs) was 1.32 ILI cases per 1,000 consultations as compared to 1.49 recorded in the previous week (Figure 2.11).

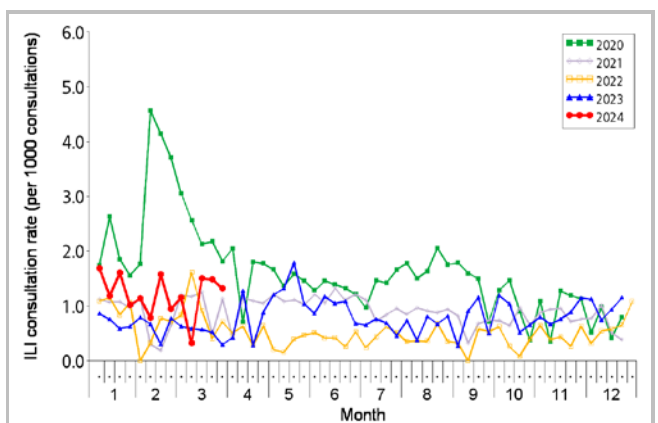


Figure 2.11 ILI consultation rate at sentinel CMPs, 2020-24

Surveillance of severe influenza cases

(Note: The data reported are provisional figures and subject to further revision.)

Surveillance for intensive care unit (ICU) admission/death with laboratory confirmation of influenza among adult patients (Aged 18 years or above)

Since 2018, the Centre for Health Protection (CHP) has collaborated with the Hospital Authority and private hospitals to monitor ICU admissions and deaths with laboratory confirmation of influenza among adult patients regularly. For surveillance purpose, the cases refer to laboratory-confirmed influenza patients who required ICU admission or died within the same admission of influenza infection. Their causes of ICU admission or death may be due to other acute medical conditions or underlying diseases.

- In week 13, 35 adult cases of ICU admission/death with laboratory confirmation of influenza were recorded, in which 22 of them were fatal. Among the 35 adult cases, 17 were known to have received the 2023/24 seasonal influenza vaccine (SIV). In the first 4 days of week 14 (Mar 31 – Apr 3), 19 cases were recorded, in which 12 of them were fatal.

Week	Influenza type					
	A(H1)	A(H3)	A(H1) and A(H3)	A (pending subtype)	B	C
Week 13	19	6	0	9	1	0
First 4 days of week 14 (Mar 31 – Apr 3)	10	4	0	5	0	0

- Since the start of 2023-24 winter influenza season in week 2, 407 adult cases of ICU admission/death with laboratory confirmation of influenza were recorded, in which 252 of them were fatal. Among them, 101 patients had influenza A(H1) infection, 195 patients with influenza A(H3), 1 patient with influenza A(H1) and A(H3), 51 patients with influenza A (pending subtype), 56 patients with influenza B and 3 patients with influenza C.
- In comparison, 570 and 563 adult cases were recorded in the same duration of surveillance (12 complete weeks) in the 2017/18 winter and 2018/19 winter seasons respectively, as compared with 388 cases in the current season (Figure 2.12, left). The corresponding figures for deaths were 382 and 331 in the above seasons, as compared with 240 deaths in the current season (Figure 2.12, right).

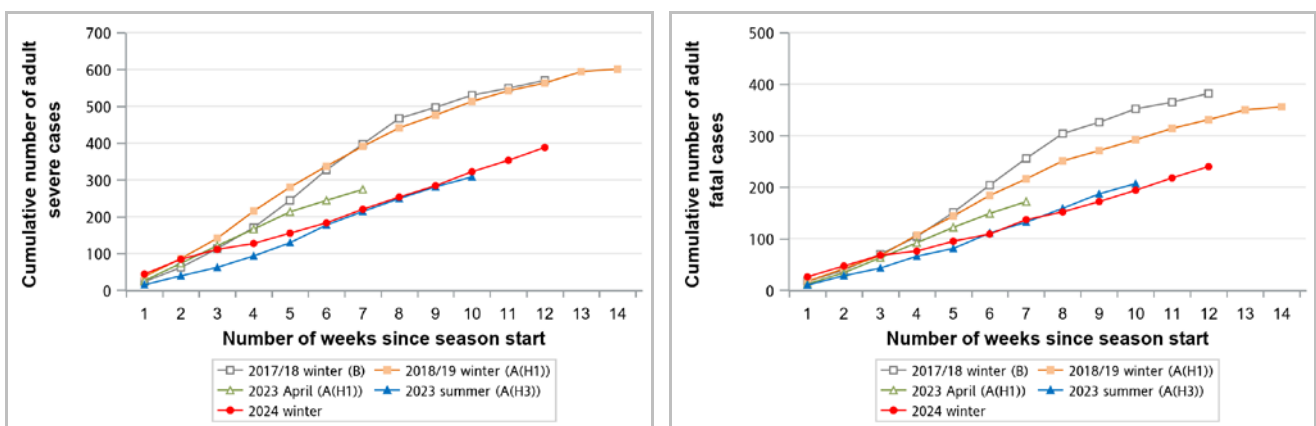


Figure 2.12 Cumulative numbers of adult severe influenza cases reported during major influenza seasons, 2018–19 and 2023–24 (left: ICU admission/death cases; right: deaths)

Note: The predominating virus was shown in bracket.

Surveillance of severe paediatric influenza-associated complication/death (Aged below 18 years)

- In week 13 and the first 4 days of week 14 (Mar 31 – Apr 3), there was one case of severe paediatric influenza-associated complication/death.

Reporting week	Age	Sex	Complication	Fatal case?	Influenza subtype	History of receiving influenza vaccine for this season
13	7 years	Male	Shock and pneumonia	No	Influenza A (H3)	No

- Since the start of 2023-24 winter influenza season in week 2, 15 paediatric cases of influenza-associated complication/death were reported, in which none of them were fatal. Eight cases had infections with influenza A(H3), four with influenza A(H1) and three with influenza B. Four of them received the 2023/24 SIV. In 2024, 16 paediatric cases of influenza-associated complication/death were recorded, in which none of them were fatal (as of Apr 3).
- In comparison, 20 and 22 paediatric cases of influenza-associated complication/death were recorded in the same duration of surveillance (12 complete weeks) in the 2017/18 winter and 2018/19 winter seasons respectively, as compared with 15 cases in the current season (Figure 2.13, left). The corresponding figures for deaths were 2 and 1 in the above seasons, as compared with 0 death in current season (Figure 2.13, right).

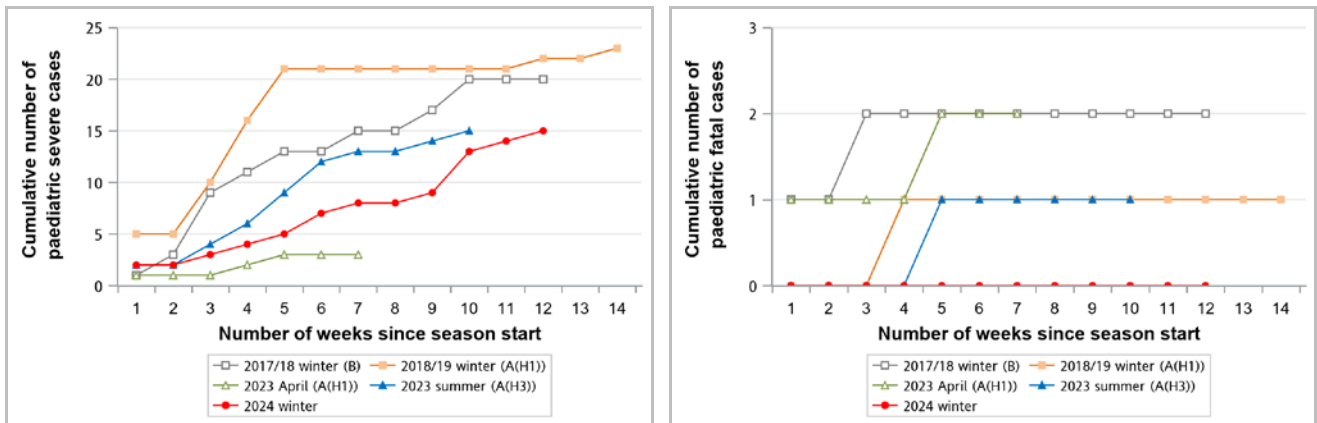


Figure 2.13 Cumulative numbers of cases of paediatric influenza-associated complication/death reported during major influenza seasons, 2018–19 and 2023–24 (left: complication/death cases; right: deaths)

Note: The predominating virus was shown in bracket.

Severe influenza cases of all ages

- Since the start of 2023-24 winter influenza season in week 2, 422 severe influenza cases among all ages have been reported, including 252 deaths (as of Apr 3).

Age group	Cumulative number of cases (death)
0-5	7 (0)
6-11	6 (0)
12-17	2 (0)
18-49	47 (6)
50-64	78 (27)
>=65	282 (219)

- Among the adult fatal cases with available clinical information, about 80% had chronic diseases.
- Among patients with laboratory confirmation of influenza admitted to public hospitals in this season (from Jan 7 to Apr 3), 3.3% of admitted cases died during the same episode of admission. So far, it was within the historical range between 1.9% (2015/16 winter season) and 3.3% (2015 summer season).

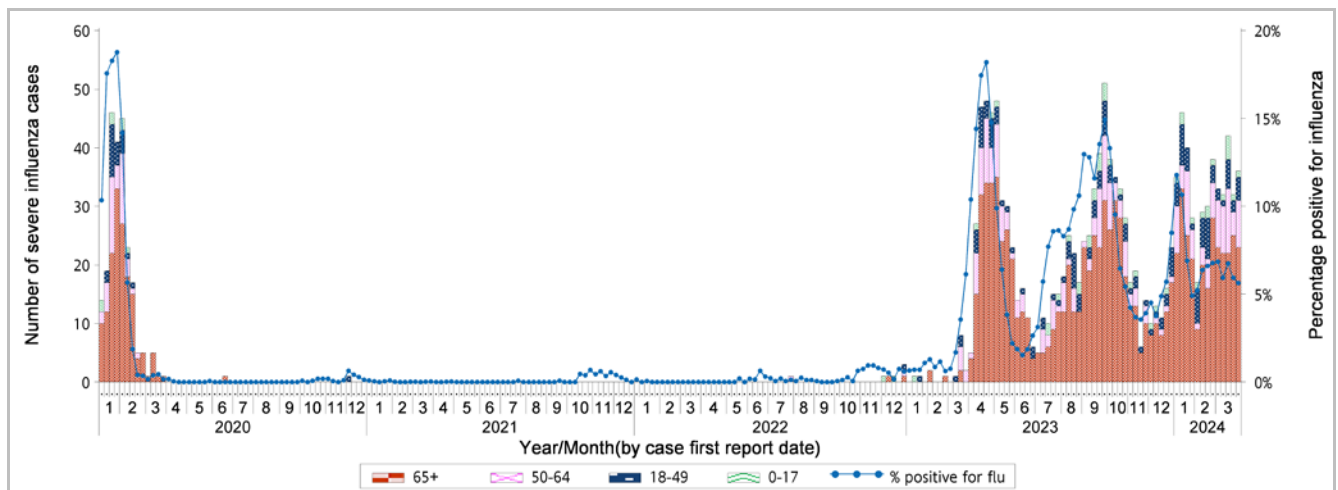


Figure 2.14 Weekly number of severe influenza cases by age groups, 2020-24 (the percentage positive for influenza viruses in Figure 2.2 is also shown in this graph)

Global Situation of Influenza Activity

Influenza activity continued to decline in most countries in the Northern hemisphere. Influenza A(H1N1)pdm09 and B viruses predominated, with differences by geographical area. In the Southern Hemisphere, influenza activity is generally low (data up to Mar 24, 2024).

- In the United States (week ending Mar 23, 2024), influenza activity remained elevated nationally but was decreasing. The percentage of specimens tested positive for influenza decreased to 10.5% from 12.1% in the preceding week. The percentage of out-patient visits for ILI was 3.1%, which was above the national baseline of 2.9%. Influenza A(H1N1)pdm09, A(H3N2) and B viruses co-circulated in week 12.
- In Canada (week ending Mar 23, 2024), most indicators of influenza activity are generally decreasing. The weekly percentage of tests positive for influenza was 8.9% in week 12. Influenza A and B viruses co-circulated.
- In the United Kingdom (week ending Mar 24, 2024), influenza activity decreased. Influenza positivity was 4.5% in week 12 as compared to 6.3% in the preceding week. The weekly ILI consultation rate in England decreased to 4.9 from 5.5 per 100,000 population in preceding week, and remained within baseline activity levels.
- In Europe (week ending Mar 17, 2024), influenza activity remained widespread, but was steadily decreasing. The percentage of sentinel specimens tested positive for influenza remained above 10% epidemic threshold at 11%, as compared to 12% in preceding week. Influenza A(H1), B and A(H3) viruses were co-circulating.
- In Mainland China (week ending Mar 24, 2024), influenza surveillance data showed the percentage of specimens tested positive for influenza in both southern and northern provinces continued to decrease, with 18.5% and 9.7% in week 12 respectively. Influenza B(Victoria) viruses predominated, followed by influenza A(H3N2) and A(H1N1)pdm09 viruses. .
- In Taiwan (week ending Mar 30, 2024), influenza-like illness consultation decreased from previous week, but was still the second highest in past 10 years. The percentage of specimens tested positive for influenza in week 11 was 20.6%. Most of the influenza detections in the 4 weeks from week 8 to week 11 were influenza A(H3N2) (51.4%), followed by influenza B (35.8%) and influenza A(H1) (12.8%) viruses.
- In Japan (week ending Mar 24, 2024), the average number of reported ILI cases per sentinel site decreased to 14.08 from 17.26 in the preceding week. Most of the influenza detections in recent weeks were influenza B viruses.
- In South Korea (week ending Mar 23, 2024), the weekly ILI rate remained elevated. The rate in week 12 was 13.8 per 1,000 out-patient visits, which was above the season epidemic threshold of 6.5. In week 12, 7.9% of tests were positive for influenza (including 4.3% influenza B and 3.6% influenza A(H3N2)).

Sources:

Information have been extracted from the following sources when updates are available: [World Health Organization](#), [United States Centers for Disease Control and Prevention](#), [Public Health Agency of Canada](#), [UK Health Security Agency](#), [European Centre for Disease Prevention and Control \(ECDC\)](#) and [WHO Regional Office for Europe \(WHO Euro\)](#), [Chinese National Influenza Center](#), [Taiwan Centers for Disease Control](#), [Japan Ministry of Health, Labour and Welfare](#) and [Korean Disease Control and Prevention Agency](#).