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 24, 2024)

Reporting period: Apr 14 - Apr 20, 2024 (Week 16)

- The latest surveillance data showed that the local COVID-19 activity is comparable to the preceding week.
- Concerning the monitoring of SARS-CoV-2 variants, the latest surveillance data showed that JN.1 is 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, 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

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

In week 16, the weekly number of newly recorded positive nucleic acid test laboratory detections for SARS-CoV-2 virus was 829 as compared to 780 in the preceding week. (Figure 1.1)

In the first 4 days of week 17 (Apr 21 – Apr 24), the daily number of newly recorded positive nucleic acid test laboratory detections for SARS-CoV-2 virus ranged from 97 to 127.

Since Jan 30, 2023, the cumulative number of positive nucleic acid test laboratory detections was 63,353 (as of Apr 24, 2024).

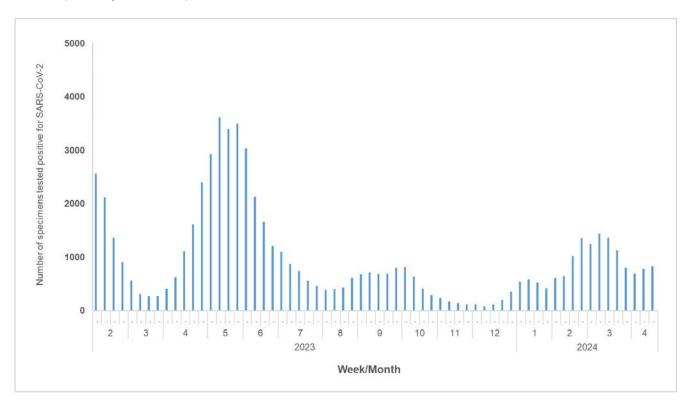


Figure 1.1 Weekly number of positive nucleic acid test laboratory detections for SARS-CoV-2 virus

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

Among the 8,095 respiratory specimens received by the Public Health Laboratory Services Branch (PHLSB) in week 16, 788 (9.73%) were tested positive for SARS-CoV-2 virus as compared to 696 (9.10%) in the preceding week. (Figure 1.2)

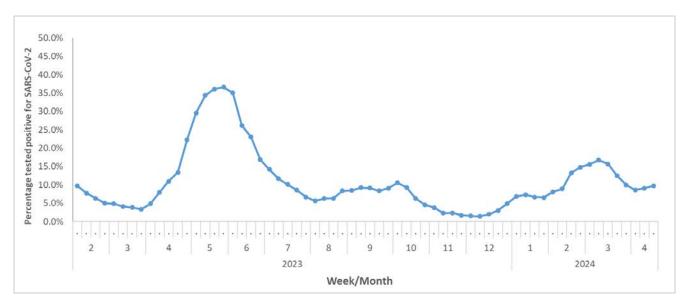


Figure 1.2 Percentage of specimens tested positive for SARS-CoV-2 virus at PHLSB

COVID-19 outbreak surveillance

In week 16, 10 COVID-19 outbreaks occurring in schools/institutions were recorded (affecting 49 persons), as compared to 7 outbreaks recorded in the previous week (affecting 44 persons). (Figure 1.3)

In the first 4 days of week 17 (Apr 21 – Apr 24), 9 COVID-19 outbreaks occurring in schools/institutions were recorded (affecting 47 persons).

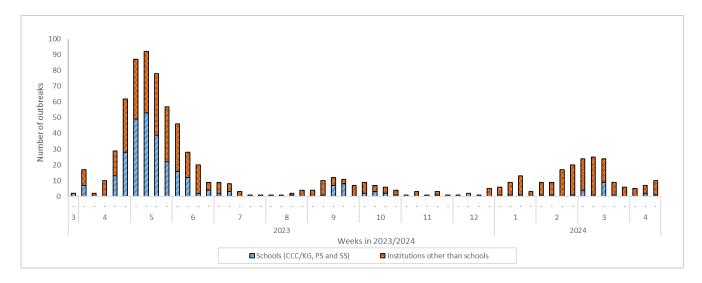


Figure 1.3 COVID-19 outbreaks in schools/institutions

Type of institutions	Week 15	Week 16	First 4 days of week 17 (Apr 21 – Apr 24)
Child care centre/ kindergarten (CCC/KG)	0	0	0
Primary school (PS)	1	0	0
Secondary school (SS)	1	1	3
Residential care home for the elderly	4	8	5
Residential care home for persons with disabilities	0	0	1
Others	1	1	0
Total number of outbreaks	7	10	9
Total number of persons affected	44	49	47

Surveillance of severe and fatal COVID-19 cases

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

In week 16, the weekly number of severe COVID-19 cases including deaths with cause of death preliminarily assessed to be related to COVID-19 was 31 as compared to 24 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 1,247 (as of Apr 20, 2024).

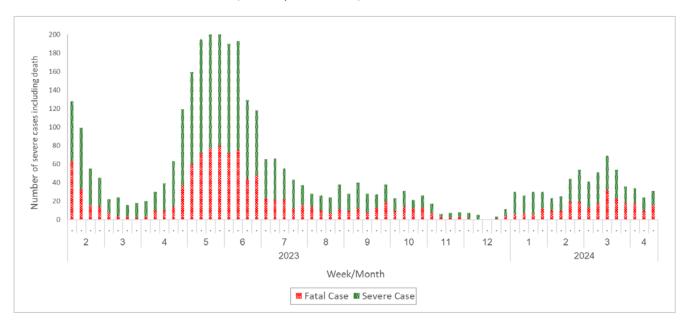


Figure 1.4 Weekly number of severe COVID-19 cases including deaths

Sewage surveillance of SARS-CoV-2 virus

In week 16, the 7-day geometric mean per capita viral load of SARS-CoV-2 virus from sewage surveillance was around 219,000 copy/L as compared to around 275,000 copy/L in the preceding week. (Figure 1.5)

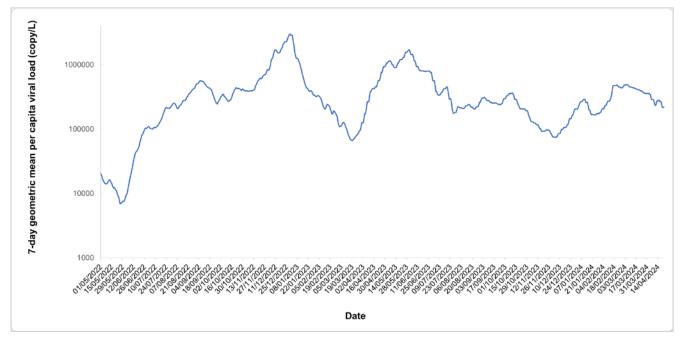


Figure 1.5 7-day geometric mean per capita viral load of SARS-CoV-2 virus from sewage surveillance since May 1, 2022

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

In week 16, the average consultation rate for COVID-19 among sentinel general out-patient clinics (GOPC) and sentinel private medical practitioner clinics were 46.0 (Figure 1.6) and 31.3 (Figure 1.7) COVID-19 cases per 1,000 consultations, respectively.

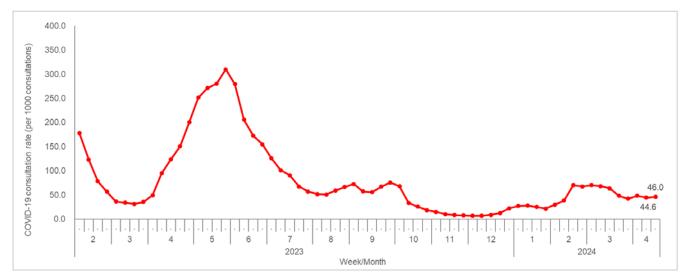


Figure 1.6 Average consultation rate of COVID-19 cases in GOPC

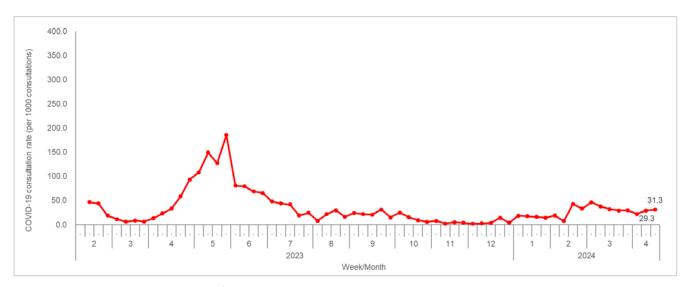


Figure 1.7 Average consultation rate of COVID-19 cases in private medical practitioner clinics

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 Apr 24, 2024) showed that JN.1 and its descendant lineages remained the most prevalent variant, comprising around 89.6% of all characterised specimens. At the same time, the prevalence of EG.5 and its descendant lineages comprised about 9.7% of all specimens. (Figure 1.8)

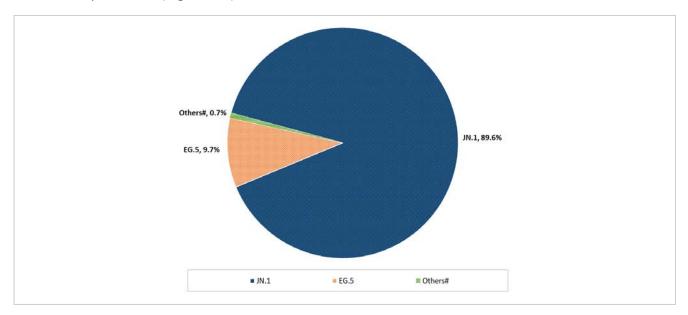


Figure 1.8 Estimated proportion of variants among sewage samples

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

CHP also conducted genetic characterisation of 59 specimens obtained from reported severe and fatal cases of COVID-19 between Apr 10 and Apr 23, 2024. The results showed that JN.1 and its descendant lineages remained the most prevalent variant, comprising 100% of all characterised specimens (59 cases). (Figure 1.9)

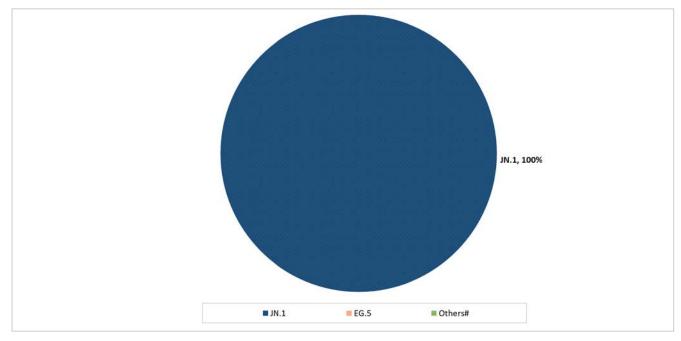


Figure 1.9 Proportion of variants among specimens obtained from reported severe and death cases for COVID-19

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 Apr 7, 2024, there have been 775,293,630 confirmed cases of COVID-19, including 7,044,637 deaths, reported to WHO.
- According to WHO COVID-19 epidemiological update last published on Apr 12, 2024,
 - Over 275,000 new cases and over 4,200 deaths were reported in the last 28 days (Mar 4 to Mar 31, 2024) globally.
 - ◆ The highest numbers of new 28-day cases were reported from Russia, New Zealand, Australia, Chile and China. The highest numbers of new 28-day deaths were reported from the USA, Russia, Chile, Australia, China and New Zealand.
 - ◆ 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.
 - ◆ Between Mar 25 and Mar 31, 2024, JN.1 is the most prevalent variant globally, accounting for 95.1% compared to 93.0% between Mar 4 and Mar 10, 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 changed from 1.6%, 1.2%, 0.3% and 0.2% to 1.6%, <0.1%, <0.1% and 0.4% respectively.</p>

Sources:

- 1. WHO COVID-19 dashboard, accessed on Apr 25, 2024
- 2. World Health Organization COVID-19 epidemiological update

Local Situation of Influenza Activity (as of Apr 24, 2024)

Reporting period: Apr 14 - 20, 2024 (Week 16)

- Hong Kong has entered winter influenza season since early January. The latest surveillance data show that local seasonal influenza activity persists at a high level and it is believed that the current influenza season would persist for a period of time.
- 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 16, the average consultation rate for influenza-like illness (ILI) among sentinel general outpatient clinics (GOPC) was 9.2 ILI cases per 1,000 consultations, which was higher than 8.2 recorded in the previous week (Figure 2.1, left). The average consultation rate for ILI among sentinel private medical practitioner (PMP) clinics was 38.2 ILI cases per 1,000 consultations, which was lower than 57.0 recorded in the previous week (Figure 2.1, right).

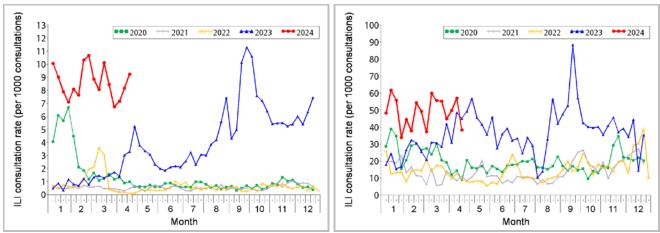


Figure 2.1 ILI consultation rates at sentinel GOPC (left) and PMP clinics (right), 2020-24

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 9,753 respiratory specimens received in week 16*, 952 (9.76%) were tested positive for seasonal influenza A or B viruses. Among the subtyped influenza detections, there were 742 (83%) influenza A(H1), 96 (11%) influenza A(H3) and 62 (7%) influenza B viruses. The positive percentage (9.76%) was above the baseline threshold of 9.21% and was higher than 8.77% recorded in the previous week (Figure 2.2).

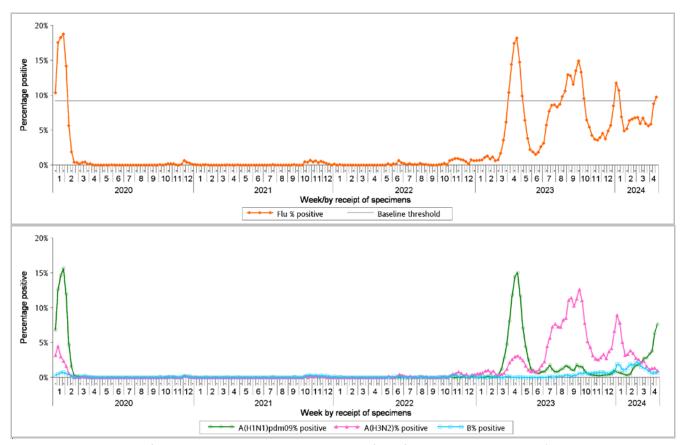


Figure 2.2 Percentage of respiratory specimens tested positive for influenza viruses, 2020-24 (upper: overall positive percentage, lower: positive percentage by subtypes)

[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 March 2024, there was one new report 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 8,095 specimens received by Public Health Laboratory Services Branch, Centre for Health Protection and 1,658 specimens received by the Hospital Authority

Influenza-like illness outbreak surveillance, 2020-24

In week 16, 29 ILI outbreaks occurring in schools/institutions were recorded (affecting 151 persons), as compared to 10 outbreaks recorded in the previous week (affecting 47 persons) (Figure 2.3). The overall number was at the low intensity level currently (Figure 2.4*). In the first 4 days of week 17 (Apr 21 - 24), 34 ILI outbreaks occurring in schools/institutions were recorded (affecting 164 persons). Since the start of 2023-24 winter influenza season in week 2, 327 outbreaks were recorded (as of Apr 24).

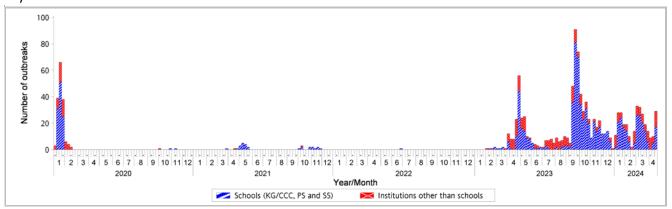
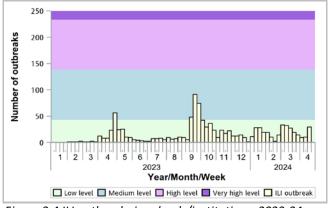
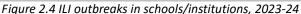


Figure 2.3 ILI outbreaks in schools/institutions, 2020-24

Type of institutions	Week 15	Week 16	Cumulative number of outbreaks since week 2 (as of Apr 24)
Child care centre/ kindergarten (CCC/KG)	0	2	32
Primary school (PS)	5	13	158
Secondary school (SS)	0	2	35
Residential care home for the elderly	3	8	53
Residential care home for persons with disabilities	2	4	29
Others	0	0	20
Total number of outbreaks	10	29	327
Total number of persons affected	47	151	1989

In the current season, 293 outbreaks were recorded during the past 15 weeks of surveillance, whereas 600, 862, 154 and 367 outbreaks were recorded in the 2017/18 winter (12 weeks), 2018/19 winter (14 weeks), 2023 April (7 weeks) and 2023 summer (10 weeks) seasons respectively (Figure 2.5).





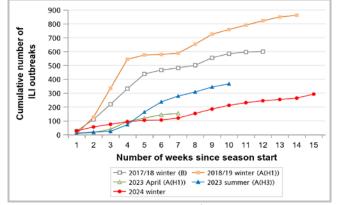


Figure 2.5 Cumulative numbers of ILI outbreaks reported during major influenza seasons, 2018–19 and 2023–24 Note: The predominating virus was shown in bracket.

^{*} 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 16, the overall admission rate in public hospitals with principal diagnosis of influenza was 0.69 (per 10,000 population) as compared to 0.63 recorded in the previous week (Figure 2.6). It was above the baseline threshold of 0.25 and at the medium 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 3.92, 1.09, 0.33, 0.21, 0.42 and 1.40 cases (per 10,000 people in the age group) respectively, as compared to 2.85, 0.80, 0.31, 0.16, 0.41 and 1.46 cases in the previous week (Figure 2.6).

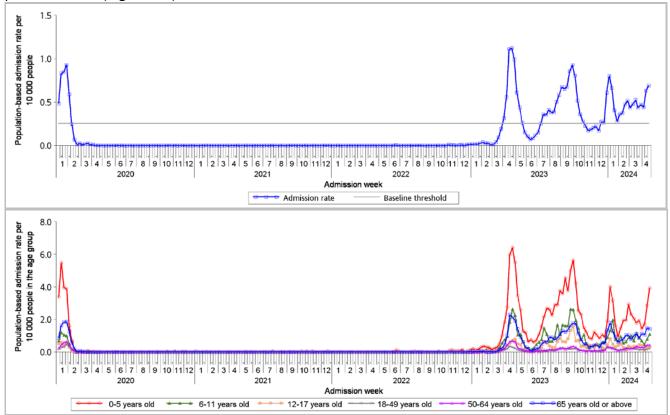


Figure 2.6 Influenza-associated hospital admission rates, 2020-24 (upper: overall rate, lower: rates by age groups)
[Note: The baseline threshold is 1.96 standard deviation above the average weekly admission rate during non-season periods from 2014 week 49 to 2019 week 48.]

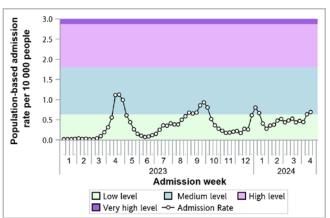


Figure 2.7 Influenza-associated hospital admission rates, 2023-24

*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 16, the rate of the ILI syndrome group in the accident and emergency departments (AEDs) was 184.7 (per 1,000 coded cases), which was higher than the rate of 182.6 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.

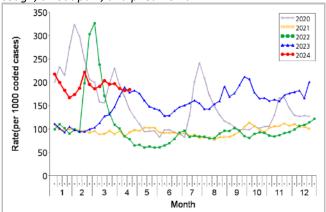


Figure 2.8 Rate of ILI syndrome group in AEDs, 2020-24

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

In week 16, 0.25% of residents in the sentinel residential care homes for the elderly (RCHEs) had fever (38°C or above), compared to 0.11% recorded in the previous week (Figure 2.10).

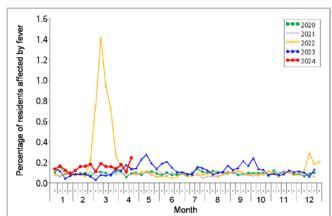


Figure 2.10 Percentage of residents with fever at sentinel RCHEs, 2020-24

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

In week 16, 1.01% of children in the sentinel child care centres / kindergartens (CCCs/KGs) had fever (38°C or above) as compared to 0.90% recorded in the previous week (Figure 2.9).

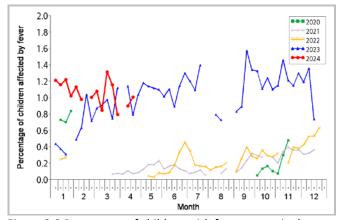


Figure 2.9 Percentage of children with fever at sentinel CCCs/KGs, 2020-24

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

In week 16, the average consultation rate for ILI among Chinese medicine practitioners (CMPs) was 1.01 ILI cases per 1,000 consultations as compared to 1.24 recorded in the previous week (Figure 2.11).

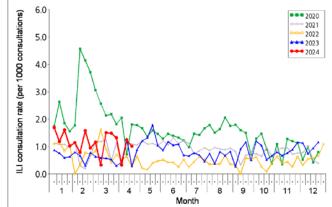


Figure 2.11 ILI consultation rate at sentinel CMPs, 2020-24

Surveillance of severe influenza cases

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

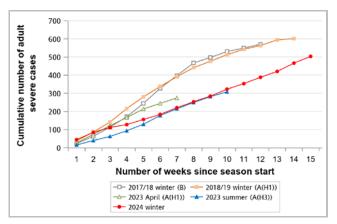
<u>Surveillance for intensive care unit (ICU) admission/death with laboratory confirmation of influenza among adult patients (Aged 18 years or above)</u>

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 16, 37 adult cases of ICU admission/death with laboratory confirmation of influenza were recorded, in which 24 of them were fatal. Among the 37 adult cases, 9 were known to have received the 2023/24 seasonal influenza vaccine (SIV). In the first 4 days of week 17 (Apr 21 – 24), 28 cases were recorded, in which 18 of them were fatal.

Week	Influenza type					
	A(H1)	A(H3)	A(H1) and A(H3)	A (pending subtype)	В	С
Week 16	25	7	0	5	0	0
First 4 days of week 17 (Apr 21 – 24)	17	2	0	8	1	0

- Since the start of 2023-24 winter influenza season in week 2 (as of Apr 24), 531 adult cases of ICU admission/death with laboratory confirmation of influenza were recorded, in which 330 of them were fatal. Among them, 189 patients had influenza A(H1) infection, 219 patients with influenza A(H3), 1 patient with influenza A(H1) and A(H3), 56 patients with influenza A (pending subtype), 63 patients with influenza B and 3 patients with influenza C.
- In the current season, 503 adult cases were recorded during the past 15 weeks of surveillance, whereas 570, 601, 274 and 308 cases were recorded in the 2017/18 winter (12 weeks), 2018/19 winter (14 weeks), 2023 April (7 weeks) and 2023 summer (10 weeks) seasons respectively (Figure 2.12, left). The cumulative number of deaths was 312 in the current season, whereas 382, 356, 172 and 207 deaths were recorded in the corresponding seasons (Figure 2.12, right).



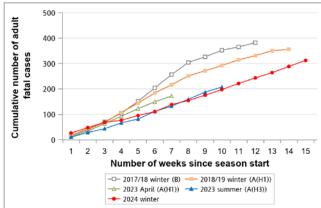


Figure 2.12 Cumulative numbers of adult severe influenza cases reported during major influenza seasons, 2018–19 and 2023–24 (left: ICU admission/death cases; right: deaths)

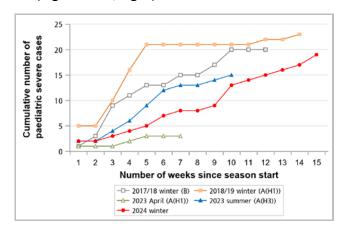
Note: The predominating virus was shown in bracket.

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

• In week 16 and the first 4 days of week 17 (Apr 21 - 24), there were three cases of severe paediatric influenza-associated complication/death.

Reporting week	Age	Sex	Complication	Fatal case?	Influenza subtype	History of receiving influenza vaccine for this season
16	8 months	Male	Encephalopathy	No	Influenza A (H1)	No
16	8 years	Female	Death	Yes	Influenza A (H1)	No
17	6 years	Female	Encephalopathy	Yes	Influenza A(H1)	Yes

- Since the start of 2023-24 winter influenza season in week 2 (as of Apr 24), 20 paediatric cases of influenza-associated complication/death were reported, in which two of them were fatal. Nine cases had infections with influenza A(H1), eight with influenza A(H3), and three with influenza B. Five of them received the 2023/24 SIV. In 2024, 21 paediatric cases of influenza-associated complication/death were recorded, in which two of them were fatal (as of Apr 24).
- In the current season, 19 paediatric cases of influenza-associated complication/death were recorded during the past 15 weeks of surveillance, whereas 20, 24, 3 and 15 cases were recorded in the 2017/18 winter (12 weeks), 2018/19 winter (14 weeks), 2023 April (7 weeks) and 2023 summer (10 weeks) seasons respectively (Figure 2.13, left). The cumulative number of deaths was 1 in the current season, whereas 2, 1, 2 and 1 deaths were recorded in the corresponding seasons (Figure 2.13, right).



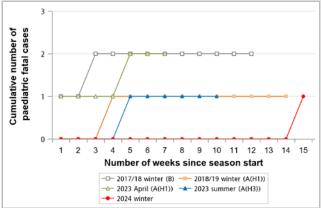


Figure 2.13 Cumulative numbers of cases of paediatric influenza-associated complication/death reported during major influenza seasons, 2018–19 and 2023–24 (left: complication/death cases; right: deaths)

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, 551 severe influenza cases among all ages have been reported, including 332 deaths (as of Apr 24).

Age group	Cumulative number of cases (death)
0-5	9 (0)
6-11	9 (2)
12-17	2 (0)
18-49	61 (7)
50-64	106 (40)
>=65	364 (283)

- Among the adult fatal cases with available clinical information, about 82% had chronic diseases.
- Among patients with laboratory confirmation of influenza admitted to public hospitals in this season (from Jan 7 to Apr 24), 3.2% 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).

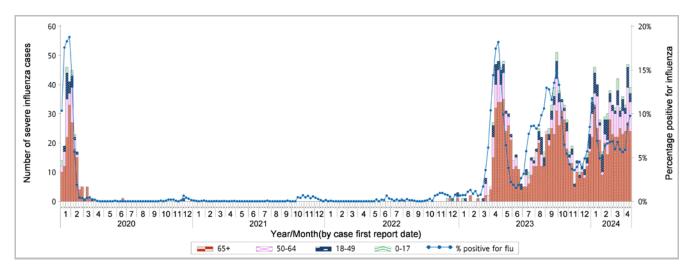


Figure 2.14 Weekly number of severe influenza cases by age groups, 2020-24 (the percentage positive for influenza viruses in Figure 2.2 is also shown in this graph)

Global Situation of Influenza Activity

Influenza activity continued to decline in most countries in the Northern hemisphere. The predominant circulating influenza virus varied by geographical area. In the Southern Hemisphere, influenza activity remained low except South America (data up to April 14, 2024).

- In the United States (week ending Apr 13, 2024), influenza activity continued to decline in most areas of the country. The percentage of specimens tested positive for influenza decreased to 5.9% from 7.6% in the preceding week. The percentage of out-patient visits for ILI was 2.5%, which was below the national baseline of 2.9%. Influenza A(H1N1)pdm09, A(H3N2) and B viruses co-circulated in week 15.
- In Canada (week ending Apr 13, 2024), most indicators of influenza activity are generally decreasing. The weekly percentage of tests positive for influenza was 7.8% in week 15. Influenza B viruses predominated and co-circulated with influenza A viruses.
- In the United Kingdom (week ending Apr 14, 2024), influenza activity continued to decrease. Influenza positivity decreased to 2.7% in week 15 as compared to 3.5% in the preceding week. The weekly ILI consultation rate in England was stable at 3.3 per 100,000 population as compared to 3.4 in preceding week, and remained within baseline activity levels.
- In Europe (week ending Apr 14, 2024), influenza activity continued to decrease and was below the 10% positivity epidemic threshold for two consecutive weeks. The percentage of sentinel specimens tested positive for influenza was 8%, as compared to 9% in the preceding week. Influenza B viruses predominated.
- In Mainland China (week ending Apr 14, 2024), influenza surveillance data showed the percentage of specimens tested positive for influenza in both southern and northern provinces continued to decrease, with 10.5% and 5.6% in week 15 respectively. Influenza A(H1N1)pdm09 and B(Victoria) viruses predominated, followed by influenza A(H3N2) viruses.
- In Taiwan (week ending Apr 13, 2024), the percentage of influenza-like illness visits to emergency department was below the epidemic threshold for two consecutive weeks, indicating that the epidemic period ended. The percentage of specimens tested positive for influenza in week 13 was 12.7%. Most of the influenza detections in the 4 weeks from week 10 to week 13 were influenza B (46.5%), followed by influenza A(H3N2)(36.8%) and influenza A(H1N1) (16.7%) viruses.
- In Japan (week ending Apr 14, 2024), the average number of reported ILI cases per sentinel site decreased to 2.69 from 5.10 in the preceding week. Most of the influenza detections in recent weeks were influenza B (Victoria) viruses.
- In South Korea (week ending Apr 13, 2024), the weekly ILI rate remained elevated. The rate in week 15 was 12.2 per 1,000 out-patient visits, which was above the season epidemic threshold of 6.5. In week 15, 7.5% of tests were positive for influenza (including 6.2% influenza B, 1.0% influenza A(H1N1)pdm09 and 0.2% 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.