



Epidemiology of seasonal influenza in Hong Kong and use of seasonal influenza vaccines

Dr KH KUNG

Surveillance Division, Communicable Disease Branch,
Centre for Health Protection

2 September 2024



衛生署

Department of Health

Overview of seasonal influenza in HK

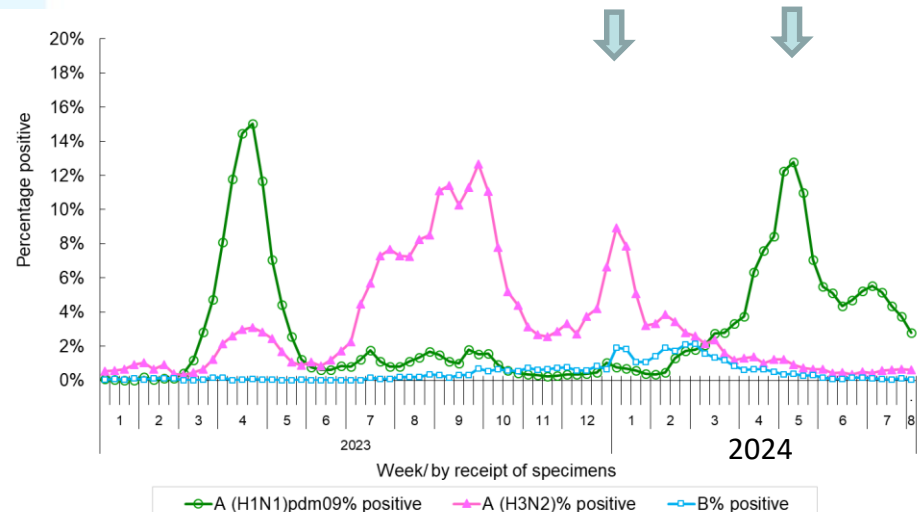
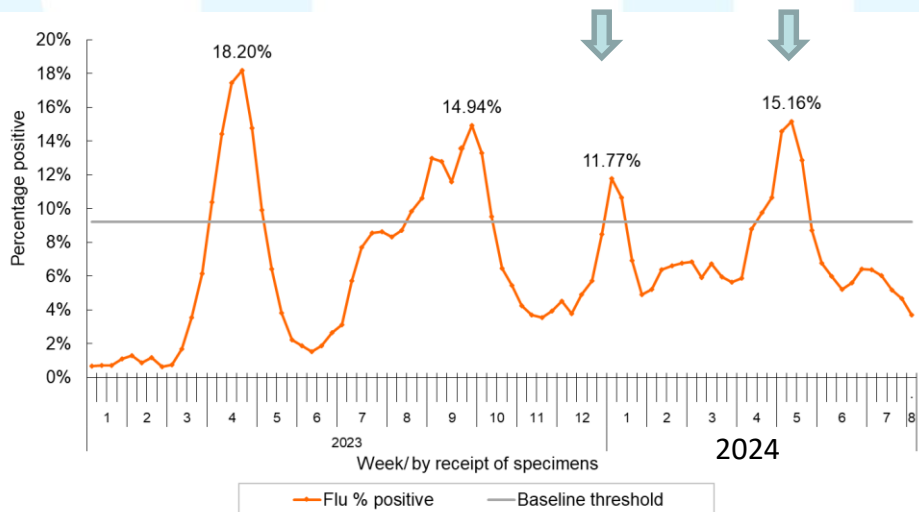
- Usually 2 influenza seasons each year prior to pandemic
 - Major season: **winter season** occurring between Jan and Mar/Apr
 - Lasted for 12 – 17 weeks in pre-COVID-19 years (but 7 weeks in the atypical 2016/17 winter season)
 - Another **summer season** with variable timing (between Jun and Sep)
 - Lasted for 5 – 8 weeks in pre-COVID-19 years (except 16 weeks in the atypical 2017 summer season)
 - Not occurred in some years (e.g. no summer season in 2018 & 2019)

2023/2024 influenza season in HK

- Experienced a prolonged influenza season from early January to late July (> 6 months, i.e. 28 weeks)
- Much longer than usual winter seasons in pre-pandemic years
- Attributable to sequential activity upsurge of different influenza viruses during the season
- Young children aged 0-5 years, children aged 6-11 years and elderly aged ≥ 65 were mostly affected
 - Majority of ILI outbreaks were in school and residential care homes for the elderly
 - Hospitalisation rate in public hospitals was the highest in young children aged < 6 years

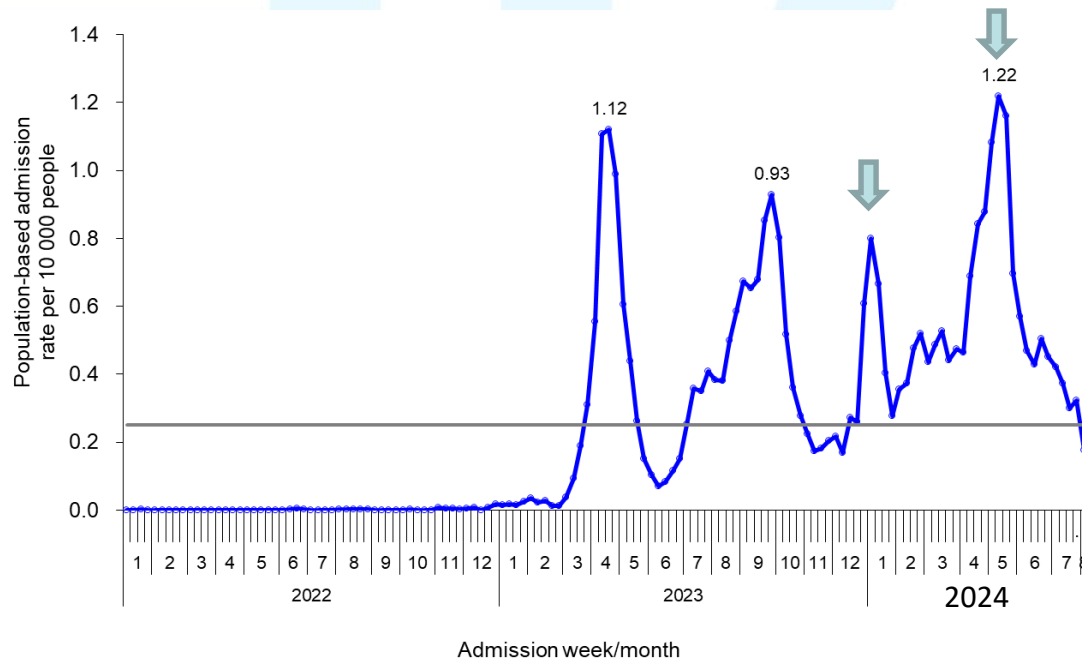
Laboratory surveillance

- Among the respiratory specimens received, the positive percentage of seasonal influenza viruses reached peaks of 11.77% in early Jan and 15.16% in May, higher than baseline threshold of 9.21%
- Peak level
 - < 18.2% in 2023 April and 26.5%-40.6% in 2017-2019 major seasons
 - comparable to 14.9% in 2023 summer
- Influenza A(H3) predominated initially (63% of detections in Jan-Feb), followed by influenza A(H1) predominance (78% of detections in Mar- Jul)

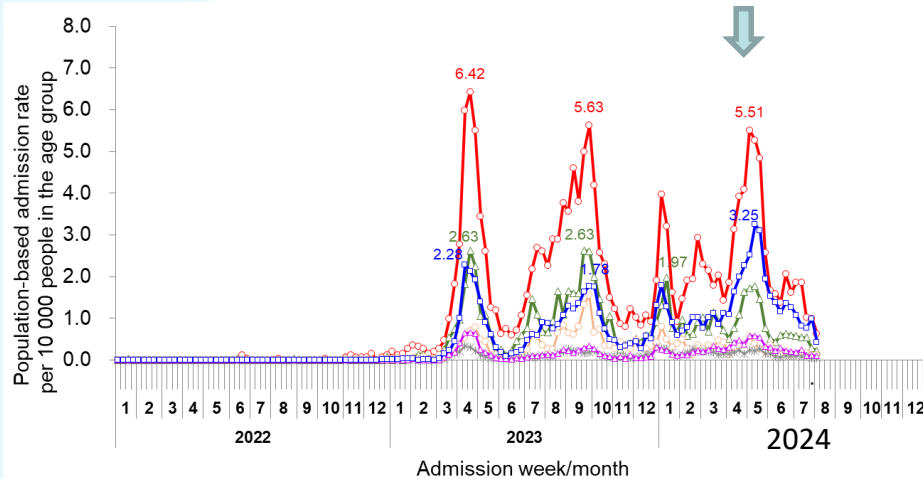


Influenza-associated admission rates in public hospitals

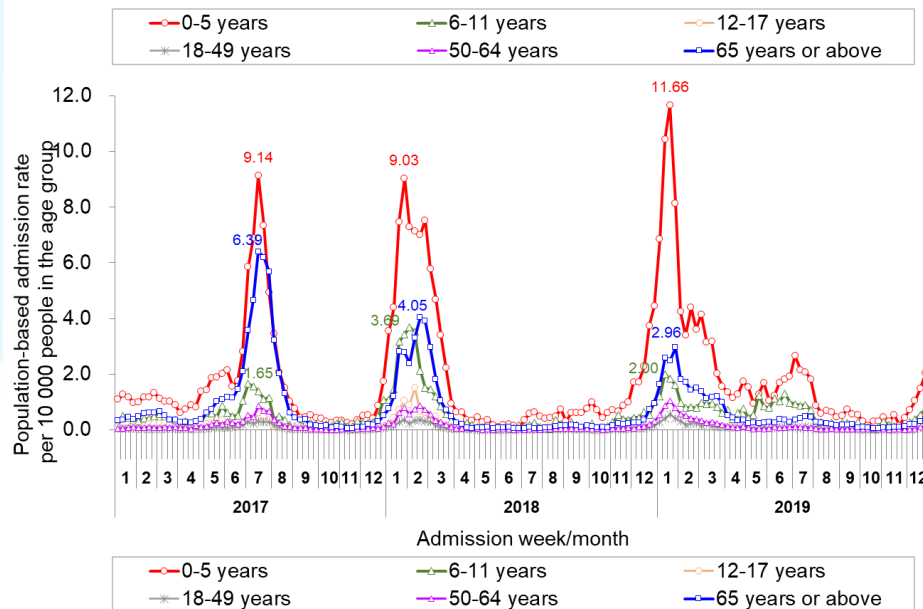
- Pattern similar to lab detection with 2 peaks in Jan and May
- Peak in May reached 1.22 per 10,000 (baseline threshold at 0.25)
- Peak higher than 2023 April (1.12) and 2023 summer (0.93) seasons but lower than 1.50-1.91 in 2017-2019 major seasons



Influenza-associated admission rates in public hospitals

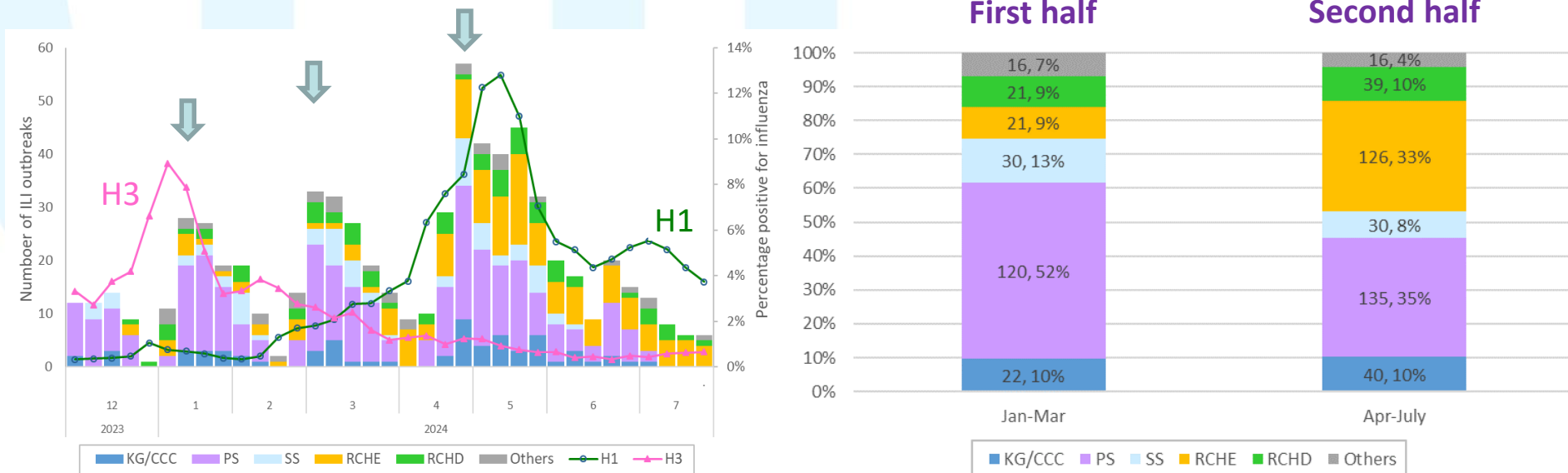


- Mostly affected age group was young children aged 0-5 years, followed by elders ≥ 65 years and children aged 6-11 years
- Peak of 0-5 years (5.51) lower than previous seasons (5.63-11.66 in 2017-2019 and 2023)
- Peak of 6-11 years (1.97) lower than 2.00-3.69 in 2018-2019 and 2023 seasons
- On the other hand, peak of ≥ 65 years (3.25) higher than 2023 seasons (1.78 and 2.28) and within 2017-2019 range (2.96-6.39)



ILI outbreaks in schools/institutions

- Stepwise increasing pattern, mainly affected schools, with intermittent drops probably related to school holidays
- Roughly coincided with the trend of different subtype viruses
- 616 ILI outbreaks reported (230 in first half and 386 in second half)
- Initial H3 period: About half (52%) from PS and <10% from RCHE
- Latter H1 period: PS reduced to 35%; RCHE increased to 33%
- Overall: Comparable to 600 in 2018 season (12 weeks) but lower than 862 in 2019 season (14 weeks)



Severe influenza cases

- 1167 adult cases (including 791 deaths) in this season
 - Higher than 274 in 2023 April season, 308 in 2023 summer season and 570 – 601 in major seasons in 2017-2019
 - Average weekly number (41.7) within previous range
- 32 paediatric cases (6 deaths)
 - Higher than previous seasons
 - Average weekly number (1.1) within previous range

Season (predominating virus)	Duration (weeks)	No. of adult severe cases (including deaths)	Average weekly number of adult cases	Number of paediatric severe cases (including deaths)	Average weekly number of paediatric cases
2024 season (H3, then H1)	28	1167	41.7	32	1.1
2023 summer (H3)	10	308	30.8	15	1.5
2023 April (H1)	7	274	39.1	3	0.4
2019 winter (H1)	14	601	42.9	24	1.7
2018 winter (B)	12	570	47.5	20	1.7
2017 summer (H3)	18	582	32.3	19	1.1

Adult influenza cases who required ICU admission or died

- 1167 cases (including 791 deaths)
- Elderly ≥ 65 years proportion
 - 69% in initial H3 period, lower than 77% in 2023 H3 summer season.
 - Increased to 76% in latter H1 period, comparable to 73% in 2023 April H1 season
- Among fatal cases, elderly proportion comparable in all seasons no matter which subtype predominated (86% to 90% in 2023 and 2024 seasons)
- ~78% of 50-64 years and 84% of elderly had pre-existing chronic diseases

Period	2024 Jan - Mar		2024 Apr – Jul		2023/2024 season	
Main circulating virus	H3		H1		Overall	
	Case including death (column %)	Death (column %)	Case including death (column %)	Death (column %)	Case including death (column %)	Death (column %)
18 – 49	47 (12%)	7 (3%)	53 (7%)	8 (1%)	100 (9%)	15 (2%)
50 – 64	74 (19%)	27 (11%)	136 (17%)	47 (9%)	210 (18%)	74 (9%)
≥ 65	267 (69%)	212 (86%)	590 (76%)	490 (90%)	857 (73%)	702 (89%)
Total	388	246	779	545	1167	791

Paediatric influenza-associated severe complications/deaths

- 32 cases (including 6 deaths) were recorded in this season
- Age range: 5 months – 16 years (median: 6 years)
- Complication: 15 severe pneumonia, 10 neurological complications (including 3 fatal cases of acute necrotizing encephalopathy & 1 fatal case with COVID-19 co-infection and acute necrotizing encephalopathy), 5 shock, 2 sepsis and 1 myocarditis
- 8 (25%) had underlying diseases

Age group	No. of cases (including death)	No. of deaths
0 - 5	15	2
6 - 11	13	4
12 - 17	4	0

Vaccination of severe cases

Age group	No. of cases	Known to have received SIV (%)
0 - 5	15	2 (14%*)
6 - 11	13	5 (38%)
12 - 17	4	1 (25%)
18 - 49	100	4 (4%)
50-64	210	31 (15%)
65 or above	857	386 (45%)

* Age of a case was less than 6 months

- Paediatrics: Majority (74%) did not receive the 2023/24 SIV
- Adult: Only 4% of 18-49 year group and 15% of 50-64 year group known to have received SIV
- Elderly: Less than half (45%) known to have received SIV

→ **Low vaccination rate**

Vaccination of severe RCHE residents

2023/24 SIV coverage among ~59 900 RCHE residents being 81.8%

SIV	Severe	Non-severe	Total	Risk (per 1000)
Vaccinated	196	48 804	49 000	4.00
Non-vaccinated	98	10 802	10 900	8.99
Total	294	59 606	59 900	

- Risk of becoming a severe case among RCHE residents who received the SIV **reduced by 56%** (p -value < 0.001) as compared with non-vaccination group

Summary of 2023/2024 influenza season

- Hong Kong entered the season in early Jan 2024, similar to the timing in pre-COVID era
- Prolonged season spanning for ≥ 6 months due to sequential upsurge of different influenza subtype activities
- Increases in cumulative disease burden including influenza infection, hospitalisation, outbreaks in school and institutions
- Severe illnesses mainly affected young children, elderly and/or persons with pre-existing chronic medical diseases, especially those who did not receive the seasonal influenza vaccine

Seasonal Influenza Vaccine (SIV)

Recommendation on SIV composition for 2024/25 Northern Hemisphere season

	Egg-based	Cell-based / Recombinant-based
H1	A/Victoria/4897/2022 (H1N1)pdm09-like virus	A/Wisconsin/67/2022 (H1N1)pdm09-like virus
H3	A/Thailand/8/2022 (H3N2)-like virus	A/Massachusetts/18/2022 (H3N2)-like virus
B/Victoria	B/Austria/1359417/2021 (B/Victoria lineage)-like virus	
B/Yamagata*	B/Phuket/3073/2013 (B/Yamagata lineage)-like virus	

*Included in quadrivalent SIV only but not in trivalent SIV.

Compositions of the SIVs recommended by WHO

Type		2023/24 Northern		2024 Southern		2024/25 Northern	
		Egg-based	Cell-based / Recombinant-based	Egg-based	Cell-based / Recombinant-based	Egg-based	Cell-based / Recombinant-based
Tri-valent SIV	H1	A/Victoria/4897/2022 (H1N1)pdm09-like virus	A/Wisconsin/67/2022 (H1N1)pdm09-like virus	A/Victoria/4897/2022 (H1N1)pdm09-like virus	A/Wisconsin/67/2022 (H1N1)pdm09-like virus	A/Victoria/4897/2022 (H1N1)pdm09-like virus	A/Wisconsin/67/2022 (H1N1)pdm09-like virus
	H3	A/Darwin/9/2021 (H3N2)-like virus	A/Darwin/6/2021 (H3N2)-like virus	A/Thailand/8/2022 (H3N2)-like virus	A/Massachusetts/18/2022 (H3N2)-like virus	A/Thailand/8/2022 (H3N2)-like virus	A/Massachusetts/18/2022 (H3N2)-like virus
	B	B/Austria/1359417/2021 (B/Victoria lineage)-like virus					
Additional component in quadrivalent SIV		B/Phuket/3073/2013 (B/Yamagata lineage)-like virus					

Seasonal influenza vaccines available in HK in 2024/25 season

Quadrivalent inactivated influenza vaccine (all egg-based)

- Vaxigriptetra Vaccine 0.5ml (aged six months or above)
- Vaxigriptetra Quadrivalent Influenza Vaccine 0.5ml (aged six months or above)
- Fluarix Tetra Northern Hemisphere Vaccine Suspension for Injection (aged six months or above)
- Influvac Tetra Vaccine Suspension for Injection (Northern Hemisphere) (aged six months or above)

Live Attenuated Influenza Vaccine (LAIV) (egg-based)

- Flumist Trivalent Influenza Intranasal Vaccine (aged 2 - 49 years)

Recombinant influenza vaccine (recombinant-based)

- Flublok Quadrivalent Influenza Vaccine solution for injection 0.5ml (pre-filled syringe without needle) (adults aged 18 or above)

Recommendations on influenza vaccination in 2024/25 season

- **All members of the public** aged 6 months or above except those with known contraindications should receive SIV annually for personal protection
- People who are in the priority groups are generally at increased risk of severe influenza or transmitting influenza to those at high risk. Therefore, they shall have higher priority for SIV
 1. Health care workers*
 2. Persons aged 50 years or above
 3. Pregnant women
 4. Residents of residential care homes
 5. Persons with chronic medical problems
 6. Children and adolescents aged 6 months to under 18 years
 7. Poultry workers
 8. Pig farmers and pig-slaughtering industry personnel

Types of SIVs recommended to be used in HK

- IIV, LAIV and RIV are recommended
- Given B/Yamagata lineage viruses are no longer circulating in the population based on WHO surveillance data, both trivalent and quadrivalent vaccines could be used in the 2024-25 season
- Depending on individual brand, IIV is recommended for use among people aged six months of age or older, including healthy people and those with chronic medical problems
- LAIV can be used for people 2-49 years of age except those who are pregnant, immunocompromised or with other contraindications
- RIV is recommended for use in individuals of 18 years or above
 - A review of existing studies suggested that, in older age group, **RIV may be potentially more effective than standard-dose IIV**
 - Both IIV and RIV are recommended for use in the residential care home setting. **When available, RIV which may offer improved protection against influenza illness in older adults is preferred for older adults living in residential care homes**

Scientific Committee on Vaccine Preventable Disease ▾

GO



Scientific Committee on Vaccine Preventable Diseases issues recommendations on seasonal influenza vaccination for 2024-25 season in Hong Kong

The Scientific Committee on Vaccine Preventable Diseases (SCVPD) under the Centre for Health Protection (CHP) of the Department of Health today (March 21) issued recommendations on seasonal influenza vaccination for the forthcoming 2024-25 influenza season in Hong Kong, after reviewing the scientific evidence, local data, latest recommendations of the World Health Organization (WHO) and overseas practices.

The SCVPD recommended that the priority groups for receiving the seasonal influenza vaccine in the 2024-25 season be the same as the season in 2023-24, covering healthcare workers, persons aged 50 years or above, pregnant women, residents of residential care homes, persons with chronic medical problems, children and adolescents aged six months to under 18 years, poultry workers, as well as pig farmers and pig-slaughtering industry personnel.

Moreover, the SCVPD recommended that the composition of the seasonal influenza vaccines for the upcoming 2024-25 season should follow the WHO's recommendations for the 2024-25 Northern Hemisphere influenza season.

Regarding vaccine types, inactivated influenza vaccines, live attenuated influenza vaccine (i.e. nasal vaccine) and recombinant influenza vaccine are recommended for use in Hong Kong. Both quadrivalent and trivalent seasonal influenza vaccines could be used in the 2024-25 season.

Contraindications

- All SIV: history of severe hypersensitivity to any of the vaccine components or a previous dose of SIV
- Additional contraindications for LAIV:
 - Concomitant aspirin or salicylate-containing therapy in children and adolescents;
 - Children 2 years through 4 years who have asthma or who have had a history of wheezing in the past 12 months;
 - Children and adults who are immunocompromised due to any cause;
 - Close contacts and caregivers of severely immunosuppressed persons who require a protected environment;
 - Pregnancy; and
 - Receipt of influenza antiviral medication within previous 48 hours.

About egg allergy (both IIV & LAIV)

- SIV contains ovalbumin (a chicken protein), but the manufacturing process involves repeated purification and the ovalbumin content is very little
- Even people who are allergic to eggs are generally safe to receive vaccination
 - Individuals with mild egg allergy can receive SIV in primary care setting
 - Individuals with a history of anaphylaxis to egg should have SIV administered by health care professionals in appropriate medical facilities with capacity to recognise and manage severe allergic reactions

Dosing schedule and vaccination interval

- A single dose of SIV is the standard regimen for persons ≥ 9 years
- Children below 9 years:
 - vaccine-naïve: 2 doses of SIV with an interval of at least 4 weeks
 - who have received one or more doses of SIV before: 1 dose
- For IIV and RIV, other inactivated or live vaccines may be administered simultaneously or at any interval between doses
- For individuals receiving LAIV, other live vaccines not administered on the same day should be administered at least 4 weeks apart
- SIV can be co-administered with COVID-19 vaccine on the same visit under informed consent
 - same principle would also apply to similar settings including residential care homes

Interim estimates for 2023/24 season in overseas countries

- In the Northern Hemisphere, influenza A(H1N1)pdm09 predominated in the 2023-24 winter season.
- Interim early season estimates in primary care setting in overseas countries showed influenza vaccination offered moderate protection against A(H1N1)pdm09.

Country/Region	VE against A(H1N1)pdm09 (95% CI)
United States	Age 6m-17y: 54-61% (26 to 81) Age ≥18: 25% (1 to 43)
Canada	63% (51 to 72)
Europe	53% (41 to 63)
United Kingdom	Age 2-17: 61% (34 to 77) Age 18-64: 46% (23 to 62) Age ≥65: 36% (15 to 51)

Thank you