

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

Sep 2021



衛生署  
Department of Health

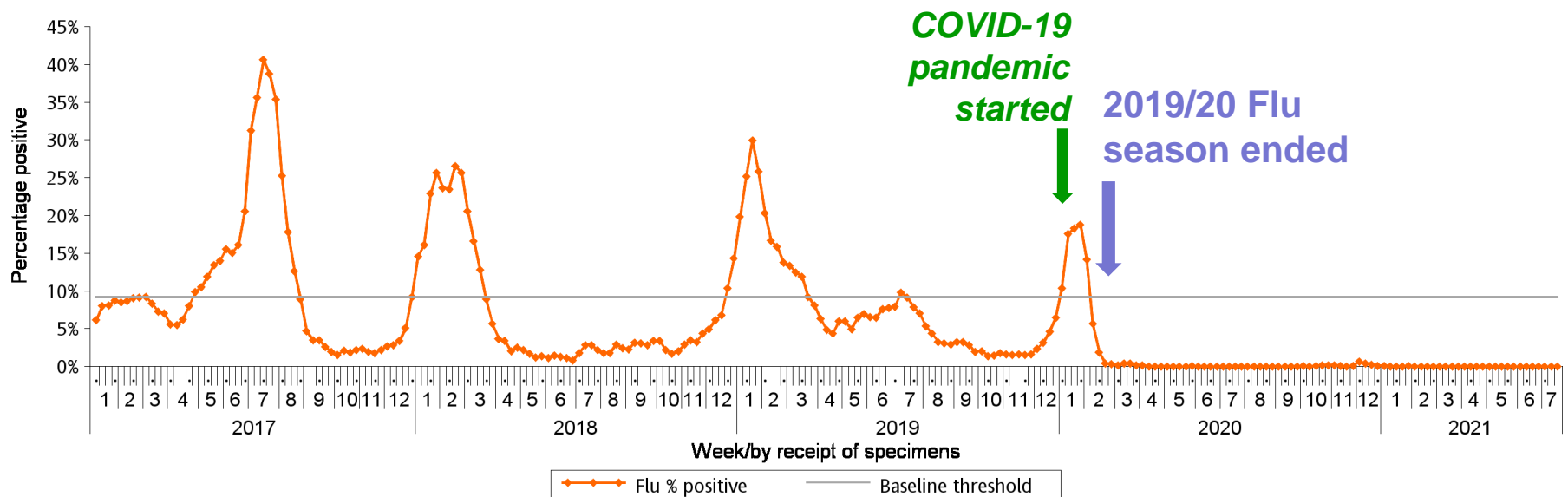
# Overview of seasonal influenza in HK

- Usually 2 influenza seasons each year
  - Main season: **winter season** occurring between Jan and Mar/Apr
    - Usually last for 12-16 weeks  
*(except 7 weeks in 2016/17, 5 weeks in 2019/20 and no 2020/21 winter seasons)*
  - Another **summer season** with variable timing (between Jun and Aug)
    - Usually shorter duration  
*(except 2017 summer season with 16 weeks)*
    - Not occurred in some years (e.g. no summer season in 2018 - 2020)

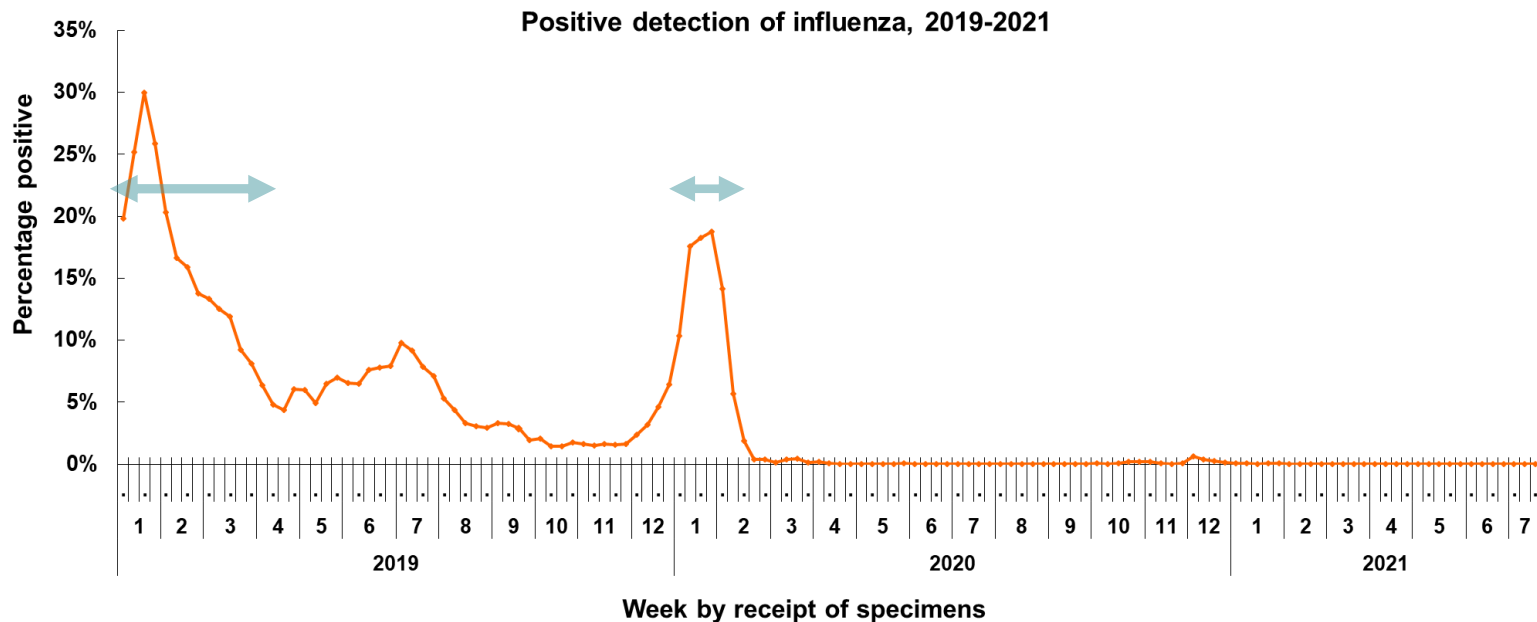
- However,...

## Low influenza activity since end of 2019/20 winter influenza season in HK

- Influenza activity remained low after the end of winter influenza season on Feb 2020



# Duration of winter influenza seasons



Season	Week start to end	Duration
2018/19 winter season	Week 1 to 14	14 weeks
2019/20 winter season	Week 2 to 6	5 weeks
2021 - No flu season	-	-

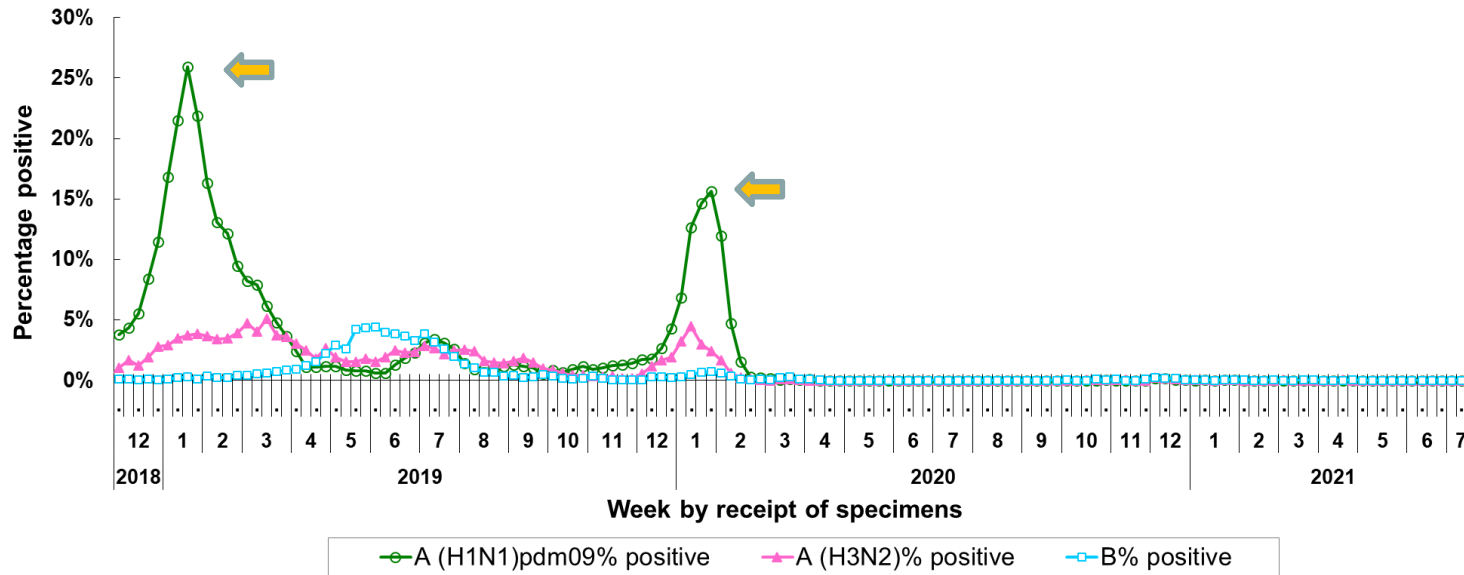
*Duration shortening*

- **Last year,...**

## 2019/20 winter influenza season in HK

- Mild season, reflected by rapid decrease in influenza activity in Feb 2020
  - influenza detections
  - institutional influenza-like illness (ILI) outbreaks
  - influenza-associated hospitalisations
- Likely related to intensive prevention measure adopted by the whole community for COVID-19, such as hand hygiene, mask wearing, social distancing, etc.

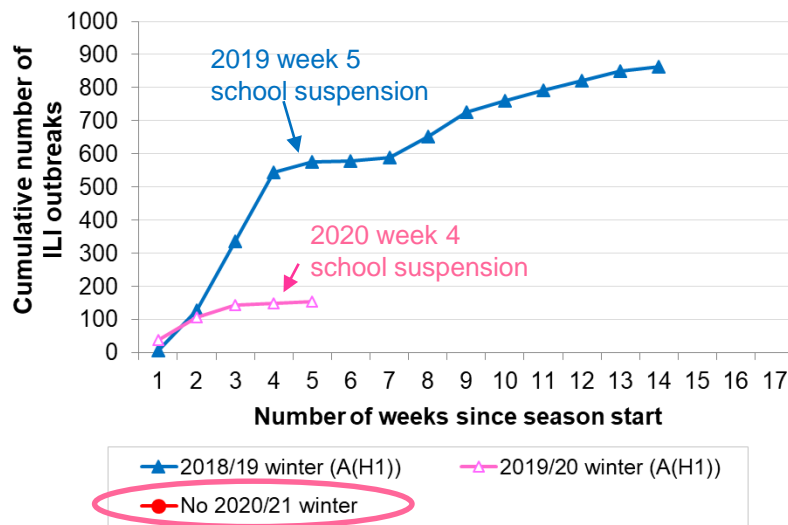
# Laboratory surveillance



Season	Peak percentage of flu positive detection	Predominating viruses
2018/19 winter season	30.0%	A(H1)
2019/20 winter season	18.8%	A(H1)
2021 - No flu season	-	-

# ILI outbreaks in schools/institutions

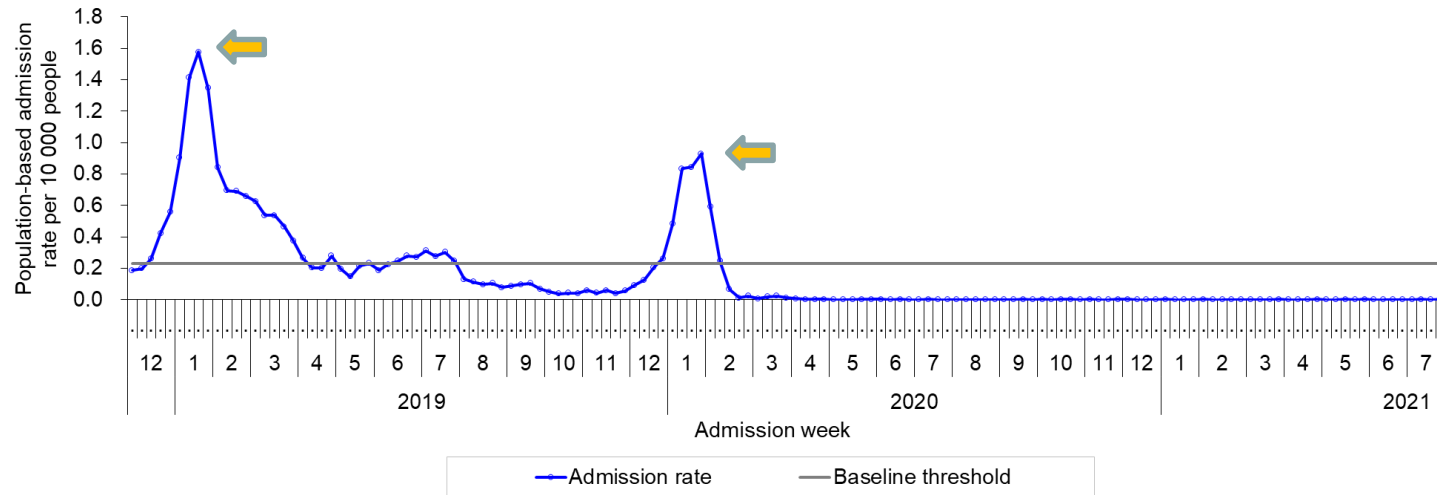
- With shorter season duration, total no. of institutional ILI outbreaks decreased in the past 2 seasons
- Peak number of ILI outbreaks also decreased



Season	No. of ILI outbreaks	Peak of weekly no. of ILI outbreak	Overall school outbreak%
2018/19 winter season	862	209	86%
2019/20 winter season	153	66	71%
2021 - No flu season	—	—	—

# Influenza-associated admission rates in public hospitals

- Peak weekly admission rates continued to decrease in past 3 years



Season	Peak weekly admission rate	Peak weekly admission rate		
		0-5 years	6-11 years	≥65 years
2018/19 winter season	1.58	11.06	1.96	2.97
2019/20 winter season	0.93	5.10	1.17	1.87
<b>2021 - No flu season</b> <i>(data in Jan to Mar)</i>	0.003	0.03	0	0.01



# Possible resurgence of winter influenza season

# Increased population susceptibility

**Behavioural and environmental interventions**  
in response to COVID-19 pandemic  
(such as social distancing measures)

Very low levels of influenza activity over winter  
2020/21 and mild influenza season in 2019/20  
-> **Lower levels of immunity than usually seen**

Increasing no. of **infants and young children**  
who have **never been exposed to influenza**  
-> higher infection levels might be expected in  
these younger age groups

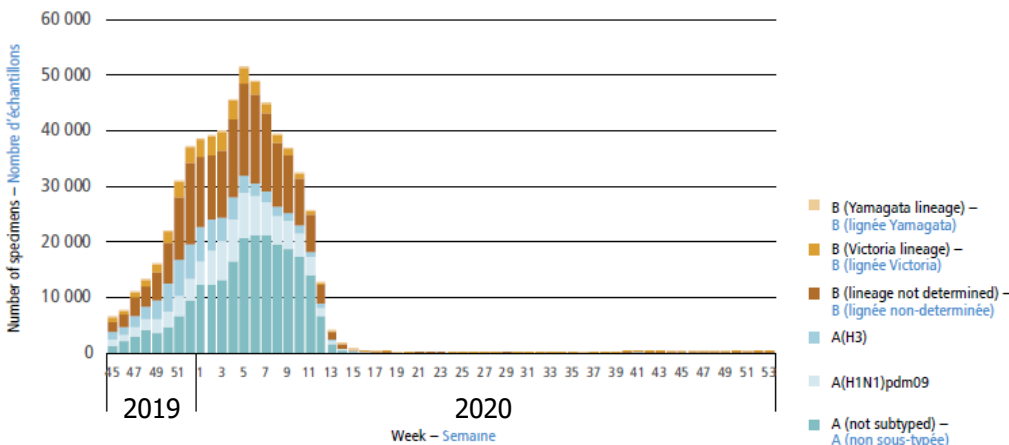
# Global circulating influenza strains

Respiratory viruses between Nov 2019 and Dec 2020 globally

Data source: FluNet (WHO)\*

Influenza subtype	No. (%)
Influenza A	385 268 (63%)
A(H1N1)pdm09	86 778 (23%)
A(H3N2)	63 779 (17%)
No subtype	234 473 (61%)
Influenza B	229 639 (37%)
B/Victoria	37 211 (16.2%)
B/Yamagata	730 (0.3%)
No subtype	191 698 (83.5%)
Total	614 907

Figure 1 Number of global influenza detections by subtype between November 2019 and December 2020  
Figure 1 Nombre de cas de grippe détectés dans le monde par sous-type entre novembre 2019 et décembre 2020



- **Flu trend in South-East Asia** similar to rest of the world with detection numbers slightly higher average in early 2020, followed by a *quick drop-off by the end of Apr 2020*

# Possible vaccine mismatch

- Given the *global decrease* in influenza circulation
  - *Much less information* available\* on which to base predictions about which influenza strains will circulate in next season
  - May increased likelihood of ***vaccine mismatch*** for flu



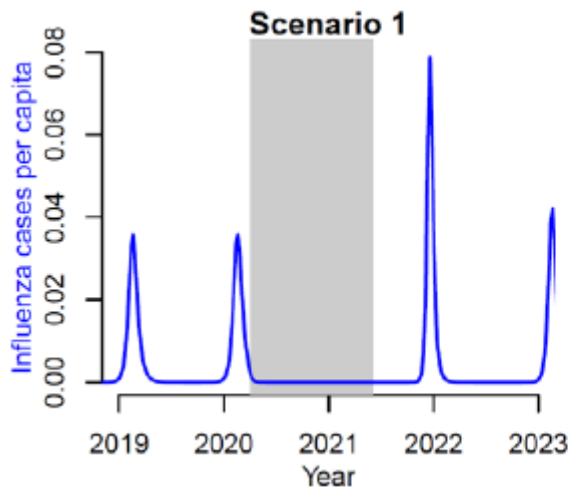
More influenza infections



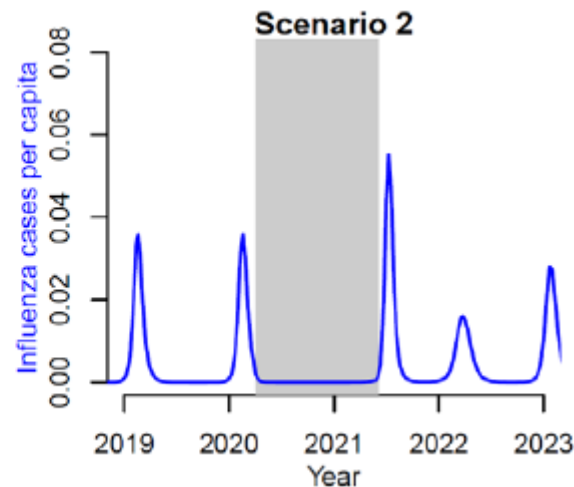
Increased demand for symptomatic testing

# Possible resurgence of influenza

- Due to easing measures of containing transmission of SARS-CoV-2
- Modelling study with UK data\*: an influenza epidemic could be between 1.5 and 2.2 times the magnitude of a 'normal' year if behavioural and environmental interventions fully relaxed



Flu strains emerged following relaxation of interventions similar to pre-pandemic assumed



Novel strains assumed, resulting in immunity declines during period with interventions

Grey area = Level of behavioural and environmental interventions in place reduced transmission of flu by 30%, a level that is sufficient to interrupt transmission over this period

# Summary

- Increased population susceptibility
- May increased likelihood of vaccine mismatch
- Possible resurgence of influenza in coming season due to easing measures for COVID-19
- Importance of increase in uptake of flu vaccine, especially in children and high risk groups, together with current programme of COVID-19 vaccination

# Seasonal Influenza Vaccine (SIV)

# Recommendation on SIV composition in 2021/22 (Northern hemisphere)

Only **egg-based** and **recombinant based quadrivalent** SIV will be available in Hong Kong

	<b>Egg-based</b>	<b>Cell-based / Recombinant-based</b>
H1	A/Victoria/2570/2019 (H1N1)pdm09-like virus	A/Wisconsin/588/2019 (H1N1)pdm09-like virus
H3	A/Cambodia/e0826360/2020 (H3N2)-like virus	
B/Victoria	B/Washington/02/2019 (B/Victoria lineage)-like virus	
B/Yamagata*	B/Phuket/3073/2013 (B/Yamagata lineage)-like virus	

\*To be included in quadrivalent SIV only but not in trivalent SIV



# Compositions of the SIVs recommended by WHO

Type		2020/21 Northern		2021 Southern		2021/22 Northern	
		Egg-based	Cell-based / Recombinant-based	Egg-based	Cell-based / Recombinant-based	Egg-based	Cell-based / Recombinant-based
<b>Trivalent SIV</b>	<b>H1</b>	A/Guangdong-Maonan/SWL1536/2019 (H1N1)pdm09-like virus	A/Hawaii/70/2019 (H1N1)pdm09-like virus	A/Victoria/2570/2019 (H1N1)pdm09-like virus	A/Wisconsin/588/2019 (H1N1)pdm09-like virus	A/Victoria/2570/2019 (H1N1)pdm09-like virus	A/Wisconsin/588/2019 (H1N1)pdm09-like virus
	<b>H3</b>	A/Hong Kong/2671/2019 (H3N2)-like virus	A/Hong Kong/45/2019 (H3N2)-like virus	A/Hong Kong/2671/2019 (H3N2)-like virus	A/Hong Kong/45/2019 (H3N2)-like virus	A/Cambodia/e0826360/2020 (H3N2)-like virus	
	<b>B</b>	B/Washington/02/2019-like (B/Victoria lineage) virus					
<b>Additional component in quadrivalent SIV</b>		B/Phuket/3073/2013-like (B/Yamagata lineage) virus					

# Recommendations on influenza vaccination in 2021/22 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 (such as RCHE or RCHD)
  5. Persons with chronic medical problems
  6. Children aged 6 months to 11 years
  7. Poultry workers
  8. Pig farmers and pig-slaughtering industry personnel

# Seasonal influenza vaccines available in HK in 2020/21 season

(Information from Drug Office as of 24 Aug)

## **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 three years or above)

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

- Flumist Quadrivalent 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)

# Types of SIVs recommended to be used in HK

- **IIV, RIV and LAIV** are recommended for use in Hong Kong
- For IIVs, depending on individual brand, most IIVs are given via the intramuscular route and recommended for use among people aged six months of age or above except those with known contraindications
- For LAIV, it can be used for people aged 2-49 years except those who are pregnant, immunocompromised or with other contraindications
- For RIV, it is recommended for use in individuals of 18 years or above.

# 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 month;
  - 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 (except RIV) contains ovalbumin (an egg protein), but the vaccine manufacturing process involves repeated purification and the ovalbumin content is very low
- 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 IIV and LAIV 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 aged  $\geq 9$  years
- Children below 9 years of age:
  - who have received one or more doses of SIV before: 1 dose
  - who have not received any SIV before: 2 doses of SIV with an interval of at least 4 weeks
- Inactivated and 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



# Dosing interval with COVID-19 vaccines

- It is suggested to have an interval of at least 14 days between administration of SIV and COVID-19 vaccines (BNT162b2 or Coronavac).



# Summary

- Significant disease burden of seasonal influenza during influenza seasons in terms of institutional outbreaks, hospitalisations and mortality, esp. among elderly and young children
- H3N2 tends to affect elderly while H1N1 tends to affect children more
- The majority of severe cases did not receive SIV
- Promoting SIV is the most effective means for mitigating the disease burden of seasonal influenza

*Thank you*