



**衛生防護中心**  
Centre for Health Protection

## **Scientific Committee on Vaccine Preventable Diseases**

### **Recommendations on Seasonal Influenza Vaccination for the 2012/13 Season**

#### **Introduction**

Seasonal influenza causes a significant disease burden in Hong Kong. Since 2004, the Scientific Committee on Vaccine Preventable Diseases (SCVPD) has reviewed the scientific evidence of influenza vaccination and recommended the target groups for influenza vaccinations. This document sets out the scientific evidence, local data, overseas practice, and provides our recommendations in relation to the application of influenza vaccination in Hong Kong.

2. For the 2011/12 influenza season, the circulating and emerging strains according to WHO is summarised below.

#### **Circulating influenza virus strains**

(a) Influenza A (H1N1) viruses

Influenza A(H1N1)2009 viruses co-circulated in varying proportions with A(H3N2) and B viruses during the period of September 2011 to February 2012, with low activity in many countries. The majority of influenza A(H1N1)2009 viruses were antigenically similar to A/California/7/2009. Vaccines containing A/California/7/2009 antigens stimulated anti-HA antibodies of similar titres against the vaccine virus and recent influenza A(H1N1)2009 viruses.



衛生防護中心乃衛生署  
轄下執行疾病預防  
及控制的專業架構

*The Centre for Health*

*Protection is a*

*professional arm of the*

*Department of Health for*

*disease prevention and*

*control*

- (b) **Influenza A (H3N2) viruses**  
Influenza A(H3N2) viruses were associated with outbreaks in several countries. The majority of recent viruses were antigenically and genetically distinguishable from the vaccine virus A/Perth/16/2009 and were more closely related to A/Victoria/361/2011-like reference viruses. Current vaccines containing A/Perth/16/2009 antigens stimulated antibodies of titres that were lower to most recent influenza A(H3N2) viruses.
- (c) **Influenza B viruses**  
Influenza B activity was reported in many countries. The proportion of B/Yamagata/16/88 lineage viruses increased in many parts of the world but B/Victoria/2/87 lineage viruses predominated in some countries, notably in China. The majority of recent B/Victoria/2/87 lineage viruses were antigenically and genetically closely related to B/Brisbane/60/2008. Most recently isolated B/Yamagata/16/88 lineage viruses were antigenically distinguishable from the previous vaccine virus B/Florida/4/2006 and were closely related to B/Wisconsin/1/2010-like viruses. Current vaccines containing B/Brisbane/60/2008 antigens stimulated anti-HA antibodies that had similar titres against the vaccine viruses and recent viruses of the B/Victoria/2/87 lineage; however, titres were lower to recent viruses of the B/Yamagata/16/88 lineage.

### **Latest Epidemiological Features of Influenza in Hong Kong (as at 2 June 2012)**

3. The Centre for Health Protection (CHP) has set up laboratory surveillance and sentinel surveillance networks to monitor the influenza activity in the community. This year, Hong Kong has entered the 2011/12 influenza season in mid-January. This influenza season appears rather atypical as it is longer than the usual influenza seasons in the past. The surveillance data in early June showed that the local influenza activity remained at high level.

4. During the early phase of the 2011/12 influenza season, the predominant circulating strain was influenza B, which increased from 84 for the week ending 14 January to its peak at 386 for the week ending 25 February, accounting for 76% of all influenza virus detections during this period. By mid-March, the influenza B virus activity was subsiding and the weekly number had decreased to 5 for the week ending 2 June. Whereas the influenza A(H3N2) virus activity has started to pick up since mid-March and has become the predominant circulating strain. The number of influenza A(H3N2) virus detections increased from 404 for the week ending 12 May to 991 for the week ending 2 June, accounting for 97% of all influenza detections during this period.

5. The circulating influenza B viruses during this influenza season

belonged to two lineages, the Victoria and Yamagata lineage. In the first few weeks of the season, influenza B viruses of both lineages circulated in around equal proportions. Subsequently, the proportion of the circulating influenza B viruses belonging to the Yamagata lineage increased. Compared with influenza B viruses of Victoria lineage, influenza B viruses of the Yamagata lineage are antigenically less similar to the current vaccine strain B/Brisbane/60/2008-like virus. Separately, the current circulating influenza A(H3N2) virus is antigenically related but not identical to the current vaccine strain, A/Perth/16/2009 (H3N2)-like virus. Though the match is less than optimal, studies have demonstrated some degree of cross protection with the available influenza vaccine against current circulating strains.

## **The Influenza Vaccine**

6. Influenza vaccination is one of the effective means in preventing influenza and its complications. In Hong Kong, two types of seasonal influenza vaccines, namely inactivated trivalent influenza vaccine (TIV) and live attenuated influenza vaccine (LAIV), are registered. The TIV has been used for years. Most TIV is given via the intramuscular route and is recommended for use in individuals 6 months of age or above (depending on the product). In addition, an intradermal TIV for adults aged 18 years or above has been licensed in Hong Kong since December 2009. Separately, the LAIV has been licensed in Hong Kong since September 2009. LAIV is given intranasally and is recommended for use among healthy, non-pregnant and non-immunocompromised people 2-49 years of age. Both TIV and LAIV have been demonstrated to be effective in children and adults. The seasonal influenza vaccine requires annual administration and the protective efficacy varies depending partly on whether the vaccine strain matches with the circulating strain.

7. According to the WHO, influenza vaccination may reduce the number of hospitalisations by 25-39% among elderly people not living in institutions. It has been shown to reduce overall mortality by 39-75% during influenza seasons. Influenza vaccines also offer approximately 70-90% protection against clinical disease in healthy adults in industrialized countries, provided there is a good match between the vaccine antigens and circulating viruses.

8. The effectiveness of influenza vaccination in other healthy population has been reviewed by an international authority dedicated to evidence-based medicine. For healthy children 2 to 15 years, the use of TIV was found to be able to reduce laboratory-confirmed influenza by 59% and to reduce clinical influenza-like illness by 36%.

9. A recently published meta-analysis found that LAIV has been shown to reduce laboratory-confirmed influenza by 83% in children aged 2 to

17 years. In a study among adults, the participants were not specifically tested for influenza. However, the study found 19% fewer severe febrile respiratory tract illnesses, 24% fewer respiratory tract illnesses with fever, 23-27% fewer days of illness, 13-28% fewer lost work days, 15-41% fewer health care provider visits, and 43-47% less use of antibiotics compared with placebo.

## **Recommendations**

10. Recommendations on the use of seasonal influenza vaccination in the local context have been developed by the SCVPD. The SCVPD recommends the following on seasonal influenza vaccination for the 2012/13 season.

### Vaccine Composition

11. Recommended vaccines to be used in the 2012/13 season (northern hemisphere winter) comprise A/California/7/2009 (H1N1)-like virus, A/Victoria/361/2011 (H3N2)-like virus and B/Wisconsin/1/2010-like virus.

### Vaccine Type

12. Both TIV and LAIV are recommended for use in Hong Kong. Depending on individual brand, TIV is recommended for use among people six months of age or older, including healthy people and those with chronic medical problems. LAIV is recommended for use among healthy, non-pregnant, and non-immunocompromised people 2-49 years of age and should not be given to people with underlying medical problems that may predispose them to complications following influenza infection. Healthy, non-pregnant, and non-immunocompromised persons aged 2-49 years can choose to receive either TIV or LAIV if the person has no contraindication to the vaccine. Regarding the types of TIV, both subunit and split types are recommended.

### Vaccine Precautions

13. Adverse events following TIV administration may include local reactions such as pain, swelling (15-20%), systemic side effects such as fever, malaise, and myalgia (1-10%), Guillain-Barré syndrome (1 to 2 per 1 million vaccinees), meningitis or encephalopathy (1 in 3 million doses distributed), and anaphylaxis (9 in 10 million doses distributed). TIV is contraindicated for those with history of hypersensitivity to components of the vaccine. Individuals with mild egg allergy who are considering an influenza vaccination can be given TIV in primary care. Individuals with diagnosed or suspected severe egg allergy should be seen by an allergist/immunologist for evaluation of egg allergy and for administration of TIV if clinically indicated.

14. The most common adverse reactions following LAIV

administration ( $\geq 10\%$ ) are runny nose or nasal congestion in all ages, fever  $> 37.8^{\circ}\text{C}$  in children 2-6 years of age, and sore throat in adults. LAIV is a live vaccine and is contraindicated in the following conditions:

- Persons with a history of hypersensitivity, including anaphylaxis, to any of the components of LAIV or to eggs;
- Adults and children who have chronic medical problems\*;
- Adults and children who have immunosuppression;
- Children aged 2-4 years whose parents or caregivers report that a health-care provider has told them during the preceding 12 months that their child had wheezing or asthma, or whose medical record indicates a wheezing episode has occurred during the preceding 12 months;
- Children or adolescents aged 6 months-18 years receiving aspirin or other salicylates; or
- Pregnant women.

\* Refer to persons with chronic medical problems under the recommended target groups (See below)

15. A study has shown that there may be a small increased risk of febrile convulsions following concomitant administration of TIV and pneumococcal vaccine in young children, but the overall risk remains acceptable. Given the obvious benefit of on-time vaccination with the two vaccines, it is recommended that the current immunisation schedule remains unchanged.

16. Guillain-Barré syndrome (GBS) is a polyneuritis which may follow about 2 weeks after viral infection, surgery or rarely after immunisation. It is characterised by progressive weakness of all limbs and areflexia. Persons with a history of GBS developed within six weeks after receiving influenza vaccine should consult a doctor before receiving TIV or LAIV.

### Dosing Schedule

17. A single intramuscular or intradermal dose is the standard regimen for TIV in persons 9 years or above. Children below 9 years, who have received one or more doses of LAIV or TIV dose in or before 2011/12 season are recommended to receive one TIV dose. For vaccine-naïve children aged below 9 years, two doses with an interval of 4 weeks are required. Half the adult dose is recommended for children below 3 years.

18. For LAIV, one dose should be administered by the intranasal route to children aged below 9 years with previous LAIV or TIV dose and persons 9-49 years of age. Vaccine-naïve children aged below 9 years should receive two LAIV doses administered with an interval of 4 weeks.

## Target Groups

19. Given influenza vaccines are safe and effective and that serious influenza infection can occur even in healthy individuals, seasonal influenza vaccination is suitable for personal protection against clinical influenza for all persons except those with known contraindications. Members of the public can consult their family doctors on seasonal influenza vaccination for personal protection.

20. Moreover, the Scientific Committee recommends a number of target groups with higher priority in seasonal influenza vaccination. These target groups have been determined based on a range of scientific considerations taking into account local disease burden and international experience.

21. The target groups recommended in the 2011/12 season will continue to be included as target groups for influenza vaccination in the 2012/13 season. Recommendations on the target groups for seasonal influenza vaccination are summarised below:

- (a) Pregnant Women: Seasonal influenza vaccination is recommended for all pregnant women for benefits in terms of reduced acute respiratory infection for both mothers and infants, and reduction of cardiopulmonary complications and the associated hospitalisations in pregnant women. The vaccine is considered safe by the WHO for use at any gestational age of pregnancy and there is no evidence indicating that inactivated influenza vaccine is teratogenic even when given during the first trimester.
- (b) Elderly Persons Living in Residential Care Homes: Seasonal influenza vaccination is recommended for elderly persons living in residential care homes for reducing the risk of complications from influenza including hospitalisation and pneumonia in influenza outbreaks.
- (c) Long-stay Residents of Institutions for the Disabled: Seasonal influenza vaccination is recommended for long-stay residents of institutions for the mentally and physically disabled for reducing influenza related hospitalisation during influenza outbreaks. The disability of the residents hinders them from undertaking adequate hygiene measures in an institutional environment which favours the transmission of influenza.
- (d) Persons Aged 50 Years or Above: Seasonal influenza vaccination is recommended for elderly persons aged 65 years or above because of their high risk of complications and excess hospital admissions and death from influenza. Persons aged 50-64 years are also recommended

for influenza vaccination for the 2012/13 influenza season because of (i) local influenza epidemiology in the 2010/11 season (when influenza A (H1N1)2009 strain predominated in Hong Kong) showing that people aged 50–64 years, irrespective of chronic medical problems, were having a higher risk of influenza-related intensive care unit admission and death, and (ii) the likelihood that influenza A (H1N1)2009 strain will continue to circulate in 2012/13 season.

- (e) Persons with Chronic Medical Problems: Seasonal influenza vaccination is recommended for persons aged 6 months or above having chronic cardiovascular (except hypertension without complication), lung, metabolic or kidney disease, obesity# (BMI 30 or above), who are immunocompromised, children and adolescents (aged 6 months to 18 years) on long-term aspirin therapy, and those with chronic neurological condition that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration or those who lack the ability to take care for themselves. Seasonal influenza vaccination is recommended for their increased risk of complications and death associated with influenza infection.

# Obesity is considered as an independent risk factor for influenza complication and thus people with BMI 30 or above are included for seasonal influenza vaccination.

- (f) Health Care Workers: Seasonal influenza vaccination is recommended for health care workers to reduce morbidity and hence reduce absenteeism among health care workers related to respiratory infections. It is also recommended in order to reduce the risk of transmitting influenza to patients who are at high risk of complications and mortality from influenza.
- (g) Children aged 6 months to 5 years: Seasonal influenza vaccination is recommended for children 6 months to 5 years for reducing influenza related complications such as excess hospitalisations or deaths.
- (h) Poultry Workers: Seasonal influenza vaccination is recommended for poultry workers and persons involved in slaughtering of animals potentially infected with highly pathogenic avian influenza virus for minimizing the risk of re-assortment and eventual emergence of a novel influenza virus with pandemic potential through preventing concomitant infections by the human influenza and avian influenza viruses in humans.
- (i) Pig Farmers and Pig-slaughtering Industry Personnel: Pig farmers and pig-slaughtering industry personnel are recommended to receive seasonal influenza vaccine to prevent emergence of new influenza A virus in either human or pig hosts.

Centre for Health Protection  
Department of Health  
Updated in May 2013



## Acknowledgements

This document has been developed by the Working Group on Influenza Vaccination led by Dr MC CHAN with the following members: Dr Daniel CHIU, Dr CB CHOW, Dr Thomas MK SO, Dr Yonnie LAM, supported by Dr Vivian CHAN and Dr Elsa CHUNG (Secretaries). The Centre for Health Protection would like to thank the contribution of the Scientific Committee on Vaccine Preventable Diseases and the Working Group for their valuable inputs.

## Correspondence:

Address : CHP Scientific Committee Secretariat  
4/F Programme Management and Professional  
Development Branch,  
Centre for Health Protection, Department of Health,  
147C Argyle Street, Kowloon, Hong Kong

Telephone : 2125 2182  
Facsimile : 2761 3272  
Email : sc\_chairman@dh.gov.hk

The copyright of this paper belongs to the Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. Contents of the paper may be freely quoted for educational, training and non-commercial uses provided that acknowledgement be made to the Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. No part of this paper may be used, modified or reproduced for purposes other than those stated above without prior permission obtained from the Centre.