



衛生防護中心  
Centre for Health Protection

## Scientific Committee on Vaccine Preventable Diseases

### Recommendations on Seasonal Influenza Vaccination for the 2014/15 Season

#### Introduction

Seasonal influenza causes a significant disease burden in Hong Kong. Since 2004, the Scientific Committee on Vaccine Preventable Diseases (SCVPD) has been reviewing the scientific evidence of influenza vaccination and recommended the priority groups for influenza vaccinations annually. 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 for the 2014/15 season.

#### Circulating influenza virus strains

2. For the 2013/14 influenza season, the circulating and emerging strains according to the World Health Organization (WHO) are summarised below.

3. Throughout the season, the majority of viruses that were characterised antigenically have matched the recommended candidate viruses for the 2013/14 vaccine. Over 99% of the A(H1N1)pdm09 and A(H3N2) viruses characterised have been antigenically similar to the vaccine viruses A/California/7/2009 (H1N1)pdm09-like virus and A/Texas/50/2012-like virus, indicating a good match with the recommended vaccine. For the B viruses, the most common characterisation was the B/Massachusetts/2/2012-like virus (from the Yamagata lineage), which matches that in the trivalent vaccine. The remaining B viruses characterised were similar to the



B/Brisbane/60/2008-like virus (from the Victoria lineage), which was included in the quadrivalent vaccine. In some regions, the B/Brisbane/60/2008-like virus accounted for more than 30% of the B viruses characterised, although this proportion appeared to vary by region. Limited antigenic drift was detected for the circulating viruses, compared to the vaccine viruses.

## **Epidemiological Features of the 2013/14 Winter Influenza Season in Hong Kong**

4. The Centre for Health Protection (CHP) has set up sentinel surveillance networks, outbreak reporting and investigation mechanisms, as well as laboratory surveillance to monitor influenza activity in the community. The 2013/14 winter influenza season started in early January 2014 and lasted for about four months until late April. The characteristics of this winter influenza season is summarised below.

5. The first half of the winter season was dominated by influenza A viruses especially influenza A(H1N1)pdm09, while the latter half was dominated by influenza B viruses. The percentage tested positive for influenza A viruses showed a continual decreasing trend since early March while that for influenza B viruses remained at the level of about 12% in March until it started to decrease since early April. The majority (82.9%) of the influenza B viruses belonged to the Yamagata lineage which was well matched with the vaccine virus for the 2013/14 season.

## **The Influenza Vaccine**

6. Influenza vaccination is one of the effective means in preventing influenza and its complications together with reduction in influenza related hospitalisation and death. Commonly available seasonal influenza vaccines can be broadly classified into inactivated influenza vaccines (IIV) and live attenuated influenza vaccines (LAIV). Inactivated influenza vaccines in the form of trivalent vaccine (IIV3) consist of three seasonal influenza viruses, two different influenza type A strains and one influenza type B strain, and have been used for over 60 years whereas LAIV though available in previous years is currently

not registered in Hong Kong.

7. Vaccine effectiveness depends on the similarity between the virus strains present in the vaccine and those circulating in the community. For over a decade, two distinct lineages of influenza B (the Yamagata and Victoria lineages) have circulated worldwide, neither providing good cross-protection against the other. The use of quadrivalent influenza vaccines which contain two influenza B virus strains has been approved and in use in Hong Kong and some overseas countries. Studies on quadrivalent influenza vaccines showed that the addition of the second B strain did not result in immune interference to other strains included in the vaccine. Moreover, the rates of adverse events following quadrivalent and trivalent influenza vaccines were similar.

8. Most IIVs are given via the intramuscular route and are recommended for use in individuals 6 months of age or above, while some are registered for older age groups. In addition, an intradermal IIV for adults aged 18 years or above has been licensed in Hong Kong since December 2009. Both IIV and LAIV have been demonstrated to be effective in children and adults. The seasonal influenza vaccine requires annual administration.

9. According to the WHO, when the vaccine strains closely match the circulating influenza viruses, efficacy of IIV in individuals younger than 65 years of age typically range from 70% to 90%, whereas the efficacy of IIV to prevent influenza infection in individuals aged 65 years or above is at best modest, irrespective of setting, population and study design. Nevertheless, vaccination remains the most efficacious public health tool currently available to protect elderly individuals against influenza.

## 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 2014/15 season.

## Vaccine Composition

11. Recommended vaccines to be used in the 2014/15 season (northern hemisphere winter) comprise A/California/7/2009 (H1N1)pdm09-like virus, A/Texas/50/2012 (H3N2)-like virus and B/Massachusetts/2/2012-like virus. If quadrivalent influenza vaccine is being used, it shall contain the above three viruses and a B/Brisbane/60/2008-like virus.

## Vaccine Type

12. Both trivalent (IIV3) and quadrivalent (IIV4) inactivated influenza vaccines are recommended for use in Hong Kong. Most IIVs are registered for use among people six months of age or above, while some are registered for older age groups. Regarding the types of IIV, both subunit and split types are recommended. Based on local laboratory data on seasonal influenza from 2003 to 2014 and the surveillance data on severe cases from 2011 to 2014, it is observed that on average influenza A and influenza B viruses respectively constituted about 85% and 15% of all positive laboratory detections of influenza viruses and severe influenza cases with varying proportions detected in each season. The Yamagata and Victoria lineages of influenza B viruses each constituted about half of all laboratory detections of influenza B on average, with varying proportions detected in each season. Thus, trivalent influenza vaccine may potentially prevent majority of influenza burden in Hong Kong, while quadrivalent influenza vaccine may potentially offer additional protection against influenza B.

## Vaccine Precautions

13. Adverse events following IIV 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). IIV is contraindicated for those with history of hypersensitivity to components of the vaccine. Individuals with mild

egg allergy can be given IIV 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 IIV if clinically indicated.

14. A study has shown that there may be a small increased risk of febrile convulsions following concomitant administration of IIV 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.

15. 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. Recent extensive review which evaluated the risk of GBS after administration of influenza vaccines (excluding the 1976-1977 swine influenza vaccine) concluded that the evidence is inadequate to accept or reject a causal relationship between influenza vaccine and GBS. Locally, in the season of 2013/14, there was one report of suspected GBS case following seasonal influenza vaccination which may or may not be related to the vaccine. The observed number of GBS cases that occurred in vaccinated persons lies within normal expectation of baseline incidence.

### Dosing Schedule

16. A single intramuscular or intradermal dose is the standard regimen for IIV in persons 9 years or above. Children below 9 years, who have received one or more doses of LAIV or IIV in or before 2013/14 season are recommended to receive one IIV 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.

### Priority Groups

17. Given influenza vaccines offer approximately 70-90%

protection against clinical influenza and severe cases do occur in previously healthy persons, members of the public except those with known contraindications should receive seasonal influenza vaccine for personal protection.

18. 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 seasonal influenza vaccination. These priority groups have been determined based on a range of scientific considerations taking into account local disease burden and international experience.

19. The priority groups recommended in the 2013/14 season will continue to be included as priority groups for influenza vaccination in the 2014/15 season. Recommendations on the priority 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. Pregnant women are recommended to have the highest priority for vaccination.
- (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 2014/15 influenza season because of (i) local influenza epidemiology in the 2010/11 season (when influenza A (H1N1)pdm09 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)pdm09 strain will continue to circulate in 2014/15 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<sup>^</sup>, 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.

<sup>^</sup> People who are immunocompromised refer to those with a weakened immune system due to disease (such as HIV/AIDS) or treatment (such as cancer treatment).

(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 for health care workers 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 minimising 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.

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