衞生防護中心
Centre for Health Protection

# Scientific Committee on Vaccine Preventable Diseases

## Recommendations on Seasonal Influenza Vaccination for the 2010/11 Season

### Introduction

Influenza is a common viral illness. It usually presents with fever, sore throat, cough, and malaise and the illness may last for about a week. Influenza affects the population in general. When influenza occurs in certain at risk population, it is associated with increased risk of complications.

2. In Hong Kong, seasonal influenza is more prevalent in January to March and July to August as reflected by the increase in influenza virus detection from laboratory surveillance, increase in outbreak occurrence reported to the Department of Health and the influenza-like illness consultation rates from sentinel general practitioners and general outpatient clinics.

3. There are three types of influenza virus: A, B and C causing human illness and types A and B are of concerns in being associated with widespread outbreaks. Influenza A is further divided into different subtypes on the basis of surface antigens haemagglutinin and neuraminidase. Human disease historically has been caused by three haemagglutinin subtypes (H1, H2 and H3), although diseases caused by H5, H7 and H9 have also been recognised.

4. Influenza type A and type B viruses evolve constantly and hence generation of new viral strains. The influenza laboratory network of World Health Organization (WHO) monitors the circulating and emerging influenza strains around the globe for antigenic changes.

5. In April 2009, a new strain influenza A/H1N1 virus, pandemic (H1N1) 2009 virus, also known as human swine influenza (HSI) was detected in Mexico and spread globally. In June 2009, WHO declared HSI outbreak a global pandemic. Having regard to the recommendations from WHO, many countries started HSI vaccination by using a monovalent vaccine. Hong Kong started HSI vaccination in December 2009 in response to the pandemic.

For the 2009/10 influenza season, the circulating and emerging strains according to WHO is summarised below.

## Circulating influenza virus strains

a) Influenza A (H1N1) viruses
The vast majority of A(H1N1) viruses detected worldwide during this period were HSI strain. Haemagglutination inhibition (HI) tests using postinfection ferret antisera indicated that HSI viruses remained antigenically homogeneous and closely related to the vaccine virus A/California/7/2009. Sequence analysis of the HSI indicated that they were genetically homogeneous. Of the few seasonal A(H1N1) viruses received, most were antigenically and genetically closely related to A/Brisbane/59/2007 and belonged to clade 2B.

b) Influenza A (H3N2) viruses
In HI tests with postinfection ferret antisera, most viruses circulating since September 2009 were antigenically closely related to the current southern hemisphere vaccine virus A/Perth/16/2009. Phylogenetically the haemagglutinin genes of recent viruses fell into two distinct clades, one represented by A/Perth/16/2009 and another by A/Victoria/208/2009. Viruses from these two clades were antigenically similar.

c) Influenza B viruses
Influenza B viruses of both the B/Victoria/2/87 and the B/Yamagata/16/88 lineages circulated and B/Victoria/2/87 lineage viruses continued to predominate. In hemagglutination inhibition tests with postinfection ferret antisera the majority of the B/Victoria/2/87 lineage viruses were antigenically closely related to the vaccine virus B/Brisbane/60/2008.

## 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 are registered. The inactivated trivalent influenza vaccine (TIV) has been used for years. Most TIV is given via the intramuscular route

and is registered for use in individuals 6 months of age or above (depending on the product). An intradermal TIV for adults aged 18 years or above was also licensed in Hong Kong in December 2009. The live attenuated influenza vaccine (LAIV) was licensed in Hong Kong in September 2009. LAIV is given intranasally and is registered for use among healthy non-pregnant 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 also been shown to reduce overall mortality by 39-75% during influenza seasons.

8. The effectiveness of influenza vaccination in other healthy population has been reviewed recently 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. For healthy individuals aged 16 to 65 years, TIV was 30% effective in reducing influenza-like illness. The vaccine may reduce laboratory-confirmed influenza by 50% to 80% of laboratory-confirmed influenza depending on matching between the vaccine and circulating strains.

10. Regarding the effectiveness of LAIV, one large study among children aged 15-85 months showed that LAIV reduced the chance of influenza illness by 92% compared with placebo. 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.

## Recommendation

11. Recommendations on the use of seasonal influenza vaccination in the local context have been developed by the Scientific Committee on Vaccine Preventable Diseases (SCVPD). The SCVPD recommends the following on seasonal influenza vaccination for the 2010/11 season.

12. Recommended vaccines to be used in the 2010/2011 season (northern hemisphere winter) comprise A/California/7/2009 (H1N1)-like virus, A/Perth/16/2009 (H3N2)-like virus and B/Brisbane/60/2008-like virus.

## Vaccine Type

13. Both TIV and LAIV are recommended for use in Hong Kong. Depending on individual brand, TIV is registered for use among people 6 months of age or older, including healthy people and those with chronic medical conditions. LAIV is registered for use among healthy non-pregnant people 2-49 years of age and should not be given to people with underlying medical conditions that may predispose them to complications following influenza infection. Healthy, non-pregnant 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

14. The most common adverse effects following TIV administration 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 eggs or other components of the vaccine.

15. The most common adverse reactions following LAIV administration (>=10%) are runny nose or nasal congestion in all ages, fever > 37.8℃ 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 illness*;
- 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 illness under the recommended target groups (See below)

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 8 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 (depending on the product). Children below 9 years, who have received one or more doses of LAIV or TIV dose in or before 2009/10 season are recommended to receive one TIV dose. For vaccine-naive 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 through 49 years of age. Vaccine-naive children aged below 9 years should receive two LAIV doses administered with an interval of 4 weeks.

19. Seasonal influenza vaccine is recommended to be used for target groups annually.

## Seasonal Influenza Vaccination after HSI Vaccination

20. There is no restriction on the time interval between HSI vaccine and 2010/11 seasonal influenza vaccine for people with completed HSI vaccination, including children aged below 9 years with two previous HSI vaccine doses and persons aged 9 years or above with one previous HSI vaccine dose. Children aged below 9 years who had only received one HSI vaccine dose have an incomplete HSI vaccination; they should receive 2010/11 seasonal influenza vaccine at least 4 weeks apart from the HSI vaccine.

## Recommended Target Groups

21. The recommended target groups have been determined based on a range of scientific considerations taking into account local disease burden and international experience. Use of seasonal influenza vaccination for individual protection is recommended for these target groups. The target groups recommended in the 2009/10 season will continue to be included as targets for influenza vaccination with the addition of pig farmers and pig-slaughtering industry personnel.

22. Recommendations on the target groups for seasonal influenza vaccination are summarised below:

a. 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.

b. 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.

c. Elderly Persons Aged 65 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.

d. Persons with Chronic Illness*: Seasonal influenza vaccination is recommended for persons aged >6 months having chronic cardiovascular (except hypertension without complication), pulmonary, metabolic or renal disease, 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 care for themselves for their increased risk of complications and death associated with influenza infection.

e. Health Care Workers: Seasonal influenza vaccination is recommended for healthcare workers to reduce morbidity and hence reduce absenteeism among health care workers related to respiratory infections. It is also to reduce the risk of transmitting influenza to patients who are at high risk of complications and mortality from influenza.

f. 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 (6 months to 5 years) or deaths (6 months to 23 months).

g. Pregnant Women: Seasonal influenza vaccination is recommended for all pregnant women for reduction of cardiopulmonary complications and the associated hospitalisations. 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.

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.

j. Others: Members of the other groups who wish to obtain seasonal influenza vaccine for their personal protection can consult their general practitioners.

*Obese persons without clinical risk factors are not included in the 2010/11 seasonal influenza vaccination target groups. They may receive seasonal influenza vaccination for personal protection.

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## 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