



衛生防護中心
Centre for Health Protection

Scientific Committee on Vaccine Preventable Diseases

Recommendations on Seasonal Influenza Vaccination for the 2011/12 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.



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5. In April 2009, a new strain influenza A/H1N1 virus, Influenza A (H1N1) 2009 virus (pH1N1 virus), also known as human swine influenza virus was detected in Mexico and spread globally. In June 2009, WHO declared pH1N1 outbreak a global pandemic. After more than one year of global circulation of the new virus, on 10 August 2010, the WHO Director-General announced that the world has moved into the post-pandemic period. Based on experience about past pandemics, the pH1N1 virus is expected to continue to circulate as seasonal influenza virus for some years.

6. For the 2010/11 influenza season, the circulating and emerging strains according to WHO is summarised below.

Circulating influenza virus strains

- (a) **Influenza A (H1N1) viruses**
pH1N1 viruses co-circulated in varying proportions with A(H3N2) and B viruses during the period of September 2010 to January 2011. pH1N1 viruses were antigenically and genetically 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 pH1N1 viruses. Very few former seasonal influenza A(H1N1) viruses were reported. Most of those analysed were antigenically and genetically similar to the previous vaccine virus A/Brisbane/59/2007.
- (b) **Influenza A(H3N2) viruses**
Influenza A(H3N2) viruses were detected in many parts of the world with widespread activity reported in several countries. The majority of recent viruses were antigenically and genetically similar to the vaccine virus A/Perth/16/2009. Vaccines containing A/Perth/16/2009-like antigens stimulated anti-HA antibodies of similar titres against the vaccine virus and recently circulating A(H3N2) viruses.
- (c) **Influenza B viruses**
B/Victoria/2/87 lineage viruses predominated in many parts of the world but B/Yamagata/16/88 lineage viruses predominated in China. 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.

7. It is expected that pH1N1, A(H3N2) and B viruses will co-circulate in the 2011/12 northern hemisphere season.

Latest Epidemiological Features of Influenza in Hong Kong

8. During the 2010/11 winter influenza season, pH1N1 virus dominated in Hong Kong and constituted about 90% of all circulating strains,

the remaining were seasonal influenza H3N2 and influenza B viruses.

9. In this winter influenza season, a significant proportion of ICU or fatal influenza cases (41%) affected persons aged 50-64 years, exceeding that of elders aged 65 years or above (17%). Also, most (41%) influenza-related deaths affected persons aged 50-64 years. In contrast, during previous influenza seasons (except summer 2009), about 85% of fatal cases occurred in the elderly.

10. Persons with pre-existing chronic disease patients had much higher rates of ICU or fatal outcome across all ages. On the other hand, the incidence of ICU or fatal influenza cases in healthy individuals aged 50-64 years was 1.8 per 100,000 population which was higher than the corresponding incidences in any other age group, including young children aged below 6 years (0.7 per 100,000) and elders (0.6 per 100,000).

11. Current evidence suggested that obesity is an independent risk factor for severe pH1N1 infection. During the period of pH1N1 pandemic, out of the 102 severe cases who did not have pre-existing chronic disease, eight (7.8%) had BMI ≥ 30 . Out of the 23 fatal cases who did not have pre-existing chronic disease, three (13%) had BMI ≥ 30 . These figures are higher than that reported in general population. Statistical tests showed the percentage of previously healthy severe and fatal cases with BMI ≥ 30 were significantly higher than the general population ($p < 0.05$). The findings were consistent with studies from , US, France and Spain which showed that obesity, after adjustment of underlying chronic illnesses, was associated with severe pH1N1 infection such as ICU utilization or death.

The Influenza Vaccine

12. 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 has been licensed in Hong Kong since December 2009. The live attenuated influenza vaccine (LAIV) has been licensed in Hong Kong since 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.

13. 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.

14. 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%.

15. 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.

Recommendations

16. 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 2011/12 season.

Vaccine Composition

17. Recommended vaccines to be used in the 2011/12 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

18. Both TIV and LAIV are recommended for use in Hong Kong. Depending on individual brand, TIV is registered for use among people six months of age or older, including healthy people and those with chronic medical problems. 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 problems 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

19. 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 diagnosed or suspected egg allergy who considering an influenza vaccination should be evaluated by a allergist/immunologist for evaluation of egg allergy and for administration of TIV if clinically indicated.

20. 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)

21. 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

22. 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 2010/11 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.

23. 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-naïve children aged below 9 years should receive two LAIV doses administered with an interval of 4 weeks.

Target Groups

24. 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 to receive seasonal influenza vaccination for personal protection.

25. 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.

26. The target groups recommended in the 2010/11 season will continue to be included as target groups for influenza vaccination in the 2011/12 season. Besides, persons aged 50-64 are also included as a target group for 2011/12 seasonal influenza vaccination, while obesity (Body Mass Index (BMI) ≥ 30) is regarded as a chronic medical problem recommended for influenza vaccination.

27. 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) 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 are also recommended for influenza vaccination for the 2011/12 influenza season because of (i) local influenza epidemiology in the 2010/11 season showing that people aged 50–64 years, irrespective of chronic medical problems, were having a higher risk of pH1N1 influenza-related intensive care unit admission and death, and (ii) the likelihood that pH1N1 strain will continue to circulate in 2011/12 season.

- d) Persons with Chronic Medical Problems: Seasonal influenza vaccination is recommended for persons aged >6 months having chronic cardiovascular (except hypertension without complication), pulmonary, metabolic or renal 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.

- (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.

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