衞生防護中心
Centre for Health Protection

Scientific Committee on Vaccine Preventable Diseases

Recommendations on Seasonal Influenza Vaccination for the 2013/14 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 target 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 2013/14 season.

2. For the 2012/13 influenza season, the circulating and emerging strains according to the World Health Organization (WHO) are 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 2012 to January 2013, with low activity in many countries. The majority of A(H1N1)2009 viruses were antigenically similar to A/California/7/2009. Vaccines containing A/California/7/2009 antigens induced anti-haemagglutinin antibodies in humans of similar titres against the vaccine virus and recent A(H1N1)2009 viruses.

(b) Influenza A (H3N2) viruses

Influenza A(H3N2) viruses were associated with outbreaks in several countries. The majority of recent viruses isolated in cells were antigenically and genetically similar to cell-propagated A/Victoria/361/2011 (Haemagglutinin clade 3C) and A/Victoria/361/2011-like reference viruses such as A/Texas/50/2012. However, ferret antisera raised against egg-propagated A/Victoria/361/2011 had high homologous titres but showed reduced titres against recently circulating cell-propagated viruses. Antisera raised against egg propagated A/Texas/50/2012 showed higher reactivity against recent cell-propagated viruses compared to those raised against egg-propagated A/Victoria/361/2011. Current vaccines containing A/Victoria/361/2011 antigens induced antibodies in humans that reacted less well to most recent influenza A(H3N2) cell-propagated 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, including Australia and China. The majority of recent B/Victoria/2/87 lineage viruses were antigenically and genetically closely related to B/Brisbane/60/2008. The majority of recently reported B/Yamagata/16/88 viruses belonged to the haemagglutinin phylogenetic clade 2, except in China where they belonged to clade 3. Most recently isolated B/Yamagata/16/88 lineage viruses were antigenically distinguishable from the previous vaccine virus B/Wisconsin/1/2010 (clade 3) and were more closely related to B/Massachusetts/2/2012-like (clade 2) viruses. Current vaccines containing B/Wisconsin/1/2010 antigens induced anti-haemagglutinin antibodies in humans that had similar titres against the vaccine viruses and recent viruses of the B/Yamagata/16/88 lineage; however, significant reductions in geometric mean titre (GMT) were observed more frequently for some serum panels when testing clade 2 viruses as compared to clade 3 viruses. Titres were lower to recent viruses of the B/Victoria/2/87 lineage.

Latest Epidemiological Features of Influenza in Hong Kong (as at 27 May 2013)

3. The Centre for Health Protection (CHP) has set up laboratory surveillance and sentinel surveillance networks to monitor the influenza activity in the community. In 2013, the local influenza activity started to increase in mid January, and it had returned to baseline level in May with the peak activity in March. The latest situation of the influenza season is summarised below.

4. This winter influenza season was considered less severe when

compared with the last influenza season because of its shorter duration and comparatively fewer severe cases. The circulating influenza viruses predominated in this influenza season was influenza A(H1N1)2009 (A/California/7/2009-like), constituting 72% of all influenza detections, followed by influenza A(H3N2) (A/Victoria/361/2011-like) (24%) and influenza B (4%), in which majority belongs to B/Yamagata lineage, which were well-matched with the vaccine viruses for the 2012/13 season.

The Influenza Vaccine

5. Influenza vaccination is one of the effective means in preventing influenza and its complications together with reduction in influenza related hospitalisation and death. 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 TIVs are given via the intramuscular route and are 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 strains match with the circulating strains.

6. According to the WHO, when the vaccine strains closely match the circulating influenza viruses, efficacy of TIV in individuals younger than 65 years of age typically range from 70% to 90%, whereas the efficacy of TIV 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.

7. The effectiveness of influenza vaccination has also been reviewed by an international authority dedicated to evidence-based medicine. For healthy children aged 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% compared with placebo or no intervention.

8. For LAIV, systematic review demonstrated that LAIV could reduce laboratory-confirmed influenza by up to 80% among healthy children aged 2 to 15 years. A study among adults aged 18 to 64 years who were not specifically tested for influenza showed that there were 19% fewer severe febrile illnesses and 24% fewer upper respiratory tract illnesses with fever among subjects

receiving LAIV compared with placebo. Vaccination was also associated with fewer days of illness, fewer days of work lost, fewer days of visits to health-care providers, and reduced use of prescription antibiotics and over-the-counter medications.

9. The use of quadrivalent influenza vaccines (QIV) which contain two influenza B virus strains has been approved in some overseas countries. Studies on QIV 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 QIV and TIV were similar.

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 2013/14 season.

Vaccine Composition

11. Recommended vaccines to be used in the 2013/14 season (northern hemisphere winter) comprise A/California/7/2009 (H1N1)-like virus, A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011 and B/Massachusetts/2/2012-like virus. If QIV becomes available and is being used, it shall contain the above three viruses and a B/Brisbane/60/2008-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. According to our latest information, there has been no quadrivalent influenza vaccines registered in Hong Kong so far. Nevertheless, the use of quadrivalent influenza vaccines should be considered if available.

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 (≥ 10%) are runny nose or nasal congestion in all ages, fever > 37.8°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. 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 2012/13, there was one report of suspected GBS case after seasonal influenza vaccination. The observed number of GBS cases that occurred in vaccinated persons lies within normal expectation of baseline incidence.

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 2012/13 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 9-49 years of age. Vaccine-naive 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. In order to maximise the cost effectiveness of public money for public health, target groups recommended by SCVPD shall have higher priority for 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 2012/13 season will continue to be included as target groups for influenza vaccination in the 2013/14 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. 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 2013/14 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 2013/14 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 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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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