Vaccine recommendations for children and youth for the 2015/2016 influenza season

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The Canadian Paediatric Society continues to encourage annual influenza vaccination for ALL children and youth ≥6 months of age. Recommendations from the National Advisory Committee on Immunization for the 2015/2016 influenza season include some important changes:

1. Children and adolescents with neurological or neurodevelopmental disorders were added to the list of individuals considered to be at high risk for severe influenza.
2. Quadrivalent influenza vaccines are recommended preferentially over trivalent vaccines for use in children and youth.
3. An adjuvanted trivalent inactivated influenza vaccine is now available for use in children six to 23 months of age.

Key Words: *Children; IIV; Influenza vaccine; LAIV*

Les recommandations relatives aux vaccins antigrippaux administrés aux enfants et aux adolescents pour la saison 2015-2016

La Société canadienne de pédiatrie continue d'encourager la vaccination antigrippale annuelle de TOUS les enfants et adolescents de six mois et plus. Les recommandations du Comité consultatif national de l'immunisation pour la saison grippale 2015-2016 comportent quelques changements importants :

1. Les enfants et les adolescents atteints d'une affection neurologique ou neurodéveloppementale ont été ajoutés à la liste de personnes considérées comme à haut risque d'une grippe grave.
2. Les vaccins antigrippaux quadrivalents inactivés sont recommandés de préférence aux vaccins trivalents inactivés chez les enfants et les adolescents.
3. Un vaccin antigrippal trivalent inactivé contenant un adjuvant est désormais offert pour les enfants de six à 23 mois.

Paediatricians and other health care providers caring for children and youth have important roles in promoting influenza vaccination. They can increase the uptake of influenza vaccine by helping families to recognize both the potential severity of influenza infection, and the efficacy and safety of vaccination.

WHO SHOULD BE VACCINATED?

The Canadian Paediatric Society encourages annual influenza vaccinations for ALL children and youth ≥6 months of age. When this is not feasible, priority should be given to individuals at high risk for influenza-related complications and their close contacts (Box 1). All children <5 years of age are considered to be at high risk for infection and, in addition, are efficient transmitters of influenza.(1,2)

The present practice point updates previous recommendations for the use of the influenza vaccine in children to reflect the most recent recommendations from the National Advisory Committee on Immunization (NACI).(2) Beginning in the 2014/15 season, NACI recommended the vaccine for all individuals ≥6 months of age, with a particular focus on people at high risk for influenza-related complications or hospitalization, and individuals capable of transmitting influenza to those at high risk. For the 2015/16 season, children and adolescents with neurological or neurodevelopmental disorders were added to the list of individuals considered to be high risk, based on evidence in Canada involving a high burden of influenza illness in this group (Box 1).(3)

Although some vaccinated individuals retain immunity from one season to the next, this is less likely when the predominant circulating strain changes between the time of vaccination and the current influenza season; therefore, annual revaccination is recommended. A high failure rate of the influenza vaccine was observed during the 2014/15 season because of the appearance of an important antigenic change in the predominant circulating A H3N2 strain, rendering that component of the vaccine ineffective. The influenza A H3N2 component has been replaced with this new strain for 2015/16. One influenza B component has also been replaced.(4)

WHAT VACCINE SHOULD BE USED?

For several decades, influenza vaccines have contained two subtypes of influenza A and one of influenza B. Two lineages of influenza B have been in circulation simultaneously in recent years, and trivalent vaccines are now being replaced by quadrivalent vaccines containing two strains of influenza A and both lineages of influenza B. NACI recommends preferential use of quadrivalent vaccines for children and adolescents because influenza B causes more mortality and morbidity in children than in adults.(2)

Two types of influenza vaccines are available in Canada: inactivated influenza vaccines (IIV) for intramuscular injection and an intranasal, live attenuated influenza vaccine (LAIV).

IIV is available in quadrivalent and trivalent forms. An adjuvanted trivalent IIV (Fluad Pediatric, Novartis Pharmaceuticals, Canada) was recently licensed in Canada for children six to 23 months of age, and may be used for this age group when quadrivalent IIV is not available. While adjuvants are designed to enhance vaccine immunogenicity, there is insufficient evidence at the present time to make a preferential recommendation for adjuvanted or unadjuvanted trivalent IIV.

LAIV is now available only in the quadrivalent form. It is authorized for use in individuals two to 59 years of age.(2) LAIV is

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BOX 1

National Advisory Committee on Immunization recommendations for the 2015/2016 influenza season

Influenza vaccination is particularly recommended for the following groups:

- People at high risk for influenza-related complications or hospitalization
- All children six to 59 months of age
- All children ≥6 months of age, adolescents and adults with chronic health conditions (severe enough to require regular medical follow-up or hospital care), specifically:
  - Cardiac or pulmonary disorders including bronchopulmonary dysplasia, cystic fibrosis, asthma or conditions associated with an increased risk for aspiration
  - Diabetes mellitus and other metabolic diseases
  - Renal disease
  - Anemia or hemoglobinopathy
  - Cancer or other immune-compromising conditions (due to disease or therapy)
  - Morbid obesity (body mass index ≥40 kg/m^2)
  - Children and adolescents (six months to 18 years of age) with neurological or neurodevelopmental conditions (including seizure disorders, febrile seizures and isolated developmental delay)
  - Children and adolescents (six months to 18 years of age) with a chronic condition currently undergoing prolonged treatment with acetylsalicylic acid
- All Aboriginal peoples
- All residents of chronic care facilities
- All pregnant women, including adolescents, in all trimesters (for their own protection and to protect their infant after birth)
- All adults ≥65 years of age

People capable of transmitting influenza to individuals at high risk, specifically:

- Household contacts (adults and children) of individuals at high risk (listed above), regardless of whether the person at risk has been immunized
- Household contacts of infants <6 months of age (these infants are at high risk but too young to receive influenza vaccine)
- Members of a household expecting a newborn during influenza season
- Individuals providing regular child care to children ≤59 months of age, regardless of whether in or out of the home
- Health care and other care providers in facilities and community settings
- Others who provide services to individuals at high risk in closed or relatively confined settings

not licensed for use in children <2 years of age because of a small, but significant, increased rate of wheezing two to four weeks following vaccination observed in this age group. LAIV can be used for healthy children and youth, two to 17 years of age. LAIV is preferred over IIV for children two to six years of age because of its greater efficacy(2) and an expected higher acceptance of intranasal administration compared with injection. Evidence of greater efficacy in older children is weaker. There is insufficient evidence to recommend LAIV preferentially over IIV in children with chronic health conditions; either vaccine may be used unless there are contraindications. In adults, there is some evidence that IIV may be more efficacious than LAIV. Either IIV or LAIV may be used for healthy adults, but adults with chronic health conditions should receive IIV. The most common side effects of LAIV are transient nasal congestion and rhinorrhea.

Reduced effectiveness of LAIV in the United States during the 2013/14 influenza season caused concern about whether to change the recommendation for preferential use of LAIV in children two to six years of age. Studies indicated that failure was most likely due to reduced heat stability of the H1N1 component and consequent virus degradation when the vaccine was exposed to excessive temperatures during transport or storage. A similar problem was not witnessed in Canada. This strain has been replaced with a more heat-stable strain in the 2015/16 vaccine,(2,5) which will hopefully solve the problem.

TABLE 1
Choice of influenza vaccine for selected age and risk groups*

Age group, health profile	Vaccine types available	Comments
Children 6–23 months of age:	• Q-IIV • T-IIV • T-IIV adj	Q-IIV preferred
Children 2–17 years of age: healthy	• Q-LAIV • Q-IIV • T-IIV	LAIV preferred** if no contraindications; otherwise Q-IIV preferred
Children 2–17 years of age: chronic health conditions without immune suppression	• Q-LAIV • Q-IIV • T-IIV	LAIV or Q-IIV preferred
Children 2–17 years of age: immune compromising conditions	• Q-IIV • T-IIV	Q-IIV preferred LAIV contraindicated
Pregnancy:	• Q-IIV • T-IIV	LAIV not recommended (not studied; theoretical risk to fetus of live vaccine)

**For vaccine options for adults see reference 2. **Evidence for superior efficacy in healthy children 2 to 6 years of age; weaker evidence for superiority in older children; limited data for children with chronic conditions. LAIV Live attenuated influenza vaccine; Q-IIV Quadrivalent inactivated influenza vaccine; T-IIV Trivalent inactivated influenza vaccine; Q-LAIV Quadrivalent live attenuated influenza vaccine; T-IIV adj Adjuvanted trivalent inactivated influenza vaccine*

See Table 1 for a summary of vaccine options and NACI preferences for children and youth. It is recognized that programmatic considerations may affect vaccine availability in publicly funded programs.

ARE THERE ANY CONTRAINDICATIONS TO INFLUENZA VACCINE?

An anaphylactic reaction to a previous dose of influenza vaccine or onset of Guillain-Barré Syndrome within six weeks of influenza vaccination are contraindications to further doses.(2)

Egg allergy is no longer a contraindication to the use of trivalent or quadrivalent inactivated vaccines. However, all vaccines should be given in a setting where anaphylaxis can be managed. LAIV is not recommended for individuals with an egg allergy at this time because it has not yet been evaluated in this population.(2)

LAIV (but not IIV) is contraindicated in individuals with immune-compromising conditions, severe asthma (defined as active wheezing, currently on oral or high-dose inhaled glucocorticosteriods or medically attended wheezing within the previous seven days) and during pregnancy. LAIV is also contraindicated in children and adolescents, two to 17 years of age, receiving chronic acetylsalicylic acid-containing therapy because of the association of Reye's syndrome with acetylsalicylic acid and influenza infection.

LAIV should not be administered until 48 h after antiviral agents active against influenza have been discontinued. If an antiviral agent must be given within two weeks after the receipt of LAIV, another dose of vaccine should be given at least 48 h after discontinuation of therapy. For individuals experiencing nasal congestion sufficient to impede the appropriate delivery of LAIV, vaccination should be deferred until the congestion has resolved or IIV should be given.

Spread of the virus from patients immunized with LAIV can occur; however, the virus is cold-adapted and, therefore, not very pathogenic. However, as a precaution, it is recommended that contact with severely immunocompromised patients (such as recent transplant recipients) be avoided for two weeks following LAIV, if practical.

WHAT IS THE DOSAGE?

The dose of IIV administered intramuscularly (IM) is 0.5 mL, regardless of age, except for paediatric adjuvanted IIV, for which the dose is 0.25 mL IM. The dose of LAIV is 0.2 mL (0.1 mL administered in each nostril as an intranasal spray).(2)

The first year that a child <9 years of age receives influenza vaccine (either IIV or LAIV), two doses at least four weeks apart are required. If a child <9 years of age has received at least one dose of any influenza vaccine in the past, only one dose is required this season. Children ≥9 years of age and adults require only one dose each year.

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