



# Summary of the NACI Seasonal Influenza Vaccine Statement for 2020–2021

Kelsey Young<sup>1</sup>, Ian Gemmill<sup>2,3</sup>, Robyn Harrison<sup>4,5</sup> on behalf of the National Advisory Committee on Immunization (NACI)\*

## Abstract

**Background:** Evidence on influenza vaccination is continually evolving. The National Advisory Committee on Immunization (NACI) provides annual recommendations to the Public Health Agency of Canada regarding the use of seasonal influenza vaccines.

**Objective:** To summarize NACI's recommendations regarding the use of seasonal influenza vaccines for the 2020–2021 influenza season and to highlight new and updated recommendations.

**Methods:** 1) To update wording on influenza vaccination of health care workers, NACI reassessed the evidence in the context of ethics and acceptability frameworks, in accordance with NACI's recently expanded mandate. 2) To provide recommendations on the use of live attenuated influenza vaccine (LAIV) in HIV-infected individuals, the Influenza Working Group developed a predefined search strategy to identify all eligible studies, then assessed the quality and summarized and analyzed the findings according to the NACI evidence-based process. NACI provided new recommendations based on assessment of the evidence.

**Results:** 1) NACI continues to recommend that health care workers and other care providers in facilities and community settings should be vaccinated annually against influenza and that this group be included among those particularly recommended to receive the influenza vaccine. 2) NACI concluded that LAIV is immunogenic in children with stable HIV infection; therefore, NACI newly recommends that LAIV may be considered as an option for children 2–17 years of age with stable HIV infection on highly active antiretroviral therapy and with adequate immune function.

**Conclusion:** NACI continues to recommend that an age-appropriate influenza vaccine should be offered annually to anyone six months of age and older who does not have contraindications to the vaccine, with a focus on the groups for whom influenza vaccination is particularly recommended.

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## Affiliations

<sup>1</sup> Centre for Immunization and Respiratory Infectious Diseases, Public Health Agency of Canada, Ottawa, ON

<sup>2</sup> NACI Influenza Working Group Chair

<sup>3</sup> Queen's University, Kingston, ON

<sup>4</sup> NACI Influenza Working Group Vice Chair

<sup>5</sup> University of Alberta; Alberta Health Services, Edmonton, AB

## \*Correspondence:

[phac.naci-ccni.aspc@canada.ca](mailto:phac.naci-ccni.aspc@canada.ca)

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## Introduction

Seasonal influenza epidemics lead to significant morbidity and mortality in the Canadian population (1) and cause significant strain on the health care system during the influenza season each year. Although the epidemiology of influenza varies from year to year, it is estimated that influenza infections cause an average of 12,200 hospitalizations (2) and 3,500 deaths (3) per year.

Given the cyclical nature of seasonal influenza, the frequent changes to the circulating viral strains, and the number of

influenza vaccines authorized for use in Canada, the National Advisory Committee on Immunization (NACI) provides annual recommendations regarding seasonal influenza vaccination to the Public Health Agency of Canada (PHAC). For the 2020–2021 influenza season, NACI has updated the wording used for their recommendation on the vaccination of health care workers (HCW) and has provided a new recommendation on the use of live attenuated influenza vaccine (LAIV) in HIV-infected individuals. Complete details on influenza vaccine can be found



in the NACI *Statement on Seasonal Influenza Vaccine for 2020–2021* (4) and related publications. The objective of this article is to provide a concise summary of the information contained in this annual seasonal influenza statement and to highlight important updates.

### Influenza vaccine abbreviations

The abbreviations used by NACI have been recently updated to better describe the defining features of the various types of influenza vaccines. The current abbreviations are listed in **Table 1**.

**Table 1: NACI abbreviations for influenza vaccines**

Influenza vaccine category	Formulation	Type	Current NACI abbreviation <sup>a</sup>
Inactivated influenza vaccine (IIV)	Trivalent (IIV3)	Standard dose <sup>b</sup> , unadjuvanted, IM administered	IIV3-SD
		Adjuvanted <sup>c</sup> , IM administered	IIV3-Adj
		High dose <sup>d</sup> , unadjuvanted, IM administered	IIV3-HD
	Quadrivalent (IIV4)	Standard dose <sup>b</sup> , unadjuvanted, IM administered	IIV4-SD
Live attenuated influenza vaccine (LAIV)	Quadrivalent (LAIV4)	Unadjuvanted, Nasal spray	LAIV4

Abbreviations: IIV, inactivated influenza vaccine; IIV3, trivalent inactivated influenza vaccine; IIV3-Adj, adjuvanted trivalent inactivated influenza vaccine; IIV3-HD, high-dose trivalent inactivated influenza vaccine; IIV3-SD, standard-dose trivalent inactivated influenza vaccine; IIV4, quadrivalent inactivated influenza vaccine; IIV4-SD, standard-dose quadrivalent inactivated influenza vaccine; IM, intramuscular; LAIV, live attenuated influenza vaccine; LAIV4, quadrivalent live attenuated influenza vaccine

<sup>a</sup> The numeric suffix denotes the number of antigens contained in the vaccine (“3” refers to the trivalent formulation and “4” refers to the quadrivalent formulation). The hyphenated suffix “-SD” is used when referring to IIV products that do not have an adjuvant, contain 15 µg hemagglutinin (HA) per strain and are administered as a 0.5 mL dose by intramuscular injection; “-Adj” refers to an IIV with an adjuvant (e.g. IIV3-Adj for Fludac<sup>®</sup> or Fludac Pediatric<sup>®</sup>); and “-HD” refers to an IIV that contains higher antigen content than 15 µg HA per strain (e.g. IIV3-HD for Fluzone<sup>®</sup> High-Dose)

<sup>b</sup> 15 µg HA per strain

<sup>c</sup> 7.5 µg (in 0.25 mL) or 15 µg (in 0.5 mL) HA per strain

<sup>d</sup> 60 µg HA per strain

Source: Table reproduced from NACI *Seasonal Influenza Vaccine Statement for 2020–2021* (4)

### Methods

To prepare the *Statement on Seasonal Influenza Vaccine for 2020–2021*, the Influenza Working Group identified the need for evidence reviews for two topics in particular and, following a review and analysis of the information, proposed new or updated recommendations according to the NACI evidence-based process (5). NACI critically appraised the available evidence and approved the specific recommendations brought forward.

### Vaccination of health care workers and other care providers

NACI identified a need to reassess the wording used for the recommendation on the vaccination of HCWs and other care providers with the influenza vaccine. To inform this updated wording, the evidence from four cluster randomized controlled trials (6–9) that assessed the impact of HCW influenza vaccination in geriatric long-term care settings was reassessed and considered in the context of ethics and acceptability. Ethics and acceptability were systematically considered, based on NACI’s approved methods for the evaluation of ethics, equity, feasibility and acceptability as part of NACI’s recently expanded mandate.

### Use of live attenuated influenza vaccine in HIV-infected individuals

The NACI Influenza Working Group oversaw the completion of a systematic review to inform the development of guidance on the use of LAIV in HIV-infected individuals. Six electronic databases (MEDLINE, EMBASE, Scopus, ProQuest Public Health Database, ClinicalTrials.gov and PROSPERO) were searched from inception to April 13, 2018 to identify relevant literature on the efficacy, effectiveness, immunogenicity and safety of LAIV in HIV-infected adults and children aged six months and older. The Canadian Adverse Events Following Immunization Surveillance System (CAEFISS) was also searched to identify any reports received on adverse events following vaccination with LAIV in HIV-infected individuals. Two reviewers independently screened the titles and abstracts of records retrieved from the search and eligible full-text articles for inclusion. One reviewer extracted data from eligible studies and appraised the methodological quality of these studies using the criteria outlined by Harris *et al.* (10). A second reviewer validated the data extraction and quality assessment. A narrative synthesis of the extracted data was performed.

### Results

#### Vaccination of health care workers and other care providers

Based on their reassessment of the evidence in the context of ethics and acceptability, NACI continues to recommend that, in the absence of contraindications, HCWs and other care providers in facilities and community settings should be vaccinated annually against influenza. HCWs and other care providers have the potential to transmit influenza to individuals at high risk and, due to their occupation and close contact with people at high-risk of influenza-related complications, are themselves at increased risk of infection (11). Given the potential to transmit influenza and the increased risk of infection, and knowing that vaccination is the most effective way to prevent influenza, NACI recommends the inclusion of this group among those particularly recommended to receive the influenza vaccine. NACI considers



the receipt of influenza vaccination to be an essential component of the standard of care for all HCWs and other care providers for their own protection and that of their patients. This group should consider annual influenza vaccination as part of their responsibilities to provide the highest standard of care.

Further information on NACI's recommendation for the inclusion of HCWs as a group for whom influenza vaccination is particularly recommended can be found in Section III.2 of the *NACI Seasonal Influenza Vaccine Statement for 2020–2021* (4).

## Use of live attenuated influenza vaccine in HIV-infected individuals

The systematic review identified eight articles that reported the findings from five studies investigating the immunogenicity, the safety, or both, of the administration of LAIV in HIV-infected individuals. No studies investigating the efficacy or effectiveness of LAIV in this population were identified. Based on the identified evidence, NACI concluded that LAIV is immunogenic in children with stable HIV infection on highly active antiretroviral therapy (HAART) and with adequate immune function. NACI also concluded that, while there is insufficient direct evidence to detect uncommon or rare adverse events related to the use of LAIV in HIV infected children, LAIV appears to have a similar safety profile to inactivated influenza vaccine (IIV). In addition, some children and their substitute decision-makers may prefer that they receive influenza vaccine through an intranasal spray as opposed to an intramuscular (IM) injection, although preferences will vary. Regarding the use of LAIV in HIV-infected adults, NACI concluded that the quantity of evidence available on the immunogenicity and safety of LAIV in adults with HIV is insufficient to justify a recommendation for the use of LAIV in this age group. Based on their assessment of the evidence, NACI has made the following recommendation:

**NACI recommends that LAIV may be considered as an option for children 2–17 years of age with stable HIV infection on HAART and with adequate immune function\* (Discretionary NACI recommendation).**

\*LAIV should only be considered in children with HIV who meet the following criteria:

- receiving HAART for  $\geq 4$  months
- CD4 count  $\geq 500/\mu\text{L}$  if 2–5 years of age, or  $\geq 200/\mu\text{L}$  if 6–17 years of age (measured within 100 days before administration of LAIV)
- HIV plasma RNA  $< 10,000$  copies/mL (measured within 100 days before administration of LAIV)

While IM influenza vaccination is still considered the standard for children living with HIV by NACI and the Canadian Pediatric and Perinatal HIV/AIDS Research Group, LAIV would be reasonable for children meeting the criteria outlined above, if IM vaccination is not accepted by the patient or substitute decision-maker.

The detailed findings of this review and additional information supporting this recommendation can be found in the *NACI Statement on the Recommendation on the Use of Live-Attenuated Influenza Vaccine (LAIV) in HIV-Infected Individuals* (12).

## Summary of NACI recommendations for the use of influenza vaccines for the 2020–2021 influenza season

NACI continues to recommend influenza vaccination to anyone six months of age and older who does not have contraindications to the vaccine. Vaccination should be offered as a priority to people at high risk of influenza-related complications or hospitalization, people capable of transmitting influenza to those at high risk of complications, and others as indicated in the **List 1** below.

### List 1: Groups for whom influenza vaccination is particularly recommended

#### People at high risk of influenza-related complications or hospitalization:

- All pregnant women
- Adults and children with the following chronic health conditions<sup>a</sup>:
  - Cardiac or pulmonary disorders (includes bronchopulmonary dysplasia, cystic fibrosis and asthma)
  - Diabetes mellitus and other metabolic diseases
  - Cancer, immune compromising conditions (due to underlying disease, therapy or both, such as solid organ transplant or hematopoietic stem cell transplant recipients)
  - Renal disease
  - Anemia or hemoglobinopathy
  - Neurologic or neurodevelopmental conditions (includes neuromuscular, neurovascular, neurodegenerative and neurodevelopmental conditions and seizure disorders [for children, includes febrile seizures and isolated developmental delay], but excludes migraines and psychiatric conditions without neurological conditions)
  - Morbid obesity (body mass index [BMI] of 40 and over)
  - Children six months to 18 years of age undergoing treatment for long periods with acetylsalicylic acid, because of the potential increase of Reye's syndrome associated with influenza
- People of any age who are residents of nursing homes and other chronic care facilities
- Adults 65 years of age and older
- All children 6–59 months of age
- Indigenous people

#### People capable of transmitting influenza to those at high risk:

- Health care and other care providers in facilities and community settings who, through their activities, are capable of transmitting influenza to those at high risk
- Household contacts, both adults and children, of individuals at high risk, whether or not the individual at high risk has been vaccinated, including:
  - Household contacts of individuals at high risk
  - Household contacts of infants less than six months of age, as these infants are at high risk but cannot receive influenza vaccine
  - Members of a household expecting a newborn during the influenza season
- Those providing regular child care to children 0–59 months of age, whether in or out of the home
- Those who provide services within closed or relatively closed settings to people at high risk (e.g. crew on a ship)

#### Others:

- People who provide essential community services
- People who are in direct contact with poultry infected with avian influenza during culling operations

<sup>a</sup> Refer to Immunization of Persons with Chronic Diseases and Immunization of Immunocompromised Persons in Part 3 of the CIG for additional information about vaccination of people with chronic diseases (13)  
Source: Table reproduced from *NACI Seasonal Influenza Vaccine Statement for 2020–2021* (4)



Recommended influenza vaccine options by age group and by dosage and route of administration by age are summarized in Tables 2 and 3, respectively.

**Table 2: Recommendations on the choice of influenza vaccine type for individual-level decision-making<sup>a</sup> by age group**

Recipient by age group	Vaccine types authorized for use	Recommendations on choice of influenza vaccine
6–23 months	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV3-Adj</li> <li>IIV4-SD</li> </ul>	<ul style="list-style-type: none"> <li>Quadrivalent influenza vaccine should be used in infants without contraindications, given the burden of influenza B disease in this age group and the potential for lineage mismatch between the predominant circulating strain of influenza B and the strain in a trivalent vaccine</li> <li>If a quadrivalent vaccine is not available, any of the available trivalent vaccines should be used</li> </ul>
2–17 years <sup>b</sup>	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV4-SD</li> <li>LAIV4</li> </ul>	<ul style="list-style-type: none"> <li>Either IIV4-SD or LAIV4 should be used in children without contraindications, including those with non-immune compromising chronic health conditions, given the burden of influenza B disease in this age group and the potential for lineage mismatch between the predominant circulating strain of influenza B and the strain in a trivalent vaccine</li> <li>If IIV4-SD or LAIV4 is not available, IIV3-SD should be used</li> <li>IIV4-SD should be used for children for whom LAIV is contraindicated, such as in children with:               <ul style="list-style-type: none"> <li>Severe asthma</li> <li>Medically attended wheezing in the seven days prior to vaccination</li> <li>Current receipt of aspirin or aspirin-containing therapy</li> <li>Immune compromising conditions, with the exception of stable HIV infection, if the child is currently being treated with HAART and has adequate immune function</li> </ul> </li> </ul>

**Table 2: Recommendations on the choice of influenza vaccine type for individual-level decision-making<sup>a</sup> by age group (continued)**

Recipient by age group	Vaccine types authorized for use	Recommendations on choice of influenza vaccine
2–17 years <sup>b</sup> (continued)	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV4-SD</li> <li>LAIV4 (continued)</li> </ul>	<ul style="list-style-type: none"> <li>LAIV4 may be given to children with:               <ul style="list-style-type: none"> <li>Stable, non-severe asthma</li> <li>Cystic fibrosis who are not being treated with immunosuppressive drugs (e.g. prolonged systemic corticosteroids)</li> <li>Stable HIV infection, if the child is currently being treated with HAART and has adequate immune function</li> </ul> </li> </ul>
18–59 years	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV4-SD</li> <li>LAIV4</li> </ul>	<ul style="list-style-type: none"> <li>Any of the available influenza vaccines should be used in adults without contraindications</li> <li>IIV should be used for adults for whom LAIV is contraindicated or not recommended, such as in:               <ul style="list-style-type: none"> <li>Pregnant women</li> <li>Adults with any of the chronic health conditions identified in Table 2, including immune compromising conditions</li> <li>HCWs</li> </ul> </li> </ul>
60–64 years	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV4-SD</li> </ul>	<ul style="list-style-type: none"> <li>Any of the available influenza vaccines should be used in those without contraindications</li> </ul>
65 years and older <sup>c</sup>	<ul style="list-style-type: none"> <li>IIV3-SD</li> <li>IIV3-Adj</li> <li>IIV3-HD</li> <li>IIV4-SD</li> </ul>	<ul style="list-style-type: none"> <li>IIV3-HD should be used over IIV3-SD, given the burden of influenza A(H3N2) disease and the good evidence of better protection compared to IIV3-SD in adults 65 years of age and older               <ul style="list-style-type: none"> <li>NACI does not make comparative individual-level recommendations on the use of IIV3-Adj or IIV4-SD over IIV3-SD, or among IIV3-Adj, IIV3-HD, and IIV4-SD</li> <li>In the absence of any specific product, any of the available influenza vaccines should be used</li> </ul> </li> </ul>

Abbreviations: HAART, highly active antiretroviral therapy; HCW, health care worker; IIV, inactivated influenza vaccine; IIV3-Adj, adjuvanted trivalent inactivated influenza vaccine; IIV3-HD, high-dose trivalent inactivated influenza vaccine; IIV3-SD, standard-dose trivalent inactivated influenza vaccine; IIV4-SD, standard-dose quadrivalent inactivated influenza vaccine; LAIV, live attenuated influenza vaccine; LAIV4, quadrivalent live attenuated influenza vaccine; NACI, National Advisory Committee on Immunization

<sup>a</sup> Recommendations for individual-level decision making are intended for individuals wishing to protect themselves from influenza, or vaccine providers wishing to advise individual patients about preventing influenza

<sup>b</sup> Refer to Table 4 of the NACI Seasonal Influenza Vaccine Statement for 2020–2021 for a summary of vaccine characteristics of LAIV compared with IIV in children 2–17 years of age (4)

<sup>c</sup> Refer to Table 5 NACI Seasonal Influenza Vaccine Statement for 2020–2021 for a comparison of the vaccine characteristics of influenza vaccine types available for use in adults 65 years of age and older (4)

Source: Table adapted from NACI Seasonal Influenza Vaccine Statement for 2020–2021 (4)

**Table 3: Recommended dose and route of administration, by age, for influenza vaccine types authorized for the 2020–2021 influenza season**

Age group	Influenza vaccine type (route of administration)				Number of doses required
	IIV3-SD <sup>a</sup> or IIV4-SD <sup>b</sup> (Intramuscular)	IIV3-Adj <sup>c</sup> (Intramuscular)	IIV3-HD <sup>d</sup> (Intramuscular)	LAIV4 <sup>e</sup> (Intranasal)	
6–23 months	0.5 mL <sup>f</sup>	0.25 mL	-	-	1–2 <sup>g</sup>
2–8 years	0.5 mL	-	-	0.2 mL (0.1 mL per nostril)	1–2 <sup>g</sup>
9–17 years	0.5 mL	-	-	0.2 mL (0.1 mL per nostril)	1
18–59 years	0.5 mL	-	-	0.2 mL (0.1 mL per nostril)	1
60–64 years	0.5 mL	-	-	-	1
65 years and older	0.5 mL	0.5 mL	0.5 mL	-	1

Abbreviations: IIV3-Adj, adjuvanted trivalent inactivated influenza vaccine; IIV3-HD, high-dose trivalent inactivated influenza vaccine; IIV3-SD, standard-dose trivalent inactivated influenza vaccine; IIV4-SD, standard-dose quadrivalent inactivated influenza vaccine; LAIV4, quadrivalent live attenuated influenza vaccine; -, no data

<sup>a</sup> Agriflu<sup>®</sup> (six months and older), Fluviral<sup>®</sup> (six months and older), Influvac<sup>®</sup> (three years and older), Vaxigrip<sup>®</sup> six months and older). Influvac and Vaxigrip are authorized, but not currently available for sale in Canada

<sup>b</sup> Afluria<sup>®</sup> Tetra (five years and older), Flulaval<sup>®</sup> Tetra (six months and older), Fluzone<sup>®</sup> Quadrivalent (six months and older), Influvac<sup>®</sup> Tetra (18 years and older). Influvac Tetra is authorized for use in Canada in adults 18 years and older; however, NACI has not specifically reviewed this product

<sup>c</sup> Flud Pediatric<sup>®</sup> (6–23 months) or Flud<sup>®</sup> (65 years and older)

<sup>d</sup> Fluzone<sup>®</sup> High-Dose (65 years and older)

<sup>e</sup> FluMist<sup>®</sup> Quadrivalent (2–59 years)

<sup>f</sup> Evidence suggests moderate improvement in antibody response in infants, without an increase in reactogenicity, with the use of full vaccine doses (0.5 mL) for unadjuvanted inactivated influenza vaccines (14,15). This moderate improvement in antibody response without an increase in reactogenicity is the basis for the full dose recommendation for unadjuvanted inactivated vaccine for all ages. For more information, refer to *Statement on Seasonal Influenza Vaccine for 2011–2012* (16)

<sup>g</sup> Children six months to less than nine years of age receiving seasonal influenza vaccine for the first time in their life should be given two doses of influenza vaccine, with a minimum interval of four weeks between doses. Children six months to less than nine years of age who have been properly vaccinated with one or more doses of seasonal influenza vaccine in the past should receive one dose of influenza vaccine per season thereafter

Source: Table reproduced from NACI *Seasonal Influenza Vaccine Statement for 2020–2021* (4)

## Conclusion

NACI continues to recommend annual influenza vaccination for all individuals aged six months and older (noting product-specific age indications and contraindications), with particular focus on people at high risk of influenza-related complications or hospitalization. In addition, people capable of transmitting to high risk individuals, people who provide essential community services and people in direct contact during culling operations with poultry infected with avian influenza are particularly recommended to receive the influenza vaccine. For the 2020–2021 influenza season, NACI continues to recommend that, in the absence of contraindications, HCWs and other care providers in facilities and community settings should be vaccinated annually against influenza, and continues to recommend the inclusion of this group among those particularly recommended to receive the influenza vaccine. NACI also newly recommends that LAIV may be considered as an option for children 2–17 years of age with stable HIV infection HAART and with adequate immune function.

## Authors' statement

KY — Writing, original draft, review, editing

IG — Review, editing

RH — Review, editing

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## Conflict of interest

None.

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**Influenza Working Group members:** I Gemmill (Chair), R Harrison (Vice-Chair), C Bancej, L Cochrane, N Dayneka, L Grohskopf, D Kumar, J Langley, P Wolfe-Roberge, J McElhaney, A McGeer, D Moore, S Smith, B Warshawsky and J Xiong





**NACI members:** C Quach (Chair), S Deeks (Vice-Chair), N Dayneka, P De Wals, V Dubey, R Harrison, K Hildebrand, C Rotstein, M Salvadori, B Sander, N Sicard and S Smith

**Liaison representatives:** LM Bucci (Canadian Public Health Association), E Castillo (Society of Obstetricians and Gynaecologists of Canada), A Cohn (Centers for Disease Control and Prevention, United States), J Emili (College of Family Physicians of Canada), M Naus (Canadian Immunization Committee), D Moore (Canadian Paediatric Society) and A Pham-Huy (Association of Medical Microbiology and Infectious Disease Canada)

**Ex-officio representatives:** J Gallivan (Marketed Health Products Directorate, Health Canada [HC]), E Henry (Centre for Immunization and Respiratory Infectious Diseases [CIRID], Public Health Agency of Canada [PHAC]), M Lacroix (Public Health Ethics Consultative Group, PHAC), J Pennock (CIRID, PHAC), R Pless (Biologics and Genetic Therapies Directorate, HC), G Poliquin (National Microbiology Laboratory, PHAC) and T Wong (First Nations and Inuit Health Branch, Indigenous Services Canada)

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