



Influenza Immunization Program 2022-2023 Update

Pharmacists are authorized to vaccinate persons 5 years of age and older who have a valid Saskatchewan Health Card with publicly funded influenza vaccine. Again, this season, there will be a soft start to the program, whereby pharmacies registered for the Influenza Immunization Program (IIP) can begin administering the vaccine as soon as it's available – mid-late September is anticipated. The program officially starts 11 Oct 2022 and ends 31 Mar 2023. Children younger than age nine requiring a second dose of vaccine can receive immunization until 30 Apr 2023.¹ For full details on the Saskatchewan Influenza Immunization Policy (SIIP) see [here](#).

Highlights of this year's Saskatchewan Influenza Immunization Policy (SIIP)¹:

- **Fluzone® High-Dose** Quadrivalent will be publicly funded for **all residents ≥65 years of age** with a valid Saskatchewan Health Services Card
- **Afluria® Tetra** will be the primary standard dose influenza vaccine supplied to pharmacies for use this season; Flulaval Tetra and Fluzone® Quadrivalent are secondary supply
- To register a pharmacy with the DPEBB to participate in the 2022-2023 Influenza Immunization Program and/or to provide off-site publicly funded influenza immunizations at licensed Personal Care Homes (PCH) see details [here](#)
- Influenza immunization statistics will be collected through Panorama with the exception of Health Care Workers. Community pharmacy influenza immunizations that are captured in the DPEBB claims system are transmitted to Panorama on a daily basis.
- Influenza immunization records are available in patients' MySaskHealthRecord accounts but wallet cards from previous years can continue to be used upon request

2022-2023 Publicly Funded Influenza Vaccine Information:

Vaccines funded by the Saskatchewan Ministry of Health for use in the 2022-2023 influenza season^{1,2}:

- **Fluzone® High-Dose Quadrivalent**
 - available through all immunizers
 - for use in individuals 65 years and older
- **Afluria® Tetra** (standard dose)
 - primary supply for pharmacies
 - for use in individuals 5 years and older
- **Flulaval Tetra** (standard dose)
 - available through Public Health (Saskatchewan Health Authority (SHA), First Nations Jurisdictions (FNJ), Athabasca Health Authority (AHA))
 - secondary supply for pharmacies
 - for use in individuals 6 months and older

- **Fluzone® Quadrivalent** (standard dose)
 - for use in individuals 6 months and older
 - multidose vials
 - available through Public Health (SHA, FJN, AHA)
 - secondary supply for pharmacies
 - prefilled syringes
 - available through Public Health (SHA, FJN, AHA)

Afluria® Tetra, Flulaval Tetra, and Fluzone® Quadrivalent are quadrivalent inactivated influenza vaccines containing 15 mcg of hemagglutinin (HA) protein for each of the two influenza A and two influenza B strains. This season the strains in use are^{1,3}:

- A/Victoria/2570/2019 (H1N1)pdm09-like virus;
- A/Darwin/9/2021 (H3N2)-like virus;
- B/Austria/1359417/2021 (B/Victoria lineage)-like virus;
- B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

These vaccines are safe for use in all stages of pregnancy.⁴

Fluzone® High-Dose Quadrivalent is a quadrivalent inactivated influenza vaccine containing 60 mcg (HA) protein of the same strains in the standard dose vaccines. It is indicated for use in individuals 65 years and older.¹ This population is at higher risk of mortality and morbidity from influenza (particularly influenza A) and their immune response to influenza vaccines is lower than that of younger people. The available evidence suggests that the high-dose vaccine should provide superior protection in this population, compared with standard dose influenza vaccine.⁴ This is the first season that **Fluzone® High-Dose Quadrivalent is publicly funded for all Saskatchewan residents 65 years of age and older.**¹

Thimerosal-containing vaccines: all multidose vials of publicly funded influenza vaccine contain thimerosal. People preferring thimerosal-free vaccine need to be referred to Public Health where Fluzone® Quadrivalent (standard dose) prefilled syringes will be available.¹ Note that thimerosal is considered safe in pregnancy.⁴

Non-publicly funded influenza vaccines:

Pharmacists should be aware of all influenza vaccine options. (See Tables 1, 2, and 3 below.) In accordance with the requirements in the [Administration of Drugs by Injection and Other Routes - Policies, Standards and Guidelines for Pharmacists](#), pharmacists may need to inform patients of influenza vaccine options in case of vaccine shortage, patient preference, contraindication, or constituent allergy.⁵ If a non-funded influenza vaccine is requested, pharmacies may purchase and charge the patient for it as a private sale and service.¹

Two influenza vaccines have recently been developed using new manufacturing processes:

In 1995 the World Health Organization (WHO) recommended alternatives to egg-based influenza virus cultivation systems be developed. This is due to⁶:

- Necessity of large number of eggs - all from specific pathogen-free flocks or at least certified as 'clean'
- Potential for allergic reaction
- Some virus strains don't grow well in eggs
- Egg-adaptive mutations can occur. Newer technology results in a more reliable product.
- Other manufacturing processes have been proven to be much faster and have reduced risk of microbial or chemical contamination. This would be very important in a pandemic.

1. **Flucelvax® Quad** (IIV4-cc) is Canada's first mammalian cell culture-based influenza vaccine. It was approved for use in Canada on November 22, 2019. The manufacturing process uses animal cells (Madin-Darby Canine Kidney, or MDCK cells) rather than fertilized chicken eggs as a host for growing the influenza viruses. The cells used to manufacture Flucelvax® Quad are kept frozen and "banked" ensuring an adequate supply is always available for vaccine production. This process is much faster and in larger volume than egg-based production and occurs in a closed environment reducing potential for contamination. Cell-culture based influenza vaccines have been available in Europe since 2007 and the United States since 2012.^{6,7}

Flucelvax® Quad is administered as a 0.5 mL dose by IM injection – preferably into the deltoid. NACI has determined that it has comparable efficacy and safety profile to IIV4-SD and recommends that it **may be considered among the quadrivalent influenza vaccines offered to adults and children 6 months of age and older.**^{4,7}

- Disadvantages:
 - More expensive than other influenza vaccinations
 - No experience with this product in Canada, although it has been used for years in other countries
 - **Not funded for use in Saskatchewan this influenza season**¹

2. **Supemtek™** (RIV4) is Canada's first licensed recombinant quadrivalent influenza vaccine. It was approved in Canada on January 14, 2021. The recombinant method uses influenza virus proteins that are combined with a portion of another virus that grows in insect cells. The resulting virus is then mixed with insect cells and allowed to replicate. The flu surface protein (hemagglutinin) is then harvested from these cells and purified. This technology allows an exact match to the WHO's recommended influenza strains. Supemtek™ contains 45 µg of antigen per strain – 3 times that of other standard dose influenza vaccines.⁸

Supemtek™ is administered as a 0.5 mL dose by IM injection – preferably into the deltoid. NACI has determined that it has comparable efficacy and safety profile to IIV4-SD and that it **may be included in the list of quadrivalent influenza vaccines offered to adults 18 years of age and older.**⁴

- Disadvantages⁸
 - At this time, in Canada, the infrastructure required for manufacturing recombinant vaccines is limited compared to that for producing egg-based vaccines
 - More expensive than other influenza vaccinations
 - No experience with this product in Canada, although it has been used in the USA since 2013
 - **Not funded for use in Saskatchewan this influenza season**¹

WHO recommends a slightly different combination of influenza strains for cell-based and recombinant vaccines. For the 2022-23 season those are³:

- A/Wisconsin/588/2019 (H1N1)pdm09-like virus;
- A/Darwin/6/2021 (H3N2)-like virus;
- B/Austria/1359417/2021 (B/Victoria lineage)-like virus;
- B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

Table 1: Influenza Vaccines Available in Canada^{4,9}

Vaccine Type	Brand Names	How Supplied	
		Multidose Vial	Prefilled Syringe (Thimerosal-free)
Quadrivalent Standard-Dose Inactivated Influenza Vaccine (IIV4-SD)	Afluria® Tetra ^a	√	×
	Flulaval Tetra ^b	√	×
	Fluzone® Quadrivalent ^b	√	√ (Public Health only)
	Influvac® Tetra	×	√
Quadrivalent Live Attenuated Influenza Vaccine (LAIV4)	Flumist® Quadrivalent	×	√ (single use pre-filled glass sprayer)
Cell-Culture Based Quadrivalent Inactivated Influenza Vaccine (IIV4-cc)	Flucelvax® Quad	√	√
Recombinant quadrivalent influenza vaccine (RIV4)	Supemtek™	×	√
High-Dose Quadrivalent Inactivated Influenza Vaccine (IIV4-HD)	Fluzone® High-Dose Quadrivalent ^c	×	√
Adjuvanted Inactivated Influenza Vaccine (IIV3-Adj)	Fluad®	×	√

a. Publicly funded in SK for the 2022-23 influenza season; primary supply for pharmacies.²
 b. Publicly funded in SK for the 2022-23 influenza season and available through Public Health and other immunizers (e.g. physicians, nurse practitioners); secondary supply for pharmacies.²
 c. Publicly funded in SK for the 2022-23 influenza season for residents 65 years and older and available through all immunizers.²

FAQs

Q: Can the COVID-19 vaccines be given at the same time as the influenza vaccines?

A: Yes. The Saskatchewan Ministry of Health issued a [directive](#) stating that as of 02 Sep 2021 all Health Canada approved COVID-19 vaccines can be given concomitantly with other vaccines; no intervals are required before or after COVID-19 vaccine administration.

Q: Can we administer the influenza vaccine to someone without an HSN?

A: Persons without a valid HSN, are from out of province, or from out of country, should be directed to a Public Health office for publicly funded flu vaccine.¹

Q: Should the influenza vaccine be administered to those on chemotherapy or immunotherapy?

A: Inactivated influenza vaccine is encouraged for individuals with cancer unless medically contraindicated. Please refer to this Saskatchewan Cancer Agency [directive](#), which addresses exceptions and use of influenza vaccines in specific cancer treatments.¹⁰

Q: Why would anyone want a non-publicly funded influenza vaccine?

A: Flumist® Quadrivalent nasal spray is an option for those who prefer not to have an injection and may be particularly useful in children. Flumist® Quadrivalent, Flucelvax® Quad and Supemtek™ can be options for those with allergies to other influenza vaccines. Fluad® contains an adjuvant which may increase the efficacy in those over 65 years of age. Although Fluzone® High-Dose is preferred in this age group, Fluad® could be an option if Fluzone® High-Dose is in short supply.³

Table 2: Non-Publicly Funded Influenza Vaccines^{4,9}

Please note that IIV4-SD is appropriate and indicated for use in all persons over the age of 6 months. Both IIV4-SD & IIV4-HD are indicated for ages 65 years and older – although IIV4-HD is preferred. See Table 1 for vaccine abbreviation definitions.

Vaccine: Abbreviation & Trade name	Age Recommendation	Comment
IIV4-cc Flucelvax® Quad	6 months and over	May be used non-preferentially up to age 65 yrs. It is an option for those ≥ 65 yrs if Fluzone® High-Dose not available or inappropriate.
LAIV4 Flumist® Quadrivalent	≥2 years to <18 years	LAIV4 is suitable for use in this age group with these exceptions: <ul style="list-style-type: none"> • severe asthma (defined as currently on oral or high-dose inhaled corticosteroids or active wheezing) • having experienced medically attended wheezing in the 7 days prior to vaccination • immune compromising conditions, due to underlying disease, therapy or both excluding those with stable HIV infection^a on HAART and with adequate immune function • currently receiving ASA • pregnancy • receipt of an influenza antiviral medication in the previous 48 hours
	≥18 years to <60 years	LAIV4 is suitable for use in this age group with these exceptions: <ul style="list-style-type: none"> • specific chronic health conditions that increase risk of influenza-related complications/ hospitalizations^b • pregnancy • health care workers • receipt of an anti-influenza antiviral medication in the previous 48 hours
RIV4 Supemtek™	18 years and over	May be used non-preferentially up to age 65 yrs. It is an option for those ≥ 65 yrs if Fluzone® High-Dose not available or inappropriate.
IIV3-Adj Fluad®	65 years and over	Has an adjuvant so may provide more immunogenicity, however, it is only trivalent and will not offer as much B strain coverage. May cause more injection-site reactions than other influenza vaccines.

a. Stable HIV infection defined as: **receiving HAART ≥ 4 months; and CD4 count ≥ 500/μL if 2–5 years of age, or ≥200/μL if 6–17 years of age (measured within 100 days before administration of LAIV); and HIV plasma RNA <10,000 copies/mL (measured within 100 days before administration of LAIV).**

b. Includes: **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 neurodevelopment conditions** (includes neuromuscular, neurovascular, neurodegenerative, neuro-developmental conditions, and seizure disorders [and, for children, includes febrile seizures and isolated developmental delay], but excludes migraines and psychiatric conditions without neurological conditions); **morbid obesity** (BMI of 40 and over)

HAART= highly active antiretroviral therapy

Table 3: Age Indications for Influenza Vaccine Types⁴

See Table 1 for vaccine abbreviation definitions.

Age	Approved Influenza Vaccines
≥ 6 months to < 2 years	IIV4-SD ^a , IIV4-cc
≥ 2 years to < 18 years	IIV4-SD ^a , IIV4-cc, LAIV4
≥ 18 years to < 60 years	IIV4-SD, IIV4-cc, LAIV4, RIV4
≥ 60 years to < 65 years	IIV4-SD, IIV4-cc, RIV4
≥ 65 years	IIV4-HD, IIV4-SD, IIV4-cc, RIV4, IIV3-Adj
a. Not all brands are approved for these ages; check product monographs	

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References

1. Saskatchewan Ministry of Health. Saskatchewan Influenza Immunization Policy 2022-2023. Regina, SK: Saskatchewan Ministry of Health; 2022 [updated 06 Sep 2022; cited 16 Sep 2022] Available from: <https://formulary.drugplan.ehealthsask.ca/PDFs/Saskatchewan%20Influenza%20Immunization%20Policy%202022-23.pdf>
2. Drug Plan and Extended Benefits. Influenza Immunization Program (IIP): Policy and procedures. Regina, SK: Saskatchewan Ministry of Health; 2022 [updated 20 Sep 2022; cited 22 Sep 2022].
3. World Health Organization. Recommendations announced for influenza vaccine composition for the 2022-2023 northern hemisphere influenza season. 2022 [25 Feb 2022; cited 16 Sep 2022]. Available from: <https://www.who.int/news/item/25-02-2022-recommendations-announced-for-influenza-vaccine-composition-for-the-2022-2023-northern-hemisphere-influenza-season>
4. Public Health Agency of Canada. Canadian Immunization Guide Chapter on Influenza and Statement on Seasonal Influenza Vaccine for 2022–2023. Ottawa ON: Government of Canada; 2022 [updated 08 Jun 2022; cited 16 Sep 2022] Available from: <https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/canadian-immunization-guide-statement-seasonal-influenza-vaccine-2022-2023.html>
5. Saskatchewan College of Pharmacy Professionals. Administration of drugs by injection and other routes - Policies, standards and guidelines for pharmacists. Regina SK: Saskatchewan College of Pharmacy Professionals; 2022 [updated 11 Feb 2022; cited 16 Sep 2022] Available from: https://scp.in1touch.org/document/3614/REF_Injection_Admin_Gdlns
6. Pérez Rubio A, Eiros JM. Cell culture-derived flu vaccine: Present and future. Hum Vaccin Immunother. 2018;14(8):1874-1882. doi: 10.1080/21645515.2018.1460297. Epub 2018 Jun 28. PMID: 29672213; PMCID: PMC6149758.
7. Public Health Agency of Canada. Supplemental statement – mammalian cell culture-based influenza vaccines. Ottawa ON: Government of Canada; 2020 [updated 04 Sep 2020; cited 16 Sep 2022]. Available from: <https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/mammalian-cell-culture-based-influenza-vaccines.html>
8. Public Health Agency of Canada. Recombinant influenza vaccines: A supplemental statement of the Canadian Immunization Guide chapter on influenza and statement on seasonal influenza vaccine for 2022–2023. Ottawa ON:

Government of Canada; 2022 [updated 12 Sep 2022; cited 16 Sep 2022]. Available from:
<https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/recombinant-influenza-vaccines-supplemental-statement-canadian-immunization-guide-seasonal-influenza-vaccine-2022-2023.html>

9. Health Canada. Drug product database online query. Ottawa, ON: Health Canada; [cited 14 Sep 2022] Available from:
<https://health-products.canada.ca/dpd-bdpp/index-eng.jsp>
10. Saskatchewan Cancer Agency. Influenza Immunization Guideline 2021. 2021 [cited 16 Sep 2022] Available from:
<https://medsasktest.usask.ca/documents/vaccine-preventable-travel/sca-influenza-2021.pdf>

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