

Pocket Guide for Immunizers:

Varicella (Chickenpox) & Herpes Zoster (Shingles) Vaccination

The purpose of this pocket guide is to serve as a tool for health care providers to learn more about varicella and herpes zoster vaccines, enabling them to make strong recommendations to their patients.



Both varicella and shingles are painful and potentially dangerous diseases caused by the varicella zoster virus (VZV). Primary varicella zoster virus infection results in chickenpox, usually among children and young adults, causing fever, malaise and extensive itchy, blister-like skin lesions. In some cases, it can lead to complications, which can include pneumonia and encephalitis, progressing to fatal disease in rare cases.

Even after a case of chickenpox has passed, the virus remains dormant lifelong within the nervous system, and can reactivate later in life, causing shingles. Shingles most frequently manifests in those aged 50 or older, and it can be permanently debilitating. Shingles is characterized by a painful skin rash on the

body or face, lasting several weeks. In addition to scarring, this can lead to permanent neuropathic pain (known as post-herpetic neuralgia) in about 20% of cases. Depending on the location of the shingles rash, some more serious cases of shingles can cause blindness, facial paralysis, and other permanent disability.

In countries without vaccination programs, up to 90% of children will get chickenpox by the age of 12. Prior to the introduction of varicella immunization in Canada, chickenpox was responsible for thousands of hospitalizations and 5 to 10 deaths each year¹. In adults, shingles vaccination is able to prevent – or reduce in severity and duration – up to 90% of shingles cases.

Immunization is the only effective way to prevent the severe harm caused by this globally endemic and highly contagious virus, in both its chickenpox and shingles presentations.

This pocket guide references recommendations made in the Canadian Immunization Guide Chapter on Varicella Vaccine and the Canadian Immunization Guide Chapter on Herpes Zoster Vaccine from the National Advisory Committee on Immunization (NACI).

¹Canada's first universal varicella immunization program: Lessons from Prince Edward Island. Can J Infect Dis. (2003). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2094900/>

What vaccines are available?

While both chickenpox and shingles are caused by the same varicella zoster virus, the vaccines developed to protect against primary infection in the form of chickenpox (varicella) differ significantly from those designed to protect against latent virus reactivation in the form of shingles (herpes zoster).

Varicella vaccines are part of routine pediatric immunization programs across Canada, and come in both univalent formulations and combined formulations that also contain measles, mumps, and rubella vaccines.

Herpes zoster vaccines are generally recommended for adults aged 50 years and older. Herpes zoster vaccines come in both live and recombinant formulations.

There is also a preparation of varicella zoster immunoglobulin authorized for use as a post-exposure immunization option in specific circumstances.

Table 1: Preparations Authorized for Use in Canada

Class Code	Class Details	Vaccine Name	Vaccine Code
VAR	Univalent varicella virus vaccines (live, attenuated)	Varivax® III	Var-MC
		Varilrix®	Var-GSK
MMRV	Combined measles, mumps, rubella and varicella vaccine (live, attenuated)	Priorix-Tetra®	MMRV-GSK
		Proquad®	MMRV-MC
RZV	Recombinant (non-live) herpes zoster vaccine	Shingrix	RZV-GSK
LZV	Live herpes zoster vaccine (no longer widely available in Canada)	Zostavax® II	LZV-MC
VarIg	Varicella zoster immunoglobulin (for post-exposure use only)	VariZIG™	VarIg-CC

Note: Throughout the rest of this guide, vaccines will be referred to by vaccine code when there is a specific recommendation within the class, and by class code when there is not.

What is the recommended dosage and how is it given?

The dosage for Zostavax® II (LZV) is 0.65ml, the entire contents of the reconstituted vial, administered subcutaneously. For all other authorized preparations of varicella and herpes zoster vaccines, dosage is 0.5mL. VAR should be administered subcutaneously. RZV should be administered intramuscularly (IM). MMRV vaccines may be administered either intramuscularly (IM) or subcutaneously (SC).

Who should receive the varicella/shingles vaccines?

Table 2: Specific Groups

Healthy children

(12 months to 18 years of age)

- Routine immunization with **VAR** or **MMRV** is recommended
- Provincial and territorial schedules consist of 2 doses, with the first administered at 12 to 15 months of age, and the second administered at 18 months of age or any time thereafter, though no later than the age at which children begin schooling
- Children with a history of varicella disease occurring before 12 months of age should still receive routine immunization, as such disease is associated with an increased risk of a second episode of varicella
- [See Table 3 for schedule.](#)

Healthy adults

(less than 50 years of age)

- Healthy adults who have not received a varicella-containing vaccine, and who do not have laboratory confirmation of immunity, should receive two doses of **VAR**
- [See Table 4 for schedule.](#)

Older adults

(50+ years of age)

- All adults aged 50 years or older should receive a 2-dose series of **RZV**, regardless of any known previous immunization or exposure to varicella zoster virus
- **LZV** may be recommended instead for immunocompetent individuals in situations where **RZV** is contraindicated, unavailable, or inaccessible
- [See Table 5 for schedule.](#)

Persons significantly exposed to varicella zoster virus

- **VAR** is the post-exposure management of choice for susceptible, healthy, non-pregnant persons, showing roughly 90% effectiveness if given within 5 days of exposure
- **Varlg** may be recommended instead for those at risk of severe varicella (see below) or those for whom **VAR** is contraindicated
- [See page 6 for details.](#)

Red boxes: information on varicella vaccines only (VAR and MMRV)

Yellow box: information on shingles vaccines only (RZV and LZV)

A Note on Interchangeability

Vaccines should never be considered interchangeable between classes. For two-dose schedules of VAR or MMRV, it is recommended that the same formulation from the same manufacturer be used for both doses. If it is not possible to use the same vaccine for the second dose as for the first, administering the second dose with a different formulation from another manufacturer is preferable to discontinuing the schedule.

Individuals at Risk for Severe Varicella

- Newborn infants of mothers or birth-givers who develop varicella from 5 days before until 48 hours after delivery
- Infants born at less than 28 weeks' gestation
- Susceptible pregnant people
- Susceptible immunocompromised individuals
- Recipients of hematopoietic stem cell transplantation

Who should not receive the varicella/shingles vaccines?

Contraindications for both varicella (VAR and MMRV) and shingles (LZV and RZV) vaccines

These vaccines have a well-established history of safety, but there are some contraindications and situations which warrant extra precautions.

- Individuals who have previously experienced an anaphylactic reaction to the vaccine—or who have a proven history of immediate or anaphylactic hypersensitivity to any vaccine component (with the exception of egg allergy for the **MMRV** vaccine)—should not be given the vaccine.
- Immunization should be postponed by at least 4 weeks for individuals with moderate or severe acute illness (by 6 weeks following measles infection). In the case of minor illness, with or without fever, immunization may proceed normally.

Contraindications for both varicella (VAR and MMRV) and LZV vaccines

- Pregnant individuals should not receive varicella-containing vaccines (including **LZV**).
- Varicella-containing vaccines (including **LZV**) are also contraindicated in individuals with active, untreated tuberculosis.



Contraindications for varicella vaccines only (VAR and MMRV)

- Do not give **VAR** if the individual is receiving antiviral therapy such as acyclovir, valacyclovir or famciclovir, as these drugs will inactivate the live-attenuated vaccine and reduce its efficacy.
- Children with a known or suspected family history of congenital or hereditary immunodeficiency contraindicating vaccination with live vaccines should not receive **VAR** or **MMRV** vaccines until their immune competence has been established.
- **MMRV** vaccine is contraindicated in persons with impaired immune function.



Contraindications for LZV vaccines only

- **LZV** is further contraindicated in individuals with primary and acquired immunocompromised states, as well as individuals currently or recently using immune-suppressive medication.
- Caution should be taken when **LZV** is administered to breastfeeding individuals.

What about side effects and adverse reactions?

Severe adverse effects are rare following immunization and, in most cases, data does not suggest a causal relationship. Some short-term mild to moderate reactions are more commonly seen.

Varicella (Chickenpox) Vaccines

- Soreness, swelling, or redness may occur at the injection site.
- Low-grade fever may occur somewhat commonly with VAR or MMRV. Fevers greater than 39°C are reported uncommonly with MMRV.
- Varicella-like rashes may occur at the injection site. Rashes that occur within the first 2 weeks after immunization should be investigated to determine whether they are caused by the vaccine-derived strain or by wild-type virus circulating in the community.
- Shingles (herpes zoster) has been reported after varicella immunization. However, previously-immunized children under 10 who contracted varicella were much less likely to develop shingles than children who contracted (wild-type) varicella but who had not been immunized against it.
 - Any children who did develop shingles had cases that were much less severe than children who had a history of wild type VZV infection.
- There have been a very few documented cases of vaccine-strain transmission from vaccine recipients to other individuals.

Herpes Zoster (Shingles) Vaccines

- Injection site reactions are very common with both LZV and RZV. The majority of these reactions are minor and last only a couple of days.
- Fatigue and muscle pain are also commonly reported with both classes of vaccine, but particularly with RZV. These reactions commonly only last 2 to 3 days.



Varicella Zoster Immunoglobulin

- Reactions to VarIlg are rare, with pain at the injection site, headache, and rash being the most commonly reported.

What specific populations require special attention?

Persons with Inadequate Immunization Records

Children and adults with incomplete immunization records, or no immunization records, should be considered unimmunized and should be administered varicella or herpes zoster vaccines on a schedule appropriate to their age and risk factors, regardless of possible previous immunization.

Immunocompromised Persons

Individuals who are immunocompromised are at greater risk of most infections, including varicella, and are more likely to experience severe disease as a result. In general, live vaccines are contraindicated in immunocompromised individuals due to the risk of vaccine-strain disease. Before administering a live vaccine, the individual's attending physician—and/or a physician with expertise in immunization or immunodeficiency—should be consulted.



Individuals Who Are Pregnant, May Become Pregnant, or Are Living in a Household Expecting a Newborn

Varicella zoster virus can be particularly dangerous during pregnancy, potentially leading to congenital varicella syndrome, with effects on the child including low birth weight, eyesight damage, limb atrophy, and cerebral atrophy. Infection occurring around the time of birth is further associated with severe neonatal varicella, with a high case fatality rate for newborns.

Immunization with VAR should be a priority in persons considering becoming pregnant. People who can give birth should delay becoming pregnant for at least 4 weeks following immunization. Susceptible individuals in a household expecting a newborn should also be immunized, including those currently breastfeeding.

Pregnant individuals who are exposed to varicella zoster virus should be evaluated for immunity. In the absence of a record of immunization, a record of varicella infection, or a serologic result within 96 hours confirming immunity, Var1g should be administered in cases of significant exposure (see below).

Who should receive Var1g in cases of exposure?

There are very strict criteria to receive Var1g. Those who have had a significant exposure (for example, people who live with, or who have had close and prolonged contact with, individuals with varicella or herpes zoster) may be advised to receive Var1g if **all** of the following criteria are met:

- They are susceptible to varicella (neither immunized nor previously infected)
- They are at increased risk of severe varicella (see page 3)
- Post-exposure immunization with VAR is contraindicated (as it is for immunocompromised or pregnant persons)

Immunization schedules

Table 3: Recommended Routine Varicella Immunization for Healthy Children Aged 12 Months to 18 Years (including those with a history of varicella disease before 12 months of age)

At 12 to 15 months of age	One dose of either VAR or MMRV, depending on provincial or territorial schedule
At 18 months of age	One dose of either VAR or MMRV, depending on provincial or territorial schedule

Table 4: Recommended Varicella Immunization for Susceptible Healthy Adults under the Age of 50

At time of presentation	One dose of VAR
At least 4 weeks after first dose	One additional dose of VAR

Notes on Tables 3 and 4

- In all cases, the number of doses of either VAR or MMRV should be 2 in total.
- Adults who have previously been infected with chickenpox or other varicella zoster virus disease are not considered susceptible and do not need to be immunized with VAR.

Table 5: Recommended Varicella Immunization for Susceptible Healthy Adults over the Age of 50

At first presentation after turning 50	One dose of RZV or LZV (preferentially RZV, unless contraindicated)
2 to 6 months after first dose	One dose of RZV or LZV (same formulation as first dose, unless contraindications have changed)

Notes on Table 5

The second dose may be given 12 months after the first dose, if doing so improves patient adherence. Strategies such as education and reminders should be considered to promote adherence. Efficacy and duration of protection are unclear after only one dose.