



Varicella (VZV) Vaccination Before Pregnancy International & National Recommendations

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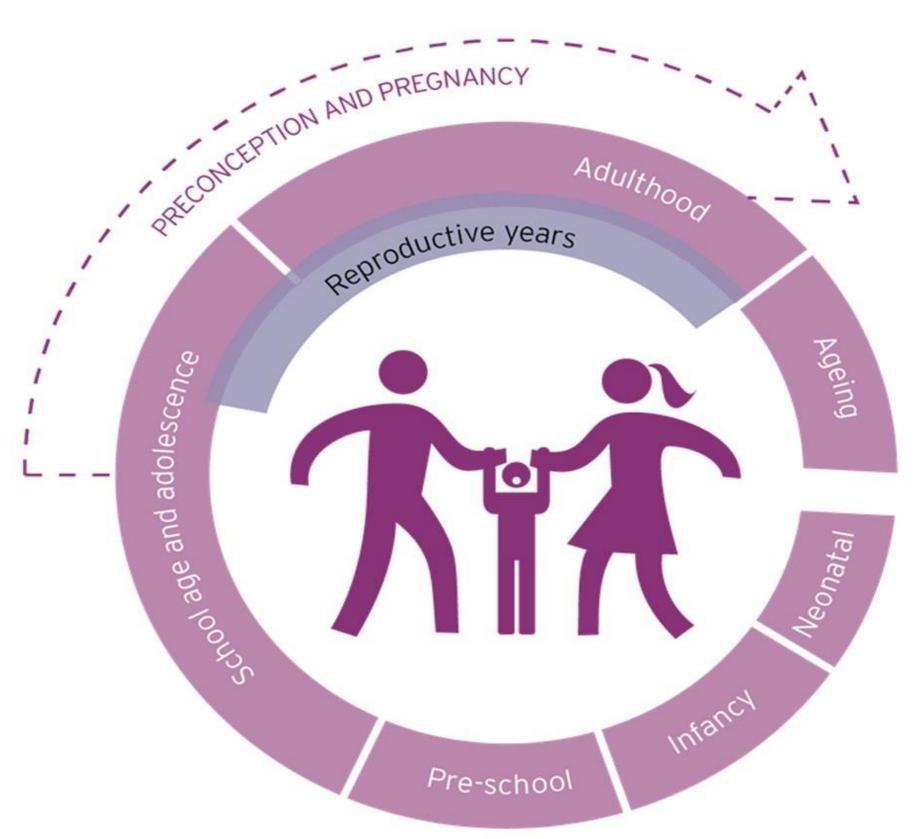
Key points:

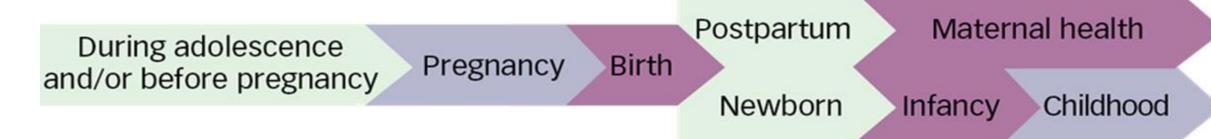
- Maternal health is vital: It impacts a woman's well-being during pregnancy, childbirth, and postpartum, health of her child and future generations.
- Maternal health is a priority for global organizations like the WHO and the United Nations (UN).¹ (Also in IRAN)
- Pre-pregnancy counseling leads to better pregnancy outcomes.
- **Pre-pregnancy (or preconception) counseling** is a proactive healthcare process for individuals **planning a pregnancy**, involving risk assessment, health education, and **interventions to optimize health before conception**, ultimately aiming to **reduce complications** and promote a healthy pregnancy **for both parent and child.**





Pre-conception care completes the coverage across the life course









- ACOG 2019: 1
- Key points:
- The **goal** of pre-pregnancy care is to **reduce** the **risk of adverse health effects for the woman, fetus, and neonate**:

 To optimize health, address **modifiable risk factors**.
- Women of reproductive age should have their immunization status assessed annually for tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap); measles—mumps—rubella; hepatitis B; and varicella.



Preconception Care (2013)



Major risk factors affecting maternal and child health outcomes 1

Nutritional conditions	Genetic conditions	Infertility/ subfertility	Too early, unwanted and rapid successive Vaccine pregnancies	Human immunodeficiency virus (HIV)	Mental health
Vaccine preventable diseases	Environmental Health	Female genital mutilation	Sexually transmitted infections	Interpersonal violence	Psychoactive substance use Tobacco use



Key points:

- Studies show that while pre-pregnancy care has higher upfront costs, the overall reduction in adverse maternal and neonatal outcomes results in net savings for healthcare systems.
- Pre-pregnancy counseling leads to better pregnancy outcomes by managing chronic conditions, providing necessary vaccinations and screenings, and promoting healthy lifestyles, and it can also be costeffective by reducing complications and the need for more expensive acute care during and after pregnancy.

It's time to raise the standard.







Preconception Counseling

HOW IMPORTANT IS IT FOR A COUPLE?

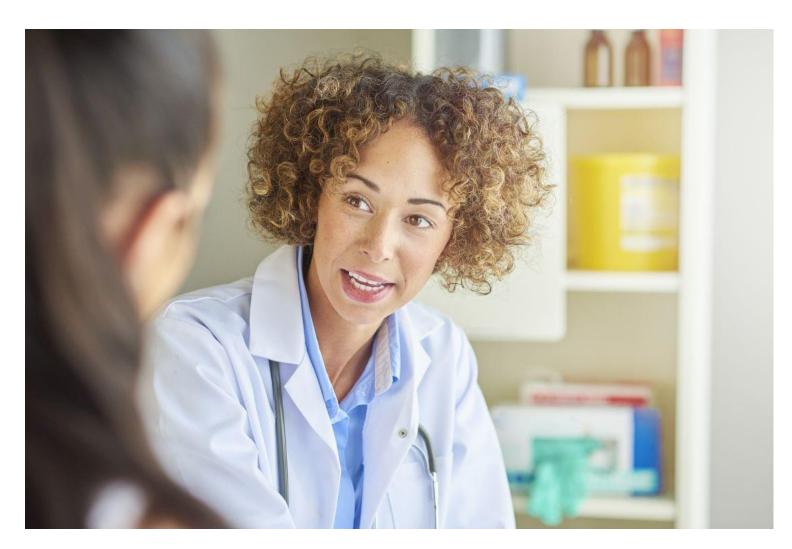


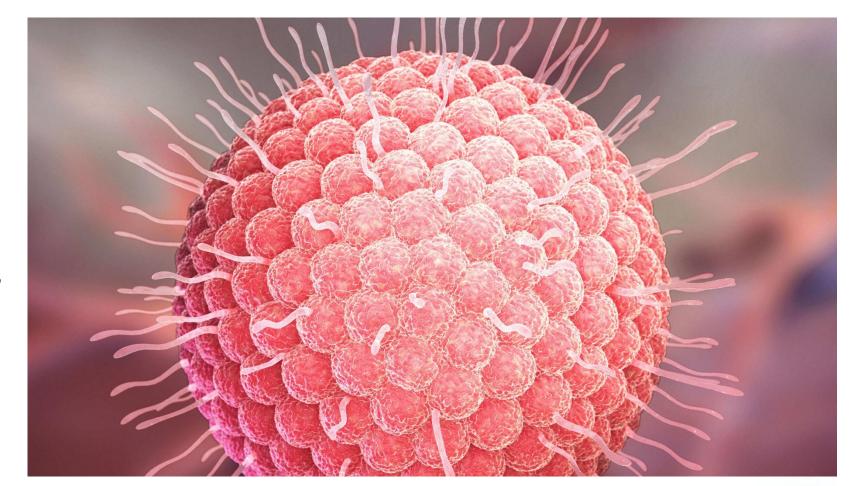


Share vaccination records with healthcare provider.

Key points (ACOG) 1:

Women who are planning pregnancy, pregnant or breastfeeding are therefore recommended to have their vaccination needs assessed e.g., as part of their pre-conception screen.









1: https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/01/prepregnancy-counseling

NEEDS ASSESSMENT:

Varicella (VZV) Vaccination Before Pregnancy:



- Key points:
- The VZV, an α-herpes virus, is an exclusively human pathogen.
- Varicella occurs worldwide, and, in the absence of a varicella vaccination program, most people become infected by mid-adulthood.
- Varicella infection usually confers immunity for life.
- Varicella-zoster virus (VZV) is a **highly contagious herpes virus**.
- Risk of varicella infection severity increases with age, is often more severe in adults.
- · Adults, and in particular pregnant women, are at increased risk of severe disease.
- Adults and infants less than one year of age were overrepresented among those who developed complicated
 disease with high rates of mortality.
- The incidence of varicella has been estimated to be 0.1–0.7/1,000 pregnancies (in countries with high population immunity). (Low but not zero).





Key points:

- Varicella vaccine is contraindicated during pregnancy.
- Varivax (the varicella vaccine for chickenpox) is a live attenuated vaccine.
- ACOG 1:
- Vaccinations for rubella and varicella should be given at least 28 days before pregnancy, or in the postpartum period if not previously given.
- Because two doses of the varicella vaccine are recommended, and the CDC recommends that women not become pregnant for 1 month after being vaccinated, a woman who desires pregnancy should begin vaccination 2 months before attempting pregnancy.



NEEDS ASSESSMENT:



- Key points 1:
- While the overall incidence is low, If acquired during pregnancy, may be responsible for serious complications for the mother, the fetus, or the newborn.
- Potential Complications
- Maternal complications:



- Susceptible pregnant women are at increased risk of severe varicella.
- Pregnant women with varicella have a higher risk of severe complications, such as pneumonitis and in some cases, may die as a result of varicella.
- Some studies have suggested that both the frequency and severity of VZV pneumonia are higher when varicella is acquired during the third trimester.



NEEDS ASSESSMENT



- Key points 1:
- Fetal complications:
- Congenital Varicella:
- Infection during the **first half of pregnancy** can lead to **congenital varicella syndrome**, characterized by **birth defects** like:
- Low birth weight,
- Skin scarring,
- Limb abnormalities,
- Ocular abnormalities,
- And neurological issues: cortical atrophy, psychomotor delay.
- Maternal varicella in the initial 20 weeks (In the first or early second trimester):
- 2% incidence of congenital varicella syndrome (a small risk of 0.4 to 2.0%). 1
- Isolated cases of congenital varicella syndrome have been described when mothers were infected up to 28 weeks of gestation.



NEEDS ASSESSMENT:



- Key points 1:
- Neonatal Varicella:
- Is most often acquired from maternal infections occurring during the last 3 weeks of pregnancy.
- The risk of severe neonatal varicella is highest when the mother develops the infection just before or after delivery (from 5 days before to 2 days after), with a significant percentage of these newborns develop severe disease.
- Children whose mothers contracted varicella during gestation have a higher risk of developing HZ in the first years of life. (may get zoster early in life without ever experiencing extrauterine varicella).
- Severe neonatal varicella, is characterized by the absence of maternal antibody protection.







Figure 2: Microphthalmia



NEEDS ASSESSMENT:





- Effective prophylaxis (i.e., primary prevention) of chickenpox and associated fetal infection in pregnant women is possible only by active immunization of seronegative women before pregnancy.
- Varicella vaccination prior to pregnancy
- The negative effects of varicella infection on maternal, fetal and neonatal morbidity and mortality are preventable with varicella immunization prior to onset of pregnancy.

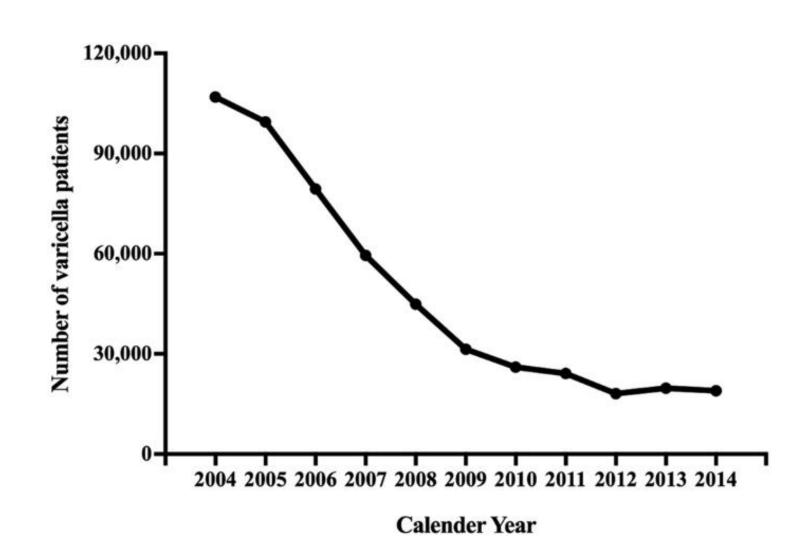




UpToDate®



- Key points 1:
- Epidemiology prior to vaccination
- Prior to the introduction of the <u>varicella vaccine in 1995</u>, the CDC estimated the **yearly incidence** of varicella (chickenpox) in the United States at approximately **four million case**s with nearly 11,000 admissions and 100 deaths.
- Epidemiology after vaccination:
- One decade after the introduction of the varicella vaccine:
- The overall incidence of varicella in active surveillance sites declined by 90 percent.
- The rate of complications from varicella infection declined dramatically; most complications were skin and soft tissue infections and Pneumonitis.



UpToDate®

- Key points:
- Benefits of immunization
- Routine immunization with two doses of varicella vaccine is:
- At least 80-90 percent effective in preventing primary varicella infection
- And 99- 100 percent effective in preventing severe varicella disease. 1.









• Seroprevalence of varicellazoster virus among pregnant women in IRAN



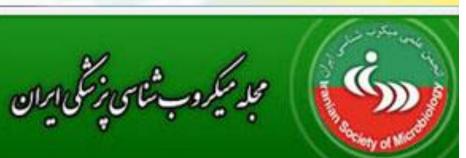
Mahshid Talebi-Taher, Maryam Kashanian, Katayoon Khalili. Seroprevalence of varicella-zoster virus among pregnant women in two teaching hospitals, <u>Tehran</u>, Iran. Iranian Journal of Microbiology,. Vol. 6, No. 1 (2014), 37-40



- Methods:
- Serologic testing for VZV was performed for 400 pregnant women attending prenatal care at clinics located in two teaching and referral hospitals in Tehran, Iran. The Enzyme Immunoassay method was used to assess IgG antibodies against VZV.
- Results:
- 361 (90.3%) were found to be seropositive.
- Conclusion:
- In conclusion, chickenpox is **no longer a childhood infection** and VZV continues to **circulate among pregnant women**.
- Serologic screening for VZV in pregnant women seems crucial.
- We suggest considering the pregnant women as the **target group for future immunization programs in Iran.**







Parviz Majidy1, Mazaher Khodabandehloo2*, Nammam-Ali Azadi3
Seroprevalence of Varicella zoster virus antibody among young women before marriage in <u>Sanandaj</u>, Iran. IRAN. J. MICROBIOL. Volume 8 Number 2 (<u>2016</u>)
147-152



- Materials and Methods:
- Cross-sectional study,
- **250** women attending health centers in Sanandaj, Iran, for **pre-marital medical check-up** were randomly selected. The **VZV IgG measured** by ELISA .
- Results:
- Out of 250 participants, 71.2% diagnosed as antibody positive and 28.8% negative.
- Conclusion:
- A notable percentage of women were found to be susceptible to VZV, hence they are at risk of getting infected during pregnancy which in turn may result in fetus abnormalities.
- Screening the immunity and further studies on the need of vaccination before marriage are recommended.

Iranian Journal of Virology

Iranian Society for Virology

Moghimi M, Javaheri A, Doosti M, Lalehzari M. Prevalence of Varicella-Zoster IgG Antibodies Among Pregnant Women Living in <u>Yazd</u>, Iran. Iranian Journal of Virology <u>2020</u>;14(2): 1-5



• Results:

- The prevalence of **VZV antibodies among pregnant women** in age groups of 14–23, 24–33, 34–44 years was **96.8%, 93.3%, and 95%,** respectively.
- Conclusion:
- The prevalence of varicella-zoster IgG antibodies among pregnant women living in Yazd was higher than in other regions of Iran.
- Performing the routine vaccination against VZV is suggested to protect mother and fetus from possible complications caused by the virus.



SYSTEMATIC REVIEW

Morteza Pourahmad et al. Varicella-zoster virus seroprevalence among <u>reproductive-age women</u> in Iran: <u>a meta-analysis and implications for targeted immunization</u>. BMC Infect Dis . 2025 Aug 18;25(1):1029.



Results:

- Data from 20 studies, including 5,629 participants, were analyzed.
- <u>A pooled VZV seroprevalence of 81%</u> was found, indicating that approximately <u>19% of reproductive-age women in Iran remain susceptible.</u>

Conclusions:

- Nearly one in five reproductive-age women in Iran lack immunity to VZV.
- Targeted vaccination, especially among non-pregnant women and students, may reduce susceptibility.
- Preconception screening for VZV immunity could help prevent maternal and fetal complications.

- ❖ Varicella (VZV) Vaccination Before Pregnancy
- **❖** International & National Recommendations









Varicella and herpes zoster vaccines: WHO position paper, June 2014 ¹











✓ WHO recommends that women of childbearing age who are not immune to varicella (chickenpox) receive the varicella vaccine before pregnancy.

✓ Efforts should be made to counsel and vaccinate susceptible women post-partum in order to prevent infections during subsequent pregnancies.





- **✓** Why this recommendation is important:
- ✓ Risk to the fetus:
- ✓ Varicella infection during pregnancy, especially in **the first 20 weeks**, can lead to **congenital varicella syndrome**, a **rare** but **serious** condition with **potential birth defects**.
- ✓ Risk to the mother:
- ✓ Varicella can cause **severe illness in pregnant women**, including **pneumonia** and other complications.
- √ Vaccination during pregnancy:
- ✓ The varicella vaccine is a live-attenuated vaccine and is generally not recommended during pregnancy according to the CDC.
- ✓ Specifically, women **should avoid pregnancy** for **at least one month** after **receiving the varicella vaccine**.



- ✓ Preconception counseling:
- ✓ It's crucial for women to discuss their varicella immunity status with their healthcare provider during preconception counseling and to get vaccinated if they are not immune.



- **✓** *Postpartum vaccination:*
- ✓ If a woman is found to be **non-immune during pregnancy**, she can be **vaccinated postpartum**.



- Varicella vaccine is contraindicated during pregnancy and pregnancy should be delayed for 4 weeks after vaccination.
- However **limited data** from infants born to women who had been **inadvertently vaccinated** during pregnancy **have not revealed any cases of congenital varicella syndrome**.
- Termination of pregnancy is not indicated if vaccination was carried out inadvertently during pregnancy.
- Routine **laboratory documentation of pregnancy** status **prior to vaccination** is **not recommended**.
- In countries where varicella vaccination has been included in the routine program, efforts should be made to counsel and vaccinate women without evidence of immunity, either prior to pregnancy or postpartum.





UK Health Security Agency (UKHSA)

Chickenpox in Pregnancy RCOG Green-top Guideline no. 13 January 2015 (minor update 2024)

- Varicella vaccination pre-pregnancy or postpartum is <u>an option</u> that should be considered for women who are found to be seronegative for varicella-zoster virus immunoglobulin G (VZV IgG).
- While universal serological antenatal testing is **not recommended in the UK**, **seronegative women identified in pregnancy** could be **offered postpartum immunization**.
- Women who are **vaccinated postpartum** can be reassured that it is **safe to breastfeed**.
- Women booking for antenatal care should be asked about previous chickenpox/shingles infection or varicella vaccination. [Updated 2024]
- Women who have **not had chickenpox**, or are known to be **seronegative for chickenpox**, **should be advised to avoid contact with chickenpox** and **shingles** during pregnancy and to inform healthcare workers of a potential exposure without delay.





Royal College of Physicians of Ireland, Immunisation Guidelines for Ireland 1

Publication Date: October 2023 Date for Revision: October 2026

- Antenatal Care and varicella prevention
- 1. We **suggest** that women **planning to conceive** and/or engaging with **fertility services**, **should have** their **varicella status** assessed as **part of pre-conception counselling** either by **history** or **laboratory testing**. Best practice
- 2. We **strongly recommend** that women should have **their immunity** to varicella **discussed** and **documented** at their booking visit. Their **immunity** can be **confirmed** by either <u>reliable history</u> of varicella, <u>two varicella</u> <u>vaccines</u> or by a <u>laboratory test</u> (varicella IgG) following exposure. Best practice
- 3. We recommend that if there is any uncertainty around the history of varicella or shingles infection, that immunity should be confirmed by laboratory testing. Best practice
- 4. We strongly recommend that women who are non-immune to varicella should be offered varicella vaccine in the postnatal period .Grade 1B
- 5. We strongly recommend that varicella vaccination should not be given during pregnancy. Grade 1B
- 6. We strongly recommend that pregnant women, who have no known immunity to varicella, should avoid children who are ill with varicella where possible. Best practice





- Single antigen varicella vaccine (Varivax).
- The Food and Drug Administration (FDA) approved this vaccine in 1995 for use in people 1 year of age and older. 1



Varicella Vaccination for Specific Groups

Clinical Guidance for People at Risk for Severe Varicella Health Care Providers, APRIL 24, 2024 ¹

- Postpartum patients should get 2 doses of varicella vaccine after their pregnancy.
- Postpartum & nursing mothers
- A woman who is or may be **pregnant** should **not receive varicella vaccination**.
- Postpartum mothers should get 2 doses of varicella vaccine after their pregnancy:
- • The **1st dose should be given after delivery** and **before they are discharged** from the medical facility.
- A **2nd dose should be given at 4 to 8 weeks after the first dose**. This dose can be given during the postpartum visit (6 to 8 weeks after delivery).
- There is **no need to delay postpartum vaccination** because of **breastfeeding**.
- People who get varicella vaccine may continue to breastfeed.



Current recommendations for vaccines for patients planning pregnancy: a committee opinion (2024)¹

Practice Committee of the American Society for Reproductive Medicine

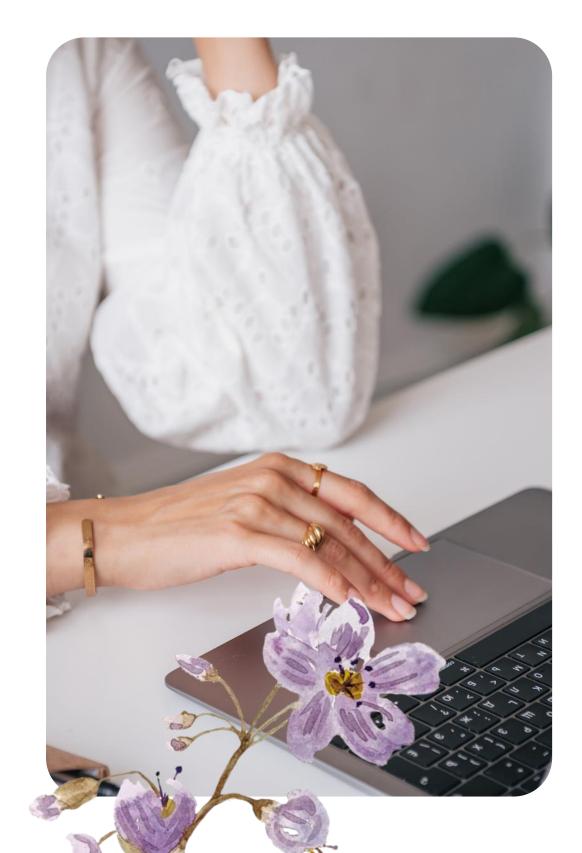


Varicella

- Before pregnancy, all adults should be asked about previous varicella infection or vaccination.
- Those without evidence of immunity or previous infection should receive 2 doses of single-antigen varicella vaccine administered 1 month apart or a second dose if they have previously received only 1 dose.
- Pregnancy should be avoided for 1 month after vaccination.
- If exposed to varicella before pregnancy, the vaccine should be administered within 96 hours of exposure, and pregnancy should be avoided.



- Pregnant individuals should be assessed for evidence of varicella immunity.
- Pregnant individuals who do not show signs of immunity should receive the first dose of the varicella vaccine on completion or termination of pregnancy and before discharge from the hospital.









Canada

Varicella (chickenpox) vaccines: Canadian Immunization Guide

Last partial content update: April 2025 1





- ☐ Risk factors
- > Persons at increased risk of severe varicella
- The following groups of individuals are considered to be at increased risk of severe varicella:
- Newborn infants of mothers who develop varicella from 5 days before until 48 hours after delivery
- **Neonates** in intensive care settings **born at less than 28 weeks of gestation** or weighing 1,000 g or less at birth, regardless of their mothers' evidence of immunity
- Susceptible pregnant women.
- Susceptible immunocompromised persons, including HIV-infected persons with CD







Varicella (chickenpox) vaccines: Canadian Immunization Guide Last partial content update: April 2025 1





- Univalent varicella vaccine is recommended for susceptible adolescents (13 to less than 18 years of age) and susceptible adults (18 to less than 50 years of age).
- Varicella immunization should be prioritized for the following susceptible individuals:



Non-pregnant women of childbearing age



- Household contacts of immunocompromised individuals,
- Members of a household expecting a newborn, o Health care workers,
- Adults who may be exposed occupationally to varicella (for example, people who work with young children),
- Immigrants and refugees from tropical regions,
- People with cystic fibrosis, o Susceptible adults exposed to a People receiving chronic salicylate therapy (for example, acetylsalicylic acid [ASA]), o case of varicella



Gouvernement du Canada



Varicella (chickenpox) vaccines: Canadian Immunization Guide Last partial content update: April 2025 ¹

- Susceptible women of childbearing age are considered to be a priority for varicella immunization because varicella-containing vaccine should not be given during pregnancy.
- Adults less than 50 years of age who have received only 1 dose of varicella vaccine should be
 offered a second dose.
- Susceptibility and immunity
- Individuals who have ANY of the following are considered immune to varicella:
- • **Documented evidence of immunization** with **2 doses** of a varicella-containing vaccine
- Laboratory evidence of immunity



Gouvernement du Canada



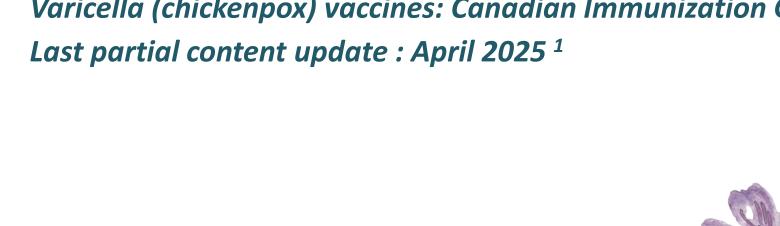
Varicella (chickenpox) vaccines: Canadian Immunization Guide Last partial content update: April 2025 ¹

- A self-reported history or diagnosis of varicella or HZ by a health care provider is not considered an acceptable evidence of immunity for:
- **Healthy pregnant women with significant exposure to VZV** (refer to significant exposures to VZV)
- immunocompromised individuals
- HCW who are newly hired into the Canadian health care system



 Booster doses beyond the 2 recommended doses of varicella-containing vaccines are not necessary.





How

- Routine childhood immunization: 2 doses of any varicella-containing (univalent varicella or MMRV) vaccine. The first dose of varicella-containing vaccine should be administered at 12 to 15 months of age and the second dose at 18 months of age or any time thereafter, but no later than around school entry
- Children aged 12 months to less than 13 years of age not immunized on the routine **schedule**: 2 doses of any varicella-containing vaccine



- Adolescents (13 to less than 18 years of age) and adults (18 to less than 50 years of age) susceptible to varicella: 2 doses of univalent varicella vaccine
- The minimum interval between doses is 4 weeks.



Gouvernement







- Pregnancy and breastfeeding
- Immunity to varicella should be reviewed in women of reproductive age and vaccination should be recommended to susceptible non-pregnant women.
- **Pregnant** women who are **not immune** to varicella should have vaccination **offered post-partum**.
- Univalent varicella vaccine should be provided after delivery,
- Susceptible individuals, including women who are breastfeeding, living in households expecting a newborn, should be vaccinated with a varicella-containing vaccine.



Gouvernement du Canada

Varicella (chickenpox) vaccines: Canadian Immunization Guide Last partial content update: April 2025 ¹





- **Pre-immunization**
- Serologic testing is not recommended for healthy individuals.
- All healthy individuals who may be susceptible to varicella should be offered immunization with 2 doses of **univalent varicella vaccine**.
- Post-immunization
- Serologic testing is not recommended for healthy individuals.
- Certain immunocompromised individuals who are vaccinated with univalent varicella vaccine may have antibody testing performed 6 to 8 weeks after the last dose.

1: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-24-varicella-chickenpox-vaccine.html









Vaccination for women who are planning pregnancy, pregnant or breastfeeding ¹

This page was updated on **31 July 2025**.

• Women who are planning pregnancy, pregnant or breastfeeding are therefore recommended to have their vaccination needs assessed e.g., as part of their pre-conception screen.









Vaccination for women who are planning pregnancy, pregnant or breastfeeding ¹

This page was updated on **31 July 2025**.

- Women planning pregnancy¹
- In particular, consider vaccines for:
- Hepatitis B
- Measles
- Mumps
- Rubella
- Varicella
- COVID-19









Vaccination for women who are planning pregnancy, pregnant or breastfeeding ¹

This page was updated on 31 July 2025.

- Inadvertently giving a live attenuated viral vaccine during pregnancy or shortly before pregnancy ¹
- The risk of adverse effects on the fetus is a theoretical one.
- The woman does not need to consider terminating the pregnancy and should be provided reassurance.





Summary (1) (2) (3)

Short summary:

- **Check immunity in all reproductive-age women** (history of chickenpox, documented vaccination, or VZV IgG).
- Offer vaccine to VZV-seronegative women before pregnancy (or in the immediate postpartum period if not done preconception). ACOG, CDC
- Live varicella vaccine must NOT be given during pregnancy. If inadvertent vaccination occurs in pregnancy, termination is not routinely recommended on that basis alone counsel regarding theoretical risks and report as appropriate. CDC
- Avoid pregnancy after vaccination. There is a discrepancy in guidance: many vaccine manufacturers and regulatory documents (FDA, product inserts) advise avoid pregnancy for 3 months after varicella vaccination, whereas ACIP/CDC guidance and authoritative public-health summaries say 1 month (28 days) is sufficient. Clinicians should be aware of both statements and document counselling. U.S. FDA, CDC
- **Postpartum vaccination for seronegative women** is recommended (first dose after delivery, second dose 4–8 weeks later). CDC,RCOG

