



## Vaccine Safety

[Vaccine Safety Home](#)

# Chickenpox (Varicella) Vaccines

Safety Information

### About Chickenpox (Varicella)

**Chickenpox**, or varicella, is a highly contagious disease caused by the varicella-zoster virus (VZV). It causes an itchy, blister-like rash that appears first on the chest, back, and face, and then spreads over the entire body. Other typical symptoms include fever, tiredness, loss of appetite, and headache.

Chickenpox can be serious, especially in babies, adolescents, adults, pregnant women, and people with a weakened immune system. Some people who get chickenpox get a painful rash called [shingles](#) (also known as herpes zoster) later in life.

[Learn more about chickenpox.](#)

There are safe and effective vaccines that can protect against chickenpox.

### Available Vaccines

Vaccine Information Statements

Vaccine Information Statements (VISs) are information sheets produced by CDC that explain both the benefits and risks of a vaccine.

[Chickenpox](#)

Varicella (Chickenpox) vaccine

There are two chickenpox vaccines approved for use in the United States: one single antigen vaccine and one combination vaccine.

Both vaccines contain live attenuated (weakened) varicella-zoster virus. [Learn more about live, attenuated vaccines.](#)


### Who Should Get Chickenpox Vaccine

CDC recommends two doses of chickenpox vaccine for children, adolescents, and adults who have never had chickenpox and were never vaccinated.

Children should receive their first dose of chickenpox vaccine at age 12 to 15 months and a second dose at age 4 to 6 years. The second dose can be given at an earlier age if it is at least 3 months after the first dose.

Talk with your  
healthcare provider  
about vaccines.

They can answer questions and  
offer advice based on your  
specific health needs.



## Child and Adult Immunization Schedules

Get CDC's official recommended immunization schedules for children, adolescents, and adults.

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Single antigen varicella vaccine ▼

[Varivax \(Frozen\) Package Insert \[PDF – 13 pages\]](#) 

[ProQuad \(Frozen Formulation – Human Serum Albumin \[HSA\]\) Package Insert \[PDF – 25 pages\]](#)

# Common Side Effects

Chickenpox vaccine is safe and effective at preventing chickenpox. Vaccines, like any medicine, can have side effects. The most common side effects are usually mild and go away on their own.



**Severe allergic reactions following vaccination are rare, but can be life threatening.**  
Symptoms of a severe allergic reaction can include hives, swelling of the face and throat, difficulty breathing, a fast heartbeat, dizziness, and weakness.

**If such reactions occur, call 9-1-1 and get the person to the nearest hospital.**

## Chickenpox Vaccine

### Common Side Effects

- Sore arm from the shot
- Fever
- Mild rash where shot is given
- Temporary pain and stiffness in the joints

### Who Should Not Get Chickenpox Vaccine

**People should not get the chickenpox vaccine if they:**

- Have had a severe, life-threatening allergic reaction after a previous dose of a chickenpox vaccine, or have any severe life-threatening allergies to a vaccine component, such as gelatin or neomycin
- Have a fever or active infection
- Are pregnant or might be pregnant
- Have a weakened immune system due to medication, history of hereditary or congenital immune system problems, or cancers, such as leukemia or lymphoma
- Have untreated active tuberculosis (TB)

**People should talk to their healthcare provider about receiving the chickenpox vaccine if they:**

- Are taking salicylates, such as aspirin
- Are taking acyclovir or similar medication
- Have recently had a blood transfusion or received other blood products
- Have a parent or sibling history of hereditary or congenital immune system problems
- Have moderate or severe acute illness with or without fever
- Have gotten any other live vaccines in the past 4 weeks

In some cases, the healthcare provider might decide to postpone chickenpox vaccination to a future visit.

More information about [contraindications and precautions](#).

## More Information

[Chickenpox Vaccination: What Everyone Should Know](#)

What everyone should know about varicella zoster virus (VZV) and the vaccines that can protect against it.

Who Should Not Get Vaccinated

Some people should not get certain vaccines or should wait before getting them. Read the CDC guidelines for each vaccine.

Varicella Vaccine – ACIP Recommendations and Guidance

Official guidance on varicella vaccine from the Advisory Committee on Immunization Practices (ACIP).

For Healthcare Professionals: Varicella Vaccination Information

Varicella vaccine recommendations, administration, storage and handling, and other professional resources.

Report Possible Adverse Events To VAERS

The Vaccine Adverse Event Reporting System (VAERS) is an early warning system, co-managed by CDC and FDA, that monitors for potential vaccine safety problems.

Healthcare providers and vaccine manufacturers are required by law to report certain adverse events following vaccination to VAERS; patients and caregivers can also submit reports.

For more information, see [Report an Adverse Event to VAERS](#).

A Closer Look at the Safety Data

Chickenpox vaccine has been shown to be safe and well tolerated. The findings from many vaccine safety monitoring systems and years of studies have shown that chickenpox vaccines have a favorable safety profile—the body of scientific evidence overwhelmingly supports their safety.

- Serious side effects after the chickenpox vaccine are rare. The few that have been reported after vaccination include:
  - Severe rash
  - Infections of the lungs or liver
  - Meningitis
  - Seizures that are often associated with fever ([febrile seizures](#))
  - General severe infection with the virus strain from the vaccine.

Some children who had these serious side effects after vaccination had weakened immune systems before they were vaccinated, but the condition had not been diagnosed before the child was vaccinated.

- Before FDA licensed the vaccine, studies were done to determine the safety of 2 doses of the vaccine. In children 12 months through 12 years old:
  - 1 of 5 children had side effects, such as soreness, swelling, and redness, within 3 days of getting the first dose, compared with 1 of 4 children after the second dose.
  - 7 of 100 children had fever after the first dose, compared with 4 of 100 children after the second dose.
  - 3 of 100 children had chickenpox-like rash after the first dose, compared with 1 of 100 children after the second dose.
- In August 2019, Merck published a 22-year review of the varicella vaccine. The review included data collected from study reports submitted from March 17, 1995, through March 16, 2017, during which over 212 million doses were distributed globally. Researchers found a decrease of reported adverse events over time (around 500 per one million doses in 1995 and around 40 per one million doses in 2016) and serious adverse events comprised 0.8 reports per one

million doses. The profiles of serious and non-serious adverse events were consistent with previously published reports, and identified no new or unusual safety concerns.

**Source:** [Varicella Virus Vaccine Live: A 22-Year Review of Postmarketing Safety Data. \[Open Forum Infect Dis. 2019\]](#) [↗](#)

- An analysis of reports during 2006-2014 after second-dose chickenpox vaccination data using the Vaccine Adverse Event Reporting System (VAERS) did not identify new or unexpected safety concerns for second dose of chickenpox vaccination.

**Source:** [Safety of Second-Dose Single-Antigen Varicella Vaccine. \[Pediatrics. 2017\]](#) [↗](#)

- Although pregnant women should not get the chickenpox vaccine, some might get the vaccine by mistake. A pregnancy registry to monitor the fetal and pregnancy outcomes of women who inadvertently received chickenpox vaccine 3 months before or at any time during pregnancy found no cases of congenital chickenpox syndrome or increased risk for other birth defects.

**Source:** [Closure of varicella-zoster virus-containing vaccines pregnancy registry – United States, 2013. \[MMWR. 2014\]](#) [↗](#)

- In 2008, a CDC-FDA report analyzed VAERS data from May 1995 through December 2005 of patients who reported side effects after getting chickenpox vaccine. The vaccine manufacturer, Merck, distributed 50 million doses of chickenpox vaccine during this time. The vast majority of reports were non-serious and mild, such as soreness at the injection site and rash. Serious side effects linked to the vaccine were rare.

**Source:** [Safety of varicella vaccine after licensure in the United States: experience from reports to the Vaccine Adverse Event Reporting System, 1995-2005. \[J Infect Dis. 2008\]](#) [↗](#)

- Since the varicella vaccine is a live virus vaccine, the virus can become dormant and reactivate, rarely causing serious side effects. Individual case reports of varicella vaccine virus reactivation leading to vaccine-associated herpes zoster ophthalmicus and encephalitis, and meningitis have been published.

**Sources:**

[A case of Herpes Zoster and Meningitis in a Twice-Vaccinated Healthy adolescent. \[J Pediatr Infect Dis. 2017\]](#) [↗](#)

[Vaccine-associated Herpes Zoster Ophthalmicus and Encephalitis in Immunocompetent Child. \[Pediatrics. 2010\]](#) [↗](#)

[Herpes Zoster and Meningitis resulting from Reactivation of Varicella Vaccine Virus in an Immunocompetent Child. \[Ann Emer Med. 2009\]](#) [↗](#)

- It is rare for vaccinated people to spread varicella vaccine virus, especially if they do not have a rash. Worldwide, since 1995, only 11 healthy vaccinated people have been documented as spreading vaccine virus to 13 unvaccinated persons. All of these vaccinated people had a rash after vaccination.

**Which adverse events are considered “serious?”**

By the [Code of Federal Regulations \(CFR\) Title 21](#) [↗](#), an adverse event is defined as serious if it involves any of the following outcomes:

- Death
- A life-threatening adverse event
- A persistent or significant disability or incapacity
- A congenital anomaly or birth defect
- Hospitalization, or prolongation of existing hospitalization

Learn more [about adverse events](#).

# How CDC Monitors Vaccine Safety

CDC and FDA [monitor the safety of vaccines](#) after they are approved or authorized. If a problem is found with a vaccine, CDC and FDA will inform health officials, health care providers, and the public.

CDC uses 3 systems to monitor vaccine safety:

- The [Vaccine Adverse Event Reporting System \(VAERS\)](#): an early warning system, co-managed by CDC and FDA, to monitor for potential vaccine safety problems. Anyone can report possible vaccine side effects to VAERS.
- The [Vaccine Safety Datalink \(VSD\)](#): a collaboration between CDC and 13 healthcare organizations that conducts vaccine safety monitoring and research.
- The [Clinical Immunization Safety Assessment \(CISA\) Project](#): a partnership between CDC and several medical research centers that provides expert consultation and conducts clinical research on vaccine-associated health risks.

## Related Scientific Articles

### 2015 to Present



Marin M, Leung J, Gershon AA. [Transmission of Vaccine-Strain Varicella-Zoster Virus: A Systematic Review.](#) *Pediatrics*. 2019 Sep; 144(3).

Leung J, Broder KR, Marin M. [Severe Varicella in Persons Vaccinated With Varicella Vaccine \(Breakthrough Varicella\): A Systematic Literature Review.](#) *Expert Rev Vaccines*. 2017 Apr;16(4): 391-400. Epub 2017 Feb 28.

### 2010 – 2014



Marin M, Willis ED, Marko A, Rasmussen SA, Bialek SR, et al. [Closure of varicella-zoster virus-containing vaccines pregnancy registry – United States, 2013](#) *MMWR*. 2014 Aug 22;63(33):732-3.

Leung J, Siegel S, Jones JF, Schulte C, Blog D, Schmid DS, Bialek SR, Marin M. [Fatal Varicella Due to the Vaccine-Strain Varicella-Zoster Virus.](#) *Hum Vaccin Immunother*. 2014;(10(1): 146-149.

Stratton K, Ford A, Rusch E, Clayton EW, Committee to Review Adverse Effects of Vaccines; Institute of Medicine, eds. [Adverse Effects of Vaccines: Evidence of Causality.](#) Washington (DC): National Academis Press (US);2011.

Marin M, Broder KR, Temte JL, Snider DE, Seward JF. [Use of Combination Measles, Mumps, Rubella, and Varicella Vaccine—Recommendations of the Advisory Committee on Immunization Practices.](#) *MMWR*. 2010 May 7; 59(RR03):1-12.

Chouliaras G, Spoulou V, Quinlivan M, Breuer J, Theodoridou M. [Vaccine-associated Herpes Zoster Ophthalmicus \[Correction of Ophthalmicus\] and Encephalitis in an Immunocompetent Child.](#) *Pediatrics*. 2010 April; (124(4); e969-72.

### Prior to 2010



Iyer S, Mittal MK, Hodinka RL. [Herpes Zoster and Meningitis Resulting from Reactivation of Varicella Vaccine Virus in an Immunocompetent Child.](#) [Ann Emerg Med.](#) 2009 Jun; 53(6):792-795.

Klein NP, Yih WK, Marin M, Jumaan AO, Seward JF, et al. [Update: Recommendations from the Advisory Committee on Immunization Practices \(ACIP\) Regarding Administration of Combination MMRV Vaccine.](#) *MMWR*. 2008 March 14;57(10):258-60.

Chaves SS, Haber P, Walton K, Wise RP, Izurieta HS, et al. [Safety of varicella vaccine after licensure in the United States: Experience from reports to the Vaccine Adverse Event Reporting System, 1995-2005](#) [J Infect Dis.](#) 2008 Mar 1;197 Suppl 2:S170-7.

Marin M, Güris D, Chaves SS, Schmid S, Seward JF. [Prevention of Varicella: Recommendations of the Advisory Committee on Immunization Practices \(ACIP\).](#) *MMWR* 2007 Jun 22;56(RR04);1-40.

Wise RP, Salive ME, Braun MM, Mootrey GT, Seward JF, et al. [Postlicensure safety surveillance for varicella vaccine](#) [JAMA.](#) 2000 Sep 13;284(10):1271-9.

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Last Reviewed: September 9, 2020