

Overview of Chickenpox

What is chickenpox?

Chickenpox is a highly contagious (infectious) disease, but a mild, exanthematous disease of children, to non-immune individuals which is caused by the **varicella-zoster virus (chickenpox virus)** and transmitted by droplet infection (so-called **chickenpox airborne** disease). It is clinically characterized by **fever**, mild prodromal symptoms such as anorexia, headache followed by the appearance of rashes called **chickenpox rash**. It is not a fatal disease and worldwide distribution and occurs in both endemic as well as epidemic forms of the disease.

Chickenpox is highly infectious to people who haven't had the disease or been vaccinated against it. In the case of chickenpox, there is no carrier state, no subclinical cases, and no animal reservoir also. The infective materials are respiratory secretions, vesicular fluid, and cutaneous lesions. The incubation period of chickenpox is about 15 days but varies from 1 to 3 weeks. Chickenpox is highly contagious so much so, the secondary attack rate is around 90 percent.

What does chicken pox look like?

The chickenpox rash begins as many small red bumps that **look like** pimples or insect bites. They appear in waves over two to four days, then develop into thin-walled blisters which are filled with fluid. The blister walls break down, leaving open sores, which finally lead to crusting over to become dry, brown scabs.

Mode of transmission: Generally it is transmitted through **droplet and droplet nuclei**. However, transplacental (about 3 percent) transmission and transmission through contaminated fomites is less likely.

Pathology and pathogenesis

How do you get chickenpox?

When a **chickenpox virus invades a cell** in the body through the **respiratory route**, and viruses circulate in the blood, later epidermis is part of the skin area. Due to the fact that its **dermatotropic property**, resulting in ballooning degeneration of the cells and outpouring of fluids (intercellular), forming a vesicle. Then, the polymorphs migrate from the fluid (clear) of the vesicle and become turbid, these lesions are called pustules, which rapidly dry up resulting in scabs and the scabs separate within 8 to 10 days without leaving pockmarks.

Sign & Symptoms

The itchy blister rash appears 10 to 21 days after exposure to the herpes zoster virus and usually lasts about five to 10 days. The **chickenpox early symptoms** are 0–1 day of fever, anorexia, headache. Other common **chickenpox symptoms**, which may appear one to two days before the rash, include:

- Fever
- Loss of appetite
- Headache
- Malaise (Tiredness and a general feeling of being unwell)

It undergoes two stages:

- **Prodromal stage:** mild fever, malaise, and myalgia, lasting for about a few hours to one day. But these features are a little more severe among adults and last about for two to three days.
- **Exanthematous stage:** In this stage appearance of rashes on the next day of fever or even on the day the fever starts.[caption id="attachment_1251" align="aligncenter" width="1200"]

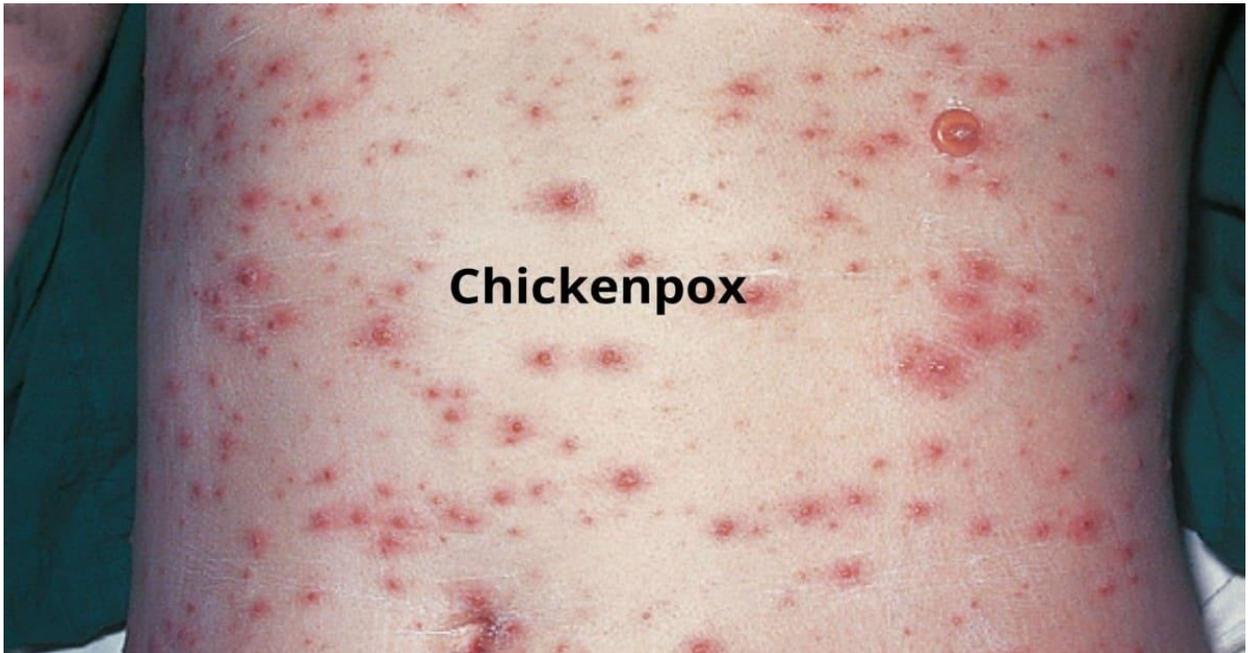


Figure: Chickenpox pictures[/caption]

Once the chickenpox rashes appear, quickly pass through the stages

- **Papules** (Raised pink or red bumps), which break throughout several days

- **Vesicles** (look like water drops, small fluid-filled blisters), which appear daily for 4 to 5 days and then break and leak out the fluid.
- **Crusts and scabs**, which cover the broken blisters and may remain from one to 3 weeks to heal. However, there may be slight discoloration lasting for a few weeks before the skin becomes normal.

Macular rashes quickly pass through all stages of papules, vesicles, and crusting stages within three to four days.

New papules continue to appear for several days, so you may have all three stages of the rashes such as papules, blisters, and scabbed (crusts) lesions at the same time period.

If all stages are present then you can spread the virus to other people within 48 hours before the rash appears, and the virus remains infectious until all broken blisters have crusted over. The disease is normally mild in healthy children. In severe cases, the rash can cover the entire body, and lesions in the throat, eyes, and mucous, anus, membranes of the urethra, and vagina of adults.

Complications of Chickenpox

Chickenpox is a mild self-limiting disease in your body. **Chickenpox complications** occur in 5 percent of cases these are the following,

- Sepsis (due to secondary infection following itching in your body)
- Varicella -pneumonia
- **Chickenpox encephalitis**
- Hemorrhages (varicella-hemorrhagic)
- Dehydration
- Other rare complications are:
 - Reye's syndrome (encephalopathy that is associated with fatty degeneration of the liver).
 - Congenital varicella syndrome.

Risk factors of Chickenpox

- Age incidence: It is common among young children below 10 years of age. However, **Chickenpox in adults** is usually severe.
- Sex incidence: Equal in both the sexes.

- Immunity: one attack confers lifelong immunity but second attacks are rare. Cell-mediated immunity prevents the recurrence and reactivation of the latent infection.
- **Chickenpox in pregnancy:** In the 3 percent cases, **chickenpox contact in pregnancy gets** the infection during the first-trimester stage, the fetus gets the intrauterine infection that leads to severe damage, low birth weight, micro-ophthalmia, chorioretinitis, cataract, etc so-called **congenital varicella syndrome**.
- Environmental factors: more common during the summer season and overcrowding area.
- People who smoke
- People who are taking steroid medications for another disease or condition treatment, such as asthma patients.

Chickenpox and shingles

If you've had chickenpox they are at high risk of a complication called shingles. The varicella-zoster virus remains in nerve cells after the skin infection has healed. Many years later, the virus can reactivate and resurface as shingles which is a painful cluster of short-lived blisters.

The virus has more chance to reappear in older adults and people who have weakened immune systems. The pain of shingles can last long after the blisters get lost. This is called postherpetic neuralgia which is a severe condition.

Your doctors recommended the shingles vaccine (Shingrix) For adults who have had chickenpox. Shingrix vaccine is approved and recommended for people aged 50 and older, including those who've previously received another shingles vaccine-like Zostavax. The Zostavax vaccine, which isn't recommended up to age 60, is no longer sold in the United States. **Chickenpox vaccine in the UK** is also no longer sold.

Chickenpox and eczema:

When you and your children scratch severely that causes scarring and the skin becomes inflamed or irritated this group of conditions called eczema so which leads to slow healing of chickenpox disease.

If you and your child have this type of symptoms present then consult your doctor or consultant and treat the disease.

Chickenpox and measles:

Chickenpox and measles both are a highly contagious disease that is caused by two different viruses. Measles also called rubeola, is caused by the **measles** virus.

Diagnosis of Chickenpox

Your doctors are generally a **chickenpox diagnosis**, diagnosed by the recognition of the rashes. But, this can be confirmed by the detection of antigen or DNA present in your body. There are the following tests such as direct immunofluorescence test (for antigen detection) or PCR test for DNA detection of aspirated vesicular fluid. Chickenpox blood tests or culture of lesion samples are also done for diagnosis.

Prevention of Chickenpox

Prevention is done by active and passive immunization.

Active immunization

A live attenuated, freeze-dried, chickenpox (varicella) -vaccine called VARIVAX. This vaccine is the best way to prevent chickenpox. which has been developed, by using the Oka-strain of the virus in Japan And grown on human diploid cells which have been proved effective and safe for people. According to CDC estimates, the vaccine provided complete protection from the virus for almost 98.1 % of people who receive both recommended doses.

When the vaccine doesn't provide complete protection from the virus, it significantly lessens the severity of chickenpox.

The **chickenpox vaccine** (Varivax) is recommended for:

The dose is 0.5 mL subcutaneously (SC) and is recommended for young children to receive two doses between 12 and 15 months and the second between ages 4 and 6 years as part of the routine childhood vaccination schedule but not used for infants.

The vaccine can be given in combination with the measles, mumps, and rubella vaccine, but for few children between the ages of 12 and 23 months, the

combination may increase a high risk of fever and seizure from the vaccine. Discuss the pros and cons of combining the vaccines with your child's consultant or doctor.

Children ages between 7 to 12 years who haven't been receiving vaccines then your children should receive two catch-up doses of the varicella vaccine, given at least two to three months apart.

Children aged 13 or more who haven't been vaccinated should also receive two catch-up doses of the vaccine, given at least three to four weeks apart.

Adults who haven't been vaccinated and who've never had chickenpox and are at high risk of exposure. This includes health care workers, child care employees, teachers, military people, international travelers people, adults who live with young children, and all childbearing age women.

Adults who've never had chickenpox or who have been vaccinated usually get two doses of vaccine, about four to eight weeks apart. If you don't recall whether you've had chickenpox or the vaccine, a blood test can determine your immunity in the blood.

The **chickenpox vaccine** isn't approved for:

Pregnant women

People who have weakened immune systems, such as those people who are infected with HIV (AIDS) and malignancy or people who are taking immune-suppressing drugs (medications), or People who are allergic to gelatin or the antibiotic like neomycin then talk to your doctor or consultant if you're doubtful about your need for the vaccine. If you're planning on becoming pregnant, consult with your family doctor or consultant to make sure you're up to date on your vaccinations before conceiving a child.

Is it safe and effective?

People typically wonder whether vaccines are safe. Since the **chickenpox vaccine** became available everywhere in hospitals, studies have consistently found it to be safer (efficacy more than 90%) and more effective. The side effects are generally mild and include redness, swelling, soreness, and, rarely, small papules at the site of the shot.

Passive Immunization

This is done by using **varicella-zoster immunoglobulin (VZIG)** and is given for those people, who are at risk such as young people with close contacts. It is

effective only when given within 3 to 4 days after exposure. High-risk contacts are those with impairment of immunity, malignancy, newborn and pregnant mother contacts.

The varicella-zoster immunoglobulin (VZIG) is a hyperimmune serum that is obtained from those people who have recovered from chickenpox or immunized against chickenpox. It is generally given a dose of 20 units per kg body weight.

Treatment of Chickenpox

Generally, **chickenpox treatment** typically has no need for otherwise healthy children. Your doctor or consultant may prescribe an antihistamine drug to relieve itching. But for the most part, the disease is permitted to run its course.

For those people who are at high risk of complications from chickenpox disease, doctors or consultants sometimes prescribe medications (drugs) to shorten the length of the contamination (infection) and to help reduce the risk of complications.

If you or your children are at high risk of complications, your doctor or consultant may suggest antiviral drugs such as acyclovir (Sitavig, Zovirax). These drugs might reduce the severity of chickenpox when given within 24 hours after the rash first appears. Other antiviral drugs, like valacyclovir (Valtrex) and famciclovir, also may reduce the severity of the disease, but might not be approved or appropriate for every person.

In some cases, your doctor or consultant may recommend getting the chickenpox vaccine within 3 to 5 days after you've been exposed to the Varicella zoster virus. This can prevent the disease or reduce its severity.

Generally, a doctor or consultant can be prescribed the drugs, then treatment state (prescriptions) is following;

- Chickenpox in adult or child
 - Oral aciclovir 800 mg 5 times daily for 5 days
 - Famciclovir 500 mg 3 times daily for 5 days
 - Valaciclovir 1 g 3 times daily for 5 days
- Immunocompromised host/pregnant woman
 - Aciclovir 5 mg/kg 3 times daily IV until the patient is improving, then complete therapy with oral therapy method until all lesions crusting over.

Can u get chickenpox twice?

Chickenpox is usually much worse in adult human beings. It's probable to **get chickenpox more than once**, although it's unusual conditions.

Treatment of complications

If you have developed complications, your family doctor will dictate the appropriate treatment. Doctors or consultants may prescribe antibiotics for skin infections and pneumonia. In case of encephalitis, it is usually treated with some antiviral drugs and also may need to be hospitalized.

Lifestyle and home remedies

Lifestyle and home remedies help to reduce the symptoms of uncomplicated conditions of chickenpox, follow this self-care management.

- **Avoid scratching**

Scratching can cause scarring that leads to slow healing, scratching your rash can put you at high risk for a bacterial skin infection. If you or your child can't stop scratching:

- Put gloves on hands, generally at night
- Trim fingernails
- Relieve the itch and other symptoms present.

- A rash can be very itchy in nature, and broken vesicles occasionally sting. These discomforts present along with fever, headache, and fatigue, can make any person miserable. For relief itchy skin:

- Tap or pat itchy area
- Take a cool uncooked or colloidal oatmeal bath (you can buy it at any local drugstore).
- Dab or pat your skin dry.
- Wear loose, cotton clothing
- Dab calamine lotion on your itchy area
- **Chickenpox Antihistamine**, such as diphenhydramine (Benadryl, others) to relieve your symptoms and check with your doctor or consultant to make sure your child can safely take antihistamines drugs.

- **Used Acetaminophen (Tylenol, others) for a mild fever.**

If the fever lasts longer than four to five days and is higher than 102°C, call your family doctor or consultants. And don't give aspirin to children and teenagers who have chickenpox because it can lead to a serious complication called Reye's syndrome.

Consult with your doctor or consultant before giving any type of nonsteroidal anti-inflammatory drug (NSAID) like ibuprofen (Advil, others) to someone who has chickenpox. Some studies suggest NSAID medication may lead to skin infections or tissue damage.

- **Keep Your Body Cool**

Heat and sweat that makes you itch more. Use a cool, wet washcloth on super-itchy areas to calm your body skin area.

- **Stay Hydrated**

Drink lots of water or fluids to help your body rid itself of the virus faster. This helps you from getting dehydrated.