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Shingles (Herpes Zoster)

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Clinical Overview



Herpes zoster, also known as zoster and shingles, is caused by the reactivation of the varicella-zoster virus (VZV), the same virus that causes varicella (chickenpox).

Primary infection with VZV causes varicella. Once the illness resolves, the virus remains dormant (latent) in the dorsal root ganglia. VZV can reactive later in a person's life and cause a painful, maculopapular rash called herpes zoster.

Anyone who has had varicella or gotten varicella vaccine can develop herpes zoster. Most people typically have only one episode of herpes zoster in their lifetime. However, second and even third episodes are possible.

Clinical Features

People with herpes zoster most commonly have a rash in one or two adjacent dermatomes (localized zoster). The rash most commonly appears on the trunk along a thoracic dermatome. The rash does not usually cross the body's midline. However, approximately 20% of people have rash that overlaps adjacent dermatomes. Less commonly, the rash can be more widespread and affect three or more dermatomes. This condition is called disseminated zoster. This generally occurs only in people with compromised or suppressed immune systems. Disseminated zoster can be difficult to distinguish from varicella.

The rash is usually painful, itchy or tingly. These symptoms may precede rash onset by days to weeks. Some people may also have headache, photophobia (sensitivity to bright light), and malaise in the prodromal phase.

The rash develops into clusters of clear vesicles. New vesicles continue to form over three to five days and progressively dry and crust over. They usually heal in two to four weeks. There may be permanent pigmentation changes and scarring on the skin.

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Complications

Postherpetic neuralgia (PHN) is the most common complication of herpes zoster. It is a persistent pain in the area where the rash once was. PHN is diagnosed in people who have pain that persists after their rash has resolved. Some define PHN as any duration of pain after the rash resolves; others define it as duration of pain for more than 30 days, or for more than 90 days after rash onset. PHN can last for weeks or months and occasionally, for many years.

A person's risk of having PHN after herpes zoster increases with age. Older adults are more likely to have PHN and to have longer lasting and more severe pain. Approximately 13% (and possibly more) of people 60 years of age and older with herpes zoster will get PHN. PHN is rare in people younger than 40 years old. Other predictors of PHN include the level of pain a person has when they have the rash and the size of their rash.

Other complications of herpes zoster include—

- ophthalmic involvement with acute or chronic ocular sequelae (herpes zoster ophthalmicus);
- bacterial superinfection of the lesions, usually due to *Staphylococcus aureus* and, less commonly, due to group A beta hemolytic streptococcus;
- cranial and peripheral nerve palsies; and
- visceral involvement, such as meningoencephalitis, pneumonitis, hepatitis, and acute retinal necrosis.

People with compromised or suppressed immune systems are more likely to have complications from herpes zoster. They are more likely to have severe rash that lasts longer. Also, they are at increased risk of developing disseminated herpes zoster.

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Vaccination

The Advisory Committee on Immunization Practices (ACIP) recommends zoster vaccine (Zostavax®) for people aged 60 years and older. Even people who have had herpes zoster should receive the vaccine to help prevent future occurrences of the disease.

Herpes zoster vaccine is approved by FDA for people aged 50 years and older. However, CDC does not recommend routine use of herpes zoster vaccine in people aged 50 through 59 years old. Health care providers considering the herpes zoster vaccine for certain persons aged 50 through 59 years should discuss the risks and benefits of vaccination with their patients. Although the vaccine has short-term efficacy, there have been no long-term studies of vaccine protection in this age group. In adults vaccinated at age 60 years or older, vaccine efficacy wanes within the first 5 years after vaccination, and protection beyond 5 years is uncertain; therefore, adults receiving the vaccine before age 60 years might not be protected when their risks for herpes zoster and its complications are highest.

Transmission

People with active lesions caused by herpes zoster can spread VZV to [susceptible people](#). People who have not had varicella and never received chickenpox vaccine can get infected with VZV from someone with herpes zoster. If this

happens, they are at risk of developing varicella not herpes zoster.

The virus spreads when a person has direct contact with the active herpes zoster lesions. The lesions are infectious until they dry and crust over. People with active herpes zoster lesions should avoid contact with [susceptible people](#) in their household and in occupational settings until their lesions dry and crusted.

Also see [Managing People at High Risk for Severe Varicella](#).

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Epidemiology

Risk Factors

Only people who had natural infection with wild-type VZV or had varicella vaccination can develop herpes zoster.

Children who get the varicella vaccine appear to have a lower risk of herpes zoster compared with people who were infected with wild-type VZV. Many people do not remember having varicella; however, approximately 99.5% of people born in the United States who are 40 years of age and older have been infected with wild-type VZV. As a result, all older adults in the United States are at risk for herpes zoster.

The reasons why VZV reactivates and causes herpes zoster are not well understood. However, a person's risk for herpes zoster may increase as their VZV-specific cell-mediated immunity declines. This decline in immunity can result from increasing age and/or medical conditions and medications that suppress the immune system.

A person's risk for herpes zoster increases sharply after 50 years of age. Almost 1 out of 3 people in the United States will develop herpes zoster during their lifetime. A person's risk of developing PHN also increases sharply with age. The risk of complications of herpes zoster, including PHN and hospitalization, also increases with age.

People with compromised or suppressed immune systems who have an increased risk for herpes zoster include those

- with cancer, especially leukemia and lymphoma,
- with human immunodeficiency virus,
- who have undergone bone marrow or solid organ (renal, cardiac, liver, and lung) transplantation, or
- who are taking immunosuppressive medications, including steroids, chemotherapy, or transplant-related immunosuppressive medications.

Other potential risk factors for herpes zoster have been identified but the findings are not consistent in all studies. For example-

- Most, but not all, studies found that more women than men develop herpes zoster [\[1,2\]](#); the reason for a possible difference between women and men is not known.
- Some studies conducted in the United States and elsewhere found that herpes zoster is less common in blacks (by at least 50%) than in whites.[\[3\]](#)

Rates

- **Disease occurrence:**

- The incidence for herpes zoster is approximately 4 cases per 1,000 U.S. population annually, age-adjusted to the 2000 U.S. population
- The incidence among people 60 years of age and older is about 10 cases per 1,000 U.S. population annually.
- There are an estimated one million cases of herpes zoster in the United States annually.
- **Repeat episodes:**
 - Although 2nd and even 3rd episodes of herpes zoster can occur, the annual incidence of recurrence is not known.
- **Hospitalizations:**
 - Approximately 1 to 4% of people with herpes zoster get hospitalized for complications.
 - Older adults and people with compromised or suppressed immune systems are more likely to get hospitalized. About 30% of all people hospitalized with herpes zoster are those with compromised or suppressed immune systems.
- **Deaths:**
 - A recent study estimated that there are 96 deaths each year in which herpes zoster was the actual underlying cause (0.28 to 0.69 per 1 million population). Almost all the deaths occurred in elderly people or those with compromised or suppressed immune systems. [\[4\]](#)

Trends

Herpes zoster rates are increasing among adults in the United States. The increase has been gradual over a long period of time. We do not know the reason for this increase. [\[5,6,7\]](#)

Some experts suggest that exposure to varicella boosts a person's immunity to VZV and reduces the risk for VZV reactivation. Thus, they are concerned that routine childhood varicella vaccination, recommended in the United States in 1996, could lead to an increase in herpes zoster in adults due to reduced opportunities for being exposed to varicella. However, two CDC studies have found that herpes zoster rates:

- started increasing before varicella vaccine was introduced in the United States, and
- did not accelerate after the routine varicella vaccination program started. [\[5,8\]](#)

Other countries, that do not have routine varicella vaccination programs, have also observed similar increases in herpes zoster rates. [\[9\]](#)

Herpes Zoster in People Who Received Varicella Vaccine

Although uncommon among children, the rate of herpes zoster in U.S. children has been declining since the routine varicella vaccination program started. Varicella vaccine contains live attenuated VZV, which causes latent infection. The attenuated vaccine virus can reactivate and cause herpes zoster; however, children vaccinated against varicella appear to have a lower risk of herpes zoster than people who were infected with wild-type VZV. [\[10\]](#) The reason for this is that vaccinated children are less likely to become infected with wild-type VZV, and the risk of reactivation of vaccine-strain VZV is lower compared with reactivation of wild-type VZV.

- In a study of children with leukemia, those who got varicella vaccine had a 67% lower risk of herpes zoster

compared with children who had natural infection with wild-type VZV.[11]

- Data on healthy children show a similar pattern of reduced risk of herpes zoster in those vaccinated against varicella.
- The number of older adults who have gotten varicella vaccine since it was licensed in 1995 is quite small. There is very little information on the risk of herpes zoster in people who got varicella vaccine as adults.

CDC continues to study the epidemiology of herpes zoster among adults and children and to monitor the effects of the U.S. varicella and zoster vaccination programs.

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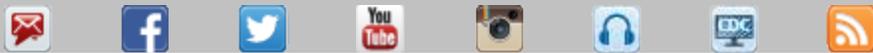
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