

Varicella zoster virus (VZV) is one of eight herpes viruses known to infect humans and other vertebrates. It commonly causes chicken-pox in children and adults and herpes zoster (shingles) in adults and rarely in children. As with the other herpes viruses, VZV causes both acute illness and lifelong latency. Before vaccination became widespread, acute primary infection (varicella or "chickenpox") was common during childhood--especially in temperate climates. Primary infection is much less common in recent years as a result of childhood vaccination, but still may occur in unvaccinated individuals and in instances of vaccine failure. Varicella usually is a benign and self-limiting illness, but can be more severe in adults and in individuals with cellular immunodeficiency. These individuals are at much higher risk of pneumonia and disseminated disease with visceral involvement. Zoster typically presents as a painful, localized cutaneous eruption occurring along 1 or more contiguous dermatomes. As with varicella, zoster usually is self-limited in the immunocompetent host, but immunocompromised persons are at risk of more severe illness with cutaneous or visceral dissemination.



Humans are the only known natural hosts of VZV. Transmission of VZV occurs through direct contact with infectious lesions or by inoculation of aerosolized infected droplets onto a susceptible mucosal surface. The virus is transmitted easily; the rate of secondary cases of varicella in susceptible household contacts typically exceeds 90%. Infectivity usually begins 1-2 days before the onset of rash, and patients remain infectious until all vesicular lesions are dried and crusted. In the immunocompetent host, the period of infectiousness is usually 5-7 days after the lesions first appear. In immunocompromised patients, however, healing can be slow and patients may remain infectious for up to several weeks. (25-34). Within the human body it can be treated by a number of drugs and therapeutic agents including acyclovir for the chicken pox, famciclovir, valaciclovir for the shingles, zoster-immune globulin (ZIG), and vidarabine. VZV immune globulin is also a treatment.

A live attenuated VZV Oka/Merck strain vaccine is available and is marketed in the United States under the trade name **Varivax**. In 2006, the United States Food and Drug Administration approved **Zostavax** for the prevention of shingles. Zostavax is a more concentrated formulation of the Varivax vaccine, designed to elicit an immune response in older adults whose immunity to VZV wanes with advancing age.

Varicella-zoster virus is known by many names, including: chickenpox virus, varicella virus, zoster virus, and human herpes virus type 3 (HHV-3). VZV is closely related to the herpes simplex viruses (HSV), sharing much genome homology. The known envelope glycoproteins (gB, gC, gE, gH, gI, gK, gL) correspond with those in HSV; however, there is no equivalent of HSV gD. The genome is a linear duplex DNA molecule; a laboratory strain has 124,884 base pairs. Laboratory tests are available to diagnose herpes zoster. The most popular test detects VZV-specific IgM antibody in blood; this appears only during chickenpox or herpes zoster and not while the virus is dormant. In larger laboratories, lymph collected from a blister is tested by polymerase chain reaction for VZV DNA, or examined with an electron microscope for virus particles.

VZV vaccines: Varivax (Merck) is a chickenpox vaccine for children, adolescents and adults. Zostavax is a vaccine for shingles for adults age 60 and older. Zostavax is a live vaccine developed by Merck & Co. that has been shown to reduce the incidence of herpes zoster (known as shingles) by 51.3% in a study of 38,000 adults aged 60 and older who received the vaccine.

ADI has developed antibody ELISA kits to determine the efficacy of VZV vaccines or test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Varicella Zoster Virus vaccine Related ELISA kits

ELISA Kit Description	Species	IgG Specific	IgM Specific	IgA Specific
Varicella Zoster Virus Vaccine Antibody (chickenpox) ELISA Kits	Human	520-200-HVG	520-210-HVM	520-220-HVG
	Mouse	520-230-HVG	520-240-HVM	520-250-HVG

Varicella Zoster Virus Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

Catalog#	Catalog#	Product Description	Product Type
Varicella Zoster Virus	VZV11-M	Monoclonal Varicella Zoster Virus (chickenpox) antigens IgG (pan, recognizes several VZV proteins)	Antigens
	VZV12-M	Monoclonal Varicella Zoster Virus (chickenpox) nucleocapsid (155 kda protein) IgG	Antigens
	VZV13-M	Monoclonal Varicella Zoster Virus (chickenpox) early gene 62 (175 kda) protein) IgG	Antigens
	VZV14-M	Monoclonal Varicella Zoster Virus gp1/IV (chickenpox) glycoprotein I/IV protein) IgG	Antigens
	VZV15-N-500	Varicella Zoster Virus (chickenpox) antigens/proteins (strain Ellen/HF Cells)	Antigens
	VZV16-N-500	Varicella Zoster Virus (chickenpox) antigens/proteins (Rod Ellen/Vero cells)	Antigens