

## Varicella Zoster Virus (VZV)

Varicella zoster virus (VZV) is third of the eight viruses in the herpesviridae family and is the cause of chicken-pox and shingles. This virus is an enveloped double stranded linear DNA virus. Primary VZV infection results in chickenpox, which is a highly contagious illness that typically begins with a vesicular skin rash on the head and body. The rash is usually extremely itchy and can umbilicate and form scabs. Adults that get infected with primary infection commonly have more severe disease manifestations with more widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Even when clinical symptoms resolve, the virus remains dormant in the trigeminal and dorsal root ganglia and can reactive later in life to produce shingles, commonly called herpes zoster. Shingles is characterized by a painful blistering skin rash with a specific dermatome distribution on the body. Although the rash usually heals, some can suffer from residual nerve pain in a condition called postherpetic neuralgia. The organism can be identified via tzanck smear with visualization of multinucleated giant cells or the presence of cowdry A inclusions. Antiviral drugs like acyclovir can be used to reduce the severity and duration of VZV infection.



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### Herpesvirus 3

#### Harp-virus on (3) Tree

This virus is the third virus in the herpesviridae family and commonly referred to as HHV3.

### Characteristics

#### Enveloped

##### Envelope

Varicella zoster virus has an envelope, which is an outer membrane that covers the protein capsid and helps the virus to enter host cells.

#### Double Stranded DNA

##### DNA Double-helix

VZV virus is a DNA virus, meaning its genetic code consists of deoxyribonucleic acid as opposed to ribonucleic acid. Like all DNA viruses except Parvovirus, the genome consists of double stranded DNA and has a linear arrangement as opposed to circular.

### Signs and Symptoms

#### Chickenpox

##### Chicken-box with Rash

Primary VZV infection results in chickenpox, which is a highly contagious illness that typically begins with a vesicular skin rash on the head and body. The rash is usually extremely itchy and can umbilicate and form scabs.

#### Pneumonia

##### Nude-Mona

Adults that get infected with primary varicella infection commonly have more severe disease manifestations with widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Pneumonia refers to inflammation of the alveoli in the lungs and is associated with fever, chest symptoms, and consolidation on chest x ray.

#### Encephalitis

##### Brain-in-flames

Adults that get infected with primary varicella infection commonly have more severe disease manifestations with widespread rash and are more likely to experience complications such as pneumonia or encephalitis. Encephalitis refers to an acute inflammation of the brain. Symptoms commonly include headache, fever, confusion, and fatigue and can lead to seizures, convulsions, and memory problems.

#### Trigeminal and Dorsal Root Ganglia

##### Tri-gem and Door Root

After clinical symptoms resolve, the virus remains dormant in the trigeminal and dorsal root ganglia and can reactive later in life to produce shingles.

## Shingles

### Roof-shingles

This virus remains dormant in the trigeminal and dorsal root ganglia and can reactivate later in life to produce shingles, commonly called herpes zoster. Shingles is characterized by a painful blistering skin rash with a specific dermatome distribution on the body. Although the rash usually heals, some can suffer from residual nerve pain in a condition called postherpetic neuralgia.

## Diagnosis

### Tzanck Test

#### Z-tank

Varicella Zoster Virus can be visualized on Tzanck smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells.

### Multinucleated Giant Cells

#### Nuclear Giant-shell

Varicella Zoster Virus can be visualized on Tzanck smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells.

### Cowdry A Inclusion

#### Cow-dry

Cowdry body A can be indicative of Varicella zoster virus, which are eosinophilic nuclear inclusions composed of nucleic acid and protein.

## Treatment

### Acyclovir

#### Apple-cyclops

Acyclovir is an antiviral drug that is an analogue of guanosine. Acyclovir can be used to reduce the severity and duration of VZV infection.