

## Herpes Simplex Virus (HSV)

Herpes simplex virus (HSV) is a viral disease from the herpesviridae family. This family of viruses is enveloped and has double stranded linear DNA. There are two types of Herpes simplex virus. Type 1 HSV causes oral herpes, commonly called cold sores. Other manifestations include herpetic gingivostomatitis, keratoconjunctivitis, and temporal lobe encephalitis. After the patient begins to produce antibodies, HSV type 1 becomes latent in the trigeminal ganglia and can become reactivated with certain stimuli including stress and UV light exposure. Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals. Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system. Infants with CNS herpes present with temporal encephalitis can commonly present with seizures, tremors, and lethargy. Type 2 HSV becomes latent in the sacral ganglia. These organisms can be visualized on Tzanck smear, which is a scraping of an ulcer base for evidence of multinucleated giant cells. Cowdry A inclusions are also present in Herpes infection, which are eosinophilic nuclear inclusions composed of nucleic acid and protein. Acyclovir is commonly used as treatment for herpes infections.



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### Characteristics

#### Enveloped

##### Envelope

Herpes Simplex 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

Herpes simplex virus is a DNA virus, meaning its genetic code consists of deoxyribonucleic acid as opposed to ribonucleic acid.

#### Linear

##### Line

HSV genome is double stranded and in a linear arrangement as opposed to a circular formation.

### Signs and Symptoms

#### Type 1 HSV

##### Harp-sign (1) Wand

There are two types of Herpes simplex virus. Type 1 HSV causes oral herpes, commonly called cold sores. Other manifestations include herpetic gingivostomatitis, keratoconjunctivitis, and temporal lobe encephalitis. Typically type I HSV infections occur above the waist but can occasionally occur below as well.

#### Gingivostomatitis

##### Ginger-in-mouth

Herpetic gingivostomatitis is often the initial presentation of the first herpes infection and is usually caused by Type I HSV. Because it is the first outbreak, symptoms are usually more severe than the typical cold sore and is characterized by inflammation of both of the oral mucosa and gingiva. The disease presents as multiple pinhead vesicles in the mouth which rupture and form painful ulcerations.

#### Keratoconjunctivitis

##### Carrot-eyes

Type I HSV can cause keratoconjunctivitis, which is inflammation of the cornea and conjunctiva. Infection typically presents with swelling and pain of the conjunctiva and eyelids, accompanied by small white pruritic lesions on the cornea. Infection can cause dendritic ulcers that have a characteristic dendritic pattern with fluorescein stain.

#### Encephalitis of Temporal Lobes

##### Brain-in-flames on Temple

Herpes simplex encephalitis is typically caused by type 1 HSV and is thought to be caused by retrograde transmission of the virus from a peripheral site on the face along a nerve axon to the brain. The virus has a predilection for the temporal lobes of the brain and patients present with altered level of consciousness.

## **Latent in Trigeminal Ganglia**

[Tri-gems](#)

HSV type 1 typically remains latent in trigeminal ganglia and can become reactivated in periods of stress as cold sores.

## **Type 2 HSV**

[Harp-sign with \(2\) Tutu](#)

Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals.

## **Genital Vesicles**

[Genital-gentleman with Vest](#)

Type 2 HSV is primarily a sexually transmitted infection that can cause clusters of inflamed vesicles on the outer surface of the genitals.

## **Neonatal Herpes**

[Baby with Herpes-harp](#)

Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system. Active outbreaks in patients who are pregnant are an indication for cesarean delivery.

## **TORCHES**

[Torch](#)

HSV is one of the TORCHES infections that can pass from mother to fetus. Infants that pass through the vaginal canal in a female with an outbreak of genital herpes can lead to neonatal herpes, characterized by multiple vesicular lesions on the skin or involvement of internal organs or the central nervous system.

## **Latent in Sacral Ganglia**

[Sack](#)

HSV type 2 typically remains latent in sacral ganglia and can become reactivated in periods of stress.

## **Diagnosis**

### **Tzanck Test**

[Z-tank](#)

Herpes Simplex 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](#)

Multinucleated giant cells are formed by the union of several distinct cells and can be indicative of herpes infection when visualized on Tzanck test.

### **Cowdry A Inclusions**

[Cow-dry](#)

Cowdry body A inclusions are indicative of Herpes infection, 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. It is primarily used for the treatment of herpes simplex virus infections.