# Human Immunodeficiency Virus (HIV) Assessment

Human immunodeficiency virus (HIV) infection is caused by an RNA retrovirus and leads to immunosuppression. Symptoms of primary HIV infection begin approximately 2-4 weeks after the infection and include flu-like symptoms and lymphadenopathy (refer to the Picmonic on "Human Immunodeficiency Virus (HIV) Stages"). Years after the infection, the patient will enter the symptomatic stage and manifest with fatigue, weight loss, and diarrhea. Other symptoms during this period include white spots on the tongue, persistent fever, and night sweats. Refer to the Picmonics on "Human Immunodeficiency Virus (HIV) Diagnosis," "Human Immunodeficiency Virus (HIV) Stages,” and "Human Immunodeficiency Virus (HIV) Interventions" for further information.<br />




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## Assessment

### RNA Retrovirus

RNA-rhino Retro-virus

HIV is caused by an RNA retrovirus and can only replicate inside living cells. Instead of replicating from DNA to RNA, retroviruses use reverse transcriptase to turn RNA to DNA. The virus enters a cell by attaching to chemokine receptor sites. During the initial infection, the patient will have a rapidly increasing viral load in the blood and a normal or slightly low CD4 T cell count. Since the majority of symptoms during the primary infection are vague, people may not realize they are infected and continue with their daily activities. Their activities may include high-risk sexual and drug-using behaviors and increase the risk of infecting other individuals.

### CD4+ Helper T Cells

CD (4) Fork with Tennis-balls

HIV enters CD4 T cells after attaching to chemokine receptor sites. After creating double-stranded viral DNA from RNA, HIV splices into the human genome and directs cells to make more HIV-infected cells. HIV may also affect lymphocytes, macrophages, and other dendritic cells by attaching to a different receptor site. Since they have many CD4 receptors, CD4 helper T cells are the most affected by HIV virus. CD4 helper T cells help the immune system recognize and fight against foreign pathogens. Destruction of CD4 helper T cells cause immune dysfunction and increases the risk of developing opportunistic infections.

## Primary Infection

### Flu-like Symptoms

Thermometer and Ice-bag

The patient with HIV will present with flu-like symptoms within 2-4 weeks after the initial infection. During this period, the patient will have a rapidly rising viral load of HIV circulating in the blood. Symptoms include fever, swollen lymph glands, sore throat, and headache. The patient may also present with malaise, nausea, muscle and joint pain, diarrhea, or a diffused rash. Often, the symptoms of HIV are mistaken for the flu. These symptoms subside as the viral load decreases and the patient enters the latent stage of the virus that may last many years.

### Lymphadenopathy

Lymph-lime-add (+)

During the primary infection, HIV replication rapidly occurs in the lymph tissue. The patient with HIV may develop persistent generalized lymphadenopathy during the asymptomatic stage.

## Symptomatic Stage

### Fatigue

Sleepy-guy

The patient with HIV will enter the symptomatic stage as the viral load slowly increases and CD4 T cell counts drop to 200-500 cells/µL. Symptoms will appear years after the initial infection. Since energy resources are being used to fight off the viral infection, patients with HIV experience severe fatigue that may cause feelings of depression or insomnia. High viral loads are positively correlated with increased fatigue. After starting HIV treatment, a majority of

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patients with HIV report increased energy levels.

**Diarrhea**

Toilet

Since patients with HIV have weakened immune system, they have an increased susceptibility to infections. The various opportunistic infections may affect the GI tract and cause diarrhea. Since diarrhea causes dehydration, monitoring the patient's fluid and electrolyte status is critical to prevent further complications.

**Unexplained Weight Loss**

Question-mark Skinny with Baggy-pants

An unexplained weight loss of over 10lbs over 2 months is a common manifestation of HIV. Contributing factors of weight loss may include diarrhea, nausea, and loss of appetite. Oral HIV infections may make eating difficult and painful while the body may be using increased energy from calories to fight off opportunistic infections.

**White Spots on Tongue**

White Spots on Tongue

The presence of white spots on the tongue is commonly found in patients with HIV. The cause is either oropharyngeal candidiasis (thrush) or oral hairy leukoplakia. Although oropharyngeal candidiasis is normally controlled by the immune system, patients with HIV have a weakened defense system and develop white clumps in their gums, inner cheeks, and tongue. Oral hairy leukoplakia is caused by the Epstein-Barr virus and manifests as painless white lesions on the sides of the tongue.

**Persistent Fever**

Persistent Fever-beaver

As the body attempts to fight off HIV virus and other opportunistic infections, the patient with HIV may experience an unexplained fever lasting over a week. The presence of infection activates the immune system to produce pyrogens, which are sent to the brain. The hypothalamus increases the body's temperature as an attempt to inhibit bacterial or viral growth.

**Night Sweats**

Moon Sweats

Many patients with HIV will experience profound night sweats and wake up drenched in sweat. As the immune system weakens, the body expends increased energy reserves to fight off HIV and opportunistic infections. Since night sweats cause great discomfort, encourage the patient to take a cool shower before sleeping. A waterproof pad may be used to protect the mattress from being saturated in sweat.

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