How HIV Affects the Human Body

HIV, or Human Immunodeficiency virus, is the virus that cause AIDS (Acquired Immune Deficiency Syndrome). HIV kills cells of the body’s immune system by killing white blood cells. Cells like CD4 ells and T cells are crucial to fighting infection and play an important role for the body’s immune system. HIV can be transferred through sexual contact, used needle, blood products, and transmitted from mother to child by breast milk or the birth process.

HIV and how it affects the human immune system

HIV infects and damages the cells of the immune system. In particular, HIV attacks and destroys the T-Cells, which are very important for the immune system and the immune systems response. T-Cells all carry a CD4 protein on the surface of the cell. The HIV virus to attach itself and pry its way into the cell uses the CD4 protein. Each day your body makes millions of T-Cells and therefore CD4 proteins. Once the HIV virus is in your body it is able to copy itself over and over, therefore increasing its ability to kill T-cells and lower the human immune system.

The lower the person’s T-cell count, the more susceptible the person is to any virus or other infections that a healthy immune system could fight off. The first few months are not as dramatic as what is to come. The T-cells are still plentiful enough that they can still fight off simple common infections. However, after the first year the T-cell will dramatically decrease and the body will start to struggle to fight off infections.

Image 1. Shows how HIV attaches to T-cells by using the CD4 protein.

![Image 1](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&ved=0ahUKEwi3iu0s7NTLAhXKNj4KHQeXCoUQjxwIAw&url=http%3A%2F%2Fwww.natur)
The Four Stages of HIV

HIV goes through four stages that describe how advanced and dangerous the infection is. The four stages are acute primary infection, clinical latent infection, symptomatic HIV infection, and progression to AIDS.

The Acute Primary Infection is the first stage of symptoms. About 75% of people will experience flu-like symptoms during the first few weeks. This is the first time a positive diagnosis is possible, however, most people will not realize they have contracted the HIV virus until a later time. Your body will produce HIV antibodies and T-cell killers to attempt to destroy the virus. This will initially lower HIV levels and allows CD4 proteins to be slightly stabilized.

The Clinical Latent Infection stage will last approximately 10 years. Still during this time people affected with HIV will still live a normal life. Their HIV levels will be very low and almost undetectable in their blood, but the virus can still be passed on to other people. Even though HIV levels will be low a doctor will most likely suggest starting drug treatment because the virus is still very active in the human body.

Over time, the HIV virus will destroy your immune system. In the Symptomatic HIV infection stage a person's HIV level will rise and we know that the immune system is weakening. This is the start of when a person's immune system starts to weaken dramatically. Simple infections will become hard for the body to detect and handle. The person will also start to feel symptoms of fever and even mild muscle pain.

The final stage is the HIV virus turning into AIDS. This is when the immune system is severely damaged and T-cell count fall dramatically. When the T-cell count fall below 200 cells per cubic millimeter of blood the HIV virus has now become stage four and is now consider AIDS. Once a person is diagnosed with AIDS they are much more likely to die, and their body most likely will not be able to fight off even the simplest common cold. Some people will live only a few months; some will live a few years.

What are T-cells?

T-cells are a type of white blood cells that attack invading virus. Each T-cell can only fight one kind of virus that is danger to the human body. T-cells release cytotoxins to kill the cell. Below is a diagram of a T-cell and its cytotoxins released.
There are 25 million to a billion different T-cells in your body. Each cell has a unique receptor that can fit with only one kind of antigen. So when HIV level rise and T-cells are lowered the body no longer has a defense mechanism against invading viruses or infections. T-cells are very specific so when they are lowered dramatically they cannot fight back against infections and the body will eventually die because it becomes overwhelmed with infections that cannot be killed.

image from: https://askabiologist.asu.edu/t-cell