

# Impact of Anti-Retroviral Treatment in Patients with HIV Infection

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## DESCRIPTION

After Human Immunodeficiency Virus (HIV) diagnosis, Anti-Retroviral Therapy (ART) is advised as soon as possible for the infected person. A class of drugs used to treat HIV is known as Anti-Retroviral Therapy (ART). The medications neither eradicate nor treat the infection. But when used together, they help to stop the infection from spreading. HIV infection slows down when the virus load decreases. ARVs are a generic term for antiretroviral medications. Highly active anti-retroviral therapy is the name for combination ARV therapy. As part of ART, a daily HIV treatment regimen, or combination of HIV drugs, are taken.

ART is advised for all HIV-positive individuals. HIV medications help patients with HIV to live longer, healthier lives, but ART cannot cure HIV. ART reduces the possibility of HIV transmission as well. HIV attacks and kills CD4 cells (CD4 T lymphocytes), which are the immune system's infection-fighting cells. When CD4 cells are depleted, the body has a tougher difficulty battling infections and certain cancers connected to HIV may occur. HIV medications stop HIV from replicating (creating copies of itself), which lowers the body's level of the virus (called the viral load). When there is less HIV in the body, the immune system has a chance to recover and produce more CD4 cells. The immune system is strong enough to fight off infections and a number of HIV-related cancers even while the body still harbors some HIV. By reducing the body's level of HIV, HIV medicines reduce the risk of HIV transmission. One of the main goals of HIV treatment is to lower a patient's viral load to an undetectable level. A viral load test is unable to detect an undetectable viral load, which means that the blood level of HIV is too low to be identified. Those with HIV who maintain an undetectable viral load are basically immune to the risk of HIV transmission to partners who are HIV-negative.

HIV is treated with antiretroviral drugs because they stop the virus from proliferating inside the body. This permits the immune system to recover and prevent further damage. A combination of HIV drugs are used since, HIV can quickly adapt

and acquire resistance. Although they frequently cost more to prescribe, some HIV medicines have been condensed into a single pill known as a fixed dose combination. Newly diagnosed HIV patients often take one to four tablets each day. Since different HIV medicine combinations work differently for different people, the medication that a person takes will be unique to the individual. The FDA has approved more than twenty antiretroviral drugs to treat HIV infection. They are typically split into six groups since they have different methods that they function.

### Inhibitors of nucleoside reverse transcriptase

Reverse transcriptase, an enzyme required for HIV replication, is inhibited by Nucleoside Reverse Transcriptase Inhibitors (NRTIs). Abacavir (Ziagen), emtricitabine (Emtriva), lamivudine (Epivir), tenofovir, disoproxil, fumarate, and zidovudine are a few examples of NRTIs.

### Inhibitors of non-nucleoside reverse transcriptase

HIV cannot reproduce when reverse transcriptase is bound by Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs). NNRTIs include among others, doravirine (Pifeltro), efavirenz (Sustiva), etravirine (Intelence), and rilpivirine (Edurant) are few examples of NNRTIS.

### Protease inhibitors

HIV protease is another protein that is required for the virus to replicate itself. Protease inhibitors inactivate this protein. Atazanavir (Reyataz), darunavir (Prezista), and lopinavir/ritonavir (Kaletra) are a few examples.

### Integrase inhibitors

They function by impeding the ability of HIV to incorporate its genetic material into CD4 T cells using the integrase protein. Biktarvy (bictegravir sodium/emtricitabine/tenofovir alafenamide fumarate), Isentress (raltegravir), Tivicay (dolutegravir), and Vocabria (cabotec) are a few examples.

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