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Short Communication

# Symptoms and Drugs Involved in the Treatment of HIV

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## DESCRIPTION

Human Immunodeficiency Virus (HIV) is a deadly virus that attacks the immune system and makes it difficult for the body to fight off infections and diseases. It is primarily spread through sexual contact, sharing of needles, or from mother to child during pregnancy, delivery, or breastfeeding. HIV is not curable, but it can be managed with Antiretroviral Therapy (ART) [1-3].

HIV targets the CD4 cells, which are a type of white blood cells that play a critical role in the immune system. The virus attaches itself to the CD4 cells, enters them, and uses them to replicate itself. As the virus replicates, it destroys the CD4 cells, which weakens the immune system and makes the body vulnerable to infections and diseases.

The symptoms of HIV can vary from person to person and may not appear for years after infection. Some people may experience flu-like symptoms within a few weeks of infection, such as fever, headache, muscle aches, and rash. However, many people with HIV do not have any symptoms for several years, which is why it is essential to get tested regularly if you think you may have been exposed to the virus [4-7].

Without treatment, HIV can progress to Acquired Immunodeficiency Syndrome (AIDS), which is a severe, life-threatening condition. AIDS occurs when the immune system is severely damaged, and the body is unable to fight off infections and diseases [8]. People with AIDS are more susceptible to opportunistic infections, such as tuberculosis, pneumonia, and certain types of cancer.

The good news is that with early diagnosis and treatment, people with HIV can live long and healthy lives. ART is a combination of medications that work together to prevent the virus from replicating and damaging the immune system [9]. ART does not cure HIV, but it can keep the virus under control and prevent it from progressing to AIDS.

In addition to ART, there are other ways to manage HIV and prevent the spread of the virus. For example, practicing safe sex by using condoms can reduce the risk of transmission during sexual contact. Using clean needles and syringes and not sharing them with others can prevent the transmission of the virus through injection drug use. Pregnant women with HIV can also take medication during pregnancy and delivery to reduce the risk of mother-to-child transmission [10].

Despite these prevention methods, HIV remains a significant global health challenge. According to the World Health Organization (WHO), approximately 38 million people were living with HIV at the end of 2019, and 690,000 people died from AIDS-related illnesses in the same year [11]. While the number of new infections has declined in recent years, there is still much work to be done to end the HIV epidemic.

One of the biggest challenges in the fight against HIV is stigma and discrimination. People with HIV may face discrimination in their communities, workplaces, and even in healthcare settings. This can lead to delays in testing and treatment, as well as poor health outcomes for people living with HIV. To end the HIV epidemic, it is essential to address the underlying social and structural factors that contribute to stigma and discrimination.

### Drugs used in the treatment of HIV

**Nucleoside Reverse Transcriptase Inhibitors (NRTIs):** These drugs block the reverse transcriptase enzyme, which HIV uses to copy its genetic material. Examples include zidovudine (AZT), lamivudine (3TC), and Tenofovir Disoproxil Fumarate (TDF).

**Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs):** These drugs also block the reverse transcriptase enzyme, but through a different mechanism than NRTIs. Examples include efavirenz (EFV), nevirapine (NVP), and rilpivirine (RPV).

**Protease Inhibitors (PIs):** These drugs block the protease enzyme, which HIV uses to produce new viral particles. Examples include darunavir (DRV), atazanavir (ATV), and lopinavir/ritonavir (LPV/r).

**Integrase Strand Transfer Inhibitors (INSTIs):** These drugs block the integrase enzyme, which HIV uses to integrate its genetic material into the DNA of infected cells. Examples include dolutegravir (DTG), raltegravir (RAL), and elvitegravir (EVG).

**Fusion inhibitors:** These drugs block the fusion of HIV with the target cell by binding to the viral protein gp41. Examples include enfuvirtide (ENF).

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**Entry inhibitors:** These drugs block the binding of HIV to the target cell by binding to the cellular receptor CCR5. Examples include maraviroc (MVC).

**Post-attachment inhibitors**: These drugs prevent HIV from entering the target cell after attachment by blocking the viral protein gp120. Examples include ibalizumab.

Combination therapy, which involves the use of multiple drugs from different classes, is typically used in HIV treatment to maximize effectiveness and minimize the risk of drug resistance.

## CONCLUSION

In conclusion, HIV is a deadly virus that attacks the immune system and makes the body vulnerable to infections and diseases. While there is no cure for HIV, early diagnosis and treatment with ART can keep the virus under control and prevent it from progressing to AIDS. It is also essential to practice safe sex, use clean needles and syringes, and take medication during pregnancy to prevent the transmission of the virus. To end the HIV epidemic, we must address the underlying social and structural factors that contribute to stigma and discrimination and work towards a world where everyone can access prevention, testing, and treatment services without fear of discrimination.

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