



PERSPECTIVE



HIV/AIDS Management Using Combination Therapy

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Description

In order to treat HIV infection, numerous antiretroviral medications are typically used in HIV/AIDS care. Antiretroviral medications can be divided into distinct types based on how they affect the HIV life cycle at various phases. Highly active antiretroviral therapy is the use of a number of medications that each target a separate viral target. HAART lessens the patient's overall HIV burden, keeps the immune system functioning, and guards against opportunistic infections, which frequently result in fatalities. As long as the HIV-positive partner maintains an undetectable viral load, HAART also prevents HIV transmission between serodiscordant partners who engage in both same-sex and opposite-sex relationships.

Treatment has been so effective that HIV is now frequently a chronic illness with little chance of developing into AIDS in many regions of the world. The director of the US National Institute of Allergy and Infectious Diseases, Anthony Fauci, has stated in writing that "an AIDS-free generation is indeed within reach with collaborative and strong effort now and a consistent commitment for years to come." All HIV patients should receive antiretroviral therapy, according to the World Health Organization (WHO) and the US Department of Health and Human Services. Such organizations stress the significance of involving patients in therapy decisions and advice weighing the risks and potential benefits due to the complexity of choosing and adhering to a regimen, the possibility of side effects, and the necessity of taking medications consistently to prevent viral resistance. Health, according to the WHO, is more than just the absence of disease. Due to this, numerous researchers have devoted their efforts to gaining a better knowledge of the effects of HIV-related stigma, the obstacles it raises for treatment interventions, and the strategies for overcoming those obstacles.

Combination therapy

Performing From viral entry into a cell, via viral replication, assemblage, and release of more viruses, to infection of other cells, the HIV life cycle can be as brief as 1.5 days. HIV lacks proofreading enzymes to fix mistakes generated during the reverse transcription of its RNA into DNA. The virus mutates quickly due to its short life cycle, high mistake rate, and high genomic variability. However, some mutations have natural selection superiority to their parent and can allow them to evade defenses like the human immune system and antiretroviral medications. The majority of mutations are either inferior to the parent virus (often lacking the ability to reproduce at all) or carry no advantage. The likelihood that the virus may become resistant to antiretroviral medications increases with the number of active copies. Antiretroviral combination therapy, in contrast, protects against resistance by putting several barriers in the way of HIV replication. This lowers the likelihood of a better mutation and maintains a low viral copy number. The other medications keep that mutation from being reproduced even if a mutation that confers resistance to one of the medications develops. The other medications keep that mutation from being reproduced even if a mutation that confers resistance to one of the medications develops. With a few notable exceptions, no single antiretroviral medication has been shown to suppress an HIV infection for an extended period of time; these medications must be taken in combinations to have an impact that lasts. Therefore, using mixtures of antiretroviral medications is considered to be the standard of therapy. Typically, combinations include three medications, each from at least two distinct groups. A triple cocktail is the usual name for this three-drug combo. Antiretroviral combinations are susceptible to both positive and negative synergy, which reduces the number of effective combinations.