Journal of Infectious Diseases & Therapy
ISSN: 2332-0877

Qin, J Infect Dis Ther 2024, 12:8

Short Communication Open Access

Treating People Living with HIV Using Highly Active Antiretroviral Therapy

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Received: 29-Oct-2024, Manuscript No. JIDT-24-155923; **Editor assigned:** 01-Nov-2024, PreQC No. JIDT-24-155923 (PQ); **Reviewed:** 15-Nov-2024, QC No. JIDT-24-155923; **Revised:** 21-Nov-2024, Manuscript No. JIDT-24-155923 (R); **Published:** 28-Nov-2024, DOI: 10.4172/2332-0877.24.8.616

Citation: Qin K (2024) Treating People Living with HIV Using Highly Active Antiretroviral Therapy. J Infect Dis Ther 12:616.

About the Study

In China, as of 30th June, 2024, 1,329,127 people with Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) and 474,006 deaths from AIDS have been reported. There are 740,787 People Living with HIV (PLWH) and 588,340 people living with AIDS at this moment [1]. According to Chinese Center for Disease Control and Prevention (Chinese CDC) HIV-infected patients should start Antiretroviral Therapy (ART) within 30 days of diagnosis. For patients with advanced HIV infection, treatment should be started within 7 days of diagnosis [2]. At present, there are 4 categories of free antiviral treatment drugs in China, including Nucleotide Reverse Transcriptase Inhibitor (NRTI): Zidovudine (AZT), Tenofovir (TDF) and Lamivudine (3TC); Non-nucleoside Reverse Transcriptase Inhibitor (NNRTI): Efavirenz (EFV) and Nevirapine (NVP); Protease inhibitors (PI): Lopinavir/ritonavir (LPV/r); Integrase Chain Transfer Inhibitor (INSTI): Dolutegravir Sodium (DTG) [3]. Free drugs have been used for many years. Some ART drugs are based on the patient's own expense and include Bictegravir (BIC), second-generation INSTI, Emtricitabine (FTC) and Tenofovir Alafenamide (TAF) [4-6]. Bitarvy tablets containing BIC, FIC, and TAF are used as long-term therapy for the treatment of HIV infection [7]. To evaluate the therapeutic effects of free ART drugs, Li et al., recently reported an analysis of the treatment outcomes of PLWH from 2005 to 2023 in Huzhou, a central city in northern Zhejiang Province. The main combinations of free drugs included 3TC +EFV+TDF, 3TC+AZT+EFV and 3TC+DTG. The main paid drugs were Biktarvy tablets containing BIC, FIC, and TAF. There was a ~80% increase in $CD4^+$ cell count and a ~70% decrease in Viral Load (VL) in both the free and paid drug groups. The mortality rate was 3.6% in the free drug group and 0.0% in the paid drug group [8]. Thus, the Highly Active Antiretroviral Therapy (HAART) with free and paid drugs has almost the same rate of improvement in PLWH, but no effect in 20%-30% of patients. Globally, HAART plays a paramount role in improving the lives of PLWH. For example, a study of HAART in HIV-infected adults in Ethiopia gave similar results [9]. PLWH requires lifelong treatment. Once the drug is stopped, the virus in the body will quickly rebound. Long-term drug use not only carries lifelong drug side effects, but also carries the risk of inducing viral resistance. Since 2018, the World Health Organization (WHO) has recommended DTG as the preferred first-line and second-line HIV treatment because it is more effective, easier to take and has fewer side effects than other drugs currently in use, although a new WHO report shows that HIV resistance to DTG is on the rise. A new drug, sunlenca (lenacapavir), has been approved by the FDA as an injectable and tablet as a capsid inhibitor that disrupts HIV capsids. Sunlenca can be used in combination with other Antiretroviral Drugs (ARVs) for the treatment of adult patients with Multidrug-Resistant (MDR) HIV-1 who have previously received a multi-drug regimen. Unlike other currently approved antivirals, Sunlenca has a multi-stage mechanism of action and has no known *in vitro* cross-resistance to other existing drugs. Sunlenca will provide a new treatment option for people living with HIV who are inadequately inhibited by existing therapies. Sunlenca is currently the only HIV therapy that needs to be administered twice a year [10]. However, there is currently no drug that can cure HIV or AIDS.

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