

Early Detection and Management of HIV Transmission Routes and Treatment Advances

Marisa Luisa*

Department of Microbiology and Preventive Medicine, University of Internal Medicine, Seville, Spain

DESCRIPTION

Human Immunodeficiency Virus (HIV) is one of the most significant public health challenges of our time, affecting millions of people globally. Since its identification in the early 1980s, HIV has prompted extensive research, awareness campaigns and a robust public health response. This study aims to provide a comprehensive overview of HIV, covering its biology, transmission, symptoms, treatment and the socio-economic impact of the disease. HIV is a retrovirus that targets the immune system, specifically CD4⁺ T cells, which play an important role in co-ordinating the body's defense against infections. The virus integrates its genetic material into the host cell's DNA, taking over the cell's machinery to produce new virus particles. This process gradually depletes the body's CD4⁺ T cells, leading to weakened immunity.

Transmission

HIV is transmitted through contact with infected bodily fluids, including blood, semen, vaginal fluids, rectal fluids and breast milk. The primary modes of transmission are:

Sexual contact: Unprotected vaginal, anal or oral sex with an infected person is the most common route of HIV transmission.

Blood transfusion: Receiving contaminated blood or blood products, although this has become rare due to rigorous screening processes.

Needle sharing: Sharing needles or syringes with someone who has HIV, often seen among intravenous drug users.

Mother-to-child transmission: An HIV-positive mother can transmit the virus to her child during pregnancy, childbirth or breastfeeding.

Symptoms and Stages

HIV infection progresses through several stages, each with distinct symptoms:

Acute HIV infection: This initial stage occurs within 2-4 weeks

after exposure. Symptoms resemble those of the flu, including fever, swollen lymph nodes, sore throat, rash, muscle and joint aches, and headache. This period is marked by high levels of the virus in the blood, making transmission more likely.

Acquired Immunodeficiency Syndrome (AIDS): Keep in bold Without treatment, HIV can progress to AIDS, the most severe phase. At this stage, the immune system is severely compromised, leading to opportunistic infections and cancers. Common symptoms include rapid weight loss, recurring fever, prolonged swelling of lymph nodes, chronic diarrhea and neurological disorders. Without treatment, AIDS is fatal.

Diagnosis

Antibody tests: These tests detect antibodies produced in response to HIV infection. They can be done using blood or oral fluid and provide results within minutes to a few days.

Antigen/Antibody tests: These detect both HIV antibodies and antigens (part of the virus). They can identify HIV earlier than antibody tests alone.

Treatment

While there is no cure for HIV, Antiretroviral Therapy (ART) has transformed HIV from a fatal disease to a manageable chronic condition. ART involves a combination of medications that inhibit the virus's replication, reducing viral load to undetectable levels and allowing the immune system to recover and function effectively.

Nucleoside Reverse Transcriptase Inhibitors (NRTIs): Block reverse transcriptase, an enzyme HIV uses to replicate.

Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs): Bind to and inhibit reverse transcriptase.

Protease Inhibitors (PIs): Inhibit the protease enzyme, preventing viral particles from maturing.

Prevention

Preventing HIV transmission involves a combination of strategies:

Correspondence to: Marisa Luisa, Department of Microbiology and Preventive Medicine, University of Internal Medicine, Seville, Spain, Email: lusia.m@upch.pe

Received: 28-May-2024, Manuscript No. VMID-24-32258; **Editor assigned:** 31-May-2024, Pre QC No. VMID-24-32258 (PQ); **Reviewed:** 15-Jun-2024, QC No. VMID-24-32258; **Revised:** 21-Jun-2024, Manuscript No. VMID-24-32258 (R); **Published:** 28-Jun-2024, DOI: 10.35248/2161-0517.24.13.289

Citation: Luisa M (2024) Early Detection and Management of HIV Transmission Routes and Treatment Advances. *Virol Myco.* 13:289

Copyright: © 2024 Luisa M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Mother-to-child transmission prevention: HIV-positive mothers can take ART during pregnancy and childbirth and avoid breastfeeding to reduce the risk of transmission to their infants.

Education and awareness: Public health campaigns to educate about safe practices, reduce stigma and encourage testing and treatment.

CONCLUSION

HIV/AIDS has profound socio-economic implications. The disease primarily affects individuals in their most productive years, leading to loss of income and increased healthcare costs.

Families often face financial strain due to medical expenses and loss of breadwinners, increasing poverty. Moreover, HIV/AIDS stigma and discrimination remain significant barriers to prevention and treatment. Stigmatized individuals may avoid seeking testing or treatment for fear of social repercussions, further spreading the virus and hindering public health efforts. Understanding HIV is important for addressing the epidemic and supporting those affected. Advances in treatment have transformed the lives of millions, making HIV a manageable condition. However, continued efforts in prevention, education and combating stigma are essential to curb the spread of HIV and ensure equitable access to care.