

HIV 101



WHAT IS THE ORIGIN OF HIV?

- The original source of HIV has been traced to a subspecies of chimpanzees native to west equatorial Africa, specifically southern Cameroon.
- It is believed that HIV-1 was introduced into the human population when hunters were exposed to infected blood.
- The earliest known case of HIV-1 in humans was collected in 1959 from a man in Kinshasa, Democratic Republic of Congo.



HIV VS. AIDS – WHAT'S THE DIFFERENCE?

- HIV or Human Immunodeficiency Virus is a sexually transmitted or blood borne virus that attacks the human body's immune system.
- HIV kills CD4 cells, or T-helper cells, that are essential for helping the body fight off infections.
- AIDS or Acquired Immune Deficiency Syndrome occurs in the advanced stages of HIV infection when the immune system can no longer fight infection.
- A person can be infected with HIV, but not have progressed to AIDS.



WHAT IS THE DIFFERENCE BETWEEN HIV-1 AND HIV-2?

- Internationally, HIV-1 is the most prevalent type of the HIV virus.
- HIV-2 is not as common, typically concentrated in West Africa.
- Both have the same modes of transmission.
- HIV-2 is less easily transmitted and often takes a longer time to progress.
- A person can be infected with both HIV-1 and HIV-2 at the same time.



WHAT ARE CD4+ T-CELLS?

- CD4+ T-cells are a type of white blood cell vital to function of the immune system.
- Their primary purpose is to fight off infections.
- HIV attaches and infects these CD4+ cells, destroying billions of them daily.
- As these cells are destroyed, the immune system is weakened.
- A healthy human usually has between 500-1600 CD4+ cells/mm³ of blood.
- As HIV progresses, these numbers will significantly drop, causing a person to become much more vulnerable to other infections.



HOW IS HIV TRANSMITTED?

- HIV is spread via sexual contact with an infected person.
- By sharing needles/syringes with someone who is infected.
- Through transfusions of infected blood and blood products., and
- From an infected mother to her baby before, during birth or through breast-feeding after birth.
- Anyone can be infected by HIV.
- Risky behaviours can increase one's chance of infection.



HOW IS HIV NOT TRANSMITTED?

- HIV is unable to replicate outside a living host and thus HIV transmission through air, water, or insects is highly improbable.
- There is no evidence that kissing, sneezing, coughing, holding hands or sharing cups with an HIV-infected person can transmit HIV.
- There is evidence that saliva and tears both contain HIV, but neither have a high enough viral load that would be necessary for it to be transmitted.



HOW DOES HIV REPRODUCE IN THE BODY?

- HIV is a retrovirus, meaning that it converts its single-stranded RNA genome into DNA during replication.
- HIV attaches to the CD4 protein on the outside of a CD4+ cell
- Once it has entered the CD4 cell, HIV converts its viral RNA into DNA.
- This DNA is then integrated into the infected human's DNA.
- Once HIV has infected a CD4+ cell, the cell can no longer fight off infections.
- Next, HIV is transcribed and translated by the host's replication machinery to facilitate the production of new HIV proteins and enzymes.
 - These new viruses exit the infected CD4+ cell to infect other CD4+ cells.



IS THERE A VACCINE AGAINST HIV?

- There is a great amount of interest focused on vaccine research and development; however, currently there are no HIV vaccines available.



IS THERE A CURE?

- Since the virus inserts its genome into human cells and then replicates, there is no cure for HIV or AIDS.

**FOR MORE INFORMATION VISIT THE
CANADIAN AIDS SOCIETY
WWW.CDNAIDS.CA**