ACQUIRED IMMUNODEFICIENCY SYNDROME AND ITS OCULAR COMPLICATIONS
• Acquired immunodeficiency syndrome (AIDS) is an infectious disease caused by a retrovirus, the human immunodeficiency virus (HIV).

• AIDS is looked upon as a modern plague.
At present, almost 10 million people are known to be infected with HIV, and it is estimated that by the year 2000, approximately 40 million people will be infected. (I.J.O. 1994)
Present Indian scenario

HIV infection first detected in C.S.W’s in Tamil Nadu in 1986.

Since then, the infection is growing very fast.

The states of Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka and Manipur are hard hit.

The estimated number of HIV infections in the country have been reported to be 3-5 million.
Human Immunodeficiency Virus (HIV)

- HIV is a retrovirus. A member of *Lentivirinae* subfamily.
- HIV-1 is more prevalent and is seen worldwide.
- HIV-2 primarily in western Africa.
- HIV is 100 nm in diameter and has a single stranded RNA genome.
- The virion has a cylindrical nucleocapsid that contains the single stranded RNA and viral enzymes, including proteinase, integrase, and reverse transcriptase.
HIV Virus ........

- Surrounding the capsid is a lipid envelope derived from infected host cell and contains virus encoded glycoproteins.
Pathogenesis

- Attachment of virus to a distinct group of T-cells and monocytes/macrophages that display a membrane antigen complex known as CD4.
- Lipid membrane of the virus fuses with target cell allowing entry of virus core into host cell cytoplasm.
- The viral core is uncoated and transcribed by reverse transcriptase and a double stranded DNA is formed which enters cell nucleus.
- This proviral DNA integrates into host cell genome and the host cell can become latently or actively infected.
Pathogenesis.....

If latently infected, no viral RNA produced and no productive infection.

If actively infected, produces mature virions by transcription of proviral DNA.

Transcription also generates messenger RNA, which is translated into HIV-specific structural proteins which integrate viral core particles.

Virus particles target CD+ T cells, which play a pivotal role in immunologic response. Their decrease in number leads to opportunistic infections and neoplasms.
## Transmission

<table>
<thead>
<tr>
<th>Type of Exposure</th>
<th>Efficiency per single (percentage)</th>
<th>Percentage of global (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td>&gt; 90</td>
<td>3-5</td>
</tr>
<tr>
<td>Perinatal</td>
<td>30</td>
<td>5-10</td>
</tr>
<tr>
<td>Sexual</td>
<td>0.1-1.0</td>
<td>70-80</td>
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<tr>
<td>I.V. drug use</td>
<td>0.5-1.0</td>
<td>5-10</td>
</tr>
<tr>
<td>Health care setting</td>
<td>&lt;0.5</td>
<td>&lt;0.01</td>
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HIV has been isolated from blood, semen, saliva, cerebrospinal fluid, tears, breast milk, amniotic fluid, vaginal secretions, cervical cells and bronchoalveolar lavage.
Diagnosis

Laboratory diagnosis depends on demonstration of virus specific antibodies by enzyme-linked immunosorbent assay (ELISA) and Western blot, virus antigen by enzyme immunoassay (EIA), direct isolation of HIV virus from the blood by culture, or detection of HIV nucleic acid by polymerase chain reaction (PCR) technology.

ELISA is widely used for screening, and Western blot is to confirm ELISA result.
Main steps of HIV infection and Antiretroviral drugs
Antiretroviral agents

Reverse transcriptase inhibitors

Nucleosides
Zidovudine
Didanosine
Lamivudine

Non-nucleosides
Neviparine
Delavirdine

Protease inhibitors
Saquinavir
Ritonavir
Indinavir