HIV / AIDS

ENDEMIC: A disease that exists permanently in a particular region or population.

Example: Malaria is a constant worry in parts of Africa.

EPEDEMIC: An outbreak of disease that attacks many peoples at about the same time and may spread through one or several communities.

PANDEMIC: When an endemic spreads throughout the world.

Example: AIDS

HIV: Human Immunodeficiency Virus. It is responsible for causing AIDS.

- HIV is a retrovirus that attacks the immune system.

RETROVIRUS	LENTIVIRUS	FASTIDIOUS ORGANISM

A retrovirus is a type of virus that inserts a DNA copy of its RNA genome into the DNA of a host cell that it invades thus changing the genome of that cell.	It causes chromic disease with long incubation period	It is any organism that has complex or particular nutritional requirements, in other words it willl only grow when certain nurtrinets are included in its medium

- Its genetic material, RNA must be converted to DNA during replication.
- Overtime the immune system and the body loses its ability to fight the virus.

AIDS: Acquired ImmunoDeficiency Syndrome

- It is characterized by signs and

symptoms of severe immune deficiency. Example: weightloss(more than 10%), diarrhea and fever lasting more than 1 month.

Discovery of HIV AND AIDS VIRUS

- Luc Montagnier and Francoise Barree-Sinuoussi, idemtified the HIV virus that causes AIDS while working at the Pasteur Institute in Paris.

Etiology: The scientific study of the cause of disease.

- World first became aware of AIDS in early 1980's and researchers aren't sure when and how HIV developed and the most likely theories assume that HIV-I was transmitted to humans from chimpanzees sometime in early 20th Century.

HIV & AIDS

- AIDS was first recognized by the UNITED STATES CENTRE FOR DISEASE CONTROL AND PREVENTION(CDC) IN 1981.
- HIV/ AIDS is considered as a

Pandemic. HIV is belived to be originated form west-central Africa. Most of those infected live in sub Saharan Africa

- Following the initial infection a person may not notice any symptoms for prolonged periods or may experience a brief period of influenza like illness
- As the infection progresses it interferes more with the immune system increasing the risks of common infections like tuberculosis or other infections or tumors that rarely affect people who have working immune systems
- These late symptoms of infections are referred to as acquired immunodifeciency Syndrome (AIDS).This stage is also associated with drastic weight Loss.
- HIV: The virus compromises the bodys ability to handle disease and causes AIDS. It is an RNA based virus that causes AIDS. It attacks the

immune system(the white blood cells called CD4 cells that protect the body fro illness) , destroys the body's defense mechanism and the body becomes vulnerable to infections and cancers that dont normally develop in healthy people.

- AIDS: It is related to HIV but are not the same
- A person has AIDS only in the final stages of HIV infection after the body's immune system becomes unable to defend itself against foreign invaders like bacteri and other viruses.

CD4 Cell (Cluster of Differentiation of 4): It's a type of white blood cell that carries the CD4 cell surface marker. This marker helps the body fight infections. HIV typically invades CD4 cells, leading to their dysfunction or destruction. CD is a glycoprotein found on the surface of immune cells.

CD4+ T Helper Cells (T4 Cells): These are

white blood cells that are crucial components of the human immune system.

Antibodies (AB): Also known as immunoglobulin, AB is a large Y-shaped protein produced by plasma cells. It plays a vital role in the immune system by identifying and neutralizing foreign objects like bacteria and viruses. Antibodies recognize a specific part of the foreign target called an antigen.

How HIV gets into a T cell?

Step 1: HIV attaches itself to infection fighting T cell
Step 2: It then locks onto two entry areas of T cell at once.
Step 3: Tricks the T cell to allow Virus RNA to enter.

What does HIV do inside the T cell?

1. Virus RNA changes into DNA
2. Enters cell nucleus & becomes a part of hosts DNA
3. Programs T cell to produce virus in

abundance
4. New viruses bud off host T cell , killing T cell and enters blood stream and this new HIV virus infects more T cells.

Test for HIV

To be tested for HIV normally people give blood sample or a swab of fluids from your mouth and it is recommended that of a person is sexually active or had multiple partners then they should be tested every 6 months.

HIV transmission: Requires Infected body fluids and enters into the body.

1. Direct contact with infected blood
2. Sexual contact: Oral , Anal, or Vaginal
3. Direct contact with semen or vagainal or cervical secretions
4. Mothers infected to HIV often transmit it to infants: prenatal transmission druingpregnancy ,delivery and breastfeeding.
5. Blood transfusion or organ donation

from an HIV infected donor.

Fluids that can transmit HIV	Fluids that are safe
Blood, semen, vagainal secretions breast milk, contaminated needles and drug use.	Spit/ Saliva, pee / urine, sweat and tears

HIV is not transmitted by casual contact: working or playing with HIV positive person, shaking hands, public pools, hugging and public toilet it is all not transmitted by air , food mosquito and does not survive long outside the body even in optimum conditions.

Symptoms of HIV

- Dry, flaky skin (Xeroderma)
- Chronic fatigue
- Fever that comes and goes (Pyrexia)
- Diarrhea that lasts more than a week
- Heavy night sweats (Hyperhidrosis)
- Rapid weight loss
- Swollen lymph nodes
- White spots on tongue, mouth & throat

Caus of death of an HIV infected person:

1. Pneumonia
2. Toxoplasmosis:-an infection with parasite called *Toxoplasma gondii*
3. Kaposis Sacroma cancer forms in the lining of blood and lymph vessels.
4. Microbacterium Avium complex
5. Invasive cervival cancer

Note: Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not infectious unless **visibly bloody**

Phases of HIV infection.

Acute
- HIV replicates quickly
- Energy requirements increase

Asymptomatic
- No symptoms

Symptomatic
- Onset of opportunistic infections
- Further increase in nutritional requirements

Late symptomatic (full-blown AIDS)
- Heightened viral load
- Intense weight loss
- Opportunistic infections taking control

Viral Load: Amt of virus present in persons body

The Severity of illness is determined by the amount of =virus in the body(increasing viral load) and the degree of immune suppression (decreasing CD4 count). Higher the viral load sonner the immune suppression occurs.

Treatment of HIV and AIDS

HIV has no cure and treatments can only help slow the progression to AIDS and minimize malnutrition. The most effective treatment is antiretroviral therapy(ART) using antiretroviral drugs (ARVs). These

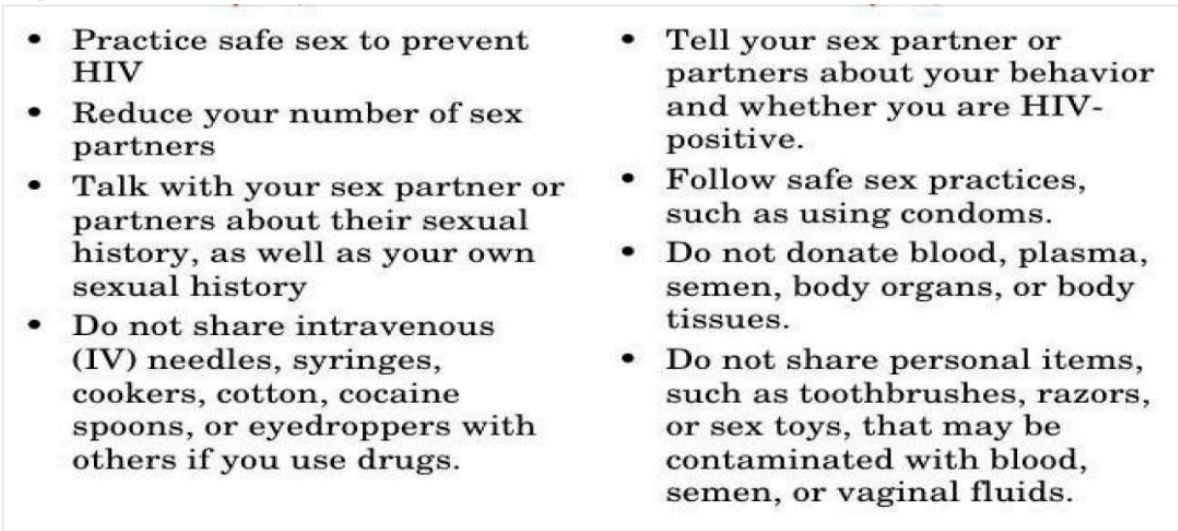
treatments help person live longer with HIV.

Prognosis: Prognosis is a medical term for predicting the likelihood or expected development of a disease, including whether the signs and symptoms will improve or worsen or remain stable over time

Antiretroviral therapy(ART) : Reduces the presence of the virus in the body to an "Undetectable viral Load" but cannot eliminate it.

Prevention

1. To preven HIV transmission during sex you need to use a condom
2. Open sores from STDs like herpes and syphilis provide gateway for HIV to enter the body.
3. Gonorrhea & Chamydia may weaken the skin and mucuous barriers that help prevent infection
4. Use a new sterile needle to inject drugs

5. HIV is not airborne and cannot be caught by touching kin sweat or saliva, holding hands or sharing drinks.
6. Mosquitos do not inject others people blood when they bite so they dont spread HIV.
7. 

1. No sex = abstinence
2. Have only one uninfected partner = monogamy
3. Use protection = Protect your self – During blood transfusion, don't use syringe from others, or safe practice.

Window Period

The time period between a persons exposure & actual infection with HIV and until antibodies are detectable in the body.

After 3 months there are usually enough antibodies to show on a AIDS test (nearly 99% people develop antibodies by 3 months)

HIV and Immune system:

1. A person can be infected with HIV and not have aids if the immune system of the person is intact
2. Often this period is 8-10 years. If a person has no symptoms then a person is a carrier.
3. After this period the immune system begins to lose the fight and the person eventually has aids.

Impact of HIV

- ☐ **Negative economic impact on countries**
- ☐ **Overwhelmed healthcare systems**
- ☐ **Decreasing life expectancy**
- ☐ **Deteriorating child survival rates**
- ☐ **Increasing numbers of orphans**

- Straining of already meager health budgets
  - Overall public health spending less than US$10/person (UNAIDS)
- Heavy demands on health system
  - Increased need for medical supervision
  - Longer hospital stays
  - Health workers shortages and burnout

- Illness and death of person, of different working group
- Increased Cost of training to replace those lost to AIDS

India has the third highest AIDS and HIV burden in the world. Which is prevalent in southern India.