MIND MAP : LEARNING MADE SIMPLE

CHAPTER - 8

Human Health and Diseases

- **Diseases**
  - **Malaria** — *Plasmodium*
    - When the mosquito bites another human, sporozoites are injected with bite
    - Parasites (sporozoites) reach the liver through blood
    - The parasite reproduces asexually in liver cells, bursting the cell and releasing into the blood
    - Parasites reproduce asexually in red blood cells, bursting the red blood cells and causing cycles of fever and other symptoms Released parasites infect new red blood cells
    - Sexual stages (gametocyte) develop in red blood cells
    - Female mosquito takes up gametocytes with blood meal
    - Mature infective stages (sporozoites) escape from intestine and migrate to the mosquito salivary glands
    - Sporozoites
    - Salivary glands
    - Fetilisation and development take place in the mosquito's intestine
    - Mosquito Host
    - Human Host
    - Female
    - Male
  - **Common cold** — *Rhino virus*
  - **Amoebiasis** — *Entoamoeba histolytica*
  - **Filariasis** — *Wuchereria*
  - **Pneumonia** — *Streptococcus Pneumonia*
  - **Typhoid** — *Salmonella typhi*
  - **Acariasis** — *Ascaris*
- **Cancer**
  - **Types**
    - Benign tumor
    - Malignant
    - Metastasis
  - **Detection & Diagnosis**
    - Biopsy
    - Radiography
    - CT
    - MRI
  - **Treatment**
    - Radiation therapy
    - Chemotherapy
    - Immunotherapy
- **Health**
  - State of complete physical, mental and social well-being
- **Lymphoid organs**
  - **Primary**
    - Bone marrow
    - Thymus
  - **Secondary**
    - Spleen
    - Lymph node
    - Tonsils
- **Drugs and Alcohol abuse**
  - **Drugs**
    - Opioids- *Papavarsomniferum*
    - Coca alkaloid- *Erythroxylum coca.*
    - Cannabinoids- *Cannabis sativa*
  - **Symptoms and signs**
    - Drop in academic performance
    - Lack of interest in personal hygiene.
    - Withdrawal and isolation.
    - Depression, aggressive and rebellious behavior.
    - Deteriorating relationship between family and friends.
    - Loss of interest in hobbies.
  - **Causes**
    - Curiosity and Experimentation.
    - Need for adventure and excitement.
    - Escape from facing problems.
    - Stress from pressure to excel in academics or examination.
    - Television, movies, newspapers, internet
    - Unsupportive family structures and Peer pressure.
  - **Prevention Control**
    - Avoid undue peer pressure.
    - Education and counselling.
    - Seeking help from parents and peers.
    - Looking for danger signs.
    - Seeking professional and medical help.
- **AIDS**
  - **Caused by HIV**
    - Retrovirus
    - Viral RNA core
    - Viral protein coat
    - Virus infects normal cell
    - Plasma membrane
    - Animal cell
    - Viral RNA is introduced into cell
    - Cytoplasm
    - Viral DNA is produced by reverse transcriptase
    - Viral DNA incorporates into host genome
    - New viral genetic material is produced by the infected cell
    - New viruses are produced
    - Nucleus
    - DNA
    - New viruses can infect other cells

    Life cycle of HIV
- **Auto Immunity**
  - Memory based acquired immunity, which is able to distinguish foreign molecules or cells (pathogen) from self-cells.E.g. Rheumatoid arthritis, Multiple sclerosis
- **Allergy**
  - Exaggerated response of the immune system to allergens.
  - Antibodies IgE type.
  - Anti-histamine, adrenaline and steroidsquickly reduce the symptoms.
- **Immunity**
  - **Pathogens**
    - **Innate (Non-specific)**
      - **Types of barriers**
        - Physical
        - Physiological
        - Cellular
        - Cytokine
    - **Acquired (Specific)**
      - **2 Types**
        - **Active Own antibodies**
          - Natural: exposure to infectious agent
          - Artificial: immunization
        - **Passive Ready made antibodies**
          - Natural: maternal antibodies *e.g.,* colostrum
          - Artificial: antibodies from other sources like anti-tetanus serum
      - **Produces primary & Secondary response**
        - **T Lymphocytes**
          - Help B Cells
        - **B Lymphocytes**
          - Produces Antibodies
            - Antigen binding site
            - Antigen binding site
            - Light chain
            - Constant region on light chain
            - Heavy chain