Human Health And Diseases

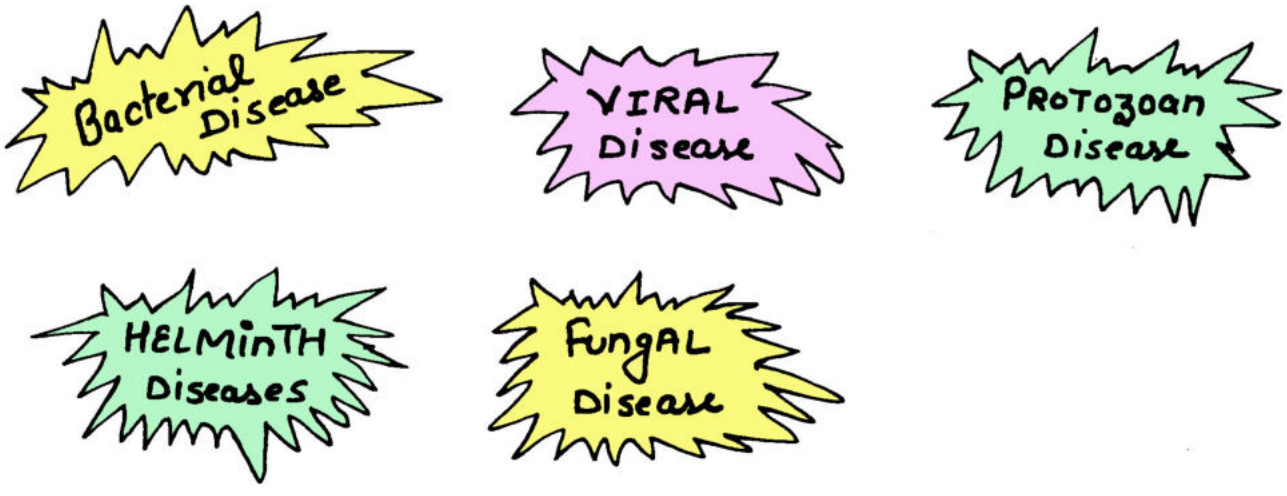
Health is a state of complete physical, mental & social well-Being. Health is affected by genetic disorders, infections, change in life style (Food, water, Rest, Exercise, habits). Mind influences immune system (By neural and endocrine systems) which maintains our health.

When the functioning of organs OR systems of the body is adversely affected, it is called a disease. Disease may be infectious OR non infectious.

Diseases which are transmitted from one person to another are called infectious Diseases.

- Disease causing organisms are called **PATHOGENS.**
- Parasites are pathogens as they harm the host by living in OR on them

Common Infectious Diseases In Man



Bacterial Diseases

(A) TYPHOID:

- Pathogen is "Salmonella Typhi".
- **Mode of transmission** → It enters the small intestine through food and water and migrates to other organs through Blood.

Symptoms

Sustained high fever (39°–40°c), weakness stomach pain, Constipation, Headache & loss of appetite. Intestinal perforation and death may occur.

→ **Widal Test** is used for confirmation of the disease.

(B) Pneumonia

- Pathogen is "Streptococcus Pneumoniae" & Haemophilus influenzae

- It infects lung alveoli. The alveoli get filled with fluid leading to Respiratory problems.

- **Mode of Transmission** → Inhaling the droplets/aerosols released by an infected person. sharing glasses and utensils with an infected person.
- **Symptoms**

Respiratory problems, Fever, chills, cough, Headache In severe cases, lip and finger nails turn gray to Blwish colour.

VIRAL Disease

Common Cold • Pathogen is **Rhinoviruses.**

- **Mode of transmission :**

Inhaling droplets resulting from cough OR sneezes. Through contaminated objects.

- **Symptoms**
  - → Infects nose & Respiratory passage.
  - → Nasal congestion and Discharge, Sore throat, Hoarseness, Cough, Headache, tiredness etc. Last for 3-7 days.

FungAL Diseases

Ring WORM Pathogens are Microsporum, Trichophyton & Epidermophyton.

They are seen in groin, Between toes.

- **Mode of Transmission :**

from soil or by using towels, cloth, comb etc.
Heat and Moisture help fungi to grow.

- **Symptoms**

Appearance of dry, scaly lesions on various Body Parts such as skin nails and scalp. Intense itching.

HELMINTH DISEASES

(a) ASCARIASIS

Pathogen is **Ascaris** [Intestinal Parasite]

- **Mode of transmission:**

  Soil, water, vegetables, fruits Contaminated with faeces containing eggs of parasites.

- **Symptoms**

  Internal bleeding, Muscular pain, fever, anaemia and blockage of Intestinal passage.

(b) ELEPHANTIASIS "Filariasis"

- Pathogen is "filarial worms" or "Wuchereria"

  example - Wuchereria bancrofti
  Wuchereria malayi

- **Mode of transmission:**

  - Bite of female "Culex mosquito."

- **Symptoms:**

  filarial worms live in lymphatic vessels (usually of lower limbs). It causes chronic inflammation of the organs in which they live for many years. Limbs and genital organs may be deformed.

PROTOZOAN DISEASES

(a) Amoebiasis ~~Amoebic dysentery~~

- Pathogen is Entamoeba Histolytica

- **Mode of transmission :**
  - Houseflies (Mechanical carriers) transmit parasites from faeces to food & water

- **Symptoms**
  - Constipation, abdominal pain and cramps, Stool with excess mucous and Blood clots.

(b) Malaria

- Pathogen is "PLASMODIUM"
  - * PLASMODIUM Vivax
  - * PLASMODIUM Malariae
  - * PLASMODIUM Falciparum
  - * PLASMODIUM Ovale

- Mode of transmission

  Anopheles Mosquito biting

- **Symptoms**

  Haemozoin (toxin Released by Plasmodium) Causes chill and High fever recurring every 3-4 days.

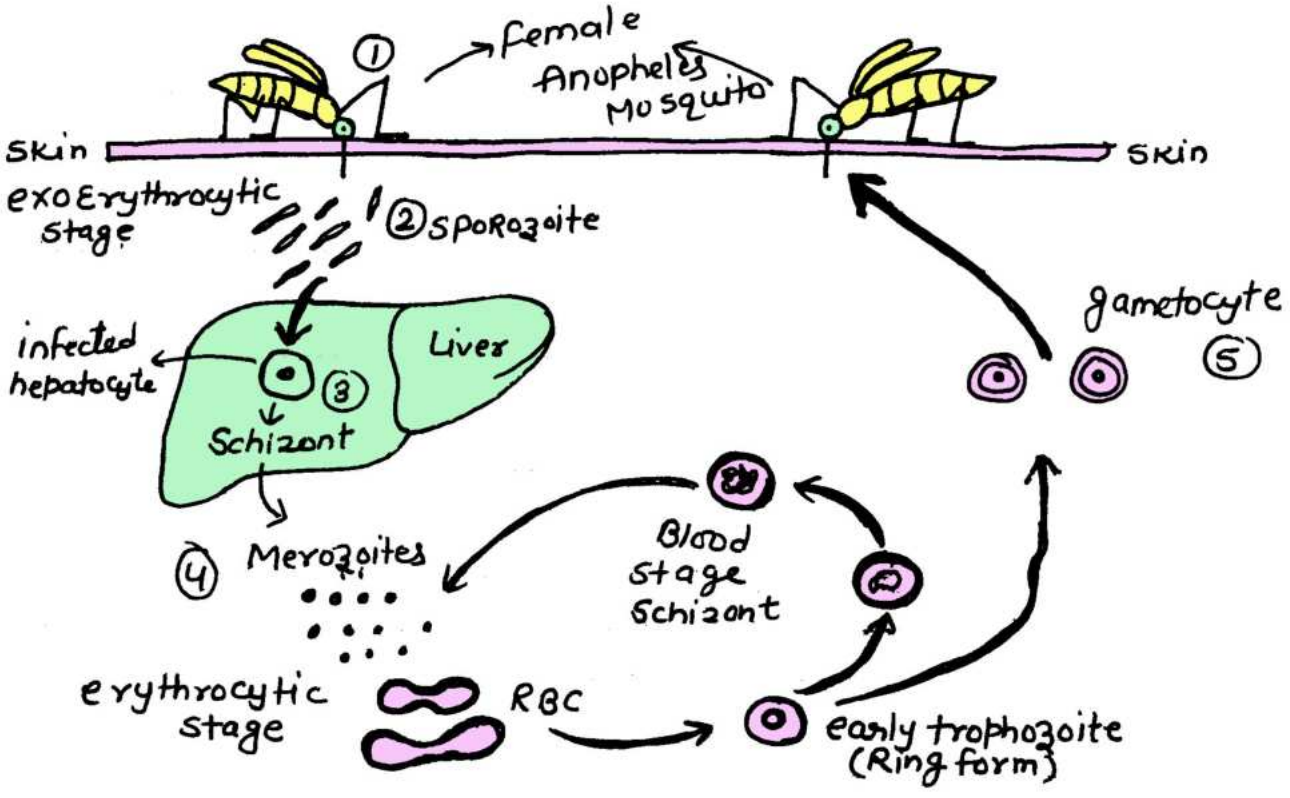
Note Malaria is caused by a digenetic (having two hosts to Complete its life cycle) and triphasic {"having three phases of life cycle"} Protozoan parasite Known as plasmodium. SIR RONALD ROSS (1897), a doctor in Indian army, established that malarial parasite is transmitted by the bite of a female Anopheles for which he got Nobel prize in 1902.

- Life cycle of Plasmodium requires two hosts for completion human and Mosquito. Plasmodium enters the human body as sporozoites (infectious form) through the bite of infected female Anopheles (vector). The Sporozoites reach the liver cells by blood where they initially multiply.

- These then attack the RBCs resulting in their rupturing. The rupture of RBC is associated with the release of HAEMOZOIN, a toxin which causes the chill and high recurring fever every 3-4 days.

- The female Anopheles mosquito when bites an infected Human being, the malarial parasites enter into the mosquito's body and undergo further development to form sporozoites that finally move to the salivary gland of the insect.

- The bite of these mosquitoes introduces the sporozoites inside the Human body, thus initiating the above mentioned cyclic process again.



Prevention and Control of Diseases

① Personal Hygiene

→ Keep the body clean, use clean drinking water, food.

② Public Hygiene

→ Proper Disposal of wastes and excreta.
→ Periodic cleaning and disinfection of water reservoirs, Pools, and tanks.
→ Avoid contact with infected persons OR their belongings (TO CONTROL AIR BORNE Diseases).
→ Standard practices of Hygiene in Public catering.
→ Control and eliminate the vectors (Mosquitoes) and their breeding places.
- Avoid stagnation of water
- Regular Cleaning of Household coolers.
- Use of Mosquito nets
- Introduce larvivorous fishes like GAMBUSIA. in ponds.
- Spraying insecticides in ditches, drainage and swamps.
- Provide doors and windows with wire Mesh.

Note These precautions can avoid vector borne diseases like Malaria, filariasis, Dengue & chikungunya.

- **CANCER** is an abnormal and uncontrolled multiplication of cells resulting in the formation of **tumor** [Masses of cells]
- Normal cells show a contact inhibition [contact with the other cells inhibits their uncontrolled growth]. Cancer cells donot have this property.

TUMORS are 2 types:-

(a) Benign tumor

- Confined to the place of its origin. They donot spread to other parts.
- Cause little damage.

(b) Malignant tumor

- These are a mass of proliferating cells Called neoplasmic OR tumor cells. They grow very Rapidly invade and damage the surrounding normal tissues. As they actively divide and grow they also starve the normal cells by competing for vital nutrients. cells sloughed from tumors reach distant sites through blood where they get lodged and start a new tumor. This property Called **Metastasis**.

CAUSES OF CANCER

CARCINOGENS

- **Physical Agents:**
  - Ionizing Radiations like **X-Rays** and gamma rays
  - Non-Ionizing Radiations like **UV**.
- **CHemical Agents:**
  - Tobacco smoke (major cause of lung cancer), vinyl chloride, Caffeine, nicotine, mustard gas.
- **Biological Agents:**
  - Oncogenic viruses, cellular Oncogenes ↓ [C-onc OR PROTO oncogenes] when C-onc in normal cells is activated the cells becomes oncogenic.

CANCER DETECTION AND DIAGNOSIS

- **Biopsy**
  - A thin Piece of the suspected tissue is stained and examined under microscope (Histopathological studies).
  - In Case of **Leukemia**: Biopsy & Histo-Pathological studies
    - → Blood & Bone marrow tests for increased cell count

Radiography

- Use of X-Rays

CT-SCAN Computarized tomography

Magnetic Resonance Imaging **MRI**

→ Use of Antibodies against cancer-specific antigens.

→ Techniques of Molecular Biology to detect genes related to cancer. such individuals may be advised to avoid exposure to particular carcinogens [Tobacco smoke]

TREATMENT

- **Radiotherapy :** Tumor cells are irradiated lethally, without damaging surrounding normal tissues.

- **Chemotherapy :** Use of chemotherapeutic drugs. Many Drugs have side effects Like hair loss, anaemia.

- **Immunotherapy :** The patients are given biological Response Modifiers [α - interferon], which activates their immune system and help in destroying the tumor.

- **Surgery :** Most cancers are treated by combination of surgery, Radiotherapy and Chemotherapy.

Note

Types of Cancer Bases on origin

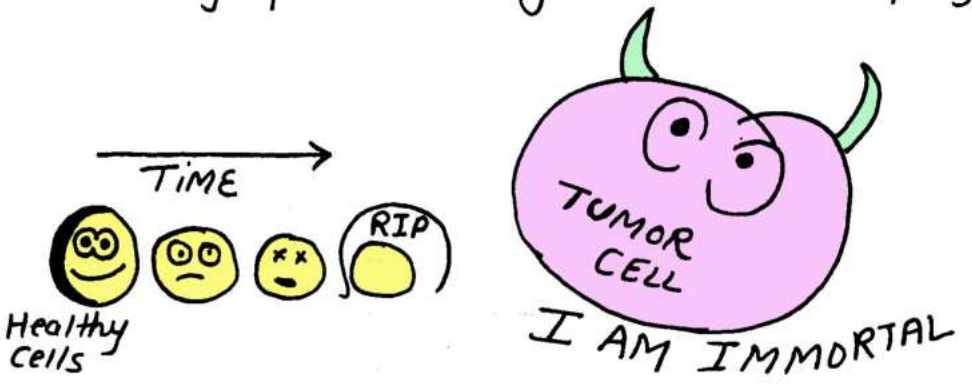
ⓐ Carcinoma - epithelial origin

ⓑ Sarcoma - Connective tissues

ⓒ Myeloma - Plasma cells of Bone Marrow.

ⓓ Leukemia - Blood Cancer

ⓔ Lymphoma - glands OR Nodes of lymphatic system.



- AIDS = Acquired Immuno Deficiency Syndrome
- Syndrome = "A group of symptoms"
- AIDS is the deficiency of immune system.
- It is caused by HIV [Human Immunodeficiency Virus), a retrovirus having RNA genome.
- AIDS was first reported in America [1981].

Transmission

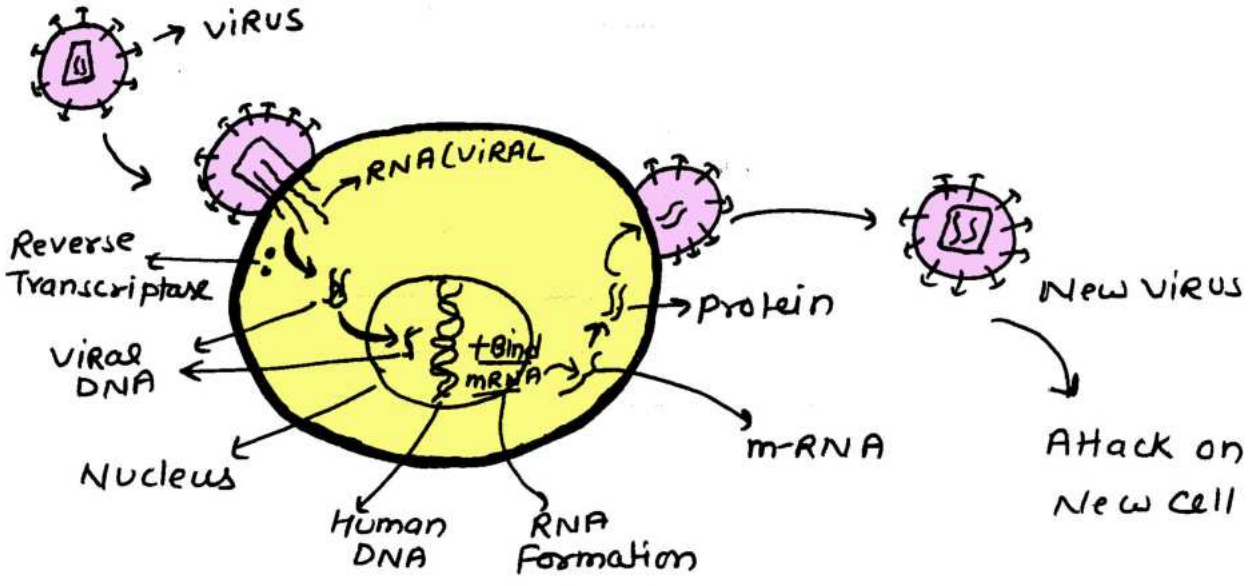
- Sexual contact with infected person.
- Transfusion of contaminated blood & Blood Products.
- Sharing of infected needles.
- From infected mother to her child through placenta.

■ High Risk of getting HIV includes
- Individuals with multiple sexual partners.
- Drug Addicts who take drugs intravenously.
- Individuals who require Repeated Blood transfusion.
- Children born to an HIV infected Mother.

■ HIV does not spread by touch or physical contact. It spreads only through Body fluids.

■ There is a time-lag (From few months to 5-10 years) between the infection and appearance of Symptoms.

Replication of Retrovirus



DNA → mRNA → Protein
Transcription Translation
Central Dogma theory

- **Life cycle** →

HIV enters into body → To macrophages

↓

RNA genome Replicates in presence of Reverse transcriptase to form Viral DNA

→ Viral DNA incorporates into host DNA

→ Infected cells produce virus particles

↓

HIV enters into Helper T-cells → Replicate & Produce progeny Viruses → Attack other helper T-cells

↓

T-cells Decrease

↓

Weaken immunity

- HIV infected person may be infected with Mycobacterium, viruses, fungi and parasites like Toxoplasma.

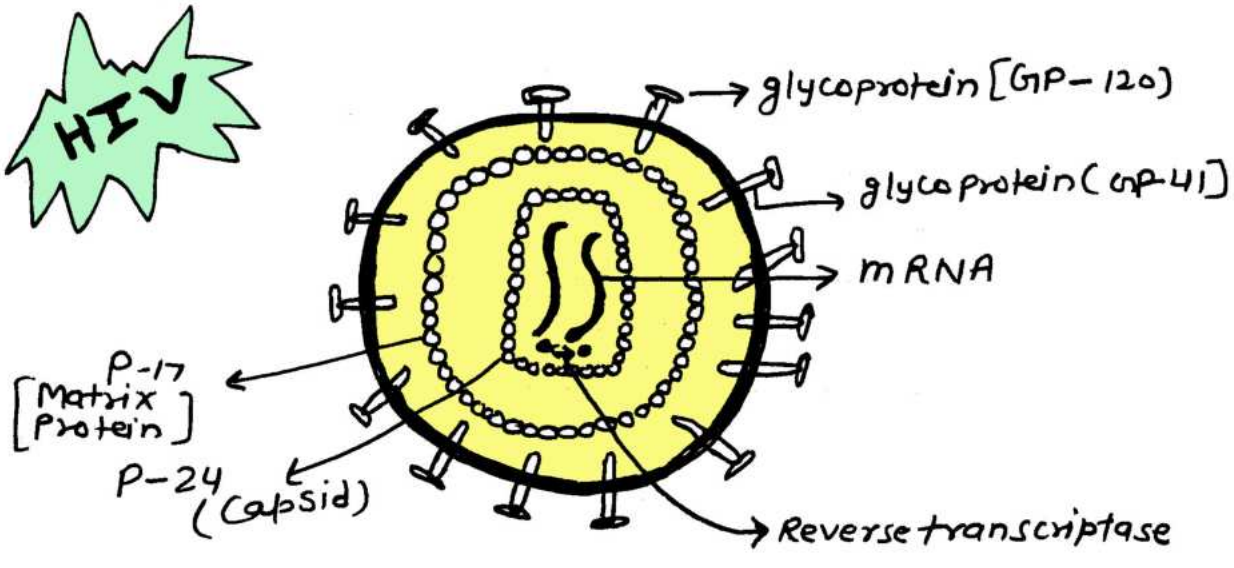
Diagnosis — **ELISA** TEST
[Enzyme linked immuno-sorbent Assay]

TREATMENT

→ Antiviral drugs partially effective. They can only prolong the life of the patient.

Prevention of "AIDS"

- Educate Peoples about AIDS
- Making Blood (from Blood Banks) safe from HIV.
- Use of Disposable needles and Syrings.
- Advocating safe sex and free distribution of Condoms.
- Controlling drug abuse.
- Regular check ups for HIV in Susceptible population.



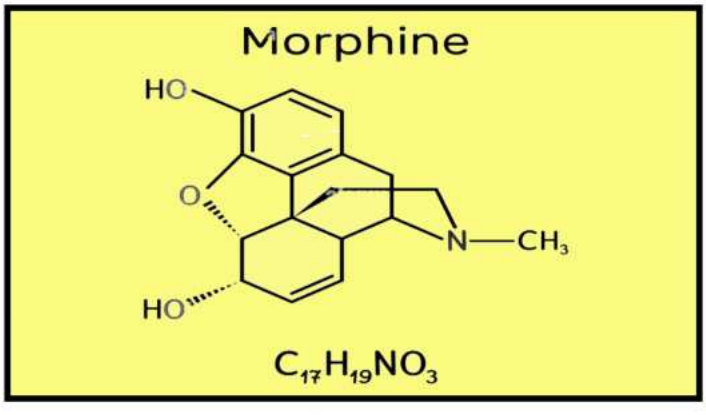
DRUGS, SMOKING, ALCOHOL ABUSE

- Commonly abused DRUGS include opioids, cannabinoids and coca Alkaloids.

OPIOID They Bind to specific opioid receptors in **CNS** and gastrointestinal tract.

Example –
MORPHINE
HEROIN
BROWN SUGAR

MORPHINE is extracted from the latex of Poppy Plant *Papaver somniferum*. It is a sedative and Pain killer, and useful for Surgery.



HEROIN is a white, odourless, bitter crystalline compound It is obtained by acetylation of Morphine. It is taken by snorting and injection. Heroin is a depressant and slows down body functions.

Smack
Di Acetyl Morphine

CANNBINOIDS

- They interact with cannabinoid receptors in the brain.
- Generally taken by inhalation and oral ingestion.

- Natural cannabinoids are obtained from the inflorescences of the plant **CANNABIS SATIVA [HEMP PIANT]**. Its flower tops, leaves and the resin are used to produce marijuana hashish, charas & ganja.

- They affect cardiovascular system.

COCA ALKALOID (COKE OR CRACK)

- It is obtained from coca plant Erythroxylum coca.
- It interferes with transport of neurotransmitter dopamine.
- Cocaine is usually snorted.
- It stimulates **CNS** Producing Euphoria & increased Energy.
- Excessive dosage of Cocaine causes Hallucinations.
- Atropa Belladona & Datura are also Hallucinogenic plants.
- Cannabinoids are abused by sportspersons.
- Drugs like barbiturates, Amphetamines, Benzodiazepines, **Lysergic** Acid Diethylamides [LSD], are used as medicines to treat mental illnesses like depression and insomnia. But they are often abused resulting in impairment of Physical, Physiological OR psychological functions.

SMOKING

- Tobacco is smoked, chewed OR used as a snuff.
- Tobacco contains nicotine (an alkaloid) which stimulate adrenal gland to Release adrenaline and nor adrenaline causing high BP and heart rate.
- Smoking causes cancers of lung, urinary bladder and throat, bronchitis, emphysema, coronary heart disease gastric ulcer. Tobacco chewing causes oral cancer.
- Smoking increases CO content in Blood and Reduces OxyHaemoglobin. This causes O_2 Deficiency in the body.

ADOLESCENCE AND DRUGS

- Adolescence is "a period" and "a process" during which child becomes mature in terms of his/her attitudes and beliefs for effective participation in society.
- Adolesence is a bridge linking childhood and adulthood (Period of 12-18 years of age). It is very vulnerable Phase of mental and Psychological development.

Cause of Drug, Alcohol use in Adolescence period

- Curiosity and Experimentation.
- Need for adventure and excitement.
- To escape facing problems
- Stress from pressure to excel in academics OR examination. / Television, movies, internet)
- Unstable or Unsupportive family structure

ADDICTION and DEPENDENCE

Addiction:

It is a psychological attachment with Drugs & Alcohol (Euphoria and a temporary feeling of well being). with Repeated use of drugs, the tolerance level of the receptors increases. Thus the receptors Respond only to higher doses leading to greater intake and addiction.

Dependence:

It is the tendency of the body to manifest a characteristic and unplesant withdrawel syndrome. if regular dose of drugs/ Alcohol is abruptly Discontinued. This result in anxiety, shakiness, nausea and sweating. Dependence leads to social adjustment problems.

Effects OF DRUG/ Alcohol ABUSE

- Reckless Behavior, vandalism and violentence.
- Coma and death due to Respiratory failure, heart failure OR Cerebral Hemorrhage.
- DRUGS in combination with alcohol may lead to death.
- Damage of nervous system and liver cirrhosis.
- Mental and social distress to family and friends.
- Social Problems like stealing and spread of infectious Diseases (AIDS, hepatitis-B).
- Use of drugs and alcohol by pregnant woman affect the foetus (foetal alcohol syndrome OR FAS]
- Loss of sexual drive and necrospermia.
- Misuse of drugs by athletes (narcotic Onalgesics, anobolic steroids, diuretics & certain Hormones to increase muscle strength and bulk and to promote aggressiveness)

Warning Signs of Drug/Alcohol abuse in Adolesence period

- Drop in Academic performance and absence from school.
- Lack of interest in personal Hygiene.
- Withdrawal and Isolation.
- Depression, fatigue, aggresive and Rebellious behavior
- Change in sleeping & eating habits.
- Fluctuations in weight, appetite.
- Loss of interest in hobbies.
- Deteriorating Relationships with family and friends.

Side effects of Anabolic steroid abuse

In males :

- Acne
- Mood swings & depression
- Increased Aggressiveness
- Reduced testicles
- Decreased sperm.
- Kidney & Liver dysfunction
- Breast Enlargement
- Premature Baldness
- Enlargement of prostate gland

In females :

- Masculanisation
- Mood swings & depression
- Increased aggressiveness
- Excessive Hair growth
- abnormal Menstrual cycle
- Deepening of voice
- ENlargement of Clitoris

Note - In the Adoleseent male and female : Severe facial and body acne, Premature closure of the growth Centres of the long bones resulting in stunted growth.

Prevention AND control

1. Avoid undue peer pressure
2. Education & Counseling
3. Seeking help from parents and Peers.
4. Looking for danger signs
5. Seeking professional and medical help → Psychologists & psychiatrists → De-addiction & Rehabilitation Programs.

IMMUNE SYSTEM

- It is the system that gives immunity to the body by recognizing, responding and remembering foreign antigens.
- It Plays Role in allergic Reaction, auto immune disease & Organ transplantation.
- It includes lymphoid organs, tissues, cells and soluble Molecules like antibodies.

LYMPHOID ORGANS

These are the organs where origin, maturation & Proliferation of lymphocytes occur 2 types:

(a) Primary Lymphoid Organs

- Immature lymphocytes differentiate into antigen-sensitive lymphocytes

  Example - Bone marrow & Thymus

- Bone marrow is the site of formation of Blood cells.
- Thymus is large during birth but gradually reduces in size and becomes very small size in puberty.

(b) Secondary Lymphoid Organs

- The organs, to which matured lymphocytes migrate, interact with antigens and then proliferate to become effector cells.

  Example - Spleen, lymph nodes, tonsils, Peyer's patches, MALT & appendix,

Spleen

→ Bean shaped organ. Contains lymphocytes and phagocytes. It removes WORN out RBC. & Microorganisms from blood. It is a reservoir of erthrocytes in foetus.

Lymph nodes

→ Found in lymphatic system. They trap Microorganisms or other antigens. Trapped antigens activate lymphocytes and Cause immune Response.

MALT

→ "Mucosal associated lymphoid tissue"
→ Located within the Linning of Respiratory, Digestive & urinogenital tracts. It constitutes 50% of lymphoid tissue.

IMMUNITY

It is the ability of the immune system to fight the disease Causing organisms. It is 2 types

- Innate immunity (INBORN)
- Acquired Immunity

① Innate immunity

- It is the non-specific defense present at the time of birth.
- It provides barriers to the entry of foreign agents into our Body

Physical Barrier

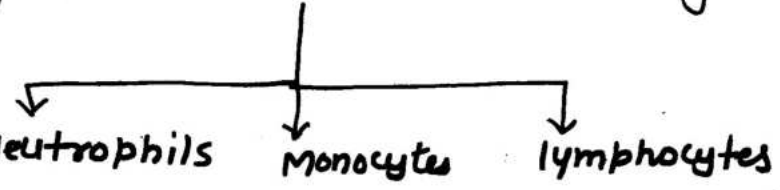
- Skin (Prevent entry of foreign Bodies)
- Mucous coating of Respiratory, gastro-intestinal and urino genital tracts to trap microbes.

Physiological Barriers:

- gastric HCl, Saliva, tear

Cellular Barriers

Phagocytes like WBC, Macrophages



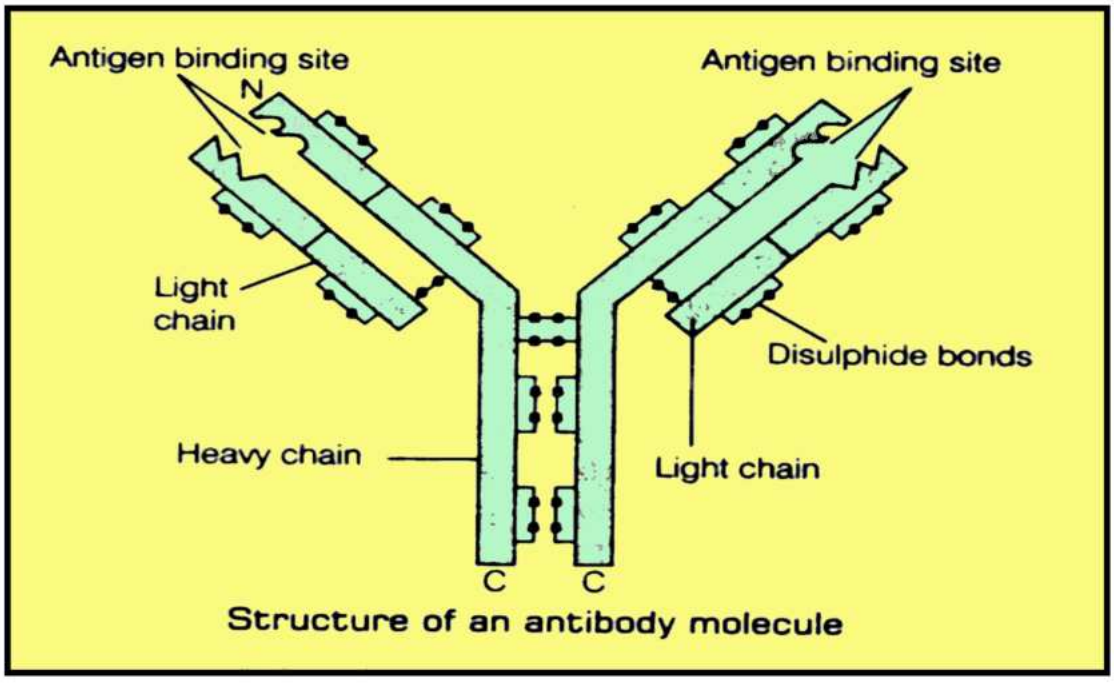
Cytokine Barriers

Virus infected cells secrete proteins called interferon which protect non infected cells from further viral infection.

② Acquired Immunity:

- It is pathogen specific immunity developed during lifetime
- It is characterized by memory, during first encounter of a Pathogen, Body produces primary Response In low intensity. Second encounter of the same pathogen causes a secondary response in High intensity.
- Primary and secondary immune responses are carried out with B-lymphocytes (B-cells) and T-lymphocytes (T-cells)
  - ⓐ B-lymphocytes: produce antibodies
  - ⓑ T-lymphocytes; Help-B-cells to produce antibodies.

Structure of an antibody molecule



Structure of an antibody molecule

Each antibody has 4 polypeptide chains, 2 small light chain and 2 larger heavy chains [H_2L_2].

Types of antibodies : IgG
IgA
IgM
IgE
IgD

Types of Acquired immune Response

① Humoral immune Response/ Antibody mediated immunity (AMI)

→ It is the immune response mediated by antibodies.
→ Antibodies are found in Blood Plasma. so called as HUMORAL Immune Response.

② Cell mediated Response / cell mediated immunity (CMI)

→ It is the immune Response mediated By T-lymphocytes (T-cells)
→ CMI causes Graft rejection. The Body is able to differentiat "self" and "non self".

➔ Tissue matching $ Blood group matching are essential before undertaking any graft/transplant. After this, the patient has to take immune-suppressants all his life.

TYPES OF ACQUIRED Immunity

Acquired immunity is 2 types:

Active immunity

- It is the immunity in which antibodies are produced in a host body when the host is exposed to antigens (Living OR dead microbes OR other Proteins)
- It is Produced by 2 ways:
  - (a) **Natural Active Immunity:** It is developed during natural infection by microbes.
  - (b) **Artificial Active Immunity:** It is developed By injecting the microbes deliberately during immunization.

Passive immunity

- Ready made antibodies are directly given to the Body.
- It is 2 types
  - (a) **Natural Passive Immunity:**
    - IgG from mother → Placenta → Foetus
    - IgA in Colostrum → infants
  - (b) **Artificial Passive Immunity:** Anti-tetanus SERUM (ATS)

IMMUNIZATION

This is Based on "memory" of the immune system:

① Active Immunization (vaccination)

- In this, a preparation of vaccine (antigenic proteins of Pathogen OR inactivated pathogen) is introduced into the body. It results in the Development of antibodies.
- During actual infection, these antibodies neutralize the Pathogenic agents.
- The vaccines also generate memory B and T-cells. They recognize the pathogen quickly

Example -

Polio vaccine, Hepatitis B vaccine, DPT vaccine.

- Vaccines are produced using DNA recombinant technology

Example -

Hepatitis-B vaccine produced from yeast.

② Passive Immunization

- It is the direct injection of pre formed antibodies OR antitoxin. It requires for quick immune Response.

Example -

Immunization against Tetanus, snake venom.

ALLERGIES

- It is the exaggerated response of the immune system to certain antigens present in the environment.

Allergens → Substances causing allergy.

Example

Mites in dust, Pollens, animal dander, fur

Antibodies produced against the allergens are of IgE type.

- Allergy is due to the release of chemicals like histamine and seroTonin from the mast cells.
- **SYMPTOMS :** Sneezing, watery eyes, running nose, difficulty in breathing, skin rashes.
- **Determination of cause of allergy →** The patient is exposed to OR injected with very small doses of possible allergens, and the reactions studied.
- **TReatment →** DRugs like anti histamine, adrenaline and steroid quickly reduce the symptoms of allergy.
- Modern day life style results lowering of immunity and more sensitivity to allergens.
- **ASTHMA** is a Respiratory disease due to allergy.

AUTOIMMUNITY

It is the condition in which the body attack self cells due to genetic and other unknown reasons. It Results in auto immune disease.

Example Rheumatoid arthritis.

HUMAN HEALTH AND DISEASES

1. Recently chikungunya cases were reported from various parts of the country. Name the vector responsible.

2. What causes swelling of the lower limbs in patients suffering from filariasis?

3. Name the causative organism of influenza.

4. Give scientific name of two helminthes that are pathogenic to man.

5. Name the respiratory disease that infects lungs and one that do not infect lungs.

6. Name the two major groups of cells required in attaining specific immunity.

7. What are primary lymphoid organs?

8. What happens in lymphoid organ with respect to immunity?

9. What role do macrophages play in providing immunity to humans?

10. How do neutrophils act as a cellular barrier to Pathogens in humans?

11. Given below are some human organs. Identify one primary and one secondary lymphoid organ : Liver , Thymus , Stomach, Thyroid , Tonsils.

12. Name the types of cells that produce antibodies.

13. Which category of adaptive immunity is provided by vaccination.

14. What are interferons?

15. " Parany Suffered from measles at the age of 10 years. There are rare chances of his getting infected with the same disease for the rest of his life." Give reason for the Statement.

16. Thymus of a new born child was degenerating right from birth due to a genetic disorder. Predict its two impacts on the health of the child.

17. In what way are monocytes a cellular barrier in immunity?

18. What is humoral immunity?

19. Write the main function of immune system?

20. Give any one example where passive immunisation is needed.

21. Each immunoglobin has two heavy chains and two light chains, where is the antigen binding site present?

22. Expand GALT.

23. Name two curable sexually transmitted diseases.

24. Name two such organisms which AIDS Patient become infected with.

25. What is neoplasm?

26. Name the cellular genes which when activated can cause cancer.

27. What do cellular oncogenes code for in normal cells?

28. When is a tumour referred to as malignant?

29. What is biopsy?

30. Name three opioids.

Very Important Questions

Direction : In the following questions, a statement as assertion (A) is followed by a statement of reason (R). Mark the correct choice as :-

(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(B) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(C) Assertion (A) is true but reason (R) is false.
(D) Assertion (A) is false but reason (R) is true.

1) Assertion (A): Acquired immunity is pathogen specific.
Reason (R) : It is not present since birth.

2) Assertion (A) : Sharing of injection needles between two individuals is not recommended.
Reason (R): This transmits STDs like AIDs and Hepatitis from the diseased person to a healthy person.

3) Assertion (A): Pathogens are disease causing organisms.
Reason (R) : Salmonella typhi is a pathogenic virus causing tuberculosis.

4) Assertion (A): The colostrum provides passive immunity to the new born baby.
Reason (R): In this, the ready-made antibodies are directly given to protect the body.

5) Assertion (A) : Bone marrow and thymus are primary lymphoid organs.
Reason (R):- These are the organs, to which matured lymphocytes migrate, interact with antigens and then proliferate to become effector cells.

6.) Assertion (A): Opioids, also called opiates used to treat pain.
Reason (R): Opioids are the drugs which bind to specific opioid receptors present in our central nervous system.

7.) Assertion (A): Heroin, the smack is chemically diacetylmorphine.
Reason (R): Heroin is obtained by acetylation of morphine.

8.) Assertion (A): Cocaine is a drug of abuse.
Reason (R): Cocaine interferes with the working of central nervous system.

9.) Assertion (A): Smoking increases the carbon monoxide (CO) content in the blood which has greater affinity to haemoglobin than oxygen
Reason (R): Co froms a stable bond with haemoglobin and does not allow binding of oxygen. It reduces concentration of haem bounded oxygen and causes oxygen deficiency in the body.

10.) Assertion (A): Ganja is hallucinogen.
Reason (R): It alters perception, causes illusion and damages cardiovascular system.

Answers :-

1. (A)	2. (A)	3. (C)	4. (A)	5. (C)
6. (A)	7. (A)	8. (C)	9. (A)	10. (A)

Human Health and diseases

1) Describe Typhoid disease on the basis of following points –
(i) Name of pathogen.
(ii) Test for confirmation of disease
(iii) Ways of Infections.
(iv) Main symptoms of disease.
(v) Draw showing structure of an antibody molecule.

2) How does opioids effect the body?

3) Define Antibodies.

4) What is innate immunity? How many types of barriers are present in innate immunity write down their names and explain them.

5) Draw a diagram of replication of retrovirus. Write the full name of AIDs pathogen. How is it transmitted? Explain the symptoms of AIDs in human beings.

6) Write the name of the pathogen of amoebasis. Write two symptoms and two source of infection.

7) From which plant is coca alkaloid or cocaine obtained? What are its effect on the human body? Write the chemical structure of morphine.

8) (i) What is immunity? Write the difference between active immunity and passive immunity.
(ii) Explain active and passive immunisation. Draw the labelled diagram of the stages of plasmodium in mosquito host.

9) Write the causes, treatment, detection and diagnosis of the cancer disease.

10) What is lymphoid organs? Explain the types of lymphoid organs with the help of example.

11) What is allergies? Write symptoms, cause and treatment?

12) Explain AIDs. Write the life of AIDs as the reverse transcriptase of retroviruse. Also write prevention of AIDs.

13) Name and Explain the disease caused by the Protozoan "Entamoeba histolytica".

14.) When ready made antibodies are directly given to protect the body then the immunity is called?

15.) Name the pathogen of Amoebic dysentry. Mention its two symptoms and two preventive measures.

16.) Define interferon and what is its function?

17.) Retro viruses have no DNA. However the DNA of the infected host cell does posses the viral DNA. How is it possible?

18.) Mention one affplication for each of the following :-

(a.) Passive Immunisation.

(b.) Anti histomine

(c.) Colostrum.

(d.) Cytokinin - barrier.

19.) Differentiate between benign and malignant tumors.

20.) Name the source plant of heroin drug. How is it obtained from the plants?

21.) Name two drug obtained from poppy plant. "These drugs are medically useful but are often abused". Taking the mentioned example justify by giving reasons.

22.) Explain Addiction and Dependence over drugs/alchol?

23.) Explain the effects of Drug.

24.) Explain about adolescence. Write the causes of drugs/alchol use in adolesencence.

25.) What are the effect of cannabinoids?

26.) Write and explain the types of Acquired Immunity?

27.) Write the pathogens, mode of transmisson and symptoms of the following diseases :-

(a.) Typhoid
(b.) Pneumonia
(c.) Common cold
(d.) Malaria
(e.) Amoebiasis
(f.) Ascariasis
(g.) Filariasis
(h.) Ring Worm.

28.) Why is Gambusia introduced into drains and ponds?

29.) Explain public and personal hygiene.

30.) How does haemozoin affect the human body when released in Blood?