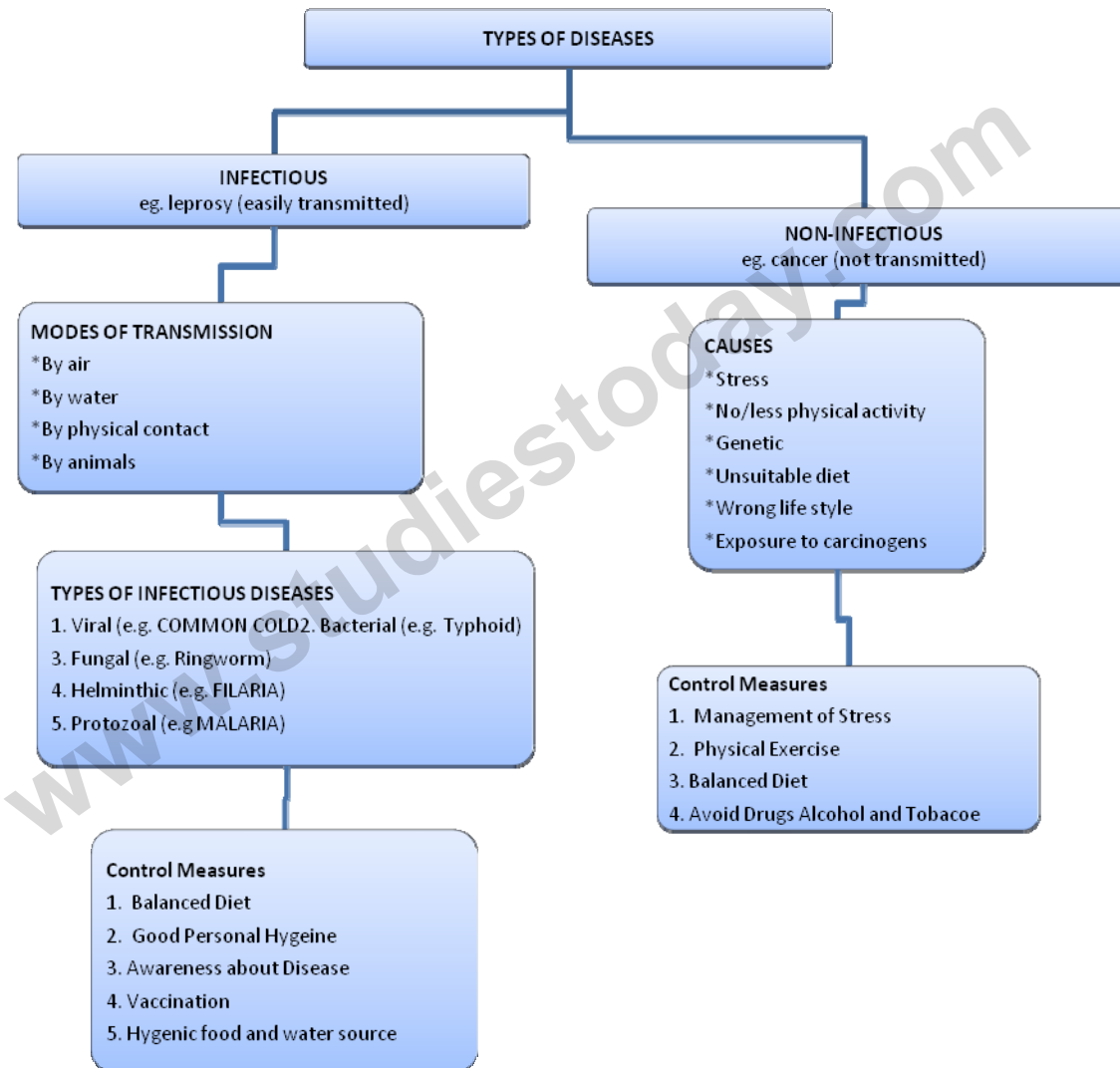
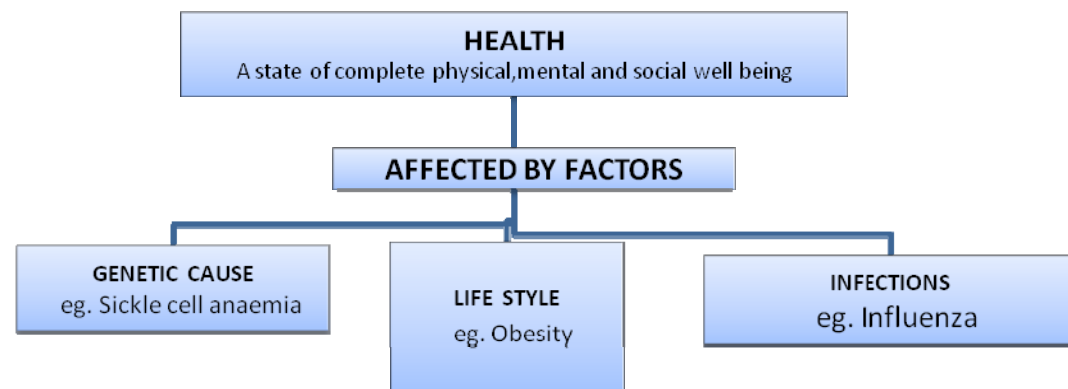


HUMAN HEALTH AND DISEASE CHAPTER 8

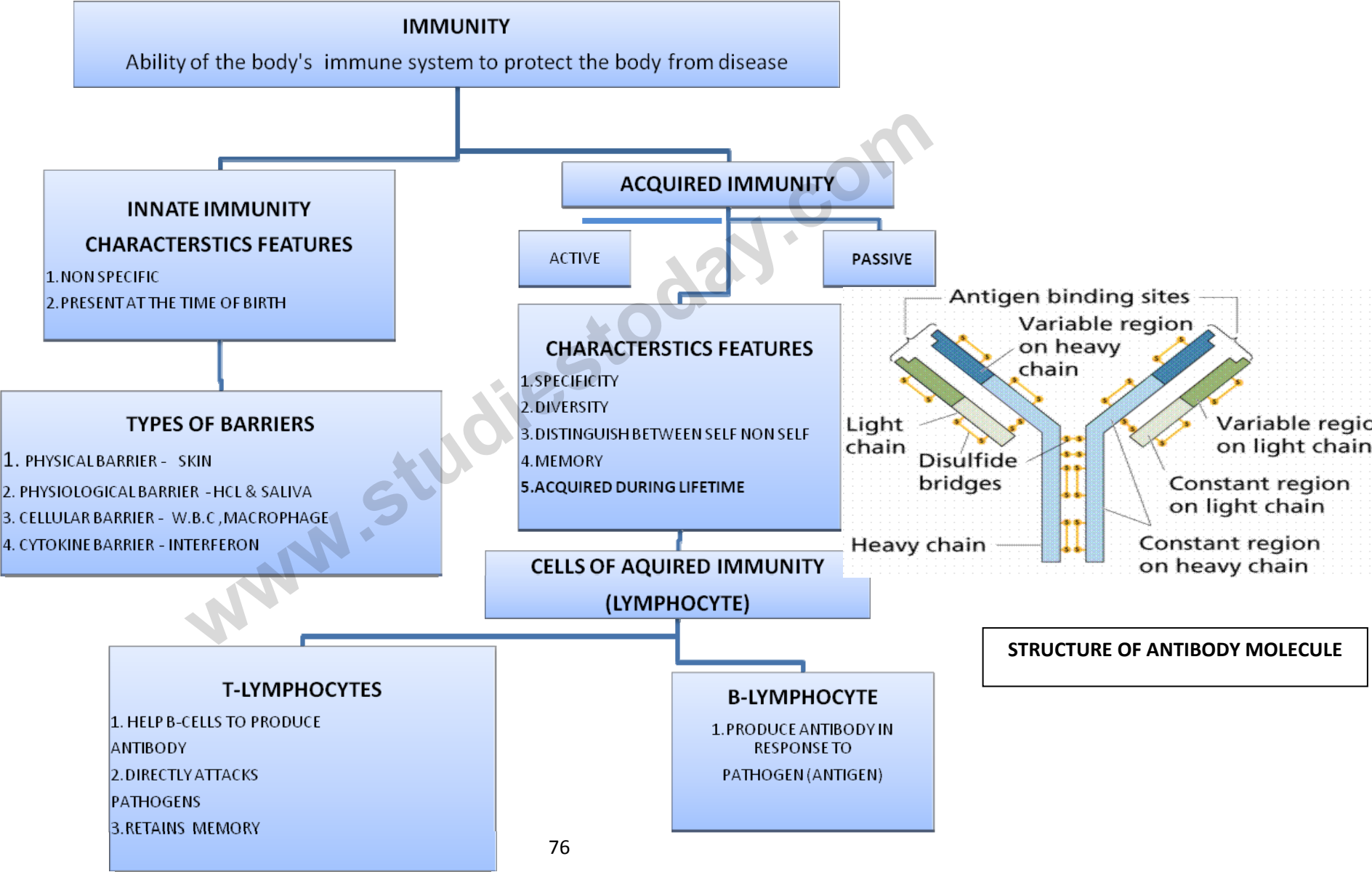




COMMON INFECTIOUS DISEASES

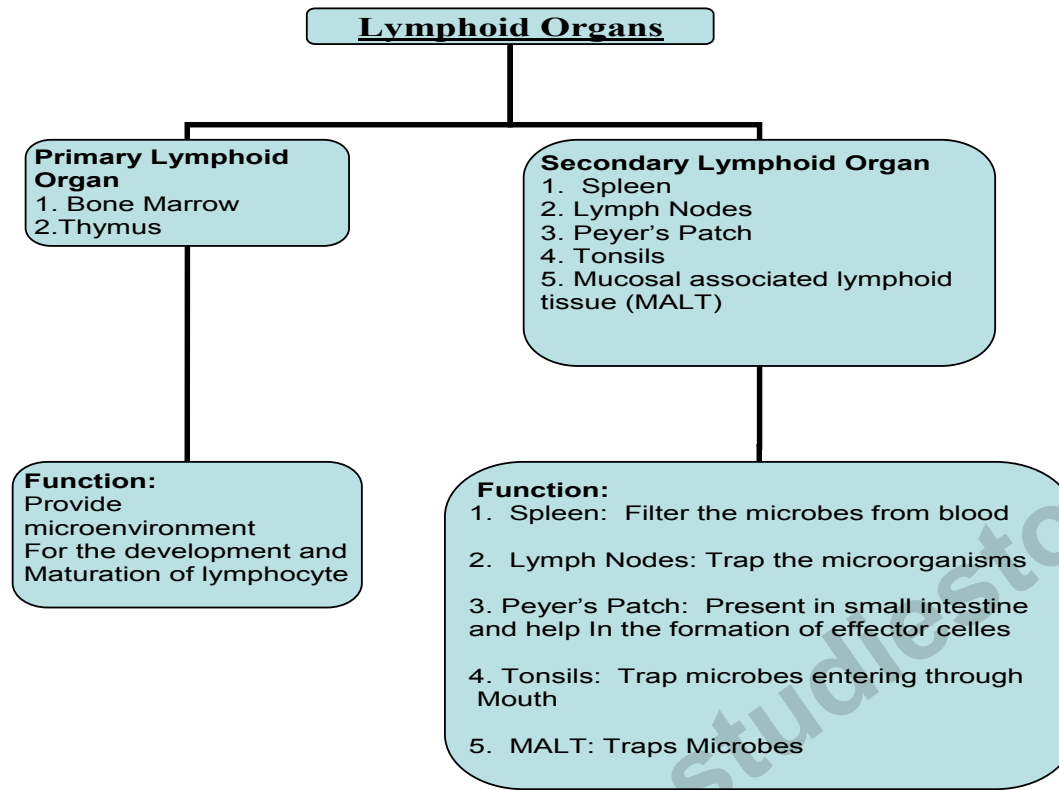
Ringworms	<i>Microsporum, Trichophyton, Epidermophyton</i>	Dry scaly lesions on skin, scalp, nail. Intense itching.	From soil, by using clothes, towels, comb of infected person.
Name of disease	Causal organism	Symptoms	Transmission
Common cold	Rhino virus	Nasal congestion & discharge, sore throat, cough, headache for 3 to 7 days	By droplet infection
Pneumonia	Bacteria- <i>Streptococcus pneumoniae</i>	Alveoli get filled with fluid, problem in respiration, fever, chill, cough.	By inhaling droplets/aerosols released by infected persons, sharing utensil.
Malaria	Protozoa- <i>Plasmodium vivax</i>	Chill, high fever recurring every 3-4 days due to rupture of RBC. Haemozoin released in blood	By female <i>Anopheles</i> mosquito bite.
Filaria	Helminthic worm- <i>Wuchereria bancrofti, W. malayi</i>	Chronic inflammation of organs, specially lower limbs, genital organs affected	By bite of female culex mosquito

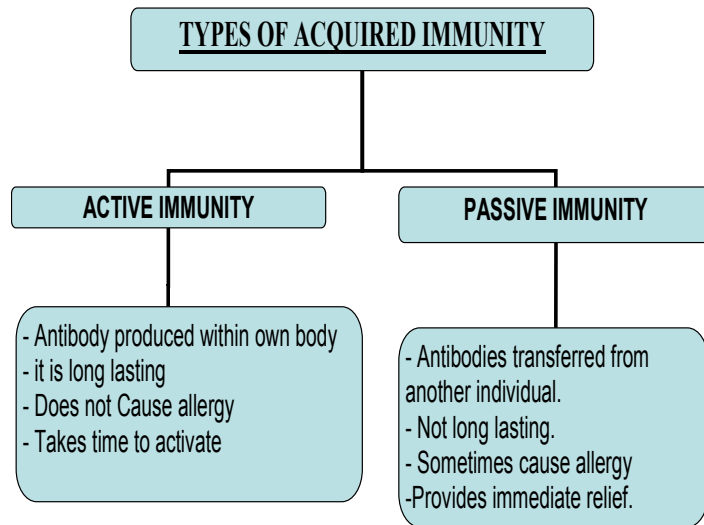
Refer to fig. 8.1 stages in lifecycle of plasmodium



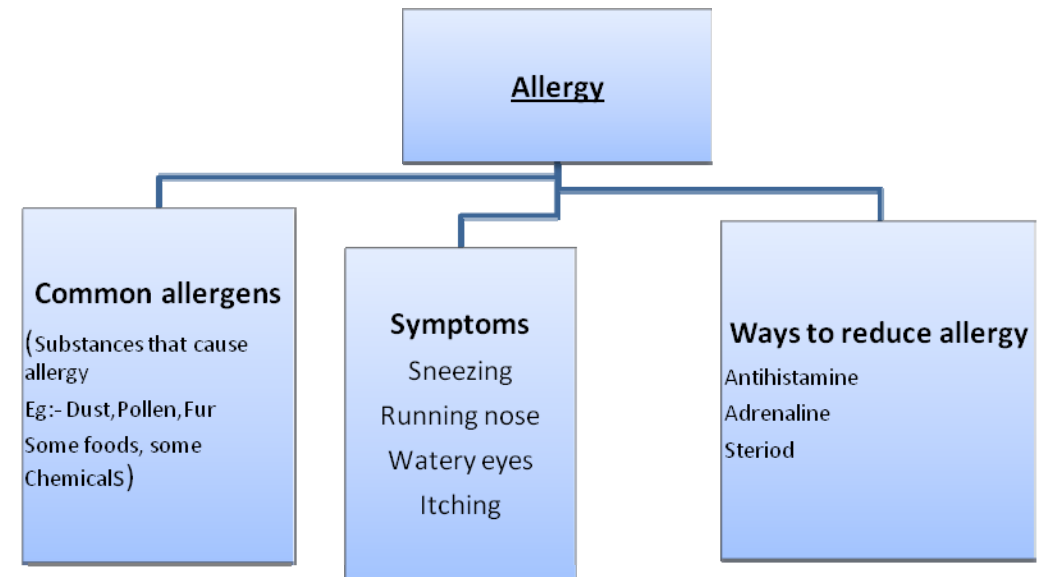
Major functional properties of antibodies

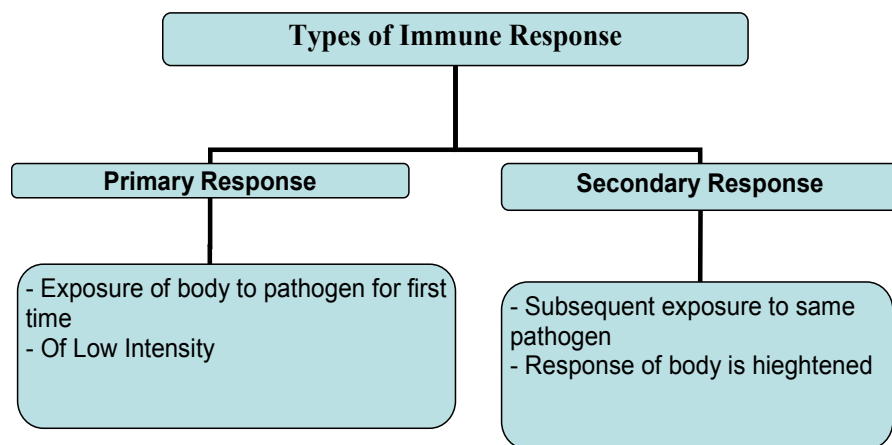
Antibody class	Major Functional properties
IgM	complement activation; antigen trapping; antigen receptor of naïve B cells
IgG	complement activation, phagocytosis, ADCC, transfer of adaptive immunity to offspring, regulation of antibody production
IgA	mucosal immunity, phagocytosis
IgE	activation of mast cells, basophils, eosinophils
IgD	antigen receptor on naïve B cells





Types of Immune Response:

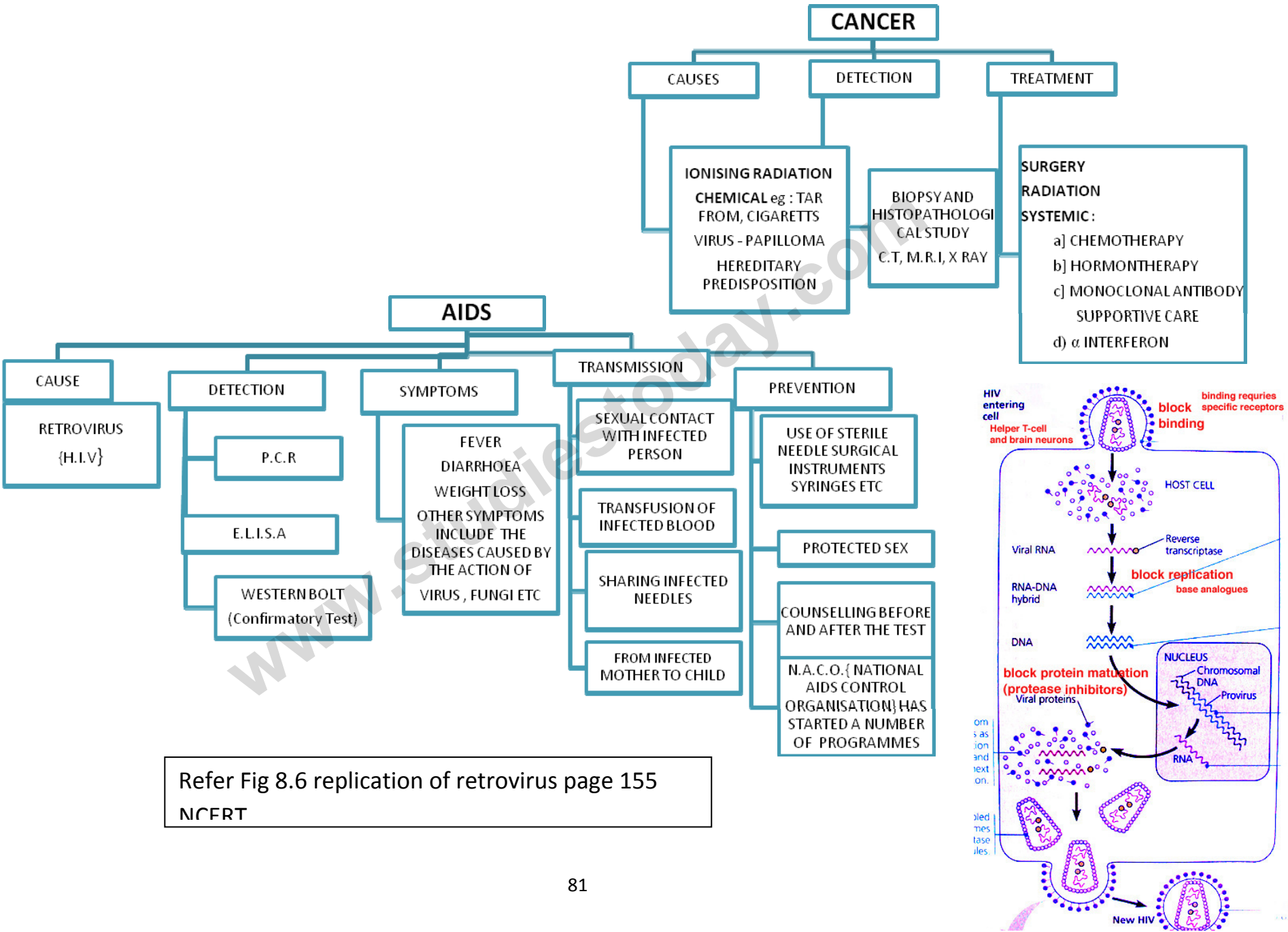


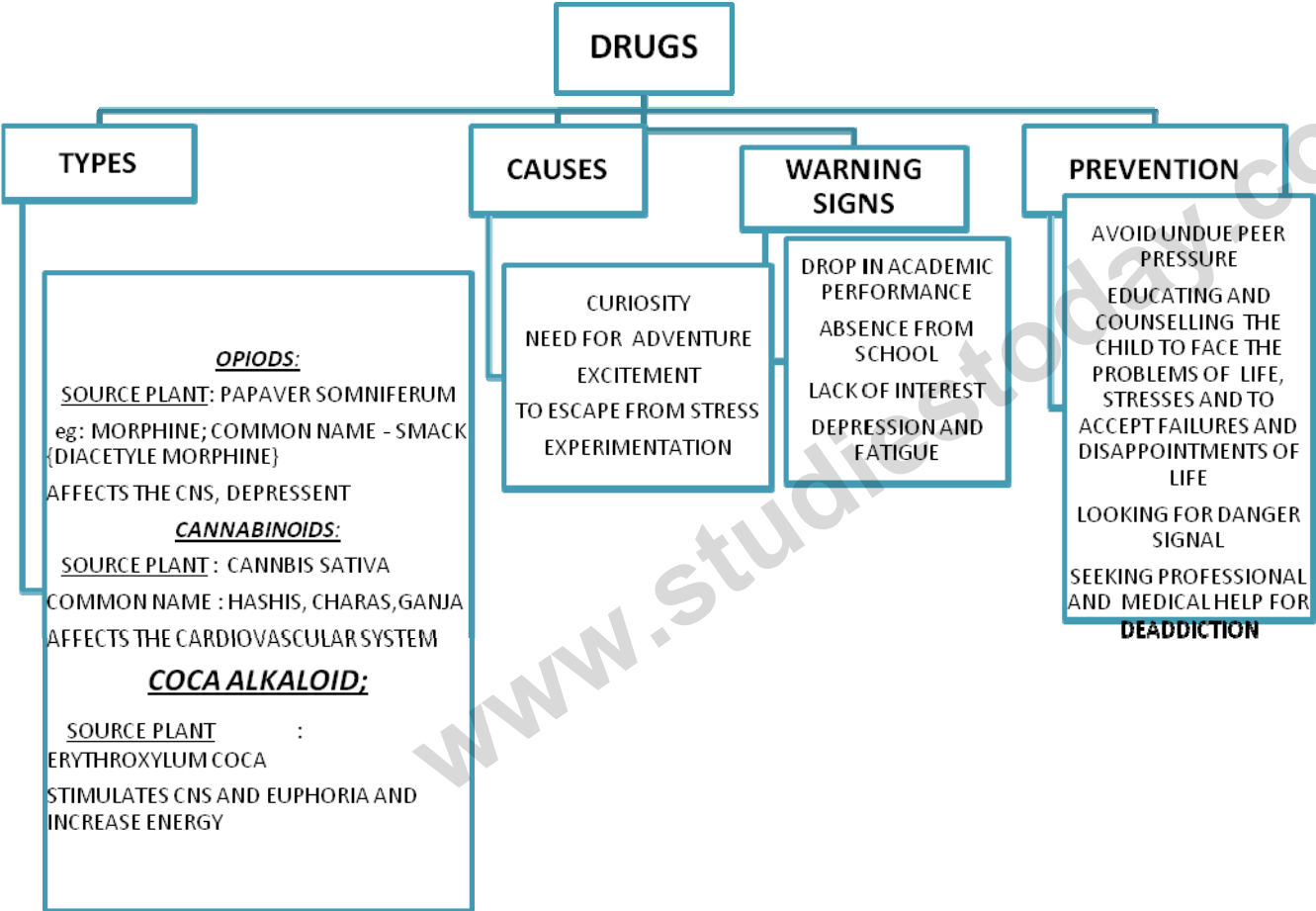


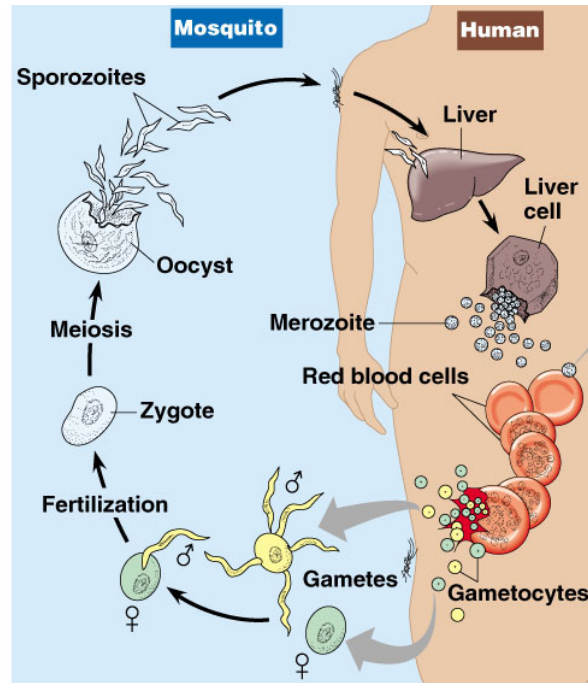
Vaccination and Immunization Vaccination refers to the administration of any vaccine. Immunization is the process by which the body produces antibodies in response to the vaccine to fight infections. Vaccine is a preparation of antigenic proteins of pathogens or inactivated/weakened pathogen. It is introduced into the body to generate antibodies which can neutralize the pathogens during actual infection. Vaccines also generate memory B & T cells that recognize the pathogens quickly. Vaccines that contain performed antibodies produce quick immune response and provide Passive Immunity e.g. vaccines against tetanus & snakebite. Other vaccines provide Active Immunity e.g. oral polio vaccine, BCG, cholera vaccine.

Allergies The exaggerated response/hypersensitiveness of the immune system of a person to certain antigens coming in contact with or entering into the body is called allergy.

Auto-immunity It is a condition when structural & functional damage is caused due to the attack of the self cells of the body by its own immune cells. Examples : Rheumatoid arthritis, Insulin- dependent diabetes.







LIFE CYCLE OF PLASMODIUM

Sporozoites are injected into the body by female anopheles mosquito

Sporozoites reach the liver through blood

Parasite reproduces asexually in the liver and comes out in the blood by bursting the liver cells. They enter the RBC.

PARASITES REPRODUCE ASEXUALLY IN RBC and by bursting them release haemozoin which causes cycles of fever.

Released parasites enter new RBC and infect them.

Parasite starts the sexual stage and forms gametocytes in RBC.

Female Anopheles mosquito takes up gametocytes.

Fertilization of gametes and development takes place in the mosquito's intestine.

Mature infective sporozoites escape from the intestine and migrate to the salivary glands of the mosquito.

Mosquito bites again and injects the sporozoites into the human body.

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IMPORTANT QUESTION

1) Why do children of metro cities of India suffer from allergies and asthma?

Ans (Hint.-Pollution)

2) A patient has lost his immunity. 1.How does saliva and tear help to prevent bacterial infection?

Ans: -saliva and tear contain lysozymes.

-Lysozymes enzymes which digest the cell wall of bacteria

-By lysing the cell wall, they kill bacteria and prevent their infection.

2. What is vaccination ?How does it help to produce immunity?

Ans:- Vaccination process of introducing a preparation of antigenic protein of the pathogens or weakened or killed pathogen in to the body.

-The vaccines include quick multiplication of B and T-lymphocytes; some of them are stored as memory cells

-The B-lymphocytes quickly produce antibodies, which neutralize the antigen during infection.

3.Write the full form of ELISA. Give an example of the clinical application of ELISA?

Ans:--Enzyme Linked Immune Sorbent Assay.

-ELISA test is used in the diagnosis of AIDS, hepatitis-Band other STD's

4 .What are the advantages of people being healthy?

Ans-When people are healthy,

A)They are efficient at work which consequently increases productivity and brings economic prosperity

B)Health increases longevity.

C)It reduces infant and maternal mortality

5 .A) Name the respective forms in which the malarial parasite gains entry into

i) Human body and

ii) Body of female Anopheles

B) Name the hosts where the sexual and the asexual reproduction of malarial parasite occur respectively

C) Name the toxin responsible for the appearance of symptoms of malaria in humans. Why do these symptoms occur periodically ?

Ans-(A) (i)-Sporozoite

(ii)Gametocyte

(B)-sexual reproduction in mosquito

-asexual reproduction in human body.

(C) Haemozoin

- Haemozoin is released when the RBC's rupture and release the pathogen

-some cells of pathogen enter fresh RBC's and reproduce asexually and repeat the cycle; hence the symptoms appear periodically .

Define innate immunity. Name and explain the category of barrier which involves macrophages.

Ans. Innate immunity refers to all those defence elements with which a person is born and are always available to protect the body. -Macrophages form part of the cellular barrier. -The cellular barrier includes the following specialized cells; (i) Polymorphonuclear leucocytes. (ii) Monocytes. (iii) Natural killer lymphocytes and (iv) Macrophages. - these cells phagocytose and destroy the invading microbes.

7. What is meant by writing H2L2 for an antibody? Name any four types of antibodies produced in our/human body?

Ans. - Each antibody molecule has four peptide chains. - Of them, two are small and called light chains (L) and two of them are longer and called heavy chains (H); hence written as H2L2. The four types of antibodies are iga, ige, igg and igm.

8.How do normal cells get transformed into cancerous neoplastic cells?

Mention the differences between viral oncogenes and cellular oncogenes.

Ans.The transformation of normal cells into cancerous neoplastic cells is induced by physical, chemical and biological agents collectively called carcinogens; they lose the property of contact inhibition.

Difference: Viral Oncogenes	Cellular Oncogenes
- These are the genes present in the oncogenic viruses, which effect oncogenic transformation of the cells they infect.	- These are the genes present in normal cells and code for growth factors; when activated under certain conditions, can cause oncogenic transformation of the cell.

9(i) Explain metastasis. Why is it fatal?

Ans. (i) Metastasis is the property of tumor cells, which get separated from a tumor, spread to different sites in the body through body fluids and produce secondary tumors wherever they are lodged. Since secondary tumors are formed at several parts of the body, it is difficult to be diagnosed and treated; hence it is fatal.

10 (1) Lymphocytes are of two types why are they called so?

A person was injured in a road accident and required an urgent immune response. What should be done?

(ii) The lymphocytes are of two types B and T-cells. Why are they called so?

(iii) A person has injured on a road accident and required an urgent immune response.

Ans: (i) Those lymphocytes which undergo maturation in the bone marrow are called B-cells while those which undergo maturation in the thymus are called T-cells.

(ii) Those lymphocytes which undergo maturation in the bone marrow are called B-cells while those which undergo maturation in the thymus are called T-cells.

(iii) Vaccine against Tetanus.

HOTS

1 The immune system of a person is suppressed . In ELIZA test he tested positive

i) Name the diseases associated with it.

iii)Why did he loose his immunity.

Ans (Hint:-AIDS)

2 Which organ can trap the microbes in the body fluid ?

Lymph

3)A person claimed that he has seen sounds, heard colours and smelt light.

l)What could be the possible reason?

li) Name two chemicles responsible for this conditions.