HUMAN HEALTH AND DISEASES

- INFECTIOUS DISEASES: DISEASES WHICH ARE EASILY TRANSMITTED FROM ONE PERSON TO ANOTHER

1. COMMON DISEASES IN MAN

DISEASES	PATHOGENS	SYMPTOMS	REMARK
1. TYPHOID FEVER	***Salmonella typhi (bacteria)***	▪ Sustained high fever ▪ Weakness, Head ache ▪ Stomach pain,Constipation,Loss of appetite ▪ Intestinal perforation [severe case]	❖ Pathogen enter the small intestine through food and water contaminated with them and migrate to organs through blood ❖ **WIDAL TEST** Confirms the disease
2. PNUEMONIA	***Streptococcus pneumonia (bacteria)***	▪ Fever,Chills,Cough and head ache ▪ The lips and finger nail may turn gray to bluish in colour[in severe case]	❖ A healthy person acquires the infection by inhaling the aerosol /droplets released by infected person ❖ Infects the alveoli of lungs
***3.* COMMON COLD**	**Rino viruses**	▪ Nasal congestion and discharge ▪ Sore throat, Hoarseness, Cough, Head ache and tiredness {usually lasts for 3-7 days}	❖ Infects the nose and respiratory passage ❖ Droplets resulting from cough or sneezes of an infected person are either inhaled or transmitted through contaminated objects causes infection
4. MALARIA	○ **Plasmodium vivax** ○ **Plasmodium malaria** ○ **Plasmodium falciparum(causes malignant malaria)** **{protozoans}** **(disease spread through bite of female anopheles)**	▪ Chill and high fever recurring every 3-4 days{parasites initially multiply in the liver cell And attack on RBC resulting in their rupture and release of heamozoin ,a toxic substance}	❖ Life cycle of plasmodium: Mosquito bites uninfected person ➡ sporozites(infectious form) ➡ multiplication and became gametocytic stage in human body ➡ mosquito bites on infected person ➡ gametes fertilise in mosquito and sporozoites migrate to saliva
5. AMOEBIASIS (AMOEBIC DYSENTERY)	***Entamoeba histolytica {protozoan}***	▪ Constipation,abdominal pain and cramps ▪ stools with excess mucous and blood clots	❖ Drinking water and food contaminated by the feacal matter are the main source of infection.house flies acts as mechanical carriers.
6. ASCARIASIS	**ASCARIS(ROUND WORM){Helminth}**	▪ Internal bleeding,muscular pain ▪ Fever, anemia ▪ Blockage of the intestinal passage	❖ A healthy person acquires this infection through contaminated water vegetables fruits etc
7. FILARISIS (ELEPHENTIASIS)	○ ***Wuchereria bancofti*** ○ ***Wuchereria malayi*** {helminth}	▪ Deformities in lymphatic vessels of the lower limbs and often genital organs slowly developing chronic inflammation	❖ Pathogens are transmitted to a healthy person through bite of female mosquito
8. RINGWORMS	○ ***Trichophyton*** ○ ***Epidermophyton*** ○ ***Microsporum {fungi}***	▪ appearance of dry scaly lesions on various parts of body such as nail skin and scalp ▪ lesions are accompanied by intense itching	❖ Ringworms are generally acquired from soil or by using towels,clothes etc of an infected person

- ✓ *INFECTIOUS DISEASES CAN BE CONTROLLEDAND PREVENTED BY PUBLIC AND PERSONAL HYGIENE*
- ✓ *PERSONAL HYGIENE INCLUDES KEEPING THE BODY CLEAN,CONSUMPTION OF CLEAN DRINKING WATER,FOOD,VEGETABLES ETC.*
- ✓ *PUBLIC HYGIENE INCLUDES PROPER DISPOSAL OF WASTE AND EXCRETA;PERIODIC CLEANING AND DISINFECTION OF WATER RESERVOIRS.*

PREVENTION OF DISEASES

WATER-BORNE DISEASES:{eg-typhoid,ascariasis,amoebiasis}

- ➢ **By maintaining personal and public hygiene**

AIR-BORNE DISEASES:{eg-common cold,pneumonia}

- ➢ **In addition to personal and public hygiene,close contact with the infected persons and their belongings should be avoided.**

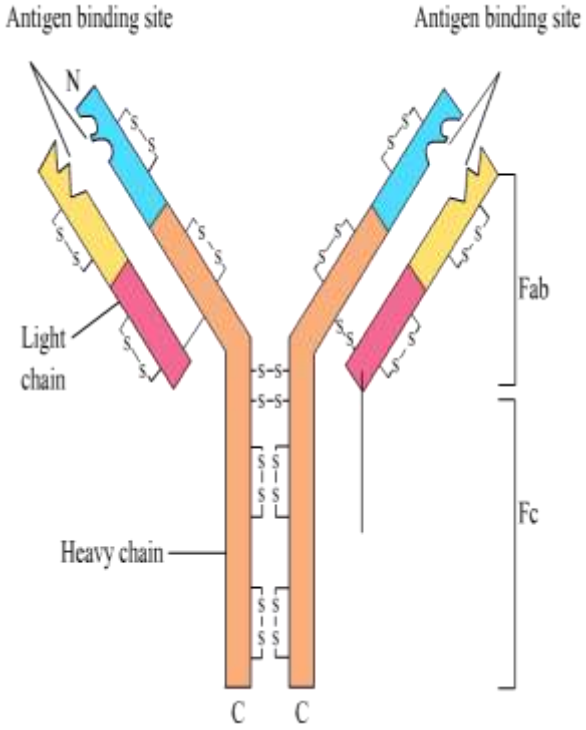
VECTOR-BORNE DISEASES:{eg-malaria,filariasis}

They can be controlled:
by avoid stagnation of water,use insecticide, grow fishes like "gambusia" in ponds that feeds on larvae of insect,use mosquito net and wire mesh on the doors and windows

2.IMMUNITY:

(1)INNATE IMMUNITY; Non-specific type of immunity that present at the time of birth itself. Innate immunity consist of four types of barriers,(a)**physical barriers**:Eg-skin on our body,mucus coating of the epithelium lining of the respiratory,gastrointestinal etc prevent entry of microorganisms.(b)**physiological barriers**:Eg-acid in stomach, saliva in mouth,tears from eyes.all prevent microbial growth.(c)**cellular barriers:**leucocytes(eg-PMNL-polymorpho nuclear leukocytes),monocytes,killer T-lymphocytes etc in blood and macrophages in tissues are phagocytic.(d)**cytokine barriers:** eg-Interferons they are the chemicals produced by the virus infected cells and prevent the spreading of virus to neighbor cells.

(2)ACQUIRED IMMUNITY;Pathogen specific immunity.it is obtained with the help of lymphocytes.there are two types of lymphocytes,**--B Lymphocytes -- T Lymphocytes**



- ♦ B Lymphocytes produce anti body,an anti body consists of 4 polypeptide chain,two small called light chains and two longer called heavy chains.
- ♦ **HUMORAL IMMUNITY:**Immunity obtained with help of antibodies.
- ♦ **CELL MEDIATED IMMUNITY:** Immunity obtained with help of T Lymphocyte
- ♦ **ACTIVE IMMUNITY:**The immunity obtained with the help of anti-body produced in the organism's own body.it is slow in action but last for a long time.it is obtained by two way,(a)by diseases(eg-chicken pox) (b) by vaccination
- ♦ **PASSIVE IMMUNITY:**Immunity obtained by ready made anti body.it is quick in action but long for short period. Eg-colostrum containing antibodies (IgA)

Vaccination

PRINCIPLE: It is based on memory of immune system.when vaccine containing proteins of pathogen or inactivated pathogen

is introduced to a body of individual.his immune system produce anti body against it.when the same type of pathogen is attack for second time,the memory t cells identifies it and give direction to B lymphocytes to produce antibody.

ALLERGY:
The exaggerated response of the immune system to certain antigens present in the environment is called ALLERGY. Substances which cause ALLERGY are called ALLERGENS.Anti body produced for this type is IgE.SYPTOMS OF ALLERGY include sneezing,watery eyes,running nosed and difficulty in breathing.Allergy is due to release of chemicals like **HISTAMINES** and **SEROTONIN.**syptoms of allergy can be reduced by using anti histamines,adrenaline and steroids etc.

AUTO IMMUNITY:
The immune system destroys the organism's own body cell. Eg – Rheumatoid Arthritis.

IMMUNE SYSTEM IN THE BODY:
Primary lymphoid organs:the organs where lymphocytes differentiate into antigen sensitive lymphocytes.eg – bone marrow and thymus.
Secondary lymphoid organs: they provide the sites for interaction of lymphocytes with the antigen,which then proliferate to effector cells. Eg –spleen, lymph node, tonsils, payer's patch of small intestine and appendix.
MALT(mucosa associated lymphoid tissue):the lymphoid tissue that present within the lining of major tracts(respiratory,digestive and urogenital tract).

3.AIDS:Acquired Immuno Deficiency Syndrome

Caused by Human Immuno Virus (HIV), a member of **retrovirus.**
Mode of transmission: (a) Sexual contact with infected person **(b)**By transfusion of contaminated blood and blood product **(c)** By sharing infected needles **(d)** from infected mother to her child through placenta.

Entering of HIV→ Attack on macrophages and produce DNA by using Reverse transcriptase→ Viral DNA joins with host cell's DNA→ Produce more and more virus particles → HIV enters to helper T-lymphocytes and produce progeny→ Virus released attack on Helper T-Lymphocytes on the body→ The patient became Immuno deficient.

Diagnosis of AIDS is done by ELISA (Enzyme Linked Immuno-Sorbent Assay)

PREVENTION: (i) avoid sex with unknown and multiple partners (ii) Receive blood from blood bank only after testing it. (iii) Avoid drug abuse and sharing of intra venous syringes.

4.CANCER

The condition when the mechanism to control cell growth and differentiation broken down resulting in the uncontrolled cell growth. Cancerous cell lost the property of contact inhibition.

Tumors are masses of cells produced by cancerous cells.It may be of two types,(a) **Benign tumors:** tumors which are confined to their original location and do not spread into other parts.It causes little damage. (b)**Malignant tumors:** tumors which result from mass proliferation of cells called Neoplastic or tumor cells.They grow rapidly,invade other parts and damage the surrounding cells too.cells from these tumors reach distant sites through blood and start a new tumor there.this property is called **Metastasis.**

CAUSES: Those substances which cause cencer are called **CARCINOGENS**. There are various type which includes,(1) Physical carcinogens eg- X ray ,u v rays etc (2) Chemical carcinogens eg- tobacco (3) biological carcinogens eg –onco viruses

DETECTION: (I) Biopsy and histopathological study of the tissues (II) Radiography like X-rays, CT (computerized tomography) (III) MRI (magnetic resonance Imaging)

TREATMENT OF CANCER: includes -surgery –radiation therapy – immunotherapy etc
*patients are substance called biological response modifiers such as alpha-interferon acticates immune system and helps in destroying tumors

DRUGS AND ALCOHOL ABUSE:

DRUGS	SOURCE PLANT	EFFECT
OPIOIDS	***Papaver somniferum***	Drugs which bind to specific opioid receptor present in central nervous system and gastrointestinal tract. Heroin is depressant and slows down body function
CANNABINOIDS	***Cannabis sativa***	Group of chemicals that interact with the cannabinoid receptors of brain. Effect on cardiovascular system of the body.
COCAINE	***Erythroxylum coca***	It interferes with transport of neuro-transmitter dopamine. Potent stimulating effect on central nervous system Produces sense of euphoria and increased energy. Excessive dosage causes hallucination

MEDICINAL USE: (I) Morphine is a very effective sedative and painkiller used for surgery patient (II) Barbiturates, amphetamines, benzo diazepines, lysergic acid diethyl amide (LSD) used as medicines to help patients cope with mental illnesses, depression and insomnia.

TOBACCO: Tobacco contains **nicotine.** Nicotine stimulates Adrenal glands to raise blood pressure and increased heart rates. Smoking tobacco is associated with cancer of lung, urinary bladder, and throat, bronchitis, emphysema, coronary heart disease, gastric ulcer etc.Smoking increased CO content of blood reduce oxygen carrying capacity of hemoglobin. chewing is associated with cancer of oral cavity.

Prevention and control:

• Avoid undue peer pressure. • Education and counseling. • Seeking help from parents and peers. • Looking for danger signs. • Seeking professional and medical help.

Prepared by JINUSH AFSAL PC for HSSLIVE