16 DISEASES : CAUSE AND CONTROL

Syllabus : A brief introduction to communicable, non-communicable, endemic, pandemic and sporadic diseases. Modes of transmission.

Meaning of each of the above with examples :

Bacterial, viral, protozoan, helminthic diseases.

Bacterial : cholera, typhoid, tuberculosis. Viral : AIDS, chicken pox, hepatitis. Protozoan : Malaria, amoebic dysentery, sleeping sickness. Helminthic : Ascariasis, taeniasis, filiariasis.

(symptoms and measures to control the above diseases). (Scientific names of causative agents not required).

161 WHAT IS A DISEASE ?

The term "disease" is a condition in which the normal functioning of the body is disturbed. Many times such conditions are not very serious and get cured, but sometimes they become serious and even fatal.

Disease is a departure from normal health through structural or functional disorder of the body.

Early man looked at disease as an act of God or evil spirits. He used magical methods and sorcery for the treatment of the disease. Today, science looks at every disease to be a condition which has a definite cause and thereby making it possible to prevent it or cure it. To make people conscious of being healthy and disease-free, we celebrate :

WORLD HEALTH DAY — APRIL 7

16.2 CATEGORIES OF DISEASES

Diseases can be categorised in several ways, *for example* based on —

1. **Extent of occurrence** — Endemic, epidemic, pandemic, and sporadic.
2. **Communicability** — Whether infectious (caused due to germs) or non-infectious (due to the body's own poor functioning).
3. **Kinds of pathogen** — Whether bacterial, viral or some other types of germs.
4. **Kinds of transmitting agent** — Whether water-borne, food-borne, air borne or insect-borne, etc.

16.3 CATEGORIES OF DISEASES BASED ON THE EXTENT OF OCCURRENCE

1. **Endemic** when the disease is found in a *certain area only attacking a fewer number of people*, e.g. yellow fever in certain African countries, goitre in sub-Himalayan regions.
2. **Epidemic** when the disease breaks out and spreads from place to place *affecting large numbers of people* at the same time e.g. plague in India in 1994 (from Surat to many other places).
3. **Pandemic** when the disease is widely distributed worldwide, e.g. AIDS.
4. **Sporadic** when there are scattered individual cases of a disease e.g. malaria and cholera.

16.4 CATEGORIES OF DISEASES BASED ON COMMUNICABILITY

Diseases can also be classified into two major categories : non-communicable or **non-infectious** and communicable or **infectious**.

A. Non–communicable or Non-infectious diseases : In these diseases there is no germ of any kind and they cannot spread from a patient to another person by contact or by any other method, *i.e.* they are *non-transmissible. Examples*, diabetes, colour blindness, heart attack, beri-beri, etc.

B. Communicable or Infectious diseases : These are caused by some germs. The germs somehow must reach a new healthy person before he can suffer from the disease. The cause of the disease is called **pathogen** and its transmission from one person to another is called **infection**. An infectious disease usually does not appear immediately after the infection but it may take some time varying from a few hours to a few days; this

period is called the **incubation period.** Common examples: cholera, smallpox, malaria, *etc.*

PROGRESS CHECK

1. Match the diseases in Column I with their categories in Column II

Column I	Column II
Plague	Sporadic
Malaria	Pandemic
Goitre	Epidemic
AIDS	Endemic

2. Classify the following diseases into communicable and non-communicable diseases: cholera, beri-beri, colour blindness, diabetes, malaria, plague, heart-attack
   (i) Communicable _____
   (ii) Non-communicable _____

16.4.1 NON-INFECTIOUS DISEASES (Extra information — Not in syllabus)

Given below is a simplified classification of non-infectious diseases with some common examples.

1. **Nutritional deficiency** – Beri-beri, scurvy, goitre, kwashiorkor, night-blindness, *etc.*
2. **Metabolic** – Diabetes (diabetes mellitus), goitre (hyperthyroidism),
3. **Genetic** – Haemophilia, Thalassemia,
4. **Allergies** – Hay fever, asthma
5. **Degenerative (ageing)** – Arthritis, cataract

   [**Arthritis** is the inflammation of joints due to deteriorating metabolism. Arthritis is caused even due to infections.]
6. **Physical and chemical causes** – Injury, heat, cold, radiation, poisoning, *etc.*
7. **Mental illness** – Depression, schizophrenia.
8. **Cancer** – Breast cancer, prostate cancer, leukemia

[Cancer is an abnormal multiplication of cells. Their uncontrolled divisions may lead to a tumour. Cancers are usually fatal. Early detection and treatment improve chances of survival. Many causes are suggested for cancer and include chemicals, tars from tobacco smoking, tobacco chewing, drugs, pollution, certain radiations, and even certain viruses. Any agent that causes cancer is called **carcinogen**.]

Why the name—CANCER?

Cancer has been given this name because it adheres to any part of the body which it siezes upon in an obstinate manner like the well-known crab ***Cancer***.

Cancer occurs most commonly in those tissues in which cell division is a normal activity, e.g. skin, liver, lining of stomach, uterus, breasts, *etc.*

16.4.2 COMMUNICABLE OR INFECTIOUS DISEASES

The infectious diseases are always due to some disease-causing organism called a **pathogen** (*pathos*: disease, *gen* : producing). The pathogens include a wide variety of organisms. Following is a list of some common pathogens and the diseases they produce. The syllabus includes only those diseases which are printed in blue letters:

Pathogens	Diseases
1. **Bacteria**	Cholera, typhoid, tuberculosis.
2. **Viruses**	AIDS (HIV), chicken pox, hepatitis.
3. **Protozoa**	Malaria, amoebic dysentery, sleeping sickness.
4. **Helminthic** (worms)	Ascariasis, taeniasis, filiariasis.

Incubation period

Incubation period is the period between the entry of germs and the appearance of the first symptoms of the disease.

Table 16.1 : Incubation period of some diseases

Disease	Incubation Period
Pneumonia	1-3 days
Diphtheria	2-5 days
Cholera	2-6 days
Tetanus	4-20 days
Gonorrhoea	5-10 days
Poliomyelitis	7-14 days
Typhoid	7-21 days
Measles	10-12 days
Smallpox	7-12 days
Whooping cough	10-15 days
Mumps	12-26 days
Chicken pox	14-21 days
Rabies	about 1 month
Leprosy	up to several years
HIV/AIDS	up to 12 or more years

All infectious diseases have a certain incubation period. Incubation periods (from the shortest to the longest) of some diseases are given in Table 18.1.

16.5 DISEASES CAUSED BY BACTERIA

Types of Bacteria. You have already read about types of bacteria in this book.

Some of the diseases caused by bacteria in humans are as follows :

1. CHOLERA. The disease attacks the intestinal tract, and is caused by a special bacterium called vibrio *(vibrio cholerae)*. Incubation period is a few hours to 6 days. The patient suffers from vomiting and loose motions. There is very little or no urination because of the shortage of water in the body. Urea accumulates in the body, which is poisonous. The patient may die if not treated properly and promptly. The treatment includes saline water injection to supply water to the blood.

The cholera germ is spread through **food** and **water** (faeco-oral route). The contamination results due to dust and by direct transport through flies. The flies sit on excreta (faeces) of the patient and mechanically carry the germs which stick to their spiny legs and body, to the exposed food that is eaten up (through the mouth, *i.e.* oral).

Prevention methods include good sanitation, killing flies, keeping the food and cut fruit properly covered to prevent the flies reaching them, boiling water for drinking, and eating well-cooked food. Immunization by taking anti-cholera injection is very useful.

2. TYPHOID FEVER. Its major symptom is a continuous fever which usually rises in the afternoon. Reddish eruptions appear on the chest and abdomen. The causative germ (*Salmonella typhi*) is a flagellated bacterium which attacks the intestines. The patient passes out the germs in his excreta. Flies and direct contamination of food and particularly of milk, spread the disease. The incubation period is about 7-12 days. After recovery, in about 2-3 weeks, the patient is left very weak. Relapse is not uncommon. Some people after recovery are carriers of the disease; they may still have the germs. Chloromycetin is a very effective antibiotic in treating the disease.

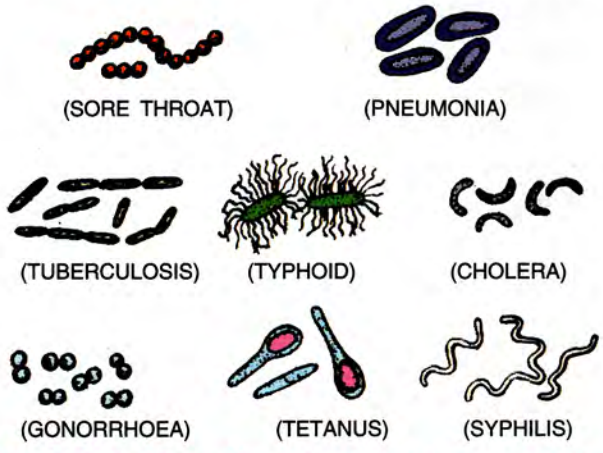

Fig. 16.1 The kinds of bacteria of some common diseases

Prevention : Anti-typhoid inoculation should be repeated every year. Proper sanitation and control of flies reduces chances of the disease.

3. TUBERCULOSIS (TB). This is usually a disease of the lungs although other parts including brain, kidney and bones may also be affected. It is caused by a small rod-shaped bacterium (*Mycobacterium tuberculosis*), and spread by the sputum from the infected persons. The germs may be carried by air or dust. The incubation period is 2-10 weeks. In the body the surrounding tissues form a kind of wall or tubercle round the germs. **The germs are widespread and almost every one receives them. Most people overcome minor infections.** If the body resistance is low, the disease becomes severe. It requires treatment in its early stages. An antibiotic, Streptomycin is a very effective drug in curing tuberculosis; it inhibits the growth of bacteria.

Prevention: BCG vaccination has been found useful in developing immunity for tuberculosis. **March 24** is observed as **anti-tuberculosis** day.

Extra : Not in syllabus but useful to know

(i) Tetanus. This is also popularly called lockjaw, because in its last phase the patient's jaws are tightly closed or locked. Death results in most cases. It is caused by the tetanus bacterium Clostridium tetani. The germ enters the body through deep wounds. Any cut in the skin due to a fall on the ground can be a source of tetanus infection. The incubation period is from 4-20 days. The germ is frequently present in horse- and cow-dung.

Prevention : Tetanus can be prevented by previous vaccination or by giving anti-toxin after getting serious wounds.

Table 16.2 summarises the various aspects of the common bacterial diseases.

(ii) Syphilis is one of the venereal diseases now better called **sexually transmitted diseases** (STD).

Table 16.2 : Diseases caused by bacteria (only the first three are in the syllabus, the rest are extra information)

Disease	Incubation period	Mode of transmission	Symptoms	Prevention
1. *Tuberculosis* (*Mycobacterium tuberculosis*)	2-10 weeks	Through air, dust, sputum of infected person	Persistent cough, afternoon fever, bloody mucus, loss of weight and fatigue, chest pain, breathlessness	B.C.G. Vaccination and isolation of patient,
2. *Cholera* (*Vibrio cholerae*)	Few hours to 6 days	Contaminated water, food and drinks, spread by flies	Acute diarrhoea, vomiting, abdominal pain, dehydration, reduced urination.	Proper sanitation, control of flies, avoid exposed food, anticholera injection
3. *Typhoid* (*Salmonella typhi*)	7-21 days	Contaminated water, milk, through flies.	High fever rise in afternoon, acute head ache, red nose, reddish eruption on the chest, diarrhoea	Proper sanitation, anti-typhoid vaccination
Extra from syllabus (but useful to know)				
4. *Tetanus* (lock jaw) (*Clostridium tetani*)	4-20 days	Through cuts or wounds in the skin, enters through blood into spinal cord.	Locking of the jaw, due to muscle spasm.	Immunization, anti-toxin in the case of wounds.
5. *Syphilis* (*Treponema pallidum*)	1-12 weeks,	Sexually transmitted, close contact	Ulcer on penis or on rectum, lips, tongue nipple, skin rash, fever	Avoid sexual contact with infected person.
6. *Diphtheria* (*Corynebacterium diphtheriae*)	2-10 days	Droplet infection while coughing and sneezing, contact	Sore throat, skin ulceration, fever, high fever, rash on throat.	DPT vaccine, isolation
7. *Whooping Cough* (*Haemophilis pertussis*)	10-15 days	Contact, droplet infection of throat.	Cold with running nose, bouts of coughing, whoop develops as a sudden bout of noisy breath at the end of cough, vomiting.	DPT immunization.
8. *Pneumonia* (*Diplococcus pneumoniae*)	1-3 days	Contact or by air	Inflammation of lungs, high fever, breathing problem and fatigue.	Avoid fatigue, malnutrition and contact.
9. *Leprosy* (*Mycobacterium leprae*)	Several years	Contact, highly contagious	Nervous loss of sensation, paralysis and deformity.	Vaccine, good nutrition, sanitation
10. *Gonorrhoea* (*Neisseria gonorrhoeae*)	3-10 days	Sexual contact	Pain in passing urine, discharge of pus, pain	Avoid sexual contact with infected person.

Its bacterium (*Treponema*) grows in genital tubes and causes a pus-like discharge. Syphilis is very dangerous and may extend to all other systems of the body, sometimes leading to death. Contact with lips also spreads syphilis. The incubation period is 1-12 weeks. Antibiotics, and particularly penicillin, are very good in curing the bacterial diseases.

(iii) Diphtheria. This dangerous disease strikes young children. The germ (*Corynebacterium diphtheriae*) is spread by discharge from the throat of infected persons by sneezing, coughing, *etc*. The incubation period is 2-5 days. It affects the throat and grows very rapidly, often taking the life of the patient. It is prevented by inoculating vaccine.

(iv) Whooping cough (Pertussis). It primarily occurs in children. The germ is a bacterium *Haemophilis pertussis*. It is spread by discharges from the throat

of the infected person. Incubation period is 10-15 days. It can be prevented by vaccination.

Triple vaccine (also called DPT) is a combined vaccine given by injections to young babies to protect them from the three diseases – **diphtheria, tetanus** and **whooping cough (pertussis)**.

(v) Pneumonia. It is caused by *Diplococcus pneumoniae* by contact or by air. It is a serious disease of the lungs. Incubation period 1-3 days. Antibiotics like *penicillin* are very effective in curing it.

16.6 DISEASES CAUSED BY PROTOZOA

1. MALARIA. Malaria is caused by a protozoan *Plasmodium*. The infective stage of the parasite is transmitted through the bite of the female *Anopheles* mosquito along with its saliva. The incubation period is about three weeks. The parasite grows and multiplies in the red blood cells and destroys them in the process. Chill and high fever are repeated on the third or fourth day. When the mosquito bites a patient, the parasite is sucked in along with the blood. It grows and multiplies within the mosquito. Various drugs such as quinine, paludrin, camoquin, etc., are useful in treatment. The disease is common in hot and humid countries.

Control measures include destruction of the mosquito at all stages and to avoid mosquito-bite by using mosquito nets or repellants.

2. AMOEBIC DYSENTERY (Amoebiasis). It is caused by a kind of amoeba called *Entamoeba histolytica*. It causes destruction of the lining of the large intestine and diarrhoea with griping pain and discharge of mucus and sometimes blood in the stools. Infection is by contamination of food, especially by flies. The incubation period is about one week. Proper sanitation and protecting food from dust and flies prevents speading of the disease.

3. SLEEPING SICKNESS. It is a disease caused by the flagellated protozoan *Trypanosoma brucei gambiense* and *Trypanosoma brucei rhodesiense*. It gets transmitted through the bite of the *Tsetse fly*. Its symptoms are fever, headache, itchiness and joint pains in the first phase. The patient later on suffers from confusion, poor coordination, numbness and trouble in sleeping (hence referred to as sleeping sickness). This phase is also known as the neurogical phase and can be fatal at this stage.

Treatment : Administering drugs like metarsophol, etc.

16.7 DISEASES CAUSED BY PARASITIC WORMS

There are numerous worms which cause diseases in man; some more important ones are as follows :

1. ASCARIASIS. A disease caused by *common round worm* (Fig. 16.2). Round worm is an elongated cylindrical worm about the size of an earthworm, females being slightly longer. The male can be recognized by a slightly curved hind end. These worms may be found in the intestines where they absorb digested food from the host. The female lays several thousand eggs per day, which pass out along with the patient's faeces. The eggs get scattered in the soil, reaching even vegetables in the fields. Children playing on the ground may get the microscopic eggs on their hands and the infection can occur by eating with unwashed hands or through unwashed raw vegetables.

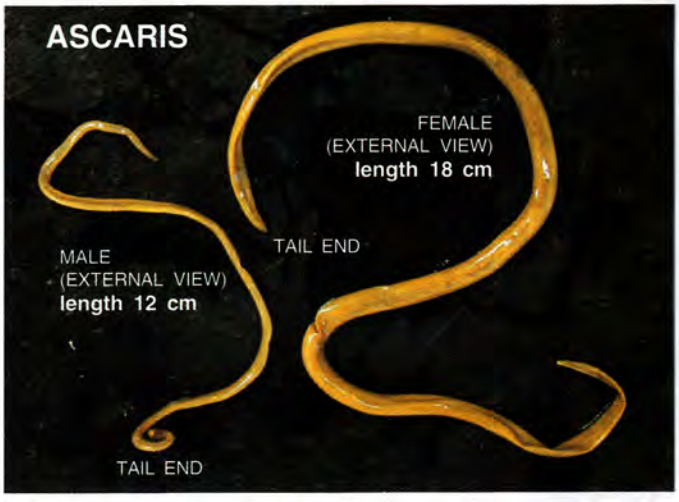

Fig. 16.2 Roundworm – *Ascaris lumbricoides.*

2. TAENIASIS. A disease caused by tapeworms called *Taenia Solium*. There are two common tapeworms. One is spread by eating infected pork and the other by infected beef. The tapeworm remains in the intestine where it may reach a length of a metre or so (Fig. 16.3). It absorbs most of the host's digested food and the patient becomes terribly weak. The mature worm breaks off a small segment from its tail end which passes out with the faeces. These segments contain eggs. When the eggs are accidentally ingested by a pig or cow they hatch and form larval stages which settle in the muscles of their new host. When man (the final host) eats raw or imperfectly cooked pork or beef the worm matures in his intestine.

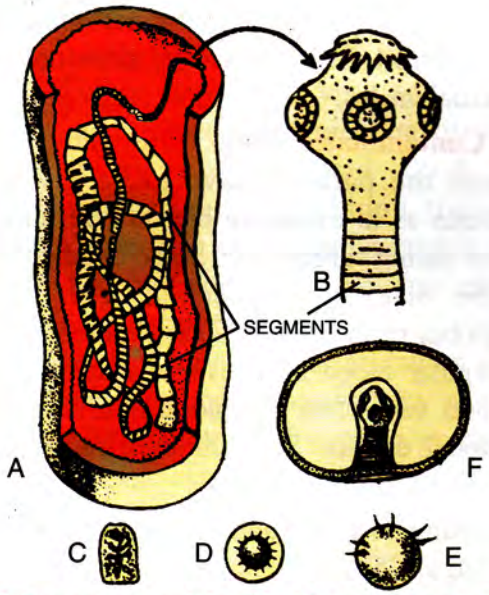

Fig. 16.3 Tapeworm and its life history stages. A—Adult tapeworm lodged in the intestine, B—The anchoring head (scolex), magnified, C—One mature segment containing eggs, D—Egg, E—Six-hooked embryo, F—Bladderworm stage in the flesh of pig (or cow).

3. FILARIASIS. It is a tropical disease also known as '**Elephantiasis**'. It is caused by the filarial worm '*Wuchereria bancrofti*'. It is transmitted through the bite of the Culex mosquito. These tiny worms lie in the lymphatic system and connective tissues of the Human body mainly the limbs. Legs become swollen resembling those of the elephant hence the name 'Elephantiasis'. The swelling is due to the blockage of lymph circulation by the worms resulting in inflammation of lymph glands and lymph vessels. Its symptoms are enlargement of limbs/ankle, fever with chills in acute cases.

Treatment : Eradication of the vector and use of antibiotics and anti-inflammatory analgesics.

17.8 VIRAL DISEASES

17.8.1 WHAT ARE VIRUSES ?

The viruses are extremely small substances made of nucleic acids and proteins. They are visible only through an electron microscope.

— They do not live freely in nature. They can live only inside other cells.

— They take over the metabolism of their host cell in their own favour producing more viruses and usually killing the host cells.

— The viruses can be cultured on living tissue in the laboratory and can be crystallized and stored on the shelf.

— The viruses are **highly specific**. They attack only one kind of host and only certain tissues. *For example*, the virus of myxomatosis which is fatal to rabbits has no effect on man and similarly the rabbits do not catch the common cold and flu. But there are some exceptions. The rabies virus normally affects the dog and its relatives, but it can even cause the disease in humans frequently leading to death.

Virus is like a gene with no cell of its own. It dictates the host cell to produce more of its own kind of virus particles only. The host cell ultimately dies and the liberated virus particles attack new host cells.

16.8.2 COMMON VIRAL DISEASES

Some common viral diseases are the poliomyelitis, common cold, influenza, smallpox, mumps and rabies. The syllabus specifies only the following three diseases **AIDS** (only an introduction), **chicken pox and hepatitis**.

WORLD RABIES DAY 8TH SEPTEMBER

Louis Pasteur (1822-1895) established that all infections are caused by germs. He was the first to have successfully treated a boy badly bitten by a mad dog by giving him injections of **weakened germs** up to the 14th day. Most immunizations today are based on Pasteur's principles.

IN CASE OF ANIMAL BITES

Do's

- Wash wound with soap and water.
- Apply available disinfectant (Povidone iodine Spirit/Household antiseptic).
- Contact doctor for timely & appropriate treatment with anti-rabies vaccines and immunoglobulins.

Don'ts

- Don't touch the wound with bare hands.
- Don't apply irritants like soil, chillies, oil herbs, chalk, betel leaves.

1. HIV/AIDS. (Human Immunodeficiency Virus/ Acquired immunodeficiency syndrome). AIDS was first recognised in the USA in 1981. Since then an

increasing number of cases are reported every year from practically all over the world. In India alone, it is estimated that there are more than 2,00,000 confirmed cases of AIDS patients. The disease is spreading at an alarming rate, and it has no cure as yet and no vaccine so far. The disease is almost fatal. People in the age group 20-39 are more susceptible to getting AIDS.

AIDS IS THE LAST STAGE OF HIV INFECTION

The **causative germ of AIDS** is a virus named HIV (Human Immunodeficiency Virus) Fig. 16.4. It has been detected in body fluids like blood, semen, saliva, tears and urine. It attacks the immune system (*i.e.* the cells that fight against infections) and the patient suffers seriously from even minor infections of other diseases. Even cancers appear when the immune system fails.

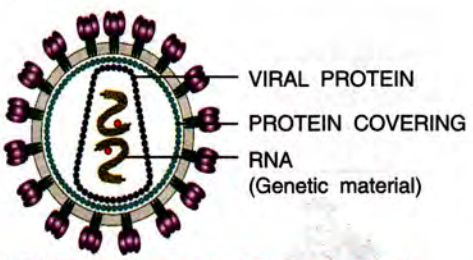

Fig. 16.4 The HIV (Human Immunodeficiency Virus). Several thousand times enlarged.

The incubation period *i.e.* the time between receiving the infection and the appearance of symptoms may **even be more than 10-12 years**. During this period the infected persons show positive results for HIV and they are popularly called HIV-positive.

Most individuals, when AIDS is fully developed, die within 3 years from **other infections** or cancers. Symptoms during this period may include swollen lymph nodes, fever, night sweats, and weight loss.

TRANSMISSION OF AIDS

The AIDS virus (HIV) is highly infective. It is transmitted by any one of the following methods:

(1) Sexual intercourse between a man and a woman, when any one of the two is infected. (The virus occurs in the fluids of the reproductive passages). Prostitution is the biggest source of the spread of the infection. Safest is the single partnership wife-and-husband relationship.

Homosexual intercourse (anal sex) with an infected person. The disease is more common in homosexual males.

(2) Contaminated blood transfusions. In many situations the patients have to be given blood transfusions as in excessive bleeding resulting from injury, or during surgery, *etc*. Some children are born with the disease thalassemia with defective haemoglobin of the blood. Such children have to be given regular blood transfusions usually every 3-4 weeks and very often the blood transfused is from professional donors. Such children run the risk of getting AIDS.

According to news published in *The Times of India* dated August 5, 1995, in one of the hospitals of Bombay alone, 45 of the 64 thalassemia children in the age group 2-15 years were found to be HIV positive, *i.e.* they had received the virus. The infection must have occurred through blood transfusion.

(3) Mother to child transmission. The germ from the infected mother may cross through the placenta and reach the embryo in the womb.

(4) Injection needles if shared by more than one person may introduce the virus from one individual to another. The disease is quite common in drug abusers. For the same reason, doctors in hospitals now use only disposable syringes which are used just once.

2. CHICKEN POX. The disease is caused by a Herpes virus 'Varicella Zoster'. It is a common contagious disease occurring mainly in children, but can also affect adults. The disease spreads quickly by close contact with an infected person. Its symptoms are highly irritating rashes that appear on the body starting near the chest and back and gradually spread to arms, legs, face and head. The rashes first appear as a pink spot and rapidly changes to a watery blister. The blister gradually shrivels up and soon dries forming scabs, this time is the infectious period.

Treatment : Bed rest, keeping the rashes clean and dry, do not prick the blister, calamine lotion can be applied to reduce itching, use of neem leaves too helps. Vaccination of live attenuated vaccine containing Varicella is given to children of the age of 12 to 18 months for **active immunization**.

3. HEPATITIS : This disease is caused by 5 strains of viruses namely Hepatitis A virus, Hepatitis B virus, Hepatitis C virus, Hepatitis D virus and Hepatitis E virus. The virus causes inflammation of the liver. Transferred by contaminated food, water, contaminated syringes and blood transfusion. **Hepatitis A** virus has an incubation period of 14 to 45 days and is most common in children and young adults, mainly transmitted by contaminated food and water. **Hepatitis B** virus has an incubation period of 6 to 26 weeks and individuals of any age can be affected, mainly transmitted through contaminated syringes and transfusion equipment. It can produce cirrhosis of the liver and possibly cancer of the liver. **Hepatitis C and D** viruses are similar to the B virus in methods of transmission and effect on the liver. Its symptoms are high temperature, headache and joint pains, loss of appetite with a general feeling of illness, nausea and vomiting. After 3 to 10 days jaundice may develop with deep yellow urine and light coloured stools.

Treatment : Bed rest until fever has settled. Take high calorie diet with limited or no protein and fat. Wash hands after handling patient's bed pan and clothes.

SPREADING OF AIDS – "YES" AND "NO"

- Yes

AIDS can be **caused** through :

— **Sexual contact**
— **Contaminated blood transfusion**
— **Mother to child transmission during birth process**
— **Shared unsterilised injection needles.**

- No

AIDS is **not transmitted by**

— **Contact with patient's clothes and other articles**
— **Shaking hands**
— **Eating together**
— **Sharing bathrooms and toilets**

HOW DO THE VIRUSES DIFFER FROM BACTERIA ?

VIRUSES	BACTERIA
1. Very small (visible only by electron microscope)	Larger (can be seen by light microscope).
2. Non-cellular.	Single-celled.
3. Have no metabolism.	Have metabolism.
4. Take no food by any method.	Take food by absorption.
5. Do not grow and do not divide.	Grow in size and divide to produce more bacteria.
6. Can be crystallized.	Cannot be crystallized.
7. Command the host cell to produce virus.	Self reproduce.
8. All produce diseases in man, animals or plants.	Some harmless, some useful and some disease producing.

POINTS TO REMEMBER

- ***Disease is a condition in which normal body functioning is disturbed.***
- ***Diseases are categorised in several ways. Extent of occurrence (Endemic, epidemic, pandemic, sporadic), Communicability (infectious, non-infectious), Pathogen (viral, bacterial, etc.), Transmission (water, food, air or insect borne)***
- ***Incubation period is the period between the entry of germs and the appearance of the disease.***
- ***AIDS, chicken pox and hepatitis.***
- ***Tuberculosis, cholera and typhoid are bacterial diseases.***
- ***Roundworm and tapeworm are transmitted through contaminated food.***
- ***AIDS is a condition caused by a virus (HIV), it paralyses the body's disease-fighting system and the patient easily catches infectious diseases.***

REVIEW QUESTIONS

A. MULTIPLE CHOICE TYPE

1. A disease widely spread worldwide is known as :
   (a) endemic (b) epidemic
   (c) pandemic (d) sporadic
2. The letter "B" in the name BCG vaccination stands for :
   (a) Brief (b) Beri-beri
   (c) Bacteria (d) Bacillus
3. Use of disposable syringes for injecting medicines, *etc*. is specially advised to prevent
   (a) Poliomyelitis (b) Mumps
   (c) Rabies (d) AIDS
4. The vector that transmits the malarial pathogen is :
   (a) Culex mosquito (b) Housefly
   (c) Anopheles mosquito (d) Entamoeba
5. Amoebiasis is caused by the protozoan :
   (a) Amoeba proteus (b) Engelena
   (c) Plasmodium (d) Entamoeba

B. VERY SHORT ANSWER TYPE

1. Mention whether the following statements are **true** (T) or **false** (F).
   (a) Filiariasis is transmitted by the housefly. T/F
   (b) Malaria is caused by a protozoan. T/F
   (c) BCG vaccine is used for chicken pox. T/F
   (d) Louis Pasteur discovered a cure for malaria. T/F
   (e) AIDS is caused by a bacterium. T/F
   (f) HIV is a serious disease, usually fatal. T/F
   (g) AIDS is not transmitted by contact with a patient's clothes. T/F
   (h) Chicken pox and hepatitis are bacterial diseases. T/F
   (i) Goitre is endemic in sub-Himalayan regions of India. T/F
   (j) AIDS is caused by a fungus. T/F
   (k) Hay fever and asthma are allergies. T/F
   (l) Smallpox still occurs in India. T/F
   (m) The disease filiariasis is caused by the bite of the female anopheles mosquito. T/F
2. Write the **full form** of AIDS.
3. **Name** the following :
   (a) Category of pathogen that causes diesases, like common cold and mumps ..... .
   (b) The vaccine for preventing tuberculosis.....
   (c) An organ usually affected by tuberculosis.....
   (d) A disease that weakens body's defense system against infections.....
   (e) Germ of germ-substance introduced into the body to prevent occurrence of an infectious disease.....
   (f) The vector responsible for transmission of sleeping sickness .....
   (g) The microorganism that requires a host to produce .....
   (h) The popular name of the disease filiariasis.....

C. SHORT ANSWER TYPE

1. **Define** the terms *infection, pathogen, incubation period and allergen.*
2. What are the **different ways** in which infectious diseases can spread ?
3. **Name** any *four* non-infectious diseases and their causes.
4. **Why** is it important to know how the germs leave the body of a patient ?
5. **Name** the causative germ of AIDS. How is this disease transmitted ?

D. LONG ANSWER TYPE

1. Write very briefly about the following :
   (a) BCG
   (b) Incubation period
   (c) Chicken pox
   (d) Hepatitis A
2. What are the **causes** and **symptoms** of malaria, chicken pox and tuberculosis ? How can these diseases be **prevented** ?