

TENDER HEART HIGH SCHOOL

CLASS - 9

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SUBJECT - BIOLOGY

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Chapter 16 Diseases: Cause and Control

Disease is departure from normal health [physical, mental or social well being] through structural or functional disorder of the body.

Categories of diseases - Based on -

(i) Extent of occurrence

- a) Endemic diseases - When disease is found in a certain area only attacking a fewer number of people eg. yellow fever in African countries, Goitre in sub Himalayan regions [Goitre occurs in sub Himalayan region because the soil there is lacking in iodine, hence in food grown there. Thus people living there are most likely to suffer from goitre in sub-himalayan region]
- b) Epidemic diseases - when the disease breaks out and spreads from place to place affecting large number of people at the same time
Eg. Plague in India in 1944.
- c) Pandemic diseases - when the disease is widely distributed worldwide Eg AIDS, Corona-COVID-19
- d) Sporadic diseases - When there are scattered individual cases of a disease Eg Malaria, Cholera

(ii) Communicability

- a) Non infectious diseases - Non transmissible -
Such diseases can not spread from one patient to another person Example
 - (i) Nutritional deficiency diseases - Goitre, scurvy
 - (ii) Allergies - Asthma
 - (iii) Ageing diseases - Cataract, Arthritis
 - (iv) Cancers etc.

ii

Communicable diseases or Infectious diseases

These are caused by germs. These disease causing germs (bacteria, viruses etc.) are called Pathogens and their transmission from one person to another is called infection.

Hence communicable diseases are those diseases which are transferred from a patient to a healthy person. Eg malaria, common cold.

Incubation Period - An infectious disease does not appear immediately after the infection but may take some time varying from few hours to few days. This period between the entry of germs and appearance of the first symptom of the disease is called Incubation period.

Pathogen may be of various types as given below -

- Bacteria - causes Cholera, Typhoid, Tuberculosis etc.
- Viruses - AIDS, Chickenpox, (COVID-19 (coronavirus))
- Protozoa - Malaria, amoebic dysentery etc.
- Helminths (worms) - Ascariasis, Taeniasis etc.

In this chapter we will study about a few of these communicable diseases

Diseases caused by Bacteria

1. Cholera

Causal organism - Vibrio cholerae

Incubation period - few hours to 6 days.

Symptoms - Disease attacks intestinal tract. Patient suffers from vomiting and loose motions. Very little or almost no urination leading to accumulation of urea in the body. Urea being poisonous may cause death of the patient.

Mode of transmission - Cholera germ spread through food and water. Vectors like housefly carries the germs from excreta (faeces) to the food. Such contaminated food if consumed cause Cholera.

Prevention / Treatment - includes (i) saline water injections to supply water to the blood.
(ii) Good sanitation (iii) Using boiled water for drinking.
(iv) Immunization by taking Anti cholera injections.

2. TYPHOID -

Causal organism Salmonella typhi

Incubation Period 7-12 days

Symptoms - Continuous fever which usually rises in afternoon. Reddish eruptions on chest and abdomen. Germ attacks the intestine. After recovery in about 2-3 weeks patient is left very weak. Relapse (to become worse again after an improvement) is not uncommon. Some people after recovery are carriers of the disease, they may still have the germs.

Mode of transmission Patient passes out the germs in his excreta. Flies and direct contamination of food and particularly of milk, spread the disease.

Treatment / Prevention - Chloromycetin is very effective antibiotic in treating the disease. Anti typhoid inoculation should be repeated every year. Proper sanitation and control of flies reduce chances of disease.

3. TUBERCULOSIS [TB]

Causal organism - Mycobacterium tuberculosis

Incubation period - 2-10 weeks

Symptoms - This is usually a disease of lungs, though other organs like brain, kidney, bones etc may be affected. Persistent cough, afternoon fever, bloody mucus, loss of weight and fatigue, chest pain, breathlessness.

People overcome minor infections of Tuberculosis if their body's immune system is strong.

Mode of transmission Germs spread through air, dust and sputum of the infected person.

Treatment/Prevention - Streptomycin (antibiotic) helps to cure TB. Tuberculosis. BCG (Bacillus of Calmette and Guerin) vaccination is also useful.

DISEASES CAUSED BY PROTOZOA.

1. MALARIA

Causal organism Plasmodium vector Anopheles mosquito (female)

Incubation Period 3 weeks

Symptoms. The parasite (plasmodium) grows & multiplies in liver cells and destroys the red blood cells of the infected person. Chill and high fever are repeated on 3 or 4 day.

Treatment/Control Drugs like quinine, paludrin, camoquin etc. are useful. Destruction of mosquitoes avoiding mosquito bite is needed.

Vector - is the agent that carries the germ from infected person to healthy person. In malaria, when an uninfected female anopheles mosquito bites an infected person, the parasite (plasmodium) is sucked in (by the female mosquito) along with the person's blood. Inside the mosquito's body the parasite grows & multiplies in its gut. Such a mosquito is now - 'malaria vector'. When this malaria vector mosquito bites a healthy person, it transmits the infective stage of parasite along with its saliva into the bloodstream of the healthy person and makes him infected in return.

2. Amoebic Dysentery [Amoebiasis]

Causal organism

Entamoeba histolytica

Incubation period

One week.

Symptoms. It causes destruction of the lining of large intestine and diarrhoea with gripping pain and discharge of mucus and sometimes blood in the stools.

Mode of infection Infection is by contamination of food, especially by flies

Prevention Proper sanitation and protecting food from dust and flies prevents spreading of the disease.

3. Sleeping Sickness

Causal organism

Trypanosoma brucei gambiense/rhodesiense

Vector - Tsetse fly

Symptoms - fever, headache, itchiness, joint pain in first phase. Patient later on suffers from confusion poor coordination, numbness and trouble in sleeping

This phase is the neurological phase and can be fatal at this stage

Treatment Administering drugs like melarsoprol etc.

HOME ASSIGNMENT -

Q1. Learn and write the Table 16.2 Diseases caused by bacteria in your notebook

Q2. Do the following questions from 'Review Questions' (given on Page 165 of your text book) in your notebook

C. Short Answer Type

Q No 1 and 2.