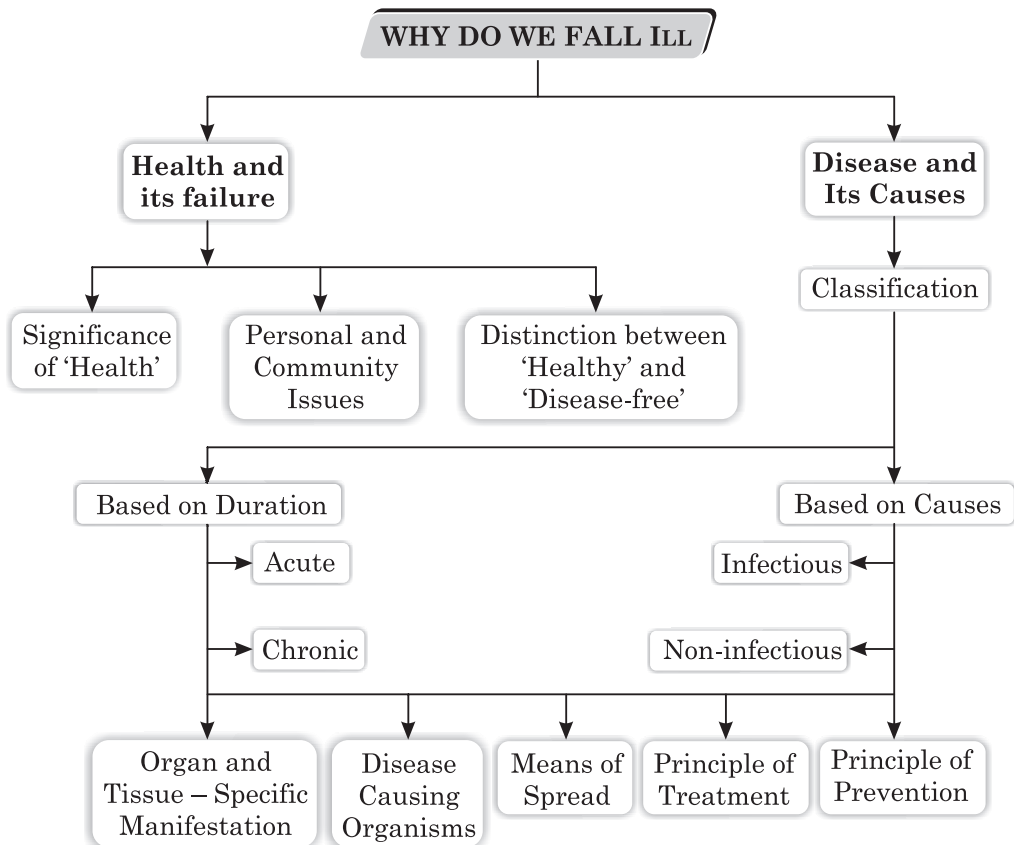


TOPICS COVERED

- 13.1 Health and Its Failure
- 13.2 Disease and Its Causes
- 13.3 Infectious Diseases

CHAPTER MAP



QUICK REVISION NOTES

Health is a state of physical, mental and social well being of a person.

WHO is *World Health Organisation*. World health day is celebrated on **7th April**.

Disease is a disorder in a human being, animal or plant caused by infection, diet or malfunctioning of organ, tissue or cells. It means lack of ease or lack of comfort.

- Being disease free and being healthy are two different conditions.
 - *Acute disease* last for a short period of time and affects the body suddenly and quickly e.g cold, cough, viral fever.
 - *Chronic Diseases* last for long time, even some of them for a whole life span, e.g. diabetes, heart ailments, TB etc.
 - Infectious diseases are caused by virus, bacteria, fungi, protozoans and worms.
 - *Infectious diseases* are spread from an infected person to a healthy person, e.g. TB, Malaria, Viral infections, AIDS.
 - These diseases may spread through air, water, food, blood contact vectors (carriers) like mosquito and through sexual contact.
 - Non-infectious diseases do not spread by the contact with infected person, e.g. heart disease, kidney stone, high blood pressure, diabetes etc.
 - *Community health* is a joint activity of people, Government, NGO for development of their society and to keep them healthy.
 - Personal and community health are supplementary to each other.
 - Cleanliness at home, surroundings and public places is essential for an individual as well community health.
 - Economic condition is an important factor which determines individual and community health.
 - We protect ourselves by keeping our body clean.
 - *Antibiotics* are the medicines which kill or suppress the growth of microorganisms, e.g. Penicillin, Tetracycline. These do not work against viruses.
 - **AIDS (Acquired Immuno Deficiency Syndrome)** is caused by retro virus called HIV (Human Immuno Deficiency Virus).
 - Microorganisms are killed or their multiplication is suppressed to cure the disease by using antibiotics.
 - Different diseases affect different organs/tissues, e.g. bacteria causes T.B. of lungs, cold is a viral disease affecting upper respiratory tract, Hepatitis virus may attack liver and damage it, meningitis attack brain and fungus may attack skin.
 - Infecting agents may be unicellular or multicellular and microscopic.
 - **Immunisation or vaccination** helps to prevent diseases, e.g. BCG vaccination prevents tuberculosis, polio drops prevent polio and DPT vaccine prevents Diphtheria, whooping cough and tetanus. MMR prevents Measles, Mumps and Rubella.
 - The ability of an organism to resist a particular infection is called *immunity*.
 - Prevention of disease is more desirable than treatment for community health, e.g. polio is being eradicated from India by Pulse Polio Program.
 - We must wash our hands with antiseptic soap before and after taking meals, urination, defecation, etc. so as to keep ourself germs free.
 - Infectious diseases can be prevented by public health hygiene like proper waste disposal, proper sanitation, etc.
-

1. HEALTH AND ITS FAILURE

Significance of Health

Healthy body keeps healthy mind.

- Good health makes the person happy.
- Health involves body, mind and social well being.
- Regular exercise keeps us healthy.
- Health is wealth.
- All our cells, tissues, organs work properly to keep us healthy.
- We must have healthy attitude.
- Health depends upon our environment.
- We can remain healthy only if our surroundings are clean.

Personal Health

It involves health of a person, i.e. physical, mental and social well being of an individual.

Community Health

It is overall well being of whole community, e.g. people on hill station remain healthy. Their environment does not have pollution like metro cities. People walk long distances and climb the mountains. People take healthy food.

Maintenance of Community Health

- Proper environment without pollution.
- Proper garbage disposable system and proper sanitation facilities.
- Proper drinking water.
- Good economic situation including job opportunities for earning and having nutritious food.
- All people clean their body and surroundings.

Difference between Healthy and Disease Free

Healthy	Disease Free
It is a state of well being physically, socially and mentally.	It is a state of absence of any disease and all cells, tissues, organs work properly.
It includes individual along with physical and social environment, e.g. old people who live alone have depression which spoils their health. If there is garbage near your house, all people living nearby will not be healthy.	It refers to individual only, keeping body clean, taking proper diet, doing exercise regularly can make us disease free.

Exercise 13.1

I. Very Short Answer Type Questions

(1 Mark)

1. If there is a snowfall on hill stations nearby, what will be the effect in Delhi?
 2. What are our cells made up of?
 3. What is meant by balanced diet?
 4. Why does pollution affect the health of people?
 5. Why is exercise essential for good health?
-

II. Short Answer Type Questions–I

(2 Marks)

6. State any two conditions essential for good health. [NCERT]
7. State any two conditions essential for disease free. [NCERT]
8. Are the answers to the above questions necessarily the same or different? Why? [NCERT]
9. Name some important conditions to maintain individual health.

III. Short Answer Type Questions–II

(3 Marks)

10. Why is public place cleaning essential for good health?
11. How does smoking, drinking alcohol, wrong sexual habits make us unhealthy?
12. Sonu, a nine year old boy, lives in a single room house along with his parents, grandparents and three siblings. They share toilet with 15 more families living in the same building which stands in the shadow of a very tall brick kiln. He works the whole day in a tea stall nearby. How does all this affect his health?
13. What do you mean by disease symptoms? Explain giving two examples? How are they different from signs?

IV. Long Answer Type Questions

(5 Marks)

14. Which of the following conditions indicate 'bad health'? Justify the answer giving reasons.
 - (a) A cricketer has put on weight and is losing too many catches in the field.
 - (b) A student is depressed over the low grades obtained in Mathematics, therefore he has stopped studying rest of the subjects.
 - (c) A woman after attaining menopause has started taking part in religious activities, yoga and social work.
 - (d) A man after losing his money in gambling has started stealing money from wallets of family members.
 - (e) The mid day meal provided to the children in a school where most of the students attending come from nearby slum colony.
15. Give at least five examples from real life where community health is being risked even if individual health may be taken care of.
16. 'Health' is a state of being well enough to function well physically, mentally and socially. Keeping in mind this statement, imagine yourself as *Pradhan* of a village, list some ways that you will follow to ensure good health of the villagers.

Answers 13.1

1. Delhi will become cold. As the chances of rain increases, temperature falls and the sudden change in temperature may create health issues.
 2. Our cells are made up of proteins, carbohydrates and fats.
 3. A balance diet contains proper proportion of proteins, carbohydrates, fats, minerals, fibres and water, necessary to maintain a good health.
 4. Many respiratory, heart related diseases are caused by pollution.
 5. Exercises increase the rate of metabolism, keeps our body organs active and disease free.
 6. (i) All organs should function properly.
(ii) The person should have proper physical and social environment.
 7. (i) Proper nutrition or balanced diet is essential.
(ii) Proper habits of keeping body and environment clean.
 8. The answer to both the questions are same because we can remain healthy only when we are disease free, our physical and social environment is healthy and all our body organs function properly.
-

9. (a) Living in clean space (b) Good economic conditions
(c) Balance between work and rest (d) Eating a balanced diet
(e) Being happy and at peace
10. If there is garbage thrown in the street, open drainage water lying stagnant around where we live, the probability of poor health increases. Therefore public places cleanliness is most important for good health.
11. (i) Smoking may lead to cancer, heart attack, TB, bronchitis.
(ii) Alcohol decreases our immunity, loss of body control and control of mind.
(iii) AIDS is caused by wrong sexual habits or by infected blood transfusion.
12. Sonu lives in a overcrowded and poorly ventilated house. The brick kiln is also a source of excessive heat, smoke and polluting gases. It is possible that he may suffer from air borne diseases.
The shared toilets are another aspects of lack of hygiene for him that can cause diseases of oral faecal route. He is likely to suffer from gastric and helminthic diseases. Not studying or playing with his friends will not allow him to develop mentally and socially. He will not be able to manage a good job even later in his life.
All these conditions are not congenial to be healthy for Sonu.
13. When there is a disease, either the functioning or the appearance of one or more systems of the body will change for the worse. These changes give rise to symptoms and signs of disease. Symptoms of diseases are the things we feel as being 'wrong'. For example having a headache, or cough, or loose motions, or a wound with pus are all symptoms. These indicate that there may be a disease, but they don't indicate what the disease is? For example, a headache may mean just examination stress or, very rarely, it may mean meningitis, or any one of a dozen of different diseases. Signs of a disease are what physicians will look for on the basis of the symptoms. Signs will give a little more definite indication of the presence of a particular disease. Physicians will also get laboratory tests done to pin point the disease further.
14. (a) The cricketer is in bad health because of his increased body weight which may be due the lack of enough practice or eating wrong diet. Anything that prevents proper functioning of cells and tissues will lead to lack of proper activity of the body.
(b) The student is not in good mental health though physically he may not have a disease.
(c) The women is healthy. She is well adjusted and fruitfully busy.
(d) The man is not healthy as he is socially maladjusted and poses a threat to other's well being.
(e) The children are getting meals and are attending school. They are healthy.
15. (a) It is often noticed that many people after cleaning their houses throw garbage outside.
(b) As they do washing and cleaning their cars, the whole lane is left wet.
(c) Whenever they are celebrating, loud music plays late till night.
(d) After organising a get together or a picnic, dirty plates and left food is left behind in the parks.
(e) On Diwali and ther festivities, crackers are burst to express their happiness.
(f) Most importantly after using a public toilet, it is left dirty. (Any Five)
16. (a) For physical health I will make sure that there are no sources of pollution near or inside the village like industries producing smoke, toxic gases, harmful effluents to poison air, water or soil.
(b) Encourage villagers to build airy and well lit houses, so that they can take in lot of clean air and sunshine. Water sources are clean.
(c) Make recreational places and playgrounds where they can enjoy and interact after hard day work.
-

- (d) Will try to create employment for all by encouraging cottage industries. It will improve their economic conditions.
- (e) Laws are made stringent not to allow anti-social activities ensuring peace and harmony amongst all.

2. DISEASE AND ITS CAUSES

Disease

It is a lack of ease, i.e. person is uncomfortable. If our body organs are not functioning properly, we are suffering from a disease.

Types of Diseases

- **Acute Diseases:** These are for short periods, e.g. common cold, cough, fever, malaria, dengue, loose motions, conjunctivitis.
- **Chronic Diseases:** These ailments can last for long time, may be for whole life, e.g. diabetes, hypothyroidism, heart ailments, hypertension. They need precautions, medication, proper diet for long time and even for whole life. They affect specific organs.
- **Infectious diseases:** These diseases spread due to infection by micro-organisms and communicated or transmitted from one person to another through air, water, vectors like mosquito, etc., e.g. T.B, chicken pox, small pox, conjunctivitis, AIDS.
- **Non-infectious Diseases:** These diseases do not spread by contact through air, water, e.g. Arthritis, heart ailments, diabetes, hypo or hyper thyroidism.

Causes of Diseases

- Micro-organisms like bacteria, virus, fungi, protozoan and worms.
- Poor nourishment and wrong eating habits.
- Heredity and genetic disorders.
- Lack of proper vaccination (Immunisation).
- Environmental pollution like air or water pollution.

Disease Causing Organisms

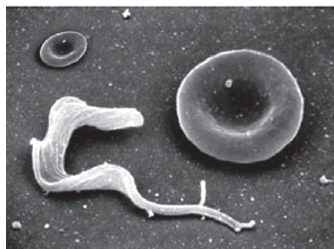
SARS Virus: It comes out from an infected cell.

- Its size is 500×10^{-6} m (500 μ m) [1 μ m = 10^{-6} m].
- Viruses cause Common cold, Influenza, Dengue fever, Polio, Hepatitis, AIDS, Chicken pox, Measles, Mumps, SARS (Severe Acute Respiratory Syndrome), small pox, swine flue (H_1N_1), Japanese encephalitis.
- All virus are active and can multiply inside the host cell.

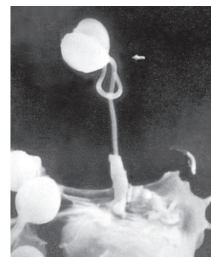


SARS Virus

Protozoa: Leishmania causes Kala-azar, Plasmodium also causes malaria, Entamoeba cause amoebic dysentery, trypanosoma causes sleeping sickness, etc.

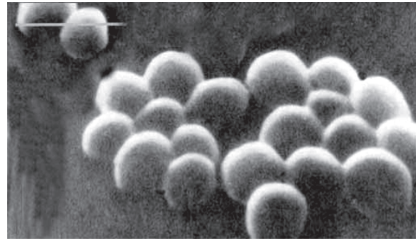


Trypanosoma protozoa



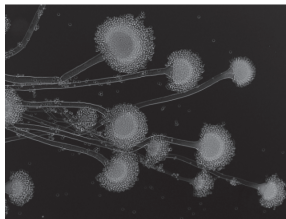
Leishmania protozoan

Bacteria: It can cause many diseases, e.g. Staphylococcus causes acne, Typhoid fever, Cholera, T.B, Anthrax, Tetanus, Food poisoning are all caused by bacteria. They can live in side as well outside the host cell unlike viruses.



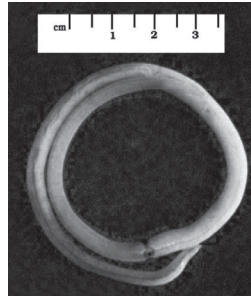
Staphylococcus, bacteria

Fungi: It can cause food poisoning, skin diseases like Athlete's foot, Ringworm and many other skin infections.



Fungi

Worm: These can cause intestinal infections, elephantiasis. For example round worm and tape worm.



Ascaris lumbricoides, roundworm

Means of Spread

Air: The microbes get spread in the air by sneezing and coughing when a person is suffering from either of the following diseases like common cold, T.B. or Pneumonia etc. affect a healthy person.

Water: The microbes enter our body either by droplet infection, drinking polluted water or infected food, e.g. cholera, amoebic dysentery, etc.

Vectors: Some organisms like female anopheles mosquito act as a vector of disease like malaria, dengue, yellow fever etc.

Through Sexual contact: STD (*Sexually transmitted diseases*) like AIDS and hepatitis B spread by sexual contact with infected person, blood transfusion from mother to child during pregnancy. Gonorrhoea, Syphilis, Warts, Genital herpes also spread through sexual contact.

Rabid animals: Rabies is spread through the bite of affected animals. Bird flue and swine flue are caused by infected animals and birds.

Antibiotics

The drugs which are obtained from micro-organisms and are used to kill or suppress the multiplication of micro-organisms are called antibiotics, e.g. tetracycline, penicillin, chloramphenicol, streptomycin, etc.

Exercise 13.2

I. Very Short Answer Type Questions

(1 Mark)

1. What is an antibiotic? Give its one example. [CBSE 2012] [NCERT]
2. Why are over crowded and poorly ventilated areas are a major factor in spread of air borne diseases? [CBSE 2010, 14]
3. What is meant by acute disease? [CBSE 2010]
4. Name the protozoan that causes (a) Sleeping sickness, (b) Kala-azar [CBSE 2010]
5. Write the full form of WHO? [DOE]
6. Why is food necessary for us? [DOE]
7. Name two non-infectious diseases. [DOE]
8. Write two water borne diseases. [DOE]
9. Name the disease transmitted by animal bites.
10. Which one of the following is not a viral disease? [NCERT Exemplar]
(a) Dengue (b) AIDS (c) Typhoid (d) Influenza
11. Write the expanded form of AIDS. [DOE]
12. What is the full form of HIV?
13. Name two STD (Sexually transmitted diseases) diseases.
14. What is the cause of malaria?
15. What is the cause of bubonic plague?
16. Name any two groups of micro-organisms from which antibiotics could be extracted.
17. Name any two diseases transmitted through vectors.
18. Which organ is affected when a person is suffering from jaundice? [CBSE 2011]
19. Why is antibiotic not effective in common cold?
20. Hepatitis B and AIDS cannot be transmitted by certain ways. Choose them out of the following:
Common tattoo needles, sexual contact, hugs, hand-shake, sharing syringes, breast feeding, blood transfusion

II. Short Answer Type Questions–I

(2 Marks)

21. Why are we normally advised to take balanced and nourishing food when we are sick? [NCERT]
 22. What are the different means by which infectious diseases are spread? [NCERT]
 23. Name the target organs for the following diseases
(a) Hepatitis targets _____. (b) Fits or unconsciousness targets _____.
(c) Pneumonia targets _____. (d) Fungal disease targets _____. [NCERT Exemplar]
 24. Fill in the blanks
(a) Pneumonia is an example of _____ disease.
(b) Many skin diseases are caused by _____.
(c) Antibiotics commonly block the biochemical pathways which are important for the growth of _____.
(d) Living organisms carrying the infecting agents from one person to another are called _____. [NCERT Exemplar]
-

25. Explain giving reasons:
- (a) Balanced diet is necessary for maintaining healthy body.
 - (b) Health of an organism depends upon the surrounding environmental conditions.
 - (c) Our surrounding area should be free of stagnant water.
 - (d) Social harmony and good economic conditions are necessary for good health.

[NCERT Exemplar]

26. Write differences between acute and chronic diseases.

III. Short Answer Type Questions–II

(3 Marks)

27. List any three reasons when you would think that you are sick and ought to see a doctor. If only one of these symptoms were present, would you still go to the doctor? Why or why not?

[NCERT] [HOTS]

28. What are vectors? Name the vectors of malaria and Kala-azar.

29. Classify the following diseases as infectious or non-infectious.

- (a) AIDS
- (b) Tuberculosis
- (c) Cholera
- (d) High blood pressure
- (e) Heart disease
- (f) Pneumonia
- (g) Cancer

[NCERT Exemplar]

30. In which of the following case do you think the long-term effects on your health are likely to be most unpleasant?

- (a) if you get jaundice,
- (b) if you get lice,
- (c) if you get acne. Why?

[NCERT Exemplar]

31. Fill in the blanks

- (a) _____ disease continues for many days and causes _____ on body.
- (b) _____ disease continues for a few days and causes no longer term effect on body.
- (c) _____ is defined as physical, mental and social well-being and comfort.
- (d) Common cold is a _____ disease.
- (e) Many skin diseases are caused by _____.

[NCERT Exemplar Problem]

32. What do you mean by disease symptoms? Explain giving two examples?

[NCERT Exemplar]

33. Give six differences between infectious and non-infectious diseases.

34. Classify the following into contagious and non-contagious diseases.

Scabies, malaria, chicken pox, worms, common cold, blood cancer

35. Harit was given blood without screening by mistake and later he discovered that he has HIV infection. Doctors told him he does not have AIDS so far. What does it mean?

IV. Long Answer Type Questions

(5 Marks)

36. What precautions can you take in your school to reduce the incidence of infectious diseases?

[NCERT]

37. Give two examples for each of the following:

- (a) Acute diseases
- (b) Chronic diseases
- (c) Infectious diseases
- (d) Non-infectious diseases

[NCERT Exemplar]

38. What is droplet infection? Which diseases may spread through them? What precautions should one take to avoid contracting these diseases?

39. What is an antibiotic? Give two examples. Name any two groups of microorganisms from which antibiotics could be extracted. Why are antibiotics not effective for viral disease?

Answers 13.2

1. The drugs which are obtained from micro-organisms and are used to kill or suppress the multiplication of micro-organisms are called antibiotics, e.g. tetracycline, penicillin, chloramphenicol, streptomycin etc.
2. When an infected person sneeze or cough, little droplets are thrown in air which enter body of a healthy person who gets infection. Poorly ventilated areas do not get fresh air and lack of oxygen may cause breathing problems.
3. Acute diseases lasts for a very short time, e.g. common cold, cough, fever etc.
4. (a) Trypanosoma causes sleeping sickness.
(b) Leishmania causes Kala-azar.
5. WHO stands for World Health Organisation.
6. Healthy food is essential for the proper functioning of our body organs.
7. Two non-infectious diseases are: Diabetes, Arthritis.
8. Two water borne diseases are: Cholera, Amoebic dysentery.
9. Rabies is transmitted by animal bites.
10. Typhoid is not a viral disease.
11. AIDS stands for 'Aquired Immuno Deficiency Syndrome
12. HIV stands for Human Immuno Deficiency Virus.
13. AIDS, syphilis are two STD diseases.
14. Protozoa causes malaria.
15. Rat flea causes bubonic plague.
16. (i) Bacteria (ii) Fungi are two microorganisms from which antibiotics are extracted.
17. Malaria, Dengue, Chickungunia, Kala-azar are transmitted through vectors. (Any Two)
18. Liver is affected by Jaundice.
19. It is because common cold is caused by virus and not bacteria.
20. Hugs, Hand-shake do not cause Hepatitis B and AIDS.
21. Balanced and nourishing food improves our immune system, which help us to fight against diseases.
22. (i) Air (ii) Water (iii) Sexual contact (iv) Animals (vi) Vectors are means by which infectious diseases are spread.
23. (a) Liver (b) Brain (c) Lungs (d) Skin.
24. (a) Infectious (Communicable) (b) Fungi (c) Bacteria/Fungi/Protozoa (d) Vectors Carries
25. (a) Balanced diet will provide nutrition to all parts of the body which is essential for their proper functioning, e.g. lack of vitamin A leads to night blindness, Vitamin C deficiency leads to scurvy, Vitamin D deficiency leads to rickets.
(b) If surrounding environmental conditions are not clean chances of infections are high. For example, house fly spreads many diseases.
(c) On stagnant water mosquito breeds which spread malaria.
(d) Good economic condition help to get proper and regular meal. Social harmony leads to peace and happiness. Social disharmony leads to stress, hypertension and depression.

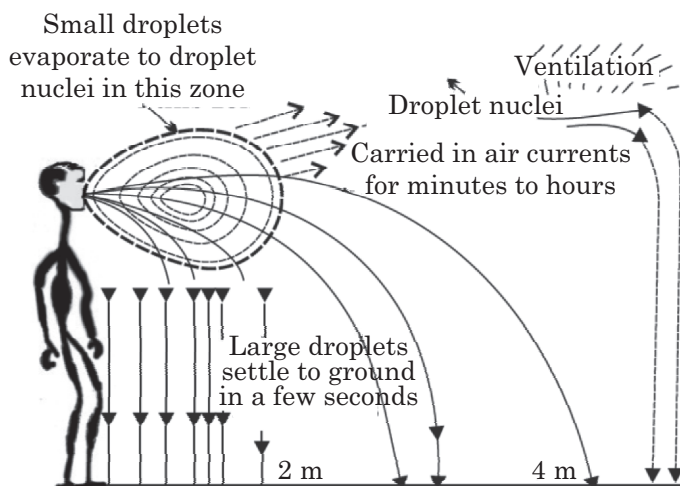
26. Acute disease	Chronic disease
These diseases last for short period	These diseases last for long period or for whole life
These do not cause long term bad effects on human health, e.g. common cold, cough.	These cause long term effects on human health, e.g. T.B., diabetes, heart diseases

27. (i) Fever, headache, body ache.
 (ii) Loss of appetite with feeling of vomiting and uneasiness.
 (iii) Loose motion, lack of energy, weakness.
 If there is any one of the above symptom, we should go to a doctor. Delay may lead to serious problem.
28. Vectors are organisms which carry germs from an infected person to a healthy person. Females Anopheles mosquito is a vector of malaria and sandfly is a vector of kala-azar.
29. **Infectious diseases:** AIDS, Tuberculosis, Pneumonia, Cholera
Non-infectious diseases: High blood pressure, Heart disease, Cancer.
30. Jaundice is a chronic disease and takes long time to be cured. It also affects the whole body and needs precautions to prevent relapse. Other two are short term and get cured easily and not affect the health for a long time.
31. (a) Chronic, long term effect (b) Acute
 (c) Health (d) Infectious (e) Fungi
32. Fever, pain in any part of the body, loss of appetite, wound with pus, breathlessness, cough, cold, loose motions are some of the symptoms which indicate presence of diseases. Symptoms tells the cause of disease, e.g. viral infection causes fever, T.B. causes cough and mild fever.

33. Infectious diseases	Non-infectious diseases
These are caused by micro-organism and worms	These are cause by environmental changes
These are caused by external (extrinsic) factors	These are caused by internal (intrinsic factors) like genetic disorder, unhealthy diet.
Transmission is through air, water and physical contact	Transmission is not possible only heredity transmission is possible
Infection may spread to a healthy person	Infection do not spread
Community health is necessary for prevention	Community health is not effective. Individual health is affected.
Person needs to be isolated from healthy people and his clothes, room need to be disinfected, can be cured and prevented.	Person need not be isolated, can be prevented sometime and can be managed through various ways.

34. Contagious diseases – Scabies, chicken pox, common cold,
 Non contagious diseases – Malaria, worms, blood cancer.
35. Just having some pathogens in the body may not produce symptoms or signs of the disease. The severity of disease manifestations depend on the number of microbes in the body. If the number of microbes is very small, the disease manifestations may be minor or unnoticed. But if the number is of the same microbe large, the disease can be severe enough to be life-threatening. The immune system is a major factor that determines the number of microbes surviving in the body.
 Being HIV positive does not means AIDS. Life of such a person can be prolonged by building his/her immunity by giving him/her nutritious diet, taking retroviral drugs, exercising and being positive.
36. Precautions to reduce the incidence of infectious diseases are:
 (i) Vaccination against epidemic in case of floods or specific diseases of that area
 (ii) Proper sanitation.
 (iii) Washing hands before meals and after urination.

- (iv) Providing safe drinking water.
 - (v) Checking on stagnant water in and around the school.
 - (vi) Pest control should be done.
 - (vii) Not allowing any junk food and open food in the school canteen.
37. (a) Acute diseases – Typhoid, malaria, dengue
 (b) Chronic diseases – T.B., chicken pox, AIDS.
 (c) Infectious diseases – Chicken pox, T.B.
 (d) Non-infectious diseases – Diabetes, Hypertension
38. Droplet infection occur by disease-causing microbes present in the air which are thrown out by an infected person who sneezes or coughs. Someone standing close by can breathe in these droplets, and the microbes get a chance to start a new infection in a healthy person. Examples are: common cold, pneumonia and tuberculosis.



Air-transmitted diseases are easier to catch the closer we are to the infected person. However, in closed areas, the droplet nuclei recirculate and pose a risk to everybody. Overcrowded and poorly ventilated housing is therefore a major factor in the spread of airborne diseases.

Precautions are:

- (i) Air-transmitted diseases like a cold are easier to catch while sitting near someone suffering from it therefore one should stay away from them or use masks etc.
 - (ii) The more crowded our living conditions are, the more likely it is that such air borne diseases will spread therefore such places should be avoided.
 - (iii) Poorly ventilated housing is also a major factor in the spread of airborne diseases therefore one should live in well ventilated and well lit places.
 - (iv) One should build immunity by eating well and staying happy.
39. The drugs which are obtained from micro-organism and are used to kill or suppress the multiplication of micro-organisms are called antibiotics.

Two examples are:

- (i) Streptomycin, (ii) Penicillin

Antibiotics can be extracted by bacteria and fungi.

Antibiotics commonly block biochemical pathways but viruses donot have such pathways of their own.

3. INFECTIOUS DISEASES

Organ and Tissue Specific Manifestations

- The disease causing micro-organisms enter the body through different means and attack the specific organ or tissue.
- If they enter from the air via nose, they are likely to enter lungs and cause respiratory and lungs infections (Bacteria streptococci causes T.B.)
- If they enter through mouth, they can stay in gut lining like bacteria causing typhoid.
- Virus can enter liver through water or food and may cause jaundice.
- The virus causing Japanese encephalitis (brain fever) enter through mosquito and infect our brain.

Organ affected	Diseases	Symptoms
Lungs	Bronchitis T.B.	Cough, breathlessness
Liver	Jaundice	digestive problems, yellow skin
Brain	Brain fever	Headache, vomiting, fits.
Bones & joints	Arthritis	Difficulty in walking, joints pain
Liver	Malaria	Shivering, fever

Immune system is a defence mechanism of the body to fight against infection. Antibodies fight against antigens (causing disease). WBC (white blood cells) also protect from infections.

- **Active immune system** induces many cells to the affected tissue to kill off the disease causing microbes. This process leads to inflammation, swelling, pain and general effects as fever.
- HIV infection is the virus which damages the immune system and causes many infections which become difficult to cure. Every minor cold can become pneumonia, minor gut infection may cause diarrhoea with blood loss and may lead to death from HIV-AIDS.
- If microbes in our body are less in number infection may not be life threatening.
- Our immune system may not allow microbes to survive in our body.

Principles of Treatment

There are two ways of treatment:

- To reduce the effects of the diseases.
- To kill the cause of the disease.

Reduce symptoms: The symptoms are usually reduced after treatment. For example, if we take medicine to bring down fever, headaches, bodyache will disappear and inflammation will be less.

We conserve our energy by bed rest during infections and get well soon after proper rest, healthy diet and suitable medicines.

Killing of Microbes: Antibiotics are used to kill micro-organisms. Chloroquine is a drug which kills protozoa causing malaria.

Blocking bacterial synthesis pathway: Antibiotics block the bacterial synthesis pathways without affecting our body. They do have some side effects. **Antiviral** drugs are difficult to make because virus do not have their own biochemical mechanism and use our body machinery for their life processes. There are very few virus specific targets to aim at. Common cold has no specific treatment. Some Antiviral drugs keep HIV infection under control.

- Some antibiotics suppress the multiplication of bacteria which are given in specific dose and for specific number of days so that relapse or reoccurrence of infection may not occur.
-

Principles of Prevention

General ways:

- (i) Public Hygiene
- (ii) Proper and sufficient food
- (iii) No pollution of air or water
- (iv) Proper garbage disposal system
- (v) Proper sanitation
- (vi) Safe drinking water
- (vii) No stagnant water
- (viii) Mosquito repellants
- (ix) Pest control
- (x) Fuming during rainy season to prevent malaria.

Specific ways:

Immunisation: The process of introducing weakened pathogen inside the body of the host to fool immune system and to produce antibodies against infections from particular disease.

Mass vaccination programmes has eradicated polio, small pox in India. These are vaccines against Tetanus, Diphtheria, whooping cough, Measles, Polio, Hepatitis A, B, C, Cholera, Tuberculosis, Plague, Mumps etc.

Vaccine	Diseases	Age-Level	Safety level
DPT	Diphtheria, Tetanus, Pertussis (whooping cough)	To all infants 1½, 2½ and 3½ month age	90% to 99%
Hepatitis A and B	Hepatitis and Jaundice	All infants, children, adults	Not yet confirmed
Polio	Poliomyelitis	All infants up to 1 years of age, minimum 3 doses at one month interval	Nearly 100%.
BCG	Tuberculosis	All children 10 to 14 years	Nearly 70%
MMR	Mumps, Measles, Rubella	All children of 9 month.	90–100%
TAB vaccine	Typhoid	All children and adults	90–99%
TT	Tetanus	All children and adults	90–99%.

Exercise 13.3

I. Very Short Answer Type Questions

(1 Mark)

[NCERT]

1. What is immunisation?
2. Name the vaccine to prevent Typhoid.
3. Why is Rabies called Hydrophobia?
4. Why is it difficult to make Anti viral drugs than antibacterial drug? [NCERT Exemplar]
5. Which micro-organism causes kala-azar?
6. Choose the wrong statement
 - (a) High blood pressure is caused by excessive weight and lack of exercise.
 - (b) Cancers can be caused by genetic abnormalities
 - (c) Peptic ulcers are caused by eating acidic food
 - (d) Acne is not caused by staphylococci
7. What are vectors?

[NCERT Exemplar]

8. Which bacteria causes peptic ulcers? Who discovered the above pathogen for the first time? [NCERT Exemplar]
9. Why is AIDS considered to be a syndrome and not a disease? [NCERT Exemplar]
10. Name the treatment to prevent Rabies.
11. Name a vaccine which is given to babies to save their life from the diseases. [HOTS]
12. Name the enzyme present in tears which prevents eye infection. [HOTS]
13. Which parameters of health are difficult to measure? [HOTS]

II. Short Answer Type Questions—I

(2 Marks)

14. Under which of the following conditions are you most likely to fall sick?
(a) when you are taking examinations.
(b) when you have travelled by bus and train for two days.
(c) when your friend is suffering from measles. Why? [NCERT]
15. Under which of the following conditions is a person most likely to fall sick?
(a) when she is recovering from malaria.
(b) when she has recovered from malaria and is taking care of someone suffering from chicken-pox.
(c) when she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken-pox.
Why? [NCERT]
16. A doctor/nurse/health-worker is exposed to more sick people than others in the community. Find out how she/he avoids getting sick herself/himself. [NCERT]
17. (a) Who discovered vaccine for the first time?
(b) Name the disease which can be prevented by using vaccines. [NCERT Exemplar]
18. What is a difference between congenital and acquired disease?

III. Short Answer Type Questions—II

(3 Marks)

19. What are the immunisation programmes available at the nearest health centre in your locality? Which of these diseases are the major health problem in your area? [NCERT]
20. A baby is not able to tell her/his caretaker that she/he is sick. What would help us to find out:
(a) that the baby is sick?
(b) what is the sickness? [NCERT]
21. What precautions will you take to justify “prevention is better than cure”? [NCERT Exemplar]
22. Sara could not attend the school for a week and her mother did not go to office for six months due to different ailments. What category of diseases are they suffering from? Explain giving example of each of the above categories. [CBSE 2016]
23. An infant was taken to a doctor for vaccination and a card of the schedule of immunisation was issued to him. Why is he being vaccinated? Name any three diseases for which he would be vaccinated? [CBSE 2016]
24. Write the symptoms when following organs are targeted by microbes:
(a) Lungs (b) Liver (c) Brain [CBSE 2012]
25. It is diagnosed that Seema suffers from malaria. Which organ of Seema is affected? [CBSE 2011]
-

26. Complete the given table.

Disease	Causative Micro-organism	Mode of Transmission
Dengue fever	(a) _____	(b) _____
(c) _____	Vibrio Cholerae	Contaminated food and water
(d) _____	HIV	(e) _____
Common cold	Virus	(f) _____

[DOE]

27. What is a cause of swine flue, Bird flue and Ebola? What is a vector? What are symptoms?
28. According to a newspaper report, some areas in Delhi received grey coloured water in their taps. It was reportedly due to mixing of contents at some points due to leakage in sewer and water supply pipes. Which kind of diseases are likely to spread due to such problems and why? Give two specific names of diseases that can thus be spread. [CBSE 2015]
29. What is meant by community? How our personal health is related to the community issues? Explain in brief. [CBSE 2016]
30. What are the two principles which are followed to treat an infectious disease? Explain by giving examples. [DOE]
31. While going abroad, why is it necessary to get vaccinated against certain diseases? [HOTS]
32. How can doctor pin point a particular disease? [CBSE 2014]

IV. Long Answer Type Questions

(5 Marks)

33. A person is suffering from chest pain, breathlessness, loss of body weight, persistent cough and produces blood stained sputum.
- Name the disease and its causative agents
 - Mention two means of its transmission
 - Name the vaccine used to prevent this disease
 - Who discovered the disease.
34. Give four methods in which AIDS can be transmitted. Give three precautions to prevent it.
35. Rabies virus is spread by the bite of an infected dogs and other animals.
- What happens to the person who is bitten by rabid dog?
 - Write any two symptoms and two signs of rabies infected person. [CBSE 2014]
 - Mention any two preventive measures given to the patient after a rabid animal bites.
36. Justify the following statements:
- Availability of proper and sufficient food would prevent from infectious diseases.
 - The general ways of preventing infection mostly relate to preventing exposure. List three points of prevention of exposure. [CBSE 2015]
37. Show by a flow diagram the common methods of transmission of diseases through air from an infected person to a healthy person.
38. Discuss in detail the causative organism, symptoms, transmission, prevention and control of Dengue.

Answer 13.3

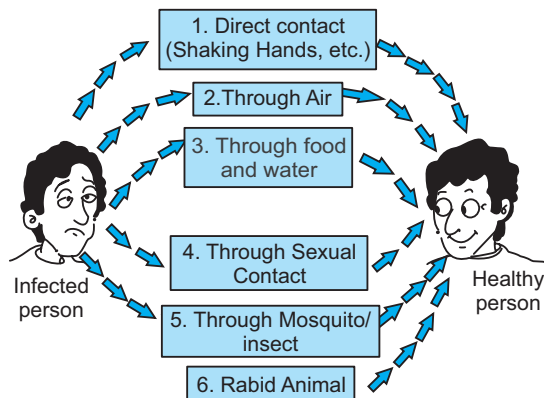
- Immunisation is production of immunity by artificial means by producing antibodies through vaccination.
- TAB vaccination prevents Typhoid.
- Rabies is called hydrophobia because patient fears water.

4. Antiviral drugs are difficult to make because virus use host machinery and do not have their own biochemical processes.
 5. Leishmania causes Kala-azar.
 6. (d) Acne is caused by staphylococci
 7. Animals or insects which carry infecting agents from sick persons to another healthy person are called vectors.
 8. Gram negative bacteria called as **Helicobacter pylori** bacterium causes peptic ulcer (stomach ulcer). It was discovered by *Robin Warren*.
 9. Syndrome is a group of symptoms, or signs, physical and biological which have common causes. It reduces immunity of the body to fight against infections. HIV that causes AIDS damages white blood cells. As a result even common cold leads to pneumonia.
 10. Pasteur's treatment in which five anti rabies vaccines are given these days to prevent Rabies.
 11. DPT D (Diphtheria), P(Pertussis) whooping cough and T (Tetanus) is a vaccine which is three in one. Babies are immunised within the first six weeks of birth.
 12. Lysozyme enzyme is present in tears which prevent eye infections.
 13. Mental health and social well being are difficult to measure.
 14. (c) Measles is a communicable disease which you can get from your friend.
Person suffering from measles should not go to school or public places till he/she gets completely cured.
 15. (c) The immune system becomes weak during fasting because our body organs do not get proper nutrition. Since she already suffered from malaria, she is too weak.
If someone is taking care of a person suffering from small pox is likely to get infected due to low immunity level.
 16. (i) Wears gloves, mask to prevent infections.
(ii) Vaccination against diseases like T.B if he is chest specialist who deals with lot of T.B patients.
(iii) Wears lab coat
(iv) Washes his hands frequently with carbolic soap.
(v) Uses all surgical instruments which are disinfected, eat balanced diet and exercise regularly.
 17. (a) Edward Jenner discovered vaccine.
(b) Tuberculosis (TB) and polio are prevented by vaccines.
 18. **Congenital disease:** These are passed on from parents to their off springs genetically, e.g. haemophilia.
Acquired disease: These are not passed on from parent to offspring, e.g. malaria.
 19. The vaccines against tetanus, diphtheria, whopping cough, T.B., measles, polio etc are part of the public health programmes of childhood immunisation.
 20. (a) The baby keeps on crying even if he is fed. His body temperature rises up, eyes start watering, vomits, has loose motions.
(b) He should be taken to a child specialist. He will conduct some tests and for symptoms he would find the cause and treatment of the sickness.
 21. Prevention is better than cure as a disease always causes some damage to the body.
Precautions:
(i) Hygienic environment
(ii) Personal hygiene
-

- (iii) Proper nutrition (balanced diet)
 - (iv) Clean food
 - (v) Clean drinking water (free from germs)
 - (vi) Regular exercise and adequate rest and relaxation.
 - (vii) Regular medical check up.
22. Sara is suffering from acute diseases which can be cured in short time, e.g. common cold caught by viral infection etc.
- Her mother is suffering from chronic illness which will take long time treatment. If it is infectious, then she has to remain isolated till she gets completely cured. It can be TB, leprosy, diabetes.
23. He is being vaccinated so as to protect him from some diseases. Three diseases for which he is vaccinated are: (i) Polio (ii) Tuberculosis (iii) Tetanus.
24. (a) Cough and breathing-problems.
 (b) Fever, vomiting, loss of appetite, yellow urine, yellow skin.
 (c) Headache, vomiting and unconsciousness.
25. Spleen and liver are affected by Malaria.
- (a) Malaria is caused by plasmodium protozoa.
 (b) High fever with alternate feeling of hot and cold are the symptoms of malaria.
26. (a) Virus
 (b) Mosquito (Female Aedes Aegypti mosquito)
 (c) Cholera
 (d) AIDS
 (e) Sexual contact or Infected blood transfusion, sharing syringes, needles with infected person, from infected mother to baby during pregnancy. (Any one)
 (f) Sneezing (air borne).
27. These are all caused by virus. Ebola is caused by *Ebola virus*. Vector of swine flue is *Pig* and *human*. Bird flue is due to birds like *chicken*. All of them lead to fever which spreads.
28. Water borne diseases are likely to spread due to such problems. It is due to presence of *Vibrio cholerae*, *E-coli* bacteria, *Entamoeba* etc. which will cause cholera, gastroenteritis amoebic dysentary.
- (i) Cholera (ii) Diarrhoea.
29. The group of people which lives nearby our house form a community.
 Community issues play an important role in personal health as follows:
- (i) If garbage is not collected and properly disposed off and people throw them on street, whole environment will lead to spread of diseases.
 (ii) If there is no proper drainage system, so water logging will lead to breeding of mosquitoes and spread malaria, dengue etc.
 (iii) Safe drinking water, proper sanitation facilities will lead to good individual as well as community health.
30. Principles followed to treat an infectious disease are:
- (i) Principle of prevention, e.g. Malaria can be prevented by using mosquito repellants and not allowing water to get stagnant in nearby areas.
 (ii) Principle of treatment, e.g. Chloroquine antibiotic is used to kill malaria causing protozoa.
-

31. A person may be a carrier of some diseases. Such a person may take that particular disease to a foreign country. Therefore, all the visitors of a foreign country are vaccinated against the diseases which is not prevalent in that country.
32. Doctor carries out physical examination, blood test, urine test. Based on symptoms and on the basis of test reports, he can pin point the particular disease e.g., blood test shows a person is suffering from malaria or dengue or chikungunya or typhoid.
33. (a) Tuberculosis (Plumonary or lung)
It is caused by bacteria called Myco-bacterium tuberculosis.
- (b) It is communicate through human beings directly or indirectly by air or sharing food with infected person. It can be contracted from animals also.
- (c) BCG (Bacillus Calmette Guerin) vaccine.
- (d) It was discovered by Robert Koch in 1882.
34. Four methods of AIDS transmission are:
- (i) Through sexual contact.
- (ii) Blood transfusion
- (iii) Use of injection needle syringe or blade etc.
- (iv) Transmitted from infected mother to her foetus.
- Prevention:**
- (i) Screening of blood for pathogens before transfusion
- (ii) Always use disposable syringe
- (iii) Leading a healthy sexual life.
- (iv) Avoid the same blade used in the saloon.
35. (a) The person will suffer from Rabies.
- (b) Two symptoms of rabies infected person are:
- (i) Severe headache, high fever.
- (ii) Painful contraction of muscles of throat and chest.
- Two signs are:
- (i) The patient has fear of water, i.e. hydrophobia.
- (ii) The patient feels restless, excessive salivation, finds difficulty in the intake of even liquid food.
- (c) Two preventive measures are:
- (i) Cleaning of wound with dettol soap and water. Any antiseptic should be applied to wound.
- (ii) Anti-rabies vaccine should be given to patient immediately.
- (iii) Compulsory immunization of stray dogs.
- (iv) Rabid animal shows excessive salivation and tries to seek isolation after bite. Everybody should keep themselves away from such dog. (Any two)
36. (a) Proper and sufficient food will provide our body all the nutrients and increase immunity to fight against infections.
- (b) (i) Use mask when going near the patient having infectious disease and in crowded places and hospitals to prevent air borne disease.
- (ii) Use gloves while touching any thing used by patients.
- (iii) Use safe drinking water and do not take bite from food eaten by infected person to prevent water brone diseases.
- (iv) Mosquito breeding should not be allowed in the home or near the home, no stagnant water should be there. It is done so as to prevent from vector borne diseases.
-

37. Common methods of transmission of diseases



38. Causative organism: Virus

Symptoms: Headache, fever, bodyache.

Transmission: Female Aedes Aegypti mosquito which multiplies in fresh water.

Prevention: No water should be kept in empty containers, coolers, tyres etc.

Control of Dengue:

- (i) Clean all coolers, containers having water.
- (ii) Add 10 mL of petrol or kerosene into water of water coolers.
- (iii) Use mosquito repellents and have doors with wire nets to prevent entry of mosquitoes.
- (iv) Fumigation should be done to kill mosquitoes during spread of dengue.

VALUE BASED QUESTIONS

1. Rakesh was suffering from common cold. He was having watery nose, mild fever, headache and went to nearby doctor. Doctor gave him antibiotic. He did not get relief. He went to Dr. Mukherji. He told him to inhale steam and no medicine is needed. He will be cured after 7 days automatically. Rakesh was happy after recovery.
 - (i) What values are associated with Dr. Mukherji?
 - (ii) Why are antibiotic not effective in common cold?
 - (iii) Why does it take 7 days for recovery from common cold?
2. There is a village Malasia in Haryana where there is no toilet. There are about 50 houses and all the villagers go to the nearby fields for getting relieved early in the morning. Students, teachers, principal of Path Finder Global school collected money and got public toilets constructed for all the villagers. They also cleaned all places nearby and check stagnation of water. The village has got award of clean village by Govt. of India.
 - (i) What values are associated with children of Path Finder Global School?
 - (ii) Why should we use only toilets to relieve ourselves?
 - (iii) Why should we wash hands with an antiseptic soap after going to toilet?
3. Lalit was suffering from chicken pox. He went to school. Mr. Kundra, his teacher saw rashes on his face and called his parents to take him home and send him only when he is completely cured.
 - (i) What values are associated with Mr. Kundra?
 - (ii) What is the causative micro-organism of chicken pox?
 - (iii) Why should a patient of chicken pox not be allowed in public places like school?

Answers

- (i) Dr. Mukherji gave right advice to Rakesh. He is a good doctor and human being.

(ii) Common cold is caused by virus and not by bacteria, therefore, antibiotic is not effective.

(iii) Patient body takes about 7 days to produce interferon (an anti viral substance) to kill virus of cold.
- (i) Students are concerned about their own health as well as community health.

(ii) Toilet protects us from water pollution. E.coli bacteria present in excreta may get mixed up with the drinking water.

(iii) Antiseptic soap will protect us from infections caused by micro-organisms.
- (i) Mr. Kundra is concerned about the health of other students in the school.

(ii) Virus is the causative microorganism of chicken pox.

(iii) Chicken pox is an infectious (communicable) disease.

COMMON ERRORS

Errors	Corrections
• Students write spelling of causative microbes wrongly.	☞ Learn correct spellings by writing.
• Students identify wrong causative microbe.	☞ Learn from table causative microbes for diseases.
• Students do not learn name and purpose of each vaccine.	☞ Learn name of diseases prevented by vaccine.
• Students do not know organ affected by diseases.	☞ Learn all organ specific diseases.
• Students do not know symptoms of diseases.	☞ Learn important symptoms on basis of which disease can be identified.

REVISION CHART

