

One day, when Nitoo returned from school—

Where are you going, Mom?



Hospital.

Hospital? Why?



Your cousin Raghu has typhoid. He is admitted there.

I'll also come with you.



No, you stay at home.

But Nitoo was very stubborn.

I'll come! I'll come! Boohooo...



Okay! Okay! Change your clothes quickly.

Nitoo was very happy. He went to the hospital with his mother.



At the hospital, Nitoo was puzzled to see many sad faces.

Mamma, why are people so silent here?



Shh...! Nitoo, don't speak loudly. The patients will be disturbed.

They then went to Raghu's room.

Hello, Raghu! How are you?



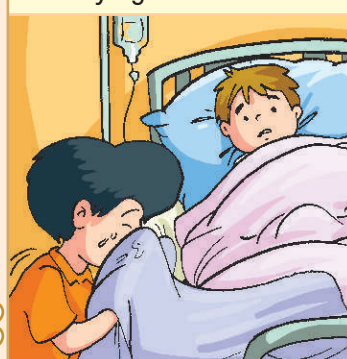
I'm feeling better, auntie.

Nitoo sat near Raghu's bed.



I'm feeling sweaty. I should wipe off my face.

Nitoo used the towel that was lying on the bed.



Now feeling very thirsty.



Nitoo drank some water.

After some time they returned home.



At home.

Ma, I'm not feeling well.



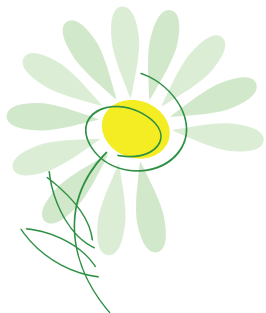
Nitoo, I told you, but you never listen me.

And then, Nitoo fell ill.



Son, some diseases spread through contact. You must have caught a disease in the hospital.

Yes Ma, I should have listened to you.



Diseases and Their Prevention

BEFORE WE START, LET'S CHECK

What you already know

Match the nutrients with the functions they perform.

- | | |
|--------------|--|
| 1. protein | (i) keeping eyes healthy |
| 2. vitamin A | (ii) making gums healthy |
| 3. vitamin B | (iii) making bones strong |
| 4. vitamin C | (iv) maintaining proper overall growth |
| 5. vitamin D | (v) formation of red blood cells |
| 6. iron | (vi) repair of muscle tissues |

What you will know

What is a disease?



What are different kinds of diseases?



How do diseases spread?



How can we prevent spread of diseases?



DISEASES

Rohit is very sad today. All his classmates are going for a picnic but he is not going. Why? Because he is ill and bed-ridden. The doctor has advised him complete rest for three days.

Everybody wants to lead a healthy and disease-free life. But everyone of us suffers from a disease some time or the other. Some of these diseases like common cold and flu are minor and do not last long. But some diseases like asthma, typhoid and cholera are very serious. Some of them, if prolonged, may also result in death.

Before we proceed further, we should understand what a disease is.

A disease is a state of discomfort in which the normal functioning of the body is disturbed.

There are certain signs and symptoms associated with particular diseases. Symptoms are sign or indications of a disease. By these symptoms, doctors diagnose or identify the disease a person is suffering from.

There are many kinds of diseases, but here we shall study two main kinds, that is, nutritional diseases and communicable diseases.



NUTRITIONAL DISEASES

We have studied in the previous chapter that food contains several kinds of nutrients. For a healthy and active body, we need to take all the nutrients in an adequate quantity regularly.

We have also studied how a lack of certain nutrients can lead to various bodily disorders. A prolonged deficiency of nutrients can result in some serious diseases. Such diseases are called nutritional or deficiency diseases.

Diseases caused by the deficiency of protein

1. Kwashiorkor: It is caused by the deficiency of protein and carbohydrate intake. It most often afflicts children in poor countries where food supply is limited.

Symptoms:

- ✧ red patches on skin that peel
- ✧ dry, sparse, brittle hair
- ✧ a bloated belly
- ✧ loss of muscle mass

If the condition is left untreated for too long, it can be fatal.

2. Marasmus: It is also a form of malnutrition. It generally afflicts infants and causes severe loss of fat, muscles and other tissues of the body.

Symptoms:

- ✧ shrunken appearance
- ✧ severe weight loss
- ✧ growth retardation
- ✧ prolonged vomiting

Diseases caused by the deficiency of vitamins

1. Night blindness: It is not a complete lack of vision at night as the name implies. A person suffering from this disease cannot see well at night or in poor light.

Night blindness is caused by the deficiency of **vitamin A** in the diet.

Symptoms:

- ✧ consistent difficulties in seeing at night
- ✧ eyes take more time to adjust when the victim goes from a brightly lit place to a dark place

2. Beriberi: There are two types of beriberi. One type affects the heart and the other damages nerves and muscles. It is caused by the deficiency of **vitamin B** in diet.

Symptoms:

- ✧ shortness of breath
- ✧ difficulty in walking
- ✧ increased heart rate

If left untreated, beriberi may cause death.



3. Scurvy: It is a disease that affects blood vessels, skin and the healing process of the body. It results in the formation of spots on the skin and swollen gums which often bleed.

It is caused by the deficiency of **vitamin C** in the diet.

Symptoms: ✨ dry mouth and dry eyes ✨ inflamed and bleeding gums
 ✨ painful, swollen joints ✨ slow healing of wounds



4. Rickets: It causes a child's bones to become soft and weak. Because of this, the bones become prone to fractures and deformity.

The main cause of rickets is the deficiency of **vitamin D** in the diet.

Symptoms: ✨ delayed growth
 ✨ pain in the spine, pelvis and legs
 ✨ delayed tooth formation
 ✨ skeletal deformities



Diseases caused by the deficiency of minerals

1. Osteoporosis: It causes bones to become weak and brittle. It mainly affects older people. In osteoporosis, bones can break more easily than normal. Sometimes, even bending over or coughing can cause a fracture.

Osteoporosis is caused by the deficiency of **calcium**.

Symptoms: ✨ back pain ✨ loss of height over time
 ✨ a stooped posture



2. Anaemia: In it, the number of red blood cells in blood becomes low. So, there are not enough healthy red blood cells to carry adequate oxygen to various tissues.

There may be many causes of anaemia, but the most common cause is the deficiency of **iron** in the diet.

Symptoms: ✨ pale skin ✨ dizziness
 ✨ weakness ✨ cold hands and feet



3. Goitre: It is a disease in which a gland in a person's neck, called the thyroid gland, becomes enlarged.

It is caused by the deficiency of **iodine** in the diet.

Symptoms: ✨ swelling at the base of the neck
 ✨ a feeling of tightness in the throat
 ✨ cough
 ✨ hoarseness of voice



COMMUNICABLE DISEASES

We have learnt about some common nutritional diseases. A nutritional disease does not spread from one person to another. But there are certain diseases which spread from person to person. Such diseases are called **communicable** or **infectious diseases**.

You may have noticed that if any member of a family suffers from cold, the other members also catch cold. Similarly, conjunctivitis, which is an eye disease, easily spreads when someone looks at the infected person's eyes.

What causes communicable diseases

Communicable diseases are caused by very tiny organisms called **microbes** or **germs**. They are so tiny that we cannot see them with the naked eye. We need a very powerful microscope to see them.

Germs are present everywhere — in air, water, soil, food, etc. When a germ enters the body of a healthy person, it is harmless. But soon it multiplies itself through reproduction and the germs disturb the normal functioning of the body.

Microbes are of many types, but the most common disease-spreading germs are: **bacteria**, **viruses**, **protozoa** and **fungi**.

Bacteria: You know that our body is made up of billions of cells. But bacteria are single-celled microbes. They have different shapes including the shapes of rods, spirals and spheres.

Some bacteria cause diseases like **typhoid**, **pneumonia**, **tetanus** and **tuberculosis**.

Viruses: Viruses are tinier than bacteria. We need an electronic microscope to see them. Viruses do not perform any function that a living organism does except one — when they enter a host body, they reproduce and increase their number.

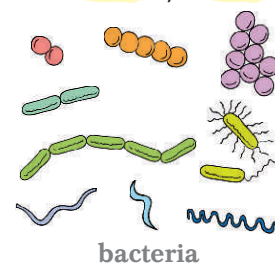
Common cold, **influenza**, **measles**, **mumps** and **AIDS** are some of the diseases caused by viruses.

Protozoa: Like bacteria, protozoa are also single-celled organisms. Some of them are parasites, which means that they use other living things, for example a person's body, as food and a place to live in.

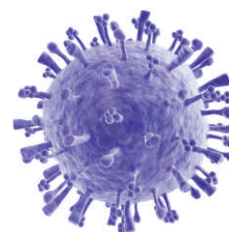
Malaria and **diarrhoea** are some of the diseases caused by protozoa.

Fungi: Fungi are multi-celled, plant-like organisms. They get nutrition from plants, food and animals in damp warm environment. Mushrooms are a kind of fungi.

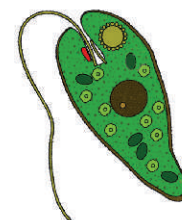
Skin diseases like **athlete's foot** and **ringworm** are caused by fungi.



bacteria



a virus



a protozoan



fungi

Spread of communicable diseases

Communicable diseases pass from one person to another in many ways. Let us learn some of them.

1. Through air: When a sick person sneezes, coughs or spits, the germs from his/her body are released into the air. When a healthy person breathes that air, the germs enter his or her body.

The *common cold*, *measles* and *flu* spread in this way.



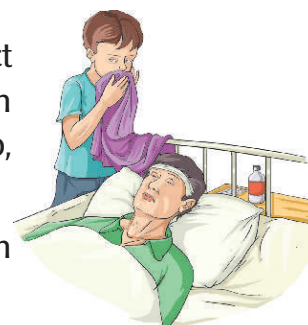
2. Through infected food and water: The food cooked in an unhygienic manner in dirty utensils gets contaminated. Uncovered food and cut fruits sold at roadside food stalls are exposed to germs. Similarly, drinking dirty water can make us ill.

Diseases like *cholera*, *typhoid*, *jaundice*, *diarrhoea* are spread in this way.



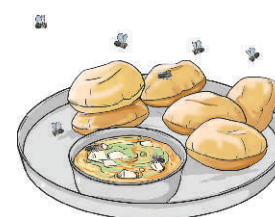
3. Through contact: Many diseases spread through direct or indirect contact with the sick person. When you touch the patient, you may catch the disease directly. Indirect contact means touching the towel, comb, handkerchief, etc. of the infected person.

Chicken pox, *measles*, *ringworm* and *whooping cough* spread through contact.



4. Through insects: Some insects are carriers of germs. Houseflies often sit on garbage in search of food. Germs stick to their hairy legs. When they sit on uncovered food, the germs are transferred to the food.

Some insects like mosquitoes and fleas suck blood. They spread diseases when they bite a healthy person after biting a sick person.



Malaria, *dengue* and *plague* spread in this way.

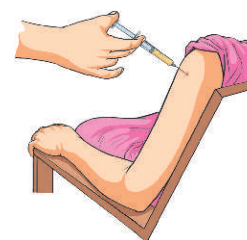
5. Through damaged skin: Germs cannot enter healthy skin easily. But if the skin has a cut, germs enter it easily.

Tetanus, *anthrax*, etc. spread in this way. So never leave a cut or wound open. Always cover it with a clean bandage or medicated adhesive tape.



6. Through infected medical equipment: Sometimes, medical equipment such as thermometers and syringes may become the carriers of communicable diseases.

If a thermometer which was used earlier by an infected person is used by a healthy person without washing it with a disinfectant, he/she may catch the disease.



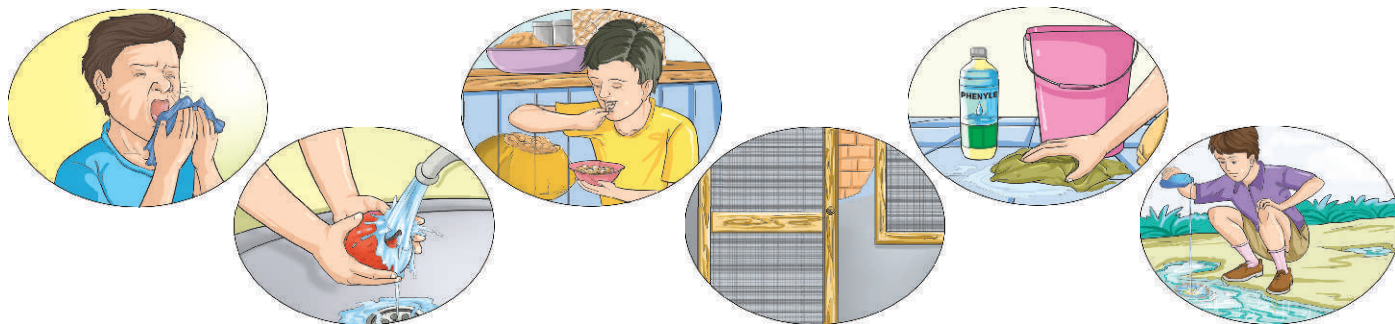
Similarly, using a common syringe for many people may spread diseases.

PREVENTION OF COMMUNICABLE DISEASES

Prevention is better than cure. How can we prevent communicable diseases from spreading? The golden rule is 'maintain cleanliness', not only your personal cleanliness but also of your surroundings.

We can prevent the spread of communicable diseases by following some basic guidelines.

- * Cover your nose and mouth with a handkerchief whenever you sneeze or cough. Make it a habit. If somebody else does not follow this rule, remind him or her.
- * Make sure that your food is cooked hygienically, vegetables and fruits are properly washed, utensils are clean and cooked food is properly covered.
- * Avoid eating food from roadside food stalls. But if you have to eat from them, make sure that the food items are properly covered, there is no garbage near the stall, the vendor is wearing clean clothes and gloves.
- * Tap water is often contaminated, so use a water filter or boil water and store it in a clean container with a lid.
- * Avoid meeting a person suffering from a communicable disease. Hospitals and clinics are not the places for healthy children to visit. So avoid going to such places unless it is absolutely unavoidable.
- * The clothes, towels and other personal items of an infected person should be kept in a separate room, away from others to stop the germs from spreading.



- * To stay away from mosquitoes, wire nets should be fixed on the doors and windows. Use mosquito repellants to protect yourself from mosquito bites.
- * A dirty house attracts insects. Cleaning floors and bathrooms with disinfectants like phenyl kills germs. The drain in the bathroom and the kitchen should be cleaned from time to time.
- * Never allow water to stagnate anywhere near your house as it is an ideal breeding place for mosquitoes. If there is stagnant water near your house, put a few drops of kerosene or petrol in it.
- * Never move barefoot anywhere. Never forget to wear shoes while going to a park, ground or any other open area.
- * Always wash the thermometer with an antiseptic liquid like Dettol before and after using it. Disposable syringes are best to use. Such syringes are destroyed after a single use.

Words to Remember

communicable diseases	– diseases that can spread from one person to another
deficiency diseases	– diseases caused by a lack of the intake of certain nutrients for a long time
malnutrition	– a poor health condition resulting from not eating enough food or not eating enough healthy food
microbes	– some very tiny organisms that cannot be seen without a microscope
germs	– disease-causing microbes
bacteria	– a kind of single-celled microbe (singular: bacterium)
virus	– a kind of germ that cannot be seen even through an ordinary microscope
protozoa	– a kind of single-celled microbe, the parasites among them cause diseases (singular: protozoan)
fungi	– a kind of plant-like organism that feeds on organic matter (singular: fungus)

Points to Recall

- ✿ Everyone has to suffer from a disease some time or the other.
- ✿ Every disease has certain symptoms by which doctors diagnose it.
- ✿ Nutritional or deficiency diseases occur because of the lack of certain nutrients in the diet for a long time.
- ✿ Kwashiorkor and marasmus are common diseases that are caused by the deficiency of protein.
- ✿ Night blindness, beriberi, scurvy and rickets are diseases caused by the deficiency of vitamins A, B, C and D respectively.
- ✿ Osteoporosis, anaemia and goitre are diseases caused by the lack of calcium, iron and iodine minerals, respectively.
- ✿ Communicable or infectious diseases spread from one person to another.
- ✿ Communicable diseases are caused by tiny organisms called microbes or germs.
- ✿ Bacteria, viruses, protozoa and fungi are major kinds of disease-spreading microbes.
- ✿ Communicable diseases can spread through air, food, water, touch, insects, medical equipment, etc.
- ✿ Personal hygiene and the cleanliness of surroundings are ways through which we can prevent ourselves from getting infected.

Exercises

A. Tick (✓) the correct option.

- Which of the following diseases often afflicts the children in poor countries?
(a) beriberi ☐ (b) cancer ☐ (c) kwashiorkor ☐ (d) malaria ☐
- In which disease do the bones become soft and weak?
(a) anaemia ☐ (b) rickets ☐ (c) scurvy ☐ (d) goitre ☐
- Which of the following is not a communicable disease?
(a) typhoid ☐ (b) measles ☐ (c) diarrhoea ☐ (d) osteoporosis ☐
- Which of the following insects is a disease carrier?
(a) mosquito ☐ (b) housefly ☐ (c) flea ☐ (d) all of these ☐
- A communicable disease can spread through
(a) air ☐ (b) infected food ☐ (c) an infected syringe ☐ (d) all of these ☐

B. Match the following.

- | | |
|-----------------------|---------------------------------|
| 1. vitamin deficiency | (a) malaria, diarrhoea |
| 2. bacteria | (b) influenza, measles, mumps |
| 3. viruses | (c) scurvy, beriberi, rickets |
| 4. protozoa | (d) athlete's foot, ringworm |
| 5. fungi | (e) typhoid, pneumonia, tetanus |

1.	
2.	
3.	
4.	
5.	

C. Answer in one or two words only.

1. What do we call the signs or indications of a disease?
2. Name a disease caused by a lack of calcium intake.
3. What instrument do we need to see viruses?
4. Name a kind of edible fungi.
5. Name a common disinfectant used for cleaning floors.

D. Answer in one sentence only.

1. How can a thermometer spread diseases?
2. What should one do while sneezing or coughing?
3. What precautions should we take with the personal belongings of an infected person?
4. Why should we not allow water to stagnate?
5. What care should we take while going to a park or a playground?

E. Answer in a few sentences.

1. What do you know about anaemia?
2. What are viruses? Name a few diseases caused by viruses.
3. Differentiate between the spreading of diseases through direct and indirect contact.
4. What should we make sure before eating from a roadside food stall?
5. Write a few measures by which we can make our houses insect-free.



BRAINSTORM

Suppose you are a doctor. Whom would you advise the following? Circle (○) the correct option.

- | | |
|---------------------------------------|---|
| 1. Eat a lot of carrots. | ⇒ a patient of <i>night blindness</i> / <i>osteoporosis</i> |
| 2. Sit in the sun daily. | ⇒ a patient of <i>marasmus</i> / <i>rickets</i> |
| 3. Drink milk regularly. | ⇒ a patient of <i>osteoporosis</i> / <i>typhoid</i> |
| 4. Eat green vegetables like spinach. | ⇒ a patient of <i>goitre</i> / <i>anaemia</i> |



TELL YOUR TEACHER

Read the following activities and tell your teacher what right or wrong thing each child is doing.

- Shreya and Parth are best friends. Today is Shreya's birthday. But Parth is not going to her birthday party as he has a cold.
- Rohit's uncle has been suffering from typhoid and has been admitted to the hospital. Today Rohit's parents are going to visit him. Rohit is also insisting on going with them.
- Sandhya has fever because of flu. Her brother Raghu has just measured her body temperature with a thermometer. Now he putting the thermometer back in its case.
- Naman and his friends are playing football in the ground. As it is a hot afternoon, Naman has taken off his shoes and is playing barefoot.

FIND OUT



What is swine flu?
What is H1N1? What are the symptoms of swine flu?



Vaccination is a way of preventing communicable diseases. Find out about Edward Jenner, the inventor of vaccines.

Project

Some diseases are generally widespread. But some diseases are confined to a geographical or climatic region. Such diseases are called endemic diseases. Some common endemic disease in India are

- malaria
- dengue
- chikungunya
- plague

Find out more about these diseases from books, magazines and the Internet. Then write brief reports on any two. Show them to your teacher.

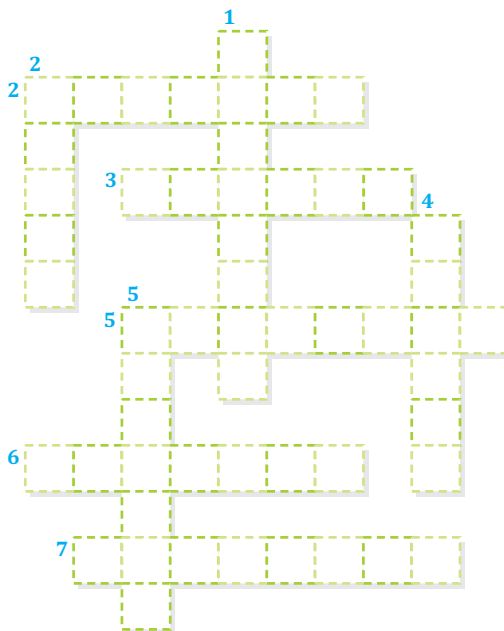


Crossword

Read the clues and fill in the crossword with the names of diseases.

Down (↓)

1. diseases caused by the deficiency of vitamin B
2. When you _____, cover your mouth.
4. In it the gums bleed and the teeth become wobbly.
5. A disease caused by mosquito bites.



Across (→)

2. a disease spreading through dirty water
3. Use iodised salt to prevent it.
5. a disease caused by malnutrition
6. a disease caused by viruses
7. a fungal infection