

Fighting Diseases



In this unit, you will

- ▶ read about the causes and effects of malaria in sub-Saharan Africa.
- ▶ read about sources of new medicines.
- ▶ review previewing a reading text.
- ▶ increase your understanding of the target academic words for this unit.

READING SKILL Finding the Main Idea

Self-Assessment

Think about how well you know each target word, and check (✓) the appropriate column. I have

TARGET WORDS	never seen the word before	seen the word but am not sure what it means	seen the word and understand what it means	used the word, but am not sure if correctly	used the word confidently in either speaking or writing	used the word confidently in both speaking and writing
AWL						
access						
accompany						
conflict						
cooperate						
decline						
implement						
intense						
labor						
medical						
ministry						
occur						
practitioner						
priority						
reside						



Outside the Reading What do you know about medicine?

Watch the video on the student website to find out more.

 Oxford 3000™ keywords

Before You Read

Read these questions. Discuss your answers in a small group.

1. Have you ever been very sick? What did you do to get well? How long did it take to get well?
2. What are some ways to prevent an illness?
3. Do you know of any insects that are helpful to humans? How do they help? Do you know of any insects that are harmful to humans? How are they harmful?

REVIEW A SKILL Previewing (See p. 2)

Preview Reading 1. Look at the title and the bold subtitles in the article. Look at the photos. What do these things tell you about the article? What do you expect to learn from the article?

 **Read**

This journal article includes information from the website of the Centers for Disease Control and Prevention (CDC), the principal public health agency in the United States.

THE BATTLE AGAINST MALARIA

Malaria is a serious health problem. It is a leading cause of death in many countries. It **occurs** mostly in tropical and subtropical parts of the world, including parts of Africa, Asia, South America, Central America, and the Middle East. The place most **intensely** affected by malaria is Africa south of the Sahara Desert. About 60% of the world's malaria cases and 90% of malaria deaths **occur** there. Even though the causes of malaria in this region are well understood, international health agencies are finding that controlling it is still an enormous and difficult task.

THE MALARIA CYCLE

Malaria is passed from mosquitoes to people and from people to mosquitoes in a cycle of events that repeats over and over. The malaria cycle begins with tiny parasites. These parasites **reside** in the bodies of *Anopheles* mosquitoes. These deadly parasites cause malaria. When a female mosquito bites a human, the mosquito draws off blood. It also leaves malaria parasites in the human's skin.



WORLD MALARIA RISK



These parasites quickly multiply inside the human and cause the individual to feel sick. If another mosquito bites a human who is sick with malaria, parasites from the human enter the body of the mosquito. When that mosquito bites another human, it will leave parasites in the other human's skin. In the malaria cycle, humans get parasites from mosquitoes and humans also give parasites to mosquitoes.

EMERGENCY MEDICAL CARE NEEDED

Becoming infected with malaria is a **medical** emergency. The first symptoms—or signs—of malaria are fever, chills, sweating, **intense** headache, and muscle pains. Nausea and vomiting often **accompany** these symptoms. Immediate ²⁵ **medical** treatment must be a **priority** for people who are infected. They must take medicines that will kill the parasites. If **medical** treatment is started soon enough, sick individuals can be cured. If it is not, malaria can cause serious illness or even death.

ONE WAY TO CONTROL MALARIA

Malaria in tropical Africa could be controlled in two ways. First, it could be ³⁰ controlled by killing the parasites that cause the illness. If every infected person quickly took malaria medicine, most would be well in a few days. Mosquitoes could not get malaria parasites from healthy individuals, so malaria would not spread. Unfortunately, many people live in far-away villages without **access** to quick **medical** care. Another problem is that the ability of quinine ³⁵ (the primary medicine used against malaria) to kill parasites has **declined** over time. There is hope, however, for new drug combinations. One, called ACT, is being used successfully to treat people who have malaria.

ANOTHER WAY TO CONTROL MALARIA

Malaria could also be controlled by stopping the 40 mosquitoes. One way would be to get rid of the pools of water where they lay their eggs. Also, insecticide¹ could be sprayed in wet areas and around buildings to kill mosquitoes. Finally, people could be told to sleep under bed nets to 45 prevent mosquitoes from biting them at night. Bed nets sprayed with insecticide would both stop and kill mosquitoes.



A bed net helps to keep mosquitoes away.

PROBLEMS FACING CONTROL

It is very difficult, however, to **implement** these plans. People in this region are poor—and made poorer by malaria because they may be too weak to work. They 50 cannot afford to pay for **medical** care or to buy bed nets. Some people may be unwilling to **cooperate** with government efforts to help them. Their old beliefs about illness may **conflict** with modern attempts to cure or prevent malaria.

There are other problems, too. Health **ministries** may not have the money to build clinics or hire trained **medical practitioners**. They may not have the 55 money to buy insect poisons and pay a **labor** force to spray regularly. And the frequent rainfall in tropical and subtropical regions would make it impossible to get rid of pools of water where mosquitoes lay eggs.

A recent discovery by **medical** scientists may offer a solution to many of these problems. In 2009, the **Ministry** of Health in Senegal arranged for scientists to 60 visit three villages. A tropical illness called “river blindness” was common in these villages. The people were given the medicine ivermectin to treat it. Two weeks after the people had taken the medicine, the scientists found many dead mosquitoes. They discovered that when a mosquito bit a person who had recently taken ivermectin, the mosquito died. It was poisoned by the medicine in the person's 65 blood. Now scientists wonder if malaria could be controlled by **implementing** a program to give this medicine to people every month. They need to find out if taking *ivermectin* every month will be safe. They also are waiting to see if there will be a **decline** in malaria cases in these villages. If it is safe and effective, this medicine could help stop the spread of malaria in sub-Saharan Africa.

¹insecticide: a poison that kills insects

Reading Comprehension

Mark each statement as **T** (True) or **F** (False) according to the information in Reading 1. Use your dictionary to check the meaning of new words.

- 1. Malaria occurs mostly in tropical and subtropical parts of the world.
- 2. Deadly malaria parasites reside in the bodies of mosquitoes.
- 3. Intense coughing and sneezing often accompany the fever of malaria.
- 4. Old beliefs may conflict with modern ways to cure or prevent illness.
- 5. Getting fast medical attention after becoming ill is a priority.
- 6. Sleeping under bed nets would lead to a decline in malaria.

- 7. Health ministries in some countries often cannot afford to implement plans to control malaria.
- 8. Most people in tropical Africa have easy access to medical practitioners.
- 9. Educated people are not willing to cooperate with government plans to help them.
- 10. A large labor force would be needed to spray insecticide regularly.

READING SKILL

Finding the Main Idea

LEARN

The *topic* of an article refers to what the article is about. The *main idea* of an article goes one step further. The main idea includes the topic and also what the writer wants to say about the topic. For example:

<u>Topic</u>	<u>Main idea</u>
<i>malaria</i>	<i>several ways to control malaria</i>

The main idea of an article is usually stated in the first paragraph, often in the first or last sentence. Sometimes it is stated in the last paragraph, which often summarizes the article. The main idea may be a full sentence or just a few words.

Each paragraph in an article contributes its own facts, definitions, and examples that help explain the main idea of the article. This means that each paragraph has its own main idea. Often it is in the first sentence of the paragraph.

APPLY

Reread the first paragraph of Reading 1. Find the sentence that tells you the *main idea*—what the writer wants to say about malaria—and circle it. Then write the most important part of the sentence here, as the main idea.

Reread the paragraphs below. Find the sentence that includes the main idea. Compare the main idea to the three choices (a, b, or c). Circle the one that best states the main idea.

PARAGRAPH 2

- a. The malaria cycle begins with tiny parasites.
- b. *Anopheles* mosquitoes are deadly.
- c. Parasites quickly multiply.

PARAGRAPH 4

- a. Malaria can cause death.
- b. Becoming infected is a medical emergency.
- c. Sick people must take medicine.

PARAGRAPH 7

- a. The people of the region need education about malaria.
- b. Plans to prevent malaria are difficult to implement.
- c. Malaria makes people poorer because they cannot work.

Vocabulary Activities **STEP I: Word Level**

A. *Practitioner* is a formal word to describe someone who practices a specific profession. With a partner, match these practitioners with their descriptions.

— 1. a practitioner of law	a. a nurse who has had extra training and can perform some services of a doctor
— 2. a nurse-practitioner	b. someone who teaches others
— 3. a practitioner of sports	c. someone licensed to represent someone else in legal matters
— 4. a practitioner of education	d. an athlete

A *ministry* is a governmental department that oversees the administration of one area of responsibility. A ministry is headed by a *minister*. He or she is in charge of the *ministerial* duties of the department. The head of a government is often called the *prime minister*.

Not all countries use these titles, however. The governments of Mexico and the United States, for example, have *departments* headed by *secretaries*. The head of the government is called the *president*.



B. With a partner, match each government ministry to its area of responsibility. Take turns making sentences with the information.

The Ministry of Finance is responsible for the national budget.

<u>a</u> 1. Ministry of Finance	a. the national budget
— 2. Ministry of Health	b. working conditions in factories
— 3. Ministry of Labor	c. airlines and trains
— 4. Ministry of Agriculture	d. hospitals and healthcare practitioners
— 5. Ministry of Transportation	e. farm products

Now, tell your partner the title of the person in charge of each ministry.

The Minister of Finance is in charge of the Ministry of Finance.

C. With a partner, decide which of these conditions should be treated medically. Check (✓) your answers.

— 1. a broken arm	— 4. an earache	— 7. choking
— 2. hair loss	— 5. a heart attack	— 8. sneezing
— 3. a broken fingernail	— 6. a high fever	— 9. an eye injury

A *conflict* (noun, pronounced CON-flict) is a disagreement or a difference in ideas or plans. It can be serious or not, depending on the context.

Two nations had an armed **conflict** that lasted five years.

Ms. Ellis had a scheduling **conflict**. She had two meetings at 9 a.m.

To *conflict* (verb, pronounced con-FLICT) means “to happen at the same time” or “to be in disagreement.” The adjective form is *conflicting*.

Her staff meeting **conflicts** with a sales meeting.

Two professors had **conflicting** ideas about history.



D. Which of these pairs of newspaper headlines have conflicting information?
Discuss with a partner why they conflict or don't conflict.

1. a. HEALTH MINISTRY REPORTS A DECLINE IN MALARIA
b. MALARIA NUMBERS INCREASE THIS YEAR
2. a. GOVERNMENT IMPLEMENTS NEW HEALTH PROGRAM
b. NEW HEALTH PROGRAM PUT INTO SERVICE
3. a. STAFF TO ACCOMPANY PRIME MINISTER ON OVERSEAS TRIP
b. PRIME MINISTER TO GO OVERSEAS ALONE

E. The noun *labor* refers to hard or difficult work. The verb is also *labor*. With a partner, discuss what these people might be doing when they are laboring. Which people are probably paid for their labor? Which ones probably receive no money for their labor?

1. a student	5. a housewife
2. a farmer	6. a poet
3. an auto mechanic	7. a musician
4. a cook	8. a gardener

Vocabulary Activities STEP II: Sentence Level

Word Form Chart

Noun	Verb	Adjective	Adverb
intensity intensification	intensify	intense intensive	intensely intensively

The adjective *intense* refers to something that is strong or extreme.

Something *intensive* suggests a strong focus of effort, power, etc. The verb *intensify* means to increase in strength. Other forms of *intense* have related meanings.

People have developed an **Intense** fear of malaria.

Doctors have **Intensified** their efforts to control the disease.

They have started an **Intensive** program to educate people.

Some common collocations: intense fear/anger/hunger/headache/odor/light, intensive program/care/study/effort/therapy



F. Rewrite these sentences to include a form of *intense*.

1. The common cold often causes strong feelings in schools.
*Students who have a cold often cause **intense** feelings in the classroom.*
2. Teachers strongly dislike having sick children in their classes.
3. They say that children with severe coughs belong at home.
4. A sick child in class strengthens the chances that other children will get sick.
5. Our school's strong health program urges students to stay home if they are sick.

The *priority* of something refers to its importance or value in relation to other things. It is usually accompanied by an adjective.

*My children are my **highest priority** in life.*

*Hospitals give patients with minor injuries the **lowest priority**.*

When no adjective accompanies the word, it means simply *important*. If something is not important, it is not a priority.

*Time is a **priority** here. In this situation, time is **important**.*

*Color is not a **priority**. Color is not **important** in this situation.*

To prioritize things (goals, tasks, etc.) means to list or do them in the order of importance.

CORPUS

G. Imagine that you work with the international organization Doctors Without Borders. Your team has just arrived in a country where most of the people are sick with malaria. With a partner, prioritize these actions—that is, rank them for importance. Write 1 for the highest priority, 2 for the next highest, etc. Give reasons for your prioritization.

— spraying homes with insecticide	— giving food to sick people
— cutting down tall grass	— getting rid of pools of water
— giving medicine to sick people	— teaching people to wash their hands

Word Form Chart				
Noun	Verb	Adjective	Adverb	
resident residents (people)	residence residences (places)	reside	residential	residentially

To *reside* somewhere is to live somewhere or make your home somewhere. A *resident* is a person who lives in a particular place. The plural is *residents*. The place where a person lives is his or her *residence*. The adjective *residential* refers to places where people live.

*Most people in Shanghai **reside** in apartment buildings.*

*All of the **residents** of my village work nearby.*

*We'll be moving to a new **residence** next month.*

***Residential** property is expensive in big cities.*

CORPUS

H. Rewrite this memo to include forms of the words *priority*, *intense*, and *reside*. Try to use other target words from this unit also. Be prepared to present your work in class.

To: The Village Rescue Team
From: Relief camp director
Re: People living in villages affected by yesterday's earthquake

The strong earthquake yesterday morning injured many people who live in nearby villages. The earthquake also destroyed many homes.

The first thing we have to do is take care of the injured people. Next, we need to set up tents where people can live until their homes are rebuilt. There is plenty to eat here, so finding more food is not so important right now.

I have asked the village leader to decide which village services should be restored and in what order. His list will help us plan our schedule.

As more people come to the relief camp, our work will probably get more difficult. Help each other and try to make the best of this very difficult time.

To: The Village Rescue Team
From: Relief camp director
Re: People living in villages affected by yesterday's earthquake

Before You Read

Discuss the answers to these questions in a small group.

1. What medicines do you take when you are sick? How well do they work?
2. Did your parents or grandparents have some old-fashioned ways to treat illnesses? Did those treatments work?
3. What advertisements have you seen for medicines on TV or in magazines? What kind of promises do they make?

 **Read**

This article from a popular science magazine describes some of the sources for new medicines.

Searching for New Medicines

Over time, new diseases develop that cannot be cured with the medicines we have. Also, many medicines that once cured common diseases sometimes lose their power to cure. For these reasons, modern drug companies are constantly looking for new medicines to help doctors cure both new and common diseases. One place that drug companies are looking is in the rainforests of the world. Scientists believe that new plants from the rainforests or simple medicines from rainforest peoples might be sources for future miracle drugs.

FINDING A CURE FOR MALARIA

Four hundred years ago, just such a miracle drug was found to cure malaria. In 1633, a fortunate event occurred. A man from Spain went to Peru to teach the native people. While he was teaching, he learned something. The village healer—the only medical practitioner the people had ever known—was making a powder from the bark¹ of the cinchona tree. The healer used this powder to cure malaria. The man brought some of this miracle powder home to Europe, where malaria was a serious disease at the time. Europeans began using the bark to cure malaria. Soon Europeans implemented overseas searches for sources of the tree bark. After many years, scientists identified the ingredient in the tree bark that cured malaria. It was quinine. By 1827, quinine was commercially produced and became the primary medical treatment for malaria throughout the world. By the 1960s, however, quinine's ability to kill the malaria parasite had declined because the parasite was becoming resistant to it.

A NEW MEDICINE TO CURE MALARIA

About this time, another fortunate event occurred. Scientists in China were digging up ancient cities. One city was a place where people had resided 2,000 years earlier. The scientists discovered that the ancient people had used a plant, called wormwood, to cure fevers. Scientists collected living samples of the plant to test. They found that wormwood contained

¹ bark: the hard outer covering of a tree

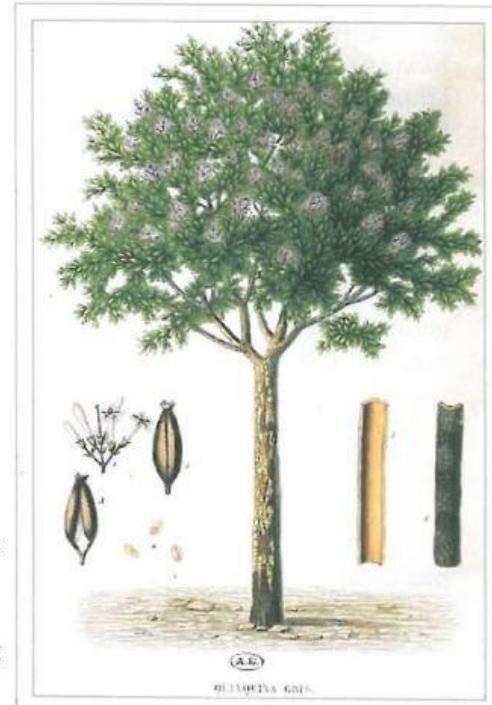


Illustration of the cinchona tree and its flowers, fruit, and bark

artemisinin. This chemical killed malaria parasites. Today, 35 artemisinin is used in various mixtures with other drugs to treat people who have malaria.

THE HISTORY OF ASPIRIN

Aspirin is another ancient medicine. Its history dates back over 2,000 years, when ancient Greek physicians made a tea from willow bark to ease pain and lower fever. People 40 continued to use willow bark as a home remedy for centuries. Modern scientists identified *salicylic acid* as the special ingredient in the bark that eased pain and fever. Soon, drug companies were making aspirin tablets containing salicylic acid. Today, aspirin is one of the most 45 widely used drugs in the world. Around 100 billion aspirin tablets are produced each year.

A MODERN MIRACLE DRUG

Not all **medical** histories are centuries old. The story of *taxol* is an example of how miracle drugs are still being found in the world's forests. In 1966, scientists discovered a powerful chemical in the bark of the 50 Pacific yew tree. This chemical could stop cell growth. They believed it would be useful in treating the unnatural cell growth of cancer. Several years later, taxol was being used in **intensive** treatments for certain kinds of cancer.



A vase with an image of an ancient Greek physician.

SEARCHING THE RAINFORESTS

Scientists think that many medicines may still be hidden in the rainforests of the world. As a result, over 100 companies that manufacture drugs are 55 searching for new rainforest plants and testing them for possible **medical** use.

Unfortunately, **access** to these rainforest plants is rapidly disappearing. Logging companies are cutting down the rainforest trees and selling the wood. Commercial developers are **laboring** hard to clear the land for houses, farms, towns, and roads. Clearly, the **priorities** of the scientists **conflict** with 60 the **priorities** of the loggers and the developers. The scientists want time to find plants that might cure diseases. The loggers and developers want to make money. They do not want to wait for the scientists to look for plants.

WILL CURES BE LOST?

Experts believe that about 50,000 types of plants, animals, and insects disappear every year because rainforests are being destroyed. Scientists 65 fear that when rainforest species disappear, many possible cures for diseases will disappear with them. They also fear that when rainforests disappear, the villages of native people who **reside** in the rainforests will also disappear. When the people leave, their healers also leave. These **practitioners** are the only individuals who know the secrets of healing sick 70 people with forest plants.

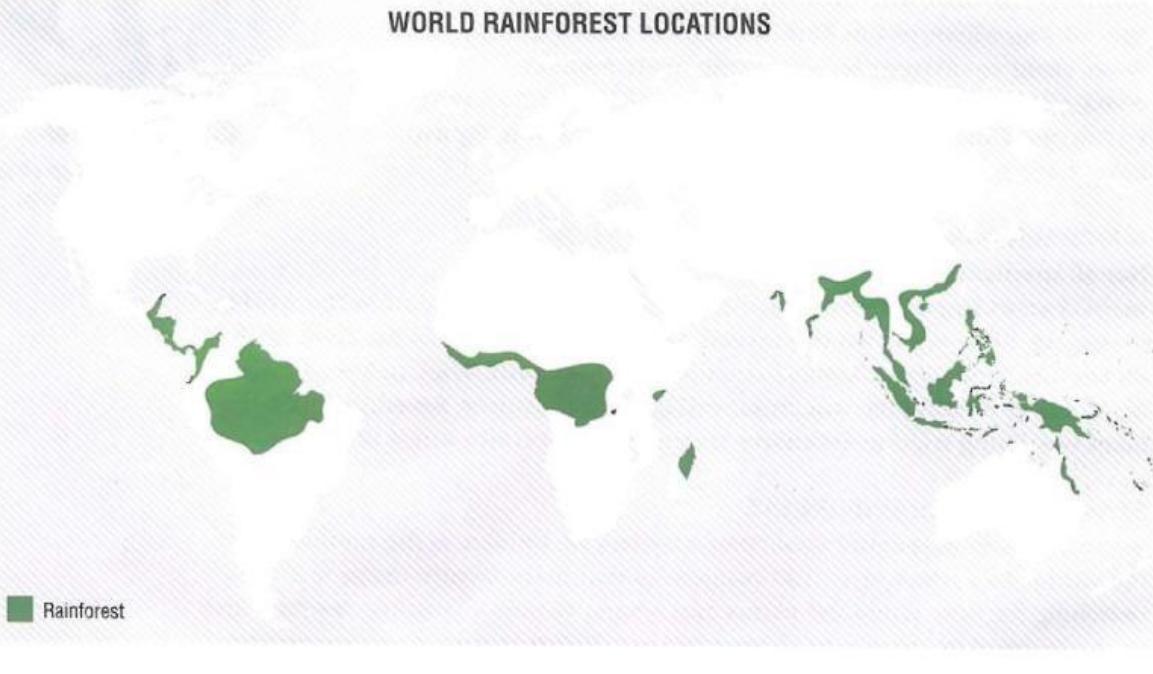
THE SEARCH IS ON

In fact, most modern drugs made from plants came from simple cures that village healers created from nearby plants. Also, some scientists say that over 70 percent of promising anti-cancer drugs originally came from rainforest

plants. As a result, modern drug companies are sending scientists, 75 **accompanied** by local translators, to work **cooperatively** with village healers. The scientists want to learn their secrets before those secrets are lost forever. Drug companies are also sending teams of workers into the rainforests to gather plants to test. If company scientists find a useful cure in a plant they test, they will identify the chemicals in the plant. Then, the 80 company can manufacture a medicine that is chemically identical.

Before rainforests disappear completely, scientists want to gather as many **medical** secrets as possible. Soon, however, it may be too late to learn the rainforest's secrets. ■

WORLD RAINFOREST LOCATIONS



Reading Comprehension

Mark each sentence as **T** (true) or **F** (false) according to the information in Reading 2. Use your dictionary to check the meaning of new words.

- ___ 1. In 1633, Indians residing in Peru treated malaria with a powder made from tree bark.
- ___ 2. Europeans had access to quinine over 2,000 years ago.
- ___ 3. The discovery of artemisinin occurred in the 1960s.
- ___ 4. Taxol is now used in the intensive treatment of malaria.
- ___ 5. Drug companies are implementing searches in the rainforests for new medicinal plants.
- ___ 6. Logging companies are cooperating with scientists by cutting down trees.
- ___ 7. The priorities of rainforest loggers conflict with the priorities of scientists.
- ___ 8. Translators accompany scientists into the rainforests to help scientists learn secrets from village healers.
- ___ 9. As rainforests disappear, the number of people living there will decline.

LEARN

Sometimes the title of an article can help you determine its main idea. Be sure to pay attention to the words in the title.

The main idea of an article, or of a paragraph within an article, is not always stated clearly in one sentence. Sometimes you have to add or remove words.

APPLY

Answer these questions about the main idea of Reading 2 and the main ideas of the paragraphs.

1. Does the title *Searching for New Medicines* help you find the main idea of the article in the first paragraph? What is the main idea? Write it here in your own words.
2. The main idea of paragraph 2 is its first sentence. Take out the unnecessary words and write the main idea here.
3. Complete the main idea of paragraph 3:
The ancient people of _____ had used _____.
4. Complete the main idea of paragraph 4:
Aspirin was first used _____.
5. Complete the main idea of paragraph 5:
Taxol is an example of _____.
6. Complete the main idea of paragraph 7:
Access to _____.
7. Write the main idea of paragraph 8 in your own words.

Vocabulary Activities STEP I: Word Level

One person *accompanies* another person when they go somewhere together.

My brother will accompany me to Indonesia.

I will be accompanied by my brother.

One thing *accompanies* another thing if they are used or appear together.

A fever often accompanies a cold.

The noun form, *accompaniment*, is mostly used in music.

The guitarist played with a piano accompaniment.



A. With a partner, match each item in the first column with the thing that it usually accompanies. Take turns making sentences with the information.

a 1. washing instructions

Washing instructions usually **accompany** a new shirt.

— 2. dosage instructions	b. a frozen pizza
— 3. operating instructions	c. a computer program
— 4. cooking instructions	d. a bottle of aspirin
— 5. watering instructions	e. an electronic appliance
— 6. installation instructions	f. a flowering plant

B. Use the target vocabulary from the box to complete this story. Use the words in parentheses to help you.

access to declined occurred priority
accompanied labored practitioners resided

Ignaz Semmelweis received his medical degree in Vienna in 1844. He took a job as head of a hospital department where women went to give birth to their babies.

After giving birth, the new mothers lived in one of two large rooms while they recovered. In one of the rooms, many new mothers died of childbed fever, an infection inside their bodies that often went along with childbirth many years ago.

In the second room, few women died. Semmelweis tried to understand why more deaths ^(3. happened) in the first room. Some people blamed bad air, but Semmelweis noticed that the first room was very dirty. The second room was very clean. He reasoned that something in the dirt was causing the infection.

Semmelweis _____ for weeks to improve the first room. Cleanliness became a _____.

Doctors wearing bloody clothes could not have _____ the patients. Nurse _____ and doctors had to wash their hands with a strong chemical before examining patients. Soon, the death rate _____ in the first room.

The word *decline* usually refers to something becoming weaker, slower, or not as good.

Grandfather's health is **declining** (verb)

His doctor noticed a **decline** in his weight. (noun)

The verb *decline* is also used to reject or refuse something. For example, you might *decline an invitation*, or *decline to answer questions*.

C. With a partner, decide which of these things might decline as a person grows older. Take turns making sentences with the items you selected.

A person's eyesight might decline.

<input checked="" type="checkbox"/> eyesight	<input type="checkbox"/> income	<input type="checkbox"/> amount of sleep needed
<input type="checkbox"/> doctor visits	<input type="checkbox"/> TV viewing	<input type="checkbox"/> time spent with family
<input type="checkbox"/> intelligence	<input type="checkbox"/> appetite	<input type="checkbox"/> sense of humor
<input type="checkbox"/> energy level	<input type="checkbox"/> interests	<input type="checkbox"/> patience

As a verb, *access* means “to get or use something.”

*Doctors use the Internet to **access** information about new medicines.*

*I couldn't **access** my email.*

As a noun, the word often occurs in the phrase *have access to* something, which means “to be able to get or use something.”

*Patients need to **have access to** information about the drugs they are taking.*

The adjective form is often used in relation to people who lack certain abilities.

*These bathrooms are **accessible** to students in wheelchairs.*

or

*These bathrooms are wheelchair **accessible**.*

The negative form is *inaccessible*.

 CORPUS

D. With a partner, match the item on the left with what it can help you access. Take turns making sentences with the information.

a 1. ladder a. a high shelf
*You need a ladder to **access** a high shelf.*

— 2. password b. the school library
— 3. key c. the subway train
— 4. elevator d. the top floor of the building
— 5. ticket e. your email
— 6. student ID card f. a locked closet

To *occur* means to happen or to take place. The noun form is *occurrence*.

 CORPUS

E. With a partner, decide when these events *occur*. Match the event on the left with when it occurs. Take turns making sentences with the information.

a 1. hot weather a. in the summer
*Hot weather **occurs** in the summer.*

— 2. a full moon b. in the morning
— 3. midnight c. in the middle of the week
— 4. breakfast d. every 28 days
— 5. Wednesday e. during a rainstorm
— 6. thunder f. at 12:00 at night