



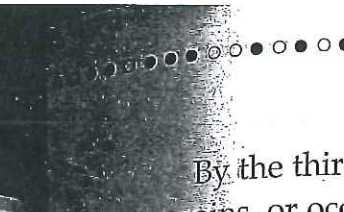
This engraving was meant to remind people that it was hopeless to try to escape death.

When PLAGUE Strikes

James Cross Giblin

OUT OF THE EAST

Early in 1347, a mysterious disease attacked people living near the Black Sea in what is now southern Ukraine. Its victims suffered from headaches, felt weak and tired, and staggered when they tried to walk.



By the third day, the lymph nodes¹ in the sufferers' groins, or occasionally their armpits, began to swell. Soon they reached the size of hens' eggs. These swellings became known as buboes, from the Greek word for groin, *boubon*. They gave the disease its official name: the bubonic² plague.

The victim's heart beat wildly as it tried to pump blood through the swollen tissues. The nervous system started to collapse, causing dreadful pain and bizarre³ movements of the arms and legs. Then, as death neared, the mouth gaped open and the skin blackened from internal bleeding. The end usually came on the fifth day.

Within weeks of the first reported cases, hundreds of people in the Black Sea region had sickened and died. Those who survived were terrified. They had no medicines with which to fight the disease. As it continued to spread, their fear changed to frustration, and then to anger. Someone—some outsider—must be responsible for bringing this calamity upon them.

The most likely candidates were the Italian traders who operated in the region. They bartered Italian goods for the silks and spices that came over the caravan routes from the Far East, then shipped the Eastern merchandise on to Italy. Although many of the traders had lived in the region for years, they were still thought of as being different. For one thing, they were Christians while most of the natives were Muslims.⁴

Deciding the Italians were to blame for the epidemic, the natives gathered an army and prepared to attack their trading post. The Italians fled to a fortress they had built

1. The **lymph nodes** are glands that filter out harmful substances.

2. **Buboes** (bū' bōz), **bubonic** (bū bon' ik)

3. **Bizarre** means "extremely strange."

4. **To barter** is to trade goods without using money. Traders traveled in groups, or **caravans**, along familiar roads for safety in deserts and dangerous regions. **Muslims** are people who follow Islam, the religion based on the teachings of Muhammad.

#1
Text Structure How has the author organized the ideas in the first three paragraphs?

#2
Question Why did people blame the Italian traders for the epidemic?

on the coast of the Black Sea. There the natives besieged⁵ them until the dread disease broke out in the Muslim army.

The natives were forced to withdraw. But before they did—according to one account—they gave the Italians a taste of the agony their people had been suffering. They loaded catapults with the bodies of some of their dead soldiers and hurled them over the high walls into the fortress. By doing so, they hoped to infect the Italians with the plague.

As fast as the bodies landed, the Italians dumped them into the sea. However, they did not move quickly enough, for the disease had already taken hold among them. In a panic, the traders loaded three ships and set sail for their home port of Genoa in Italy. They made it only as far as Messina,⁶ on the island of Sicily, before the rapid spread of the disease forced them to stop.

This account of what happened in southern Ukraine may or may not be true. But it is a fact that the bubonic plague—the Black Death—arrived in Sicily in October 1347, carried by the crew of a fleet from the east. All the sailors on the ships were dead or dying. In the words of a contemporary⁷ historian, they had “sickness clinging to their very bones.”

The harbor masters at the port of Messina ordered the sick sailors to remain on board, hoping in this way to prevent the disease from spreading to the town. They had no way of knowing that the actual carriers of the disease had already left the ships. Under cover of night, when no one could see them, they had scurried down the ropes that tied the ships to the dock and vanished into Messina.

The carriers were black rats and the fleas that lived in their hair. Driven by an unending search for food, the rats’ ancestors had migrated slowly westward along the caravan routes. They had traveled in bolts of cloth and bales of hay, and the fleas had come with them.

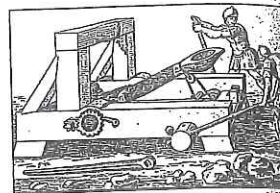
5 The natives *besieged* the Italians by surrounding their fortress with armed forces.

6 *Genoa* (jen’ō ə), *Messina* (mə sē’ nə)

7 *Contemporary* means “living or happening in the same period.”

Visual Vocabulary

Catapults (kat’ə pultz’) are war machines that were used like giant slingshots to hurl objects, such as large rocks.



#13

Question What do you want to learn about the Black Death? What questions might guide you to find the answers?

Although it was only an eighth of an inch long, the rat flea was a tough, adaptable⁸ creature. It depended for nourishment on the blood of its host, which it obtained through a daggerlike snout that could pierce the rat's skin. And in its stomach the flea often carried thousands of the deadly bacteria that caused the bubonic plague.

The bacteria did no apparent harm to the flea, and a black rat could **tolerate** a moderate amount of them, too, without showing ill effects. But sometimes the flea contained so many bacteria that they invaded the rat's lungs or nervous system when the flea injected its snout. Then the rat died a swift and horrible death, and the flea had to find a new host.

Aiding the tiny flea in its search were its powerful legs, which could jump more than 150 times the creature's length. In most instances the flea landed on another black rat. Not always, though. If most of the rats in the vicinity were already dead or dying from the plague, the flea might leap to a human being instead. As soon as it had settled on the human's skin, the flea would begin to feed, and the whole process of infection would be repeated.

No doubt it was fleas, not Italian traders, that brought the bubonic plague to the Black Sea region, and other fleas that carried the disease on to Sicily. But no one at the time made the connection. To the people of the fourteenth century, the cause of the Black Death—which they called "the pestilence"⁹—was a complete and utter mystery.

When the first cases of the plague were reported in Messina, the authorities ordered the Italian fleet and all its sick crew members to leave the port at once. Their action came too late, however. Within days the disease had spread throughout the city and the surrounding countryside.

⁸ **Adaptable** (ə dap' tə bəl) means "able to change to meet the needs of a certain situation."

⁹ **Pestilence** comes from a Latin word meaning "unhealthy" and refers to any highly infectious, widespread disease.

Vocabulary

tolerate (tol' ə rāt') v. to endure; put up with

Text Structure How does the author organize the ideas that describe the process of infection?

#4

Some of the plague's victims fled to the nearby town of Catania, where they were treated kindly at first. But when the citizens of Catania realized how deadly the disease was, they refused to have anything more to do with anyone from Messina or even to speak to them. As was to happen wherever the plague struck, fear for one's own life usually outweighed any concern a person might have felt for the life of another.

ON TO ITALY

From Sicily, trading ships loaded with infected flea-bearing rats carried the Black Death to ports on the mainland of Italy. Peddlers and other travelers helped spread it to inland cities such as Milan¹⁰ and Florence.

Conditions in these medieval cities provided a splendid breeding ground for all types of vermin, including rats. There were no regular garbage collections, and refuse accumulated in piles in the streets. Rushes¹¹ from wet or marshy places, not rugs, covered the floors in most homes. After a meal, it was customary to throw bits of leftover food onto the rushes for the dog or cat to eat. Rats and mice often got their share, too.

Because the cities had no running water, even the wealthy seldom washed their heavy clothing, or their own bodies. As a result, both rich and poor were prime targets for lice and fleas and the diseases they carried—the most deadly being the bubonic plague.

Several Italian commentators noted an unusual number of dead rats in cities struck by the plague. It seems odd that no one linked this phenomenon¹² to the disease. Perhaps people were so used to being surrounded by vermin, dead and alive, that a few more didn't arouse that much concern. At any rate, the Italians sought other explanations for the terrible pestilence.

10 *Milan* (mi lan')

11 *Medieval* (mē' dē ē' vəl) refers to the Middle Ages, roughly A.D. 500–1450. *Vermin* are any insects or animals that are troublesome or harmful. *Refuse* (ref' ūs) is another word for *garbage*. *Rushes* are reedy, grasslike plants.

12 Anything that is extremely unusual is a *phenomenon* (fə nom' ə non').

#5

Question What caused the people of Catania to act as they did?

#6

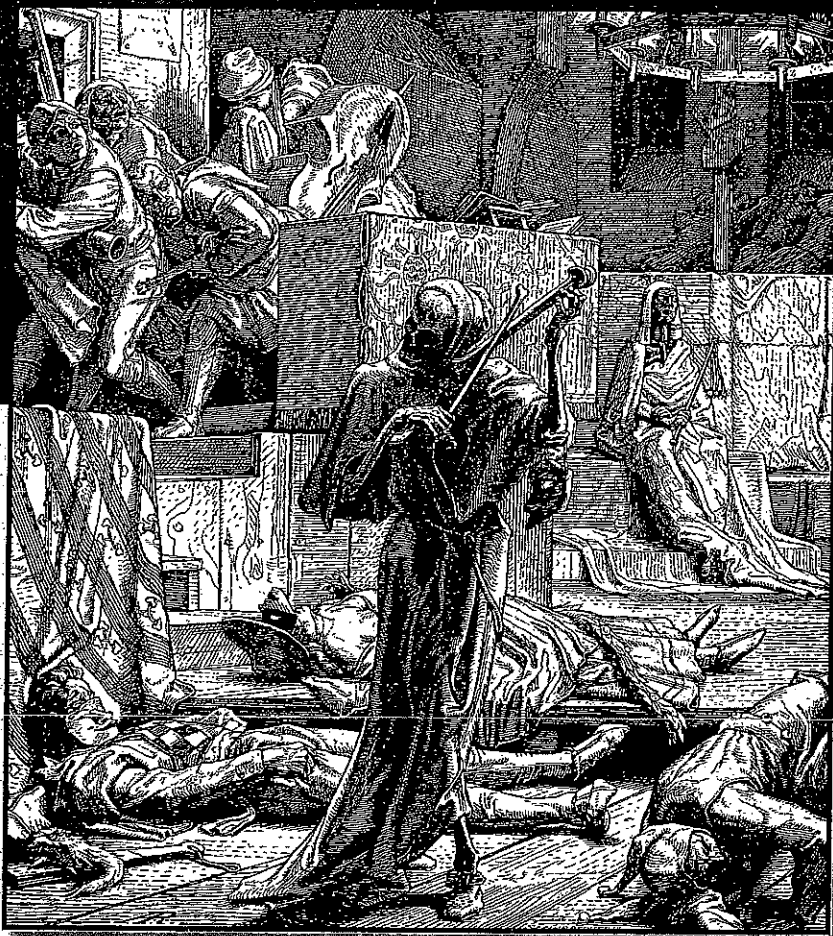
BQ BIG Question

Why did the author include this information about medieval cities?

caused the
to act as

Grim Reaper, 1851. Wood
engraving after Alfred Rethel.

View the Art How does this
image illustrate people's beliefs
about the plague?



Some scholars thought the plague had been triggered by a series of earthquakes that had devastated large areas of Europe and Asia between 1345 and 1347. They said the quakes had released poisonous fumes from the Earth's core, and some believed the Devil was behind it all.

Others claimed that climatic changes had brought warmer, damper weather and strong southerly winds that carried the disease north. They tried to predict its course by studying the colors of the sky at twilight and the shapes of cloud formations. Meanwhile, the death toll in both city and countryside continued to mount.

At Venice, one of Italy's major ports, the city's leaders decreed¹³ that no one could leave an incoming ship for

¹³ To **decree** is to set forth an official rule, order, or decision.

Vocabulary

devastated (dev' əs tā' tid) v. caused great pain, damage, or destruction; overwhelmed

quaranta giorni—forty days—the length of time Christ was said to have suffered in the wilderness. From this decree comes the word *quarantine*,¹⁴ which means any isolation or restriction on travel intended to keep a contagious disease from spreading. But the quarantine in Venice proved no more effective than the one imposed earlier at Messina. When the Black Death struck in December 1347, Venice had a population of about 130,000. Eighteen months later, only about 70,000 Venetians were still alive.

Other Italian cities tried harsher measures to halt the spread of the disease. As soon as the first cases were reported in Milan, the authorities sent the city militia¹⁵ to wall up the houses where the victims lived. All those inside, whether sick or well, were cut off from their friends and neighbors and left to die.

The most complete account of the Black Death in Italy was given by the writer Giovanni Boccaccio,¹⁶ who lived in the city of Florence. In the preface to his classic book *The Decameron*, Boccaccio wrote: “Some say that the plague descended upon the human race through the influence of the heavenly bodies, others that it was a punishment signifying God’s righteous anger at our wicked way of life.”

After describing the disease’s symptoms, Boccaccio went on to say: “Against these maladies, it seemed that all the advice of physicians and all the power of medicine were profitless and futile.¹⁷ Perhaps the nature of the illness was such that it allowed no remedy; or perhaps those people who were treating the illness, being ignorant of its causes, were not prescribing the appropriate cure.”

One of the most alarming things about the bubonic plague was the way it struck. “It would rush upon its victims with the speed of a fire racing through dry or oily substances that happened to be placed within its reach,” Boccaccio wrote. “Not only did it infect healthy persons

14 *Quarantine* (kwôr’ən tēn’)

15 A military force made up of civilians who serve as soldiers during a time of emergency is called a *militia* (mi lish’ə).

16 *Giovanni Boccaccio* (jō vā’nē bō kā’chē ō’)

17 *Futile* means “useless or not effective.”

#7
Text Structure What text structure does the author use to describe the attempt to stop the spread of the disease?

who conversed or had any dealings with the sick . . . but it also seemed to transfer the sickness to anyone touching the clothes or the other objects which had been handled or used by the victims."

Boccaccio reported seeing two pigs in the street, rooting through the ragged clothes of a poor man who had died of the plague. Within a short time, the pigs began to writhe and squirm as though they had been poisoned. Then they both dropped dead, falling on the same rags they had been pulling and tugging a few minutes earlier.

How did the people of Florence react to this mysterious and fatal disease? Some isolated themselves in their homes, according to Boccaccio. They ate lightly, saw no outsiders, and refused to receive reports of the dead or sick. Others adopted an attitude of "play today for we die tomorrow." They drank heavily, stayed out late, and roamed through the streets singing and dancing as if the Black Death were an enormous joke. Still others, if they were rich enough, abandoned their homes in the city and fled to villas¹⁸ in the countryside. They hoped in this way to escape the disease—but often it followed them

Whatever steps they took, the same percentage of people in each group seemed to fall ill. So many died that the bodies piled up in the streets. A new occupation came into being: that of loading the bodies on carts and carrying them away for burial in mass graves. "No more respect was accorded to dead people," Boccaccio wrote, "than would be shown toward dead goats."

The town of Siena, thirty miles south of Florence, suffered severe losses also. A man named Agnolo di Tura¹⁹ offered a vivid account of what happened there:

"The mortality²⁰ in Siena began in May. It was a horrible thing, and I do not know where to begin to tell of the cruelty. . . . Members of a household brought their dead to a ditch as best they could, without a priest, without any divine services. Nor did the death bell sound. . . . And as

18. A *villa* is a house, especially one in the country or at the seashore.

19. *Siena* (sē en' ə), *Agnolo di Tura* (ä nyō' lō di tōō' rə)

20. Here, *mortality* means simply "deaths" or "the dying."

48
Text Structure What clues in this paragraph help you recognize the problem/solution structure?



A doctor of the 1700s wears a mask during an outbreak of plague in Venice. The beak of the mask probably contained fragrant herbs.

View the Art What kind of protection does the doctor think is provided by this type of mask?

soon as those ditches were filled, more were dug. I, Agnolo di Tura, buried my five children with my own hands. . . . And no bells tolled, and nobody wept no matter what his loss because almost everyone expected death. . . . And people said and believed, "This is the end of the world."

By the winter of 1348–49, a little more than a year after its first appearance in Sicily, the worst of the Black Death was over in Italy. No one knows exactly how many Italians died of the disease, because accurate medical records were not kept. Conservative²¹ estimates put the loss at about a third of the population, but many scholars believe the death rate reached forty or fifty percent, especially in the cities.

In any case, it was the greatest loss of human life Italy had suffered in a comparable period of time—and a loss not equaled to the present day.

Meanwhile, the Black Death had swept on to France, entering that country via Marseilles and other southern ports. Before long it traveled inland and reached the city of Avignon,²² where the Pope was then living.

²¹ These estimates are cautious, or *conservative*, meaning that the numbers are likely to be too low rather than too high.

²² *Marseilles* (mār sā'), *Avignon* (ä vē nyōn')

#9 **Question** Why do you think people thought it was the end of the world?

#10 **Text Structure** What type of organization does the author use to describe the plague's movement?

BETWEEN TWO RAGING FIRES

When the Black Death arrived in Avignon in the spring of 1348, this old walled city in southern France had been the home of the Pope and his College of Cardinals²³ for almost forty years. They had come there in 1309 to escape political unrest in Rome and had built a magnificent palace on the city's main square.

Pilgrims, priests, and diplomats crowded into Avignon from all over Europe to pay their respects to the Pope. Without meaning to, some of these visitors must have brought the pestilence with them. Between February and May, up to 400 people a day died of the plague in Avignon. When the graveyards were filled, the bodies of the dead had to be dumped into the Rhône River, which flowed through the heart of the city.

Many courageous priests ministered to the sick and dying even though they knew that they would probably become infected and die themselves. Meanwhile, Pope Clement VI decided it was his duty, as leader of the Roman Catholic Church on the Earth, to remain alive if at all possible. On the advice of his physician, he withdrew to his private rooms, saw nobody, and spent day and night between two fires that blazed on grates at opposite ends of his bedchamber.

What purpose were the fires supposed to serve? It was tied in with the theory of humors, which still dominated medical thought in the fourteenth century. This theory goes back to the Greek physician Hippocrates,²⁴ who lived from about 484 to 425 B.C. and is often called the "father of medicine."

Hippocrates examined sick persons carefully and honestly recorded the signs and symptoms of various diseases. But his knowledge of how the human body worked was extremely limited. He believed the body contained four basic liquids, which he called humors: blood, which came from the heart; phlegm, from the brain;

²³ *College of Cardinals* is the group of high-ranking priests who act as advisers to the Pope. Here, *college* means "people who have the same purpose," not a school of higher learning.

²⁴ *Hippocrates* (hi pok' rə tēz)

#11
Question. How might the visitors have brought the "pestilence" with them?

/ do you think
it was the
id?

ture. What type
tion does the
to describe the
ovement?

yellow bile, from the liver; and black bile, from the spleen.²⁵

If these humors were in balance, Hippocrates wrote, a person would enjoy good health. But if one of them became more important than the others, the person was likely to feel pain and fall victim to a disease. A physician's main job, therefore, was to try to restore and maintain a proper balance among the four humors.

BLOOD AND BILE

Another Greek physician, Galen (A.D. 130–200), took the ideas of Hippocrates a step further. Galen stated that the four humors in the human body reflected the four elements that people believed were the basis of all life: earth, air, fire, and water. Blood was hot and moist, like the air in summer. Phlegm was cold and moist, like water. Yellow bile was hot and dry, like fire, and black bile was cold and dry, like earth. In other words, according to Galen, the human body was a smaller, contained version of the wider natural world.

Galen recommended certain treatments to keep the humors in balance. For example, if a patient was too hot, various foods were prescribed to make him or her cooler. If this treatment failed, the physician might perform bloodletting to reduce the amount of hot blood in the patient's system.

Most of Galen's theories have been **discredited** in modern times, but for over a thousand years, until the sixteenth century, no physician thought of questioning them.

Most medieval physicians were actually scholar-priests. They spent their time analyzing the writings of Galen and Hippocrates and left the treatment of patients to surgeons and barber-surgeons.

Surgeons usually had some medical training in a university. They were regarded as skilled craftsmen,

²⁵ Today, we know that *phlegm*, or mucus, is formed in the nose or throat, not the brain. *Bile* does not come from the liver, and the body uses it to aid digestion. The *spleen* filters blood and produces white blood cells. The *heart*, of course, pumps blood but does not produce it.

Vocabulary

discredited (dis kred'it'id) v. refused to accept as true or accurate; caused to be doubted or disbelieved

#12

Question What is the importance of this information about medical thought?

#13

Text Structure How does the author organize the ideas in this paragraph?

able to close wounds, set broken bones, and perform simple operations.

Most barber-surgeons were illiterate men whose only training came from serving as apprentices²⁶ to surgeons. As their name **implies**, they cut hair as well as setting simple fractures and bandaging wounds. Some say the traditional red-and-white-striped barber's pole comes from the time when barber-surgeons hung their bloody surgical rags in front of their shops to dry.

Two other groups of people played important roles in medieval medicine. Apothecaries²⁷ filled prescriptions and also prescribed herbs and drugs on their own. Nonprofessionals, many of them older women, provided medical care in rural areas where no surgeons or barber-surgeons were available. These nonprofessionals had no formal training and relied heavily on folk remedies that had been handed down from generation to generation in the countryside.

STRANGE TREATMENTS

This, then, was the medical scene when the Black Death raged through western Europe in the mid-fourteenth century. It helps to explain why physicians and surgeons were at such a loss to know what caused the epidemic, let alone how to treat it. It also answers the question of why the Pope's physician had him sit alone in his bedchamber between two raging fires.

Galen had written that diseases were transmitted²⁸ from person to person by miasmas,²⁹ poisonous vapors that arose from swamps and corrupted the air. The Pope's physician, who believed in Galen's theories, thought that

26. Someone who is **illiterate** is unable to read or write. **Apprentices** are beginners who learn their skills from experienced professionals.

27. **Apothecaries** (ə poth'ə ker'ēz) are druggists or pharmacists.

28. To **transmit** a thing is to send it, or cause it to pass, from one person or place to another.

29. **Miasma** (mī az'mə)

Vocabulary

implies: (im plīz') v. suggests without directly stating

#14
Question Who were the main caregivers in the "medical scene" at the time?

hot air from the fires would combat any dangerous miasmas that got into the Pope's chamber and render³⁰ them harmless. (The Pope did survive, but it's doubtful whether the fires had anything to do with it except to make his chamber uncomfortable for rats and fleas.)

Other physicians and surgeons interpreted Galen's theories differently. Instead of fighting fire with fire, so to speak, they recommended fleeing from it. People were urged to leave warm, low, marshy places that were likely to produce miasmas and move to drier, cooler regions in the hills. If that was not possible, they were advised to stay indoors during the heat of the day, cover over any brightly lighted windows, and try to stay cool.

Hands and feet were to be washed regularly, but physicians warned against bathing the body because it opened the pores. This, they thought, made the body more vulnerable to attack by disease-bearing miasmas. Exercise was to be avoided for the same reason.

Sleep after eating and in the middle of the day was bad because the body was warmer then. And physicians cautioned their patients not to sleep on their backs at any time, because that made it easier for foul air to flow down their nostrils and get into their lungs.

To ward off³¹ miasmas when one walked outside, physicians recommended carrying bouquets of sweet-smelling herbs and flowers and holding them up to the nose. Some say this practice was one of the inspirations for the old English nursery rhyme "Ring-a-ring o' roses." In the first published version it read as follows:

Ring-a-ring o' roses,
A pocket full of posies,
A-tishoo! A-tishoo!
We all fall down.

30 To *render* a thing is to make or cause it to become.

31 The expression *ward off* means "to turn back; keep away."

Vocabulary

vulnerable (vul' nər ə bəl) *adj.* capable of being damaged or wounded; easily hurt

HS

Question What advice did physicians and surgeons give to people?

Those who link the rhyme to the plague think the ring o' roses was the rash that often signaled infection. The pocket full of posies referred to the flowers people carried to sweeten the air around them. A-tishoo! was the sound of sneezing, a common symptom of the disease, and "We all fall down" implied that all of its victims died.

Some prescribed treatments for the plague seem sensible or at least harmless: bed rest, drinking lots of liquids, and the application of salves made of herbs to the affected areas of the body. But other treatments hurt plague sufferers instead of helping them.

Surgeons who had studied Galen's theories believed that the Black Death interrupted the flow of the body's humors. Since the heart produced the most important of these liquids, blood, doctors thought one effective way to fight the plague and improve circulation was to bleed veins close to the heart.

The surgeons also thought that buboes, the swellings that characterized the disease, revealed where the body was being attacked, and they geared their treatment accordingly. If a buboe appeared in the region of the groin, for example, the surgeon drained blood from a vein leading to one of the organs in that area. By doing so, the surgeon meant to cool the body and help it fight the disease, but in fact bleeding only weakened the body's defenses.

ST. ROCH³²

In the face of treatments like these, it's no wonder that people lost faith in their physicians and came to rely more and more on prayer. Many directed their prayers to St. Roch, who had died in 1327 and was the particular saint associated with the plague.

According to the legends told about him in France and Italy, Roch inherited great wealth as a young man. Like St. Francis, he gave it away to the poor and then went on a religious pilgrimage³³ to Italy. He was in Rome when an epidemic struck, but instead of fleeing, Roch stayed on to

³² *Roch* (rôk)

³³ A *pilgrimage* is a long journey, especially to a holy place for a religious purpose.

#16 BQ > BIG Question

Why does the author provide information about the origin of the nursery rhyme?

What advice did
and surgeons
ple?



A doctor holding a vinegar-soaked sponge to his face treats a plague victim.

View the Art Why do you think the doctor holds the sponge to his face?

nurse the sick. Eventually, he caught the disease himself.

Roch left the city and went to the countryside, where he expected to die alone in the woods. But a dog carrying a loaf of bread in its mouth miraculously found him. Each day the dog reappeared with a fresh loaf, and Roch gradually recovered.

He got home to France safely, but his relatives failed to recognize him and had Roch arrested as an impostor. He died in jail, filling his cell with a mysterious white light. After Roch's story spread and he was made a saint, it was thought he would come to the aid of plague victims just as the dog had come to his aid in the Roman woods.

Even prayers to St. Roch did not halt the relentless march of the Black Death through France, however. At the peak of the plague, the death rate in Paris was reported to be 800 a day. By the time the epidemic had run its course in 1349, over 50,000 Parisians had died—half the city's population.

#7 **Question** From the time that the plague arrived in Messina, Sicily, how long did it take to run its course?