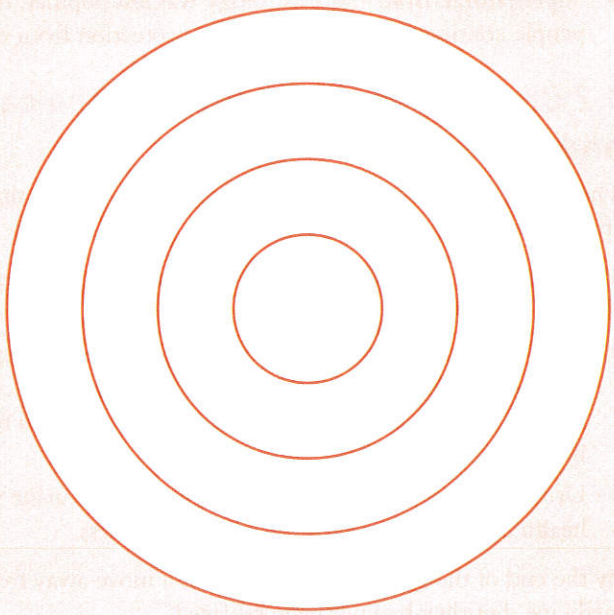
Organising knowledge

Use the information on page 10 to complete the table below to show the links between cause, treatment and prevention of the Black Death.

Black Death	Religion	Rational	Supernatural
Beliefs about cause			
Treatment			
Prevention			

Analysing factors

You need to understand the role that factors had on the medieval ideas about the cause of disease and the treatments and preventions that they used. Make a copy of the concentric circles. Rank order the factors in the box that explain the ideas that existed about cause, treatment and prevention, beginning with the most important in the middle to the least important on the outside. Explain your decisions by annotating the diagram.



For example, if you believe that the religious ideas about cause, treatment and prevention were the most influential, write 'The Church' in the centre circle. You can then annotate this with details of the religious ideas, such as it was believed that God sent the Black Death as a punishment for sins.

FACTORS

- government
- individuals
- attitudes in society
- the Church
- science and technology.

For a reminder about each factor see page 5.

c.1500–c.1700: The Medical Renaissance in England

Ideas about the causes of disease and illness were starting to change during the **Renaissance**. However, this led to very little change in methods of prevention and treatment. The Renaissance did see the introduction of science and technology improving medicine.

1 Ideas about the cause of disease and illness

REVISED

During the Medical Renaissance new ideas began to influence medicine and slowly replace old beliefs. As **Protestantism** spread across Europe, the Catholic Church was less able to promote its beliefs and control medicine. As a more **secular** society developed, scientific ideas were discovered both in medicine, and beyond.

1.1 Continuity in explanations of the cause of disease and illness

- Miasma Theory (see page 6): this idea continued and became more widespread during **epidemics**.
- The influence of the Church: during epidemics, such as the Great Plague, religious causes were still influential.
- Supernatural: from 1500, astrology was less popular, but during epidemics people continued to wear charms as protection from evil spirits.

1.2 Changes in explanations of the cause of disease and illness

The practice of medicine did not change much during this time, but the ideas about cause were starting to change:

- The decline in influence of the Church: most now believed that God did not send disease.
- The Theory of the Four Humours: this had been discredited and was not believed by physicians by the end of the seventeenth century. However, because patients understood it, the theory continued to be used to diagnose illness until this time.
- Urine analysis: physicians now understood that urine was not linked to ill health and no longer used it to diagnose illness.

By the end of the Renaissance, there was a move away from old ideas about medicine, but they had not been replaced.

Animalcules

A new idea that little animals were the cause of illness developed after they could be seen by newly invented, more powerful microscopes. These images were not very clear.

The work of Thomas Sydenham

Thomas Sydenham was important in moving medicine away from the ideas of Hippocrates and Galen. Sydenham believed in closely observing the symptoms of a patient, noting these down in detailed descriptions and then looking for remedies to treat the disease, rather than relying on medical books.

Key terms

Epidemic A widespread occurrence of an infectious disease in a community at a particular time

Printing press A machine for reproducing text and pictures

Protestantism The practice of the Protestant Church

Renaissance A revival of ideas from 1500 to 1700

Secular Not connected with religious or spiritual matters

Key individual

Thomas Sydenham A well-respected doctor in London during the 1660s and 1670s. He was given the nickname of the 'English Hippocrates' because, like the Greek doctor, he placed great importance on observing a patient. His book *Observationes Medicae* was used for two centuries

The influence of the printing press

In the fifteenth century, the first printing press was invented. It enabled medical information to spread further and more quickly; and contributed to the decline in influence of the Church. Now physicians were able to publish books that criticised Galen.

The Royal Society

The Royal Society was founded in London in 1660 to discuss new ideas in astronomy, medicine and science. It was important in the development of new medical ideas because it made it possible for scientists and physicians to study one another's work. The Royal Society also sponsored scientists and assisted them with the publication of their ideas.

Key factor

Science and technology
Science began to play a significant role in medicine during the Renaissance. Physicians and doctors started to question the old ideas and look to science for new explanations for the cause of disease and illness. New technology was developed that assisted the development of medicine; the printing press and microscopes.

Organising knowledge

Use the information on page 12 to complete the table below to show the old and new ideas that existed during the Renaissance in England about the cause of disease and illness.

Ideas about the cause of disease and illness during the medical Renaissance in England	
New ideas	**Old ideas**

Making comparisons

Look at the exam-style question below and the two answers. Which answer is better for comparing the key features of medical understanding? Why?

Explain one way in which ideas about the causes of disease were similar in the fourteenth and seventeenth centuries. (4 marks)

ANSWER 1

Ideas about the causes of disease in the fourteenth and seventeenth centuries were similar because at both times illness was believed to have been caused by bad air.

ANSWER 2

In the fourteenth and seventeenth centuries disease was believed to have a rational cause, for example bad air (miasma). During the Great Plague, like the Black Death, people believed that bad air (miasma) was caused by rotting waste and a movement of the planets. They believed that this led to an imbalance of the four humours and so disease in the form of the plague.

2 Approaches to prevention and treatment 1

REVISED

2.1 Continuity in approaches to prevention, treatment and care

Many of the preventions and treatments used during medieval England continued throughout the Renaissance because there was little change in the ideas about the cause of illness. These included:

- bloodletting, purging and sweating
- herbal remedies
- the practice of *regimen sanitatis* (see page 8)
- the removal of bad air
- treatment of the sick by apothecaries and surgeons for those who could not afford a physician
- women cared for the sick who did not go to hospital.

2.2 Changes in approaches to prevention, treatment and care

The move towards scientific thinking also led to new preventions and treatments:

- People started to believe in **transference**.
- People began to look for chemical cures for diseases rather than relying on herbs and bloodletting.
- Ideas that the weather conditions were the cause of disease became more popular and so people would relocate to avoid a disease.
- Renaissance hospitals began to treat people with wounds and curable diseases such as fevers.
- Hospitals that specialised in one particular disease were new in this period. These became known as pest houses, plague houses or poxhouses.

2.3 Dealing with the Great Plague in London in 1665

The plague returned to England throughout the seventeenth century. The Great Plague was the last major epidemic of the plague to hit England.

Key terms

Pomander A ball that contained perfumed substances

Transference Belief that an illness or disease could be transferred to something else. For example, people believed that if you rubbed an object on a boil the disease would transfer from the person to the object

Revision task

Summarise the continuity in the prevention and treatment of disease and illness in the period c.1250–c.1700. Try to make this visual by creating a mind map.

Exam tip

You need to know the similarities and differences between the preventions and treatments during the Great Plague in 1665 those used during the Black Death in 1348.

Idea about cause	Prevention and treatment
Astrology: an unusual alignment of the planets Punishment from God to cleanse man of his sins An imbalance of the four humours Miasma: bad air caused by foul-smelling rubbish Person to person by touch	Prayers were recited Plague victims were quarantined for 28 days and the door was painted with a cross alongside the words 'Lord have mercy upon us' People were encouraged to carry a **pomander** to drive away the bad air Fasting took place and some changed their diet to include a lot of garlic Plague doctors treated patients wearing a birdlike mask (because birds were believed to attract disease away from the patient), with sweet-smelling herbs inside to ward off miasma Smoking tobacco to ward off miasma Local authorities tried to prevent the plague from spreading by: • banning public meetings, funerals and fairs • closing theatres • sweeping streets clean • burning barrels of tar and sweet-smelling herbs to ward off miasma • killing cats and dogs • appointing searchers to monitor the spread of the disease and clear victims' bodies from towns

Organising knowledge

Study the Black Death in 1348 (page 10) and the Great Plague in 1665 (page 14). Complete the table below to show the similarities and differences between these two outbreaks.

Similarities	Differences
Ideas about the cause:	Ideas about the cause:
Preventions and treatments:	Preventions and treatments:

You're the examiner

Below is an exam-style question.

Explain why there was continuity in the way disease and illness were prevented and treated in the period c.1250–c.1700. (12 marks)

You may use the following information in your answer:
- **Great Plague**
- **Attitudes in society**

1 Below are a mark scheme and a paragraph which is part of an answer to the question. Read the paragraph and the mark scheme. Decide which level you would award the paragraph. Write the level below, along with a justification for your choice.

Remember that for the higher levels you must:
- explain three reasons
- focus explicitly on the question
- support reasons with precise details.

Mark scheme	
Level	
1	A simple or generalised answer is given, lacking development and organisation
2	An explanation is given, showing limited analysis and with only an implicit link to the question
3	An explanation is given, showing some analysis, which is mainly directed at the focus of the question
4	An analytical explanation is given which is directed consistently at the focus of the question

STUDENT ANSWER

People tried to prevent catching the Great Plague by placing those who had the disease in quarantine for 28 days, by carrying a pomander to drive away the miasma because they believed it was caused by the bad air, and by eating a diet heavy with garlic. Some healers advised smoking tobacco to also ward off the miasma. Local government also took action by banning public meetings and fairs, and closing theatres. Fires were lit and barrels of tar were burned. These actions took place because the local government wanted to prevent the spread of the disease by contagion and miasma. Here we can see a similarity with the Black Death during the Middle Ages as this epidemic was also believed to have been spread by bad air and contagion.

Level ☐ Reason _____

_____

2 Now suggest what the student has to do to achieve a higher level.

3 Try and rewrite this paragraph at a higher level.

4 Now try and write the rest of the answer to the question.

3 Approaches to prevention and treatment 2

REVISED

3.1 Changes in care and treatment

The new approach to medicine and knowledge developed during the Renaissance led to a change in medical training and care of the sick.

Improvements in medical training

Apothecaries and surgeons were better educated between 1500 and 1700:

- Wars were being fought with new technology, which led to new wounds that required more surgery.
- The increase in available chemicals led to new ingredients being available for apothecaries.

Physicians continued to train at universities with little change. Due to the decline in power of the Church, **dissection** was legalised but it was difficult to get a supply of fresh corpses to work on. This meant that physicians continued to train from books, such as those of Galen. Training did advance as physicians were inspired to challenge the old teachings and investigate for themselves (see below, Vesalius and Harvey). The printing press made books more widely available for physicians to study.

The influence in England of the work of Vesalius

In 1543, **Vesalius** published his most famous book, *On the Fabric of the Human Body*. Vesalius had been able to dissect a large number of executed criminals.

Learning of Vesalius	Impact of Vesalius
Vesalius found around 300 mistakes in the anatomical work of Galen, which included: • the human lower jaw has one bone, not two • the human breastbone has three parts, not seven • men do not have one fewer pair of ribs than women • the human liver does not have five separate lobes Vesalius corrected these mistakes and encouraged other doctors to base their work on dissection rather than old books. Vesalius explained these mistakes by pointing out that Galen had dissected animals, rather than humans	**Anatomy** became central to the study of medicine, and doctors were encouraged to carry out dissections for themselves Vesalius' work was heavily copied and appeared in other medical texts His work inspired other anatomists. After Vesalius' death, Fabricius went on to discover valves in human veins and shared his discovery with William Harvey Vesalius caused a lot of controversy because he had challenged the ideas of Galen. This angered traditional physicians who argued that the human body had not changed since the ideas of Galen

Key terms

Anatomy The branch of science concerned with the bodily structure of humans

Dissection Cutting up a body to study its internal parts

Key individuals

William Harvey Studied medicine at Cambridge and then at the famous medical school in Padua. In 1615, he became a lecturer in anatomy at the College of Physicians before becoming a doctor to King James I

Andreas Vesalius The most famous anatomist of this period. He was a lecturer in surgery at the University of Padua and had a deep interest in the human body

Key factor

Individuals The work of individuals became important during the medical Renaissance in England. What they discovered about the human body is important, but also the influence that they had.

Revision task

Summarise in no more than ten words the changes in medical training and treatment as a result of the work of Vesalius and Harvey.

3.2 William Harvey and the discovery of the circulation of the blood

Harvey had a keen interest in dissection and observing the human body to improve his knowledge of human anatomy.

Discovery of the circulation of the blood	Impact of Harvey
Harvey's research involved dissecting human corpses and cutting open cold-blooded animals because they had a slower heartbeat and this enabled their blood to be observed while they were still alive Harvey's research proved that arteries and veins were linked together in one system Harvey's theory was that blood must pass from arteries to veins through tiny passages invisible to the naked eye. Today we know these to be capillaries Harvey corrected Galen and showed that only the veins carried blood and that the heart acted as a pump	Harvey's theory encouraged other scientists to experiment on actual bodies However, his discovery had little practical use in medical treatment and led to very little change Some openly criticised Harvey because he did not have a powerful enough microscope to prove that capillaries existed. He was said to be mad

Support or challenge

Below is an exam-style question which asks how far you agree with a specific statement. Below this are a series of general statements which are relevant to the question. Using your own knowledge and the information throughout this key topic, decide whether these statements support or challenge the statement in the question and tick the appropriate box.

'Individuals had the most significant impact on medical training between c.1500 and c.1700.' How far do you agree? Explain your answer. (16 marks, with a further 4 marks available for spelling, punctuation and grammar.)

You may use the following in your answer:

- Vesalius
- The Royal Society

You **must** also use some information of your own.

Statement	Support	Challenge
More powerful microscopes were being developed and, in 1683, one allowed for the observation of tiny 'animalcules'		
The Royal Society first met in 1660 to share scientific knowledge and encourage new ideas		
The Theory of the Four Humours was starting to be rejected by physicians		
Doctors and anatomists were starting to observe the human body themselves rather than relying on old books		
Thomas Sydenham encouraged doctors to observe their patients and note down their symptoms		
The newly developed printing press allowed for medical information to be spread quickly and accurately		
Vesalius dissected human corpses and proved around 300 ideas of Galen incorrect		
Harvey discovered that blood circulated around the body and that the heart acted as a pump		
Without a microscope, Harvey was unable to prove that capillaries existed and so many physicians ignored his ideas		

Once you have completed this table, write an answer to this question.

c.1700–c.1900: Medicine in eighteenth- and nineteenth-century Britain

From 1700, the Church began to lose its influence over disease and illness as there was a focus on scientific explanations. This period saw the growth of cities, which brought threatening diseases such as smallpox, tuberculosis and typhus.

1 Ideas about the cause of disease and illness

REVISED

Intellectual movements such as the **Enlightenment** encouraged others to think for themselves to find answers – including about disease and illness.

1.1 Continuity and changes in explanations of the cause of disease and illness

Ideas about the cause of disease had not changed by the eighteenth century and people still believed in the Theory of the Four Humours and miasma, but this theory was losing popularity. Scientific thinking led to a change in medical understanding at the end of this period when the **Germ Theory** was developed.

Spontaneous generation theory

Microscopes had improved so that scientists could see **microbes** on decaying matter. This led some scientists to develop the theory of spontaneous generation in the early eighteenth century. They argued that the microbes were a product of the decay, rather than the cause of it, and that they spread by miasma.

1.2 The influence of Pasteur's Germ Theory

In 1861, **Louis Pasteur** published his discovery of the Germ Theory. He proved that germs were causing liquids to decay. This disproved the spontaneous generation theory. This discovery led him to the theory that germs might cause disease in the human body.

Impact

- Little immediate impact on medicine because doctors and surgeons could not see Pasteur's microbes.
- Some impact on the work of Joseph Lister, who linked the Germ Theory to infection in his patients (see page 20). Unfortunately, Lister's ideas were doubted as he could not prove his theory. With the presence of microbes in the organs of healthy people, it seemed impossible to some that they could be the cause of disease and illness.
- In the long term, Pasteur's discovery led to changes in preventing disease with vaccinations and the introduction of antiseptic and aseptic surgery.

1.3 Koch's work on microbes

Robert Koch developed the work of Pasteur by successfully identifying the different microbes that caused common individual diseases:

- 1876: Koch discovered the bacteria that caused anthrax.
- 1882: Koch went on to discover the bacteria that caused tuberculosis and typhoid.
- 1883: Koch discovered cholera.
- Koch's co-workers also went on to discover the microbes for diphtheria, pneumonia, meningitis, the plague and tetanus.

Key terms

Enlightenment A European intellectual movement of the late seventeenth and eighteenth centuries that emphasised reason and individualism rather than tradition

Germ Theory The theory that germs cause disease, often by infection through the air

Microbes A living organism that can only be seen with a microscope. Microbes include bacteria

Key individuals

Robert Koch A German doctor who identified specific bacteria that caused disease in humans

Louis Pasteur A French chemist who discovered germs before going on to develop vaccines

Key factors

Attitudes in society The Enlightenment encouraged questioning and new theories about medicine to develop

Science and technology Scientific experiment, microscopes, the swan-neck flask and the Petri dish were all vital instruments in the discovery of germs and development of vaccines