Timeline of Important Dates

Here's a timeline showing the order of key events in the history of British medicine since around 1250.

c.1250

1348 The Black Death hits Britain

1470s First British printing press

1543 Vesalius' 'The Fabric of the Human Body'

1628 Harvey's 'On the Motions of the Heart and Blood'

1660 Royal Society founded

1665 Great Plague hits London

1676 Sydenham's 'Medical Observations'

1798 Jenner publishes his vaccination findings

1847 James Simpson discovers chloroform

1853 Smallpox vaccination made compulsory

1855 John Snow's 'On the Mode of Communication of Cholera'

1859 Florence Nightingale's 'Notes on Nursing'

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1861 Pasteur publishes the Germ Theory

1875 Public Health Act

1876 Robert Koch identifies anthrax spores

1895 Wilhelm Röntgen discovers X-rays

1909 Ehrlich and Hata discover the first magic bullet, Salvarsan 606

1928 Alexander Fleming discovers penicillin

1932 Domagk discovers the second magic bullet, Prontosil

1938-40 Florey and Chain purify penicillin

1940 Government launches diphtheria vaccination campaign

1948 NHS founded

1953 Watson and Crick discover the structure of DNA

1956 Government's first polio vaccination campaign

1965 Cigarette adverts banned from television

1967 Christiaan Barnard completes first heart transplant

2003 Human Genome Project completed

2006-7 Smoking banned in public places

Today

Disease and the Supernatural

In medieval England (and for the purposes of this section we're talking roughly 1250 to 1500), treatment of disease was a bit... medieval. The key problem was a lack of understanding of the causes of disease.

Disease was thought to have Supernatural Causes

1) Many people believed that disease was a punishment from God for people's sins. They thought that disease existed to show them the error of their ways and to make them become better people. Therefore, they thought that this meant the way to cure disease was through prayer and repentance.
2) Disease was also thought to be caused by evil supernatural beings, like demons or witches. Witches were believed to be behind outbreaks of disease — many people were tried as witches and executed.
3) People believed that some diseases could be caused by evil spirits living inside someone. Members of the Church performed exorcisms, using chants to remove the spirit from the person's body.

The Church had a big Influence on medieval medicine

1) The Roman Catholic Church was an extremely powerful organisation in medieval Europe. It dominated the way people studied and thought about a range of topics, including medicine.
2) The Church encouraged people to believe that disease was a punishment from God, rather than having a natural cause. This prevented people from trying to find cures for disease — if disease was a punishment from God, all you could do was pray and repent.
3) The Church made sure that scholars of medicine learned the works of Galen (see p.7) as his ideas fit the Christian belief that God created human bodies and made them to be perfect. Because Galen's work was so central to medical teaching, it was difficult to disagree with him.
4) The Church outlawed dissection. This meant that medieval doctors couldn't discover ideas about human anatomy for themselves — they instead had to learn Galen's incorrect ideas.

Comment and Analysis

The Church's influence over medieval medicine meant that there was very little change in ideas about the cause of disease until the Renaissance — the Church and its messages were so influential that people were unable to question them.

Astrology was used to Diagnose disease

1) Astrology is the idea that the movements of the planets and stars have an effect on the Earth and on people. Astrologers in medieval England believed that these movements could cause disease.
2) Astrology was a new way of diagnosing disease. It was developed in Arabic medicine and brought to Europe between 1100 and 1300.
3) Medieval doctors owned a type of calendar (called an almanac) which included information about where particular planets and stars were at any given time, and how this related to patients' illnesses.
4) Different star signs were thought to affect different parts of the body.

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A woodcut from 1490 showing two astrologers looking at the positions of the Sun and Moon to predict the effects on people's lives.

The medieval period — a dark age for medicine...

Explain how far you agree with the following statement: 'The influence of the Roman Catholic Church was the main reason for the lack of change in medicine in medieval England.' [16]

EXAM QUESTION

Rational Explanations

Some treatments in medieval England were based less on religious faith and more on rational theories and observation of the physical world. But a reason-based theory can still be wrong.

Medicine was dominated by the Four Humours Theory

Many medieval doctors based their diagnosis and treatments on the Theory of the Four Humours.

1) The Theory of the Four Humours was created by the Ancient Greek doctor Hippocrates (c.460-c.377 BC). Hippocrates believed that the body was made up of four fluids (or humours) — blood, phlegm, yellow bile and black bile. These were linked to the four seasons and the four elements. They needed to be in balance for good health.

E.g. in winter we get colds. So Hippocrates thought that in winter the body created an excess of phlegm. Sadly, Hippocrates failed to see that a bunged-up nose, fevers and suchlike are symptoms of the disease — he thought they were the cause.

E.g. someone with a cold (too much cold, wet phlegm) could be given chicken, pepper or wine (all considered hot and dry) to correct the imbalance.

2) The Theory of the Four Humours was developed further by another Greek doctor, Galen, who was born in AD 129 and worked for much of his career in Rome.

3) Galen believed that diseases could be treated using opposites. He thought that different foods, drinks, herbs and spices had a humour, which could balance the excessive humour that was causing the disease.

The Miasma Theory blamed Bad Air for causing disease

1) The miasma theory is the idea that bad air (or miasma) causes disease when someone breathes it in. This bad air may come from human refuse, abattoirs or dead bodies — anything that creates a bad smell.

2) The miasma theory originated in Ancient Greece and Rome, and was incorporated by Galen into the Theory of the Four Humours. The idea became extremely popular in medieval England.

3) The miasma theory was so influential that it lasted until the 1860s, when it was replaced by the Germ Theory (see p.18). Miasma often prompted people to do hygienic things, like cleaning the streets, which sometimes helped to stop the spread of disease (but for the wrong reasons).

Comment and Analysis

The Four Humours and miasma were both incorrect theories. But they were rational — they assumed disease had a natural cause, rather than a supernatural one. This was important, as it suggested that people weren't powerless against disease — they could investigate and take action against it.

Hippocrates and Galen were very Influential

The work of Hippocrates and Galen was extremely influential in medical diagnosis and treatment (see p.8).

1) Hippocrates and Galen wrote down their beliefs about medicine. These were translated into Latin books, which were considered important texts by the Roman Catholic Church. Like the Bible, Hippocrates' and Galen's ideas were considered the absolute truth.

2) Many of their ideas were taught for centuries after their deaths, including the incorrect ones. E.g. Galen only ever dissected animals — animal and human bodies are very different, so some of his ideas about anatomy were wrong. Medieval doctors were not allowed to perform their own dissections, so they continued to learn Galen's incorrect ideas.

3) Some of Hippocrates' and Galen's ideas were so influential that they continue to be used today. The Hippocratic Oath is the promise made by doctors to obey rules of behaviour in their professional lives — a version of it is still in use today. Hippocrates and Galen also believed that doctors should observe their patients as they treat them.

The Four Humours — it's totally hilarious...

Split your page in two. On one side, list all of the supernatural causes of disease believed by people in medieval England. On the other side, do the same for the rational causes.

REVISION TASK

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Treating Disease

As the Middle Ages went on, medical treatments continued to be based on ideas we'd nowadays consider very unscientific. Treatments were ambitious though, and theories quite sophisticated in their own ways.

Prayer and Repentance were major treatments

1) Disease was believed to be a punishment from God, so sick people were encouraged to pray. The sick often prayed to saints, in the hope they would intervene and stop the illness. Medieval people also believed that pilgrimages to holy shrines (e.g. sites containing the remains of saints) could cure illnesses.
2) Others took their repentance one step further. Flagellants were people who whipped themselves in public in order to show God that they were sorry for their past actions. They were particularly common at times of epidemics, such as the Black Death (see p.10).
3) Many doctors had superstitious beliefs — e.g. some doctors used astrology to diagnose and treat illness (see p.6). Others believed that saying certain words when administering treatment could make that treatment more effective.

Bloodletting and Purging aimed to make the Humours balanced

1) Bloodletting and purging were popular treatments because they fitted in with the Four Humours Theory.
2) If someone apparently had too much blood inside them, the doctor would take some blood out of their body through bloodletting — they might make a small cut to remove the blood or use blood-sucking leeches.
3) Some people were accidentally killed because too much blood was taken.
4) Purging is the act of getting rid of other fluids from the body by excreting — doctors gave their patients laxatives to help the purging process.

Comment and Analysis

Bloodletting caused more deaths than it prevented, but it remained a popular treatment. This shows the strength of medieval people's beliefs in the face of observational evidence.

Purifying the Air was thought to Prevent Disease

1) The miasma theory (see p.7) led people to believe in the power of purifying or cleaning the air to prevent sickness and improve health.
2) Physicians carried posies or oranges around with them when visiting patients to protect themselves from catching a disease.
3) During the Black Death (see p.10) juniper, myrrh and incense were burned so that the smoke and scent would fill the room and prevent bad air from bringing disease inside.

Purifying the air was also seen as important for helping with other health conditions. In the case of fainting, people burned feathers and made the patient breathe in their smoke.

Remedies were Early Natural Medicines

1) Remedies bought from an apothecary, local wise woman or made at home were all popular in medieval England and contained herbs, spices, animal parts and minerals.
2) These remedies were either passed down or written in books explaining how to mix them together. Some of these books were called 'Herbals'.
3) Other remedies were based on superstition, like lucky charms containing powdered unicorn's horn.

Get the terminology right — no funny spellings...

Some of your marks in the exam are for using specialist terminology. Make sure you know how to spell any tricky words or names (like miasma), so you can happily use them in your answer.

EXAM TIP

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Treating Disease

If you were ill in the Middle Ages, you couldn't just go to your local GP. But as there were various kinds of medical healers, there could still be an element of 'patient choice'...

Physicians had little Practical Experience

1) Physicians were male doctors who had trained at university for at least seven years. They read ancient texts as well as writings from the Islamic world, but their training involved little practical experience.
2) Physicians used handbooks (vademecums) and clinical observation to check patients' conditions.
3) In 1300, there were less than 100 physicians in England. Seeing a physician was very expensive — only the rich could afford it.

Most sick people went to see an Apothecary

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This medieval print shows a doctor and an apothecary. The plants in the middle show the importance of herbal remedies.

1) Apothecaries prepared and sold remedies (see p.8) — and sometimes gave advice on how best to use them.
2) Apothecaries were trained through apprenticeships. Most apothecaries were men, but there were also many so-called 'wise women', who sold herbal remedies.
3) Apothecaries were the most common form of treatment in medieval England as they were the most accessible for those who could not afford a physician.

Quacks were people without any medical knowledge who sold medical treatments. They'd sell their wares at fairs and markets, and they often did more harm than good.

Surgery — work for Barbers, not doctors

1) Medieval surgery was very dangerous — there was no way to prevent blood loss, infection or pain. It was therefore only attempted rarely and for very minor procedures, e.g. treating hernias, pulling teeth or treating cataracts.
2) Although there were a few university-trained, highly paid surgeons, surgery as a whole was not a respected profession in medieval times — most operations were carried out by barber-surgeons (who also cut hair).

Comment and Analysis

Barber-surgeons weren't doctors, so they had little medical training or insight. This meant they had neither the ability nor the desire to experiment with new treatments.

There were Few Public Hospitals

1) There were relatively few hospitals in medieval Britain, so most sick people were treated at home by members of their family, mainly the women of the house.
2) Most hospitals were set up and run by monasteries. They were very popular and highly regarded.
3) The main purpose of hospitals was not to treat disease, but to care for the sick and elderly. They hospital provided its patients with food, water and a warm place to stay.
4) Hospitals also provided some basic medical treatments — Monks also had access to books on healing and they knew how to grow herbs and make herbal remedies.

Monastic hospitals were good for patients' health because they were more hygienic than elsewhere. Monasteries separated clean and dirty water. They had one water supply for cooking and drinking and one for drainage and washing, so people didn't have to drink dirty water. They also had good systems for getting rid of sewage.

Medieval medical treatment was varied and diverse...

Write out a list of all the different types of healers and treatments in medieval times. Then note down the pros and cons of each option for a person needing medical attention.

REVISION TASK

Case Study: The Black Death

The Black Death struck in the 14th century in Europe, and had a devastating effect. People tried to explain why it had happened, but there was little that could be done to stop the disease.

The Black Death was a devastating Epidemic

1) The Black Death was a series of plagues that first swept Europe in the mid 14th century. Two illnesses were involved:

- Bubonic plague, spread by the bites of fleas from rats carried on ships. This caused headaches and a high temperature, followed by pus-filled swellings on the skin.
- Pneumonic plague, which was airborne — it was spread by coughs and sneezes. It attacked the lungs, making it painful to breathe and causing victims to cough up blood.

2) The disease first arrived in Britain in 1348. Some historians think at least a third of the British population died as a result of the Black Death in 1348-50.

People Didn't Know what Caused the Black Death

No-one at the time knew what had caused the plague.

1) Some people believed that the Black Death was a judgement from God. They thought the cause of the disease was sin, so they tried to prevent the spread of the disease through prayer and fasting.
2) Some blamed humour imbalances, so tried to get rid of the Black Death through bloodletting and purging.
3) Those who thought that the disease was caused by miasma (see p.7) carried strong smelling herbs or lit fires to purify the air. In 1349, Edward III sent an order to the Lord Mayor of London to remove filth from the city streets, in the hope of removing bad smells.
4) Believers in astrology carried diamonds and rubies, which they believed could protect against the Black Death. People also carried charms or used 'magic' potions containing arsenic.

Comment and Analysis

The high death toll of the Black Death was in large part because people didn't know what caused the disease. People tried to use existing ideas about the cause of disease to come up with ways to prevent or cure the plague. But because their ideas about the cause of disease were wrong, their attempts at prevention and treatment were mostly ineffective.

Local Governments tried to Prevent the spread of the disease

1) Some people in Winchester thought that you could catch the plague from being close to the bodies of dead victims. When the town's cemetery became too full to take any more plague victims, the townspeople refused to let the bishop extend the cemetery in the town centre. Instead, they insisted that new cemeteries be built outside of the town, away from the houses.
2) The town of Gloucester tried to shut itself off from the outside world after hearing the Black Death had reached Bristol. This suggests that they thought the plague was spread by human contact. Their attempt at prevention was unsuccessful — many people in the town died of the Black Death.
3) By November 1348, the Black Death had reached London. In January 1349, King Edward III took the decision to close Parliament.

'Deadly pestilence had suddenly broken out in the said place and neighbourhood, and had daily increased in severity, so that grave fears were entertained for the safety of those coming here at the time.'
King Edward III on his decision to close Parliament.

Think about how far things changed or stayed the same...

'There was little progress in medicine in Britain during the medieval period.'
Explain how far you agree with this statement. [16]

EXAM QUESTION

The Renaissance

The Renaissance was a time of new ideas and fresh thinking. People began to challenge old beliefs, and there were many new developments in doctors' knowledge and skills.

The Renaissance was a time of Continuity and Change

1) In the Renaissance there was a rediscovery of knowledge from classical Greek and Roman times. Western doctors gained access to the original writings of Hippocrates, Galen and Avicenna (a Persian physician who lived between 980 and 1037 AD). These hadn't been available in the medieval period. They led to greater interest in the Four Humours Theory and treatment by opposites (see p.7).
2) But the Renaissance also saw the emergence of science as we know it from the magic and mysticism of medieval medicine. People thought about how the human body worked based on direct observation and experimentation.
3) This was partly because many of the new books that had been found said that anatomy and dissections were very important. This encouraged people to examine the body themselves, and to come to their own conclusions about the causes of disease.
4) People began to question Galen's thinking and that of other ancient doctors. However, his writings continued to be studied.

Protestant Christianity spread across Europe during the Reformation, reducing the influence of the Catholic Church. Although religion was still important, the Church no longer had so much control over medical teaching.

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This woodcut shows physicians debating over a medicine book.

The Medical Knowledge of doctors Improved

1) Many doctors in the Renaissance trained at the College of Physicians, which had been set up in 1518. Here they read books by Galen, but also studied recent medical developments. Dissections — showing how the body actually worked — also became a key part of medical training.
2) The College of Physicians encouraged the licensing of doctors to stop the influence of quacks, who sold fake medicines (see p.9). Some of the college's physicians (such as Harvey — see p.13) made important discoveries about disease and the human body.
3) New weapons like cannons and guns were being used in war. This meant that doctors and surgeons had to treat injuries they hadn't seen before, forcing them to quickly find new treatments.
4) Explorations abroad brought new ingredients for drugs back to Britain, including guaiacum — believed to cure syphilis — and quinine, a drug for malaria from the bark of the Cinchona tree.

There were some technological developments too. Peter Chamberlen invented the forceps (probably at some point in the 1600s), which are still used today to help with childbirth.

5) In the 1530s, Henry VIII closed down most of Britain's monasteries (this was called the 'dissolution of the monasteries'). Since most hospitals had been set up and run by monasteries (see p.9), this also led to the closure of a large number of hospitals. The sudden loss of so many hospitals was bad for people's health.
6) The monastic hospitals were gradually replaced by some free hospitals, which were paid for by charitable donations. Unlike the monastic hospitals, which had been run by monks, these new hospitals were run by trained physicians, who focused more on getting better from illness.

Use relevant facts to support your answer...

It really helps to add some important facts — a useful date, for example. But make sure it's relevant to what you're trying to say — the details should be used to support your argument.

EXAM TIP

Vesalius and Sydenham

Vesalius and Sydenham believed that direct observation was the best way to learn about the body. They encouraged people to gain practical experience, and to use dissection to understand anatomy.

Vesalius wrote Anatomy books with Accurate Diagrams

1) Vesalius was born in 1514 and was a medical professor in Padua, Italy. He believed that successful surgery would only be possible if doctors had a proper understanding of the anatomy.
2) Vesalius was able to perform dissections on criminals who had been executed. This let him study the human anatomy more closely.
3) He wrote books based on his observations using accurate diagrams to illustrate his work. The most important were 'Six Anatomical Pictures' (1538) and 'The Fabric of the Human Body' (1543).
4) His works were printed and copied (see the printing press, p.14), allowing lots of people to read about his ideas.

> Vesalius' work helped point out some of Galen's mistakes. For example, in the second edition of 'The Fabric', Vesalius showed that there were no holes in the septum of the heart.

5) Vesalius's findings encouraged others to question Galen. Doctors also realised there was more to discover about the body because of Vesalius' questioning attitude.
6) Vesalius showed that dissecting bodies was important, to find out exactly how the human body was structured. Dissection was used more and more in medical training for this reason (see p.11).

Comment and Analysis

The work of Vesalius didn't have an immediate impact on the diagnosis or treatment of disease. However, by producing a realistic description of the human anatomy and encouraging dissection, Vesalius provided an essential first step to improving them.

Thomas Sydenham used Practical Experience

1) Thomas Sydenham (1624-1689) was a Renaissance physician who worked in London. He was the son of a country squire, and fought in the English Civil War before becoming a doctor. He has been called the 'English Hippocrates' because of the big impact of his medical achievements.
2) Sydenham didn't believe in the value of theoretical knowledge. Instead he thought that it was more important to gain practical experience in treating patients. As a doctor, he made detailed observations of his patients and kept accurate records of their symptoms.
3) Sydenham thought that diseases could be classified like animals or plants — the different types of disease could be discovered using patients' symptoms.
4) Sydenham is known for showing that scarlet fever was different to measles, and for introducing laudanum to relieve pain. He was also one of the first doctors to use iron to treat anaemia, and quinine for malaria (see p.11).
5) Sydenham wrote a book called 'Medical Observations' (published in 1676), which was used as a textbook by doctors for 200 years. His descriptions of medical conditions like gout helped other doctors to diagnose their patients more easily.

Comment and Analysis

Sydenham's work on classifying diseases helped make diagnosis a more important part of doctors' work. Before, the emphasis had been on prognosis — predicting what the disease would do next.

Sydenham and Vesalius believed in direct observation...

Scribble down the main achievements of both Sydenham and Vesalius. Then note down the impact of their ideas — did they change things? Think about short-term and long-term effects.

REVISION TASK

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Case Study: William Harvey

William Harvey is a key person in the history of Renaissance medicine. He made hugely important discoveries about how blood circulates around the body.

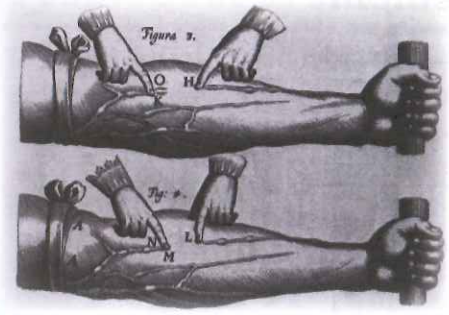
Harvey discovered the Circulation of the Blood

1) William Harvey was born in 1578 and worked in London at the Royal College of Physicians, before becoming Royal Physician to James I and Charles I.
2) Harvey studied both animals and humans for his work. He realised that he could observe living animal hearts in action, and that his findings would also apply to humans.
3) Before Harvey, people thought that there were two kinds of blood, and that they flowed through two completely separate systems of blood vessels. It was thought that:
   - Purple 'nutrition-carrying' blood was produced in the liver and then flowed through veins to the rest of the body, where it was consumed (used up).
   - Bright red 'life-giving' blood was produced in the lungs and flowed through arteries to the body, where it was also consumed.
   - This may show the continuing influence of Galen, who had suggested this kind of system about 1400 years earlier.
4) Harvey realised this theory was wrong. From experiments, he knew that too much blood was being pumped out of the heart for it to be continually formed and consumed. Instead he thought that blood must circulate — it must go round and round the body.

Comment and Analysis

A new type of water pump was invented at around the time of Harvey's birth. This new technology gave Harvey a comparison and inspiration for how the heart worked.

Harvey's research was a Major Breakthrough in Anatomy...



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1) Harvey's ideas changed how people understood anatomy. His discoveries gave doctors a new map showing how the body worked. Without this map, blood transfusions or complex surgery couldn't be attempted.
2) Harvey also showed that Vesalius had been right about how important dissection was.

A diagram from Harvey's 'On the Motions of the Heart and Blood' (1628), showing blood circulation in the arm.

...but it had a Limited Impact on Diagnosis and Treatment

Not everyone believed Harvey's theories — it took a long time before doctors used them in their treatments.

1) When people did attempt blood transfusions, they were rarely successful — because of blood loss, shock, and because the wrong blood types were used.
2) Bloodletting, which was supposed to keep the Four Humours in balance (see p.8), also continued to be performed, even though Harvey had shown the reasoning behind it to be wrong.

Although people knew more about the body's anatomy because of Harvey, medical treatments and surgical techniques were still very basic.

The circulation of the blood goes round and round...

'Harvey's discoveries were a major breakthrough in the development of medicine during the Renaissance period.' To what extent do you agree? Explain your answer. [16]

EXAM QUESTION

Transmission of Ideas

Greater scientific and medical progress in the Renaissance wasn't just the result of improved understanding of the anatomy. New technology allowed ideas to be circulated more easily, making change even quicker.

The Printing Press allowed New Ideas to be Spread

1) The first British printing press was set up in the 1470s. The invention of printing accelerated the rate of progress in medicine (and everything else).

- Making a single copy of a book by hand could take many months or even years. Books were therefore very rare and precious.
- New ideas would have to be widely accepted before anyone would go to the bother of copying them by hand.
- The invention of printing allowed books to be copied much more easily.

2) Students in universities could have their own textbooks for the first time, letting them study in detail.

3) New ideas could be spread and debated more easily. Ambroise Paré (1510-1590) was a French army surgeon whose ideas about surgery were translated into different languages and reprinted. His works influenced several other books about surgery from this time.

4) The printing press also meant people could question existing ideas. At least 600 different editions of Galen's books were printed between 1473 and 1599. This meant that lots of people knew his theories. However, with so many different versions around, it was unclear what Galen had originally written — this made his writings seem less reliable.

Comment and Analysis

The printing press had a huge impact on the communication of ideas. Think about the impact the Internet has had in the last two decades — that should give you an idea of how important it was.

The Royal Society changed Perceptions of Medicine

1) The Royal Society was a prestigious scientific body founded in 1660.
2) It was supported by King Charles II, which gave it high status. It's still the highest authority on scientific matters in Britain today.
3) The society was important in spreading new scientific theories and getting people to trust new techonology.
4) Its motto was 'Nullius in verba', which means 'take no-one's word for it' — the society wanted to encourage people to be sceptical and to question scientific ideas.
5) Through its scientific journal 'Philosophical Transactions', more people could read about new inventions and discoveries.
6) It also published Robert Hooke's 1665 'Micrographia', which showed the first drawings of a flea made using a microscope.

Comment and Analysis

Huge progress was made in the Renaissance — and the printing press and the Royal Society helped spread the new ideas. But because most people couldn't read or write, these things could only have an impact on a small part of society. Most people in the Renaissance were using the same cures and treatments as people in the Middle Ages (see p.8).

Different factors affect change and continuity...

Individuals can have an impact on the rate of change. But so can institutions, society's attitudes, and developments in science and technology — like the printing press. Don't forget any of these.

EXAM TIP

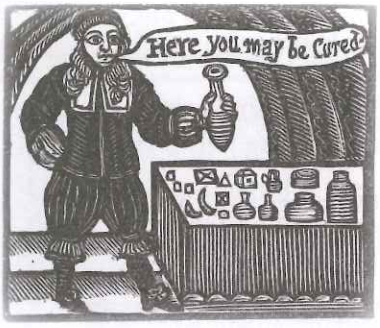
Medical Treatment: Continuity

Despite the rapid pace of change in the Renaissance, there was continuity in many aspects of medical care. For most ordinary people, medical treatment was very similar to how it had been in medieval times.

Some Doctors still followed Old Ideas

Many doctors were reluctant to accept that Galen was wrong. This meant that they continued to use similar treatments to the Middle Ages, like bloodletting and purging (see p.8). Doctors tended to focus more on reading books than on treating patients.

People continued to use Other Healers



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A woodcut from c.1670 showing a quack selling his 'miraculous' cures.

1) Doctors were also still very expensive. As a result, most people used other healers, like in the medieval period (see p.9):

- Apothecaries sold medicines and drugs from their shops.
- Barber-surgeons were used for small operations.
- Some people turned to quack doctors, who sold medicines and treatments in the streets. Many of these drugs were fake — although some might have worked.

2) Superstition and religion were still important. People thought the King's touch could cure scrofula (a skin disease known as the 'King's Evil'). Thousands of people with scrofula are thought to have visited King Charles I (1600-1649) in the hope of being cured.

People sought care in the Community and at Home

1) Wise women, who were skilled in herbal remedies, continued to provide medical attention within the community. This role was sometimes taken by wealthy ladies, who would care for local families.
2) People would also keep their own medical or recipe books, passed down in the family.

Lady Grace Mildmay (1552-1620) was a wise woman who was highly educated and read lots of medical books. She used her knowledge to help patients. She also kept detailed records of her treatments.

Hospitals were still Fairly Basic

1) Most Renaissance hospitals were for the sick and the 'deserving' poor — those who led hardworking, respectable lives. People might have to work in hospital, not just be treated. Those with incurable or infectious diseases like smallpox were often not allowed in.
2) St Mary of Bethlehem's hospital (or 'Bedlam') was Britain's first 'lunatic' institution. Many of its inmates actually had learning disabilities or epilepsy, or were just poor. People even visited the hospital to watch the patients for entertainment.
3) Other hospitals like St Bartholemew's in London became centres of innovation and new research.

Comment and Analysis

Hospital care was still in its early stages in the Renaissance. Many hospitals mainly focused on moral or spiritual education. But health and sickness were becoming more of a priority.

Those Renaissance doctors — stuck in the past...

Make two lists of the key features of medieval and Renaissance medicine — how much had changed? Think about the experience of the average person, as well as new scientific discoveries.

REVISION TASK

Case Study: The Great Plague

The continuity of treatments was most felt when the Great Plague struck London in 1665. From prayers to bloodletting, the responses to the plague were eerily similar to the reaction to the Black Death (see p.10).

The Great Plague hit London in 1665

1) In 1665, London was struck by the Great Plague. This was a rare but deadly recurrence of the medieval Black Death.
2) London's death toll was about 100,000 — this was around 20% of the city's population.
3) Many people fled the city, but only richer people had this option.
4) Doctors and priests were often most affected because the sick went to them for help.

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Like the Black Death, the Great Plague was spread by the bites of fleas from rats. The people at the time didn't know this, though.

Superstition still dominated Treatment

Just like responses to the Black Death 300 years before (see p.10), most treatments for the Great Plague were based on magic, religion and superstition.

1) This included wearing lucky charms or amulets, saying prayers and fasting.
2) Special remedies were made using ingredients like dried toad.
3) Bloodletting was still used, even though this probably made the plague worse — it created wounds which could become infected.
4) Other people thought that miasma caused the disease (see p.7). They carried around posies of herbs or flowers to improve the air.
5) Perhaps the most extreme treatment was strapping a live chicken to the swellings — people thought the disease could be transferred from the plague victim to the chicken.

Comment and Analysis

Living conditions were very poor in Renaissance England, so it isn't a surprise that the plague came back. Death records show that the poorest, most crowded areas of London were worst hit.

People tried to Prevent the plague from Spreading

Local councils took measures to try to stop the spread of the plague. They were largely ineffective because they didn't know the cause of the disease.

1) Councils tried to quarantine plague victims to prevent them passing on the disease to others. The victim's house was locked and a red cross was painted on their door, along with the words "Lord have mercy upon us."
2) Areas where people crowded together such as theatres were closed.
3) People tried not to touch other people. E.g. if someone had to give money in a shop, the coins might be placed in a jar of vinegar.
4) The dead bodies of plague victims were buried in mass graves away from houses. Carts organised by the authorities roamed the city to the infamous cry of "bring out your dead!", collecting corpses for burial.
5) Local councils paid for lots of cats and dogs to be killed, because they thought they carried the plague.

Comment and Analysis

The responses to the plague came from local councils — they did more to try to combat the Great Plague than they had done for the Black Death 300 years previously. But there were no national government attempts at prevention.

The plague gradually began to disappear. Many people think the Great Fire of London in 1666 helped wipe it out, by effectively sterilising large parts of London — it burned down the old, crowded houses, killing the plague bacteria.

Another deadly attack of the plague...

Explain one difference between people's reactions to the Great Plague in the 17th century and the Black Death in the 14th century. [4]

EXAM QUESTION

Case Study: Vaccination

Until the 1700s, people had few effective ways to prevent the spread of disease. Edward Jenner's discovery of the smallpox vaccine was a landmark in the development of preventive medicine.

Before Jenner the only way to prevent Smallpox was Inoculation

1) In the 1700s, smallpox was one of the most deadly diseases — in 1751, over 3500 people died of smallpox in London alone.
2) At the time, the only way to prevent smallpox was through inoculation. This was introduced into Britain from Turkey by Lady Mary Wortley Montagu in 1718.
3) Inoculation involved making a cut in a patient's arm and soaking it in pus taken from the swelling of somebody who already had a mild form of smallpox.

Inoculation was successful in preventing the disease, but it meant patients had to experience smallpox before they could become immune — some died as a result.

Jenner discovered a link between Smallpox and Cowpox

1) Edward Jenner (born in 1749) was a country doctor in Gloucestershire. He heard that milkmaids didn't get smallpox, but they did catch the much milder cowpox.
2) Using careful scientific methods Jenner investigated and discovered that it was true that people who had had cowpox didn't get smallpox.
3) In 1796 Jenner tested his theory. He injected a small boy, James Phipps, with pus from the sores of Sarah Nelmes, a milkmaid with cowpox. Jenner then infected him with smallpox. James didn't catch the disease.
4) Jenner published his findings in 1798. He coined the term vaccination using the Latin word for cow, vacca.

Comment and Analysis

Jenner was important because he used an experiment to test his theory. Although experiments had been used during the Renaissance, it was still unusual for doctors to test their theories.

Jenner's vaccination was Successful despite Opposition

1) Some people resisted vaccination. Some doctors who gave the older type of inoculation saw it as a threat to their livelihood, and many people were worried about giving themselves a disease from cows.
2) But Jenner's discovery soon got the approval of Parliament, which gave Jenner £10,000 in 1802 to open a vaccination clinic. It gave Jenner a further £20,000 a few years later.
3) In 1840 vaccination against smallpox was made free for infants. In 1853 it was made compulsory.
4) The vaccine was a success — it contributed to a big fall in the number of smallpox cases in Britain.

Comment and Analysis

The government's attempts to get people vaccinated against smallpox were surprising given attitudes at the time. People believed in a laissez-faire style of government — they thought that government shouldn't get involved in people's lives. The vaccination policy went against this general attitude.

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A cartoon from 1802 by James Gillray, with cows bursting out of vaccinated patients' sores. Vaccination was met with a lot of opposition — some groups in Britain published pamphlets against vaccination.

Jenner didn't know why his vaccine worked. This lack of understanding meant Jenner couldn't develop any other vaccines. This was only possible after the Germ Theory was published (see p.18), when Pasteur and others worked to discover vaccines against other diseases, like chicken cholera and anthrax.

Jenner's vaccine got things mooving on disease prevention...

'The smallpox vaccination was the most important medical discovery in Britain between the years 1700 and 1900.' To what extent do you agree? Explain your answer. [16]

EXAM QUESTION

The Germ Theory

Although people's understanding of anatomy had improved greatly during the Renaissance, there was still plenty to learn. The causes of disease was an area that still needed proper explanation.

People knew about Germs but hadn't linked them to Disease

1) Germs and other micro-organisms were discovered as early as the 17th century. Scientists thought that these microbes were created by decaying matter, like rotting food or human waste — this theory was known as spontaneous generation. It led people to believe that disease caused germs.
2) People still thought miasma (see p.7) was the main cause of disease. The cholera outbreak of 1831-32 (see p.22) saw the government regulate the burial of the dead bodies to stop them creating bad air.

Pasteur was the first to suggest that Germs cause disease

1) The French chemist Louis Pasteur was employed in 1857 to find the explanation for the souring of sugar beet used in fermenting industrial alcohol. His answer was to blame germs.
2) Pasteur proved there were germs in the air — he showed that sterilised water in a closed flask stayed sterile, while sterilised water in an open flask bred germs.
3) In 1861, Pasteur published his Germ Theory. In it he argued that microbes in the air caused decay, not the other way round. He also suggested that some germs caused disease.

Pasteur's discovery was partly due to Antonie van Leeuwenhoek's invention of the microscope in the 17th century. More advanced microscopes were developed during the 1800s. They allowed scientists to see much clearer images with a lot less light distortion.

It took Time for the Germ Theory to have an Impact

1) The Germ Theory was first met with scepticism — people couldn't believe tiny microbes caused disease. It didn't help that the germ responsible for each disease had to be identified individually, as this meant it was several years before the theory became useful.

'I am afraid that the experiments you quote, M. Pasteur, will turn against you. The world into which you wish to take us is really too fantastic.' *La Presse, a French Newspaper, 1860.*

'Thanks for having, by your brilliant researches, proved to me the truth of the germ theory. You furnished me with the principle upon which alone the antiseptic system can be carried out.' *The founder of antiseptic surgery, Joseph Lister, in a letter to Louis Pasteur, 1874.*

2) The Germ Theory soon gained popularity in Britain.
   - The theory inspired Joseph Lister to develop antiseptics (p.21).
   - It proved John Snow's findings about cholera (p.22).
   - It linked disease to poor living conditions (like squalor and contaminated water). This put pressure on the government to pass the 1875 Public Health Act (see p.23).

Robert Koch used dyes to identify microbes

1) The German scientist Robert Koch built on Pasteur's work by linking specific diseases to the particular microbe that caused them. Koch identified anthrax spores (1876) and the bacteria that cause septicaemia (1878), tuberculosis (1882) and cholera (1883).
2) Koch used revolutionary scientific methods:
   - He used agar jelly to create solid cultures, allowing him to breed lots of bacteria.
   - He used dyes to stain the bacteria so they were more visible under the microscope.
   - He employed the newly-invented photography to record his findings.

Pasteur's theory — more than the germ of an idea...

Split your page into three sections, with the headings: individuals, technology and changing attitudes. Under each heading, list the ways in which that factor contributed to the Germ Theory.

REVISION TASK

Developments in Nursing

Before the 1800s, hospitals were often dirty places that people associated with death and infection. Florence Nightingale helped change that — by improving hospital hygiene and raising nursing standards.

Florence Nightingale improved army hospitals

1) Florence Nightingale (1820-1910) brought a new discipline and professionalism to a job that had a very bad reputation at the time. Despite opposition from her family, she studied to become a nurse in 1849.
2) When the Crimean War broke out in 1853-54, horror stories emerged about the Barrack Hospital in Scutari, where the British wounded were treated.
3) Sidney Herbert, who was both the Secretary of War and a friend of her family, asked for Nightingale to go to Scutari and sort out the hospital's nursing care.
4) The military opposed women nurses, as they were considered a distraction and inferior to male nurses. Nightingale went anyway, with 38 hand-picked nurses.
5) Using methods she had learned from her training in Europe, Nightingale made sure that all the wards were clean and hygienic, that water supplies were adequate and that patients were fed properly.
6) Nightingale improved the hospital a lot. Before she arrived, the death rate in the hospital stood at 42%. Two years later it had fallen to just 2%.

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Mary Seacole (1805-1881) also nursed in the Crimea.

1) She learnt nursing from her mother, who ran a boarding house for soldiers in Jamaica.
2) In 1854, Seacole came to England to volunteer as a nurse in the Crimean War. She was rejected (possibly on racist grounds) but went anyway, paying for her own passage.
3) Financing herself by selling goods to the soldiers and travellers, she nursed soldiers on the battlefields and built the British Hotel — a small group of makeshift buildings that served as a hospital, shop and canteen for the soldiers.
4) Seacole couldn't find work as a nurse in England after the war and went bankrupt — though she did receive support due to the press interest in her story.

Nightingale used her fame to Change Nursing

1) In 1859, Nightingale published a book, 'Notes on Nursing'. This explained her methods — it emphasised the need for hygiene and a professional attitude. It was the standard textbook for generations of nurses.
2) The public raised £44,000 to help her train nurses, and she set up the Nightingale School of Nursing in St. Thomas' Hospital, London. Nurses were given three years of training before they could qualify. Discipline and attention to detail were important.
3) By 1900 there were 64,000 trained nurses in Britain from colleges across the country.
4) In 1919 (after Nightingale's death) the Nurses Registration Act was passed. This made training compulsory for all nurses.

As well as improving hospital care, Florence Nightingale is credited with helping turn nursing into a respectable profession, particularly for women. This was formalised in 1916, when The Royal College of Nursing was founded. It began to admit men in 1960.

The 1800s also saw a massive increase in hospital building. Hospitals became cleaner and more specialist, catering for rich patients as well as the poor.

Comment and Analysis

The Germ Theory wasn't published until 1861, so initially Florence Nightingale didn't know what the cause of disease was — she believed in the miasma theory. But her teachings suggested that good hygiene could prevent the spread of disease.

Like it or lamp it, you've got to learn it...

Write a list of all of Florence Nightingale's achievements. At the end of your list, write a sentence explaining what you think was her most important achievement.

REVISION TASK

Anaesthetics

Improving the hygiene and sanitation of hospitals helped to prevent many unnecessary deaths. But the two problems of pain and infection were yet to be solved. The answer to the first of those was anaesthetics.

Anaesthetics solved the problem of Pain

Pain was a problem for surgeons, especially because their patients could die from the trauma of extreme pain. Natural drugs like alcohol, opium and mandrake had long been used, but effective anaesthetics that didn't make the patient very ill were more difficult to produce.

- Nitrous oxide (laughing gas) was identified as a possible anaesthetic by British chemist Humphry Davy in 1799 — but he was ignored by surgeons at the time.
- The gas had been dismissed as a fairground novelty before American dentist Horace Wells suggested its use in his area of work. He did a public demonstration in 1845, but had the bad luck to pick a patient unaffected by nitrous oxide — it was again ignored.

- In 1842, American doctor Crawford Long discovered the anaesthetic qualities of ether, but didn't publish his work. The first public demonstration of ether as an anaesthetic was carried out in 1846 by American dental surgeon William Morton.
- Ether is an irritant and is also fairly explosive, so using it in this way was risky.

- James Simpson was a Professor of Midwifery at Edinburgh University. Looking for a safe alternative to ether that women could take during childbirth, he began to experiment on himself. In 1847, he discovered the effects of chloroform.
- After Queen Victoria gave birth to her eighth child while using chloroform in 1853, it became widely used in operating theatres and to reduce pain during childbirth.
- Chloroform sometimes affected the heart, causing patients to die suddenly.

General anaesthesia (complete unconsciousness) is risky, so local anaesthesia (numbing of the part being treated) is better for many operations. In 1884, William Halsted investigated the use of cocaine as a local anaesthetic. His self-experimentation led to a severe cocaine addiction.

Early Anaesthetics actually led to a Rise in death rates

1) Anaesthetics led to longer and more complex operations. This was because surgeons found that unconscious patients were easier to operate on, meaning they could take longer over their work.
2) Longer operating times led to higher death rates from infection, because surgeons didn't know that poor hygiene spread disease. Surgeons used very unhygienic methods.

- Surgeons didn't know that having clean clothes could save lives. Often they wore the same coats for years, which were covered in dried blood and pus from previous operations.
- Operations were often carried out in unhygienic conditions, including at the patient's house.
- Operating instruments also caused infections because they were usually unwashed and dirty.

Comment and Analysis

Anaesthetics helped solve the problem of pain, but patients were still dying from infection. This meant the attempts at more complicated surgery actually led to increased death rates amongst patients. The period between 1846 and 1870 is sometimes known as the 'Black Period' of surgery for this reason.

Anaesthetics revision — don't let it put you to sleep...

In the exam remember to be specific about the information you use. For example, rather than writing about anaesthetics in general terms, try to use specific types to explain your answer.

EXAM TIP

Antiseptics

Anaesthetics had solved the problem of pain, but surgeons were still faced with a high death rate from operations due to the amount of infection. Antiseptics and later asepsis helped prevent this by killing germs.

Antisepsis and Asepsis reduce infection

There are two main approaches to reducing infection during an operation:

- Antiseptic methods are used to kill germs that get near surgical wounds.
- Aseptic surgical methods aim to stop any germs getting near the wound.

Joseph Lister pioneered the use of Antiseptics

1) Ignaz Semmelweis showed that doctors could reduce the spread of infection by washing their hands with chloride of lime solution between patients. However, it was very unpleasant, so wasn't widely used.
2) Joseph Lister had seen carbolic acid sprays used in sewage works to keep down the smell. He tried this in the operating theatre in the early 1860s and saw reduced infection rates.
3) Lister heard about the Germ Theory in 1865 — he realised that germs could be in the air, on surgical instruments and on people's hands. He started using carbolic acid on instruments and bandages.
4) The use of antiseptics immediately reduced death rates from as high as 50% in 1864-66 to around 15% in 1867-70.
5) Antiseptics allowed surgeons to operate with less fear of patients dying from infection. The number of operations increased tenfold between 1867 and 1912 as a result.

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A photograph of a surgical operation taken in the late 1800s. You can see Lister's carbolic spray on the table on the right. The operating theatre isn't aseptic though — the surgeons aren't wearing sterile gowns or surgical gloves.

Comment and Analysis

Antiseptics (and later asepsis) solved the problem of infection. This, combined with the use of anaesthetics (see p.20) to stop pain, improved British surgery — many deaths were prevented as a result of antiseptics and anaesthetics.

Asepsis reduced the need for Nasty Chemicals

Since the late 1800s, surgeons have changed their approach from killing germs to making a germ-free (aseptic) environment.

1) Instruments are carefully sterilised before use, usually with high temperature steam (120 °C).
2) Theatre staff sterilise their hands before entering — and wear sterile gowns, masks, gloves and hats. Surgical gloves were invented by William Halsted in 1889.
3) The theatres themselves are kept scrupulously clean and fed with sterile air. Special tents can be placed around the operating table to maintain an area of even stricter hygiene in high risk cases.
4) Aseptic surgery reduced the need for a carbolic spray, which is unpleasant to get on your skin or breathe in — many doctors and nurses didn't like to use it.

Make a Lister them facts — then germ up on them...

Write a paragraph summarising whether you think anaesthetics or antiseptics were a greater breakthrough for 19th century surgery.

REVISION TASK

Case Study: Cholera in London

The industrial revolution began in the 18th century. Lots of people moved into cities like London to work in the factories. The places they lived were cramped, dirty and great for spreading diseases like cholera.

Towns had no proper Water or Waste facilities

1) Before the Germ Theory was published, people didn't understand the need for clean water or good sewerage systems. Most houses had no bathroom — they instead shared an outside toilet, called a privy.
2) Each privy was built above a cesspit. Cesspit and household waste was collected by nightmen, who threw the waste into rivers or piled it up for the rain to wash away.
3) Water companies set up water pumps in the streets, which were shared between many houses. The pump's water supply was often contaminated by waste from the cesspits or rivers.

Cholera epidemics Killed Thousands of people

1) Cholera reached Britain in 1831. By 1832, it was an epidemic — over 21,000 people in Britain died of cholera that year. The epidemics recurred in 1848, 1853-54 and 1865-66.
2) Cholera spreads when infected sewage gets into drinking water. It causes extreme diarrhoea — sufferers often die from loss of water and minerals. Both rich and poor people caught the disease.
3) At the time people didn't know what caused cholera — the best theory was miasma (see p.7). The government started regulating the burial of the dead, but this did little to halt the spread of cholera.

Snow linked Cholera to Contaminated Water

John Snow was a London doctor who showed that there was a connection between contaminated water and cholera. For a long time he had suspected that the disease was waterborne, but had very little proof.

1) When cholera broke out in the Broad Street area of London in 1854, Snow set out to test his theory. He interviewed people living in Broad Street and made a map of the area showing where cases of the disease had been. This is some of the information he collected, published in 1855 in his report 'On the Mode of Communication of Cholera':

'There were only ten deaths in houses situated decidedly nearer to another street pump. In five of these cases the families of the deceased persons informed me that they always sent to the pump in Broad Street, as they preferred the water.'

'There is a Brewery in Broad Street, near to the pump, and on perceiving that no brewer's men were registered as having died of cholera, I called on Mr. Huggins, the proprietor... He is quite certain that the workmen never obtained water from the pump in the street. There is a deep well in the brewery.'

'[A cholera victim in the West End] had not been in... Broad Street for many months. A cart went from Broad Street to West End every day, and it was the custom to take out a large bottle of the water from the pump in Broad Street, as she preferred it.'

2) Snow's investigations showed that all victims used the same water pump on Broad Street. He convinced the local council to remove the handle from the pump. This brought the cholera outbreak to an end.
3) It was later discovered that a nearby cesspit had a split lining — its waste had leaked into the pump's water supply.

Comment and Analysis

Snow's findings took a while to make an impact — it was not until the Germ Theory was published that his theory became widely accepted. But eventually Snow's findings helped lead to a change in attitudes — people realised that waterborne diseases like cholera needed a government response in order to clean up the streets and waterways. This contributed to the 1875 Public Health Act. Like Jenner (see p.17), Snow was also important for using observation and evidence to support his theory.

If anyone knows the cause of cholera, John Snows...

'John Snow's discovery in 1854 was an important turning point in the prevention of disease in Britain during the period 1700-1900.' Explain how far you agree with this statement. [16]

EXAM QUESTION

The Public Health Act, 1875

Before 1875, there was little effort to improve public health — people didn't know what caused disease, and they believed the government shouldn't do anything about it. The Public Health Act of 1875 changed this.

Earlier attempts to improve Public Health had Limited Success

1) In 1842, Edwin Chadwick published a report suggesting that poor living conditions caused poor health.
2) Chadwick's report led to the 1848 Public Health Act. The Act set up a central Board of Health and let local councils set up their own boards of health.
3) In 1858, sewage in the River Thames made a 'Great Stink' in the middle of London. This forced the government to plan a new sewer system, which opened in 1865.

The 1848 Act's impact was limited — towns could set up health boards but very few chose to, and those that did often refused to spend any money.

Public Opinion began to Change

For most of the 19th century, people believed in a laissez-faire style of government — they thought the government shouldn't intervene in public health. But then things began to change.

1) Snow's discovery of the link between dirty water and cholera (see p.22) and Pasteur's Germ Theory (see p.18) showed that cleaning up towns could stop the spread of disease.
2) In 1867, the Second Reform Act was passed. It gave an additional 1 million men the vote, most of whom were industrial workers.
3) Writers like Charles Dickens and philanthropists like Octavia Hill helped change attitudes towards the poor, who suffered the worst conditions.

Comment and Analysis

Now that they had the vote, workers could put pressure on the government to listen to concerns about health. For the first time, politicians had to address workers' concerns in order to stay in power.

The 1875 Act improved Public Health

In the 1870s, the government finally took action to improve public health.

1) In 1871-72, the government followed the Royal Sanitary Commission's proposal to form the Local Government Board and divide Britain into 'sanitary areas' administered by officers for public health.
2) In 1875, the government of Benjamin Disraeli passed another Public Health Act. It forced councils to:
   - Appoint health inspectors and sanitary inspectors who made sure that laws on things like water supplies and hygiene were being followed.
   - Maintain sewerage systems to prevent further cholera outbreaks.
   - Keep their town's streets clean.
3) The 1875 Public Health Act was more effective than the one passed in 1848 because it was compulsory.
4) In 1875, Disraeli also brought in the Artisans' Dwellings Act, which let local councils buy slums with poor living conditions and rebuild them in a way that fit new government-backed housing standards.
5) Other important reforms included the 1876 River Pollution Prevention Act, which stopped people from dumping sewage or industrial waste into rivers.

Comment and Analysis

Just as the government used the work of Jenner to make vaccination compulsory (see p.17), the 1875 Act built on the work of several individuals, including John Snow and Louis Pasteur. The scientific proof these individuals provided, combined with a change in attitudes towards the role of government, helped put pressure on the government to act.

Turns out laissez-faire had made things less fair...

Including your knowledge of the 1875 Public Health Act, explain why there was an improvement in the prevention of disease in Britain during the 19th century. [12]

EXAM QUESTION

Modern Ideas about the Causes of Disease

The Germ Theory (see p.18) was a major breakthrough in identifying the causes of disease, but identifying bacteria couldn't explain every disease. Viruses, genetics and lifestyle were all found to impact on health.

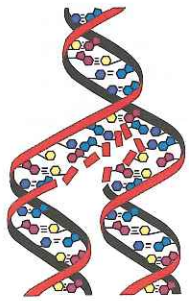
Viruses were discovered at the turn of the century

Despite their successes with bacteria, Pasteur and Koch (see p.18) were unable to find the cause of some diseases, as they were caused by microbes called viruses, which were too small to see under a microscope.

1) In 1892 the Russian microbiologist Dmitry Ivanovsky investigated mosaic, a disease that was killing tobacco plants. He found that the cause was an extremely small microbe that remained in water even after bacteria were removed. In 1898, the Dutch scientist Martinus Beijernick found that these microbes had different properties to bacteria — he labelled these microbes viruses.
2) The discovery of viruses led to their successful treatment. Unlike bacteria, viruses aren't destroyed by antibiotics (see p.26). Instead, doctors can prescribe antiviral drugs, but they only prevent a viral infection from growing — only the body's immune system can destroy a virus for good.

DNA has given an insight into Genetic Conditions

1) Genes are the chemical 'instructions' that plan out human characteristics, like sex and hair colour. They are stored in cells as DNA. Your DNA is a mix of your parents' DNA.



The structure of DNA is a double helix.

2) The structure of DNA, a double helix (a kind of spiral) that can reproduce itself by splitting, was first described in 1953 by Francis Crick and James Watson.
3) Watson and Crick's discovery allowed other scientists to find the genes that cause genetic conditions — diseases that are passed on from one generation to another. These include cystic fibrosis, haemophilia and sickle-cell anaemia.
4) Knowledge of genetic conditions has improved diagnosis and treatment of them. Scientists can now produce a synthetic protein to replicate the work of a faulty gene and treat inherited conditions using techniques like gene therapy.

One of the biggest breakthroughs in genetic research was made in 2003 with the completion of the Human Genome Project — this identified all the genes in human DNA.

Lifestyle Factors can increase the Risk of some Diseases

A healthy diet, exercise and other lifestyle factors have long been suggested as ways to prevent illness, but it was only in the 20th century that lifestyle choices were linked to particular health conditions:

1) Smoking has been shown to cause lung cancer (see p.31).
2) Obesity increases the chance of getting heart disease or diabetes.
3) Drinking too much alcohol has been shown to cause liver disease.
4) Overexposure to ultraviolet radiation (e.g. from sunlight) can cause skin cancer.

Comment and Analysis

The advances in science and technology since 1900 have shown that there is not just one cause of disease. In addition to bacteria, we now know that disease can be caused by viral infections, genetic mutations and our lifestyle choices. This makes their treatment and prevention even more complex — with so many different causes, treatment needs to be more targeted to the specific disease.

Watson and Crick described DNA — they're gene-iuses...

Make a list of the causes of illness that people didn't know about in 1875 but did know about in 2000. For each one, write the name of a disease it is associated with.

REVISION TASK

Developments in Diagnosis

New causes of disease demanded new ways of diagnosing them. These new methods were introduced rapidly in the 20th century, due to innovations in science and technology, from computers to X-rays.

Blood Tests allow doctors to Diagnose more illnesses

Blood tests were first introduced to test blood groups before blood transfusions (see p.28). Since then, blood tests have been used to test for a range of diseases.

1) Blood tests can be used to check a patient's cholesterol level. This can help diagnose their chance of suffering a heart attack or stroke.
2) Blood tests can be used to check a patient's DNA (see p.24). This can help diagnose a genetic condition, like haemophilia or cystic fibrosis.
3) Some blood tests can be used to show whether a patient has a certain type of cancer, including ovarian cancer, prostate cancer and breast cancer.

Blood tests make diagnosis more accurate, providing doctors with clearer information of what is wrong. This means they can be more confident when deciding how best to treat their patients.

Doctors can see more of the body with Medical Scans

1) The use of medical scans began in 1895 when Wilhelm Röntgen discovered X-rays. They pass easily through soft flesh, but less well through bone. They also affect photographic film. These factors allowed simple X-ray images to be produced by directing X-rays at a body part in front of a photographic plate.
2) Advances in computers allowed doctors to use ultrasound scanning — this uses high frequency sound waves, which bounce off the patient's organs and other tissues to create an image of them on the computer.
3) Computed Tomography (CT or CAT) scans were invented in 1972 by Godfrey Hounsfield. They use X-rays and a computer to make detailed images of parts of the patient's body.
4) Magnetic Resonance Imaging (MRI) scans were initially invented in 1970s but became widely used in the 1980s. These use extremely powerful radio waves and magnetic fields to construct images.

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An X-ray image of a hand from 1904. Early medical scans used dyes so that blood vessels and organs showed up on the X-ray images. These were swallowed or injected into the patient.

Comment and Analysis

Improvements in technology, like medical scans, have given doctors a much more detailed picture of what's going on inside their patient's body. This has enabled them to intervene much earlier, before the disease has become too advanced. Early treatment is generally more effective and has a higher chance of success.

Patients can now Monitor their own bodies

Since around 1900, devices have been introduced to allow doctors and patients to monitor the body.

1) Blood pressure monitors were invented and developed in the 1880s and 1890s. They let doctors and patients see whether disease, lifestyle factors or medicines are causing high blood pressure, which can cause damage to the heart.
2) Blood sugar monitors were introduced in the mid 20th century. They allow those with diabetes to make sure their blood sugar is at the right level.

An important change in the 20th century is the use of monitoring devices by people in their own homes — this has allowed individuals greater control over their own health.

I've taken an X-ray of my pet — I call it a cat scan...

In the exam, you only have a limited amount of time to answer each question. If you're spending too long on one question, write a conclusion then move on to the next question.

EXAM TIP

Case Study: Penicillin

In the 1800s, Pasteur discovered that bacteria cause disease. But it wasn't until the 1900s that doctors were able to treat bacterial diseases. This was partly due to the discovery penicillin, the first antibiotic.

Fleming discovered Penicillin — the first Antibiotic

1) Alexander Fleming saw many soldiers die of septic wounds caused by staphylococcal bacteria when he was working in an army hospital during the First World War.
2) Searching for a cure he identified the antiseptic substance in tears, lysozyme, in 1922 — but this only worked on some germs.
3) One day in 1928 he came to clean up some old culture dishes on which he had been growing staphylococci for his experiments. By chance, a fungal spore had landed and grown on one of the dishes.
4) What caught Fleming's eye was that the colonies of staphylococci around the mould had stopped growing. The fungus was identified as Penicillium notatum. It produced a substance that killed bacteria. This substance was given the name penicillin.
5) Fleming published his findings in articles between 1929 and 1931. However, nobody was willing to fund further research, so he was unable to take his work further. The industrial production of penicillin still needed to be developed.

The original plate on which Fleming first observed the growth of Penicillium notatum.

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Florey and Chain found a way to Purify Penicillin

1) Since it is a natural product, penicillin needs to be purified. A breakthrough was made by Howard Florey's team in Oxford between 1938 and 1940. Ernst Chain, a member of the team, devised the freeze-drying technique which was an important part of the purification process.
2) At first Florey and Chain didn't have the resources to produce penicillin in large amounts. They made penicillin for their first clinical trial by growing Penicillium notatum in every container they could find in their lab. Their patient began to recover, only to die when the penicillin ran out.

Florey took penicillin to America for Mass Production

Florey knew that penicillin could be vital in treating the wounds of soldiers fighting in World War II. British chemical firms were too busy making explosives to start mass production — so he went to America.

1) American firms were also not keen to help — until America joined the war in 1941. In December 1941, the US government began to give out grants to businesses that manufactured penicillin.
2) By 1943, British businesses had also started mass-producing penicillin. Mass production was sufficient for the needs of the military medics by 1944.
3) After the war, the cost of penicillin fell, making it more accessible for general use.
4) Fleming, Florey and Chain were awarded the Nobel Prize in 1945.

Comment and Analysis

While individuals (like Florey, Chain and Fleming) were important in making the discovery of penicillin, it was large institutions like governments that funded its mass production.

Today, penicillin is used to treat a range of bacterial infections, including chest infections and skin infections. Other antibiotics were discovered after 1945, including treatments for lung infections, acne and bacterial meningitis.

Penicillin isn't just mould news — it's still used today...

How far do you agree that Alexander Fleming's discovery of penicillin was the most important moment in medicine since c.1900? Explain your answer. [16]

EXAM QUESTION

Modern Treatments

Scientists have found a range of other treatments for diseases, besides penicillin. These include magic bullets, which use chemical and synthetic substances to kill bacteria.

Paul Ehrlich discovered the first Magic Bullet — Salvarsan 606

Antibodies were identified as a natural defence mechanism of the body against germs. It was known that antibodies only attacked specific microbes — so they were nicknamed magic bullets. In 1889, Paul Ehrlich set out to find chemicals that could act as synthetic antibodies.

1) First, Ehrlich discovered dyes that could kill the malaria and sleeping sickness germs.
2) In 1905, the bacterium that causes the sexually transmitted disease syphilis was identified.
3) Ehrlich and his team decided to search for an arsenic compound that was a magic bullet for syphilis. They hoped it would target the bacteria without poisoning the rest of the body.
4) Over 600 compounds were tried, but none seemed to work.
5) In 1909, Sahachiro Hata joined the team. He rechecked the results and saw that compound number 606 actually appeared to work. It was first used on a human in 1911 under the trade name Salvarsan 606.

Gerhard Domagk found the second Magic Bullet — Prontosil

1) In 1932, Gerhard Domagk found that a red dye, prontosil, stopped the streptococcus microbe from multiplying in mice — without being poisonous to the mice.
2) In 1935, Domagk's daughter pricked herself with a needle and caught the disease. Afraid she would die, Domagk gave her a large dose of prontosil. The girl turned bright red, but recovered.
3) The active ingredient of prontosil was identified as a sulphonamide. A whole group of drugs based on sulphonamides followed, including M&B 693, which worked on pneumonia without turning you a strange colour.
4) Sadly more serious side-effects were discovered. Sulphonamide drugs can damage the liver and kidneys.

Streptococcus caused blood poisoning which was often fatal, and which could be contracted from very minor wounds. Many surgeons contracted it after cutting themselves in the operating theatre.

Comment and Analysis

The discovery of magic bullets showed that synthetic, targeted treatments for specific diseases were possible. Since Paul Ehrlich's first discovery, a huge pharmaceutical industry has grown, dedicated to the research and production of new treatments.

Treatments have been introduced to fight Cancer

1) The first successful treatment against cancer that didn't involve surgery was radiotherapy, introduced after the discovery of radiation in 1896-1898 by Antoine Henri Becquerel, Marie Curie and Pierre Curie. Radiotherapy involves killing cancer cells using targeted X-rays and gamma rays.
2) Chemotherapy is the treatment of cancer using drugs. It was discovered in World War II when doctors found that nitrogen mustard (a chemical in mustard gas) could be used to reduce cancer tumours. Other drugs were later discovered, including a compound in folic acid that blocks the growth of cancer cells.
3) Since the late 1990s, targeted therapy has been used to fight cancer. This uses drugs to prevent cancer from spreading.

When it comes to magic bullets, Ehrlich hit the mark...

Write a paragraph describing the changes in treatment during the 20th century. Explain whether you think individuals or advances in technology were the most important factor.

REVISION TASK

© Mary Evans Picture Library

Modern Surgery

Surgery improved rapidly during the 20th century. The discovery of blood groups made blood transfusions more successful, and even heart transplants are now possible. Nowadays the emphasis is on precision.

Blood Transfusions have solved the problem of Blood Loss

The idea of blood transfusions was known from the 17th century, but they were rarely successful because the blood of the recipient often clotted. Blood also clotted if it was stored outside the body.

1) In 1900, Karl Landsteiner discovered blood groups. Certain blood groups can't be mixed as the blood will clot, clogging the blood vessels. He found that transfusions were safe as long as the patient's blood matched the blood donor's.
2) In 1914, during World War I, doctors found that sodium citrate stopped blood clotting so it could be stored outside the body. In 1917, this discovery was vital when the first ever blood bank was set up at the Battle of Cambrai.
3) In 1946, the British National Blood Transfusion Service was established.

Patients always suffer some blood loss during surgery. If a lot of blood is lost, this can be fatal. Blood transfusions helped to prevent this cause of death by allowing surgeons to replace any blood lost during surgery.

Transplants have been made more Successful

1) In 1905, the first successful transplant of the cornea of the eye was performed. During the First World War, surgeons developed techniques for skin transplantation.
2) The first complete organ to be successfully transplanted was the kidney. Livers, lungs, pancreases and bone marrow can now also be transplanted.
3) The first successful heart transplant was carried out by the South African surgeon Christiaan Barnard in 1967. The patient only survived for 18 days — he died of pneumonia.

The problem for transplants is rejection. The immune system attacks the implant as if it were a virus.

- The success of early transplant operations was limited because doctors lacked effective immunosuppressants — drugs that stop the immune system attacking.
- Since the 1970s, researchers have developed increasingly effective immunosuppressants, making transplants safer and more likely to be successful.

Keyhole Surgery and Robot-assisted Surgery increased Precision

1) Keyhole surgery is a technique (developed in the 1980s) which makes surgery less invasive — it leaves patients with smaller scars and allows them to recover more quickly.
2) A type of surgical camera called an endoscope is put through a small cut, letting the surgeon see inside the body. Other surgical instruments are then introduced through even smaller cuts in the skin.
3) Keyhole surgery is useful for investigating the causes of pain or infertility. It's also used for vasectomies, removing cysts or the appendix, mending hernias and other minor operations.

Robot-assisted surgery has also improved precision.

- The first surgical robot was introduced in 1985 but robot-assisted surgery only became widely used after 2000 with the launch of the da Vinci system.
- Robot-assisted surgery allows surgeons to make smaller cuts. This means less scarring, less infection and quicker healing of wounds.

These new types of surgery have made it safer for patients by limiting the possibility of infection and blood loss, as well as reducing the shock and trauma of surgery.

All you need to do is transplant these facts into your brain...

Explain why there were a lot of improvements in surgery between the end of 19th century and the end of the 20th century. [12]

EXAM QUESTION

The National Health Service

Advances in science and technology improved the quality of healthcare during the 20th century. But it was only with the founding of the National Health Service that everyone in Britain felt the benefits.

Before the NHS, access to Healthcare was Limited

1) At the start of the 20th century, access to healthcare was severely limited. This was particularly the case for poor people, who couldn't afford to go to the doctor or buy medicine.
2) This meant that people's health was poor. For example, in 1901 there were 140 infant deaths for every 1000 births — today it's less than 5. When the Boer War broke out in 1899, army officers found that 40% of volunteers were physically unfit for military service.
3) In 1911, the Liberal government introduced the National Insurance Act, which gave some workers health insurance to pay for medical attention. But World War I drained Britain's resources, and several economic slumps in the 1920s and 1930s meant the government couldn't expand healthcare provision.

The NHS was established in 1948

1) The Second World War (1939-1945) changed people's attitudes towards healthcare:
   - The raising of a mass army made powerful people take notice of the health problems of the poor.
   - Air raids, especially the Blitz of 1940, prompted the government to set up the Emergency Medical Service. This provided a centralised control of medical services and offered free treatment to air raid casualties. It proved successful under great pressure.

© Illustrated London News Ltd/Mary Evans

Aneurin Bevan.

2) In 1942, the social reformer William Beveridge published a report. The report called for government provision of social security 'from the cradle to the grave'. The report became a bestseller.
3) In 1945, the Labour Party was elected with a mandate to implement Beveridge's proposals, primarily by founding the National Health Service (NHS) in 1948.
4) Aneurin Bevan was the Minister for Health who introduced the NHS. Bevan wanted the NHS to be free at the point of use — he set up a system of compulsory National Insurance to pay for it.
5) Bevan wooed doctors and dentists with a fixed payment for each registered patient. They were also allowed to continue treating private fee-paying patients. By 1948 nearly all hospitals and 92% of doctors had joined the NHS.

Comment and Analysis

The founding of the NHS showed that government intervention could make a positive impact on people's health. However, it took a change in public attitudes (backed up by greater scientific knowledge) to make it happen.

The NHS has improved Access to Healthcare

1) The NHS increased the number of people with access to healthcare — the number of doctors doubled between 1948 and 1973 to keep up with demand.
2) Today, the NHS provides a range of health services, most of which are free and accessible to everyone. They include accident and emergency care, maternity care and major surgery, as well as pharmacies, dentists, mental health services, sexual health services and general practitioners (GPs).

The NHS has encountered some problems in providing access to care. The 1980 Black Report suggested that the NHS hadn't improved the health of the very poorest. Patients also had to suffer long waiting times during the 1990s. In 2000 the government drew up an 'NHS plan' to deal with waiting times among other areas.

Beveridge Report — nothing to do with your favourite drink...

Explain how people's attitudes towards government intervention were different in the 20th century compared to the period c.1700-1900. [4]

EXAM QUESTION

The Government's Role in Healthcare

Since 1900, the government's role in improving people's health has grown and grown.

Vaccination Campaigns have eradicated some Diseases

Since 1900, the government has launched several national vaccination programmes to prevent people from catching deadly diseases. These have been successful in reducing the number of deaths from such diseases.

Diphtheria is a contagious disease that is caused by bacteria in the nose and throat. It can eventually attack the heart muscles, causing paralysis or heart failure.

- Before the 1940s, diphtheria was a major killer disease — in 1940, there were over 60,000 cases of the disease and over 3,000 deaths.
- After fears that wartime conditions could lead to the spread of the disease, the government started a vaccination campaign in 1940.
- The government ran publicity campaigns, using posters, newspaper advertisements and radio broadcasts.
- The campaign was a success — by 1957, the number of diphtheria cases had dropped to just 38, with only six deaths.

In 1940, the easiest way to reach children was through schools, so 5-15 year olds were vaccinated more than the youngest children who were most vulnerable. The establishment of the NHS in 1948 (see p.29) allowed the government to vaccinate all children by their first birthday.

Polio is an infection that can attack the digestive system, bloodstream and nervous system. The disease can cause paralysis, and particularly affects children.

- In the late 1940s and early 1950s, Britain suffered a series of polio epidemics — the disease made over 30,000 children disabled between 1947 and 1958.
- The first vaccine was introduced in Britain in 1956 alongside a national campaign, aiming to vaccinate every person under the age of 40.
- The campaign was successful, with the disease all but eradicated by the late 1970s. In the period 1985-2002, only 40 polio cases were reported in Britain.

Lifestyle Campaigns aim to improve people's Health

In the 20th century, scientists showed a link between people's lifestyle choices and their health (see p.24). The government ran several campaigns to make people aware of the dangers and to change their lifestyles.

1) In 1952, a Great Smog caused by coal fires resulted in 4,000 deaths in London. It showed the dangers of air pollution, which can cause breathing conditions like asthma and bronchitis. The government passed laws in the hope of limiting air pollution.
2) An increase in less active lifestyles has led to an increase in obesity. In 2009, the government launched the Change4Life campaign, with the aim of improving diets and promoting daily exercise.
3) Excessive alcohol intake has been linked to several diseases, most notably liver cirrhosis. Alcohol intake rose between 1950 and 2004, but has since fallen. This may be due to the government's Drinkaware campaign, launched in 2004. The Drinkaware logo appears on many alcohol advertisements.

Comment and Analysis

These campaigns mark a big shift in the government's approach from the foundation of the NHS, and an even bigger shift from the laissez-faire attitudes of the 19th century, when people thought government shouldn't intervene at all in public health. Not only is the government trying to treat and vaccinate against known diseases, it is now intervening in people's lives in order to stop them getting particular illnesses in the first place.

My free speech campaign is getting everybody talking...

Draw a mind map of all of the ways the government has tried to improve health and medicine in Britain since 1900. Include vaccinations, lifestyle campaigns and the NHS in your diagram.

REVISION TASK

Case Study: Lung Cancer

Lung cancer is a disease that was much more common after 1900 than before. The battle against lung cancer is an example of science and technology and government campaigns working side by side.

Lung Cancer can be caused by Smoking

1) Lung cancer was a rare disease in 1900, but became common by the 1940s. Today, around 20% of all cancer deaths in the UK are due to lung cancer. Approximately 43,500 people are diagnosed every year.
2) Scientists have estimated that around 90% of lung cancer cases can be linked to tobacco smoking. The popularity of smoking increased in the First World War, particularly among soldiers. Smoking soon became popular among women too.
3) In 1950 the link between smoking and lung cancer was proven by Richard Doll and Austin Bradford Hill.

Lung cancer Diagnostics and Treatment have Improved

Advances in science and technology have made it easier to diagnose and treat lung cancer.

- Chest X-rays are the first means of diagnosing lung cancer. The X-rays can't show whether the patient definitely has cancer, but can show if there is anything on the lung that shouldn't be there.
- CT scans (see p.25) can be used to give a more detailed image of the lungs.
- Doctors can now use bronchoscopy to diagnose lung cancer. This involves putting a thin tube into the lungs to take a sample of the suspected cells. It requires a local anaesthetic to numb the throat.

- Lung cancer can be treated using surgery, for example by removing the affected lung.
- Modern treatments like radiotherapy and chemotherapy (see p.27) are also used to treat lung cancer. Radiotherapy involves directing radiation at the lungs. Lung cancer chemotherapy uses a combination of several drugs, which are normally injected directly into the bloodstream.

Government Campaigns have reduced smoking

When the link between smoking and lung cancer became clear, the government warned people of the risks.

1) In 1962 the Royal College of Physicians recommended a ban on tobacco advertising. Shortly afterwards, in 1965, cigarette adverts were banned from television. In 1971 tobacco companies were forced to put a health warning on cigarette packets.
2) In recent years, the government has put a ban on smoking in public places — this was introduced in Scotland in 2006, and in England and Wales in 2007.
3) Recent government campaigns have focused on helping people to give up smoking and on discouraging smoking in cars, homes and in front of children.
4) In March 2015 Parliament passed a law requiring all cigarette companies to use plain packaging on boxes of cigarettes.

These measures have contributed to a decline in smoking. The percentage of men who smoke cigarettes has fallen from 65% in 1948 to around 20% in 2010 and for women it's dropped from 41% to 20% in the same period.

Comment and Analysis

Lung cancer prevention is a good example of an area of health where the government has been increasingly active — the large number of television campaigns and pieces of legislation show that the government is now taking health seriously, which is in contrast to its attitude before 1900.

Dreams of a healthy lifestyle went up in smoke...

'Lung cancer is more common now than it was in 1900. This shows that there has been little improvement in medicine in the 20th century.' Explain how far you agree with this statement. [16]

EXAM QUESTION

Revision Summary

Well, that was a healthy amount of information to revise. Now treat yourself to these revision questions.

- Try these questions and tick off each one when you get it right.
- When you've done all the questions for a topic and are completely happy with it, tick off the topic.

c.1250-c.1500: Medicine in Medieval England (p.6-10) ☐

1) Give two supernatural causes of disease believed by people in medieval England. ☐
2) Describe two rational causes of disease believed by people in medieval England. ☐
3) Name six treatments for disease used by people in medieval England. ☐
4) List three types of people you might visit if you felt ill in medieval England. ☐
5) Give three ways people tried to prevent the Black Death. ☐

c.1500-c.1700: The Medical Renaissance in England (p.11-16) ☐

6) Explain why Thomas Sydenham was important in renaissance medicine. ☐
7) What was Vesalius' discovery and why did it help improve surgery? ☐
8) What did Harvey discover and why did he have a limited impact on diagnosis and treatment? ☐
9) Describe the impact of the printing press on people's understanding of medicine. ☐
10) How did the Royal Society change perceptions of medicine? ☐
11) List five ways in which there was continuity between medieval and renaissance medical treatments. ☐
12) List five treatments and five prevention methods people used against the Great Plague in 1665. ☐

c.1700-c.1900: Medicine in 18th and 19th Century Britain (p.17-23) ☐

13) Describe how Edward Jenner proved the link between smallpox and cowpox. ☐
14) List three reactions by Parliament to Jenner's discovery of the smallpox vaccine. ☐
15) In what year did Louis Pasteur publish the Germ Theory? ☐
16) Explain how Florence Nightingale changed nursing. ☐
17) Name the year that chloroform was discovered and explain why it led to a higher death rate initially. ☐
18) What is the difference between antisepsis and asepsis? ☐
19) Describe John Snow's 1854 investigation and explain what he showed. ☐
20) Give three things that the 1875 Public Health Act forced local councils to do. ☐

c.1900-Present: Medicine in Modern Britain (p.24-31) ☐

21) Describe three causes of disease that have been discovered since Pasteur's Germ Theory. ☐
22) What did Watson and Crick discover in 1953 and how did it help medical diagnosis? ☐
23) When were X-rays discovered? How are they used in medical diagnosis? ☐
24) Explain how the following individuals or institutions contributed to the production of penicillin: Fleming, Florey and Chain, the United States government. ☐
25) Name the first two magic bullets, who discovered them and the dates they were discovered. ☐
26) Give three advances in surgery since 1900 and explain how they have made surgery safer. ☐
27) List five factors that led to the founding of the National Health Service (NHS) in 1948. ☐
28) Describe two government vaccination campaigns. ☐
29) Give five ways in which lung cancer diagnosis and treatments have improved. ☐
30) List four ways that the government has tried to reduce smoking. ☐

Trench Warfare on the Western Front

Between 1914 and 1918, the Allies (including Britain, France and Belgium) fought the German Imperial Army in Belgium and France — the area where the fighting happened was called the Western Front.

The War on the Western Front was mostly Fought in Trenches

In the autumn of 1914, the Germans and the Allies realised that they couldn't beat each other outright. Instead of retreating, they built a line of trenches that stretched through northern France to the coast of Belgium. These trench lines were developed throughout the war, but their position mostly stayed the same.

1) In July 1916, the British tried to break through the German line in an area called the Somme — lots of lives were lost during this offensive.

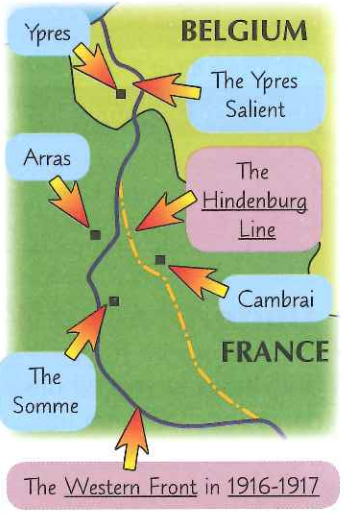
On the first day of the Battle of the Somme, there were almost 60,000 British casualties — 20,000 of these were killed. There were only 174 Medical Officers treating tens of thousands of serious casualties in the first week of the battle. Many men died because they had to wait for days before being treated.

2) In 1917, mines were used at Arras and Ypres to break through the enemy line (see p.34) — the aim was to avoid losses like those at the Somme by making it easier for the infantry to attack the enemy trenches.

3) The army also tried to improve medical care after the casualties of the Somme overwhelmed medical staff. In 1917, more medical posts were set up to prepare for casualties before a big offensive on the Ypres Salient.

During the Third Battle of Ypres, from July to November 1917, there were over 200,000 casualties. This time, there were 379 Medical Officers, so many men were treated earlier than those at the Somme.

A salient is where one side's line pushes into the other side's line — their territory gets surrounded by the enemy on three sides.



The Western Front in 1916-1917

4) By April 1917, the Germans had retreated to the Hindenburg line. In November 1917 at the Battle of Cambrai, the Allies broke its defences with tanks, but they lost this ground again later. There were about 45,000 British casualties — fewer than at the Somme, but still a high number.

Before the Battle of Cambrai, a blood bank was set up by Captain Robertson (see p.38) — he realised that it would be easier to save lives during the battle if they had a ready supply of blood.

Trenches were Designed to Protect Soldiers from Enemy Attack

1) Most trenches were dug down into the ground and their upper level was fortified with sandbags. In wet areas, trenches were built upwards using sandbags full of clay — these were called 'breastworks'. Ideally, trenches were about six or seven feet deep.

Mounds of earth were built from the side of the trench to split it into sections — these were called 'traverses'.

2) Trenches were constructed by 'entrenching' (lots of soldiers in a line digging straight into the ground), 'sapping' (one man digging outwards from the end of the trench) or 'tunnelling' (like sapping, but a layer of earth was left along the top of the trench until it was finished).

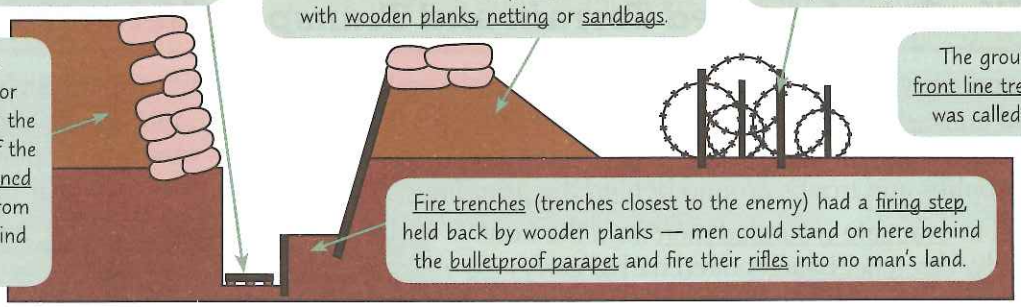
The floors of trenches in wet areas were often lined using wooden boards called 'duckboards'.

The parapet was built up in a similar way to the parados on the front side of the trench. It was meant to be bulletproof, and was lined with wooden planks, netting or sandbags.

Barbed wire was set in front of the trench to make it harder for enemy infantry to attack head on.

The parados was a mound of earth or sandbags that raised the height of the back of the trench. It was designed to protect soldiers from shell explosions behind the trench.

The ground between the front line trenches of each side was called 'no man's land'.



Fire trenches (trenches closest to the enemy) had a firing step, held back by wooden planks — men could stand on here behind the bulletproof parapet and fire their rifles into no man's land.

To the enemy trenches.

Trench warfare was new to everyone...

Write down a quick description of the following features and explain how they helped to protect soldiers from the enemy: breastworks, parapet, parados, firing step, barbed wire.

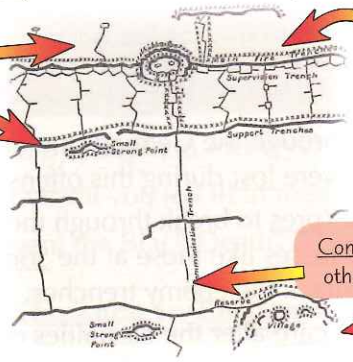
REVISION TASK

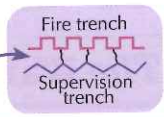
Trench Warfare on the Western Front

Trench systems were expanded during the war — this had a big impact on the terrain of the Western Front.

Trenches were often Organised in Parallel Lines

According to one 1916 training manual, trenches were ideally built in three parallel lines.





'Saps' were small trenches that pushed out into no man's land.

The front line had two trenches. The 'fire trench' faced the enemy. The 'supervision trench' was used to move along the line behind the fire trench. They had zig-zag or step-shaped sections separated by traverses (p.33). This stopped enemy infantry from firing along the trench, and contained explosions from shells in small areas.

The 'support trench' was about 60 to 90 metres behind the front trench — this protected it from shell bombardment aimed at the front line. It was connected to the front line trench by communication trenches — soldiers could retreat to the support trench, and the support trench reinforced the front line.

Communication trenches connected the trench lines to each other and to local roads and army depots behind the lines.

The 'reserve trench' was about 350 to 550 metres behind the front line. It was made up of dugouts (shelters that protected 4 to 6 men) or lines of trenches. Reinforcements waited here so they could counter enemy attacks.

Comment and Analysis

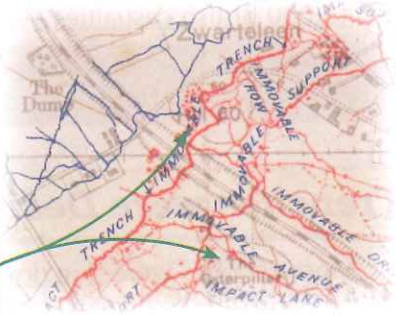
This image shows an ideal trench system. In reality, building such organised trenches was hard — they might be built quickly as troops advanced. Terrain had to be considered too. Trench maps drawn during the war show that the lines were often far more complicated.

Underground Warfare was a Key Feature of the Western Front

Both sides tunnelled under no man's land to reach enemy trenches. It was dangerous for tunnellers, who could be buried, suffocate or meet the enemy, but it was less costly than a normal infantry attack through no man's land.

In 1916, the Allies built a tunnel network under Arras by extending existing caves, quarries and mines — it had electricity, accommodation and a hospital (p.35). In April 1917, it was used to hide 24,000 men before the Battle of Arras. Tunnels were dug up to the German line so men could reach the enemy trenches in safety — the entrances were blown open with mines at the start of the battle. Lots of ground was won on the first day. However, the British suffered over 150,000 casualties during the battle.

At the Battle of Messines on the Ypres Salient in June 1917, 19 mines were blown up under the German line. Around 10,000 German soldiers died instantly. Two of the mines were used to destroy defences on hills — Hill 60 and the Caterpillar. They would have been hard to attack head on without heavy losses.



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A trench map of Hill 60 and the Caterpillar in April 1917. German trenches are red and British are blue.

Comment and Analysis

Trench maps are a good source for studying the layout of trenches and their defences. They're more realistic than the ideal layout in training manuals. They were drawn up using photos taken from the air. Teams on the ground collected information too. They don't always give the full picture, though. For example, machine gun placements were often deliberately hidden and could be missed by planes.

Trench Warfare damaged Terrain and Transport Networks

1) Shelling and entrenchment damaged roads and terrain on the Western Front. The British army used motor and horse-drawn vehicles to move supplies towards the Front from 'supply dumps' near railway lines, but the muddy, shell-damaged terrain was hard to negotiate. Railways became important for moving supplies and troops around behind the front lines, but they weren't always near the Front.

2) It was hard to evacuate wounded men from the front lines quickly. Stretcher bearers often had to carry casualties down communication trenches or through a series of relay posts — this delayed wound treatment.

By 1917, the British had built a light railway network behind the lines (other Allied armies had done this already). This made it easier to move supplies, ammunition and men through muddy and damaged terrain, and to evacuate wounded men from the Front.

I'll never complain about potholes again...

Write down the advantages and disadvantages of using trench maps to study trench systems.

REVISION TASK

The RAMC and the FANY

The fighting on the Western Front disrupted local transport networks. The British Army were supported by various medical units who treated wounded men and evacuated them from the front line.

The Royal Army Medical Corps (RAMC) ran Field Ambulances

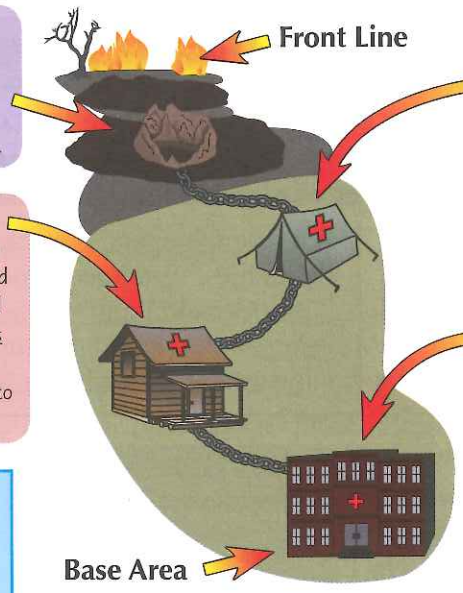
1) Moving casualties away from the Front to be treated was a problem — the terrain had become very muddy.
2) The RAMC Field Ambulances (these were units, not vehicles) set up mobile medical stations. Stretcher bearers carried casualties through a series of relay posts until they reached a medical post or somewhere they could be moved by road, rail or river.

Field Ambulance transport included:
- Teams of stretcher bearers.
- Horses, wagons and carts.
- Motor ambulances (the RAMC started using these in 1915).

The RAMC Field Ambulances created the Chain of Evacuation

Men were more likely to survive if their wounds were treated quickly. The RAMC developed a system to move wounded men who had a chance of surviving to medical areas — this was called 'the Chain of Evacuation'.

A Regimental Aid Post (RAP) was set up a few metres behind the front line in a shell hole or dugout. They gave first aid. Men who needed more treatment walked or were carried by stretcher bearers to an Advanced Dressing Station.



Advanced Dressing Stations were ideally set up around 350 metres from the RAP in tents, dugouts or large buildings. Main Dressing Stations were set up about 1 mile behind the Advanced Dressing Stations. They collected injured men from the RAP using horse-drawn ambulances and stretcher bearers. Seriously injured men were moved to Casualty Clearing Stations.

Casualty Clearing Stations collected seriously injured men from Main Dressing Stations using motor ambulance convoys. They had surgical and medical wards in wooden huts, nursing staff, and were sometimes supported by mobile X-ray units (see p.38 for more on X-rays). Men could be treated for up to four weeks before being moved to a Base Hospital or sent back to the Front.

Base Hospitals were designed to take up to 400 patients. They were often turned into specialist hospitals to treat common injuries and ailments (e.g. the effects of gas). They were set up in large buildings and were often close to transport networks. They also had X-ray departments. They treated patients until they could be sent back to the Front or sent home to Britain.

The army prepared for the Battle of Arras in 1917 by setting up a hospital with room to treat 700 men in the Arras tunnels (p.34). It had an operating theatre, waiting rooms for the wounded, and rest areas for stretcher bearers.

The FANY provided Transport Services to the Allied Armies

1) The women of the First Aid Nursing Yeomanry Corps (FANY) were trained in first aid, veterinary skills, signalling and driving. They mainly worked as a field ambulance, moving wounded men between base hospitals, medical posts, trains, barges and hospital ships. The FANY staffed two key ambulance convoys — the Calais Convoy and the St. Omer Convoy.

One FANY driver called Beryl Hutchinson who was part of the St. Omer Convoy described her role in her memoirs. She had to pick up wounded men from trains and drive them to base hospitals or to boats that would take them back to Britain. The driving skills of the FANY were pretty useful when it came to transporting men who were very badly wounded — they had to drive as smoothly as possible so that the men wouldn't be jolted around. Canal barges were used to move the worst cases.

The driving skills of the FANY were very useful to the army, as they needed to move supplies, wounded men and rations between coastal ports and the front line.

2) The FANY had many roles. They ran a mobile soup kitchen and a mobile bathing vehicle, staffed hospitals and convalescent homes, ran a hospital canteen and organised concerts for the troops.

The army really liked their acronyms...

You need to know the system that the army used to move men away from the Front. Scribble down a quick diagram of the Chain of Evacuation and label it.

REVISION TASK

The British Sector of the Western Front, 1914-1918

Reproduced by permission of the National Library of Scotland.

Conditions in the Trenches

Life in the trenches exposed soldiers to lots of illnesses and infections — they were also at risk of gas attacks.

Bad Conditions in the Trenches caused Illness

1) Soldiers were exposed to the weather in the trenches. Many suffered from exposure to the cold and frostbite, especially in the cold winter of 1916-17.
2) Trench foot was a condition caused by standing in flooded trenches for too long. Skin and tissue on the feet broke down. It could become gangrenous (infected) — doctors used amputation to stop the gangrene from spreading.
3) Dysentery caused diarrhoea and dehydration. Dirty water and unhygienic latrines (holes about 4 or 5 feet deep that served as toilets) helped this disease to spread.
4) The trenches were also full of vermin that spread diseases, like rats, lice, maggots and flies. Trench fever and typhus were spread by body lice — it could take 12 weeks to recover.

Trench foot was more common at the start of the war. By 1915, there were fewer cases, as soldiers had to change their socks frequently. They also put whale oil on their feet to create a waterproof layer.

Doctors didn't make the link between lice and trench fever until 1918. Delousing stations were set up to try and stop outbreaks of these diseases, but they weren't always successful. It was hard to remove lice eggs from soldiers' clothing.

Both sides used Gas Attacks to Disable Soldiers

Four main types of gas were weaponised during the war — the effects of each could be devastating.

Lachrimatory Gas — from 1914

Also known as tear gas. It caused inflammation of the nose, throat and lungs, and blindness. It was meant to disable soldiers or force them to retreat, rather than kill them.

Mustard Gas — from July 1917

A 'blistering agent' that caused blisters, burning and breathing difficulties. Extended exposure to mustard gas could cause blindness and lung infections. It ate away at the body from the inside, and it could take up to five weeks to die. The gas could cling to clothes for hours, which put medical staff at risk too.

Chlorine Gas — from April 1915

Chlorine gas was the first deadly gas used on the Western Front. It was a 'killing agent' that slowly suffocated its victims. A medical officer for the French described its effects at Ypres.

"...I felt the action of the gas on my respiratory system; it burned in my throat, caused pains in my chest, and made breathing all but impossible. I spat blood and suffered from dizziness. We all thought we were lost."
(April 1915)

Phosgene — from December 1915

This gas caused suffocation. Phosgene had a mild scent and was colourless, so it was hard to detect. It could take over 24 hours for symptoms to set in.

Trench Warfare could also cause Emotional Trauma

1) In the trenches, soldiers were exposed to lots of death, destruction and artillery bombardment. Living in these harsh conditions could cause a psychological illness called shell shock.
2) Symptoms of shell shock could include tiredness, blindness, hearing loss, shaking and mental breakdown. Doctors disagreed over whether it was caused by unseen physical injuries or by emotional trauma.

After the Battle of the Somme in 1916, there was an increase in shell shock cases — doctors started to evacuate these cases to specialist hospitals. However, the emotional trauma caused by trench warfare wasn't really understood until later in the war — even then, many with shell shock were seen as cowards.

Comment and Analysis

'Shell shock' meant two different things:

1) When an explosion shocked the central nervous system, causing brain damage.
2) An emotional disorder caused by the traumatic trench environment.

The trenches were pretty horrific...

You'll need to be able to explain how you'd use sources to study a historical problem. Think about the kind of sources you could use to study the effects of gas attacks and how they're useful.

EXAM TIP

Wounds and Injuries

Trench warfare caused horrific injuries on a scale doctors had not seen before the war.

Soldiers were often Wounded by Gunfire and Shell Explosions

1) Machine guns and rifles caused gunshot wounds, bruises, fractured bones and organ damage.
2) Trenches often protected the body, but the head was exposed — the army were alarmed at the number and severity of head injuries. They saw injuries like shrapnel embedded in the brain, skull fractures, large scalp cuts and brain damage. In 1915, metal 'Brodie' helmets were issued. Before this, many head injuries were fatal. The helmets gave soldiers a better chance of surviving, but treatment was still limited.

American surgeon Dr Harvey Cushing treated head injuries during the war. He pioneered new surgical techniques that were still being used in the 1970s. His techniques halved the number of deaths caused by brain surgery during the war. He used X-rays to find shrapnel in the brain and drew it out using magnets. His efforts were limited by slow evacuation and lack of brain imaging techniques.

3) Shrapnel (metal objects and fragments from explosions) caused horrific facial injuries and could kill instantly. Shrapnel shells were blown open in the air using a small fuse — they were filled with bullets and metal balls which flew out and hit soldiers. Other shells were designed to explode violently — the cases of these high explosive shells broke into large jagged pieces of shrapnel that tore through flesh.

Dr Harold Gillies, a British surgeon, treated serious facial injuries at Queen Mary's Hospital in Sidcup during and after the war. He developed a plastic surgery technique called the tube pedicle, which made skin grafting and facial reconstruction more effective.

4) Soldiers could also get concussions from shell explosions, be hit by flying debris, buried under collapsed buildings and trenches or poisoned by carbon monoxide from blasts which then collected in air pockets.

Wound Infection was a Big Problem

1) Many trenches were dug in farmland, which was covered in bacteria from fertilisers. In Flanders, drainage ditches had been destroyed by shelling, so trenches were often waterlogged and bacteria thrived.
2) The ground was also infected by unhygienic latrines and thousands of bodies that were left to decompose or were buried in shallow graves near the trenches.
3) Wounded men often had to lie in the contaminated mud of trenches or no man's land for hours or days before being picked up by stretcher bearers. They were at risk of getting serious infections like tetanus and gas gangrene — these were fatal without treatment. Infections could also cause sepsis.

"...every gunshot wound of this war in France and Belgium is more or less infected at the moment of its infliction... mud and dirt pervade everything; and bacteriological investigations of the soil, of the clothing, and of the skin demonstrate the presence of the most dangerous pathogenic organisms in all three."
Extract from a 1916 lecture by British Army surgeon Sir Anthony Bowlby.

"...there were numerous dug outs, and these so filthy that our men could not occupy them, the bottom of the trenches were paved with dead all German so far as we could learn, and very badly decomposed..."
Extract from the 10th Canadian Battalion's war diary describing conditions in a French trench on the Ypres Salient in April 1915.

Comment and Analysis

Doctors like Bowlby realised that every wound was likely to be infected. This was a big problem for the army, as those with only minor injuries were still at risk of dying from a fatal infection.

There were a Few Ways to Fight Infection at the Start of the War

1) Anti-tetanus serum was given to injured soldiers on the front line to prevent tetanus.
2) Wounds were thoroughly washed in an antiseptic solution called carbolic lotion, closed up and wrapped in bandages soaked in carbolic acid.
3) A paraffin paste called Bipp was used to cover wounds to prevent infection.
4) Before antibiotics were discovered in the 1920s, amputation of wounded arms, legs, hands or feet was a common way to stop life-threatening infections from spreading.

I'm feeling a bit squeamish now...

How useful are the Canadian war diary entry and the account of Sir Anthony Bowlby for studying illnesses and infections that were linked to living conditions in the trenches? [8]

EXAM QUESTION

Developments in Surgery and Medicine

During the war, doctors developed new techniques for dealing with serious injuries and infections.

The number of Deaths from Wound Infection was Reduced

In the 19th century, surgeons tried to avoid germs getting into wounds — this was called aseptic surgery.

They started to disinfect their hands before surgery and wear surgical gloves. They also sterilised their operating theatres and instruments to get rid of germs.

Antiseptics like carbolic acid were used to kill germs and prevent wound infection.

However, wound treatment was still very basic before the war. Doctors quickly explored the wound for objects that needed removing, then washed the wound with antiseptic and sewed it up (this was called primary closure).

During the war, a Belgian doctor called Antoine Depage developed a better way to treat wounds. He treated every wound as if it was already infected. There were two main steps in his treatment:

1) The wound was properly and thoroughly explored and objects like shrapnel or bits of clothing were removed. Depage also realised that removing all damaged tissue and then washing the wound with antiseptic decreased the chance of infection.
2) Depage left the wound open to the air for about 24 to 48 hours. Next, he looked at a swab of the wound under a microscope to check for bacteria. If the wound wasn't infected, then he closed it up — this was called delayed primary closure.

In 1915, Alexis Carrel and Henry Dakin developed a new way to prevent infection. Dakin created an antiseptic solution that could be flushed into a wound using rubber tubes before closure — this technique was called irrigation. Depage used this method as part of his wound treatment.

Comment and Analysis

These improvements in wound treatment saved many men from having amputations just to stop infections from spreading. Allied surgeons also used these techniques to improve the chances of surviving an amputation.

Fracture Treatment was improved by X-Rays and Splints

1) Wilhelm Roentgen discovered X-rays in 1895. During the war, hospitals used X-ray machines to find broken bones and shrapnel.
2) The British had 528 X-ray units — 14 of these were mobile units. They took mobile X-ray machines and radiographers to casualty clearing stations, so men could be treated closer to the front line.
3) At the start of the war, 80% of men who suffered a fractured femur (thigh bone) in the trenches died. A surgeon called Robert Jones treated this injury using the Thomas splint.
4) The Thomas splint was strapped around the broken leg before the casualty was moved. This stopped the leg from moving, so that it was protected from more damage. By 1915, only 20% of soldiers with this kind of injury died.

Before X-ray machines, surgeons had to look for shrapnel by hand, putting their patients at risk of infection. X-ray machines made aseptic surgery more effective, because the surgeon didn't have to touch the wound to find shrapnel and bone fragments.

In 1917, Robert Jones released a book (influenced by his war experience) advising doctors in Britain on how to treat complicated shoulder, leg, arm, spinal and pelvic fractures. It explained how to use splints to treat certain fractures.

Blood Transfusions were used to treat Blood Loss

1) Blood loss caused many deaths during the war. British doctors transfused blood from one person to another (direct transfusion), but it was a slow process and not always successful.
2) A new method called the syringe-cannula technique was developed. Doctors took blood from a donor using a needle and syringe and transfused it into their patient quickly. It was tricky to carry out, as blood could clot in the syringe.
3) In 1917, a US Army doctor called Captain Oswald Robertson argued that it would be better to collect blood before it was needed. As a result, the first blood bank was set up in preparation for the Battle of Cambrai in 1917.

In 1914, it was discovered that adding sodium citrate to blood stopped clotting so it could be stored. In 1916, blood was added to a citrate glucose solution, so it could be stored on ice for about 10 to 14 days.

War doctors set the stage for modern medicine...

Describe two characteristics of the treatment of infected wounds on the Western Front. [4]

EXAM QUESTION

Revision Summary

You've made it through the whole section — now it's time to test your mettle on some revision questions.

- Try these questions and tick off each one when you get it right.
- When you've done all the questions for a topic and are completely happy with it, tick off the topic.

Trench Warfare on the Western Front (p.33-34) ☐

1) Name four key places on the British sector of the Western Front. ☐
2) Give three defensive features of a trench. ☐
3) What was a traverse? ☐
4) What were communication trenches used for? ☐
5) Give two features of a reserve trench. ☐
6) Why were mines used at the Battle of Messines to destroy Hill 60? ☐

The RAMC and the FANY (p.35) ☐

7) Give three types of transport used by the RAMC. ☐
8) Why was it hard for the RAMC to move wounded men away from the front line? ☐
9) Write down two features of Casualty Clearing Stations. ☐
10) Where was the underground hospital that was built by the Allies? ☐
11) Name three things that the FANY did during the war. ☐

Conditions in the Trenches (p.36) ☐

12) Name three illnesses caused by poor conditions in the trenches. ☐
13) Why was trench foot less common by 1915? ☐
14) Describe the effects of mustard gas. ☐
15) How did phosgene kill? ☐
16) Name one place where chlorine gas was used during the war. ☐
17) Give three symptoms of shell shock. ☐

Wounds and Injuries (p.37) ☐

18) Why were Brodie helmets issued in 1915? ☐
19) What did Dr Harold Gillies work on during the war? ☐
20) Name three kinds of injuries that might be caused by a shell explosion. ☐
21) Give two reasons why soil on the Western Front was contaminated. ☐
22) Name two serious wound infections that soldiers were at risk of on the Western Front. ☐
23) How was carbolic acid used as an antiseptic? ☐

Developments in Surgery and Medicine (p.38) ☐

24) What was aseptic surgery? ☐
25) Describe Depage's two-step approach to wound treatment. ☐
26) Why did X-ray machines improve aseptic surgery? ☐
27) What was the Thomas Splint? ☐
28) Name two methods of blood transfusion used during the war. ☐
29) What did Captain Oswald Robertson do before the Battle of Cambrai? ☐

Exam Skills

Now you've made it through all of the horrible details (phew!), it's time to think about how to use all of your lovely knowledge in the exam. This page tells you what you can expect in the exam and how to deal with it.

You'll be asked to Write About the Key Features of your Site

In the exam, you'll need to be able to identify and talk about the key features of your site.

Key features of a historical site are any details, characteristics or unique features that stand out and make the site, or part of it, special. They are the main or most important characteristics of the site. For example, the layout and organisation of the trenches, trench conditions, illnesses and injuries caused by trench warfare, and the chain of evacuation are all key features of the Western Front.

1) You'll be asked to describe two different features of a certain aspect of the Western Front.
2) To get all four marks, you'll need to identify two features and then give a little bit of extra information that's relevant to each one.

You only need to talk about two key features — writing about more won't get you any extra marks.

Give a description of **two** features of Base Hospitals on the Western Front. [4 marks]

Base Hospitals could treat up to 400 men at a time. They were set up in big buildings in towns.

Base Hospitals were set up near major river and railway networks. They collected men from trains and barges.

Identify a feature, then add some supporting information that gives a bit more detail.

Make sure your supporting information is linked to the feature that you've talked about.

There'll also be a Question about the Usefulness of Sources

In the exam, you'll be given two sources and asked to decide how useful they are for answering a question about your historic site. Here are some tips on how to analyse the usefulness of a source.

1) Think about the source's provenance (where it's from) and how that might affect its usefulness. There are three main things to think about when you're analysing provenance.

Nature — what is the source (e.g. a photo, a document)? What can it tell us?
Origin — where and when was the source created? Is it contemporary?
Purpose — who created the source and why did they create it?

Have a look at p.40-41 for more tips on answering the source questions in the exam.

2) Think about the strengths and weaknesses of each source. Some sources are more useful than others, depending on their provenance and the kind of information that you're trying to find out.
3) Analyse the sources by picking out key details and explaining what each source can and can't tell you. Think about how useful these details are for answering the question.
4) Use your knowledge of the historic site to put the sources into context — use what you know to decide how typical the information in the source is.
5) Make a judgement about how useful the sources are for answering the question. Base your judgement on the results of your analysis and your own knowledge.

Don't just bring in random bits of information — make sure you stick to stuff that's relevant to the question.

In 2008, a man broke 46 toilet seats with his head in one minute...

Random facts are fun, but they're also pretty useless if you're trying to pick up marks in the exam. Study all of the key features of your site — it'll help you to answer the questions with the most relevant examples.

Types of Sources

When you're talking about the usefulness of sources, it's a good idea to think about what that source can and can't tell you. Some types of sources will give you information that other types of sources don't.

Different Types of Document have different Uses

Documents are written sources that contain information or evidence.

1) Documents like official records or government reports are useful if you're looking for statistics or factual information about your site and the people who used it.
2) There's often a date attached to official documents too, so you can tell exactly when the source was written. This is useful if you're looking for evidence that's linked to a particular time in your site's history.
3) Documents can be quite one-sided, and it's not always obvious who wrote them, so it can be hard to decide how reliable they are. This affects how useful the source is, as it's hard to judge how reliable the facts in the document are.

Documentary sources for the Western Front include diaries, letters, medical records, official reports written by RAMC and army officers, hospital admission records and government reports.

Documents
- Official Records
- Government Reports
- Diaries and Letters

4) Record collections are useful if you're trying to spot patterns or work out how typical a piece of evidence you've found might be. Lots of records are based on forms that ask for certain facts or information about a person, so they're really useful for comparing the experiences of different people.

Field Ambulance hospital admission records were based on forms. They sometimes used a wound classification code to show what type of wound a soldier had — these records are useful for working out which kinds of wounds were the most common.

First-hand Accounts can be More Personal

1) First-hand accounts are really useful for finding out what it was like to live in a particular place. They often reveal details about a historic site that less personal sources don't mention.
2) It's important to look at the provenance (p.39) of first-hand accounts.

A trench map can't tell you what it felt like to be on the front line, but a diary entry or memoir extract that describes life at the Front can give a really good idea of how it felt. Personal accounts can be one-sided, though, so they're only useful as evidence of the experiences of the person who wrote them.

- A diary entry written as events were happening might be more accurate than a memoir or autobiography written years later, as it's easy to forget details, or focus on some more than others.
- An official account has a different purpose to a personal account. They're more useful if you're looking for technical details or if you want to know about the priorities of the people in charge.

First-hand Accounts
- Diaries or Memoirs
- First-hand Reports
- Autobiographies
- Oral Accounts

Image Sources can Show what a site Looked Like

1) Maps and plans are useful sources for looking at how a site was laid out and organised. Maps covering large areas are useful for putting the site into a wider context. Maps of a specific part or physical feature of a site can give a detailed picture of how the site looked and worked.
2) Photos give a snapshot of what a historic site looked like at a particular time. Photos don't always tell the whole story, though. Every photograph is taken by a photographer who chooses what to focus on and what to leave out.

Some photos of soldiers on the Western Front were posed so that journalists could use them in magazines. They showed an idealised version of life in the trenches. When you're analysing a photo to decide how useful it is, it's a good idea to use your own knowledge to decide whether it's giving a typical or accurate picture.

Image Sources
- Photographs
- Maps
- Plans
- Diagrams
- Artwork

Some sources are more useful for putting on chips...

Different types of source are better for answering certain questions. Think about what the source was originally designed to do or say — this'll help you to decide how useful it is for answering your question.

Analysing Sources

This page shows you how to analyse a source for usefulness — there are a few key things to remember.

You'll be given Two Sources and asked to Analyse their Usefulness

In the exam, there'll be a question that asks you to analyse two different sources and decide how useful they are for carrying out an enquiry. Both of the sources will be contemporary and at least one will be written.

How useful are these two sources for studying the problems involved in managing wound infection on the Western Front? [8 marks]

The question will sound something like this.

Analyse the Provenance of the Sources and Say Why It Matters

It's important to look at provenance (p.39), as it can affect the usefulness of a source:

1) Knowing who wrote a source and why will help you to decide how reliable it might be. If the author had a reason to lie, leave out details or exaggerate them, then the usefulness of the source is affected.
2) It's important to work out the original purpose of the source — think about what kind of information it was meant to get across and whether this limits its usefulness for answering your question.

For example, a medical article about wound infection in British hospitals might be useful for understanding different types of wound infection, but it might not give any information about the specific problems that were caused by the conditions on the Western Front. This would limit its usefulness.

Talk about the Strengths and Weaknesses of Each Source

A key strength of Source A is that it's a diary that incudes dates. It says when the soldier was diagnosed with a septic cut, and when he was in hospital, which shows how long it took for him to be moved to a place where his wound infection could be treated.

Source A

Apl 27 Germans sent over gas shells which burst 200 yards away. Sent out thick yellow smoke which rolled along like a fog bank, the wind driving it away. Went to doctor to see about a cut on the ankle. He said it was septic and sent me to hospital.
Apl 28 In hospital. Plenty of company, wounded coming in all the time.

From the war diary of John French, written in 1916

A weakness of this source is that it only shows one man's personal experience of being treated for wound infection. It doesn't tell you very much about the wider treatment of wound infection throughout the Western Front.

Use your Own Knowledge to put Key Details into Context

This extract talks about an infection that caused problems on the Western Front — gas gangrene. It was written two years after Alexis Carrel and Henry Dakin developed their irrigation technique to treat wound infection.

Source B

That the septic character of wounds is disastrous is also well known. During the early hours, or the first few days, the wound is exposed to the danger of gas-producing infection. Later are developed the various infections, which, either in the seat of fracture, in joints laid open, or in extensive lacerations of soft parts, sometimes give rise to lesions leading to amputation or to death.

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Extract from 'The Treatment of Infected Wounds', written by Alexis Carrel and Georges Dehelly in 1917

Bring in some relevant knowledge, then use it to make a judgement about the source.

The source is useful, as it shows that wound infection was still a big issue in 1917, even after Carrel and Dakin's efforts.

Barbecue sauce has no weaknesses...

Source analysis might sound a bit complicated, but it's not so bad once you've practised the skills on this page. Make sure you support the points you make with your own knowledge and stuff from the sources.

Historial Enquiries

In the last bit of the exam, you get to use all of your lovely source analysis skills to design a historical enquiry.

The Last Question will ask you to Plan a Historical Enquiry

1) Once you've decided how useful your two sources are (p.41), then you'll be asked to explain how you'd use one of the sources to find out more about the issue in the first part of the question.
2) You'll be asked for four pieces of information — you'll get a mark for each one.

Identify a Detail in the Source that you'd like to Investigate

How could you follow up Source A to find out more about the problems involved in managing wound infection on the Western Front? [4 marks]

Source A

Apl 27 Germans sent over gas shells which burst 200 yards away. Sent out thick yellow smoke which rolled along like a fog bank, the wind driving it away. Went to doctor to see about a cut on the ankle. He said it was septic and sent me to hospital.
Apl 28 In hospital. Plenty of company, wounded coming in all the time.

From the war diary of John French, written in 1916

Read the question and work out what it wants you to investigate — this'll help you to pick your detail.

This bit of the source is a good starting point if you want to follow up on the topic of wound infection — it mentions a small septic wound, but it doesn't give very much information about it.

Decide what Questions still need to be Answered

1) Next, you'll need to create a question that will help you find out a bit more information about the detail that you've picked out.
2) Your question should help you to follow up on the issue that's been identified in the exam question.

Make sure your question is linked to the detail that you identified.

Was infection in small wounds a big issue for hospitals on the Western Front?

Identify which Type of Source you'd use to Answer your Question

After you've written a question, you'll need to say which type of source you could use to answer it.

1) Start by thinking about what kind of information you need to answer your question.
2) For example, the question above is designed to find out how common infection in small wounds was — in other words, it's questioning whether the soldier's experience in Source A is part of a bigger problem.
3) To answer this, you need to know how many soldiers were sent to hospital with septic wounds. A good source to use would be hospital admission records that say why each soldier was admitted to hospital.

Explain How the Source will help you to Answer the Question

It's a good idea to think about the strengths of the source and why it would be useful for your enquiry.

This source would show how common it was for soldiers to be admitted to hospital with small infected wounds, which would help me to see how much pressure this put on Western Front hospitals.

Hospital admission records would be very useful for finding out how many men were admitted to particular field hospitals with septic wounds. You could use these records to work out whether septic wounds were a big issue compared to other medical problems and injuries.

Be a historian for a day...

This question is like being a historian for a day (well... okay... more like for a few minutes). It's a bit more straightforward than the source analysis question — follow the four steps on this page and you'll ace it.