

Name: _____

Medicine in Britain, c1250-present – 1-4



This booklet is designed to support you in your studies – reading around the subject at home will be essential.

This exam paper will ask you questions on both Medicine Through Time and Medicine on the Western Front (see additional support guide).

You will need to answer 3 questions and have 50 minutes to do this.

You **must** answer Questions 3 and 4 and then choose **either** question 5 or question 6.

This is worth 20% of your final GCSE grade.

This revision guide is designed to help support you in preparing you for your medicine through time exam There are five units to study here:

- Medieval Medicine
- Renaissance Medicine
- Medicine in 18th and 19th century Britain
- Medicine from 1900 to the present day.
- Medical Treatment during the First World War

Question 3: *Explain one way....* **4 marks**

to spend only **five minutes** on this. Give either a similarity or a difference. E.g. *one similarity is that....*

Question 4: *Explain why...* **12 marks**

This asks you to **give the reasons why something has happened**. You should spend about **15 minutes** on this question. You are given two bullet points as prompts **but you do not have to use them**.

e.g. one reason why smallpox was no longer a problem was that...

this is because...

another reason is that...

this is because...

EITHER Q5 or Q6 *How far do you agree...* [16 marks + 4 SPAG]

Spend about **30 minutes** on this question and a choice of which question you want to answer.

You **must** come to a decision at the end and you should think about both sides of the argument. Spend some time planning this answer before you start – put your points under ‘for’ and ‘against’ headings.

e.g. One important reason for development in surgery is chloroform. This is because...

another reason is Joseph Lister. He discovered that...

Overall, I think the most important reason is

How to work out centuries:

Cover the last two numbers and add one to the remainder.

E.g. 1914 is in the twentieth century

1252 is in the thirteenth century

c.1700 wherever you see a small ‘c.’ before a date this means ‘circa’ or around. Usually used when we are not talking about exact dates.

When completing an extended answer use these connectives to help you make your answer better

Be very careful not to tell the story – these phrases will help you. Try to use them in every piece of writing you do.

To compare

similarly as with like in the same way

To show differences

instead of otherwise unlike but on the other hand

To show causes and consequences (what happened afterwards)

because so therefore this led to...

To give examples

for example such as

Unit 1: Medicine in Medieval England c1250-1500

What did people think cause disease?

Religion

People in medieval England were very religious

Illness was very common (**malnutrition** was very common) and remained a mystery so the Church used religion to provide the answers. They taught that sins would be punished by God.

Leprosy was a disease believed to have been sent by God.

Astrology

People believed how the planets and stars were lined up could cause illness. This was a **supernatural** cause of disease.

Key words

Malnutrition

an illness caused by lack of food

Leprosy

skin disease, followed by paralysis and death

Diagnosing

looking at symptoms to decide what is wrong with a patient

Physician

another name for a doctor

Vivisection

criminals who were dissected alive

Scourge

something that causes great suffering

Flagellants

a group who punished themselves during the Black Death in the hope that God would take pity

Quarantine

Separating the sick from the healthy

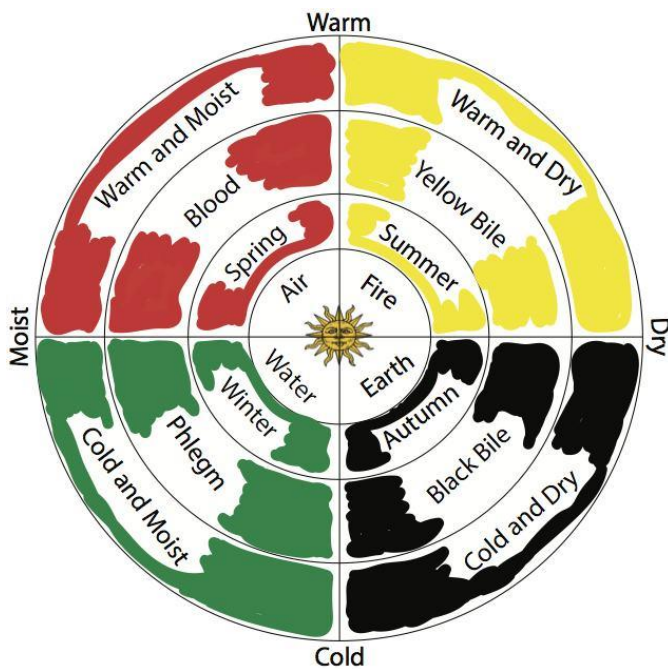
The Four Humours Theory

This was an idea from Ancient Greek times. It stated that the body was made up of four different humours (liquids):

- Blood
- Phlegm
- Black bile (poo)
- Yellow bile (vomit)

This idea was started by a man called **Hippocrates**, he linked illness to what he could see around him.

In Ancient Rome, **Galen**, another famous doctor, developed the theory further. He created the **Theory of Opposites**, for example he said that an excess of phlegm could be cured by eating hot peppers, a fever could be cured by cucumbers to cool the patient down.



If there was too much of one humour in the body a person became ill.

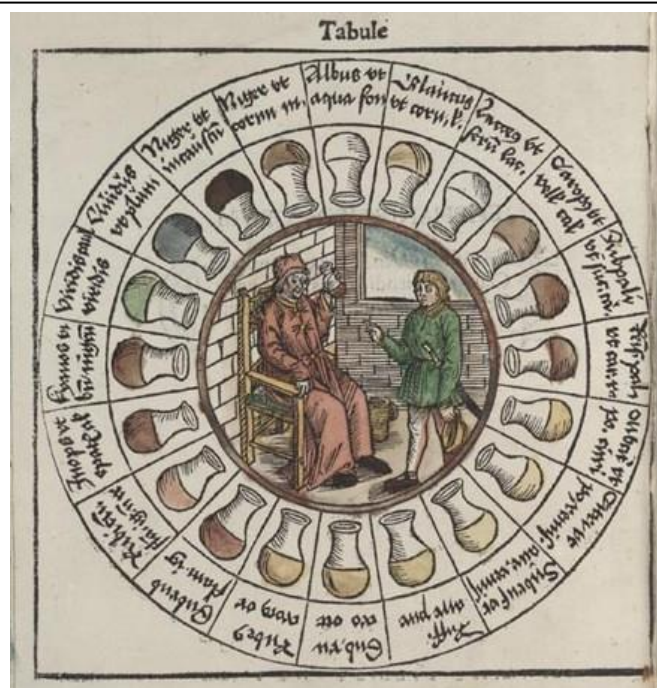
There was no other major idea for the cause of disease

Miasma

A miasma was bad air and people thought it could cause disease.

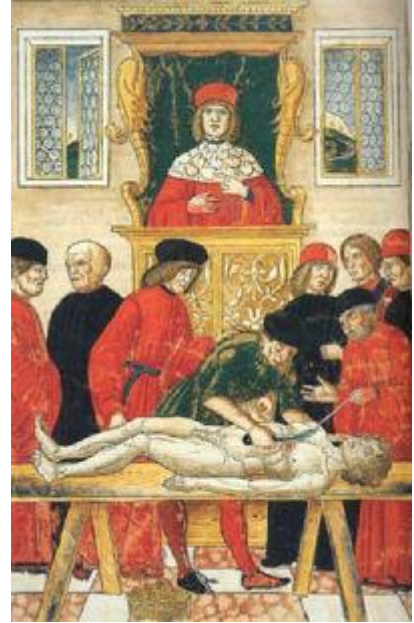
Diagnosis illness

Many Medieval doctors examined the colour, smell and taste of the patient's urine, and made an on-the-spot guess as to what they might be suffering from.



Why did ideas stay the same in the Middle Ages?

- **Hippocrates and Galen:** doctors were taught by the books of Hippocrates and Galen. Galen had said that the body was designed for a purpose – this could only be done by God. The Christian Church liked this and agreed with Galen's ideas.
- **The Church:** The Catholic Church ran universities and printed medical books. It told people they had to believe in the Four Humours Theory.
- **Scientific and technology:** Science was not good enough for any other causes of disease. The church would not allow bodies to be dissected (cut up) unless they were criminals. In the picture you can see the doctor in the background reading aloud from a book by Galen. A **Barber Surgeon** is doing the cutting up of the body.



Explain why there was **continuity** in ideas about the **cause of disease** in the period 1250-1500

You may use the following information in your answer:

- The Church
- Galen

You **must** also use information of your own. **12 marks**

What are the key words in this question?

Continuity = things staying the same

Cause of disease = what did people think caused disease?

You have been two helpful hints to help you answer this question – the Church and Galen. Think about what you know about these two things – if you are struggling with the question just tell me what you know about these things – you cannot lose marks!

1. The Church – how did the Christian Church stop new things in medicine? (think about what they didn't allow to happen)
2. Galen – you could talk about the Four Humours Theory and why it means new ideas were not allowed (why did the Church like Galen?)

How did they treat and try to prevent disease?

Supernatural (religion)

If God caused illness, then he could also cure it. People could cure illness by:

- Prayers and spells
- Fasting (going without food)
- Pilgrimages (journeys to religious places)
- Doing nothing – if God had sent the disease to clean the soul then it was important to let it run its course.

Astrology was also used to diagnose illness and treatments were given according to horoscopes and where the planets were.

Four Humours - Bleeding

bloodletting was the most common treatment, bad humours could be removed by removing some of the blood. It was usually carried out by Barber Surgeons. It could be done in different ways

- Cutting a vein: a vein was cut open with a sharp knife.
- Leeches
- Cupping: the skin was pierced until it bled, a heated cup was then placed over the cut to draw out the blood.

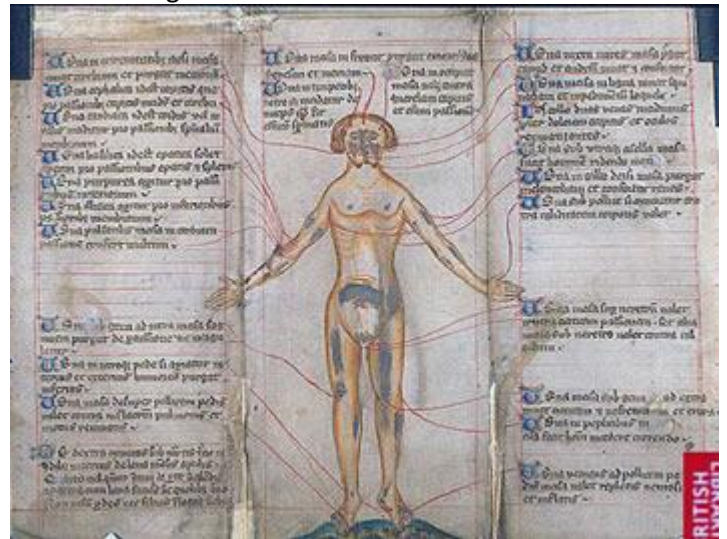
Herbal remedies & Bathing

People were given mixtures of different herbs to treat illnesses.

Different foods were given to balance the humours, e.g. chicken and almonds as the ingredients were warm and moist.

Warm baths were often prescribed to get rid of blockages in the humours. Plants and herbs were added to the bath water. Sometimes they were less pleasant – for paralysis (not being able to move) patients were advised to boil a fox in the water and bathe in it – foxes are quick and nimble

A bloodletting chart



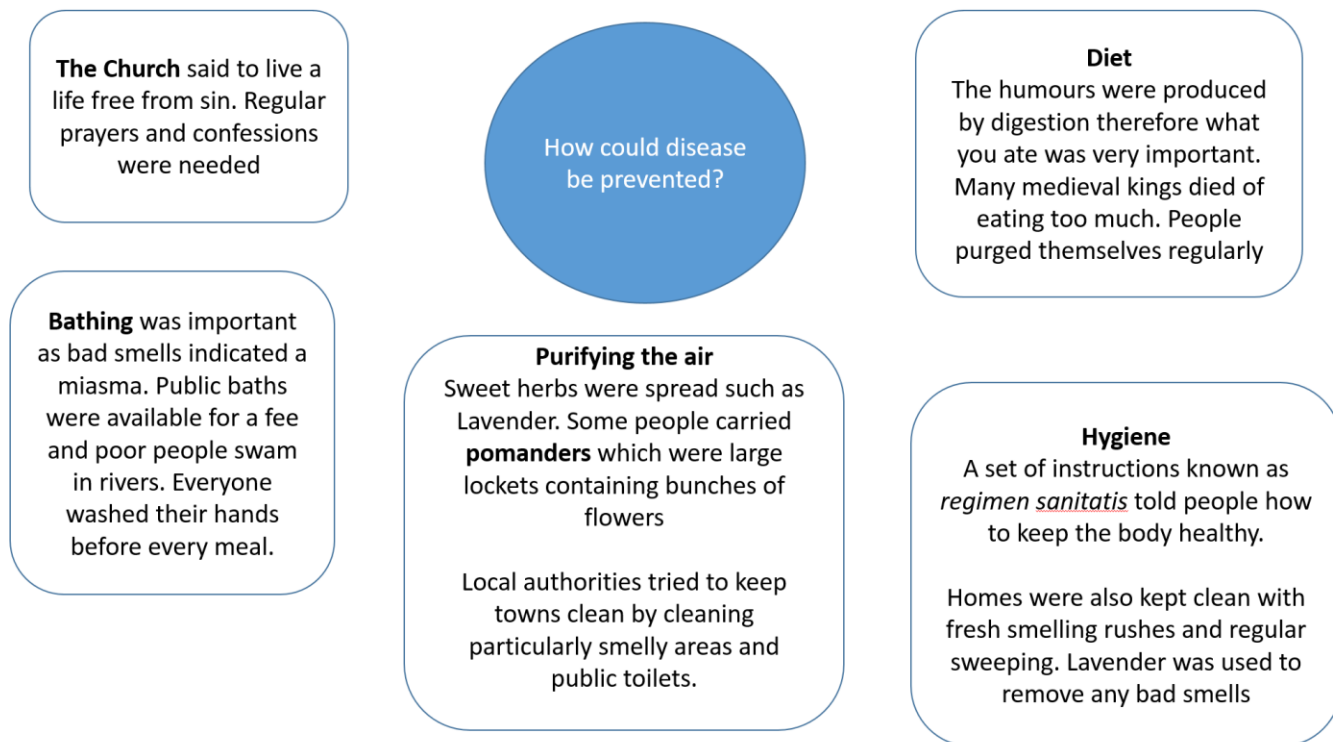
The Four Humours - purging

Purging

People thought that food could cause an imbalance of humours so doctors gave them herbs to make them vomit or laxatives to make them poo.

If more help was required an **enema** was given – a mixture of herbs and oils were squirted into a patient's anus using a greased pipe fixed to a pig's bladder.





Who would you visit for treatment?

Physicians (doctors) Medieval doctors were known as physicians and their main role was to diagnose illness and give treatment. They didn't usually look at patients themselves. The physician would take a sample of urine, faeces (poo) and blood. They were expensive as there weren't many of them because training took so long (7-10 years) Cost: £££££	Apothecaries They mixed herbs. They were cheaper than doctors but mixed the medicines they prescribed. They also sold poisons. Cost: £££
Barber Surgeons They had sharp knives. They could take out teeth and bleed patients. They would advertise their services by putting a bowl of blood in the shop window until 1309, after that they displayed a sign of a bandaged, bloody arm. Some were highly trained and learned from doing surgery rather than books Cost: ££	Women They treated most people at home – they made the patient comfortable, prepared food and mixed herbal remedies. Women would also grow plants for medicine. There is some evidence that they also carried out minor surgery and bleeding but the records are patchy. Cost: Free

Medieval Hospitals



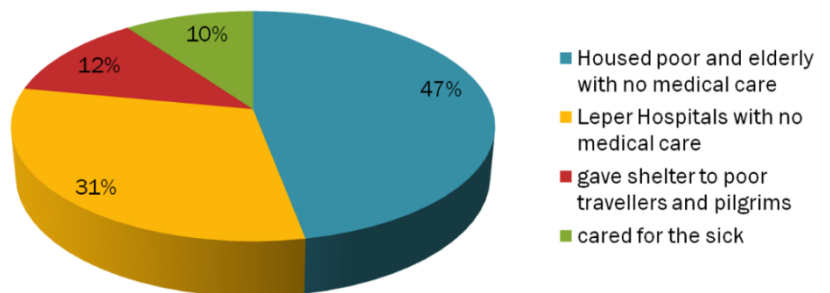
The Hotel Dieu in Paris. This is where the king's doctors worked

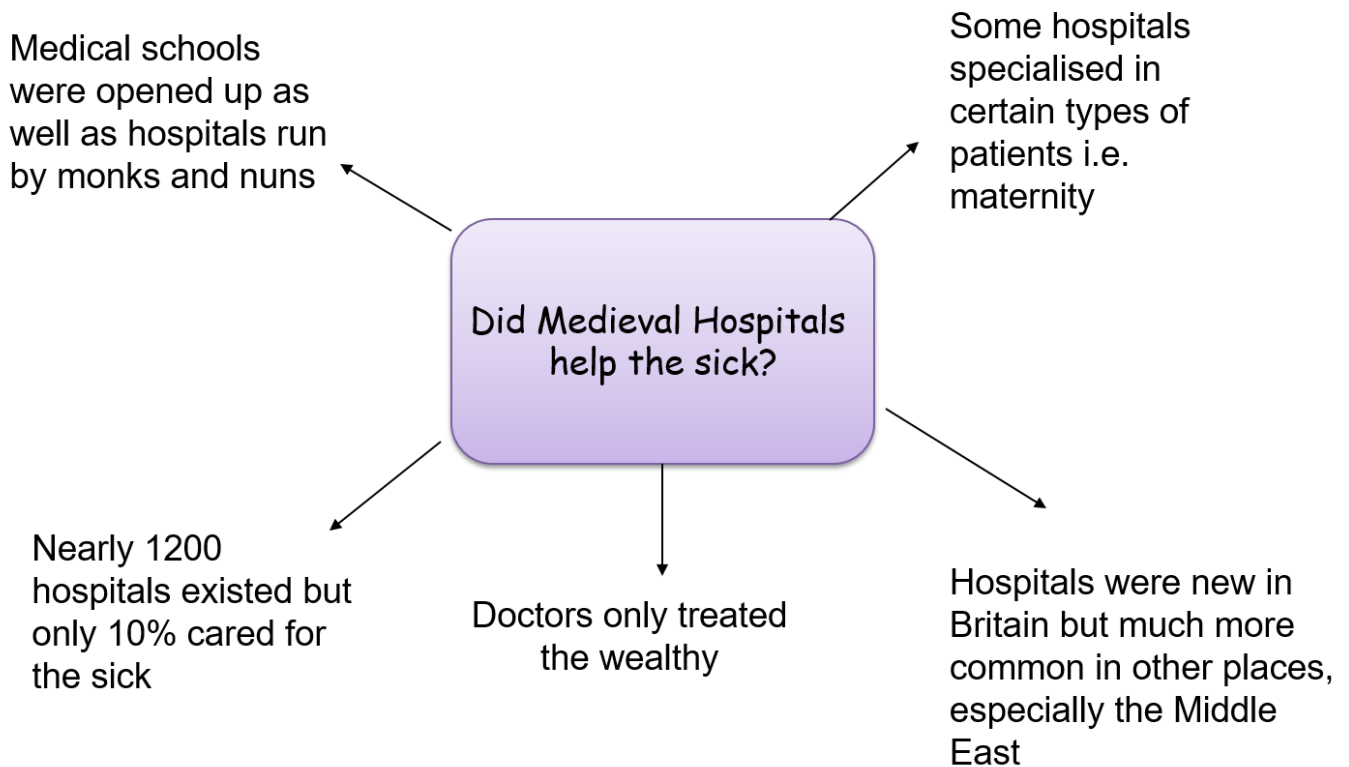
- The term Hospital comes from the Latin word “hospes” meaning stranger or guest. Most hospitals looked after travellers not sick people.

- Some hospitals specialised in certain diseases such as

Leprosy

- There were nearly 1200 hospitals in Medieval England and Wales. However, most did not even have a doctor
- Patients were given food and a bed although they often had to share; treatments included herbal remedies but prayer was also important





‘Hospital treatment in England in the period from 1250 to 1500 was **very rare’**.

How far do you agree? Explain your answer

You may use the following information in your answer

- Charity hospitals
- Care in the home

You **must** also use information of your own. **[16 marks + 4 SPAG]**

What are the Key words in this question?

So what is it asking you? (did many people get treatment in hospitals?)

It has given you hints to help you with your answer – ignore the word charity and just look at hospitals. Care in the home...you guessed it: women! You have to decide if you agree whether people actually had much medical treatment in hospitals. Follow this writing frame:

People did receive some treatment in hospitals. For example...

However, this was not good because...

Most people would be treated in the home by...

This is because...

Overall, I think that most people did/didn't go to hospitals because...

Case Study: The Black Death 1349

What was it?

People called it the 'Scourge' and did not have any treatment for it.

The Black Death was **Bubonic Plague** that was spread by **fleas** who lived on the rats travelling on ships.

The disease would last about 3-5 days and we think **1/3 of the population of England died**.

The plague returned every 10-20 years after 1348 although it was never as bad.

What were the symptoms of the plague?



Day 1 Painful swellings called buboes appeared in the victim's armpits and groin. These were usually about the size of an egg, but could sometimes be as big as an apple.



Day 4 The disease attacked the nervous system. This caused the victim to suffer spasms. The victim was in terrible pain.



Day 2 The victim vomited and developed a fever.



Day 5 Sometimes the buboes burst and a foul-smelling black liquid oozed from the open boils. When this happened the victim usually lived. However, in most cases the victim suffered a painful death.



Day 3 Bleeding under the skin caused dark blotches all over the body.

What did people think caused it?

- Black death was a punishment from God
- Mars, Jupiter and Saturn lined up in a strange way
- Miasma (bad air)
- The Jews had poisoned the wells



What treatments were available?

- Praying to God
- bleeding and purging
- strong smelling herbs
- lighting a fire and boiling vinegar
- lancing the buboes
- apothecaries sold remedied and herbs

How did people try to prevent it?

- pray to God
- go on a pilgrimage
- **Flagellants** who went around whipping themselves to punish themselves and prove to God that they were sorry
- Run away
- Carry flowers and herbs to avoid breathing in miasma
- Avoid bathing (water would open the pores to the infected air)
- Avoid those with the disease
- **Quarantine** laws were put in place to stop people moving around
- People were told not to be in large crowds
- They also stopped cleaning the streets as they believed that the foul smell of rubbish and rotting bodies would drive away the Plague

Unit 2: The Medical Renaissance in England c.1500-c.1700

Renaissance is a period in History when Ancient Greek and Roman ideas came back into fashion.

Universities set up schools of medicine. The Renaissance saw the beginning of **scientific method** - which involved experiments which led them to question the knowledge of the Greeks and Romans. This was important for the development of medicine.

	Key words
Reformation	Change in religion from Catholic to Protestant
Humanism	A love of learning and a belief that humans could make up their own minds about the world
Royal Charter	a document from the king granting a right or power to a person or group
New World	North and South America
Dysentery	A stomach bug causing severe diarrhoea
Anatomy	Study of how the human body works
Quack Doctor	no medical training but sold remedies to patients promising to 'cure-all'

New Ideas

- Some doctors were starting to reject the Theory of the Four Humours
- In 1628 **William Harvey** suggested that blood was circulated around the body
- A better understanding of the digestive system was developed – people no longer believed that disease was caused by eating the wrong foods
- By 1683 more powerful microscopes allowed the observation of tiny 'animalcules' (little animals). This was the first recorded observation of bacteria

Did Medicine change? Not really...no

- It was still impossible to diagnose or treat problems inside a living patient
- People still believed in the Four Humours Theory
- Even though the Christian Church was not as powerful, people still looked to God
- The idea of Miasma was still used

Explain **one** way in which ideas about the **cause of disease and illness** were **similar** in the 14th and 17th centuries

[4 marks]

This asks you to compare the Middle Ages and the Renaissance. Can you give one thing that was the same about the cause of disease during these two time periods (miasma, four humours theory, God) and give a little bit of extra detail?

[illegible]

Thomas Sydenham



Thomas Sydenham was a doctor who observed his patients carefully and kept detailed records.

- Sydenham began to work about 1656 in London, where he made a study of epidemics (rapid spread of a disease). This work formed the basis of his book on fevers (1666).
- He was among the first to describe scarlet fever.
- He also insisted that doctors should visit the sick
- but he taught that disease was caused by 'atmospheres' (the weather)

Who were the Royal Society?

- Scientists wanted to be able to share ideas. Its aim was to carry out experiments.
- It published the world's first scientific journal. This was a really important way for scientists to share their work
- It encouraged its members to write in English, not Latin, making it easy for everybody to read and that copies were put into a library. It meant scientists could read each other's work

The Printing Press

- This was created in 1440 and was a machine that could print pictures and text, before this books had to be copied out by hand which made them very expensive.
- Information could now be spread very quickly and accurately. Scientists could publish and share their work.
- Before the printing press the Church had controlled all printed books, this meant most books were about religion, now a much wider variety of subjects could be printed.

Continuity	Change
○ Bleeding, purging and sweating were used to rebalance humours ○ Herbal remedies were still used ○ Cleanliness was still important – but bathing was less fashionable – people were afraid of catching syphilis! They were more likely to change their clothes	○ Idea of transference – an illness or disease could be transferred to something else – some people used to sleep with a sheep in the bedroom hoping that their fever would transfer to the animal! ○ New plants were brought back from the New World ○ people began to look for chemical cures for disease – metals were used as cures ○ Ideas about the atmosphere causing disease were becoming more popular and people measured weather over a long period of time ○ Fines were given for not keeping the street clean and removing sewage and rubbish was given as a punishment

Explain **one** way in which ideas about the treatment of disease were different in the 14th and 17th centuries

[4 marks]

Renaissance Doctors

- were well educated and trained
- did 'scientific' research
- However, they charged very high fees and only the richest people could afford them

The medicine available to ordinary people depended on what they could afford. The people they turned to for medical advice included:

- country doctors - lower fees than town doctors, but not well-trained
- barber-surgeons - who were paid to perform small operations
- apothecaries (chemists) - no medical training, but sold medicines and groceries
- quacks - travelling barbers, tooth-pullers, who sold medicines which were supposed to cure everything
- wise women, neighbours and local 'witches'



Andreas Vesalius

Vesalius studied medicine in Paris and Padua, a very famous university.

He drew diagrams that labelled the human body. He cut up the bodies of executed criminals and made detailed drawings.

In 1543 he published his book and corrected over 300 of Galen's mistakes including:

[Remember Galen? The Ancient Greek doctor whose ideas were really important in medicine during the Middle Ages]

- the human jawbone is in one part, not two
- the main vein leading out of the heart did not lead to the liver

He told other doctors to dissect bodies. Artists produced detailed drawings for his books.



'Individuals had the biggest impact on **medical training** in the 16th and 17th centuries'

How far do you agree? Explain your answer

You may use the following information in your answer:

- Vesalius
- The Printing Press

You **must** also use information of your own. **[16 marks + 4 SPAG]**

Work out the key words in this question – what is it asking you? IF you are struggling to understand what the question is asking look at the bullet points beneath it and tell me what you know.

It is asking you whether important people (individuals) changed how doctors learned medicine. Use the writing frame below to help you structure this...

Vesalius was very important in the Renaissance because...

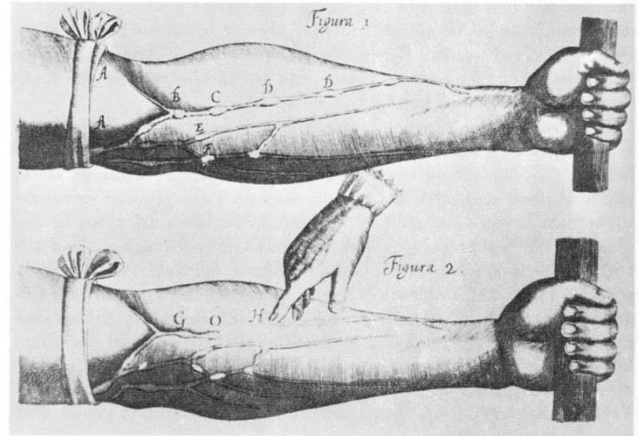
The Printing press allowed doctors to...

Overall, I think the most important reason was...

Case Study: William Harvey

What did Harvey prove?

- Harvey explained how **blood flowed in one direction** throughout the body
- He dissected human corpses and cut open cold blooded animals to observe the movement of the blood.
- Galen had said that blood flowed through the heart. Harvey proved that there were **no holes in the heart**, that the veins carried just blood and the **heart acted as a pump**.



How important was he?

- He encouraged other scientists to experiment on bodies
- His book was widely read

But

- His discoveries had little practical use in medical treatment
- A lot of doctors ignored and criticised him

Hospitals and Community Care

Hospitals Improvements were made since the Middle Ages: ○ People got well fed ○ Doctors would visit the patients ○ Many had pharmacies to mix medicine BUT... When Henry VIII closed down the monasteries after 1536 many hospitals closed	Pest Houses These were hospitals that specialised in a particular disease – hospitals opened to treat the plague or smallpox. Normal hospitals still did not admit contagious patients (those who had disease that could spread) but these patients had to go somewhere.
Women Most people continued to be treated at home and women played an important role on treating the sick. They usually mixed and sold simple herbal remedies. This was still cheaper than a physician or apothecary.	

Case Study: The Great Plague 1665

- Lasted from June to November
- 100,000 people died in London (1 in 5 people)
- They still didn't know what caused it so they blamed...
 - The planets
 - God was punishing them
 - Miasma (bad air) causing by stinking rubbish on the streets
 - Person to person infection

How was it treated?

- Locking victims in their home
- Wrapping victims in woollen clothes and lying them by the fire – sweat it out
- strapping a live chicken to a buboes to draw out the poison
- Herbal remedies

Doctors said that people should...

- Pray
- Carry a Pomander (a ball containing nice smelling flowers)
- Fasting (not eating) or eating a garlic heavy diet
- Smoke tobacco
- Cath syphilis (a nasty STD)

He looks like a bird because his mask was stuffed with herbs to keep away the bad air. It was shaped like a bird because it was believed that birds attracted the disease, therefore would leave the patient alone.

The wax cloak would be wipe clean (think about the symptoms of the plague). The stick was for beating people away.

The Plague Doctor



Did the government help?

YES...

- Public meetings and theatres were closed 😊
- Streets and alleyways were swept and cleaned 😊
- Searchers and wardens checked for plague victims and quarantined the houses. Houses were painted with a large red cross. Carts would travel through the streets and collect dead bodies 😊

NO...

- Fires were set to burn on streets to drive away the miasma 😞
- 40,000 dogs and 200,000 cats were killed 😞
- Charles II said everyone should fast regularly 😞

Explain **one** way in which ideas about preventing the plague were different in the 14th and 17th centuries [4 marks] – *choose one similarity from the table below and add detail*

The Black Death and the Great plague	
Similarities	Differences
- Many still believed God had sent the plague as a punishment for their sins - government ordered for days of public prayer and fasting so people would publicly confess their sins and beg God for mercy - Others still blamed the movement of the planets as they did in the 14th century - Blamed the poisonous air - Still no cures found for the plague - Doctors followed their clients out of London to the countryside - Both were spread by rats - Houses were marked with a red cross and 'Lord have mercy upon us' - Blamed minor groups	- It seems that there was a more scientific approach to understanding the plague - weekly bills of mortality were kept and some observers linked dirt with disease as they saw that the highest number of deaths were from the poorest, dirtiest parishes where people were crammed into the worst housing - Methods of preventing the spread of the plague were more carefully planned out - the mayor of London did a lot more to help - Victims were shut up in their houses with watchmen on guard to stop people from going in or out - When a person died 'women searchers' were sent to examine the body to check that the plague was the cause - surgeons would confirm their findings - The victims' bedding was hung over the smoke of fires before it could be used again - Fires were lit in streets to cleanse the air of poisons - Householders were ordered to sweep their streets in front of their doors - making the city cleaner - Pigs, dogs, cats and other animals were ordered to be kept inside - this hindered the prevention of the plague as it was spread by rats and now there was nothing to kill them - Public events eg plays were banned to prevent the gathering of large crowds - People had began to see the link between dirt and disease but couldn't explain it scientifically

Explain why there was continuity in the way disease was treated in the period c.1500-1750.

You may use the following in your answer:

- The Great Plague
- Attitudes in society (resistance to change)

You **must** also use information of your own [12 marks]

Continuity = what stayed the same

There were lots of similar ideas about the causes of disease. For example...

The ideas didn't change because...

During the Great Plague people still thought that...

Unit 3: Medicine in 18th and 19th century Britain (1750-1900)

Key words

Inoculation	giving somebody a small dose of a disease to create immunity.
Vaccination	creating antibodies against a disease
Spontaneous Generation	a belief that decay <i>caused</i> germs to appear
Pasteurisation	Heating liquid to kill germs
Bacteriology	the study of bacteria
Cholera	disease causing severe vomiting, diarrhoea, dehydration and death
Antiseptic	kills germs on a wound
Aseptic	a germ free environment
Pharmaceutical	Using drugs for medicine
Anaesthetic	Making the patient unconscious
Gangrene	death of body tissue
Antibodies	particles inside the body that can identify and fight off germs
Laissez-faire	governments who do not get involved in the lives of their people
Epidemic	a widespread outbreak of a disease
Cesspit	a pit for storing sewage

Case Study: Edward Jenner and Vaccination

Lady Mary Wortley Montague witnessed **inoculation** in Turkey in the early 1700s. She had nearly died from smallpox when she was younger and was keen to protect her children.

Inoculation means giving somebody the disease – this was not very safe!

Edward Jenner

Edward Jenner trained as a doctor in London and then returned to Gloucestershire to become a local doctor.

Jenner noticed that **milkmaids who got cowpox** (a weaker version of smallpox causing blisters) did not go on to develop smallpox and thought that the two must be connected.



A local milkmaid, Sarah Phelps, came to him with cowpox and Jenner used the **cowpox matter to inject into eight-year-old James Phipps**. Six weeks later he inoculated James with smallpox but James did not catch it. He **repeated this experiment** several times on both James and local people.

He named his technique '**vaccine**' after the Latin word *Vacca*, which means cow.

How did people react to Jenner's discovery?

People opposed Jenner because...

- this only worked between smallpox and cowpox. It **did not work for any other disease**.
- Jenner could **not explain** how the link between cowpox and smallpox worked
- **some doctors were not careful enough** and gave their patients smallpox
- **doctors lost money** because people no longer paid for inoculations



BUT...

- From the 1800s onwards the British government supported this method of vaccination. It was **safer, more reliable and cheaper**.
- It became very popular in Britain
- After 1872 the government made **vaccination compulsory**, this meant that everybody was vaccinated
- In 1979 the World Health Organisation announced that the disease had been completely wiped out

Explain why there was **rapid change** in the **prevention of smallpox** after 1798.

You may use the following in your answer:

- Inoculation
- Government action (forcing people to get vaccinated)

You **must** use information of your own [12 marks]

Vaccination was better than inoculation because...

The government forced people to get vaccinated after 1852. This meant that...

The Germ Theory

What ideas did people have about the causes of disease by 1750?

By the 18th century (1700s) they were less likely to blame disease on God or unbalanced humours. The search for a new explanation of illness now developed into two main theories:

Bad air (miasma)

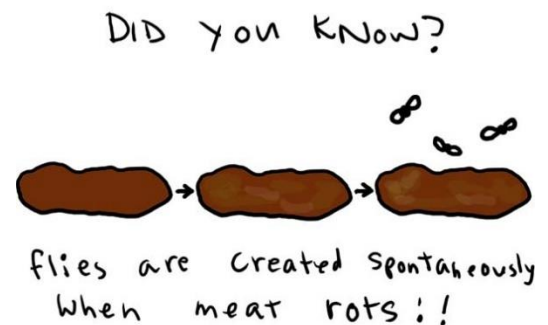
People could see rotting food and waste in the streets and knew they smelt terrible.

They assumed it must be the smell that caused disease

Spontaneous Generation!

The latest theory. The microscopes saw germs on rotting food.

Scientists thought that the germs were spontaneously (automatically) generated (created) by the decay and then spread the disease further.



Enter Louis Pasteur...

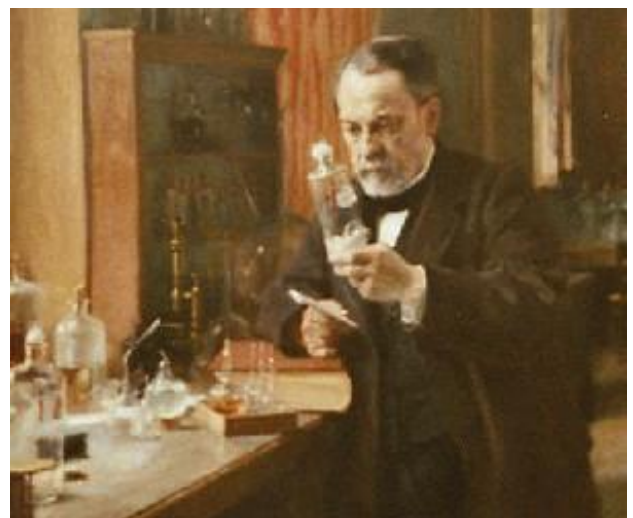
First scientist to work out Germs

In the 1850s Louis Pasteur, a **French Scientist**, (not a doctor!) was asked to find out why beer was going bad

Pasteur used powerful microscopes to watch germs grow in the liquid.

He discovered that heating the liquid killed the germs. This is called **Pasteurisation**

In 1861 he published his **Germ Theory**, showing that there were germs in the air.



How important was Pastuer?

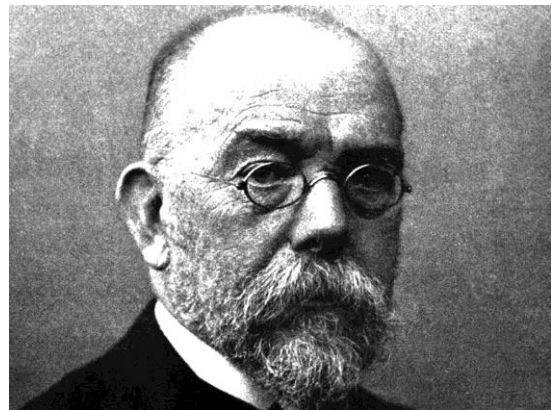
In Britain people continued to believe in Spontaneous Generation until the 1870s and did not believe Pasteur. It was not believed as bacteria could not be identified – this caused problems working out what bacteria led to which illness and also the fact that even healthy people had bacteria living on them.

Therefore, **attitudes amongst doctors** in Britain meant people refused to recognise the link between germs and disease.

Robert Koch – father of bacteriology

Identified the different germs that caused disease

- In 1882 Koch discovered the bacteria causing **Tuberculosis** (TB).
- In 1883 he discovered the bacteria causing **Cholera** and proved it was spread through water.
- He was also important for developing ways of growing bacteria using **agar jelly**. He also developed methods of **staining them** to make them easier to see.
- He inspired other scientists to find germs for other diseases.



How important was he?

Only once the specific germs had been found could work begin to find cures and vaccines. Even the British government ignored the Germ Theory and said illness was caused by miasma

However, new treatments could now be researched.

The development and use of vaccinations

Pasteur wanted more vaccines to treat more diseases but this couldn't happen until the germs causing the disease were found.

In 1879 Pasteur's team was studying **chicken cholera** microbes. Pasteur went on holiday, leaving a dish full of chicken cholera out. When he returned he found the air had made it weak. It didn't harm the chickens. It was a vaccination. Pasteur found a vaccine for **anthrax** (an animal disease) and one for **rabies**.

Pasteur could not explain how this worked but by 1900 other scientists were looking for human vaccines.

'There was **rapid change** in ideas about the **causes of illness and disease** in the period c1700-1900'

How far do you agree? Explain your answer

You may use the following information in your answer:

- Spontaneous Generation
- Louis Pasteur

You **must** also use information of your own. **[16 marks + 4 SPAG]**

This question asks you about whether there was much change in what people thought caused disease. It is a long period of time so focus on the prompt points.

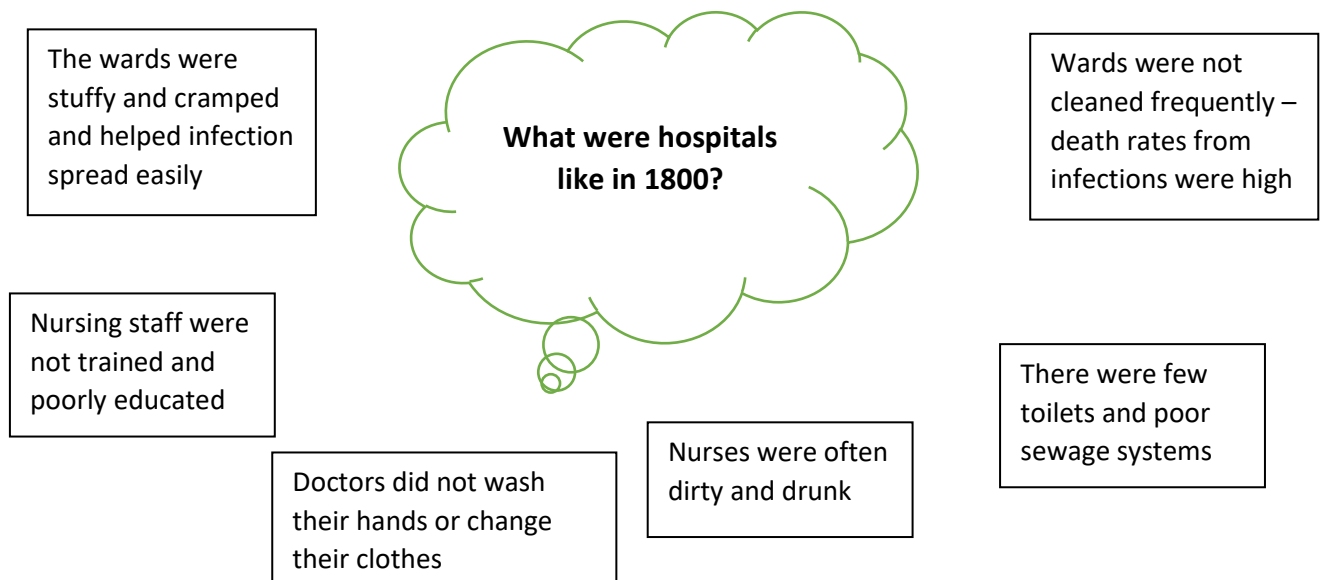
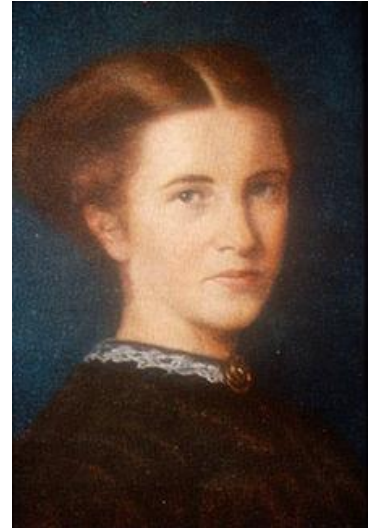
There were some new ideas in the causes of illness in this time, for example spontaneous generation, this said that...

Louis Pasteur was also important as he said that...

The changing role of women in medicine

Women had always been important in medicine and knew a lot about herbal remedies but they were not allowed to become doctors. A few women did fight to become doctors such as **Elizabeth Garrett**, the first woman to qualify as a doctor in Britain.

She was, however, **an exception**. Most male doctors were opposed to women doctors, and each time a woman managed to study medicine, men changed the rules to stop it happening again. In 1911 there were only 495 women on the Medical Register in Britain.



- In 1854 the Crimean War broke out with Britain vs. Russia.
- It was fought in mud and freezing temperatures.
- The death rate from disease and infection was enormous
- The hospital was **filthy, damp, smelly, and overrun with rats**.
- Disease killed more men than the fighting.

Florence Nightingale

Background

Florence Nightingale was born into a wealthy family but decided she wanted to be a nurse.

When she heard reports of the terrible conditions in the Crimea she talked to the minister for war. He agreed to let her take 38 nurses to the Crimea.

In the Crimea

When she arrived at the hospital she was horrified by the conditions she found there. She made changes to take care of the wounded soldiers:

- **Scrubbed the hospital wards** thoroughly
- Nurses were **organised** and could treat 2,000 patients
- **Clean bedding** and good meals

The death rate fell from 40% to less than 2% within six months and Florence returned home a hero.

After the Crimea

Florence changed the way the **hospitals were designed**. They were built out of materials that could be easily cleaned.

She also set up a **nursing school** at St Thomas' hospital in London. Training focused on keeping clean.

Proper training turned it into a profession rather than an unskilled job and the number of nurses quickly increased.



By 1900 hospitals were very different...

- Separate wards were created
- There were operating theatres and different departments
- They were clean
- Doctors were common; trained nurses lived in nearby accommodation
- They had become a place for treatment

How did the workhouse system lead to an improvement in medical care?

A large number of old, sick, blind, deaf or disabled people, or those with mental illness were sent to the workhouse. The government ordered that separate hospitals were built with a full time doctor. These went on to become major hospitals with well-trained doctors.

Patent Medicines and Pharmacies

As people moved to the towns there was less reliance on herbal remedies.

Many apothecaries sold 'preparations' which they said were a cure for everything.

Home cures included electrical shocks, injection with animal hormones, and a range of harmful substances including cocaine.

Other alternative medical treatments included hypnotism and taking tiny doses of poisons,



Travelling 'quacks' sold patent medicines (such as Lily the Pink's medicinal compound).

The use of pills in medicine was changed in 1844 with the invention of a machine to make pills.

By the late 19th century Thomas Beecham was selling pills and Jesse Boot had opened a chain of pharmacies. By the end of the century the government had stopped many harmful ingredients being added



Developments in surgery in the 19th century

What were the main problems of surgery in the early 19th century?



Pain	without anaesthetic (putting a patient to sleep) there was no way of preventing the patient suffering pain. This made it difficult for the surgeons who had to work quickly on a moving patient.
Infection	even if a patient survived the operation then infection usually killed them. Surgeries were done in dirty places.
Bleeding	Surgeons had to be quick as there was no way of replacing lost blood.

#1 Pain: The Development of Anaesthetics

Before the 19th century the patient was held down or tied down by the surgeon's assistants. Surgery had to be fast. During the 18th and 19th centuries, scientists experimented with chemicals to see their effects on humans

In 1799 Humphrey Davy discovered that pain could be reduced by using **laughing gas**, but the patient was still awake.

Ether was later found to put patients to sleep. However, it could cause the patient to cough or vomit, not ideal when a surgeon is cutting them with a knife! It was also highly inflammable.

James Simpson and Chloroform

James Simpson was a doctor at Edinburgh University. He has used Ether but was hoping for a better anaesthetic. He gathered a group of friends together and they inhaled the vapours of various chemicals to see what might work. After sniffing **chloroform**, they all passed out and Mrs Simpson discovered them under the table.

Simpson realised it was an effective anaesthetic and within days starting using it to help women in childbirth. He wrote about his discovery and other surgeons started to use it in their operations



Why were people against it?

- in 1848 14-year-old Hannah Greener died from an overdose after having an infected toenail removed.
- It also allowed surgeons to go deeper into the body, causing more infection.
- The Victorians believed that pain relief was interfering in God's plan, particularly in childbirth, which was meant to be painful. In 1853 Queen Victoria used it during the birth of her eighth child.
- Doctors liked to know their patient was alive – by the screaming!

Over time the use of anaesthetics improved, other chemicals were used to relax muscles as well as putting patients to sleep. but Simpson's discovery of chloroform was a turning point.

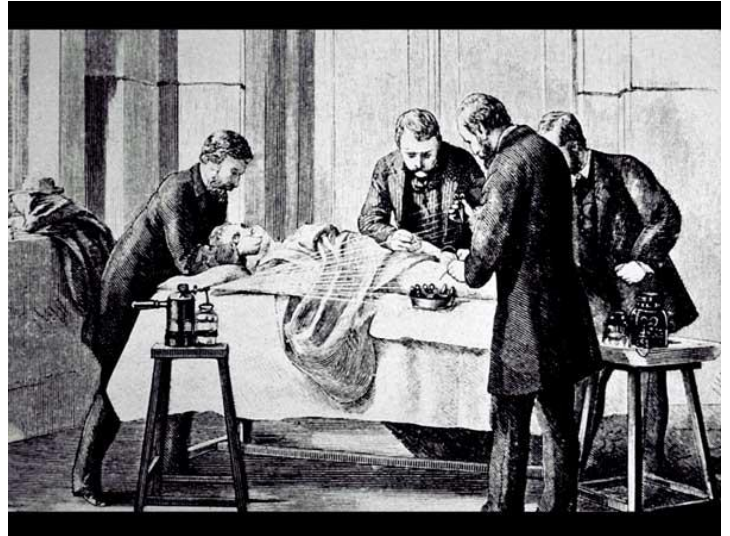
#2 Infection: the development of antiseptic surgery

Before the Germ Theory, operating theatres and surgeons themselves were dirty; in fact, the dirtier a surgeon's coat was – the more experience he had! **Gangrene** was common and killed many patients after the operations.

Joseph Lister

Joseph Lister suggested that germs in the air were causing infections in humans. He started to look for a chemical that would clear bacteria – **Carbolic Acid** was used to take the smell out of sewage and he wondered if it could be used in surgery. In 1865 he operated on a patient with a broken leg and used bandages soaked in carbolic acid to cover the wound.

From this he developed the use of **Carbolic Spray**, which was sprayed in the air during operations. He reduced infections by 30%.



Why were people against it?

- Surgeons did not believe in germs.
- Carbolic spray cracked the surgeon's skin and made everything smell.
- Surgeons were trained with the idea that many of their patients would die, they couldn't accept Lister's results

What was the impact?

By the 1890s Lister's antiseptic methods had developed into **aseptic** surgery which meant removing all possible germs from the operating theatre. This was done by:

- Cleaning all operating theatres and hospitals thoroughly
- Steam cleaning instruments
- Rubber gloves and surgical gowns were introduced
- Face masks for surgeons

Explain why there was **rapid change** in **surgical treatments** in the period c1700-c1900.

You may use the following in your answer

- Chloroform
- Joseph Lister

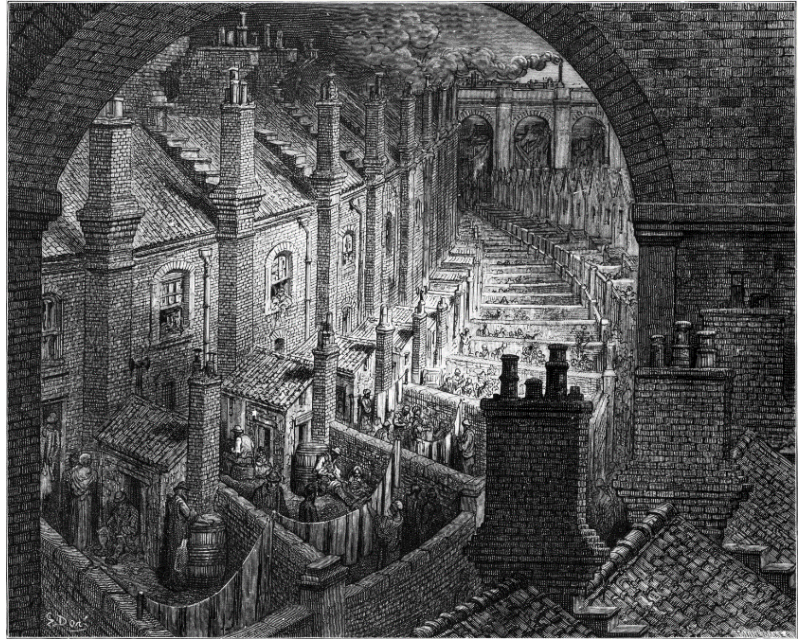
You **must** also use information of your own. **12 marks**

Another rapid change question!!! It is asking you why surgery changed so quickly. You can talk about the development of chloroform and antiseptics and how this helped medicine.

Public Health in the 19th Century

What were the problems in towns?

- Towns grew very quickly so houses were built very quickly and cheaply
- Overcrowding
- Regular outbreaks of **epidemic** diseases such as cholera
- Open sewers
- Rubbish on streets
- Not enough toilets
- ***Laissez-Faire***, which means 'leave be'. The government believed that poor people were poor because they were lazy.



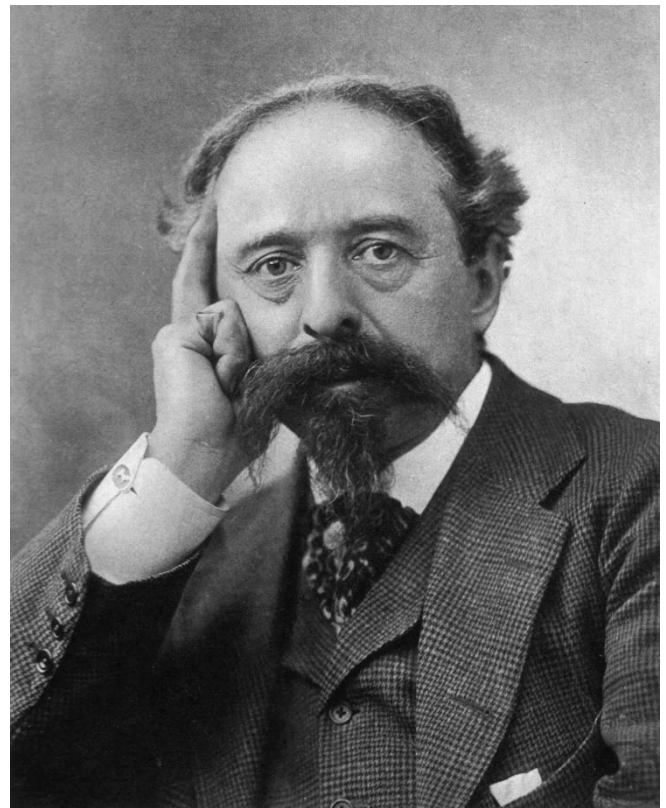
Edwin Chadwick

He proved that:

- The poor lived in dirty, overcrowded conditions
- This caused a huge amount of **illness**

He said that towns needed:

- **Drainage and sewers**
- Rubbish was removed from streets and houses
- **Clean water** supplies



Case Study: Cholera 1854 (coller-ra)

Cholera causes severe diarrhoea, vomiting and death.

The disease is caught by taking in food or drink—usually water—that has bacteria found in poo.

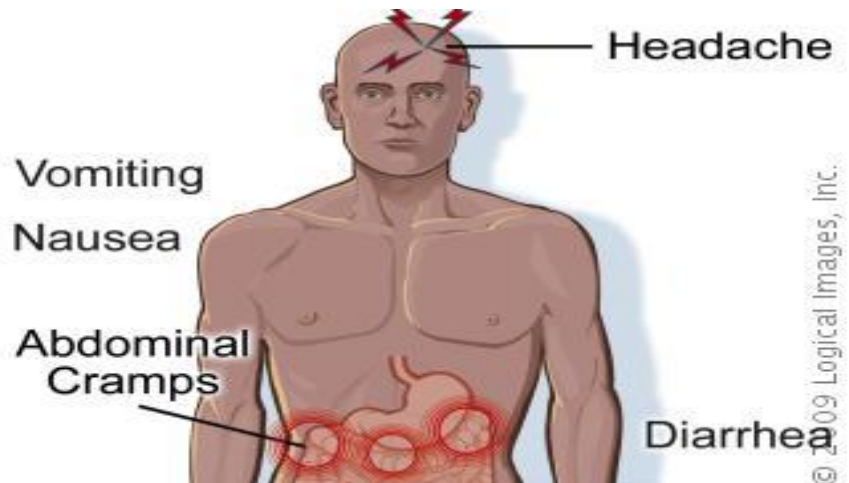
Cholera first arrived in Britain in 1831 and returned regularly throughout the century. The next major epidemics were in 1848 and **1854**.

Doctors found it impossible to treat.

People still believed that miasma was causing the disease, in 1848 the

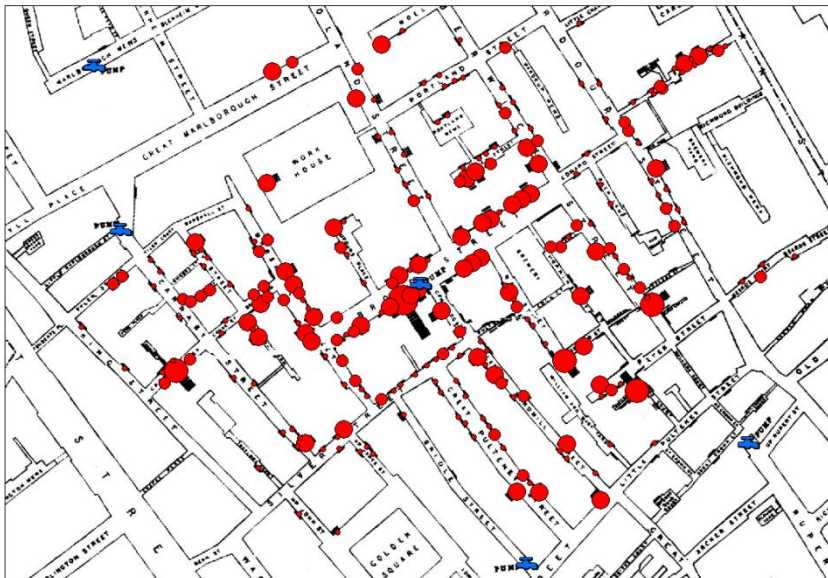
government passed the **First Public Health Act** which encouraged local areas to provide clean water.

However, this was **not compulsory** and costed money so most places ignored this.



John Snow

In 1854 there were over 500 cholera deaths around **Broad Street** where Snow worked as a doctor. Snow mapped out the deaths in detail and showed that there was a pattern – the number of deaths were centred around the Broad Street water pump.



Snow proved that:

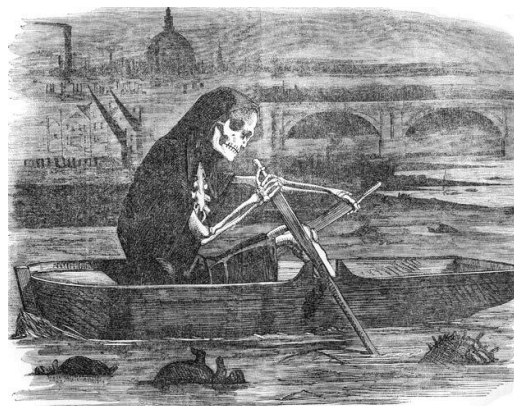
- Eighteen factory workers near the pump had died
- Residents of a local workhouse, who had their own water supply, were not badly affected
- **No workers at the local brewery died** as the workers drank beer
- A woman living several miles away had died – Snow proved that she had a bottle of water sent up every day from the Broad St. pump because she liked the way it tasted.

His evidence was so strong that the **handle of the pump was removed** – there were no more deaths. It was later discovered that a **cesspit**, only a metre away from the pump, was leaking into the drinking water.

He had proved cholera was spread through water. He recommended massive changes to sewer systems

Although Snow had practical evidence, **he lacked scientific proof**: Louis Pasteur's germ theory had not yet been published and it would be another 30 years before Koch found the bacteria causing cholera.

The Great Stink



The summer of 1858 was really hot and dry. The River Thames became really low and showed the sewage beneath it – which then heated up and steamed. The stink was awful and the Houses of Parliament had to close. This made the government realise that something needed to be done.

The Public Health Act 1875

From the 1860s the government began to take more action in improving living conditions:

- In London sewers were built
- In Birmingham, slums were demolished
- In Leeds sewage was prevented from being drained into the river

In **1875** the government passed a **Second Public Health Act**. This time local authorities **had** to follow the rules. They now had to:

- Provide clean water
- Build public toilets
- Better quality houses

This worked and deaths from diseases decreased.

‘Louis Pasteur’s publication of the Germ Theory was the biggest turning point in medicine in the period c1700-c1900’

How far do you agree with this statement?

You may use the following in your answer

- Edward Jenner
- Robert Koch

You **must** also use information of your own **16 marks**

Was Louis Pasteur and the Germ Theory the most important medical development in this time?

The Germ Theory was important because...(p.23)

Edward Jenner was also important in medicine because...(p.21)

Robert Koch was also important because... (p.24)

Overall, I think the most important development was that...

Unit 4: Medicine in Modern Britain (c.1900-present)

Ideas about the cause of disease

DNA was discovered in a series of discoveries over time – it was not a one off thing! In **1953** two individuals called **Crick and Watson** discovered the structure of DNA; They found that DNA was present in every human cell, and that they pass information on from parents to children.

Key words

Hereditary diseases	passed on from parents to children
Genome	complete set of DNA – more than three billion DNA pairs
Mastectomy	surgery where one or both of the breasts are removed
Antibiotic	any treatment that limits the growth of bacteria in the body

Mapping the genome –

Mapping the **Genome** was now possible – (mapping DNA) the help scientists understand the causes of genetic diseases. Scientists from all over the world worked together on this using advanced microscopes.

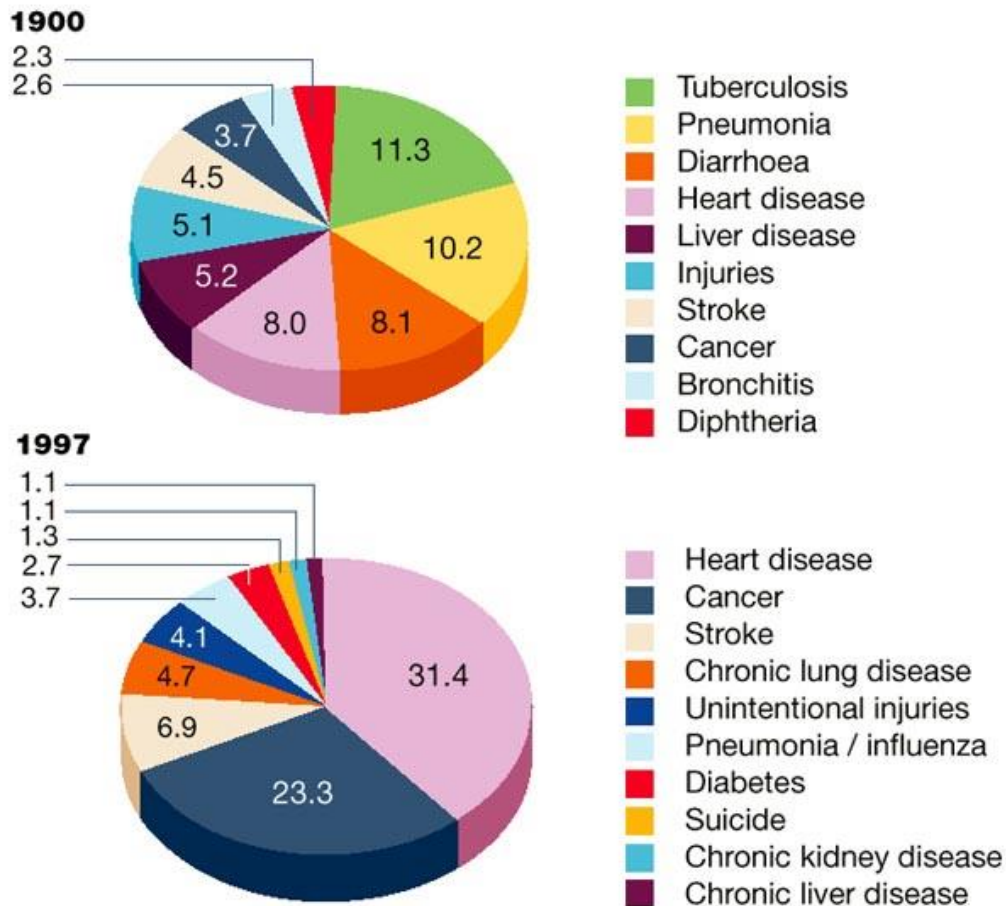
Once it was mapped in the year 2000 then scientists could start looking for mistakes in the DNA of people suffering from diseases passed from parents e.g. a gene that is sometimes present in breast cancer. Angelina Jolie has this gene and underwent a double **mastectomy** as she has an over 80% chance of developing the disease. Her risk is now less than 5%.



How has genetics helped medicine?

Understanding what causes hereditary illness could lead scientists to a treatment by inserting the missing information. But this is not yet possible.

How has lifestyle changed the causes of disease?



In 1900 25% of deaths were caused by infectious diseases, by 1990 it was less than 1%. Most diseases today are caused by lifestyle:

Smoking became very popular in the 1920s but it wasn't until the 1950s that doctors noticed the link between smoking and lung cancer. It can also cause high blood pressure, cancer and heart disease.

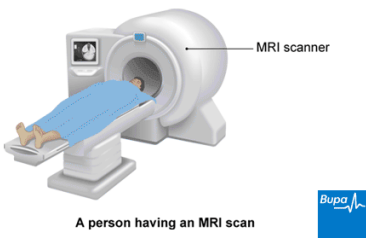
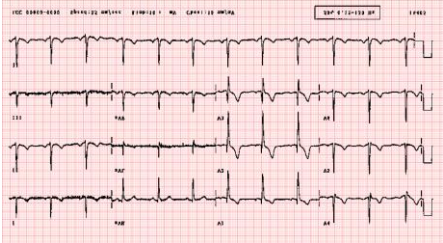
Diet: too much sugar and Fat are eaten today and can lead to diabetes and heart disease; lack of fruit and vegetables can also lead to health problems

Drinking too much alcohol can lead to kidney and liver problems;

Unprotected sex and sharing needles has led to the spread of diseases such as HIV,

Tanning has also led to an increase in skin cancer worldwide.

How has diagnosis improved?

Blood Tests  Blood groups were discovered in 1901. Doctors could now give people blood. In the 1930s blood tests were developed that could test for illnesses	Blood Sugar Monitoring  From the 1960s people who suffer from diabetes could check their blood sugar regularly
X-Rays  doctors could now view inside the human body without cutting it open. They are used most often to deal with broken bones.	MRI Scans  MRIs were developed in the 1970s and use magnet and radio waves to diagnose soft tissue injuries.
Blood Pressure Monitors  help diagnose high and low blood pressure	Endoscopes  these have a camera on the end of a tube and can see inside the human body.
ECGs  use electrical pulses to check heart beats	CT Scans  a more advanced form of X-rays and can be used to diagnose tumours and growths
Ultrasound Scans  Use soundwaves to build up a picture. They can be used in pregnancy or to diagnose kidney or bladder stones.	

Explain **one** way in which understanding of the causes of disease and illness was different in c1750 to the present day **4 marks**

Antibiotics are substances that kill bacteria or stop their growth.

Magic Bullets

- A 'magic bullet' was a **chemical cure** that would attack specific germs in the body leaving the rest of the body unharmed. By 1914 scientists had discovered several 'magic bullets' - The most significant was **Salvarsan 606**(for syphilis).
- In 1932 scientist **Gerard Domagk** discovered a bright red dye called **Prontosil**, killed bacteria. One day his daughter chased her guinea pig into his lab and in doing so cut herself, developing blood poisoning. Domagk was forced to try the untested drug on his daughter – it worked!
- The most famous antibiotic is penicillin. Scientists began to look for other drugs that worked in the same way but germs have started to become resistant to antibiotics. This could be a problem in the future.



Case Study: The Development of penicillin

How did Fleming discover Penicillin?

In **1928**, Professor Alexander Fleming was having a clear up of his laboratory. He had been on holiday and had left some dirty petri dishes (with bacteria on) by an open window. One of the dishes had mould on it which had killed the bacteria. He could not make this pure enough to use on humans.

What happened next?

Florey and Chain decided to develop Fleming's discovery further and set about finding a way to turn the penicillin mould juice into a pure drug, which would be more suitable for the treatment of humans.

In 1940, Florey's team found a way of making penicillin pure which was tested on a patient, a policeman. The patient began to recover after receiving the drug, but unfortunately supplies ran out. They could not produce it on a large scale.

Florey managed to persuade **US drug companies** to mass produce penicillin when the US entered the war in December 1941 because it could be used to treat infections caused by war wounds. **Mass production** began in 1943 by British firms.

How was it used?

- It can be used to treat infection and also to prevent it e.g. if you have a tooth out
- The development of penicillin also allowed other doctors to look for other moulds that could fight bacterial infections.
- BUT **penicillin resistant bacteria** first appeared in 1942 and this remains a problem in the 21st century.

The National Health Service 1948

The NHS officially began on July 5th 1948. It provides free healthcare in hospitals, Accident and Emergency and at doctor's surgeries.



Why was the National Health Service introduced?

Before the war there were lots of different services offering healthcare and people had to pay for doctors. The NHS offered people a free, government run service.

Why were people against it?

Many doctors were against it because their workload would increase and they would lose money

What was the impact?

There were problems of not having enough staff, lack of beds and lack of money. There were longer waiting times.

What treatments are available in hospitals today?

The problems of pain, surgery and blood loss have all been solved so doctors can carry out more complex operations; new machinery also allows people to have replacement organs and even limbs. A few examples are:

- Advanced X-rays (radiotherapy)
- Dialysis (to help people with kidney problems)
- Heart bypasses
- false limbs
- Organ transplants
- keyhole surgery- being able to operate through tiny incisions
- Robotic surgery

Problems with new treatments

- Some vaccines, such as flu, have to be changed each year
- New diseases have appeared that cannot be cured with pills
- There has been an increase in heart disease, cancer and diabetes
- Germs are becoming drug resistant

‘Treatment of diseases and care of the sick completely changed after c1800’

How far do you agree with this statement?

You may use the following in your answer

- Magic bullets
- The NHS

You **must** also use information of your own **16 marks**

Have things changed in the way disease has been treated since in the last 200 years?

- How have antibiotics (magic bullets and penicillin) changed treatment?
- What does the NHS provide for patients? (think about how hospitals have changed)
- Do you think there are still problems remaining?

Preventing disease in the 20th century

Since the beginning of the 20th century, the government has taken action to improve the public's health:

- In the twentieth century the government made it compulsory to have vaccinations against some diseases such as measles.
- Laws have been passed to stop air pollution
- In 2007 it became illegal to smoke inside workplaces
- The government warns people about health risks e.g. Ebola outbreak in Africa
- Advertisements that show the dangers of smoking, drinking and unhealthy eating



Public Health England
Protecting and improving the nation's health

NHS England

Ebola in West Africa

If you have returned from **Guinea, Liberia** or **Sierra Leone** or cared for someone with Ebola in the past **21 days**

and

You have a **fever** or **feel unwell**

Without touching anyone, tell a member of staff or call **111**

For more information visit www.gov.uk/phe or www.nhs.uk/ebola

Explain why there was rapid progress in disease prevention after c1900

You may use the following in your answer

- Government interventions
 - Vaccinations

You **must** also use information of your own **12 marks**

It is asking you how we have stopped diseases spreading in the 20th century. Look above for government interventions and vaccinations, try to give details on both.

Case Study: Lung Cancer in the 20th century

- Today Lung Cancer in the second most common form of Cancer
- Over 40,000 people are diagnosed with it each year
- cigarette smoking is the major reason for Lung Cancer
- It is deadly because it is difficult to diagnose in the early stages. One 1/3 live for a year after diagnosis; only 10% live for more than five years.
- Tests are not good enough to detect lung cancer and are expensive; x-rays and biopsies (taking part of the lung) can cause problems for some people

Treatments

- **Surgery** has been used since the 1930s. It can have remote-controlled tools and cameras
- **Radiotherapy** aims to kill cancer cells using beams of radiation.
- **Chemotherapy** involves using a powerful chemical to attack the cancer cells but has significant side effects.

Preventions

Governments have tried to prevent people developing lung cancer by passing laws or using advertising:

Passing laws	Controlling advertising
in 2007 smoking was banned in the workplace including restaurants, pubs and cafes	Cigarette advertising on television was banned in 1965. In 2005 cigarette advertising was banned entirely including sponsorship of major sporting events
In 2007 the legal age of buying tobacco was raised from 16 to 18 to reduce the number of teenagers who smoked.	There have been campaigns to advertise the dangers of smoking . This has been on the TV, on cigarette packages and in schools
In 2015 a law was introduced that banned smoking in cars carrying children under the age of 18	All cigarette products in shops have now been removed from display
Increased taxation on tobacco has been introduced	



November is Lung Cancer Awareness Month

Whatever question you want to ask, the Macmillan team is here to help – pop along to our information centre, call our free Macmillan Support Line on 0808 808 00 00 or visit macmillan.org.uk

