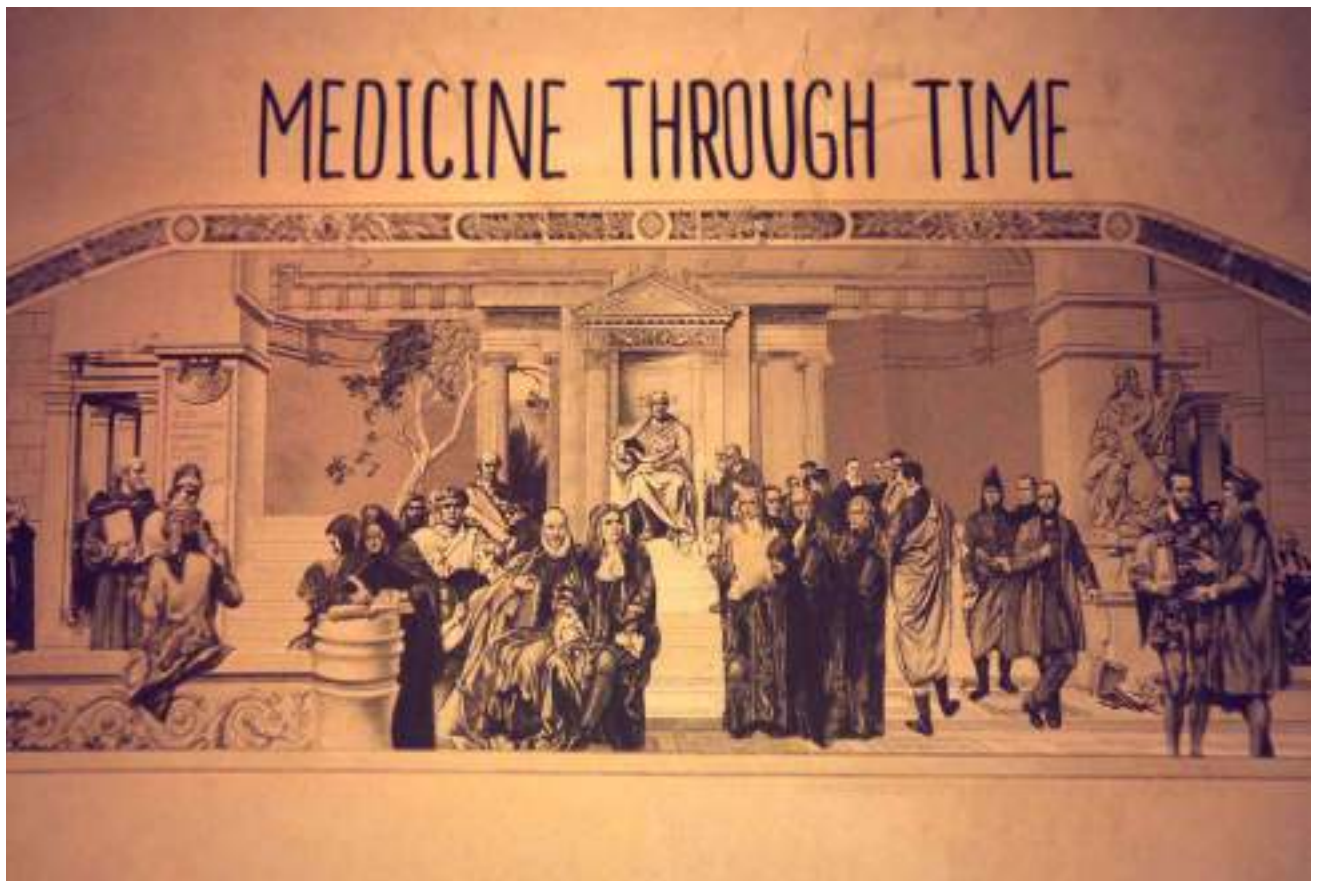


# British Medicine Through Time, 1200 to 2000 Revision Guide

Name:



## Key Topics

1. Medieval Medicine (1250-1500)
2. Renaissance Medicine (1500-1700)
3. Industrial Revolution Medicine (1700-1900)
4. Modern Medicine (1900-2000)

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# 4 Mark Similarity and Difference Question Guide

This question is asking you compare two time periods of history



So to get top marks (4/4)  
What should I do?

- Compare both time periods!
- Give examples from both time periods
- Explain the SIMILARITY or DIFFERENCE between



**Identify**  
Identifies the comparison

**Periods**  
Discusses both time periods

**Detail**  
Detail from the source e.g. quote/evidence



**Identify**  
Identifies the comparison

**Periods**  
Discusses both time periods

**Detail**  
Detail from the source e.g. quote/evidence

## Model 4 Mark SIMILARITY Question

*Explain one way in which peoples ideas on the causes of the 1665 Great Plague in London were similar to the way that people reacted to the Black Death in 1348.*

(4 Marks)

One way in which there was **similarity** in the ideas on what caused the Great Plague and Black Death was the **blame on Miasma**.

**In the Black Death, the epidemic was blamed on bad air caused by the filthy streets and even alignment of planets**

**Whilst in the Great Plague, the prominent theory was that Miasma was causing the disease, started by the warm weather and dunghills causing the vapour**

## Model 4 Mark DIFFERENCE Question

Explain one way in which hospital care was different between the nineteenth and twentieth centuries

(4 Marks)

One way in which there was **difference** in hospital care between nineteenth and twentieth centuries was the **availability of care**

**In the industrial period, only the rich could afford care and usually took it at home, whilst the poor had to rely on workhouse infirmities**

**Whilst in the modern period, the setting up of the NHS in 1948 meant that healthcare was free for all regardless of background, being paid for by taxes**

## Exam Practice

Explain one way in which understanding of the causes of illness was similar in the late 19<sup>th</sup> and 20<sup>th</sup> centuries

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Mark \_\_\_\_/4 Feedback:



# 12 Mark Explain Question Guide



This question asks you to explain the cause/consequence of a specific event  
The question is testing both your knowledge and also ability to explain causation.

You are being examined on two skills:

- [Subject Knowledge](#)
- [Analysis of cause/change](#)



So to get top marks (12/12)  
What should I do?

- A minimum of three points (paragraphs) needed to reach Level 4
- Uses a wide range of specific subject knowledge
- Always link back to the question and analyses the causes
- Use both bullet points & at least one of your own

Mark Scheme		
Level		Mark
AO1: Specific and relevant subject knowledge AO2: Analysis of cause/change		
1	1-4	A simple answer that attempts to answer the question Basic subject knowledge of the topic
2	4-6	Explanation that answers the question e.g. <i>Why there was continuity in the ideas about the cause of disease</i> Good subject knowledge is used to back up explanation Maximum 5 marks for Level 2 answers that only use the two bullet points
3	7-9	Two to three clear and detailed explanations that answer the question but can lack organisation Accurate and specific subject knowledge Maximum 8 marks for Level 3 answers that only use the two bullet points
4	10 - 12	An analytical explanation that answers the question, sticks to question and is structured Uses specific, relevant and accurate subject knowledge Level 4 can ONLY be reached if answers provide at least 1 extra explanation with the two bullet points



1. First you need to identify the cause/consequence in your first sentence
2. Explain in detail this cause/change using specific knowledge and examples
3. **Always** link back to the question at the end of the paragraph.

See the example paragraph below



## Tips and Tricks

- 18 minutes in total
- No conclusion or judgement needed
- You don't need to use the bullet points, you can use ANY other piece of relevant information to answer the question. Aim for 3-4 to get Level 4.
- The bullet points are simply there to guide you, they can be used as paragraphs or as examples within paragraphs but you don't need to use them!

## Example Paragraph

This is one paragraph of the question on the right.  
The key parts have been identified.



Explain why there was continuity in ideas about the cause of disease during the period c1250-1500.

- Role of Galen and Hippocrates
- The Church

One significant factor that caused continuity in the ideas on the cause of disease was the role of Galen and Hippocrates, ancient doctors who's ideas continued to influence medical thinking in the Middle Ages. Initially, Hippocrates developed the theory of the Four Humours, that the human body was made up of 4 different humours (blood, black bile, yellow bile and phlegm) which caused illness when they were imbalanced. For example, a cold could be attributed to too much phlegm. This idea was later developed by Galen, who came up with the theory of opposites, a method to treat the illness. These ideas continued 1000 years later in the Middle Ages as they simply made sense to people, they were rational as they could see the physical effects of an imbalance of a humour. In an age of superstition and lack of scientific understanding, the four humours were logical. Furthermore, the Church actively encouraged these ideas and as they were responsible for medical training, medieval physicians used the four humours in the diagnosis of their wealthy patients. Therefore, the ideas of Hippocrates and Galen were respected and entrenched in the ideas of the cause of disease.

**Identify**  
Clearly identifies the cause

**Explain**  
Explains in detail the point made

**Link**  
Links back to the question at the end of the paragraph

**Knowledge**  
Specific subject knowledge

# Interpretation Question Mark Explain Question Guide



To get 16/16 you need to do the following in 24 minutes:

1. Read the statement!
2. Write a paragraph (or 2 depending on question) that argues why you **agree**.
- 3 Write a paragraph to balance why you **disagree** with the statement.
- 4) Use examples (3 per paragraph) and specific subject knowledge
- 5) ALWAYS refer to how you agree/disagree. This analysis is essential for Level 3
- 6) For Level 4, you can balance your analysis within a paragraph, to show the limits to how much you agree
- 7) Write a detailed conclusion that agrees or disagrees with statement with link to the question.
- 8) Remember SPaG is worth 4 marks

## 16 Mark Question Mark Scheme

Grades	Description
<b>Level 1</b> 1-4 Marks	<ul style="list-style-type: none"> <li>• Simple answer with no development or organisation</li> <li>• Limited knowledge &amp; understanding</li> <li>• Overall judgement missing</li> </ul>
<b>Level 2:</b> 5-8 Marks	<ul style="list-style-type: none"> <li>• Agrees or Disagrees in detail, or does both but with weak explanation</li> <li>• Attempts to explain HOW FAR they agree or disagree but lacks analysis</li> <li>• ONLY discusses the 2 suggested bullet points</li> <li>• Accurate &amp; relevant information</li> <li>• Overall Judgement on agree or disagree but not backed up clearly (8 marks with judgement)</li> </ul>
<b>Level 3:</b> 9-12 Marks	<ul style="list-style-type: none"> <li>• Agrees and Disagrees with interpretation with strong explanation and detail</li> <li>• Uses 2 bullet points and provides 1 of own</li> <li>• Argues well HOW FAR they agree or disagree with clear analysis that links clearly to the question.</li> <li>• Good, accurate &amp; relevant knowledge</li> <li>• Overall judgement with some justification</li> </ul>
<b>Level 4:</b> 13-16 Mark	<ul style="list-style-type: none"> <li>• Agrees and Disagrees with interpretation with strong explanation and detail</li> <li>• Uses 2 bullet points and provides 1 or 2 of own</li> <li>• Strongly argues HOW FAR they agree or disagree with clear analysis that links clearly to the question.</li> <li>• Sticks to question throughout and well structured</li> <li>• Accurate, relevant and wide ranging contextual knowledge</li> <li>• Judgement is well justified with clear explanation</li> </ul>
<b>SPaG</b> 1-4	To get 4/4 you need to spell and punctuate accurately, use grammar properly and use key words correctly and often

### Model Paragraph

The key parts have been identified of a model 'agree' paragraph to the question on the right



***Germ theory was the most significant medical breakthrough in the 1800's. How far do you agree?***

- **The Germ Theory**
- **Anaesthetics**

Some historians would agree that the Germ Theory was the most significant breakthrough in the 1800s, due the fact it finally proved the cause of disease and had a considerable long term impact Ideas on the cause of disease remained incorrectly based on old (Miasma theory) and new (spontaneous generation) until the mid 1800s when Louis Pasteur came up with the Germ Theory in 1861. His theory, which was finally proved by Robert Koch in the 1880s, was that germs cause disease. This was a significant breakthrough as it finally ended old ideas on the cause of disease with a scientifically proven one that Koch could show cause Cholera and Smallpox. Consequently, the Germ Theory significantly improved surgery as Joseph Lister used the theory to create Carbolic Acid, the first antiseptic which was vital in reducing deaths from surgery. Moreover, it helped prove Edward Jenner right and led to the later development of vaccinations for such disease as rabies. The only limitations to the Germ Theory is the lack of immediate impact and resistance it faced. Whilst the Germ Theory became the basis for medical thinking in the Modern age, it took almost 50 years for it to be accepted and doctors like Henry Bastian openly challenged it. Nevertheless, there is little doubt that the Germ Theory was the outstanding breakthrough of the Industrial period.

### Signposts

Identifies agree/disagree point in opening sentence

### Explanation

Explains the impact of the Germ Theory with balance

### Language

Uses analytical language

### Link






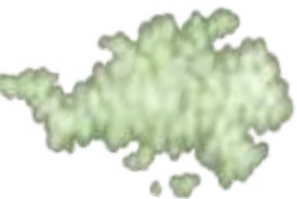


Links back to the question to ASSESS how far the the Germ Theory WAS a breakthrough

### Knowledge

Specific subject knowledge

# Ideas on the cause of disease in the Middle Ages

Ideas on the cause of disease in the Middle Ages showed significant continuity, they were based on ancient ideas from the Greek and Roman periods whilst the power of the church continued to influence medieval thinking.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>The Four Humours</b></p>	  	<p><b>Hippocrates was a Greek doctor &amp; teacher who created the theory of the Four Humours.</b> He believed the body contained four humours (black bile, yellow bile, blood and phlegm)</p> <ul style="list-style-type: none"> <li>• If you are healthy the humours are balanced</li> <li>• If you are ill, you have imbalanced humours (Too much of it)</li> </ul> <p>Hippocrates believed you saw evidence of this when you were sick E.g. You would have a nosebleed if you had too much blood</p> <p>To cure this illness you needed to get rid of the humour that was unbalanced, e.g. you would need to use leeches or cups to remove the excess blood.</p>  <p><b>Galen, a Roman doctor then developed the Four Humours by creating the 'Theory of Opposites'.</b> His theory was very simple:</p> <p>If you had too much of a humour, you needed to cure it with the opposite. For example:</p> <p>If you had too much phlegm, which is cold and wet, you were given something spicy which is hot and dry to cure the sickness.</p> <p><b>The church supported the idea of the Four Humours</b> and all physicians (doctors) were taught about it when educated by the Church.</p> <p>Physicians also used urine charts linked to the Four Humours to check the colour, smell and taste to check for illness e.g. white = too much phlegm</p> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Miasma</b></p>		<p><b>People blamed bad stinking air, called 'Miasma' for causing disease.</b> They believed dirt/waste from the streets poisoned the air which caused illness – <b>this seemed logical</b> as dirty places smelt bad.</p> <p>Even King Edward III said <i>'The filth from the houses is infecting the air with contagious sickness'</i> during the Black Death. The idea of miasma was also supported by Hippocrates and Galen, making it more supported. It was also thought the air was sent from God himself, or caused by the planets.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>God</b></p>		<p>The bible taught <b>People that diseases were a punishment from God for their sins (e.g. gambling and drinking) or a way of God testing your faith (if you survived it was a miracle!).</b> A common disease linked to sin was leprosy.</p> <p>The 1348–49 <b>Black Death was thought to be a punishment for peoples sins.</b> The Prior of Christchurch Abbey, wrote that the 1348 Black Death was by God who used <i>'suffering to drive out the numberless sins of the people'</i></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Supernatural</b></p>		<p>Many people in the Middle Ages were <b>superstitious</b> – they believed in the supernatural like witchcraft and astrology</p> <p>In the 14<sup>th</sup> Century, astrology (the study of the movement of stars and planets) was key part of medical training and physicians used planetary movements and zodiac signs in their treatment. <b>Physicians believed the stars and planets affected your health and caused disease,</b> for example the movement of Saturn and Jupiter was to blame from the Black Death.</p> <p>Other causes were witchcraft, bad luck or blaming minority groups such as Jews were blamed for poisoning wells</p>

## A lack of progress

During the Middle Ages, no progress was made towards understanding the cause of disease.  
People knew nothing of the real causes of disease

A respect for tradition, a lack of education and scientific coupled with the power of the church caused continuity in ideas from the ancient world. There was no desire to find the real cause!



## Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam question.

**Explain one way in which ideas about the cause of disease and illness were similar in the 14<sup>th</sup> and 17<sup>th</sup> centuries. (4 Marks)**

Five minutes

Remember to compare BOTH time periods



# Treatment of disease in the Middle Ages

Treatment of disease made little progress in the Middle Ages, simply due to the lack of understanding in the cause of disease

## Treatment

Treatments in the Middle Ages often followed the idea on the cause e.g. religious or the four humours

### Religious

It was important to go through spiritual healing for illness  
Religious healing included:

- Healing prayers and incantations
- Paying for mass to be said
- Fasting (going without food)



Pilgrimages to tombs were popular and the sick would touch holy relics or pray at a shrine to cure their illness.



### Four Humours

Continued use of ancient ideas by physicians using Four Humours

**Blood letting** – The most common way to remove bad humours/blood. It included:

- **Cupping** - Putting warmed cups onto open cuts to draw out blood into the cup.
- **Leeching** – Using leeches to suck out bad blood



**Purging** – Swallowing a mixture of herbs and animal fat to make you sick, or taking laxatives to empty your bowels and 'cleanse'

**Bathing** - Warm baths prescribed with herbs to draw out the humours

### Herbal Remedies

Herbal remedies to drink/sniff/bathe in were given by wise women or apothecaries.



Many remedies worked, honey was put on wounds to fight infection whilst aloe vera for digestion

Most remedies used herbs, minerals and animal parts – Styne in the eye used onion, garlic, bulls bladder and wine.

### Supernatural

Specific treatment for illness, such as a magpies beak around your neck for toothache



Barber surgeons 'Trepanned' skulls to release demons making them ill but dangerous!

## Surgery in the Middle Ages

Surgery made some surprising progress in the Middle Ages.

Medieval surgeons could do some complex external surgery, from removing eye cataracts or trepanning – the drilling of a hole into the skull to remove demons.

They used wine as an antiseptic, natural substances (opium or hemlock) as anaesthetics and honey to clean wounds.

Surgeons were not trained and knew little about anatomy

They would use 'Wound Man' illustrations which gave advice on how to deal with different wounds.



In a time of frequent war, surgeons' skills were much in demand and as a result their skills increased – Prince Henry V was saved by his surgeon John Bradmore

Surgeons still had no idea that dirt carried disease so surgeries and equipment were often filthy, causing infection.

Also, they could not prevent infections or stop heavy bleeding, therefore most deaths came from this.

### Progress?

There was little progress in the Middle Ages (continuity) as a majority of treatments remained based on religious or humoral factors.



You could argue that surgery did make some progress due to the constant warfare and experience of surgeons in the Middle Ages.

### Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam question.



**'There was little progress in the treatment and prevention of disease in the Middle Ages' How far do you agree? (16 Marks)**

**You may use the following in your answer:**

- Surgery • Bleeding

# Prevention and Public Health in the Middle Ages

Although treatment of disease was common, there was a strong focus in the Middle Ages on prevention of disease. This was common when there was little proof that many of the treatments actually worked.

## Prevention of Disease

Many people thought **ONLY** God could cure diseases so they aimed to **prevent** it first.

Flagellants whipped themselves to beg God for forgiveness during the Black Death



People fasted, made offerings to God and lit candles to show they were sorry for their sins



Many people simply followed a Christian lifestyle; praying, going to church and following the commandments. The King ordered religious service during the Black Death



Physicians promoted 'Regimin Sanitis' for patients to keep healthy.

This included; avoiding stress, exercising, eating a healthy diet and bathing regularly

Only used by the rich as it was expensive to have a list created for you.



To prevent diseases some wore amulets charms) and bought incantations ( to provide protection from spirits.

People also based their treatments on the zodiac charts

People attempted to solve miasma by removing the dirt that poisoned the air.

- People carried sweet smelling herbs and lit fires to overpower the bad air
- Others rang bells to keep the air moving away from them.
- The rich could visit bath houses and hung sweet herbs in their houses



## Public Health

In the Middle Ages, people cared about Public Health (The health of the population as a whole) and the wealthy spent to keep towns clean, they tried to improve sanitation and introduced clean water with London being the first city to have piped water.

However, the cost of public health improvements was high, so the poor still lived in dirty conditions.



The government **ONLY** spent to improve public health in the Middle Ages during the Black Death

### Problem: Waste and litter

Streets were filled with litter and threw blood and human waste onto it

**Solution:** Laws banned littering, public latrines (toilets) built in London. Butchers had to clean throw waste out of towns

### Problem: Dirty water

Water supplies were polluted by human and industrial waste

**Solution:** In Gloucester they used lead pipes and aqueduct to bring in fresh water, however it was only for the rich

### Problem: Too many animals

Animals were butchered in streets and horses left dung in streets.

**Solution:** 12 Rakers were employed to clean the streets of London by 1370. Cities like Newcastle paved their streets to make them easier to clean

### Problem: Leaking Latrines

Latrines and cesspits contaminated water supplies

**Solution:** Laws on locations for private latrines. Cesspits build with stone to stop leaks.

Night carts went round emptying cesspits in towns like Hull.

## Progress?

There was little progress in the Middle Ages (continuity) as a majority of prevention remained based on religious factors. However, the ideas of regimin sanitis were healthy

You could argue that public health improved with rakers, fresh water and efforts to clean cities, however it was still not enough to improve health.



## Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam question.

**Explain how people tried to prevent disease and illness in the Middle Ages(12 Marks)**

**You may use the following in your answer:**

- Regimin Sanitis
- Rakers





# Care during the Middle Ages



Treatment from illness depended on two things in the Middle Ages, who were were and how rich, and also how ill you were. Those who cared for the sick and hospitals provided a range of care.

## Who treated the sick?

### Wise Women

- A local women with experience, could be the 'Lady of the Manor'
- They would use herbal remedies and some charms/ spells to help cure local villagers. They were cheap.
- Often helped with childbirth and they could train to be a midwife with a bishops permission
  - Not allowed to be physicians



### Apothecaries

- Like a pharmacist or chemist
- Trained but had no medical qualifications, highly experienced.
- Mixes various ingredients to produce medicines for physicians
- Understood herbal remedies and healing power of plants/herbs
  - Cheaper than a physician



### Physicians

- Medically trained at university for 7 years using Hippocrates and Galen, but without dissection so little anatomical knowledge.
- Only 100 male physicians in England
- They would diagnose illness and suggest treatment by surgeons or apothecaries
- Took clinical observation – took pulse and examined whole body.
- Used Four Humours, urine charts & astrology to diagnose. Also carried a **Vademecum** (book of diagnoses)
- Very expensive, only rich could afford



### Barber Surgeon

- Untrained but experienced surgeon (quality of surgery better than knowledge)
- Used a wound man diagram for advice
- Could pull out teeth, let blood, lance boils and remove tumours
- Performed basic surgery such as amputating limbs or removing arrowheads
- Used no anaesthetic or antiseptic– very low success rate for surgery
- Cheapest surgery available



## Medieval Hospitals

The first hospital in England was created in 1123, St. Bartholomew's in London. At first hospitals were set up by m, run by monks who cared for older people, they provided food, warmth and prayers. Over time, smaller hospitals were set up by wealthy merchants to care and by 1400 there were over five hundred in England.

### Management

- Majority run by the Church
- Emphasis on Gods healing power

### Patients

- Did not allow those with infectious diseases
- Mostly for the old or the poor, or travellers

### Doctors, Nurses and Carers

- Most did not have doctors but a priest with monks and nuns who ran the hospital



### Treatments

- Focus on 'Care not Cure'
- Patients given food and warmth to make them comfortable
- Monks believed it was up to God to cure you, so they would offer prayer and you could go to Mass 7 times a day

### Progress?

Despite growth of churches, there was little treatment with the focus on care and God's healing. A majority of people were cared for at home by women and herbal remedies

### Conditions

- Kept very clean by monks
- Had gardens, herb and vegetable patches

## Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam question.

**Explain how the sick were treated and cared for in the Middle Ages. (4 Marks)**

You may use the following in your answer: • Hospitals • Wise Women



The Plague first broke out in China then spread to India, across Europe until it reached Dorset in England in 1348. By 1349 it had spread around the rest of Britain, killing 40% of the population died with a higher number in towns and ports. At one point 200 people a day were being buried in London.



At the time it was called 'the pestilence' but historians have called it the bubonic plague. Survivors and those at the time felt it was the end of the world 'I waited amongst the dead for death to come' said Irish monk Brother John Clynn.



## Symptoms

For those unfortunate to catch the disease developed painful swellings under their armpits/groin called buboes. Blisters appeared all over, followed by a high fever, severe headaches, vomiting, fits, unconsciousness and then death.

## Ideas on the cause

Most ideas about the causes of the 'pestilence' fitted existing ideas:

- The majority of people believed it was caused by God as punishment for their sins.
- It was blamed on the movements of the planets (Mars, Saturn and Jupiter)
- Many people believed that Bad Air (Miasma) caused by the poisonous fumes released by a volcano were to blame
- Jews, a religious scapegoat, were blamed for spreading the disease by poisoning the wells



No-one had an idea that it was possibly spread when fleas bit infected rats and then passed the disease onto other rats and humans.

Trade amongst ships brought the rats and fleas to England.



## Treatment of the disease

Followed methods common at the time

Rubbing onions, herbs or a chopped up snake on the boils or rubbing a chickens bottom on the buboes

Drinking vinegar, eating crushed minerals, arsenic, mercury or even ten-year-old treacle!



Physicians would pop the buboes to release the pressure or try bleeding or leeching

Sitting close to a fire or in a sewer to drive out the fever, or fumigating the house with herbs to get out the bad air

Praying to God in the hope he would cure illness

## Prevention & Public Health

The government introduced 'quarantine' to stop people moving around so much, whilst victims were stopped from leaving their houses. The hospitals would not accept sufferers either



However, King Edward ordered the cleaning of the streets to stop! Believing the odour would drive away the miasma.



Usual advice was to carry a post of flowers or herbs around their neck or bathe to avoid the corrupted air



One of the most common methods was escaping the plague and avoiding people,



Seeking gods forgiveness was the most common way people attempted to prevent the Plague:

- 'Flagellants', whipped themselves for forgiveness
- Daily church services, prayers and pilgrimages were common to ask God to stop.



## Living Conditions in 1340s

Large cities were perfect for the spread of the Black Death as people lived so close to each other. – 60% of Londoners died!

Cities helped spread the disease and increase the number of rats/fleas because:

- **Animals** – Horse waste was everywhere and the butchering of meat led to waste and blood on the streets
- Medieval towns had no drainage, sewers or rubbish collections. In such conditions, rats lived and germs grew.
- The disposal of bodies was very basic and helped to spread the disease still



## Exam Question



Explain **one** way in which ideas about preventing the plague were different in the 14<sup>th</sup> and 17<sup>th</sup> centuries (4 marks)

Below we can formulate the basis of an answer to this 16 mark question.

'There was no progress in medicine during the Medieval Period (1250-1500)'

How far do you agree? Explain your answer. [16 marks]

You may use the following in your answer:

- Medieval Surgery
- The Four Humours

You must also use information of your own



## Ideas on the cause of disease

### Progress



There was **no progress** on what caused disease during the Middle Ages

### No progress

**Religious Ideas** – Everyone believed that God caused disease and this was simply not challenged due to the power of religion. As the Church taught this there was zero progress put into finding the real cause of illness.



**Miasma, Supernatural and Superstitious Ideas** – All these ideas were all common throughout the Middle Ages but again, they offered no real cause of disease.



**Four Humours** – The idea that the cause of disease was based on the four humours (blood, black bile, yellow bile and phlegm) continued for over 1000 years.



Hippocrates and Galen's ideas failed to clearly identify the cause of disease.

## The treatment of disease

### Progress

**Hospitals** – Britain's first hospital, St. Bartholomew's, opened in 1123 and by 1400 there were over 500 across the country. Rich merchants could visit these



**Surgery** – Made progress during a time of conflict where barber surgeons gained experience. Their expertise developed and they could perform some external surgery (removing arrows etc.) or even removing eye cataracts. They also used basic anaesthetic (opium) and antiseptic (honey) to treat the wounded during and after surgery.

**Herbal Remedies** – Some remedies, used by wise women, worked, such as mint

### No progress



**Hospitals** – The sole focus was on 'care not cure', those with contagious diseases were banned from entering and those monks providing care usually relied simply on God.

**Surgery** – 50% of patients died due to infections and injuries. Surgeons did not clean equipment, could not clean wounds or stop heavy bleeding. Very basic understanding of anatomy using 'wound man'.



**The Four Humours** – Most of the treatments suggested to treat the Four Humours did not work and often made patients worse (cupping, leeching, purging).

Religious – Praying and pilgrimages also failed to cure

## The prevention of disease

### Progress

**Public Health** – Efforts were made in some cities to improve public health for example; in 1370 there were 12 rakers in London clearing the streets of waste, in Hull aqueducts were built to bring in clean water and in 1352 Edward III passed a law banning littering in the streets.



**Prevention** – Regimin Sanitis was a medieval common sense approach to the rich keeping healthy, through exercise and a balanced diet.



### No progress

**Public Health** – Medieval towns were still filthy places this is why the Black Death spread so quickly as there were rats. Also, the government did little to help improve public health, only when the Black Death was happening.

People believed hanging sweet smelling herbs or wearing amulets/charms would prevent diseases like the Black Death – they didn't!

## Concluding Remarks

Life expectancy remained at 35 years old, this is clear proof that medicine had not progressed in the medieval period.



Although the rich could access 'better' medical treatment and care, it did little to improve their life expectancy

## Exam Tip!

To reach that higher Level 4 answer, balancing your argument in a paragraph shows deeper analysis – examiners love it! For example:

*'Historians would agree that there was little progress in the Middle Ages, for example in Public Health as....*

*However, you could argue that there was some partial progress in Public Health as.....'*



# Factors affecting progress in medieval Britain



There is little doubt that there was limited progress in medicine during medieval Britain. There are a number of factors that hindered (limited) progress such as the church, the government and the ideas of Hippocrates and Galen. During this period, there was virtually nothing that pushed medicine to improve.

## Factors limiting progress

### The Church

The Catholic Church was extremely rich and powerful in the Middle Ages, it dominated the lives of all people who feared God. The bible said that God sent diseases as punishment for sins and it was only he who could cure it (e.g. the Black Death)



Therefore, there was no need to look for other causes or treatments.



The church said that anyone who dared challenge the church they would go to hell. Therefore, people dared not challenge them.

English Scientist Roger Bacon was even jailed for challenging the churches views on medicine

Lastly, the Church controlled all education and libraries, so all ideas were from the church and no new ones could spread.

The church trained all the physicians, who they taught the ideas of Galen and Hippocrates, if you challenged them, you were challenging God. Dissection was also banned, so no inspecting anatomy could happen to challenge Galen.

### Hippocrates and Galen



The ideas of Galen and Hippocrates (the Four Humours) were well respected as they were over 1000 years old and logical.

Galen had written over 300 medical books, they were detailed and illustrated, so doctors believed everything to be correct.

To medieval doctors, the Four Humours theory worked and you could see evidence.

When someone was sneezing, they had too much Phlegm. The sneezing was the body rebalancing its humours – this made sense to them, so they continued to follow it.



All medieval training (from the church) focused on the work of Hippocrates and Galen

They were taught that all they wrote was correct and not to challenge it, instead to prove how Galen was right. This meant these ideas were NEVER challenged.

Linked

### A respect for tradition

A majority of people had respect for the past, they wanted to keep everything as it was. Plus, without any access to new books or ideas, there was little opportunities for new ideas.

Physicians were not encouraged to challenge the past (Hippocrates/Galen). The focus was on supporting old theories.

As medicine was always done this way, then why change it?



### The King and Government

The majority of tasks for the King of England were to defend the country and keep it peaceful, he was not interested in public health.



The government did not take any taxes to improve peoples health or medicine, so no money was spent to improve medicine.

Only during the Black Death did the government aim to tackle public health



## Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam questions.

Remember to use the 'how to' guides in the front of this book to help your in your answers.



Explain why there was a lack of medical progress in the Middle Ages. You may use the following:

- Hippocrates and Galen
- A respect for traditions

You must also use your own information (12 Marks)

Microplan your answer here

<u>Paragraph 1</u>	<u>Paragraph 2</u>	<u>Paragraph 3</u>



Using your revision guide, the sources and A4 paper, practice the below exam questions.

Remember to use the 'how to' guides in the front of this book to help your in your answers.

**1. Explain why there was continuity in the way disease was treated in the period 1500-1700:**

**You may use the following information in your answer:**

- The Great Plague
- Attitudes in society

**You must also use your own information (12 Marks)**

**2. Individuals had the biggest impact on medical training in the 16<sup>th</sup> and 17<sup>th</sup> centuries. How far do you agree?**

**You may use the following in your answer:**

- Vesalius
- The printing press

**You must also use your own information (16 Marks)**



Using these two boxes to micro-plan your answer to the above questions

You only need to plan out your 3-4 paragraphs, and key words/terms you would include in each

P1.

P1. Agree: Individuals did have the biggest impact

P2.

P2. Disagree: Decline of the Church

P3.

P3. Disagree: Scientific Revolution/Royal Society

**Explain one way in which ideas about preventing plague were different in the 14<sup>th</sup> and 17<sup>th</sup> centuries.**

During the Black Death in the 14<sup>th</sup> century \_\_\_\_\_

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Whereas in the 17<sup>th</sup> Century \_\_\_\_\_

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# Renaissance: Ideas of Cause of Disease

Renaissance means 'rebirth' and during this period, there was a rebirth of old ideas from Ancient Greece and Rome, whilst people began to question, challenge and test traditions. Despite this, many things stayed the same and there was large amounts of continuity, especially in the form of ideas on the cause of disease

## Change and Continuity

### Change

#### The Four Humours

Scientists such as Sydenham and Paracelsus reject the theories of Galen and Hippocrates Four Humours, saying it could not explain epidemics like the Great Plague. However..

### Continuity

#### The Four Humours

Despite scientists challenging the theory of the Four Humours, **most physicians and people still thought the Four Humours caused disease.** For example King Charles II was diagnosed using them in 1685.

#### Supernatural

Fewer people believed in supernatural causes of disease



#### Religion

With the declining power of the church in the Reformation, less people believed God caused disease and less spread of the Four Humours



#### Astrology

Jupiter and Saturn aligning in 1664 was used to blame for the Great Plague by many common people



#### Religion

However, again during the Great Plague people blamed God!

#### New Scientific Thinking

Scientific thinking spreads, Frascatoro theories (1546) that seeds in air may spread disease. Whilst Thomas Sydenham promotes 'direct observation' of patients for diagnosis rather than using books



Also discoveries into the digestive system meant that physicians and scientists no longer believed urine charts



#### Miasma

The idea that bad smells and evil fumes caused disease still continued. During the Great Plague it was believed the main cause of disease.

#### Medical Thinking

Despite huge improvements in anatomical knowledge, many physicians and healers still diagnosed using old ideas as they were respected



## Was there any progress?

The key issue was that despite better understanding of the body and scientific findings, no-one still could find the cause of disease and it remained slow for new ideas to spread or traditions to decline.



# Here's the PROBLEM...



### Exam Practice

**Explain one way in which the ideas on the cause of disease was similar in the 13<sup>th</sup> and 17<sup>th</sup> centuries**

In the 13<sup>th</sup> century \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Whilst in the 17<sup>th</sup> Century \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mark \_\_\_\_/4 Feedback:

# Renaissance: The Scientific Revolution

The Renaissance included the **Scientific Revolution** which started in the sixteenth century. It became an age of logic, reasoning and experimentation which has a significant impact on medical thinking



## The Royal Society

The Royal Society was founded in 1660 at Gresham College in London. It had its own labs and equipment and was set up as a place where scientists could share their ideas, experiments and discoveries.

### Aims:

- To carry out experiments to further the understanding of science.
- To encourage debate, challenge old ideas and search for new theories and ideas.

Importantly, in 1662, Charles II gave the society a Royal Charter (he was very interested in science) which mean it had support from high places and was respected from the start.

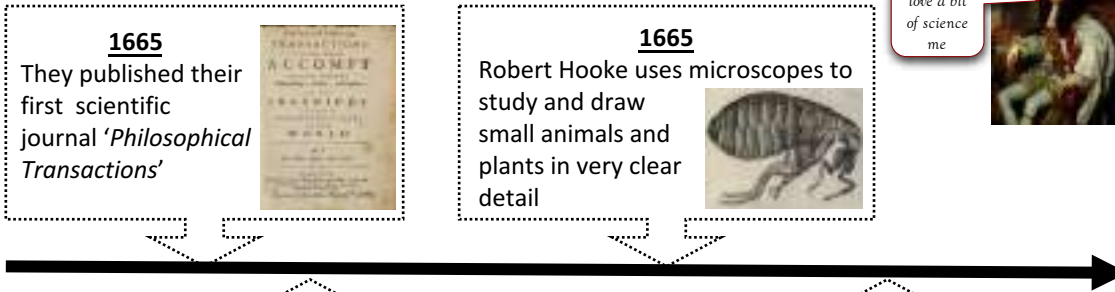


*'Nullius in Verba'*

The Royal Society's motto, It means "Take nobodies word for it", which shows its aims

### Key Events

The Royal Society played an important part in publishing key developments from the Scientific Revolution.



**1665**

They published their first scientific journal '*Philosophical Transactions*'



**1665**

Robert Hooke uses microscopes to study and draw small animals and plants in very clear detail



Oooh, I love a bit of science me



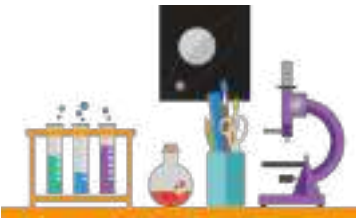
**1665**

Richard Lower completes the first ever experimental blood transfusion



**1683**

Antonie Van Leeuwenhoek sees animalcules (bacteria) under a microscope for the first time, but doesn't understand them!



## Why was the Royal Society so important?



1. The Royal Society printed scientists books and journals like '*Philosophical Transactions*', they even translated foreign medical and scientific books, this helped spread new ideas.
2. Journals like '*Philosophical Transactions*' contained clear 'evidence' of science and challenged existing ideas
3. The best scientists of the time worked together to share research and ideas, encouraging enquiry and experimentation.

## The Importance of Thomas Sydenham

Thomas Sydenham, who has been called the *English Hippocrates*, and the father of English medicine.

In 1676 Sydenham released ***Observationes Medicae*** – a **groundbreaking book** which was used for over 200 years in training and treatment. It contained his key ideas:

- Doctors must rely on his own observation and practical experience rather than just reading books, they should visit the sick take their pulse and make detailed notes on the patients health and symptom to ensure the correct diagnosis is made.
- He stated that the Four Humours was completely wrong and that God did not disease.

Sydenham also argued that there were 'species' of disease that needed to be classified. (e.g. measles and scarlet fever) When they are classified, it would make the correct treatment easier. However, Sydenham still believed that disease was caused by 'atmospheres' and did not know the real cause of disease

Lastly, Sydenham is known for introducing quinine to treat malaria and iron to to treat anemia.

## Did this scientific revolution really improve medicine?

However, it had long term effects which eventually helped improve medicine and understanding of the human body.

- Sydenham's *Observationes Medicae* was used for medical training for 200 years, challenging traditional ideas
- The Royal Society and printing press allowed the growth of ideas that led to eventual medical change.
- It simply opened the doors to challenge ideas with science!



These discoveries did **LITTLE to improve medicine in the Renaissance** as it led to no wide changes in what caused disease, how it was prevented or even treated.



### Biography

Born: 1624  
Studied: Oxford  
Experience: Fought in Civil War, Doctor

# Renaissance: Treatment and Prevention of Disease

Whilst knowledge of the body was improving and scientific thoughts began to challenge traditional ones, treatment and prevention of disease in the Renaissance showed significant continuity



## Treatment of Disease

### Change

#### Chemical Cures

Alchemy 'medical chemistry' was became a new treatment, inspired by Paracelcus. Also called *iatrochemistry*



The College of Physicians suggested over 122 chemicals to treat 2140 illness Antimony was used to purge illness by encouraging sweating and sickness, however they did not understand it was poisonous! Mercury, also poisonous, was used for Smallpox.



#### Transference

A new idea that an illness could be transferred from a patient to something else if you rubbed an object on it e.g.: Rubbing an onion on warts would transfer the wart to the onion

#### Herbal Remedies

Herbal remedies remained very popular in the Renaissance.

Remedies now used to match colour of illness, e.g. drinking red wine to cure Smallpox

Exploration of the New World brought new herbs/spices like quinine which Sydenham, used to cure Quinine which worked.

Books used to spread ideas on herbal remedies, such as Mary Doggett's scurvy cure



### Continuity

#### Bleeding and purging

This technique remained popular to rid the the Four Humours, even King Charles II was bled and purged.



Rhubarb was used to purge the bowels during the Great Plague but it weakened patients and did not work.

#### Religious

Many believed the Kings royal touch could cure as he was close to God. Over 92,000 visited Charles II believing he could cure the skin disease, scrofula.



Also many still prayed during the Great Plague.

#### Supernatural

The New London Dispensary suggested magic to cure malaria 'cut off hair, feed to birds in an egg and put inside a tree'. Whilst during the Great Plague, magical charms continued to be used.

## Prevention of Disease

Preventing disease was considered to be the best way to avoid dying and many medical ideas continued with slight changes

The practice of staying clean and healthy to avoid illness through *Regimin Sanitatis* continued. This included you and your home



Change

The idea of avoiding areas with disease and checking the weather to do this using new instruments such as thermometers. However, bathing was less popular due to spread of Syphilis in bath houses.

People still believed in miasma and wearing sweet smelling herbs



Change

More effort was now made to remove Miasma from the air such as removing sewage, draining bogs and cleaning up rubbish from the streets.

Superstitious ideas and prayer remained popular



Change

The idea of **moderation** spread, avoiding exhaustion, fatty foods, drinking too much or being too lazy. Superstition of your birth health rose, being a weak child would explain later illness

### Progress?

Overall, that was partial progress in the Renaissance for treatment and prevention of disease.

Whilst some natural treatments and common sense ideas were growing, there was a large amount of continuity and we were no closer to stopping or treating disease effectively!



### Exam Question

Using your revision guide, the sources and A4 paper, practice the below exam question.



**Explain one way in which the ideas on the treatment of disease was different in the 13<sup>th</sup> and 17<sup>th</sup> centuries**



# Renaissance: Care & Hospitals

Some change had been made in hospital care since the Middle Ages, rather than visiting hospitals for shelter and prayer, they now went for treatment of wounds and sicknesses.

A patient in the 16<sup>th</sup> century could expect some form of 'treatment' in a hospital

1. A good diet of healthy foods
2. A visit from a physician who would observe and suggest treatment
3. Medication, provided from the hospital apothecary



However, the Dissolution of the Monasteries from 1536 dramatically changed the availability of hospital in England

## Impact of the dissolution of the Monasteries



When Henry split from the Catholic Church, he closed monasteries, convents and confiscated their lands which had a negative effect on hospital care



As most hospitals were attached to the church, very few were able to stay open, hundreds vanished around the country, only St. Bartholomew's survived!



As a result, smaller charity run hospitals sprung up, with more of a focus on cure not care. But, it still took until the 1700s time for numbers of hospitals to increase

## Change and Continuity in Hospital Care

### Change

Specialist hospitals grew that focused on one disease such as the plague.



These were known as pest houses, pox houses or plague houses

These were a big change from the Middle Ages, as previously the contagious were not admitted, also they now focused on treating the sick!

Small spread of charity hospitals after the Dissolution of the Monasteries wiped out many of the church run hospitals



### Continuity

Most sick people continued to be cared for at home or in the local community as physicians remained too expensive



Women continued to play an important role in the care of the sick, even rich women like Lady Grace of Mildway who kept notes of her treatment.

Overall, there was little significant change in hospital care between the periods

## Renaissance Healers

The same group of medical healers took care of the sick in the Middle Ages; Apothecaries, Surgeons and Physicians with some changes to their role.

### Apothecaries and Surgeons

Still not given any university training and considered inferior to physicians. They remained a cheaper alternative to doctors.

They began to organise themselves into Guild Systems, this meant they could train as apprentices for years until becoming a Master Surgeon or Master Apothecary. Both had to also have licenses to do their job.

Practical experiences grew in the period with ongoing wars and new treatments such as iatrochemistry.



### Physicians

Continued to be trained at university's but new subjects such as anatomy due to discoveries by Vesalius and Sydenham. Trainees had access to large selection of books due to printing press which contained detailed anatomical drawings to use. This did encourage doctors to slow challenge traditions

However, most learning done from books and there was little practice training despite dissection now being legal. Few university's had an operating theatre to practice on corpses.



# Renaissance: The work of Andreas Vesalius

The most famous anatomist (those who studied the human body) of the Renaissance was **Andreas Vesalius**, he had a strong interest in the human body and sharing his findings. His role in **changing the understanding of the human body and medical training** was significant for hundreds of years

## Who was Vesalius?

- He **studied medicine** throughout Europe, including Paris and taught surgery at the University of Padua.
- He was a *graverobber*, stealing dead bodies to dissect to improve his anatomical knowledge, he was the first to dissect a human brain, doing so in front of audiences to demonstrate to his students
- **Vesalius openly challenged Galen's ideas** on human anatomy, this had never been done in 1000s of years!



## The work of Vesalius

### 'Six Anatomical Tables'

- In 1537 Vesalius published '*Six Anatomical Tables*'
- This book showed detailed, labelled drawings of the human body which Vesalius himself had worked on.
- It was written in 4 languages and became popular in the training and teaching of human anatomy



### 'Fabric of the Human Body'

- In 1543 Vesalius released his groundbreaking book '*The Fabric of the Human Body*'
- It was based on his dissection of humans.



### Galen's Mistakes

- Vesalius noted that Galen's ideas were mistaken as he had used animal instead of human for dissection
- In total Vesalius found 300 mistakes in Galen's work
- These included:
  1. The human jaw was in one part not two (Galen used a pig!)
  2. Blood does not flow into the heart through invisible holes
- The book contained many images of the body in stages of dissection, to show as perfect a representation as possible



## What factors aided Vesalius?

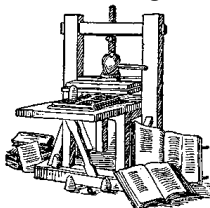
### Attitudes

Decline of the church allowed Vesalius to Vesalius to acquire and dissect dead human bodies and challenge Galen. This was during the '*Scientific Revolution*'



### Technology and Art

The Printing Press allowed thousands of copies of his books to be made, whilst the new Renaissance artists meant anatomical drawing were more realistic.



## The importance of Vesalius

His books were printed, copied & widely spread, by 1560 his books were used to train doctors at Cambridge University in England.

Vesalius was a trailblazer who encouraged other doctors to dissect human bodies themselves to improve their knowledge. As a result, in 1565 the first anatomical dissection happened in England. Eventually doctors even began to correct his own mistakes

His work on veins was developed by others, like Fabricius who taught William Harvey. Harvey went on to discover blood circulation.

**HUGE IMPACT**



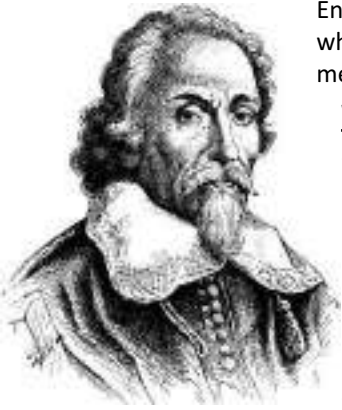
Vesalius and confronted the church and had proved the world famous Galen wrong, encouraged others to do so!

**BUT** However, many were still reluctant to challenge Galen and support Vesalius

Whilst the work of Vesalius actually did **NOTHING** to improve health, medicine and treatment in the Renaissance

# Renaissance: The importance of William Harvey

English doctor and lecturer, William Harvey made one of the most important medical breakthroughs when he **discovered the circulation of blood**. Whilst it had little short term impact on Renaissance medicine, it laid the foundations of the understanding of blood, surgery and physiology



## Who was William Harvey?

- Harvey was born in 1578 and went on to study medicine at Cambridge, later training at Padua's medical school and later becoming lecturer of anatomy at the Royal College of Physicians
- By 1618 he was one of the Royal doctors for James I and Charles I, meaning he had royal support for his ideas (similar to the Royal Society)
- He, like Sydenham, suggested direct observation



Harvey was interested in blood, having been taught at Padua about Vesalius's theories and he wanted to continue the progress

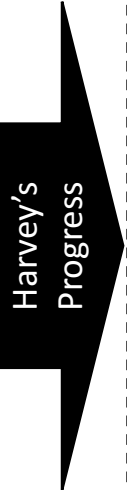
### Existing ideas on blood



Galen's ideas on blood had been followed for many years

Galen said the following:

1. The liver 'produced' blood that was constantly burned up around the body
2. Veins carried both blood and pneuma (the breath of life) around the body
3. Blood flowed from one side of the heart to another through invisible holes in the septum



### Renaissance Progress

Vesalius challenged Galen and theorised that the veins of the body contained valves, meaning that blood only flowed one way towards the heart. This had not been proven but this gave Harvey the inspiration he needed

### Harvey's and Blood

Harvey dissected both human corpses and live cold blooded animals (who had a slower heartbeat) to observe the movement of their blood, this allowed him to challenge Galen and provide Vesalius right.

Furthermore, he was influenced by the new mechanical water pump of the Renaissance, thinking that *'perhaps the human bloody circulation system worked the same way?'*



### Harvey's discoveries

Harvey's research led him to introduce the following discoveries in his 1628 book *'An anatomical account of the motion of the heart and blood'*

1. He proved that Galen's theory about blood production was wrong, calculating that the body would have to produce 1,800 litres of blood a day if it was true!
2. He **proved Vesalius** right by trying to pump liquid to the 'wrong way' up a vein. This showed blood flowed one way and that it only contained blood, not pneuma. This **proved arteries and veins were linked together in one system**. This was done by tying a tight cord around an arm to cut off the blood flow in the artery. Harvey's theory was that blood must pass from arteries to veins through tiny invisible passages (we now know these are capillaries!)
3. He **proved blood circulation** from the heart which pumped blood around the body



### The impact of William Harvey

Harvey had an considerable impact on medicine, even if not immediately during the Renaissance

Harvey added to the voice arguing for more dissection and experimentation, showing it worked!

Progress on blood was slow until 1901 with transfusions

Harvey had proven Galen wrong on blood anatomy, encouraging further challenges

Harvey had proven blood circulation, this was vital to the later improvements in surgery and blood transfusions

Harvey's ideas were slow to take on. Galen's ideas continued in books until 1651, it took 50 years for Harvey's work to appear in universities!

Understanding of circulation did little to improve medical treatment. Doctors disliked Harvey's ideas

Big Impact

Small Impact



# The Great Plague 1665

London was a unhealthy place in the seventeenth century, with tightly packed streets, no sewage system and filthy water. As a result, the return of the plague in 1665 hit London hard. During the epidemic, 15% of the city died with estimates of 100,000 dead, 7165 died in September alone. Even 300 years after the Black Death, people were still as helpless to resist, treat and prevent it

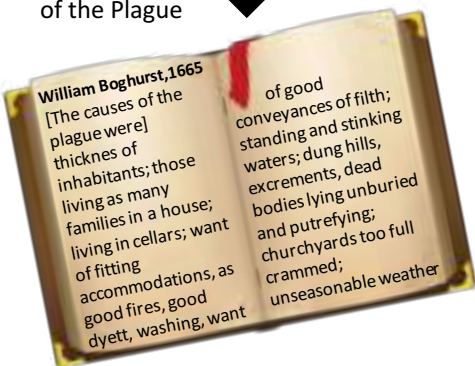
Exam Tip: You need to know the similarities and differences between The Black Death (1348 and the Great Plague (1665) as it could be a 4 mark question, or examples to your 12/16 mark answers



## Ideas on the cause of the Plague

Most people believed the same things for the Great Plague 1665 as they did for the Black Death 1348. Therefore there was a lot of **similarity** between the two epidemics

A contemporary view on the causes of the Plague



- **Astrology:** The alignment of Jupiter and Saturn October 1664 and the sight of a comet suggested trouble was coming.
- **God:** Many believed it was another punishment from God for mans wickedness and sin
- **Miasma:** The most popular theory was that the plague was caused by bad air (miasma), many blamed the stinking dunghills and warm weather for causing a vapour bringing the Plague
- **Four Humours:** Despite being less popular, some still blamed an imbalance of the humours for the Plague.
- **Passing it on:** A new (and correct) idea spread that the disease could be passed from person to person, they did not know why but as a result victims were quarantined, even whole villages like Eyam in Derbyshire!



## Treatment of the Plague

Unfortunately, many of the physicians of London fled to the countryside themselves to avoid getting ill.

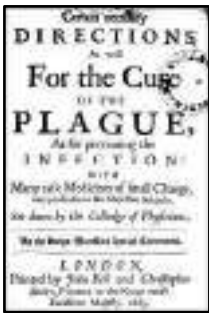
**Quack Doctors** (untrained individuals who sold medical cures/advice) were popular.

They wore waxed cloaks with bird shaped beak like masks (to attract the disease away) filled with sweet smelling herbs to ward off the miasma.



Treatments for the Great Plague were also **similar** to those used against the Black Death, with some new ideas from the Renaissance period.

- **Bleeding and purging:** Continued advise to do this, Physicians suggested sweating out the disease by wearing woolly clothes by the fireside
- **Herbal Remedies:** Called 'Great Medicines' were common, for example *London Treacle* contained wine, herbs, spices, honey and opium
- **Transference:** A new and popular idea, for example strapping a live chicken to the bubo to transfer the plague to the bird
- **Prayer:** Remained common but no flagellants this time



As people did not understand the cause of the Great Plague and therefore could not treat it effectively, the most common advice was: avoid catching it in the first place!

## Prevention of the Plague

The most significant change came in attempts to prevent the Plague, this time people and the government made much more effort showing both **similarity** and **difference** in the prevention of the Black Death.

### Government Actions

Charles II and the government made more effort this time around, doing the following to help stop the spread:

- Public meetings, fairs and large funerals were banned whilst theatres were closed **BANNED!**
- Barrels of tar or sweet smelling herbs were burnt on newly cleaned streets to drive away the miasma
- Over 40,000 dogs and 20,000 cats were slaughtered as they were blamed for spreading the disease
- The mayor appointed searchers and wardens looking for those with the disease. Households with it were marked with a red cross and 'Lord have mercy upon us' written on it. They were quarantined for 28 days, and the dead were collected daily

### Advice from Healers and Physicians

The rich took advice from the College of Physicians and most people followed suggestions from local healers, such as:

- Carrying a pomander (a ball of stuffed perfumed items) to ward away the miasma
- Dieting and fasting, or eating a diet of garlic
- Prayer and repenting your sins
- Plague Water was sold by apothecaries which included mint, rosemary, nutmeg and sugar
- Smoking tobacco (a product of the New World) was encouraged to ward off miasma
- Others were told if you catch syphilis (a similar disease) it would prevent you catching the plague, which it evidently did not

# Key individuals from the Renaissance period

My name is Thomas Sydenham, also known as the '*English Hippocrates*'. I was an English doctor working in London during the 1660s and 70s. In 1676, I released my groundbreaking book *Observationes Medicae* – which was used for by doctors for over 200 years. In my book I argued that doctors must not rely on medical books (like Galen's) but should visit the sick, observe and and make detailed notes on the patients health and symptoms to make a diagnosis.

I also argued that the the Four Humours was completely wrong and that diseases were like 'species'. I challenged old ideas by arguing diseases had nothing to do with the nature of the patient and that a disease needed treating, not just the symptoms. However, I still supported the idea that disease was carried in the air.



**Thomas Sydenham**

My name is William Harvey, the heart expert! I had a lot of job roles, James I's doctor, lecturer of anatomy and the College of Physicians and a medical writer. I am known as being a pioneer in the human anatomy as I carried out public dissections which led me to discover the process of blood circulation.

My book, '*Anatomical Account of the Motion of the Heart and Blood*' contained detailed drawings and my experimentation and research into blood circulation which proved:

- That Galen was wrong in saying blood 'burnt up' in the body, it was circulated.
- That the heart pumped bloody around the body through veins and arteries in one connect system.

I was extremely important as I openly challenged Galen's ideas and this encouraged others to, whilst my anatomical research was taught in medical schools by 1700 and my methods of experimentation, observation and dissection encouraged such as Sydenham others to make their own.



**Andreas Vesalius**

I am the Italian doctor and professor of surgery at Padua University, Andreas Vesalius. I was a pioneer in the human anatomy as I carried out a large number of dissections on human bodies, rumour is that I used the bodies of criminals.

My famous book, the *Fabric of the Human Body* (1543) helped improve understanding of the human body (anatomy) as I was able to find over 350 mistakes in the work of Galen, for example in the human jaw. The book was published in England and contained detailed illustrations of the human body, which helped doctors knowledge of the human body.

My lasting impact was that I encouraged and inspired other physicians to carry out dissections, make further discoveries and to challenge the work of Galen. I even made anatomy fashionable!!



**William Harvey**

I discovered bacteria in 1783 using a microscope and the Royal Society put my discovery of these 'animalcules' into its journal '*Philosophical Transactions*'. However, I did not realise the importance of this or that they caused disease

In 1665 I made the first blood transfusion. The Royal Society printed my work in their scientific journal



**Paracelsus**



**Richard Lower**

Don't forget about me! It was me who declared '*Galen is a liar and a fake!*' I believe alchemy can cure everything



**Robert Hooke**

My book *Micrographia* used one of the very first microscopes to view plant cells and small animals such as fleas. I was able to publish detailed drawings of these.



**Van Leewenhoek**

# How much 'progress' was there in the Renaissance?

Below we can formulate the basis of an answer to this 16 mark question.

'There was little progress in medicine during the Renaissance Period (1500-1750)'

How far do you agree? Explain your answer. [16 marks]

You may use the following in your answer:

- William Harvey
- Transference

You must also use information of your own



## Ideas on the cause of disease

### Progress

In an age of scientific thinking, those like Sydenham and Harvey encouraged direct observation of the sick, alongside making notes on symptoms rather than using simply textbooks.



Urine Charts were no longer used due to scientific developments

### No progress

In the Renaissance they were **NO CLOSER** to finding the correct cause of disease, despite scientists seeking to make discoveries

The majority of people and physicians/healers still believed traditional ideas from Middle Ages

**Religious Ideas** – during the Great Plague, people still blamed God!

**Miasma** – Remained a common theory, especially during the Great Plague and due to the poor living conditions

**Four Humours** – These ideas remained popular with physicians, even Charles II was diagnosed and treated using the Four Humours

## The treatment and care

### Progress

**Hospitals** – Small growth of some specialist hospitals e.g. pox houses which focused on treating the sick



**Surgery** – Due to growing dissection (declining power of church), anatomical knowledge improved and surgeons became

**Herbal Remedies** – The New World brought new herbs/spices like quinine which cured Malaria, spread of basic cures for scurvy spread

Care –

### No progress



**Hospitals** – Hospital care remained the same (continuity) due to the Dissolution of Monasteries which closed the majority of church run hospitals, setting back progress.

**New Treatments:** – Alchemy and Transference treatments grew in the Renaissance but did not work, with the chemical mercury actually making King Charles II more ill!



**Old Treatments** – The use of the Four Humours, purging, bleeding, supernatural treatment and religious cures remained common throughout the period, especially during the Great Plague and in treating King Charles II

**Care:** – Most sick people continued to be cared for at home or by wise women, whilst Physicians remained expensive for most.



## Prevention and Public Health

### Progress

**Public Health** – Efforts were made to clear miasma (sewage and draining bogs), most effort made in response to Great Plague for example quarantine of those with the Plague & plague pits buried the dead away from towns

**Moderation** – Rich encouraged to continue to follow Regimin Sanitatis to keep healthy

### No progress

**Public Health** – Renaissance towns like London were still filthy places this is why the Great Plague spread so quickly as there were rats. Also, the government did little to help improve public health, only during the Great Plague



**Prevention:** Majority remained based on removing Miasma, which was linked to cause Superstitious ideas, four humours and prayer remained popular ways to prevent illness, especially during the Great Plague

## Medical Knowledge

### Progress

The 'Scientific Revolution' had an long term impact:

- **Vesalius:** Improved anatomical knowledge and proved Galen wrong
- **Sydenham:** Observationes Medicae used in medical training for 200 years, challenged Galen's ideas and encouraged direct observation
- **Harvey:** Challenged Galen, proved blood circulation and encouraged dissection and experimentation
- **Royal Society:** Printed and translated scientific/medical books and encourage experimentation and released Philosophical Transactions

### No Progress

These discoveries of Vesalius, Sydenham, Harvey and the Royal Society did **almost nothing to improve medicine in the Renaissance**

Whilst the discoveries of those like Harvey took 50 years to become part of medical training or were treated with suspicion.

Despite dissection being made legal, most physician training was based on textbooks by Galen until the later 17<sup>th</sup> century

## Concluding Remarks

Life expectancy remained around 40 years old, clear proof that medicine had not progressed in the Renaissance (continuity)

Despite the considerable growth of medical 'knowledge' during the scientific revolution, little of this actually impacted on medicine during the period, it just laid the foundations for later.



Despite their being very little medical progress (diagnosis, treatment, prevention) but improvements in knowledge, the Renaissance was a period of significant change vs tradition which both helped and **hindered** progress

## The Church

The declining power of the church during the reformation meant that the critics of Galen's teaching would not be silenced any longer, this encouraged those such as Harvey, Sydenham and Vesalius to openly challenge him. Whilst dissection was no longer banned by the Church, so anatomical knowledge could be developed.

**However – the simple fact that many of the ordinary population still believed in God and followed the Church meant that the ideas on cause, treatment and prevention were still influenced by religion. For example, during the Great Plague people still thought it was a punishment by God.**



## Science and Technology

The Scientific Revolution of the Renaissance helped the development of the medicine as it was an age where the Royal Society, Thomas Sydenham and William Harvey all made new discoveries and challenged the 2000 year old ideas of Galen. The very motto of the Royal Society was 'take nobody's word for it', which shows their wish to improve medicine and science.

They were also aided by new technologies which allowed new discoveries, such as the microscope which allowed Anthonie Van Leuwenhoeke to first see bacteria (despite not linking it to disease) or the water pump which inspired William Harvey to theorise that blood circulated around the body.

Invention of the printing press in the late 1440s led to widespread production of books and as a result increasing literacy. As printing became quicker and cheaper, scientists and medical books could now be printed and slowly became the basis of medical training and therefore improved knowledge

The first scientific journal (philosophical transactions) was released by the Royal Society in 1665, whilst books by individuals helped spread their discoveries, for example Vesalius's 'Fabric of the Human Body' helped improve anatomical knowledge and Sydenham's '*Observations Medicae*' became a medical training book for over 200 years

**However, we must not over estimate the impact of science and technology on medicine during the Renaissance, as it did LITTLE to actually improve treatment, prevention of diagnosis at the time and for the majority of people, these discoveries meant nothing and many could not even read the books!**



## The Government

The Royal Charter of Charles II was crucial to the Royal Society, this gained them support, money and publicity which helped their work, without him the discoveries of Robert Hooke, Van Leuwenhoek and other scientists may not have been recognised. Even Charles I supported William Harvey

**However, the closing of the monasteries by Henry VIII had a significant impact on hospital care as most hospitals were attached to the church. It was only during the Great Plague when the government acted to prevent the spread (quarantine, street cleaning and burning herbs) and improve public health**



## Respect for Tradition

Despite the discoveries and scientific developments in medical knowledge, a continued respect for tradition still caused medicine to lack progress – this is a major cause for a lack of change.

Physicians still respected the 2000 year old methods of Galen and traditional methods of treating disease (purging, bleeding, balancing humours), and even King Charles II was treated this way.

Ordinary people still continued to use traditional medicines passed down over the years.

It took over 50 years for Harvey's ideas about blood circulation to be taught in university, many doctors argued he was wrong as he was contradicting Galen.



## Individuals

If it was not for individuals like Vesalius, Harvey and Sydenham seeking improvement, the Four Humours would not have been challenged, anatomical knowledge would have remained basic and the discovery of blood circulation would not have been made

If Vesalius had not proved Galen wrong about anatomy, then Harvey and would not have been encouraged to do the same regarding blood circulation. Sydenham 'The English Hippocrates' pushed medical progress through developing the idea of 'direct observation' of patients and arguing the Four Humours were wrong – again arguing Galen's ideas were wrong.





Using your revision guide, the sources and A4 paper, practice the below exam questions.

Remember to use the 'how to' guides in the front of this book to help your in your answers.

**1. Explain why there was continuity in the way disease was treated in the period 1500-1700:**

You may use the following information in your answer:

- The Great Plague
- Attitudes in society

You must also use your own information (12 Marks)

**2. Individuals had the biggest impact on medical training in the 16<sup>th</sup> and 17<sup>th</sup> centuries. How far do you agree?**

You may use the following in your answer:

- Vesalius
- The printing press

You must also use your own information (16 Marks)



Using these two boxes to micro-plan your answer to the above questions

You only need to plan out your 3-4 paragraphs, and key words/terms you would include in each

P1.
P2.
P3.

P1. Agree: Individuals did have the biggest impact
P2. Disagree: Decline of the Church
P3. Disagree: Scientific Revolution/Royal Society

**Explain one way in which ideas about preventing plague were different in the 14<sup>th</sup> and 17<sup>th</sup> centuries.**

During the Black Death in the 14<sup>th</sup> century \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Whereas in the 17<sup>th</sup> Century \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



# Renaissance Model Answer - 12 Mark Question

Explain why some changes took place in medical knowledge during the period 1500-1700

- The Royal Society
- Vesalius

PERFECT

Includes specific examples, dates and key words throughout

The improvement of medical knowledge during the Renaissance was partly due to the work of Andreas Vesalius, a doctor whose work improved knowledge of anatomy. Vesalius actively sought to improve his knowledge of the human body by dissecting dead bodies (stealing them!) and then sharing his ideas. Vesalius published two books, including the 'Fabric of the Human Body', which was a groundbreaking book which included detailed drawings of the human body. This helped improved knowledge as his books were printed (using the newly invented printing press) and shared, they even were used to train doctors at Cambridge University. Furthermore, Vesalius's work found over 300 mistakes in the work of Galen, for example the human jaw. This hugely improved medical knowledge as it challenged Galen who has been followed for over 1000 years and it encouraged others to dissect and improve their knowledge.

Links exactly to how it improved knowledge

Each opening sentence identifies a point and signposts the paragraph

The work of William Harvey was fundamental in the improvements in medical knowledge, notably the understanding of human circulation. Harvey, a English surgeon, also sought to challenge existing ideas on blood, especially those of Galen who he believed to be incorrect, as he was inspired by the work of Vesalius. Harvey's research led him to include a number of discoveries in his 1628 book 'on the motion of the heart and blood', such as finding that veins and arteries were linked in one system, this proving blood circulation and Galen wrong. Despite some initial resistance to his work, Harvey's work became central to medical training and further encouraged more challenges to Galen's ideas.

Finally, this period was also called the 'scientific revolution' when old ideas were challenged and new discoveries were made, leading to improved knowledge. The Royal Society, started in 1660, is an example of an organisation that sought to share new ideas, indeed it's motto was '*Take nobodies word for it*'. The Royal Society produced its own journal called Philosophical Transactions, which included scientific discoveries such as Hooke's use of the microscope. Furthermore, the Royal Society also translated foreign medical and scientific books, like those of Vesalius, to encourage the spread of new ideas. The support of King Charles II, gave the Royal Society respect from scientists, who read the books.

Gives three overall paragraphs, linking to L4

**What next?**

Read this answer, if you could write a different paragraph on WHY there was an improvement in medical knowledge, what else could you include?

it's  
your  
turn

# Ideas on the cause of disease

Until 1700, there had been significant continuity in the ideas on the cause of disease, people believed that disease was caused by either God, miasma or the 4 humours. However, during the Industrial Revolution many old ideas were abandoned due to the continued decline in power of the church and continued scientific breakthroughs.

## Ideas that stopped



The Four Humours theory was no longer believed as a cause of disease



Supernatural and superstitious such as astrology were no longer used in diagnosis



With the decline in the church, people no longer believed God was the cause of illness



## Ideas that continued



Miasma theory remained popular amongst the population, even Florence Nightingale and Edward Chadwick supported it.

Cities in Industrial Britain were filthy with poor sanitation, people could see and smell it, so they thought it caused disease.



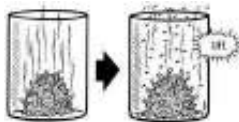
The Great Stink of 1858 highlighted miasma theory

## New Ideas (Change)

### Spontaneous Generation

In the 1700s a new theory called Spontaneous Generation grew, as new microscopes allowed scientists to see bacteria on decaying items e.g. fruit

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



This idea was ONLY believed by scientists although it was wrong, and proved so by the Germ theory

### The Germ Theory

In 1861, Pasteur was able to prove Spontaneous Generation was wrong, he showed that bacteria/germs in the air CAUSE decay

This was developed by Koch, who proved that bacteria/germs caused disease e.g. TB and Cholera. The Germ Theory became basis for identifying bacterial disease, even now and had a significant impact.

However, at the time most doctors and the government did not accept this theory immediately, it took until 1900 for it to be widely believed.



## 16 Mark Question Practice

Can you improve this plan?

*“Ideas about the causes of disease changed significantly in the period c1700-1900.*

How far do you agree with this? Explain your answer.

- Spontaneous Generation
- Louis Pasteur

### Paragraph 1

**Significant change in ideas** – Louis Pasteur and Robert Koch proved the link between disease and bacteria

**Evidence** – Theory of 4 humours abandoned, spontaneous generation instead of more study of microbes – still wrong but the basis of Pasteur’s work.

### Paragraph 2

**Ideas did change but not significantly** – not all ideas were accepted and Pasteur only published criticisms of “spontaneous generation” in 1861. “Germ Theory” was not immediately accepted as the cause of disease.

**Evidence** – Pasteur was unable to prove the link between germs and human disease because had to kill the “germs” by heating. Koch, later in the century stained and identified specific bacteria that caused disease in humans – vaccines for human disease. Only then was germ theory was accepted.

### Paragraph 3

**Ideas of some did not change** – not everyone accepted the rational explanations that were coming through and still believed in supernatural reasons.

**Evidence** – People were still religious – many criticised the new treatments (such as anaesthetics) which were seen as against God’s Will. But the tie between religions and disease was cut.

## Create your own brief plan for this 12 mark question.

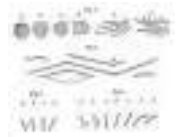
Explain why there was rapid change in the understanding of the cause of disease c1700-1900.

You may use the following in your answer:

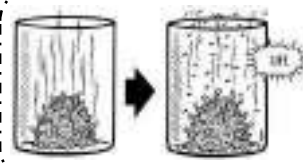
- Germ Theory
- The Microscope



# The Germ Theory



Scientists in the early 18<sup>th</sup> century no longer believed in the Four Humours or Miasma but with new powerful microscopes they could now see microbes (tiny organisms like bacteria) and they began to think of new ideas such as **Spontaneous Generation**.



## Spontaneous Generation

Simply the idea that microbes were the product of decay (e.g. rotting food/waste) and they caused disease.

They did not think that it was actually microbes in the air that caused decay – it was wrong but still progress as they knew SOMETHING scientific caused disease

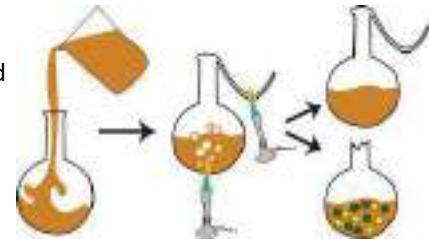
## Louis Pasteur and the Germ Theory



In 1861, French scientist **Louis Pasteur** came up with the **Germ Theory** which challenged the idea of Spontaneous Generation and finally led the way to understand the true cause of disease!

Pasteur's theory claimed:

1. Microbes cause decay and also disease
2. The air is full of microbes
3. Microbes can be killed by heating them (Pasteurisation)



**Pasteur had made a huge breakthrough!** He had proved germs were all around us, and some were harmful and could cause disease

### Why was Pasteur so Significant

Pasteur proved this through his experiments on milk, beer and animals



In the short term, **Pasteur and the Germ Theory** had little impact as doctors like **Henry Bastian** refused to accept that microbes like bacteria could make people ill!

So they continued to believe spontaneous generation. It took a long time to convince people...but a German scientist began to develop this work!

## Robert Koch and the Germ Theory



Robert Koch  
Father of bacteriology

I was able to develop Pasteur's ideas to **discover types of bacteria cause disease**.

In 1876 I discovered the bacteria which caused Anthrax.



**This was a major breakthrough!**

**It was the first time anyone had identified a specific microbe (bacteria) that causes a specific disease)**

I followed this by discovering the bacteria for Tuberculosis in 1882 and then Cholera in 1883 (proving John Snow right).



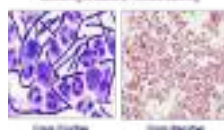
Koch published his methods of identifying disease causing bacteria

- It involved growing bacteria using agar jelly and a petri dish
- This would grow 'cultures' of pure bacteria, allowing Koch to identify specific bacteria causing disease



**Koch had a serious impact:**

- He invented a method to grow and stain bacteria to make them easier to identify
- Doctors now began to seek ways to to attack the microbe that caused disease, rather than just the symptoms. A huge turning point!
- He inspired other scientists to discover the causes of pneumonia and tetanus
- His methods are still used to this day,



## Impact of the Germ Theory

1. The Germ Theory solved the ideas on what caused disease which was a HUGE breakthrough despite not everyone including the British government believing it. By the 20<sup>th</sup> Century, the Germ Theory was widely accepted and developed
2. Scientists now look at preventing disease causing microbes- through Jenner's vaccinations and antiseptics, whilst new treatments could be developed with this new understanding. The Germ Theory affected almost everything in medicine



1. How was the Germ Theory the biggest breakthrough in medicine 1700-1900?
2. 'Louis Pasteur was the most significant individual during 1700-1900' do you agree?

# Impact of the Germ Theory



The Germ Theory is considered by historians as the **most important medical breakthrough** of the Industrial Period, even to that point in medical history!

The theory not only identified the cause of disease, ended years of incorrect ideas but it had an impact on treatment, care and prevention that affected short and long term medicine.


What is brilliant about the Germ Theory is that it can be used in nearly all exam questions on the Industrial period, so learn it!

## Impact on ideas on cause of disease

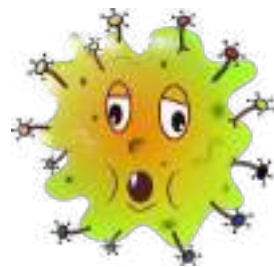
- The Germ Theory simply identified that germs/bacteria cause disease
- The work of Pasteur and Koch ended ideas of Miasma and Spontaneous Generation, but we must remember it was SLOW to take off at first. Nearly 50 years went by until it was accepted
- Koch was able to prove John Snow's theory on Cholera, identifying the bacteria that caused it
- The study of bacteriology (Koch is the father of this!) in the 20<sup>th</sup> century had enormous impact on our understanding of the causes of disease



## Impact on Treatment

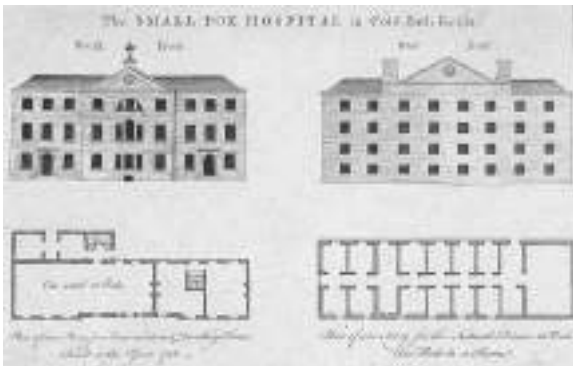
- Whilst there was **little short term impact** on treating diseases as there was no way to directly treat diseases, the understanding of the **Germ Theory impacted surgery**
- As Joseph Lister believed the Germ Theory, he directly developed **Carbolic Acid** (1865) spray as an antiseptic. 
- This directly led to a reduction in death rates from infection due to surgery, whilst it increased the development of Aseptic Surgery to keep Operating Theatres free of germs
- The **long term impact** is that scientists could now look at treating specific disease as Koch has identified the bacteria which caused diseases like Anthrax and Smallpox.
- As a result of this, in the 20<sup>th</sup> century scientists could focus on the production of the first antibiotics like Penicillin. 

## How significant was the Germ Theory?




## Impact on care and hospitals

Although Florence Nightingale was mistrustful of the Germ Theory, the improving understanding of germs led to improvements in hospital design. This included large windows, well ventilated rooms, and easy clean surfaces



Nurses and doctors now began to wash their hands, wash their clothing and use sterilised equipment and clothing in treatment and care, thus reducing the chance of infection.

## Impact on Prevention

- The Germ Theory allowed the development of vaccinations from the work of Jenner, who previously could not prove his work
- Once Koch began to identify specific diseases such as Cholera, TB, Smallpox and Anthrax, the development of vaccinations began.
- He was able to develop a vaccine for rabies.
- In the long term, the development of vaccines continued into the 20<sup>th</sup> century which government support, and they remain common practice to this day and diseases such as Smallpox and Polio has been all but wiped out.
- With regards to public health, the Germ Theory slowly but finally encouraged the Government to spend on Public Health, with the Public Health Act of 1875 being the largest intervention in British history 

# Care during the Industrial period

## Hospitals in the 18th century

In 1700, there were only 5 hospitals in Britain but during Industrial Period (18<sup>th</sup> to 19<sup>th</sup> Centuries) new hospitals began to appear. Whilst there was a move towards treatment in hospitals, by the 1800s the increasing population put pressure on a system that was unprepared and remained unhygienic as they still did not understand germs cause disease, which often led to more deaths!

Early industrial hospitals had a variety of problems and dangers as shown in this diagram.

- High death rates from infection
- Few toilets and sewage systems
- Untrained nurses
- Uncleaned equipment, wards and operating theatres
- Doctors/nurses did not wash their hands

As a result, hospitals in the early part of the Industrial Period (18<sup>th</sup>c) experienced a large amount of continuity



## The Significance of Florence Nightingale

Florence Nightingale was a nurse who worked at Kings College Hospital, London

In 1854, during the **Crimean War**, she persuaded the government to send her and 38 nurses to help in the hospitals.

When she arrived, she was appalled at the dirty hospitals and high death rates amongst injured soldiers.

She focused on cleaning the hospitals, improving hygiene (scrubbing dirt away from patients) and eating good food.



As a result of her efforts in the Crimea, she was able to have a big impact on two areas of medicine;

1. The design of hospitals
2. The training of nurses

### The design of hospitals

She said hospitals needed :

- **Sanitation:** clean water, sewage systems and toilets
- **Ventilation:** fresh clean air as she believed in miasma
- **Supplies:** food & clothing

She promoted pavilion plan hospitals with large rooms, more windows, tiled floors for easy cleaning and isolation wards for infectious patients. The Birmingham hospital was built like this.

### The training of nurses

In 1859 she wrote Notes on Nursing and in 1863 Notes on Hospitals. Both books provided the basis and importance for training nurses.

She also established the Nightingale School for Nurses in 1860, to train nurses. As a result, nursing became a more respectable profession.



As a result, the death rate dropped from 40% to 2% over 6 months at the Scutari Hospital. She was called a national hero and this allowed her to encourage changes at home.

## Changes to hospitals

By 1900, hospitals looked very different to the start of the Industrial Period (1700) with a key focus on treatment of the sick in clean and sanitised hospitals, which now used aseptic surgery after the discovery of bacteria in the Germ Theory. Patients could also receive greatly improved surgery by trained doctors which ended pain and infection due to anaesthetics and antiseptics.

### New Hospitals

Small, local **Cottage Hospitals** spread from 1859 and there were 300 by 1900. They providing nursing care and treatments

There were also 18 voluntary hospitals in London with 4,000 beds where local doctors worked for free. Working people used these only if they payed into a fund each week, like medical insurance

From 1867, Infirmaries were built in workhouses where the poor old, sick, blind, deaf or disabled lived. Local taxes paid for these to have treatment, the first time ever

**Specialist hospitals** like asylums for the mentally ill and fever houses for those with infectious diseases were built.



### Continuity in hospital care

- The rich could afford to be treated and even have surgery in their own homes, which they continued to do
- Hospitals remained expensive & small for the working classes to afford, so many were still treated at home



### Pharmacies and new medicines

Apothecaries were now known as Pharmacies and the famous Boots pharmacy opened in 1849, selling cures. The first 'pill machine' was invented in 1844. New 'alternative' cures began to include electrical shocks, injection with animal hormones, and a range of **harmful substances** including cocaine, mercury, and creosote. There remained continuity as 'quack' remedies remained popular, for example 'Lily the Pink's medicinal compound'

## Surgery in the 18<sup>th</sup> Century

At the start of the 18<sup>th</sup> century, surgery was dangerous due to three main problems; **bleeding, pain and infection.**

There was no anaesthetic to stop pain, some did use opium.



There were no effective ways to stop bleeding out on the surgery table.



This was a problem that continued into the period

Despite some talented surgeons, most surgery was completed in dirty conditions, with the tools and clothing never being cleaned. This spread infection and death.



As a result of this, surgery was basic and the most common type was amputation as other types were too risky.

## Surgery in the 19<sup>th</sup> Century

Surgery made some considerable progress during the Industrial Revolution, largely due to the invention of antiseptics and anaesthetics. Despite this, there was plenty of progress left to make

### Anaesthetics

During the 1800s attempts had been made to find a suitable anaesthetic;



Ether was used from 1846, but it was risky and highly flammable

In 1847 that **James Simpson** discovered **Chloroform**. It could make patients unconscious in surgery



Simpson promoted it and even Queen Victoria gave it her blessing after the birth of her son in 1853.

He was even knighted for his work



Chloroform now allowed doctors to perform deeper and more complex surgery (e.g. First heart surgery 1896) and solved the issues of pain.



However, Chloroform had some serious risks, it was not perfect.

- Overdoses could kill between 1850-1870 it was the 'Surgery Black Period' as so many patients died e.g. Hannah Greener
- The problems of blood loss continued, especially during complex surgery.
- Many refused to use Chloroform

### Antiseptics

Until the mid 1800s, no one understood that germs and bacteria caused disease. Therefore surgeons, equipment and theatres were filthy and not cleaned.



As a result of this, germs spread to patients causing infection and disease.



In 1865 **Joseph Lister**, an English surgeon who studied the Germ Theory developed **Carbolic Acid** spray as an antiseptic.

Lister published his results where he showed 11 cases how his carbolic acid stopped infection, the idea spread quickly around doctors.

Antiseptics helped reduce deaths in amputations by 15% by 1870



However, Carbolic Acid did not fully take off around Britain:

1. Many surgeons didn't believe the Germ Theory, so they didn't use carbolic acid
2. Carbolic Acid damaged hands as it was poisonous, even Lister stopped using it!



### The impact of Carbolic Acid

- In the short term, surgery did not change due to resistance at first
- Importantly, attitudes began to change towards germs and bacteria. They finally began to see it was their responsibility to prevent infections
- This began the move to **Aseptic surgery**

## How much progress was there in surgery?

The major problems of pain and infection had been 'solved' and as a result surgery became more complex surgery. It was still not perfect, there was plenty still to go in the twentieth century.



However, the problem of blood loss had still not been fixed and patients still continued to die during/after surgery.

### Aseptic Surgery

**Aseptic surgery** is where bacteria was prevented from getting into the wound in the first place through having clean equipment and operating theatres

The focus on aseptic surgery led to changes:

- From 1887 all instruments were steam cleaned and sterilised
- Surgeons wore rubber gloves, surgical gowns and masks



# Prevention: Edward Jenner and Vaccinations

Edward Jenner was the first to make a discovery that successfully prevented people from catching the deadly disease, smallpox. He created the first vaccine, a method to prevent disease. It was the first breakthrough of the Industrial age that started huge improvements in the prevention of disease

## Smallpox



In the 18<sup>th</sup> century smallpox killed more children than any other disease. Thousands of adults died too and survivors were often left with terrible scars

Epidemics were common during the 18<sup>th</sup> century.

## Edward Jenner

- Edward Jenner was born in 1749.
- He trained in London as a surgeon and apothecary before working at St George's hospital.
- He then returned to his birthplace in Gloucestershire to work as a GP,
- It was here where he made his discovery that milkmaids who caught cowpox never caught smallpox. He decided to test and experiment the idea, even though he did not fully understand it.



## Vaccination and Smallpox

Since the 1720s, doctors like Sutton brothers had been inoculating thousands of people against smallpox by infecting them with a small amount of smallpox ( using pus from a scab). However, only the rich could afford it, it did not always work and many died from trying.

Jenner followed this with interest and noted when he treated people for the disease cowpox, they patients never caught smallpox. He thought there was a link

In the 1790s, Jenner used scientific methods to test his theory. He infected local people with cowpox and then tried to infect them with smallpox. None of them caught smallpox.



In 1798 he wrote up his findings but he did not know how to explain it (this was before the Germ Theory!) Unfortunately but the Royal Society refused to publish it, so he paid to print it himself and his ideas began to spread

In 1802 the Royal Jennerian Society was set up to promote vaccinations and by 1804 it had vaccinated 12,000 people. But it took time to become popular in Britain due to opposition

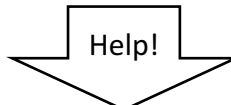


Eventually, after a smallpox epidemic killed 35,000 in 1837-40, the government bans inoculation and from 1840 agrees to pay for vaccinations for children!

In 1852, the government made the small pox vaccination compulsory but they only forcing it from 1872, it took time!

By 1979 the World Health organisation announced that smallpox had been wiped out.

## KEYWORDS



Key Word	Definition
Inoculation	Putting a low dose of a disease into the body to help it fight against a more serious attack
Cowpox	A mild version of smallpox, caught from cows
Vaccination	The name given to Jenner's method of injecting patients with the disease 'Vacca' comes from the Latin for cow!

## Opposition to Jenner/Vaccinations

Many people opposed Jenner's work because:

- They thought it was wrong to give people an animal's disease and it interfered with God's plan for humans
- Doctors who inoculated lost money when the government offered vaccination free
- The government and scientists could see no scientific proof and therefore were reluctant

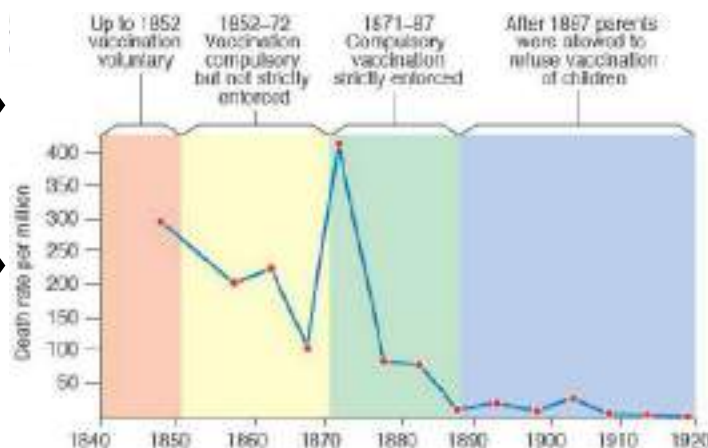
## Impact of Jenner and Vaccines

### Short Term:

- Smallpox vaccine saved many lives, over 100,000 people around world vaccinated by 1800, even Napoleons army!
- Slow uptake of vaccinations at first due to opposition, incorrect use of vaccines and lack of government support

### Long Term

- Jenner had showed vaccines worked, he inspired Pasteur and Koch to search for more vaccines **but** the method could not be used for other disease, so no new vaccines until 1900s
- Led to eventual government enforcement of vaccinations and smallpox was wiped out smallpox by the 1970s!



# Prevention: Public Health

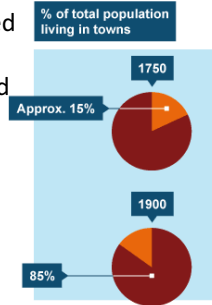
## Living Conditions in the Industrial Revolution

During the Industrial Revolution, Britain's population boomed to 20m by 1850.

The greatest change was the growth of towns, where 85% of people now lived which caused overcrowding and poor sanitation with no running water, shared toilets and little sewage systems.



One result of these living conditions was the frequent outbreaks of epidemics like cholera, notably in 1854



In 1842, Government official Edwin Chadwick completed a report on the living conditions in British cities

### 'Report on the Sanitary Conditions of the Labouring People'

- Life expectancy in cities is lower than in the countryside at 38 years! In Liverpool it is 15 years
- Unhealthy living conditions in cities through overcrowding, no sewage disposal and poor diet are causing poor health in the poor.
- The rotting sewage and filth is causing bad air (miasma), which is making people ill.
- I recommend we force local councils to do something about public health by building new sewer systems, remove waste & supply water



### Was Edwin Chadwick important?

In the early 1800s, the government followed a '*Laissez Faire*' (Hands off) approach to public health, which meant it did not feel it was its role to improve living conditions or public health, it did not want to interfere



However, when Chadwick's report was published it helped create awareness of the need for the government to do something.

As a result they **passed the first Public Health Act in 1848**. The aim was to improve sanitary condition within towns in England and Wales, **however as it was not compulsory and this was pre germ theory, many local councils did nothing and public health did not improve.**

### 1848 Public Health Act

1. National Board of Health set up
2. The government could force some town councils to improve water/sewerage
3. Local councils were told to collect taxes to pay for public health improvements
4. Councils were allowed to appoint medical officers

**NO EFFECT**

### A turning point in public health

From the 1850s the governments policy towards public health took a drastic turn due to a number of events and factors



The 1854 and 1866/7 Cholera outbreaks killed thousands with the government hopeless to prevent it until John Snow identified (but could not prove) the link between water and cholera



Pasteur's Germ Theory in 1861 proved that bacteria/germs caused disease, this ended the idea that Miasma caused disease. Scientific proof made people want public health reform.

### Changes in Public health

**BIGCHANGE.**

The government's attitude to public health changed over time and after several epidemics of diseases such as cholera they began to realise that they must take further responsibility for public health.

Furthermore, when working class men got the vote from 1867, politicians now had to appeal to voters who wanted better living conditions

From the 1860s onwards the government began to take more action to improve living conditions in cities:

- 1,300 miles of sewers were built in London after the Great Stink of 1858
- Slums were demolished in Birmingham
- In Leeds, dumping sewage into the river was banned

The government took its biggest ever steps to improve public health and improve the prevention of disease in the **Public Health Act of 1875**, as a result Cholera did not outbreak again in London.

### 1875 Public Health Act

City authorities must provide:

1. Clean water to stop diseases spreading from dirty water
2. Sewers to dispose of waste properly
3. Public toilets
4. Street lighting
5. Public parks for exercise

As well as

1. Public Health officers to inspect; lodging houses, the building of new homes and check the quality of food sold

### 12 Mark Question

Explain how the prevention of disease improved from 1700 to present

You may use the following in your answer:

- Vaccinations
- The Public Health Act, 1875

You must also use your own information (12 Marks)

Now this is a cheeky question from the June 2018 exams, it cover two time periods! You can discuss how prevention improved in both the Industrial Revolution and Modern Period!





# Case Study: Cholera

## Background

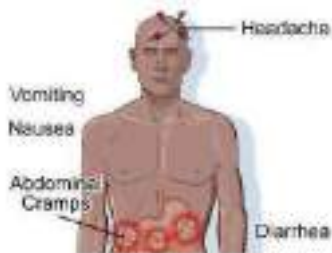
Cholera was a feared disease in Industrial Britain.

The first outbreak occurred in 1831, with further outbreaks in 1849 and 1854.

During the 1854 epidemic, over 20,000 Londoners died

It was usually fatal

Cholera was nicknamed the “blue death” as it turned the skin of its victims blue with dehydration



Most people that caught Cholera died at this time as there was no known cure to treat the disease..

Cholera mainly affected the poorest people with the disease was most present in the overcrowded slum areas, workhouses and prisons of towns and cities.

## Ideas on the cause

With no known cure or accurate knowledge on the causes of cholera, people believed it was caused by miasma or spontaneous generation which were the widely accepted theories at that time. This was BEFORE the Germ Theory (1861)

### Examples of prevention of cholera:

- To combat the impact of miasma, people tried to keep their homes clean and tar was burnt on the streets
- Some towns and cities attempted to clean the streets of rubbish and employed people to maintain this. However this wasn't the case in all areas.
- The Public Health Act of 1848 expected councils to be responsible for providing clean water. This was not a legal requirement however so many councils chose to ignore this! So it failed to help

## CHOLERA. PREVENTION.

1. Let every person be washed perfectly clean, morning and evening.
  2. Let every room be cleaned and swept every day, and well washed at least once a week.
  3. Let no rubbish nor dirt lie about the door, nor near the house.
  4. Let off all stagnant water.
  5. Let the house be whitewashed with lime.
  6. Beware of Invasions—nothing is so likely to bring on Disease.
- If any one is seized with sickness, slight vomiting, and purging, a burning heat at the stomach, with cramp in various parts of the body, and a feeling of cold all over, it probably is the Cholera.

As a surgeon working in London, Snow was able to observe the impact of cholera in Soho

During the 1849/9 outbreak, he theorised that cholera was caused by contaminated drinking water rather than miasma

During the 1854 outbreak, he used a map to plot all of the cholera victims and noticed a link to one water pump, on Broad Street

### The work of John Snow



He removed the handle to the Broad Street Pump, preventing it being used.



The cholera outbreak stopped almost immediately. Snow also found that the local cesspit was leaked into the water supply.

Snow could prove his link between cholera and unclean water but could not explain why, just yet!



Most deaths were centred around the Broad Street Pump

In 1855, Snow presented his findings to the government

### The Impact of Snow's work:

#### Short Term

At first, Snow's ideas weren't widely accepted and his recommendations were ignored by the government who clung to the Miasma Theory

The population of Soho benefitted as they managed to avoid Cholera

#### Big Impact

In the long term, Snow's ideas became important when combined with Germ Theory from 1861 onwards leading to a new sewer system in 1875 and the 1875 Public Health Act which made cities and towns provide clean water for the public

He recommended that government make improvements to the sewer systems to avoid another outbreak.

However, many rejected Snow's work as he could not provide any scientific proof and the Board of health clung to the Miasma Theory.



### 4 Mark Question

Explain one way in which prevention of epidemics was similar the 16<sup>th</sup> and 19<sup>th</sup> centuries.

Remember, you need to discuss BOTH time periods and point out a similarity between these two with evidence

## The Age of Breakthroughs

The Industrial period was an age of rapid medical change and breakthroughs:

- **Ideas on cause:** The Germ Theory
- **Prevention:** Vaccinations and Public Health Acts
- **Surgery:** Antiseptics, Anaesthetics and Aseptic Surgery



## Work left to do

Despite the major progress across medicine, there were still some improvements to go

- **Surgery:** Blood loss still a problem
- **Prevention:** Vaccinations for other diseases than Smallpox
- **Hospitals:** Care for the poor

<u>Progress</u>	<u>Limited Progress</u>
<p><b><u>Ideas on Causes of Disease</u></b></p> <p>The Germ Theory was a <b>HUGE</b> turning point in medicine, it finally proved what causes illness and ended ideas on Miasma and Spontaneous Generation. It is still used today! The development of microscopes allowed Louis Pasteur to publish Germ theory, proving that spontaneous generation was wrong and that germs caused decay. Robert Koch furthered this work, linking specific microbes to diseased, including TB and cholera.</p>	<p><b><u>Ideas on Causes of Disease</u></b></p> <p>The first half of the Nineteenth Century (1800s) saw little progress in knowledge of causes of disease – Miasma theory remained, it was even blamed on the Cholera outbreaks and the incorrect idea of spontaneous generation was popular amongst scientists even after the Germ Theory. Germ Theory wasn't published until 1861 and it took many decades to become accepted by scientists or the British government, only until Koch's work in the 1880s.</p>
<p><b><u>Prevention (Vaccinations)</u></b></p> <p>Vaccination was developed by Edward Jenner throughout the 1790's. He published his work in 1798, showing how he was able to use the Cowpox disease to vaccinate against Smallpox. This led to the government paying for vaccinations (1840) and its being made compulsory. Huge long term impact, in Modern period</p>	<p><b><u>Prevention (Vaccinations)</u></b></p> <p>The vaccination against Smallpox couldn't be developed further to stop other diseases. Many people believed that the vaccination was wrong as it went against God's will. Jenner wasn't able to explain why his vaccination worked, only when the Germ Theory was proved by Koch</p>
<p><b><u>Prevention (Public Health)</u></b></p> <p>The Public Health Act of 1875, combined with the work of John Snow in preventing cholera improved the prevention of disease. Changes included clean water, creating new sewers, building regulations and the monitoring of diseases. Public Health was now the government's responsibility</p>	<p><b><u>Prevention (Public Health)</u></b></p> <p>Public Health wasn't a priority until later in this period (1860s onwards) and acts like the 1848 public health act did little to improve public health as it was not enforced. Many people such as Snow faced opposition for their ideas until Germ Theory linked disease to poor living conditions.</p>
<p><b><u>Treatment</u></b></p> <p>Surgical improvements in the industrial period were rapid, ending the problems of pain and infection for the first time.</p> <ul style="list-style-type: none"> <li>• Antiseptics such as carbolic acid (1866) invented by Joseph Lister dramatically reduced infections, reduced surgical deaths and led to aseptic surgery (removing bacteria from operating theatre/hospitals).</li> <li>• Anaesthetics like ether, chloroform, laughing gas and cocaine meant that more complex surgery was possible (first heart surgery 1896)</li> </ul>	<p><b><u>Treatment</u></b></p> <p>Surgery was still dangerous- anaesthetics like chloroform caused deaths as doses were not fully understood, causing the surgery black period and the stopping of chloroform. . Many opposed the use of carbolic acid as it caused a burning sensation to doctors, some thought it opposed God whilst others mistrusted the Germ Theory so refused to use it. The third problem of surgery was still not solved, blood loss. With increasingly complex surgery, patients could still die due to the loss of blood.</p>
<p><b><u>Care and Hospitals</u></b></p> <p>Hospital care was drastically improved by Florence Nightingale with greater emphasis on cleanliness, training for nurses and the use of wards to treat specific diseases. As a result hospitals were designed to improve cleanliness &amp; care. Specialist hospitals were set up infectious diseases and asylums for the mentally ill whilst the first hospitals (infirmaries) for the poor</p>	<p><b><u>Care and Hospitals</u></b></p> <p>Many of the poorest could not afford hospital care, whilst the poorest and disabled were forced into workhouses to 'pay' for their treatment. A good majority of people, especially the rich continued to be treated at home</p>



### 16 Mark Question Practice:

Germ theory was the most significant medical breakthrough in the 1800's. How far do you agree?

- The Germ Theory
- Anaesthetics

# What factors affect change in the Industrial Period?



## Science and Technology

New inventions such as improved microscopes, the use of agar jelly to grow microbes directly led to the creation of Germ Theory as Pasteur/Koch could see the bacteria

The development of syringes allowed improved vaccination

Meanwhile, surgical improvements including antiseptics, aseptic surgery and anesthetics led to reduced death rates and more complex procedures.

Improvements in engineering and construction allowed the building of sewer systems e.g. the 1100 miles built in London

However the experimental nature of the new technologies like chloroform caused deaths, leading to the surgery 'black period' and risky surgery inside the body.

## Work of Individuals

Many individuals affected great change in medical care, treatment and prevention. They pushed the breakthroughs of the period.

Florence Nightingale's work revolutionized hospital care and the profession of nursing, whilst Koch, Snow and Pasteur radically changed ideas on causes of disease for good even in the face of opposition!

The tenacious (persisting) attitudes of Jenner, Pasteur and Simpson led them to make discoveries sometimes by chance

However these individuals often faced huge resistance from others in society, such as religious conservatives who believed they were working against God's will.



## Government Attitudes

Changing attitudes of the government was crucial to medical progress in the Industrial period, particularly in public health and the prevention of disease. The government were now directly responsible for the health of the public.

The introduction of the Public Health Acts of 1848 and later 1875 improved the prevention of disease drastically. Councils were expected to provide clean water, build sewers and provide public toilets. They were also expected to maintain building regulations and monitor diseases. As a result, Cholera was ended.

The government even gave £30,000 to Jenner to develop his work on vaccinations, later paying for all vaccinations in 1840 and making them compulsory from 1852.

But, we must remember that the government was slow to acknowledge changes should be made, especially to public health until the Germ Theory



## 12 Exam Question Express Planning

Create an express plan for the following question using the boxes below to organize your thoughts



**Explain why there were changes in knowledge on the causes and prevention of disease during the period 1700-1900. You may use the following in your answer:**

- Edward Jenner
- Germ Theory (12 marks)

Paragraph 1:

Paragraph 2:

Paragraph 3:



# Industrial Period Model Answer - 16 Mark Question

**Simpson's use of chloroform as an anaesthetic was a major breakthrough for surgery during the period 1700-1900. How far do you agree?**

- Chloroform
- The surgery Black period



Uses 'Some historians' as opening sentence, to avoid getting into 'I agree' 'I disagree' conundrum

Some historians would agree that the development of anaesthetics were a significant breakthrough for surgery in the industrial period. In the until 1800, a problem facing surgeons was that there was little successful pain relief for patients, apart from alcohol and opium and the risk of death by shock was high. Attempts were made to find a suitable anaesthetic until James Simpson discovered chloroform in 1847, which could put patients to sleep during surgery. This new method, supported by Queen Victoria who used it during childbirth, revolutionized surgery. It allowed doctors to performed deeper and more complex surgery, such as the worlds first heart surgery in 1896. However, what limits chloroforms significant was that overdoses were common, nicknaming the time 'the surgery black period', whilst there was still no method to stop bleeding and as a result, chloroform was used less as new types were looked for. Nevertheless, chloroform could certainly be seen as a breakthrough

For Level 4 it balances the analysis of each point

Provides balance to the statement, offering a disagree point

Other historians could argue that the development of the first antiseptic, carbolic acid was an equally important breakthrough. Indeed, in the 1800s, death by infection was a likely result of surgery as equipment and surgeons were not cleaned. Joseph Lister, a surgeon, who supported the new Germ Theory, which suggested bacteria caused disease, wanted to find a way to reduce death by infections caused by surgery. As a result created carbolic acid, the first antiseptic. This acid was soaked into bandages and sprayed onto wounds and chloroform proved successful, reducing deaths by amputations by 15% by 1870. Despite the improvements, Carbolic acid did not take off as many surgeons didn't believe the Germ Theory and the acid itself damaged hands.

Provides clear examples and specific subject knowledge

Remains focused on the statement throughout

Consequently, Carbolic Acid was no longer used, even by Lister himself. What makes this first antiseptic a breakthrough is that it helped changed attitudes towards germs and infection, helped the move towards aseptic surgery.

Provides a third agree or disagree point

The move towards aseptic surgery had a considerable long term impact as doctors began to remove bacteria from operating theatres, clothing and equipment. Creating this sterile environment, where all instruments were steam cleaned from 1887 and surgeons wore rubber gloves onwards benefitted surgery to this day.

Conclusion, whilst balanced still favours one side

In conclusion, I would disagree with the statement as although the development of chloroform solved the issues if pain in surgery and encouraged deeper surgery, the risks were high. Whilst the development of antiseptics after the Germ Theory revolutionised surgery and its' environment, which continues to have an impact today.

# Causes of illness – diagnosis & lifestyle



Science and technology has vastly improved the opportunities to test and diagnose (find the cause) of a disease.

The benefits of this improved diagnosis has been that doctors can now treat patients better using more specific treatment to their disease whilst other instruments can now be used at home by patients to monitor illness.

## Blood Tests/Biopsys

From the 1930s, doctors can use blood tests to test for a huge range of conditions such as anaemia.



Whilst a biopsy (sample) of human tissue can be used to identify disease

## Blood Sugar Monitoring

Allows those with diabetes to check their blood sugar levels to keep on top of their condition



## CT Scans

Advanced X-Rays which can be used to diagnose tumours and other growths such as cancer



## MRI Scans

Using magnets and radio waves, doctors can create an internal image of the body.

Tis can be used to diagnose soft tissue or ligament damage



## ECGS

Echocardiograms use electric impulses to track heart activity.

These are useful after a patient has a heart attack.



## Ultrasounds

Also known as Sonograms, they use sound waves to build up a picture of the inside of the body.

They can help to diagnose kidney/gall stones



## X-Rays

From the 1890s, these help see inside the human body without cutting into it. They help diagnose broken bones



## Endoscopes

Small, thin flexible cameras are used to see inside the human body. They are used to look a digestive system problems, they can also take a biopsy (sample) of human tissue to test.



## Lifestyle & causes of disease

Your health,  
your way,  
your choice.

During the 20<sup>th</sup> century we also have a much better understanding of how lifestyle choices affect our body and how they link to disease .

These lifestyle factors all play a significant role in a the health and potential illnesses of a person

### Smoking



Doctors have linked smoking to a variety of conditions, most commonly lung cancer.

They also now recognise smoking is associated with high blood pressure, heart disease, throat/mouth cancer and gum disease or tooth decay.

Even second hand smoke increase asthma cases amongst children.

### Diet



Diet has a huge impact on health (something they did know in the Middle Ages!)

Sugar and fat are the biggest concerns, as too much sugar can cause Type 2 diabetes (an incurable condition) Whilst too much fat can lead to heart disease



### Drinking alcohol and Drug Taking

Alcoholism or binge drinking can lead to liver disease and kidney problems, whilst use of needles can spread disease



### Sexually Transmitted Disease

People are aware of how unprotected sex can cause disease and spread fatal incurable diseases like HIV Aids

# Causes of illness – Genetics & DNA

## Early work on genetics

By 1900 it was clear that microbes did not cause ALL disease and some conditions were born with but this could not be identified at first but they knew a link must be there, especially in hereditary disease (passed down families)

Early work on genetics theorised that genes are inherited from each parent (the fundamental laws of inheritance) but it was not until the development of the electron microscope (1931) that genes could be seen, yet still even by 1950 the missing piece to the puzzle (DNA) has still not been found



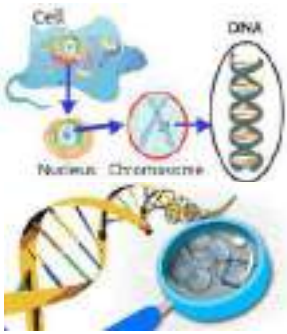
## The discovery of DNA

It actually took a series of discoveries to 'find' DNA, beginning with the late 1800s when scientists knew DNA existed and that it controlled what we are like.

The vast improvements in science and technology of the 1900s ( that allowed scientists to first photo human cells and then work out that every cell in the human body contains DNA, codes that control the genes of people

In 1953, two scientists Francis Crick and James Watson discovered the structure of DNA. They also proved DNA was in every human cell and was passed down from parents to children through their genes.

They then worked with Rosalind Franklin who developed a technique to photograph DNA, she was also the first person to x-ray photo DNA.



## The Human Genome Project

In 1986, The Human Genome Project began to identify the purpose of each gene in the human body – completing a complete map in 2001.

Mapping DNA was vital to helping scientists understand the causes of genetic diseases.



Scientists could use the blueprint of human DNA to look for mistakes or mismatches in the DNA of people suffering from hereditary diseases

Scientists have now been able to identify a gene that is sometimes present in women who suffer from breast cancer.

## DNA and causes of disease

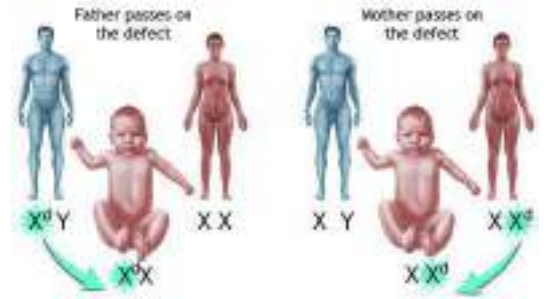
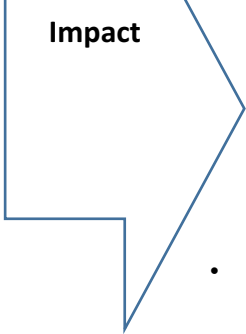
Once the Germ Theory only helped doctors/scientists identify bacterial causes of disease

Doctors could now identify **genetic causes** of disease that have been inherited from the sufferer's genes.

It would also let them work out how to help sufferers and also prevent these disease.

Perhaps genomes could be added to lead to treatment?

- Doctors can now identify specific genetic disorders such as Down's Syndrome, Parkinson's disease, Diabetes, Cystic fibrosis and Alzheimer's disease



- Doctors can also predicting that some people have a higher risk of developing some cancers

## Importance of the DNA discovery

### Future Medicine

DNA discoveries and it's impact on medicine is still ongoing, we don't know where it will take us in 5 years – it may be the most important breakthrough of all time



### Treatment

Gene Therapy can help sufferers of diseases like sickle cell anaemia HOWEVER, there is still not a cure or effective treatment for genetic conditions such as Downs Syndrome or Cancer.



### Prevention

Doctors can now screen for genetic diseases and or those with hereditary traits such as breast cancer. They can then be offered a mastectomy to remove the tissue to prevent cancer  
Simply, parents can be offered an abortion for embryos which highlight early signs of Downs Syndrome.

# Antibiotics in the Modern Age

**Early 20<sup>th</sup> century**

In the late 19th Century, more microbes responsible for specific diseases were being discovered due to Koch proving the Germ Theory, this meant that vaccines could be made

**1988s**

The hunt was on to make artificial or chemical antibodies that would attack the infection without harming the body

## The first Magic Bullet – Salvarsan 606



Paul Ehrlich, who worked with Robert Koch reasoned that, if certain dyes could stain bacteria, perhaps certain chemicals could kill them.

Ehrlich said this would be like a **Magic Bullet**. The chemical would 'shoot' the infection, not the patient.



Ehrlich set up a private laboratory and a team of scientists and by 1914 they had discovered several 'magic bullets' – compounds (chemical mixtures) that would target and kill specific bacteria.

The most effective and well known compound was **Salvarsan 606**. (it was the 606<sup>th</sup> attempt!)



Salvarsan 606 could now be used to treat the STD Syphilis. It was the first treatment of disease using chemicals!



### Importance of Salvarsan 606

This was a major step in the progress of medicine as it was the first chemical that could be used to kill infection inside the body. As a result, the hunt was on the better antibiotics!

However, as Salvarsan 606 was made from arsenic, it was also poisonous!

## The second Magic Bullet - Prontosil

In 1932 Gerhard Domagk found the second magic bullet after years of research.

This was a red dye called **Prontosil** and killed the bacteria causing BLOOD POISONING.

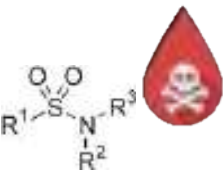
At first he trialed on mice which proved to be a success.



Domagk soon had the chance to trial it on a human – his own daughter who had blood poisoning which could not be cured. He injected her with Prontosil and she recovered!

Doctors discovered that **sulphonamide** was the key ingredient which attacked disease and were able to then create new drugs which cured gonorrhoea, pneumonia, and scarlet fever.

This helped mothers dying from post-natal infection drop from 20% to 5% - a huge impact!



## Penicillin

# REVOLUTION

The most important antibiotic discovered was penicillin.

It was the first anti-biotic made using microbes and not chemicals.

Alexander Fleming accidentally discovered Penicillin after leaving petri-dishes with bacteria on and then noticed the mould that grew killed the bacteria. Fleming then diluted this penicillin and found it could kill bacteria but only on the outside of the body but not inside the body.



In 1938, two oxford scientists **Florey and Chain** managed to create a pure penicillin which could kill bacteria inside the body like septicemia.

During WW2, the US government funded and mass produced penicillin so that it could be used by the army (over 2.3 million doses).

The NHS made it free for all and it became an important 'wonder-drug' to treat AND prevent illness.

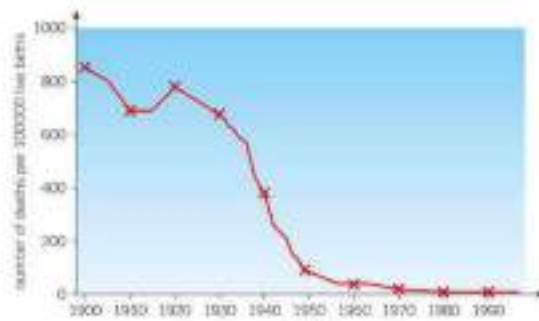


### Impact of antibiotics

For the first time in history, doctors could now treat bacteria based diseases e.g. pneumonia and deaths by disease significantly dropped from the 1940s onwards. Look at the impact on childbirth deaths from infection

The work on antibiotics did not stop, using other fungi to create more antibiotics. As a result, Streptomycin was discovered in 1943, an antibiotic so powerful it cured tuberculosis (TB) which was previously thought incurable

In the shorter term antibiotics have been a miracle cure for diseases, however in the long term superbugs like MRSA are becoming resistant/immune to antibiotics which proves continuing problem for scientists. Whilst diseases like septicemia (blood poisoning) are fighting off old antibiotics



ANTIBIOTIC





# Treatment in the Modern Age

## Continuity from the 1750-1900s

Even in the early 1900s, at home people still relied on herbal remedies, treatments passed down through families and medical books made for home use. Companies such as Boots and Beecham's sold medicines

# BIG CHANGE.

But, huge change to treatment was coming

### Changes in Medicine and Drug Treatment

'Cure all' medicines were now replaced by new medicines such as Aspirin which was now used as a painkiller and remedy for fevers.



New anti-biotics such as magic bullets and penicillin were also developed to treat infections and disease.

New custom drugs can now target specific particular health problems due to genetic conditions such as Huntington's disease



Pills can now be mass produced in capsule form (which dissolve in the stomach quicker), whilst the development of hypodermic needles can allow quicker injections into the blood stream and insulin pumps help those with diabetes

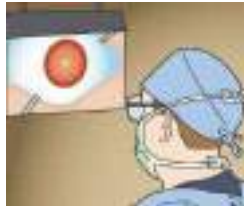
### Changes in Surgical Treatments

In the 1900s, the three major problems of surgery – pain, infection and bloodloss had now been solved. The use of new modern science and technology allowed medicine to treat illness, injury and any medical issues.

#### Keyhole Surgery

Keyhole surgery (laparoscopic) uses tiny cameras and minute instruments to operate.

This means quicker healing and less impact on the human body.



#### Microsurgery

Microsurgery allowed tiny nerve endings and blood vessels can now be reattached after surgery, which helped transplants develop

The first kidney transplant was in 1956, and heart transplant in 1967.



#### Robotic Surgery

Surgeons can now use computers to control instruments for precision surgery

This is often used in brain surgery



#### Anaesthetics

From the 1930s, anaesthetic could be injected into the blood stream allowing precise doses and safer surgery.



### Modern Treatments

Treatment has developed significantly since 1900

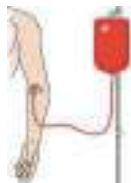


#### X-Rays

X-Rays can now be used to target and shrink tumours growing inside the body – this is called Radiotherapy which is used to treat cancer.

#### Blood Transfusions

From 1900, scientists could now store blood for transfusions due to solving the problem of blood clotting being solved in WW1. They added sodium citrate



Dialysis machines keep kidney patients alive until a transplant is available. Heart bypass machines and pacemakers perform the functions of a heart

#### Machines

#### Gene Therapy

Gene Therapy takes normal genes from a healthy donor and puts them into the DNA of someone suffering from a genetic disease such as cystic fibrosis. Stem cells are being trialed to reverse blindness



#### Robotics

Improved prosthetic limbs are now used to help amputees, especially those injured in Iraq or Afghanistan. Even 3D printing of parts is in developmental stage!



### How much change was there in treatment?

**Yes, BUT...**

- New disease are constantly appearing without immediate cures/treatment whilst the rise of drug resistant bacteria like MRSA is a growing concern for the medical profession
- People still rely on 'alternative remedies' such as herbal medicines and homeopathy like acupuncture
- There are currently no cures for cancer or heart disease which are linked to lifestyle factors

From 1900s, medical treatment has made significant change, the most ever. Deaths from infectious disease have dropped from 25% to less than 1% whilst overall life expectancy has risen to 83 in 2013, this can be attributed to the treatments available.



# Preventing illness in Modern Period



The government has now taken significant cation to improve the publics health since 1900, there are two reasons for this:

<p><b>1. Increased understanding of causes of disease</b></p>	<p>Now we know what causes disease, the government recognizes that its intervention can have an impact on public health.</p>
<p><b>2. Increased understanding of methods of prevention</b></p>	<p>Now causes were understood, methods of prevention could now be tested and introduced to improve public health</p>

Once this the causes of disease and health problems were understood, the government could now introduce new methods of prevention:

- **Compulsory vaccinations** – Vaccination campaigns launched for measles, polio and diphtheria
- **Screening for genetic diseases** – Downs Syndrome during pregnancy or testing genes for breast cancer
- **Communicating health risks** – During times of global epidemics (Ebola 2014-15), government tracked travellers and put quarantine measures in place. Communicating risks is now key in preventing disease
- **Charities** – British Heart Foundation creates adverts encouraging people to protect their heart by giving up smoking, eating less fat and exercising



## Vaccination Campaigns

The **first national vaccination campaign** against diphtheria was launched in 1942.



Over 3000 children died a year from Diphtheria, so in WW2 the government finally took total control. Children were now immunized and diphtheria died out.

Other significant vaccination campaigns included those against contagious disease, Polio. The first vaccine was introduced by 1956 and there has not been a case of polio since 1984!

Key vaccinations have been introduced ever since, such as:

- Tetanus, 1961
- Measles, 1968
- Rubella, 1970 (which is dangerous for unborn children)

The government has also introduced vaccines like HPV, which protects women against an STI than can cause cervical cancer

The main concern for the government is that parents are free to decline to have their child vaccinated, causing potential illness. Another problem is that flu viruses change so often, new vaccines are required each year!



## New methods: Government lifestyle campaigns

The government now aimed to help people prevent disease like cancer, heart disease and HIV/AIDs themselves by promoting healthier lifestyles, this included:

- **Advertising campaigns** which warned against the dangers or smoking, binge drinking, drug use and unprotected sex.
- **'Stoptober'** to encourage people to not smoke for a month
- **'Sugar Smart' and '5 a day'** to encourage families to eat well and move more.



### HM Government

#### Government Legislation (Passing Laws)

The government began to pass laws to provide a healthy environment for the population.

**Clean Air Act of 1956 and 1968**

This was passed due to bad smog (heavy fog pollution) in London caused by burning coal. The law aimed to reduce air pollution

Other recent government acts have included:

- **Smoking ban** inside all public buildings 1 July 2007
- **Limiting car emissions** (taxing cars that cause more pollution)



Everyone over the age of 40 is given the opportunity to have a health check every 5 years focussing on blood pressure, weight and cholesterol levels and it also includes lifestyle advice.

# Care on the Modern Age

**Early 1900s** The major problem in 1900 was the cost of medical treatment.

The 1911, **National Insurance Act** did provide help for workers who fell ill but it was a long way from including all the population such as the elderly, families or unemployed. From 1912, clinics in schools did begin to give children free medical treatment.

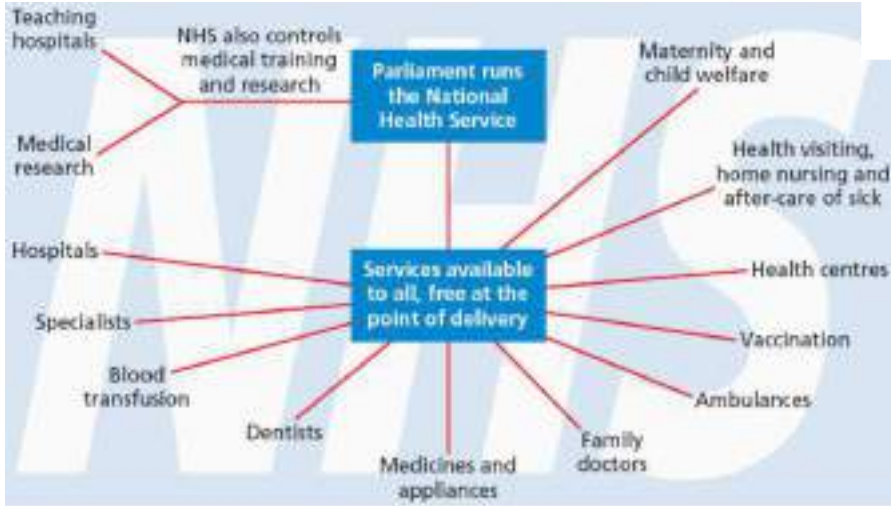


## The NHS

In 1948, the government set up the **National Health service (NHS)**

The idea came from the 1942 Beveridge Report that said treatment should be available to the rich and the poor.

The NHS provides **medical care for all the population**, paid for by British taxes. Medical care (as shown to the right) was to be free for all the population regardless of background



The NHS is now responsible for over 2500 hospitals and GPs surgeries in the UK

### Early problems with the NHS

In the short term beginnings of the NHS, the government faced a number of problems:

- Hospitals throughout the country needed updating desperately and most were in the South East – there were not enough around England.
- Britain had very little money after WW2 to pay for the NHS
- GPs surgeries needed modernizing and GP's themselves were suspicious of the NHS, many of them were not interested in medical research.
- There were large appointment waiting times and delays



### Improvements from the 1960s

From the 1960s, the government began to spend to improve the NHS

- **More hospitals were built** around Britain, even specialists like Alder Hey children's hospital.
- The **Quality Care Commission** was set up to monitor hospital quality
- **The GPs Charter, 1966** – This gave incentives to GP's who kept up with medical research and encouraged GP's to work in practices together



### Impact of the NHS

The NHS was the biggest ever intervention by the government to improve the of the British public and it had significant affects:

- **Medical care/treatment**- Any one, regardless of social background could receive the save level of service.
- **Prevention**: The NHS encouraged healthy living, administers vaccinations and uses checkups and modern technology to hep prevent or catch diseases like cancer early
- **The NHS offered high-tech medical treatment and care** – specialist doctors and nurses treat patients, and patients can now access a range of treatments such as blood lung transplants and chemotherapy for cancer patients.
- **Life expectancy** - The NHS has played an important part in increasing peoples life expectancy (83 in 2015)
- **Training** – Nurses have developed specialist skills in the care of patients, some can now prescribe medicine.

## Improvement



### Problems with the NHS today

- Waiting times and appointment delays
- An aging and growing population is putting a strain on the system
- Increasing lifestyle problems which cause disease (drinking, smoking & drugs)
- **Rising Cost** – The NHS costs the government a significant amount whilst budgets are cut



# Lung Cancer Depth Study

Lung cancer has become more common since 1900 with over 40,000 new cases a year. It had become the second most common cancer and the leading cancer amongst women today. The rise of lung cancer deaths has also risen, peaking at 26,000 deaths in 1973



## The link between Lung Cancer and smoking



In 1950, the British Medical Research Council proved that lung cancer was directly linked to smoking, indeed 85% of those get cancer are people who do or have smoked.



## How diagnosis have improved in the modern age

### Modern diagnosis

1. Patients are given a CT scan, often after being injected with a dye to create a more detailed picture.

Doctors then do one of two things

1. A PET-CT scan which uses radioactive material to identify specific cancerous cells
2. A bronchoscope takes a sample (biopsy) from the lungs

This allows the doctor to work out the type of cancer, how advanced it is and what treatment is best.



# BUT

As of 2015, there is currently no national screening programme as the technology simply does not exist to pick up the early signs of cancer

Lung cancer is particularly deadly, only 1/3 in live a year after their diagnosis so the focus on improving this.

Originally, X-rays were used to identify tumours with this was inaccurate.



## Modern treatment of Lung Cancer

Treatment has developed since the 1930s into four broad types:

### Surgery

The earliest method which has developed with microsurgery.

Lungs can also be transplanted but this leaves ethical questions.



## Modern prevention of Lung Cancer

The government were slow to intervene until lung cancer deaths grew too high and smoking related deaths cost the NHS £165m yearly.

### Changing Behaviour

The government passed laws to force people to change their smoking behaviour:

- In 2007, smoking in public places was banned. This was extended to cars in 2015 as there was evidence passive smoking had a negative impact on health.



- Taxes on tobacco were increased
- Must be 18 to buy cigarettes, which cannot be on display



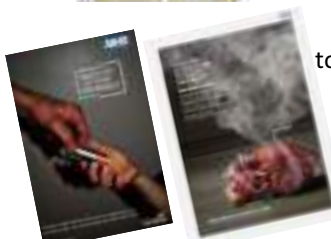
### Influencing behavior

The government also aims to influence peoples behaviour to improve their lifestyle to reduce the chances of cancer.



- Advertisement was banned entirely from 2005 and packing now contains warning

- The NHS produced campaigns to advertise the dangers of smoking. This includes in education to stop young people smoking



### Chemotherapy

Used since the 1970s is surgery and radiotherapy has not been successful.

Chemical medicines are used to shrink tumours or prevent cancer returning. It can have negative side effects.



### Radiotherapy

Aims to kill the cancer cells using beams of radiation to target the cancer precisely.



### Immunotherapy

Cancer can resist the bodies immune systems attempts to fight it, so scientists are researching into boosting a patients immune system to fight cancer.

However, as of 2016, there is NO cure for cancer which remains a focus for medical researchers

# How much 'progress' was there in the Modern Period

Below we can formulate the basis of an answer to this 16 mark question.

'Medical made rapid progress from the 20<sup>th</sup> Century onwards'

How far do you agree? Explain your answer. [16 marks]

You may use the following in your answer:

- Genetics
- The NHS

You must also use information of your own



## Ideas on the cause of disease

### Progress

With the Germ Theory from the Industrial period, progress in diagnosing disease has made an enormous leap forward to identifying all.

We can now do the following:

- Use DNA (from 1953) onwards, we can use DNA to identify genetic diseases like Downs Syndrome
- Human Genome Project allowed doctors to use DNA to identify hereditary diseases like breast cancer, impacting prevention
- Influence of lifestyle factors linked to disease, such as link between smoking and lung cancer from 1950s
- Modern technology can accurately pinpoint illness e.g. blood test, CT scans & endoscopes



### Continuity/More to do

Despite the huge changes and the fact we can identify the majority of diseases, we can't always cure/treat genetic diseases we can identify such as Huntington's

## Prevention/Public Health

### Progress

Government has continued to make more effort in the prevention of disease through a variety of methods:

- Vaccination campaigns from the 1940s onwards has ended threats of polio and diphtheria
- NHS set up has
- Lifestyle campaigns like five a day and stoptober
- Laws like the Clean Air Acts, car emission taxes and smoking bans have sought to legally improve public health
- Identifying of hereditary conditions early (e.g. breast cancer) to have preemptive surgery to reduce risks



### No progress

Continuing struggles by the government to encourage people to change lifestyle to reduce impact on health, such as eating healthily and stopping smoking which cost NHS millions. Many people still refuse to immunise their children due to the fears of vaccines, increasing risks

## The treatment

### Progress

Like diagnosis, treatment has made significant progress in the Modern Age due to advances in science and technology.

### Surgery

Advances in surgery have solved the 3 key issues in surgery (pain, blood loss and infection) whilst surgery has become much more advanced for example:

- Robotic surgery, microsurgery, key hole surgery and transplants(heart transplant 1967)

### Antibiotics

First development of antibiotics were crucial in treating illness Development of magic bullets (Salvarsan 606 in 1914) and later penicillin allows doctors to treat successfully, for example pneumonia. Made free on NHS, huge impact!

### Other

Modern science and technology has allowed treatment for a wide range of diseases such as: dialysis (diabetes), transplants, blood transfusions and even paracetamol



### Continuity/More to do

### Antibiotics

Rise in 'superbugs' like MRSA and evolution of septicaemia proves problem for doctors as they are resistant to modern day antibiotics

### Other

Doctors cannot treat some of the major diseases like lung cancer or genetic disease like Downs Syndrome, which are currently incurable

## Care

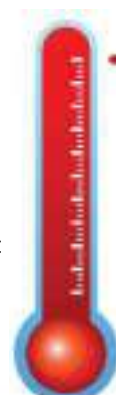
### Progress

The setting up of the **NHS in 1948 was the biggest ever intervention by the government** to improve the of the British public and it had significant affects:

Any one, regardless of social background could receive the same level of service for free (paid for by taxes). This service includes **high-tech medical treatment and care from** specialist doctors and nurses who received high quality training and use the latest medical research and techniques, such as transplants.

### Continuity/More to do

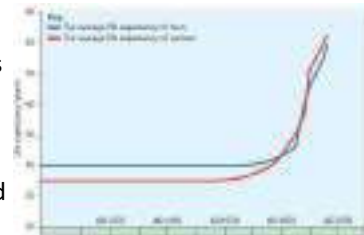
The largest concern for the NHS in the modern period is the rising cost, reducing in funding and increasing aging population.



## Concluding Remarks

In the Modern Period, the biggest progress has been in increasing peoples life expectancy (83 in 2015).

Whilst there are constant challenges and evolving conditions, medicine in this period has made rapid and lasting progress



## Science and Technology

The rapid advances in science and technology directly impact on medical progress, science & tech allowed diseases/ to be pinpointed accurately which affected treatment/prevention

- **Cause of disease:** Genetics/DNA discovery, Human Genome Project with thousands of scientists collaborating, Electron microscopes for gene mapping of DNA. New methods of diagnosis using tech; X Rays, Blood tests, ECGs, CT scans, ultrasound and biopsy's
- **Treatment:** Mass production of pills like penicillin, robotic surgery, chemotherapy, insulin pumps, hypodermic needles, microsurgery, dialysis, prosthetic limbs and keyhole surgery
- **Prevention:** Mass production of vaccines, DNA/Genetic tests for hereditary diseases



## Work of Individuals



As in other periods, the work of key individuals pushed medical breakthroughs, such as:

- **Crick and Watson** who used earlier work by Franklin & Wilkins to discover and map DNA in 1953, which led to significant improvements in diagnosis of disease
- In 1909 **Erlich** developed the first magic bullet, Salvarsan 606, an antibiotic to treat syphilis
- **Fleming** who discovered accidentally penicillin (first natural antibiotic) in 1928 and then **Florey and Chain** who in 1940 developed it into a useable and mass produced antibiotic.

## The Government

During the modern period, the government made the biggest interventions ever to improve public health, through setting up the NHS in 1948 to provide free healthcare and treatment to all to the compulsory vaccinations campaigns like Diphtheria.

The government actively aimed to help prevent diseases through passing laws (Clean Air Act and Smoking Ban) or supporting lifestyle campaigns such a five a day or Stoptober, to increase public awareness of a healthy lifestyle.

Even the US government supported the funding the work of Florey for five years that allowed him to develop methods to mass produce penicillin.



## Attitudes

Change your mindset!



Essentially attitudes towards health changed during the 20<sup>th</sup> century, which a greater focus by the public and government to increasing health. The attitudes of the key individuals above to improve medicine were important, for example Fleming who was appalled at the deaths by infection during WW1 and was inspired to search for better antibiotics

## 12 Exam Question Express Planning

Create an express plan for the following question using the boxes below to organize your thoughts

**Explain why there have been changes in methods of treating illness during the 20<sup>th</sup> century.**

- **The Government**
- **Penicillin**



Paragraph 1

Paragraph 2

Paragraph 3

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Using your revision guide, the sources and A4 paper, practice the below exam questions.

Remember to use the 'how to' guides in the front of this book to help your in your answers.

1. Explain why there have been changes in methods of treating illness during the 20<sup>th</sup> century.

You may use the following in your answer

- The Government
- Penicillin

You must also use your own information (12 Marks)

2. 'There has been huge progress in the prevention of disease since 1900' How far do you agree?

You may use the following your answer

- Government intervention
- Genetic conditions

You must also use your own information (16 Marks)



Using these two boxes to micro-plan your answer to the above questions

You only need to plan out your 3-4 paragraphs, and key words/terms you would include in each

P1.

P1. Agree: Government Intervention

P2.

P2. Disagree: Genetic Conditions (DNA)

P3.

P3. Disagree:

Explain one way in which understanding of the causes of illness was different in the late 19<sup>th</sup> and 20<sup>th</sup> centuries.

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# Modern Period Model - 16 Mark Question

*'There has been huge progress in the prevention of disease since 1900'*

How far do you agree?

- Government intervention
- Genetic conditions



Uses 'Some historians' as opening sentence, to avoid getting into 'I agree' 'I disagree' conundrum

Many historians would agree that the prevention of disease since 1900 has made considerable progress, notably due to the development of vaccinations by the British government. Since Jenner's discoveries and the Germ Theory in the 18<sup>th</sup> and 19<sup>th</sup> centuries, scientists began to identify how specific bacteria caused disease and vaccines were created for them, such as Tetanus, Rubella and Measles. From 1942, the government began the first national vaccination campaign against diphtheria which killed thousands of children a year. As a result, children were now immunized and diphtheria died out. Other vaccines have been developed to prevent diseases leading to others, such as the HPV protects women against an STI which can also cause cervical cancer. A limiting factor with vaccines is that in modern society, some parents choose to not vaccinate their children as they feel it is risky, which limits the effect on public health. Overall, the development of vaccinations in the modern period have been significant in improving public health.

For Level 4 it balances the analysis of each point

Provides balance to the statement, offering a disagree point

Furthermore, during the modern period, the government has continued to make more effort in the prevention of disease through a variety of acts, campaigns and the setting up of the NHS. Due to the costs of healthcare on the government, prevention has become a priority and through the NHS they have made considerable efforts through screening for diseases, health check ups for over 40s and even communicating risks from global epidemics such as Ebola. Moreover, new methods such as the setting up of campaigns such as Stoptober and 5 a day, have been key in aiming to changing peoples mindset towards their own health. Lastly, a further intervention has been the smoking ban, which aims to reduce the proven link between smoking and lung cancer than was identified in the 1950s. Therefore, historians would agree that the efforts made by the government to prevent disease n the Modern age has made huge progress.

Remains focused on the statement throughout

Provides a third agree or disagree point

Some historians would argue there are still areas where improvements are yet to be made, for example genetic diseases and conditions. Whilst progress has been made in the diagnosis of genetic conditions and the use of DNA from the 1950s has considerably helped this, there currently exists no ways of preventing some genetic diseases. Whilst pregnant women are screen for downs syndrome and offered abortions, for hereditary diseases like Parkinson's and traits like breast cancer, there currently exists no prevention.

Provides clear examples and specific subject knowledge

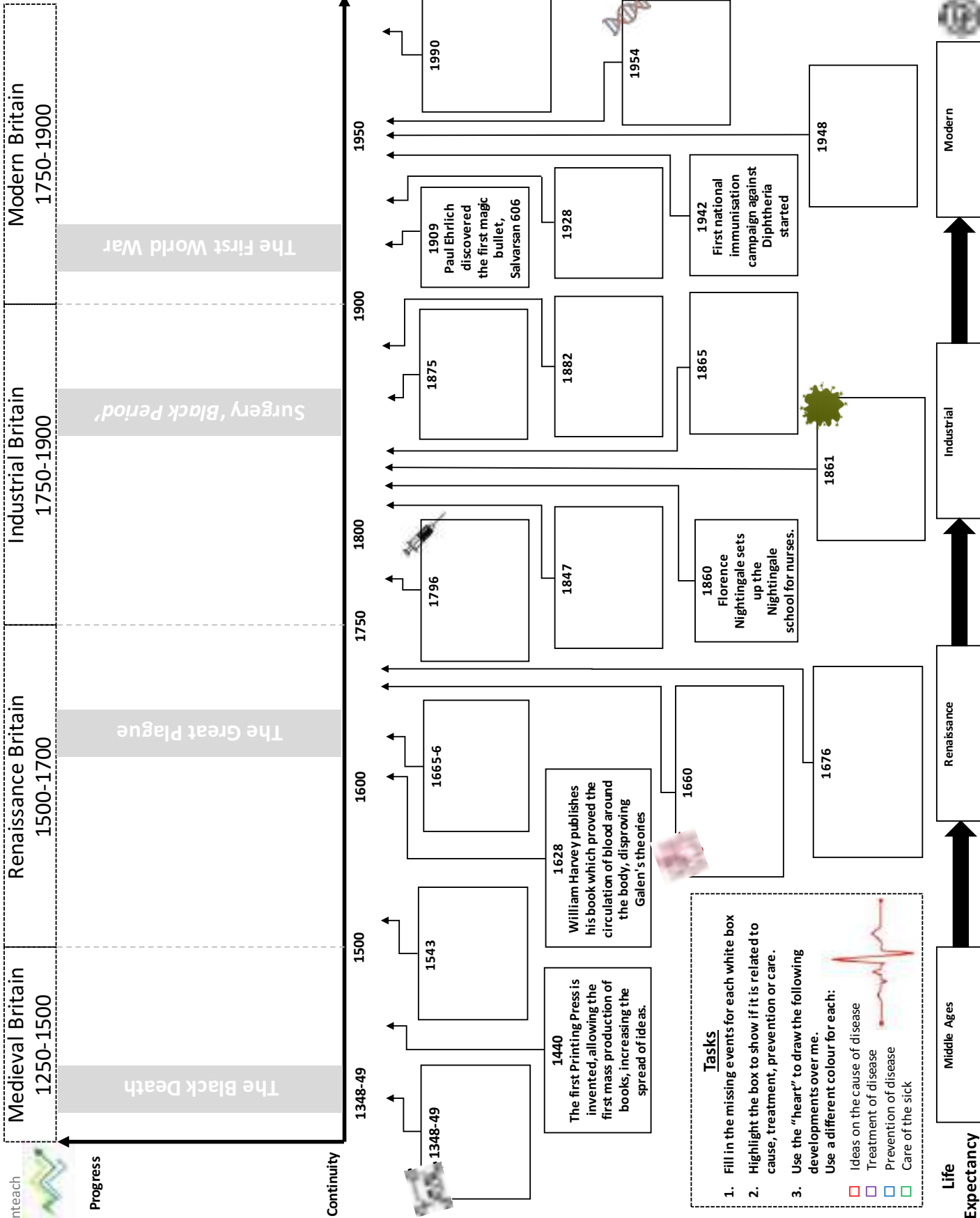
In conclusion, I would agree with the statement as prevention has made significant forward steps, despite the struggles the medical profession faces with regards to lung cancer and genetic conditions. Clear evidence of this is the fact that life expectancy in the 2000s stands at 86, whilst the almost wiping out of disease such as polio by vaccinations and efforts by the government show the considerable progress.

Conclusion, whilst balanced still favours one side



# How did medicine change over time?

	Ideas on cause of disease	Treatment of disease	Prevention of disease	Care of the sick	Key Events/People	Discoveries/Inventions
<b>Middle Ages 1250-1500</b>	<ul style="list-style-type: none"> <li>• God</li> <li>• The Four Humours</li> <li>• Miasma</li> <li>• Astrology</li> <li>• Supernatural ideas (Volcanoes, Jews)</li> </ul>	<ul style="list-style-type: none"> <li>• God</li> <li>• The Four Humours</li> <li>• Astrology</li> <li>• Supernatural</li> <li>• Herbal Remedies</li> <li>• Surgery</li> <li>• Barber surgeons</li> </ul>	<ul style="list-style-type: none"> <li>• Praying</li> <li>• Fasting</li> <li>• Charms</li> <li>• Regimin Sanitatis</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Care not cure</i></li> <li>• Church hospitals</li> </ul>	<ul style="list-style-type: none"> <li>• Galen</li> <li>• Hippocrates</li> <li>• The Black Death 1348/9</li> </ul>	
<b>Renaissance 1500-1700</b>	<ul style="list-style-type: none"> <li>• God</li> <li>• The Four Humours</li> <li>• Miasma</li> <li>• Supernatural</li> </ul>	<ul style="list-style-type: none"> <li>• God</li> <li>• The Four Humours</li> <li>• Herbal Remedies</li> <li>• Supernatural</li> <li>• Alchemy</li> <li>• Transference</li> <li>Surgery                             <ul style="list-style-type: none"> <li>• Barber surgeons</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Prayer</li> <li>• Quarantine</li> <li>• Pomander</li> <li>• Regimin Sanitatis</li> <li>• Moderation</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in hospitals</li> <li>• Pox Houses</li> </ul>	<ul style="list-style-type: none"> <li>• Thomas Sydenham</li> <li>• Andreas Vesalius</li> <li>• William Harvey</li> <li>• The Great plague 1666</li> </ul>	<ul style="list-style-type: none"> <li>•The Printing Press</li> <li>•Discovery of blood circulation</li> <li>•Galen proved wrong about the body</li> </ul>
<b>Industrial Revolution 1700-1900</b>	<ul style="list-style-type: none"> <li>• Miasma</li> <li>• Spontaneous Generation</li> <li>• The Germ Theory from 1861</li> </ul>	<ul style="list-style-type: none"> <li>• Herbal Remedies</li> <li>• Medicines</li> <li>• Surgery</li> <li>• Antiseptic</li> <li>• Anaesthetics</li> <li>• Aseptic Surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Vaccination s from 1800s</li> <li>• Public Health Acts</li> </ul>	<ul style="list-style-type: none"> <li>• Cottage Hospitals</li> <li>• Voluntary Hospitals</li> <li>• Aseptic Surgery</li> <li>• Cleanliness and sanitation</li> <li>• Nurse Training</li> </ul>	<ul style="list-style-type: none"> <li>• Florence Nightingale</li> <li>• John Snow</li> <li>• James Simpson</li> <li>• Joseph Lister</li> <li>• Edward Jenner</li> <li>• Cholera outbreak</li> </ul>	<ul style="list-style-type: none"> <li>• Germ Theory 1861</li> <li>• Chloroform</li> <li>• Carbolic Acid</li> <li>• Vaccinations</li> <li>• X Rays</li> </ul>
<b>Modern Age 1900-Present</b>	<ul style="list-style-type: none"> <li>• The Germ Theory</li> <li>• DNA</li> </ul>	<ul style="list-style-type: none"> <li>• Antibiotics</li> <li>• Pills</li> <li>• Chemotherapy</li> <li>• Surgery</li> <li>• Antiseptic</li> <li>• Anaesthetic</li> <li>• Microsurgery</li> </ul>	<ul style="list-style-type: none"> <li>• NHS</li> <li>• Vaccination s</li> <li>• Scans</li> </ul>	<ul style="list-style-type: none"> <li>• NHS</li> <li>• GP Research</li> <li>• Nurse Training</li> </ul>	<ul style="list-style-type: none"> <li>•Fleming</li> <li>•Florey and Chain</li> <li>•Watson and Crick</li> <li>•Bevan</li> </ul>	<ul style="list-style-type: none"> <li>•Magic Bullets (Salvarsan 606 and Prontosil)</li> <li>•Penicillin</li> <li>• DNA</li> <li>•Transplants</li> <li>• Genetic</li> <li>•Radio/chemotherapy</li> </ul>



# The BIG Story of British Medicine



Explain one way (4)	Explain (12)	How far (12)
Explain one way in which ideas about cause of disease and illness were similar in the 14 <sup>th</sup> and 17 <sup>th</sup> century.	Explain why there was continuity in ideas about the cause of disease during the period c1250-1500. <ul style="list-style-type: none"> <li>• Role of Galen</li> <li>• The Church</li> </ul>	<i>Hospital treatment in England in the period 1250-1500 was very rare.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Charity hospitals</li> <li>• Care in the home</li> </ul>
Explain one way in which ideas about the treatment of disease were different in the 17 <sup>th</sup> century from ideas in the 13 <sup>th</sup> century.	Explain why there was little change in the care provided by hospitals in the period 1250-1500: <ul style="list-style-type: none"> <li>• Ideas in the Church</li> <li>• Herbal remedies</li> </ul>	<i>Individuals had the biggest impact on medical training in the 16<sup>th</sup> and 17<sup>th</sup> centuries.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Vesalius</li> <li>• The printing press</li> </ul>
Explain one way in which ideas about preventing plague were different in the 14 <sup>th</sup> and 17 <sup>th</sup> centuries.	Explain why there were changes in the way ideas about the cause of disease and illness were communicated in the period 1500-1700: <ul style="list-style-type: none"> <li>• The printing press</li> <li>• The Royal society</li> </ul>	<i>There was rapid change in ideas about the causes of illness and disease in the period 1700-1900.</i> How far do you agree? You may use the following in your answer: <ul style="list-style-type: none"> <li>• Spontaneous generation</li> <li>• Louis Pasteur</li> </ul>
Explain one way in which understanding of the causes of diseases was different in 1750 from the present day.	Explain why there was continuity in the way disease was treated in the period 1500-1700: You may use the following information in your answer: <ul style="list-style-type: none"> <li>• The Great Plague</li> <li>• Attitudes in society</li> </ul>	<i>Louis Pasteur's publication of the Germ Theory was the biggest turning point in medicine in the period 1700-1900.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Edward Jenner</li> <li>• Robert Koch</li> </ul>
Explain one way in which people's reactions to plague were similar in the 14 <sup>th</sup> and 17 <sup>th</sup> centuries.	Explain why there was rapid change in surgical treatments in the period 1700-1900. You may use the following in your answer: <ul style="list-style-type: none"> <li>• Chloroform</li> <li>• Joseph Lister</li> </ul>	<i>The role of science and technology was the main reason why diagnosis improved in the 18<sup>th</sup> and 19<sup>th</sup> century.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Scientific Revolution</li> <li>• Florence Nightingale</li> </ul>
Explain one way in which ideas about the causes of disease were similar in the 14 <sup>th</sup> and 17 <sup>th</sup> centuries.	Explain why there was rapid change in the prevention of smallpox after 1798. <ul style="list-style-type: none"> <li>• Inoculation</li> <li>• The government</li> </ul>	<i>Treatment of diseases and care of the sick completed changed after 1800.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Magic bullets</li> <li>• The NHS</li> </ul>
Explain one way in which treatments for illness were similar in the 14 <sup>th</sup> and 17 <sup>th</sup> centuries.	Explain why some changes took place in medical knowledge during the period 1500-1700 <ul style="list-style-type: none"> <li>• The Royal Society</li> <li>• Vesalius</li> </ul>	<i>'There has been huge progress in the prevention of disease since 1900'</i> How far do you agree? <ul style="list-style-type: none"> <li>• Government intervention</li> <li>• Genetic conditions</li> </ul>
Explain one way in which people's reactions to epidemics of disease were similar in the 17 <sup>th</sup> and 19 <sup>th</sup> centuries.	Explain why there was little change in methods of treating and preventing disease during the period 1500-1700. <ul style="list-style-type: none"> <li>• The Great Plague</li> <li>• The Four Humours</li> </ul>	<i>Pasteur's germ theory was the most important turning point in understanding the causes of disease and illness.</i> How far do you agree? <ul style="list-style-type: none"> <li>• The Germ Theory</li> <li>• The discovery of DNA</li> </ul>
Explain one way in which people's reactions to the epidemics of disease were different in the 17 <sup>th</sup> and 19 <sup>th</sup> centuries.	Explain why there were changes in understanding of the cause of disease during the period 1700-1900 <ul style="list-style-type: none"> <li>• The Germ Theory</li> <li>• Cholera</li> </ul>	<i>Simpson's use of chloroform as an anaesthetic was a major breakthrough for surgery during the period 1700-1900.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Chloroform</li> <li>• The surgery Black period</li> </ul>
Explain one way in which ideas about the causes of diseases were similar in the 17 <sup>th</sup> and 19 <sup>th</sup> centuries.	Explain why there was both continuity and change in treatments for sickness during the period 1700-1900 <ul style="list-style-type: none"> <li>• The Church</li> <li>• The Great Plague</li> </ul>	<i>The development of penicillin was a major breakthrough in the treatment of illnesses during the 20<sup>th</sup> century.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Penicillin</li> <li>• Chemotherapy</li> </ul>
Explain one way in which understanding of the causes of illness was similar in the late 19 <sup>th</sup> and 20 <sup>th</sup> centuries	Explain why there have been changes in understand the causes of illness during the 20 <sup>th</sup> century. <ul style="list-style-type: none"> <li>• The discovery of DNA</li> <li>• Science and Technology</li> </ul>	<i>Jenner's vaccination against smallpox was a major breakthrough in the prevention of disease during the period 1700-1900.</i> How far do you agree? <ul style="list-style-type: none"> <li>• Jenner's vaccination</li> <li>• The Public Health Act</li> </ul>
Explain one way in which understanding of the causes of illness was different in the late 19 <sup>th</sup> and 20 <sup>th</sup> centuries.	Explain why there have been changes in methods of preventing illness during the 20 <sup>th</sup> century. <ul style="list-style-type: none"> <li>• The Government</li> <li>• The NHS</li> </ul>	<i>Harvey's discovery of the circulation of the blood was a major breakthrough in medical knowledge during the period 1500-1700.</i> How far do you agree? <ul style="list-style-type: none"> <li>• The work of Vesalius</li> <li>• The circulation of blood</li> </ul>
	Explain why there have been changes in methods of treating illness during the 20 <sup>th</sup> century. <ul style="list-style-type: none"> <li>• The Government</li> <li>• Penicillin</li> </ul>	<i>Germ theory was the most significant medical breakthrough in the 1800's.</i> How far do you agree? <ul style="list-style-type: none"> <li>• The Germ Theory</li> <li>• Anaesthetics</li> </ul>
	Explain why there was rapid change in preventing illness in Britain during the period 1700 to 1900 <ul style="list-style-type: none"> <li>• The Public Health Act</li> <li>• The work of John Snow</li> </ul>	<i>There was no progress in understanding the cause of disease between 1250-1800.</i> How far do you agree? <ul style="list-style-type: none"> <li>• The Four Humours</li> <li>• Miasma</li> </ul>