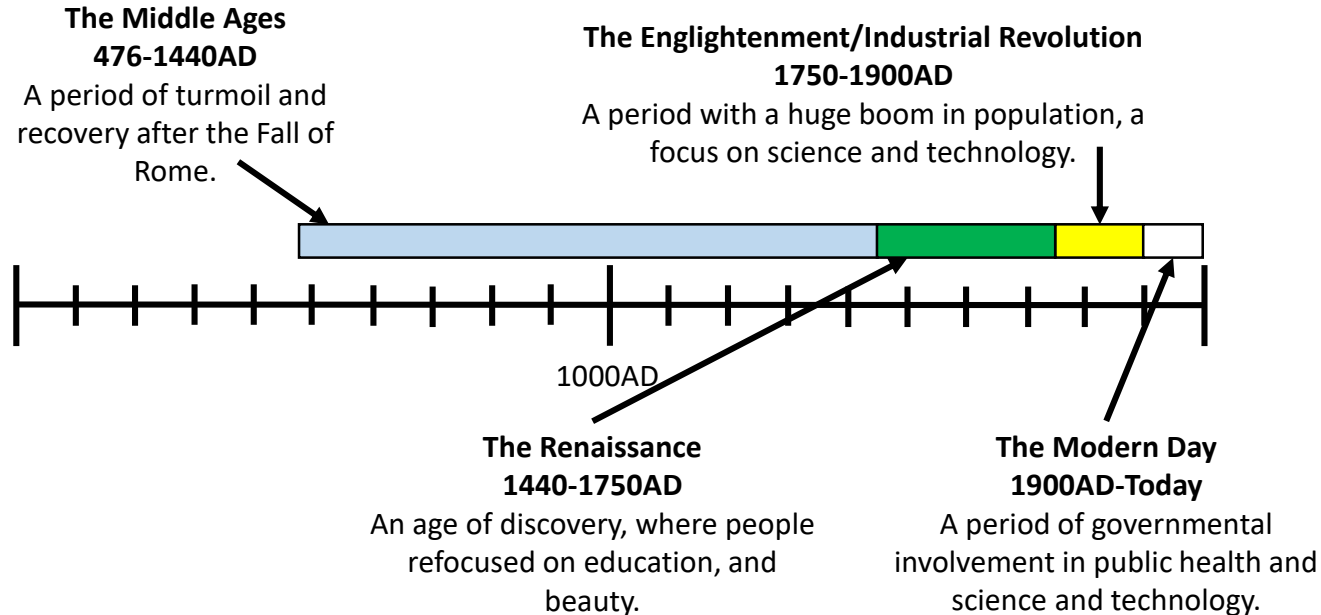# Britain: Health and the People

Knowledge Organiser

History Knowledge Organiser: Britain, Health and the People

1. Britain, Health, and the People Timeline:

The Middle Ages
476-1440AD
A period of turmoil and recovery after the Fall of Rome.

The Englightenment/Industrial Revolution
1750-1900AD
A period with a huge boom in population, a focus on science and technology.

1000AD

The Renaissance
1440-1750AD
An age of discovery, where people refocused on education, and beauty.

The Modern Day
1900AD-Today
A period of governmental involvement in public health and science and technology.

Keywords:
turmoil:
A state of great disturbance and confusion

public health:
The process of keeping people healthy and extending human life within society

supernatural:
Something which is beyond science and nature

symptom:
A physical or mental sign that something is wrong with the body or mind

2. Galen and Hippocrates:
- Before the Middle Ages, two doctors had been extremely important in the empires of Ancient Greece and Ancient Rome: Hippocrates and Galen.
- Before Hippocrates and Galen, most people believed that diseases were supernatural punishments from the Gods, which could be healed through offerings and prayer.
- Hippocrates is known as the "father of medicine": he argued that doctors should observe patients' symptoms to find out what was wrong with them and then use an appropriate treatment.
- Hippocrates believed that were four fluids in the body, called humours, which needed to be kept in balance to keep patients healthy. This could be achieved by controlling exercise and diet. Medicine was seen as a last resort.
- Galen, a Greek doctor in the Roman Empire, built on Hippocrates' ideas and made them popular.
- Both doctors wrote a huge number of books, many of which remained in use up to the 19th century.

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3. The Treatment of Disease in the Middle Ages:
- After the fall of the Roman Empire, the **Catholic Church** became extremely powerful in Europe.
- The Church had tight control over **education**, **knowledge**, and the development of medicine:
  - The Church controlled **universities**, which trained **physicians**.
  - The Church **wrote and copied most books**.
  - The Church **persecuted** people who disagreed with them.
  - Conflict between **Islam** and **Christianity** slowed the spread of ideas from the **Islamic Empire**.
- The Church promoted the ideas that **disease was a punishment from God** and Hippocrates' and Galen's theories that **disease was caused by an imbalance of the humours**.
- The Church supported Galen's ideas because Galen argued that, as the body was perfectly designed, it must have been made by one God. This was in line with the Church's beliefs.

	What causes disease: - Most people believed that disease was **a punishment from God** or was caused by an **imbalance of the humours**. - Other beliefs at the time included the belief that disease was caused by the **alignment of the planets**, by groups poisoning wells (such as Jews), or a belief in **miasma**.	**X**
	How disease spreads: - Most people did not understand that disease spread from person to person.	**X**
	Preventing disease: - Many people attempted to prevent disease by **avoiding sin** or **punishing themselves** so God would not punish them.	**X**
	Curing disease: - Most ordinary people would get **supernatural or herbal treatments** from **wise women**. Herbal treatments would focus on relieving **symptoms**. - Ordinary people could also receive **bloodletting** from **barber-surgeons**. - Richer people would get treatments from **physicians**, who would focus on balancing the **humours** or explaining **why God had punished them**. - People could get care in **hospitals in monasteries**. The treatment in Christian hospitals would focus on **prayer** and keeping patients **comfortable**. - The Church encouraged people to visit **shrines** to be healed by a **miracle**.	**X**

Keywords:

physician:
A doctor who trained at university

persecution:
The attack of someone because of their beliefs or an aspect of their identity

miasma:
The belief that bad smells cause disease

barber surgeon:
People who performed basic surgeries on ordinary people

shrine:
A place related to a holy person or object

symptom:
A physical or mental sign that something is wrong with the body or mind

monastery:
A building where monks live and work.

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4. Surgery and Anatomy in the Middle Ages:
- During the Middle Ages, most surgery was extremely **painful** and carried a high risk of death by **blood loss** or **post operative infection**. As a result, most people viewed it as a **last resort**.
- Most major operations were performed on the **battlefield** by **field surgeons**. These operations often involved **amputation**.
- The frequent **war** in the Middle Ages meant that many field surgeons developed new methods and tools.
- Other operations were usually performed by **barber-surgeons** who learned their trade through **apprenticeships**.
- Barber surgeons usually performed minor surgeries, such as **bloodletting**, removing **small tumours** or correcting **dislocated limbs**.

	Blood loss: - Most major wounds were closed using **cauterisation**, which was extremely painful and carried a high risk of infection. - Some people in the Islamic Empire used **ligatures** but this knowledge spread slowly to **Christendom**.	**X**
	Infection: - Most surgeons believed that **pus** was a **sign of healing** (following Galen). - **Hugh and Theodoric of Lucca** believed that pus was bad and used wine (a basic anti-septic) on wounds. Their methods were generally effective but unpopular.	**X**
	Pain: - Some herbal **anaesthetics**, such as **mandrake** and **hemlock** were used. - However, dosages were difficult to get right, making their use dangerous. - Usually the patient was **held down** and operations were performed as **quickly as possible**.	**X**
	Anatomy: - **Dissections** happened at universities. However, as the Church did not approve of them, they were **rare** and did little to advance anatomy. - Influential individuals, such as **Mondino**, stated that dissections should be about proving Galen right, rather than trying to make new discoveries. - Some medical textbooks were available, but they were **expensive**, **rare**, and their diagrams were often **unrealistic**.	**X**

Keywords:
post operative infection:
An infection which happens after surgery

amputation:
Removing a limb

field surgeon:
A surgeon who works on the battlefield

apprenticeship:
When someone learns by working with someone who is already qualified

cauterisation:
Burning a wound shut

ligature:
A thread which is used to tie blood vessels shut

anaesthetic:
A substance which numbs pain during surgery

dissection:
Cutting up something which is dead in order to learn about its structure and how it works

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5. Public Health in the Middle Ages:
- As the Middle Ages progressed, increasing **trade** meant that more and more people moved to **towns and cities**.
- This process caused public health conditions in towns and cities to **decline**.
- Some town councils tried to improve conditions and introduce **laws**.
- However, they found it difficult to do so for two main reasons:
  - People **did not understand the causes of disease**
  - **Taxes were unpopular**, meaning that councils had very little money to enforce laws.
- Rich people could generally afford to keep the areas around their homes clean.

	Sanitation: - Most towns had **open sewers** to carry away water and waste. These would often overflow. - There were public and private **cesspits** which were emptied by **gongfermers**. However, during rainfall these also overflowed into the streets. - Very few streets were **paved** and, particularly when it rained, streets would become extremely muddy. - People would often get their water from **rivers**, which would often be **contaminated** by waste.	**X**
	Living conditions: - As towns and cities became more popular, they began to become more **overcrowded**.	**X**
	Healthcare: - Everyone had to pay for healthcare. - **Wise women** and **barber surgeons** offered affordable healthcare. - Rich people would visit physicians, who were **rare** and **expensive**. - However, most treatments either focused on **symptoms** or were **ineffective**.	**X**
	Personal health: - Individuals like De Chauliac emphasised the need for a **good diet and regular exercise**. - Although it was very difficult in towns and cities, people connected being clean with being a good person.	✓

Keywords:
tax:
A certain amount of money which people have to pay to a council or government

sanitation:
access to facilities to help people keep clean, such as clean water and sewers

open sewer:
A channel, open to the air, which carries away waste

cesspit:
A pit where liquid waste and sewage would be stored

gongfermer:
A person who was hired to empty cesspits

contaminate:
To make something impure or unclean

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6. Islamic and Christian medicine:

- After the fall of the Roman Empire, the **Catholic Church** became powerful in Europe and **Islam** became powerful in southern Europe and the Middle East.
- Both religions believed that they had a **religious obligation** to care for the sick.
- The Islamic Empire placed huge emphasis on **science** and **education**.
- As a result, the Islamic Empire helped to **preserve knowledge** which would otherwise have been lost after the fall of the Roman Empire.
- The Church put emphasis on **tradition**, **its own authority** and a belief in **God**.

	Islam	Catholic Christianity
Disease	- Islamic doctors believed that disease was **natural**. - Doctors were supposed to **observe symptoms** and form a **diagnosis**, usually based on the four humours.	- The Church believed that **disease was sent by God as a punishment**. - The Church also promoted Galen's theory of the **four humours** and believed in observing symptoms.
Hospitals and doctors	- Hospitals were **secular** and could be found throughout the Islamic Empire. - Treatments were based on the **four humours**. - Hospitals were run by **physicians** and often contained **libraries** and **medical schools**.	- Most hospitals were in **monasteries**. - Treatment was based on **prayer** and **comfort**. - Most hospitals were run by monks or nuns, not physicians. - Physicians trained at **universities**, often without seeing any patients.
Ancient ideas	- Islamic doctors generally accepted the works of Galen and Hippocrates. - Some doctors, like **Al-Razi**, challenged Galen's work.	- The Church supported the works of Galen and Hippocrates. - The Church often **persecuted** people who challenged their views.
Knowledge	- Ancient works were translated into Arabic by **scholars**. - Many **caliphs** invested in huge libraries.	- Ancient works were translated into **Latin** and other languages by **monks**. - Tension between the two religion meant that texts from the Islamic Empire reached Europe very slowly.

Keywords:

diagnosis:
When a doctor identifies the illness which a patient has

monastery:
A building where monks live and work

secular:
Something which is not connected to religion

persecution:
The attack of someone because of their beliefs or an aspect of their identity

scholar:
Someone who studies something in great detail

caliph:
The name given to the leader of Sunni Islam

obligation:
Something which people feel they have to do

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7. The Black Death:
- The Black Death was an epidemic which killed 1.5 million people in Britain between 1348 and 1350.
- It is actually two diseases, the **pneumonic plague** and the **bubonic plague**.
- The pneumonic plague causes coughing and a fever and is spread coming into contact with the **breath** or **blood** of someone with it.
- The bubonic plague causes swellings, called **buboes**, in the armpit and groin and is spread by fleas which carry the bacteria.

Causes	Reaction	Significance
What **actually** caused it: - Poor disposal of rubbish in towns encouraged rats. - As **trade** increased during the Middle Ages, diseases could spread more widely. - Towns and ports were **crowded**, meaning the disease spread quickly.	Individual people: 'Cures' for the Black Death were ineffective. They included: - Drinking mercury - Self-flagellation (not popular in England) - Popping buboes - Praying - Avoiding sin - Attacking Jews (not in Britain) - Fleeing to the countryside	Short term: - 1/3 of Europe's population died. - Towns and cities suffered from **food shortages** due to the lack of **labourers** in the countryside. - This made food more **expensive.**

What people **thought** caused it:
- Most explanations focused on **supernatural** causes.
- People thought causes included:
  - The position of stars and the planets (astrology).
  - Jews poisoning wells.
  - God punishing people for their sins.
  - Bad air (miasma)
	Government:
	- Local councils tried to **quarantine** infected areas.
	- King Edward III ordered **church services** and **prayers** every day where people would ask forgiveness from God.
	- King Edward III tried to have streets in London cleaned to **remove bad smells**.
		Medium term:
		- **Living conditions and wages** for **peasants** improved: as there were fewer of them they were more valuable.
		
		Long term:
		- People began to become **resentful** of the **Catholic Church** as their cures hadn't worked and some priests had fled their towns.

Keywords:

bubo:
A swelling in the armpit or groin

epidemic:
A widespread outbreak of one disease

pneumonic:
Something which affects the lungs

astrology:
The study of the movement and position of stars and planets

miasma:
The belief that bad smells cause disease

supernatural:
Something which cannot be explained by science

self-flagellation:
When someone whips themselves

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8. The Treatment of Disease in the Renaissance:
- The Renaissance was a period in which people began to **question traditional authority**, such as the Catholic Church or ancient writers, such as **Galen**.
- New ideas also began to spread much more quickly, because of the invention of the **printing press**, which made it much cheaper and easier to produce books.
- However, **with a correct knowledge or understanding of germs**, many new ideas were still incorrect.

	What causes disease: - Most people believed that disease was caused either by an **imbalance of the humours** or by **miasma**. - In the late 1600s, the invention of the **microscope** meant that people became aware of bacteria. However, they believed that **germs were the result of decay, not the cause** (spontaneous generation).	**X**
	How disease spreads: - People began to understand that disease can spread **from person to person** and began to **quarantine** people. - People began to make a connection between **dirt and disease** (although this was linked to miasma).	**X**
	Preventing disease: - Some people used **bloodletting** to try to prevent disease. - During **epidemics**, rich people would move to the countryside.	**X**
	Curing disease: - **Bloodletting** was a common treatment for much of the Renaissance. - **Harvey** proved that the amount of blood in the body was **finite** and that it **circulated** around the body. This was a direct challenge to **bloodletting**. - Academics, such as **Paracelsus**, began openly challenging Galen's ideas. - Some people still believed in **supernatural cures**, such as the king's touch. - The **printing press** allowed people to have access to **herbals**, which contained collections of herbal remedies. These treatments usually focused on **symptoms**. - Exploration resulted in the discoveries of new treatments. Some worked, such as lemons and limes to treat scurvy. Others were ineffective. - Many **quacks** sold **miracle cures** which often did nothing.	**X**

Keywords:

miasma:
The belief that bad smells cause disease

the printing press:
An invention which allowed text to be printed rather than being handwritten

to quarantine:
to isolate someone in order to preven the spread of disease

epidemic:
A widespread outbreak of one disease

supernatural:
Something which cannot be explained by science

herbal:
A book containing different herbal remedies

quack:
An unqualified person who claims medical knowledge

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9. Surgery and Anatomy in the Renaissance:

- During the Renaissance, the Catholic Church became less powerful.
- This had an effect on surgery as **dissections** became more acceptable and people became more willing to **challenge existing authority**.
- As a result, a number of important discoveries about anatomy were made during this period.
- However, as effective **anaesthetics** and **antiseptics** had not been developed, most people in the Renaissance did not benefit from these discoveries.
- For most people, major surgery remained an absolute **last resort**.

	Blood loss: - Most surgeons still used **cauterisation** to close wounds. - **Paré advocated** the use of **ligatures** in Europe. While ligatures were less painful than cauterisation, they were **time consuming** and they still carried a high risk of **infection**.	X
	Infection: - **Paré** accidentally developed an **anti-septic** cream which could be used to treat gunshot wounds. However, he did not understand the science behind it.	X
	Pain: - Exploration resulted in the discovery of new **anaesthetics**, such as **opium**. - However, these anaesthetics were still risky and most people still avoided major surgery.	X
	Anatomy: - Dissections were more accepted as the Catholic Church was less powerful. However, bodies were still difficult to obtain. - **Vesalius** promoted **investigative dissection**, rather than dissections to prove Galen right. - A number of important anatomical discoveries were made, such as **Harvey's** discovery that blood is **finite** and is pumped around the body by the heart. - A number of anatomists, including **Vesalius**, used **realism** and the **printing press** to produce **accurate medical textbooks** which people could easily obtain.	✓

Keywords:
dissection:
Cutting up something which is dead in order to learn about its structure and how it works

anaesthetic:
A substance which numbs pain during surgery

antiseptic:
A substance which destroys germs

investigative dissection:
Cutting up a body in order to learn about it and make new discoveries

finite:
Something which has a limited amount

realism:
An art style which attempts to represent objects as closely to real life as possible

ligature:
A thread which is used to tie blood vessels shut

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10. The Great Plague:
- In 1665 a epidemic of the plague hit Britain, particularly London, killing roughly 70,000 people.
- Small outbreaks of the **pneumonic plague** and **bubonic plague** had hit England since the 14th century, but it had not hit Britain on this scale since 1348.
- The Great Plague demonstrated that, **while people still did not understand how to treat diseases**, they were **beginning to understand how they spread**.

Causes	Reaction	Significance
What **actually** caused it: Many causes of the Great Plague were the same as the Black Death in the 14th century: - Poor disposal of rubbish in towns encouraged rats. - Towns and ports were **crowded**, - People fleeing the disease carried fleas and the plague on their clothes.	Individual people: 'Cures' for the plague remained ineffective. They included: - Bleeding with leeches - Breathing through sponges soaked in vinegar. - Using **pomanders** to keep away bad smells. - Using animals to draw out the 'poison'. - Moving to the countryside.	Short term: - Roughly 70,000 Londoners died. - **Bills of Mortality** showed that most people died in the poorest and dirtiest parts of the city. Medium term: - When London was rebuilt after the Great Fire of London, it was built with **spacious streets** and stone buildings, temporarily improving living standards.

What people **thought** caused it:
People's ideas about the causes of disease had changed very little, although the focus was now on **miasma**. People thought the plague was caused by:
  - The position of stars and the planets (astrology).
  - Jews poisoning wells.
  - God punishing people for their sins.
  - Bad air (miasma)
	Government:
	- **Searchers** took note of people with the plague.
	- When a plague victim was discovered, their house was **quarantined** and guarded.
	- **Public gatherings** were banned.
	- Bodies were buried at night.
	- **Trade** between towns was stopped.
	- Fires were lit on street corners to burn away bad air.
		Long term:
		- The Great Plague was the last major outbreak of plague in Britain.

Keywords:
epidemic:
A widespread outbreak of one disease

pomander:
A ball, sometimes worn around the neck, which contained sweet smelling herbs

miasma:
The belief that bad smells cause disease

bills of mortality:
Documents which show how many people died from which causes within a certain time period

leeches:
A bloodsucking worm which was used to balance the four humours

quarantine:
When people are isolated to make sure they can't spread diseases

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11. Edward Jenner and inoculation:

- Smallpox is a deadly disease which was very common in the 18th century.
- Many people would try to protect themselves using **variolation**, which would involve people exposing themselves to smallpox.
- Variolation used methods such as rubbing pus from a smallpox wound into the wound of a healthy person.
- Variolation often caused **extreme scarring** and could often lead to people **contracting smallpox**.
- Edward Jenner performed an experiment at the end of the 18th century which proved that **people who had caught cowpox did not catch smallpox**.
- Cowpox was **much less dangerous** and caused **much less scarring** than traditional methods of variolation.
- Jenner faced a lot of **opposition** to his discovery. However, it eventually became widely accepted.
- Jenner proved that his method worked. However, he **did not know how and why it worked**.
- After the development of germ theory in the **1860s** scientisits, Lous Pasteur and Robert Koch, built on Jenner's work roughly and developed vaccines for other diseases.
- Smallpox was officially declared **eradicated** in 1980, largely because of vaccinations.

Keywords:

inoculation:
Protecting someone from a disease by giving them a weakened version

variolation:
A basic method of inoculation against smallpox when a healthy person is exposed to pus or scabs from someone with smallpox

eradication:
When something is destroyed to the point of no longer existing

Some people protected themselves from smallpox using **variolation**, which often lead to catching smallpox.

↓

Jenner published a paper in **1796** which proved that **cowpox could safely protect people from smallpox**.

Objections to Jenner's work:
1. Fashionable city doctors looked down on Jenner because he was a **country doctor**.
2. Other scientists tried and **failed to recreate Jenner's experiments**.
3. Ordinary people **did not understand** (and so did not trust) Jenner's theory.

Pasteur and Koch build on Jenner's work and **develop vaccines for other diseases** in the **late 19th century**.

The World Health Organisation declared the **eradication of smallpox** in 1980.

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12. Public Health in **early** Industrial Revolution:
- During the Industrial Revolution, thousands of people **migrated** to cities and towns in search of work.
- This increase was so sudden that many towns and cities struggled to keep up and the **existing public health facilities struggled to cope.**
- Governments during this period also had a **laissez-faire attitude**: they believed that governments should only be responsible for defence and not for public health.
- Until the late 1800s, there were regular outbreaks of diseases such as cholera and typhus.

	Sanitation: - Most towns had **sewer systems**. However, many towns still depended on **open sewers** which would overflow due to flooding or overuse. - There were public and private **cesspits** and **communal toilets** which were emptied by gongfermers. These would often be used by a **large number of people**. During rainfall they would often overflow into the streets. - People would often get their water from **rivers**, which were also used to dispose waste, or **pumps** which got their water from contaminated sources.	X
	Living conditions: - **Migration** to towns and cities caused serious **overcrowding**. - Many houses were **cramped** and **poorly built and insulated**, causing many people to live in cold and damp conditions.	X
	Healthcare: - Hospitals staffed by physicians were common. However, everyone either had to **pay for their healthcare** or have their healthcare paid for them. - Unclean conditions in hospitals meant that their death rates were high. - Most rich people were visited by physicians in their own homes. - **Most treatments either focused on symptoms or were ineffective.**	X
	Personal health: - Most people in factories worked **long hours** in **poor conditions**. - The **laissez faire** attitude of the government to public health and clean water meant that many people found it **difficult to stay clean**. - Most people working in factories had **poor quality diets**.	X

Keywords:
migration:
The movement of people from one place to another

laissez-faire:
A government policy of letting things run their course without interfering

typhus:
A disease spread by lice on clothing

cholera:
A disease spread by drinking contaminated water

insulation:
Material which helps to keep houses warm

cesspit:
A pit where liquid waste and sewage would be stored

gongfermer:
A person who was hired to empty cesspits

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13. Hospitals in the 18th and 19th centuries:
- In the 18th and 19th centuries, many more hospitals were built in towns and cities.
- Many of these hospitals were still controlled by the **Church**, but they were also built by groups of **donors** and **rich philanthropists**.
- These hospitals mostly served the **poor**, as wealthy people would still be visited by physicians and surgeons at home.
- Treatment in these hospitals was not free. People would either have to **pay themselves** or have their **treatment paid for them by a donor**. As a result, **being admitted as a patient was not guaranteed**.
- Hospitals now focused on medical treatment; they were staffed by physicians and nurses and were used for medical training.
- However, most treatments were still **ineffective** because of a poor understanding of disease.
- **Overcrowding** and a **lack of cleanliness** meant that catching diseases and developing infections **in** hospitals was common and **death rates in hospitals were high**.
- Conditions in hospitals gradually improved in the mid to late 19th century because of individuals such as **Florence Nightingale**, who emphasised the need for hospitals to be clean and well-ventilated.

14. Surgery in the early Industrial Revolution:
- Major surgery in the early Industrial Revolution was still viewed as a **last resort**.
- Most operations were **amputations** which would be performed as quickly as possible.
- Surgeons, such as **John Hunter**, did research into how to solve issues, like aneurysms, without surgery.

	Blood loss: - The first successful blood transfusion was performed in the early 19th century. However, they were still rare and were often unsuccessful.	X
	Infection: - The lack of antiseptics and poor conditions in hospitals meant that **post operative infections** remained common.	X
	Pain: - Basic anaesthetics, such as **alcohol** or **opium** were available. - However, they were unreliable and dangerous; many people refused them.	X
	Anatomy: - **Dissection was common** and was a standard part of **surgical training**.	✓

Keywords:

donor:
Someone who gives something to, usually not expecting anything in return

physician:
A doctor who has trained at university

philanthropist:
Someone who tries to improve the quality of life of other people

amputation:
Removing a limb

aneurysm:
The swelling of an artery

blood transfusion:
When lost blood is replaced

15. The Public Health Act 1848:
- The creation of the steam engine and the **factory** resulted in the industrial revolution.
- This caused thousands of people to move to towns and cities in search of work.

Urbanisation because of factories

⬇

Overcrowding and poor living conditions

Epidemics
There were regular outbreaks of diseases associated with poor living conditions, such as cholera and typhus, in towns and cities.

Edwin Chadwick
Chadwick wrote a **report** which showed that the government should act to improving the living conditions of the poor.

Pressure on government

⬇

The Public Health Act 1848
- **Boards of Health** were set up to coordinate public health.
- Councils took responsibility for providing **clean water and draining sewage** and waste water.
- Councils were given money to **clean up streets**.
- The Act was **not compulsory**, so few councils improved public health.

Keywords:
urbanisation:
When an increasing percentage of a country's population live in towns and cities

Act:
A written law

compulsory:
Something which people have to do because of a rule or law

board of health:
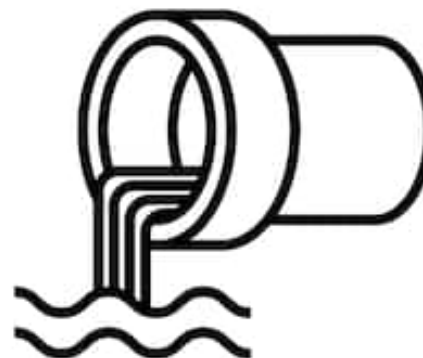A group of people (within the government) who work to improve public health

epidemic:
A widespread outbreak of one disease

16. The Great Stink:

- In 1858 a **heatwave** in London forced the British government to recognise the building problems with public health.
- The heat wave revealed tonnes of rotting waste in the Thames. The smell was so bad that MPs in the **Houses of Parliament** tried soaking their curtains in chlorine to cover it.
- The smell prompted the government to hire **Joseph Bazalgette** to build a new sewer network throughout London to **intercept** waste before it reached the Thames.
- Bazalgette's **planning** and **engineering genius** meant that the sewer system was complete by **1866.**

Causes	Reaction	Significance
What caused it: - **Overcrowding**, increased **migration** and a lack of **public health laws** meant that a huge amount of waste had been dumped in the Thames. - The Thames did not flow quickly enough to move **waste** which had been dumped in it. - A freak **heat wave** caused the level of the Thames to go down, revealing the waste and causing it to rot further.	**Bazalgette:** - Bazalgette designed and built a network of **sewers**, **pumping** stations and **embankments**. - The **embankments** made the Thames flow more quickly, removing a lot of the existing waste. - The sewers were designed to use **gravity** to get the sewers to flow downstream. **Government:** - The government **invested** £3 million (roughly £1 billion today) to put Bazalgette's plans into action.	**Short term:** - There was only one further **cholera outbreak** in London, which was where Bazalgette's sewers had yet to reach. - It took a while for the sewers to have an effect: when the SS Princess Alice sank in 1865, many victims died due to the dirty water in the Thames. **Medium term:** The government began to introduce **public health laws**. **Long term:** Bazalgette **predicted** that London's population would grow and planned for it: many of his sewers are still in use today.

Keywords:

Houses of Parliament:
The building in London where politicians meet

Engineering:
The application of science and knowledge to design

Embankment:
When the bank of a river is artificially raised, sometimes creating a walkway

Cholera:
A disease spread by drinking contaminated water

Invest:
When people or a government puts money into something to help it to develop

Intercept:
To stop something from reaching a destination

Sewer:
A channel which carries away waste

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17. Public Health laws in 1875:

- Although the Public Health Act 1848 improved living conditions in some areas, many councils did not introduce improvements as the Act was not **compulsory**.
- As a result, living conditions remained poor in many areas and **epidemics** continued to be common.
- A number of factors between the 1848 Act and 1875 put much more pressure on the government, which forced it to introduce much stronger **legislation**.

Continued poor living conditions

In 1854, John Snow Snow proved that **cholera was carried by dirty water** and so the government had to act to improve sewage and water pipes.

Voting reform In **1867** more **working men** in **towns and cities** were given the **vote**. The government had to listen to them to stay in power.

The Great Stink In **1858** a heatwave exposed tonnes of rotting waste in the Thames in London. The smell was particularly disgusting in the **Houses of Parliament**.

Pressure on government

Public Health Laws in 1875

- The **Public Health Act 1875:** councils had a wide range of responsibilities (street cleaning, street lighting, sewers, and clean water) which were **compulsory**.
- The **Artisans' Dwellings Act 1875:** councils could buy and demolish **slum housing**.
- The **Sale of Food and Drugs Act 1875**: set out guidelines to check the safety of food before sale.

Keywords:
compulsory:
Something which people have to do because of a rule or law

epidemic:
A widespread outbreak of one disease

legislation:
Written laws

slum:
An overcrowded and dirty area of housing

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18. Effective Anaesthetics in the 19th century:
- Anaesthetics existed before the 19th century, but they were often **dangerous or ineffective**.
- As a result, surgery before anaesthetics had to be **simple, quick** and often a **last resort**.
- Even as effective anaesthetics were developed, people **objected** to their use. Some argued:
    - A screaming patient was a patient who was definitely alive and was what surgeons were used to.
    - God had given people (particularly women in childbirth) pain because it is what He expected.
    - Invasive surgeries increased the risk of death from **blood loss** and **infection**.

Before the 19th century:
Patients were given **alcohol** or **opium**.

Problems:
Opium was addictive and **difficult to measure**.
Alcohol raised the heart rate, leading to further blood loss.

The late 18th century – 1844:
In 1795 Humphry Davey showed that inhaling **nitrous oxide** made him feel relaxed.
Dentist, Horace Wells, tried to show that it could be used in **tooth extraction** in 1844.

Problems:
Wells' demonstration was unsuccessful due to an incorrect dosage, making people think that nitrous oxide was ineffective.

1846:
William Morton publically demonstrated the use of ether in 1846. **Robert Liston**, a British surgeon, was influenced by this and used ether to perform a successful leg amputation in the same year.

Problems:
Ether was **difficult to inhale**, **highly flammable** and could cause **vomiting**.

1847:
James Simpson, a Scottish obstetrician, was testing different substances and accidentally discovered **chloroform**.
Queen Victoria was given chloroform during the birth of her son in 1853. She recommended it.

Problems:
Some people argued that God gave women pain in childbirth as a punishment and so they should be made to endure it.
Invasive surgeries increased the risk of death from **blood loss** and **infection**.
Some patients died from chloroform overdoses.

Keywords:
anaesthetic:
A substance which numbs pain during surgery

opium:
A highly addictive drug made from poppies from which drugs like morphine are derived

amputation:
Removing a limb through surgery

invasive surgery:
Surgery which goes deep into the body, often involving vital organs

obstetrician:
A doctor who specialises in pregnancy, childbirth and health directly after birth

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19. Germ Theory:

- In late 17th century Leeuwenhoek observed bacteria for the first time. He called them **animalcules**.
- People knew that bacteria existed, but didn't know what they did. The theory of **spontaneous generation** developed in the 18th century: germs were the **result** of decay, not the **cause** of it.
- Over time, people began to challenge this idea. However, by the 19th century, most people still believed that **miasma** caused disease and that germs appeared because of **spontaneous generation**.
- Definitive proof against spontaneous generation was eventually provided by **Louis Pasteur** in 1861.

Pasteur wrote a paper in 1861 which proved that **germs were the cause of decay**, not the result.
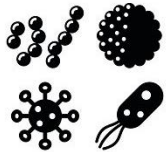
Robert Koch proved that bacteria were **different** and **specific bacteria cause specific diseases** (1876).

The development of the first **magic bullet** by Ehrlich (1909)

The development of **antiseptic surgery** by Lister (1860s).

The **identification** of different bacteria and the development of further **vaccines** by Pasteur and Koch (1860s-1890s)

The discovery of the first **antibiotic** by Fleming, Florey, and Chain (1920s-40s)

The development of **aseptic** surgery by Halsted (1890s)

Keywords:

anti-septic surgery:
Destroying germs which come in contact with wounds

aseptic surgery:
Trying to avoid germs coming into contact with wounds

miasma:
The belief that bad smells cause disease

spontaneous generation:
The belief that germs are the result of disease and decay, rather than the cause of them

magic bullet:
A substance which is designed to target one specific bacterium.

antibiotic:
A substance which destroys germs as they travel around the body

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20. The Acceptance of Germ Theory in Britain:

- Although Pasteur's theory about germs, decay, and disease was correct, it took roughly 20 years for the idea to be widely accepted in Britain.

Pasteur wrote a paper in 1861 which proved that **germs were the cause of decay**, not the result.

VS.

Bastion, a professor at UCL, wrote articles supporting **spontaneous generation** in the 1860s.

Prince Albert died of typhoid fever in 1861, highlighting the disease.

In 1866 **Beale** proved that the **cattle plague** was caused by a specific bacterium.

In 1867 **Lister** published a paper about **antiseptic surgery**.

In 1870, physicist, **Tyndal**, began delivering lectures providing proof the existence of germs in the air.

In 1874 **Klein** announced that he had found the bacterium which caused typhoid fever. He was wrong.

In 1879 **Cheyne** translated **Koch's** work from German to English, providing access to further proof.

1880s onwards:
General acceptance of germ theory in Britain.

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21. Antiseptic and aseptic surgery:
- In the 1860s, a surgeon called **Joseph Lister** began using **carbolic acid** to **soak bandages**, **clean wounds**, and to **spray in the air during surgery** in an attempt to reduce post operative infections.
- Lister argued against **spontaneous generation** and **miasma**, arguing that it was the germs which got into wounds which caused infections. The acid which Lister used **killed the germs** before they could cause an infection.
- Although Lister's methods reduced the death rates from surgery, **infections still occurred** and many surgeons complained that carbolic acid **irritated their lungs and hands**.
- In the 1890s, surgeons, such as **American Halsted**, developed **aseptic** surgical techniques, which aimed to avoid contact with germs rather than just to kill.
- Modern surgery combines anti-septic and aseptic techniques.
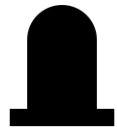
More people died from infection during the **Black Period of Surgery**.

Lister read Pasteur's paper about **germ theory** in 1861.

Lister developed **antiseptic surgery** using carbolic acid in the 1860s.

Death rates fell, but carbolic acid caused **irritation** and some **infections** still occurred.

Halsted developed **aseptic** techniques in the 1890s.

Keywords:
The Black Period of Surgery:
A period in which the death rates from surgery rapidly increased.

antiseptic surgery:
Destroying germs which come in contact with wounds

aseptic surgery:
Trying to avoid germs coming into contact with wounds

miasma:
The belief that bad smells cause disease

spontaneous generation:
The belief that germs are the result of disease and decay, rather than the cause of them.

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22. Liberal Reforms in the early 20th century:

- In the early 1900s, a number of laws were introduced to further improve public health in Britain.
- Unlike public health laws in the 19th century, these laws focused on people's individual lives, rather than just their living conditions.

Efforts to recruit soldiers for the **Boer War** (1899-1901) showed that almost half of Britain's young male population were **too unfit to fight**.

Industrialist **Rowntree** and social reformer **Booth** wrote reports which showed that many people were still living in **poverty** and their quality of live would not improve without government help.

The **Liberal Government** were voted into power, who wanted to improve the quality of life of ordinary Britons.
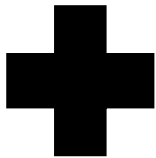
Liberal Reforms

Labour exchanges to help people find work and to support them while they were looking for work.

A **pension** scheme for the elderly.

Free medical check-ups and treatment for school children. Government supplied **medical insurance** for people who paid into it (**National Insurance**).

Free school meals for pupils who were in need.

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23. World War One and World War Two:
- Between 1914 and 1918 most of the countries in Europe were involved in **World War One**.
- Twenty years later, between 1939 and 1945, most of Europe went to war again in **World War Two**.
- Over this period new weapons, such as **mustard gas** and **grenades** were developed, causing new injuries.

	World War One	World War Two
Surgery	New injuries allowed Harold **Gillies** to experiment with techniques in **reconstructive surgery**. His techniques focused on ensuring that patients **looked good**, but they often didn't function. Mobile **x-ray machines** allowed surgeons to assess injuries more easily.	New injuries (particularly burns) allowed Archibald **McIndoe** to experiment with techniques in **reconstructive surgery**. His techniques both **looked good** and **functioned** (such as replacing eyelids).
Blood	It was discovered that **sodium citrate** could be used to store blood for blood transfusions.	The **logistics** surrounding blood transfusions became much more advanced: by 1945 the **Blood Transfusion Service** was efficient, storing blood and transporting it to where it was needed.
Infection	Alexander Fleming saw injured soldiers dying from infections during World War One, which inspired him to research possible solutions. This led to the discovery of the first antibiotic, **penicillin**.	Florey and Chain were given the funds needed to **mass produce penicillin** by the American government during World War Two.
Public health	After World War One, David Lloyd George attempted to introduce a number of public health reforms, stating that he wanted to create a **"land fit for heroes"**.	The poor health of **evacuees** and the desire to **repay people** for their sacrifices during the war led to the publication of the **Beveridge Report** and the creation of the **Welfare State**.

Keywords:
reconstructive surgery: Surgery which is designed to repair the body, returning lost function and returning it to its original appearance

blood transfusion: When lost blood is replaced

logistics: Organising a large scale business or organisation

antibiotic: A substance which destroys germs as they travel around the body

evacuee: Someone is moved away from an area during a time of great danger

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24. The Development of Penicillin:

- Before the development of **antibiotics** in the early 20th century, people had to rely on their bodies' natural defences to fight off infections once they had caught them.
- **Antiseptics** could kill off bacteria before people became infected. However, some bacteria were **resistant** to antiseptics.
- The first antibiotic, penicillin, was discovered and then developed between the late 1920s and the 1940s.

Fleming saw men dying from infections during World War One. He wanted to stop this from happening again.

Fleming left a petri dish out while he went on holiday.

Fleming discovered that the mould **penicillium** could kill bacteria. He wrote a paper about his discovery in **1928**.

Florey and Chain read Fleming's paper and proved that **penicillin** could treat infections in humans in **1941**. However, a **large amount was needed** to treat humans.

The American government provided funding. (The British government had refused.)

World War Two broke out in 1939.

Florey and Chain begin **mass producing** penicillin in the USA.

- Penicillin became extremely popular and further antibiotics were then developed.
- As a result of overuse and people not finishing prescriptions of antibiotics, **antibiotic resistant bacteria**, such as MRSA, are becoming a problem.

Keywords:

antibiotic:
A substance which destroys germs as they travel around the body

antiseptic:
A substance which destroys germs outside of the body.

petri dish:
A glass or plastic lidded dish which allows bacteria to be easily studied.

to mass produce:
To make something in large amounts, usually using machines

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25. The Welfare State:
- In the late 1940s, the British government began to create a series of systems designed to support people in Britain from **"cradle to grave"**.
- Many of these systems were extensions of systems which already existed, such as the **National Insurance** scheme or **labour exchanges**.
- This series of systems and services was called **the Welfare State**.

- **Evacuees** which were sent to the countryside during World War Two highlighted the poor conditions that many children were still living in.
- People wanted to **reward soldiers** who had fought in World War Two.

- The government asked **William Beveridge** to write a report in 1942 about how to improve public health in Britain.
- Beveridge recommended that the government cared for people **"from cradle to grave"** by tackling the **"5 giant evils"** of society (see below).

The Welfare State:

Disease:
The NHS was set up to provide **free healthcare** paid for by taxes.

Idleness:
The government **protected jobs** by **nationalising** some major industries.

Squalor:
The government **demolished** poor housing and built **council houses**.

Ignorance:
Children had to stay in **education** until they were 15.

Want:
The government extended the **benefits** which it gave to people in need.

Keywords:
welfare:
The health and happiness of a person

squalor:
Being in an extremely dirty or unpleasant environment

idleness:
Being lazy or inactive

ignorance:
A lack of knowledge

to nationalise:
When a service or industry is owned and run by the government

evacuation (during World War Two):
When children from cities were moved out to live with families in lower risk areas in the countryside

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26. The NHS:
- The NHS was established in **1948** by **Aneurin Bevan** in the **Labour government**.
- Most hospitals were **nationalised** and put under the control of **local governments**.
- Healthcare, medicines, non-essential care (such as dental work or glasses) was provided to all people for free. An **ambulance** service was also established.
- Although the NHS was extremely popular after it had been introduced, many politicians and doctors objected to it. This was because:
    - **Conservative** politicians argued that the **cost** would be too high
    - Many **doctors** argued that they would look **autonomy** and **income** if they had to work for the government.
- The NHS overcame it's initial resistance. However, it has encountered other problems since its launch:

	Expense: - When the NHS was launched many people argued that, as people became healthier, the NHS would become cheaper because people would use it less. - In reality, as people began to seek treatment for issues they had suffered with in the past, as the population grew, and as people began living for longer, the NHS became more and more expensive. - In 1952, the government introduced **charges for prescriptions**, **dental work** and **glasses**. However, a lot of people, such as people under 18 or people who are on certain benefits, do not have to pay.
	An ageing population: - People in the UK are living for longer. - There is a also a higher percentage of people over the age of 65. - Because of these changes, the NHS is having to **change its priorities** so it can focus on providing treatment for **conditions associated with old age**, such as Alzheimer's or arthritis.
	Changing lifestyles: - People's lifestyles have changed significantly since the NHS was first established. - Fewer people are dying from diseases caused by poor living conditions, such as tuberculosis. - However, **more people are dying from conditions associated with changes in diet**, such as diabetes.

Keywords:
to nationalise:
When a service or industry is owned and run by the government

autonomy:
the freedom to make decisions

prescription:
An instruction from a doctor which allows a patient to be given a certain medicine

the NHS:
The National Health Service