John Hunter conducted extensive researches in comparative anatomy and physiology, founded surgical pathology, and raised surgery to the level of a respectable branch of science.

Industrial Revolution 1700-1900

Cowpox and Smallpox

- Smallpox was a very contagious disease that killed 25% of people who caught it.
- People were very scared of it because it left terrible scars on the body.
- People started using a cure called inoculation which came from China. A doctor would take some pus out of a smallpox victim's spot and insert it into the paying patient's skin. This gave people a small case of smallpox which would build up resistance to 'full-blown' smallpox.

Edward Jenner

- There was a small outbreak of smallpox in Berkley and Edward Jenner (who was the village doctor) noticed that most people caught it but milkmaids never caught it.
- However, the milk maids did catch cowpox from the cows that they milked.
- Jenner noticed this and thought that there may be a link. He wanted to test it out.
- He got his gardener's son (James Phipps) and gave him cowpox. After a while Jenner then gave Phipps smallpox. James did not fall ill.
- Jenner published a book about his discovery in 1798.
- Because he did not know why this worked people did not like his idea.
- Someone decided to test out Jenner's theory however the equipment was contaminated so the patient died, and everyone concluded that Jenner was wrong.
- Eventually it was discovered that Jenner was correct, and he was given £10,000 to set up a vaccination clinic.
- In 1853 the vaccination became compulsory.

New Anaesthetics

Nitrous Oxide

- Nitrous oxide was discovered by the English chemist Joseph Priestley in 1772; another English chemist, Humphry Davy, later named it and showed its physiological effect.
- Davy produced an account to describe how it made him laugh.
- In 1884 an American dentist used it for the removal or a patient's tooth.

Ether

- William Thomas Green Morton was an American dentist who first publicly demonstrated the use of inhaled ether as a surgical anaesthetic in 1846.
- It was used for a leg amputation and to remove a neck growth and this convinced people.
Chloroform

- James Simpson was the first physician to demonstrate the use of chloroform as an anaesthetic.
- Death was common from the use of chloroform as an anaesthetic because it was easy to have an overdose.

Why did some people object to the use of these as anaesthetic?

- People thought if things like child birth hurt it must be because it was Gods will for it to hurt.
- People feared death from the drugs.
- Objections were overcome when Queen Victoria used it in childbirth and described it as a pleasant experience.

Louis Pasteur (1822-1895)

- Pasteur was a French chemist and biologist best known for his new discoveries on the causes and prevention of diseases. In 1861, he published his germ theory of diseases.
- He also made an important contribution to advances in vaccination, fermentation and pasteurisation (the process of killing bacteria in liquid such as milk and wine).
- The biggest challenge to the theory of spontaneous generation and miasma in Europe came from Pasteur.
- From 1857-1860 he investigated why wine and beer often went sour. He designed a clever series of experiments to show that if air was kept out of the neck of the flask, the liquid would not go off.
- Pasteur identified the specific microbe responsible for souring wine and showed that heating it to the right temperature could kill the microbe.

Joseph Lister (1827-1912)

- He introduced new principles of cleanliness in surgery.
- Lister used Pasteur’s ideas about microbes and germs to try and stop/control infection that he encountered in surgery.
- In August 1862, a young boy, James Greenlees was run over by a cart. Normally the surgeon would have amputated the damaged leg, but Lister set the bones and used dressing soaked in carbolic acid (see later).
- After 4 days, Jamie complained of irritation, so Lister took off the bandage and found that there was no infection and the skin was healing well.

Antiseptics And (Anti)Contagionists

- In 1677, the first basic microscope was invented which allowed scientists to see tiny organisms.
- At this point, most people thought that microbes just appeared – called spontaneous generation.
- Before the 1860’s infection was dealt with by keeping the patient’s general health good, burning off inflamed tissue and making sure cleanliness was at a high level.