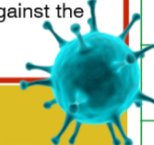


### Key individuals

Louis Pasteur, Robert Koch, John Tyndall, William Cheyne, Paul Ehrlich, Humphrey Davy, Horace Wells, William Clark, Dr Crawford Long, William Morton, Robert Liston, Queen Victoria, James Simpson, Joseph Lister, Edwin Chadwick, Dr John Snow, Joseph Bazalgette.

### Treatment of disease

1861 - Louis Pasteur discovered Germ Theory proving the theory of Spontaneous Generation wrong but it was not accepted immediately. Robert Koch applied Pasteur's theory to human diseases. He was the founder of bacteriology and proved that specific bacteria caused specific diseases. In 1876 he discovered the microbe responsible for anthrax, 1884 - cholera and 1882 - tuberculosis. He also discovered stains to dye microbes under a microscope. Pasteur and Koch were rivals and sponsored by their governments which motivated their work. Pasteur and his team created a vaccine for rabies and anthrax. This work was accepted in Britain due to John Tyndall and William Cheyne. Paul Ehrlich (Koch's assistant) found chemicals that would not only stain but kill specific types of bacteria. In 1909 he discovered a chemical cure for syphilis. These cures became known as 'magic bullets'. Prontosil worked against the germs that caused blood poisoning and 'sulpha drugs' were developed for meningitis, pneumonia and scarlet fever.



### Key dates

1832	Edwin Chadwick Public Health Report
1837	Cholera outbreak
1842	Ether used
1844	Nitrous oxide used
1846	Ether used in public demonstration
1848	First Public Health Act, Hannah Greener died
1853	Queen Victoria uses chloroform
1854	Dr Snow discovers cause of cholera
1858	Great stink and Bazalgette starts building sewers
1861	Germ theory
1866	Sanitary Act
1875	Second Public Health Act, Artisan's Dwelling Act, Sale of Food and drugs
1909	Chemical cure for syphilis

### Improvements in surgery

The key problems of surgery were pain, infection and blood loss. Anaesthetics - nitrous oxide was identified by Humphrey Davy and used by Horace Wells in 1844 to extract teeth. Ether was also used by the dentist William Clark in 1842 and Dr Crawford Long removed a neck growth with it. In 1846 William Morton gave a public demonstration and in December Robert Liston amputated a leg with it. It was difficult to inhale though and was also flammable. Chloroform was the alternative and discovered by James Simpson. Surgeons could now take more time over operations but this had initial problems such as dosage. Hannah Greener died of an overdose during a toenail operation in 1848. In 1853 Queen Victoria used chloroform in childbirth making it more acceptable.

Antiseptics - Joseph Lister had read about Germ Theory and applied it to the problem of infection. He used carbolic acid to stop the spread of germ spraying it on hands, wounds, equipment and in the room. This dramatically reduced death from infection but they were still wearing outdoor clothing and it was not pleasant to use. The next step was aseptic surgery where germs were removed from the room. Facemasks, rubber gloves, gowns and sterilised instruments replaced public operating theatres and dramatically reduced infections.



### Public Health

The Industrial Revolution led to a population explosion and a movement of people into the rapidly expanding towns. The government attitude was laissez-faire meaning they did not believe it was their job to deal with domestic matters. The back to back houses and lack of sanitation led to cholera (a waterborne disease) epidemics in 1837, 1838, 1848, 1853-5 and 1865-6. In 1832 Edwin Chadwick collected information about the conditions on towns in the Report on the Sanitary Condition of the Labouring Population. This identified problems in the towns and cities leading to the 1848 Public Health Act. However this was voluntary and many councils did nothing. In 1854 Dr John Snow discovered the cause of Cholera adding more evidence that something needed to be done. This was followed by the Great Stink of 1858 where the sewage in the Thames led the government to leave the city. As a result Joseph Bazalgette was given the job of building the sewers under London. He was given £3 million. He used 318 million bricks and built 83 miles of sewers removing 420 million gallons of sewage a day. Once fully operational cholera never returned. Louis Pasteur discovered germs in 1861 adding more evidence that something must be done. After working class men gained the vote in 1867 the government brought in more laws to improve people's lives. 1866 - Sanitary Act. 1875 - Artisan's Dwelling Act, Sale of Food and Drugs Act. The Second Public Health Act of 1875 was compulsory and made councils responsible for public health. They had to provide clean water, build sewers, keep the streets clean and light them. Laissez-faire was now at an end.



### KEY VOCABULARY/TERMS

Spontaneous generation, germ theory, bacteria, bacteriology, microscope, government, vaccine, rabies, anthrax, cholera, syphilis, chemical, prontosil, magic bullets, blood poisoning, meningitis, pneumonia, scarlet fever, anaesthetics, antiseptics, ether, chloroform, nitrous oxide, aseptic, surgery, sterilised, operating theatre, pain, infection, blood loss, sanitation, laissez-faire, sanitation, sewers, artisan, dwelling, Public Health Act, water, voluntary, compulsory.