

19th Century Medical Megastars

Jenner and Smallpox

Strictly speaking Jenner made his discovery at the end of the 18th century but his success in finding a way of preventing smallpox inspired doctors in the 19th century to try to find ways to prevent people catching other diseases. Smallpox was a terrible disease which caused death, disfigurement and blindness.

Jenner heard an old country tale that milkmaids never caught smallpox because they had already caught cowpox during their work. He noticed that he could not get any reaction with some people when he tried the dangerous method of infecting people with matter from a mild case of smallpox. He thought that the reason for this was that they had already had cowpox. Jenner was brave enough to try out the cowpox method on a young boy. He deliberately gave him cowpox by putting matter from a cowpox sore into a scratch on his arm. After he had recovered from the mild disease of cowpox, Jenner put matter from a smallpox sore into a scratch on the boy's arm and noticed that he could not get any reaction. This seemed to prove to him that people catching cowpox could not catch smallpox. If people were deliberately vaccinated with cowpox, they would not be able to catch smallpox.

He sent details to the Royal Society of which he was a member. When this refused to publish so fanciful a story. Jenner paid to have his method published. Within a few years his method was protecting people all over the world. He could have made a fortune by keeping his methods secret. Smallpox has now been wiped out.

James Simpson and the use of chloroform

Nitrous oxide (laughing gas) was the first anaesthetic to be used in hospitals but it could not produce deep levels of unconsciousness. Some doctors used ether but this irritated the lungs of some patients. Simpson discovered that chloroform was a better anaesthetic.

Lister and the use of antiseptics

Lister was a surgeon who was worried about the number of his patients who died after their wounds had turned septic. In 1865 he heard about Pasteur's work and realised that microbes in the air or on dressings might carry the infection. He knew that carbolic acid was being used to kill the microbes causing the smell from sewage. He believed that this might kill the microbes that made his patient's wounds turn septic. He tried out carbolic acid as an 'antiseptic'. He sprayed it in the air over patients while he operated and soaked bandages in it. The death rate after his operations fell sharply.

Though his method worked, many doctors and nurses disliked it. It cracked and discoloured the skin of doctors and nurses using it. Gradually the use of carbolic acid became accepted. The spray was only used for about 20 years. Doctors realised that the use of steam-sterilised instruments, operating gowns and masks could keep most harmful germs away from patients. Lister is important for making doctors and the general public aware of the need to remove dangerous germs.

Pasteur (French)

He is important for three main reasons:

1. He developed the germ theory of decay and illness 1865
2. He found a way of preventing other diseases 1881
3. He found a way of curing the deadly disease of rabies 1882

Pasteur was not a doctor but a professor of Chemistry whose work meant that he became interested in diseases in plants, animals and humans. His work for the wine industry made him convinced that wine had been spoiled by microbes floating around the air on dust, He did not believe that decaying material made microbes; he believed that the microbes caused the decay. Heat was one way of destroying these harmful microbes. This is called "Pasteurisation" after his name. In a famous experiment he proved that microbes floating in the air on dust could cause soup to go bad. Keeping out the dust slowed down decay.

He began to study the animal diseases of anthrax and chicken cholera. Part of the study involved infecting chickens with chicken cholera. One batch of chickens were injected with germs from an old culture and did not catch the disease as expected. They were injected with germs from a fresh culture but still did not catch the disease but some chickens injected for the first time with the same culture did develop the disease. It was clear to Pasteur that an injection of a weakened germ protected the bird from a strong germ later. The body prepared defences against the weak germs which later killed the strong germs. Other diseases in animals and humans could be prevented by injecting weakened germs. Smallpox, after 1881, was not the only disease which could be prevented.

Pasteur found a way of curing rabies soon after the bite by injecting the patient first with very weak viruses and later with stronger ones to prepare the body's defences. Rabies can take over 6 months to develop which is why animals are in quarantine for 6 months today.

Robert Koch (German)

Koch was trained as a doctor and had much more knowledge, patience and skill than Pasteur had. He is famous for developing ways of identifying and showing microbes which caused particular diseases. Most germs are nearly transparent and Koch found ways of staining them so that he could see them clearly through a microscope and photograph them.

He grew colonies of germs on a jelly made from potatoes. He carried out careful tests to prove beyond doubt that the microbe he suspected did in fact cause the disease that he was studying. Animals had to be used to show this.

In 1878 Koch discovered the microbes that cause wounds to go septic. Lister had been killing these germs without seeing them. By 1900 he and his students had identified the germs causing 21 diseases. The search for microbes had become the new science of bacteriology.