



# Vaccines Fact sheet

## What are vaccinations?

Vaccinations are another means of helping our immune system protect us against harmful diseases. They use your body's natural defences to build resistance to specific infections and help build our immune system stronger.

## How do vaccines work?

When the vaccine is injected into the body the immune system attacks it as if harmful microbes were attacking the body. White blood cells, a part of our immune system, create lots of antibodies to attach to specific markers on the surface, called antigens, of the vaccine organisms. Because the vaccine is an extremely weakened or killed version of the microbes, our immune system can detect the vaccine and eliminate it, and it will not make you ill. By successfully eliminating all the vaccine, the immune system remembers how to combat those microbes. The next time microbes carrying the same markers/antigen enter the body the immune system is ready to fight it before it has a chance to make you ill. This means you develop immunity against diseases.

## History:

English doctor Edward Jenner created the first vaccine in 1796. He saw people around him getting ill from a disease called smallpox. As a doctor, Edward Jenner listened to what the country people said about smallpox. They believed that someone who caught a different mild infection called cowpox from their cows would not catch the much more serious smallpox. Jenner carried out an experiment to see if the people were right. In 1796 a milk maid called Sarah Nelmes came to Jenner complaining of a cowpox rash on her hand that she caught from Blossom the cow. Jenner took some of the pus from the cowpox rash on Sarah's hand. He scratched some of the pus into the hand of an 8-year-old boy called James Phipps, the son of his gardener. James fell ill with cowpox but soon recovered. Jenner then took some pus from someone with the dangerous disease, smallpox, and scratched this into James' arm. James developed a scab but did not develop smallpox, Jenner's theory was right. Jenner's discovery came to be known as vaccination from the Latin word for a cow: vacca. Jenner went on to vaccinate all the local children with the cowpox to stop them from getting the more dangerous smallpox disease.

A French scientist called Louis Pasteur was also another important researcher. In the 1880s he developed a vaccine against rabies. He used a weakened form of the rabies virus to protect against a full attack by the same virus.

Since, many more scientists have gone on to develop many different vaccinations to protect us against many diseases!

