

Edward Jenner

The Discovery of Vaccination



A report by Erin McGregor

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Introduction

Vaccination against disease has had a greater effect than anything else in modern medicine. How did it begin?

The discovery of the vaccination against disease has revolutionised the world. Not only has it saved the lives of humans but also animal's world wide, it has helped led to discovery of many other medical aids.

The word vaccination comes from the Latin of Vacca meaning Cow; Edward Jenner created this word after discovering the connection between cowpox and human smallpox.

The first discovery of the first Vaccination (or immunisation as it is otherwise known) was by Edward Jenner in 1796.

Edward Jenner was born in 1749 and died in 1823. He was born in Gloucestershire in west England where he worked as a doctor.

The idea of vaccination came from trying to prevent infection of smallpox.

Smallpox was an extremely infection disease which killed 30% of people who caught it (mostly of which were infants and children) until vaccination was discovered.

This project will go on to show how the discovery of vaccination came about, how vaccination helped, how vaccination has worked, and what the discovery has lead to and the benefits it has given to society.

How the Discovery of Vaccination Came About

Two hundred and twelve years ago Edward Jenner first used vaccination; on a farmer called Benjamin Jesty. He was given a vaccination with cowpox to induce immunity to the smallpox disease.

Smallpox was one of the main killers throughout the eighteenth and nineteenth centuries, doctors and scientists did not understand the disease itself.

Edward Jenner noticed that cows on the farm were contracting a disease with similar side effects to smallpox; this inspired further research from which he discovered milkmaids were also suffering from smallpox. Both mammal and human from inflamed spots, which were found on the hands and wrists of the farm workers.

Jenner's first idea to try and eradicate smallpox was to make a small incision into the sufferers arm and rub on variolous matter (infected with smallpox); it was found that the symptoms began to disappear after time even in the most severe smallpox cases, for the first time smallpox could be controlled by vaccination.

How Vaccination Works

Vaccination is the artificial induction of immunity in the body to protect against germs and disease.

Edward Jenner's first vaccination worked by injecting the patient with forms of smallpox germ over a period of time but there was a risk of death or further illness.

Vaccination is now done using an inactive germ, which is done by heating the germs. Because the germ is inactive it caused a response within the bodies immune system but does not cause the disease. (See figure 1)

Antibodies are formed by the immune system, and because the body has already been exposed to the inactive disease, future contraction of the disease provokes the antibodies to effectively kill the germs.

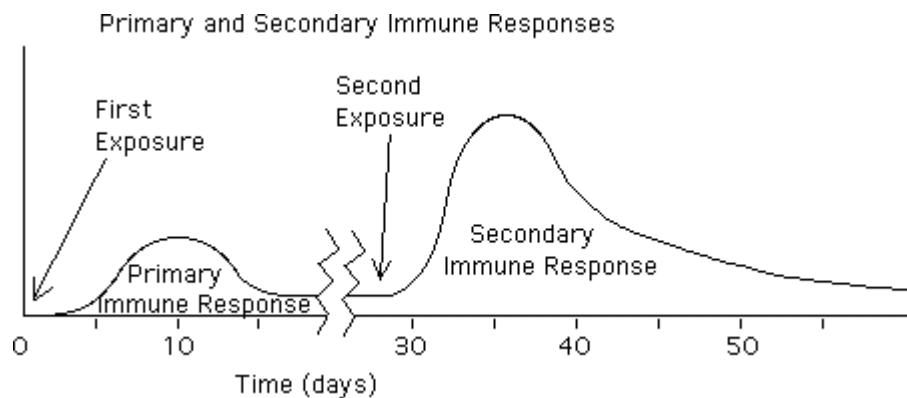
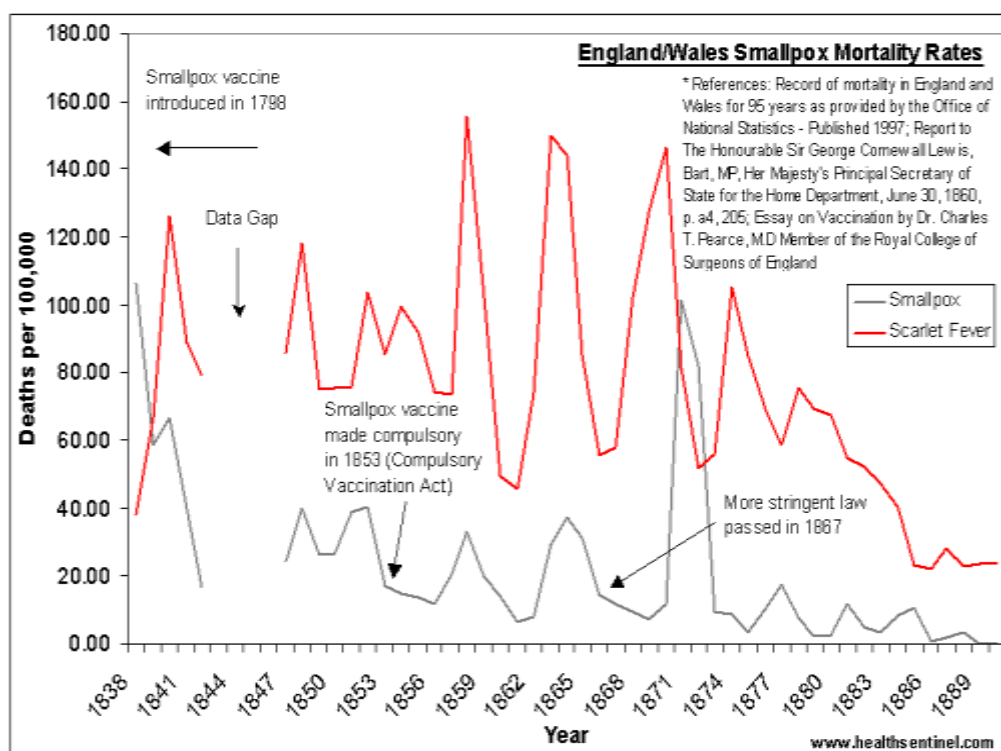


Figure 1

How Vaccinations Have Helped

The introduction of the smallpox vaccine has helped not only eradicate smallpox, but also other disease. The last case of smallpox in the United Kingdom occurred in the 1930's and the last case of smallpox in the world was recorded in the October of 1977, this shows the success of Edward Jenner's vaccine, it not only helped the people of his time but also populations that followed and eliminated the disease.

Figure 2 shows the death rates of Smallpox and Scarlet Fever after the smallpox vaccine was introduced. Although the graph for Smallpox does undulate the mortality rate is still low for the time.



(Figure 2)

The Vaccine has also helped eradicate diseases such as diphtheria, whooping cough and measles.

Disease	Year/ number of cases recorded	Year/ number of cases recorded
Diphtheria	1921 206,939 cases	1998 1 case
Whooping cough	1934 265,269 cases	1998 6,279 cases
Measles	1941 894,134 cases	1998 89 cases

What has the Discovery of Vaccination Lead to

In conclusion discovery of the vaccination has lead to many medical advances, and changed lives of many.

In 1853 a law was passed declaring that people must be vaccinated against the smallpox disease in England and Wales decreasing the death rate from smallpox by thousands. Policies in America also stated children were to be vaccinated against smallpox before entering school, helping again to decrease the risk of the disease.

Edward Jenner also influenced the lives of many, and one man in particular who's name was Louis Pasteur.

. Louis Pasteur was a famous French chemist who created the first vaccine for rabies (a viral disease which causes inflammation of the brain) anthrax and cholera. Pasteur also made the link between microorganisms and disease. From here Pasteur worked with other chemists where he helped create bacteriology with Robert Koch. Pasteur's most famous discovery was that of pasteurisation, which is the process of heating [liquids](#) for the purpose of destroying [viruses](#) and [harmful organisms](#) like bacteria this method is still in use today but may not of been had Edward Jenner not influenced Louis Pasteur.

The vaccination for yellow fever was also discovered using bases from Jenner's discovery. Yellow fever is a viral disease and if left untreated can be fatal; the vaccination helps save around 30,000 lives a year.

Edward Jenner's first vaccination has also led to the breakthrough of experimental vaccines for patients which have already contracted disease like Alzheimer's, AIDS and forms of Cancer.

The most recent vaccine to be discovered was the Human Papillomavirus (HPV) in 2005. HPV is viruses based in DNA and infects the skin and mucous membranes, the vaccine is so far had 100% efficacy.

Evaluation

During the research for this project it found that the information appeared to be different in other places, the information in this project is that of which was common in most places (including books and the internet), meaning that not all the significant data on Edward Jenner's career is included due to lack of evidence so from this no complete conclusion can be made as some data says it was Edward Jenner who invented vaccination and some say otherwise.

Bibliography

Internet sources

www.sc.edu

www.wikipedia.com

www.darrendixon.supanet.com

www.immunizationinfo.org

www.healthsentinel.com

Books

The Medical Encyclopaedia

Appendix 1: Plan

Topic: Edward Jenner

Basic information: Date of Birth- 1749-1823

Place of Birth-Gloucestershire

Occupation- doctor

When the discovery was made-1796

Questions: How the discovery of vaccination came about

How vaccination works

How vaccinations have helped

What has the discovery of vaccination lead to? (Conclusion)

Sources: The Medical Encyclopaedia

(Class notes?)

www.sc.edu

www.wikipedia.com

www.darrendixon.supanet.com

www.immunizationinfo.org (diagram)

www.healthsentinel.com (diagram)

Summary

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Edward Jenner noticed that cows on a farm where he worked were contracting a disease with similar side effects to smallpox; this inspired further research from which he discovered milkmaids were also suffering from smallpox.

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cases.

Vaccination is the artificial induction of immunity in the body to protect against germs and disease.

Antibodies are formed by the immune system, and because the body has already been exposed to the inactive disease, future contraction of the disease provokes the antibodies to effectively kill the germs.

Edward Jenner also influenced Louis Pasteur who created the first vaccine for rabies, anthrax and cholera.

The vaccination for yellow fever and the breakthrough of experimental vaccines for patients which have already contracted disease like Alzheimer's, AIDS and forms of Cancer were also discovered using bases from Jenner's work.

