
Vaccination – the Greatest Invention of All Times

The definition of invention is “the action of inventing something, typically a process or device” according to the Oxford Dictionary. There have been many inventions created throughout time from the stone tools in The Stone ages to electrical toothbrush in our current, The Big Data age. Most of these inventions are created to make our lives easier, but there is an invention that was created to save millions of people without any discrimination, from the wealthy to the poor. Vaccination, as defined by Oxford Dictionary, is the administration of a vaccine to stimulate the administered individual’s immune system to naturally develop antibodies to fight against the diseases so that when the individual is in contact with the disease they already have the antibodies in their body to fight the disease. This prevents the individual from being impacted from life threatening diseases as the body already has the antibodies to fight against the disease. Vaccinations have been proved to be the most efficient cure for infectious diseases as it prevents the disease from ever affecting the vaccinated individual. Vaccines are the greatest invention ever created. In this essay, I will argue that vaccines are the most important and greatest inventions ever created. They have saved the lives of humans, animals, and plants alike. Diseases such as Smallpox, Polio and Measles, that were once thought to cause eradication of life on Earth, have now been controlled through the efficient distribution and use of vaccines. Not only has vaccination saved lives, but it has saved economies of countries too.

According to Smith (2011), Louis Pasteur fathered this invention through his studies of microbiology even though Edward Jenner’s pioneered it by creating the first ever vaccine. The Smallpox vaccine was the main contributor to the eradication of smallpox. The World Health Organisation states that during 1967, 60% of the world’s population was affected by Smallpox whereby one in every four affected patients died. Those who survived had scars and/or were blinded for the rest of their lives according to Fenner (1988). Smallpox was declared eradicated by the World Health Organisation in 1980 as the last case known was in Somalia in 1977. Thanks to the vaccination created by Edward Jenner, millions of lives were saved by a very cheap and accessible invention, the vaccination.

Smallpox did not just affect the health of mankind but also created a great dent in the economy of countries. There were fewer people in the workforce as the epidemic left millions dead or blinded. This created less revenue for countries affected. Although Smallpox vaccines were inexpensive, it did cause every affected country to buy tons of them since there was a large amount of people requiring vaccination during the Smallpox epidemic, causing a dent in the capital of the country. The combined effects of the cost of vaccines and fewer people in the workforce cause a great impact on the Gross Domestic Product of a country. Even though the expense for vaccines was high during the epidemic stages, they helped the economy in the long

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run as more people were able to return to their daily lives in the workforce. Vaccines prevent the disease from infecting the individual, therefore this is cheaper and safer than to cure the disease. Eradication of Smallpox was just the beginning of this revolutionary invention. Diseases that were once thought to be incurable, and life threatening now had a chance of being eradicated from the face of Earth. According to the statistics by UNICEF (2018) 9 million lives per year have already been saved owing to immunisation and a further 16 million lives per year can be saved if vaccines are deployed in an effective manner.

UNICEF claims that Polio and Measles can be the next diseases that can be eradicated with the help of vaccines. Polio and Measles are currently causing around 2 million deaths worldwide. If vaccines can be efficiently distributed to communities with these diseases as soon as possible, Polio and Measles can be like Smallpox, a disease of the past. Unfortunately, humans are not the only living organisms that are affected by bacteria and viruses. Animals and plants have been affected and since livestock and crops are a source of food for us, we too get affected. The farmers get directly impacted as livestock and crops are a source of income for them. Some of the diseases in animals can easily spread to humans and farmers if they are directly in contact with them, therefore they are at a higher risk of getting infected. The loss of livestock and crops can negatively affect countries that rely primarily on agriculture sectors to provide to their Gross Domestic Product. Vaccines are extremely important when there is an outbreak of infectious diseases in livestock and crops as it affects the whole country. It is cheaper to prevent the disease by vaccinated crops and animals instead of trying to cure the infection after it has already infected the populations. The effects of vaccination are so incredible that without vaccines the agricultural sector will not be able to deal with the loss of incomes when a new disease strikes the area and destroys the livestock and crops.

Smallpox was eradicated from cattle by vaccines simultaneously while it was eradicated in humans. Rift Valley fever is a viral disease in livestock that has recently in 2010 caused an outbreak in South Africa and other nearby countries. Since it is, an airborne disease, containing the disease is quite a difficult leading to a great loss for farmers according to an article in the World Health Organization (2018). The disease also easily spreads to humans from the affected animals through mosquitoes and bodily fluids of the animals. This caused a major impact on sheep farmers in South Africa as they lost assets because the affected animals could not be sold for meat. After, the vaccines were injected to unaffected livestock the farmers' loss started decreasing as they were no more newly infected livestock. Importing the vaccines from other countries did cause a great expenditure for the farmers but in the long run vaccines were cheaper than curing the already infected animals.

Creating vaccines for plants is the next step for scientists according to Walter (2018). There are many diseases, viruses, fungi and insects that kill crops creating drastic loss for the farmers and food security problems especially in the African continent where a balanced diet cannot be

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reached out to a large population. Creating vaccines for crop diseases means that fewer farmers will need to use pesticides, this will improve the quality of crops and in turn reduce the diseases that pesticides are known to cause in humans, such as cancer. The consumers are not to going to be the only beneficiaries of vaccines for crops, the farmer can create more yield as there will not be any factor affecting the yield of the crops. Countries that rely on agricultural sectors to contribute largely to the Gross Domestic Product, as mentioned above, will largely benefit as more profit will be made by the agriculture sector, therefore boosting the economy.

Although vaccines have not been created to fight diseases that affect the crops, scientists have infused plants with vaccines that are beneficial to humans. These plants with infused vaccines are used to help eradicate viruses causing diseases such as Polio and Zika virus. Vaccines for auto-immune diseases such as diabetics are also being created by plants. Plants are easy to be cultivated and to be mass produced, that is the reason behind using plants to create vaccines for us. De Vires also agreed that, this reduces the cost of vaccines and medications. Vaccines are so incredible that with slight modifications, vaccinations can prevent diseases that are life threatening through the means of eating your everyday food.

There have been more advanced inventions such as electricity, the internet, and lightbulbs that we cannot imagine our life without. These inventions do play an extremely important role in our day to day lives, but without vaccines half of the world's population will be not able to enjoy these inventions as they will be dead or paralysed. Those inventions are crucial for day to day lives, but vaccine is crucial for humanity. Vaccines are an evolving invention that will be relevant for years to comes as there are new diseases to fight every day.

Polio and Measles are in line to be eradicated thanks to vaccines. Millions of lives are being saved because of vaccines. Crops, animals, humans and even a countries economy have to give thanks to all the benefits that vaccines have provided for us. There is no denial that vaccines can and will attain incredible achievements. Vaccines are the most important invention ever created.

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