

HOW DO WE KNOW THAT VACCINES WORK?

Vaccines are working around the world

◇ Reductions in infectious diseases due to vaccines have occurred in every country.

◇ Polio once affected about 350,000 people around the world each year¹. With intensive immunization campaigns, there were only 22 cases of wild-type polio disease reported worldwide in 2017¹.

◇ In the 1970s and earlier, an estimated 20,000 children, most under 5 years, suffered each year from meningitis, pneumonia and epiglottitis caused by the bacterium *H. influenza*². After introduction of the *H. flu* vaccine, there was a reduction of these diseases by more than 99%

◇ The impact of vaccines is shown in the table below.

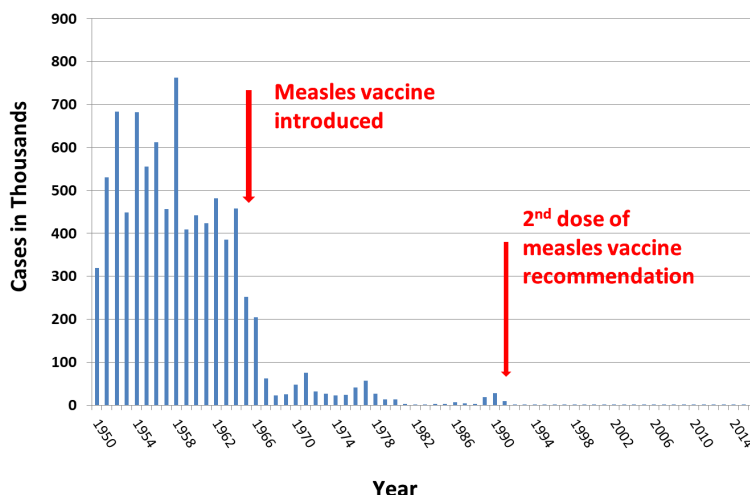
- The function of vaccines is to protect people from diseases which can kill or cause serious illness.
- So we can look at the impact that vaccination has had on the number of people who become sick from the disease before and after the introduction of vaccine.
- One of the most dramatic impacts was on smallpox, which historically killed thousands annually.
- Typically 1 out of every 3 people with smallpox died and those that survived usually had lifelong scars across their body.
- Smallpox vaccination was introduced widely in the late 18th century and 2 centuries later the disease was completely eradicated from the world, with the last naturally occurring case occurring in 1977.
- Measles is another disease that has historically killed many, primarily children as well as causing lifelong nerve damage to some. It was so common that it was deemed as inevitable as “death and taxes.”⁴
- Around 500,000 cases were reported each year in the US before 1963⁵. However, it has been estimated that as many as 3–4 million persons each year became infected⁵. With the introduction of vaccination in the 1960s, cases of this highly infectious disease have plummeted, and the disease was officially determined to have been eradicated from the western hemisphere in 2016⁶.
- Before the introduction of the polio vaccines in the mid-1950s, many children used to die from polio and many of those who survived were left crippled or disabled for the rest of their lives.

◆ Before a vaccine was available, there were approximately 117.55 case of pertussis reported each year for every 100,000 people in the US. After the introduction of the vaccine, there were 1.9 cases for every 100,000 people occurring each year⁷.

◆ Before the mumps vaccine was introduced, there were 89.53 cases annually for every 100,000 people in the US, but after the introduction of the vaccine, this number dropped to 2.09 new cases each year⁷.

◆ As these diseases are transmitted via respiratory droplets from person to person, it is unlikely that these substantial decreases can be attributed to improvements in sanitation.

Annual measles cases reported in the US, 1950 to 2016



Source: <https://vaccines.procon.org/sourcefiles/cdc-reported-deaths-vaccine-preventable-diseases.pdf>

Impact of vaccines upon serious infectious diseases in the US³

Disease	Cases each year in 20th century	2017 cases	% decrease
Smallpox	29,005	0	100%
Diphtheria	21,053	0	100%
Pertussis	200,752	15,808	92%
Polio	16,316	0	100%
Measles	530,217	122	>99%
Chickenpox	4,085,120	126,639	97%

MALPH

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Sources:

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