



Truths and Myths about Vaccines

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Along with the famous discovery of penicillin, vaccines are regarded as a cardinal advancement of medicine. According to the World Health Organization, immunization prevents approximately two to three million deaths every year from diphtheria, tetanus, pertussis (whooping cough), and measles (1). The evidence supporting vaccine efficacy and safety is incontrovertible, yet "anti-vaxers" are still around spouting anecdotes about the harm of vaccines on our children.

The anti-vaccine movement is not a new concept. Benjamin Franklin's decision to withhold the smallpox vaccine from his son was regrettable when his four year old child died from the disease (2). In more modern times, Dr. Andrew Wakefield published an article in the Lancet that suggested a link between the MMR (measles, mumps, rubella) vaccine and autism. The article, which was a case study based on only twelve children, was later retracted and most of the authors also retracted their support on the article. Furthermore, numerous large-scale studies have debunked any link between vaccines and neurodevelopmental disorders. Incidentally, Wakefield was later stripped of his medical license.

Herd immunity, or the ability for a large vaccinated population to protect the select few unvaccinated persons, can be achieved when 95% of the "herd" is vaccinated (3). Measles was considered eliminated until pockets of outbreaks occurred last year due to groups of unvaccinated persons.

Here are a few truths and myths about vaccines that everyone should know:

Truths:

1. Complete vaccination of children in the US annually saves about 33,000 lives and prevents an estimated 14 million infections (4).
2. The rubella vaccine has nearly eliminated the disease with a reduction of 99.99% of cases from 1998 to 2013 (3).
3. Haemophilus influenzae infections, which cause meningitis and other serious diseases in children, have decreased by over 99% since the vaccine was introduced (5).
4. The smallpox vaccine (6) and the polio vaccine (7) have nearly eradicated their respective diseases.
5. The flu pandemic of 1918 killed 50 million people worldwide. This was before the advent of the modern influenza vaccine.



Myths:

1. The MMR vaccine causes autism. There is no proven study that this is true. Records from half a million children were reviewed from 1991-1998 and there was no increased occurrence of autism in those vaccinated. In fact, a Canadian study found that autism rates were higher in populations that were not vaccinated (8,9).
2. Thimerosal is toxic. This preservative was never proven to be toxic as it cannot accumulate in the body due to a short half-life. At the turn of the millenium, thimerosal was removed from all vaccines given persistent concerns, yet autism rates continue to rise dispelling the myth that thimerosal could be the cause.

3. All the vaccines are overwhelming to a young child's system. People erroneously theorized that because of this, children developed autism, cancer, and other neurologic disorders. It is a myth because vaccines are a weakened form of the disease. All 14 the child receives the first few years of life contains about 160 antigens, or immunologic components. By comparison, one bacterium a baby comes in contact with can contain up to 6,000! In theory, an infant can receive 10,000 vaccines at one time, and research has not proven any link between vaccine "overload" and autism (10,11).

Particularly in the world where information is at our fingertips, any one person can find another person who agrees with opinions. If I firmly believe that the earth is flat, I'm sure I can find "evidence" somewhere online suggesting that what I believe is true. But is it really evidence?

In the world of medicine, health care providers go by evidence based medicine (EBM). We look at large-scale studies, not anecdotes of one mom from Michigan whose one son unfortunately developed autism coincidentally three weeks after receiving a shot. We look at the numbers; a study where the researchers are blinded and examining 20,000 patients is stronger than a case study looking at 12. Scientific evidence supporting vaccines is overwhelming and can be replicated. And if you're still not convinced, let's look at the humane aspect of things: doctors are not evil, and scientists are not trying to kill your kids with toxic substances.

In a world where there are so many other illnesses and conditions that cause harm and demise, the onus falls upon all of us to be educated and to do whatever we can to keep ourselves and the next generation healthy.

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The health information provided herein is not intended to replace the advice or discussion with a healthcare provider and is for educational purposes only. Before making any decisions regarding your health, speak with your healthcare provider.

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