



Benefit of Vaccines – myths and facts

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In the “good old days”, when everything was “natural”, babies surviving childbirth often died from an infectious disease such as smallpox, polio, whooping cough, etc., before their first birthday. Today, vaccination against vaccine-preventable diseases (VPDs) of childhood has eradicated smallpox worldwide, and made VPD-related infant death rare in countries with high vaccination coverage.

Because of the huge success of infant vaccination, parents seldom see a child with a VPD and many think that childhood vaccination is unnecessary. Others think VPDs are mild, and fear the adverse effects of the vaccine more than they fear the disease itself.

These misconceptions can lead to outbreaks of VPDs. Let’s examine the myths and facts around infant vaccination to clarify the benefits and risks.

✘ Myth: The modern trend of favouring everything “natural” has resulted in several myths about “unnatural” vaccinations. These range from a belief that “true immunity can only be obtained through natural infection”, to a belief that “vaccines actually cause diseases such as autism”, or “vaccines suppress the immune system”.

✓ Fact: A vaccine contains either the whole causative organism (either killed or weakened so that it can’t cause disease) or non-infectious parts of the organism, and thus stimulates the immune system in the same way as natural infections do.

Babies are exposed to many different micro-organisms every day through eating; touching and mouthing different objects and surfaces in their environment and they also get a number of bacterial and viral infections every year. Yet their immune systems do not get suppressed or over-stimulated. Unvaccinated and vaccinated children respond to non-VPDs in exactly the same way, showing that vaccines do not alter the healthy functioning of the immune system.

Finally, the “autism myth”, based on a study on 12 children, has been fully refuted by many very large independent studies on collectively millions of children.

The first signs and symptoms of autism coincidentally appear at around the same age when children in the UK receive their measles, mumps and rubella (MMR) vaccine, thus it is unsurprising that children developing signs and symptoms of autism have coincidentally recently been vaccinated with MMR.



✘ Myth: VPDs are mild; the risks associated with vaccination are far higher than the risks associated with infection.

✓ Fact: The diseases against which South African babies are vaccinated for free, are all diseases that are able to cause severe illness and death.

Conversely, vaccines that prevent these diseases cause very mild reactions (tenderness, redness, mild fever) which are short-lived. Serious reactions to a vaccine are very rare (1 per several thousands or millions, or so rare that risk cannot be calculated; Table 1).

✘ Myth: Improvements in living conditions, education, nutrition, sanitation, antibiotics and other medical treatments, are solely responsible for the reduction in VPDs.

✓ Fact: The above had greatly reduced the burden of infectious diseases globally by the mid twentieth century. However, even in highly developed countries it was only after the introduction and widespread use of a number of vaccines targeting VPDs of childhood, that these diseases

dramatically declined. USA records show that when the measles vaccine was introduced in 1963, measles cases dropped from half a million per year, to 44 cases in 2002. When the rubella vaccine was introduced there in 1969, rubella cases dropped from 57 686 (including 29 deaths), to 18 cases in 2002.



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Even long after the introduction of the older vaccines, increased vaccination coverage in different parts of the world resulted in a global reduction in these VPDs (Table 2).

Conversely, declining pertussis vaccination levels in the UK during 1974-1978 resulted in 100 000 pertussis cases and 36 deaths, while low diphtheria vaccination coverage in the former Soviet Union in the 1990s resulted in 50 000 cases and 1700 deaths in 1994.

✗ Myth: “Vaccines are ineffective”

✓ Fact: No vaccine is 100% effective most are 85-95% effective. A World Health Organization example of a hypothetical high school with 1000 pupils exposed to measles, illustrates why, in countries with high vaccination coverage, the majority of people who get the disease are vaccinated: Of the 1000 children, 995 are fully vaccinated against measles, and all 1000 are exposed to measles. All of the 5 unvaccinated children

get measles, while of the 995 vaccinated children, 7 get measles.

While it is true that 58% of those with measles were vaccinated, in fact 100% of the unvaccinated got measles, while only 0.7% of the vaccinated got measles! In fact the vaccine was 99.3% effective, and if none of the children were vaccinated, perhaps all 1000 would have got measles.

These myths are just a few of the many that may cause parents to doubt the value of vaccinations. Hopefully these facts will reassure you that vaccinating is the best thing you can do for the health of your baby!

*** References on request**

Table 1: Risk of disease versus risk of vaccination

Disease	Risk of Disease	Risk of vaccination
Measles	Pneumonia: 1 in 20 Encephalitis: 1 in 2000 Death: 1 in 5 in developing countries 1 in 3000 in industrialised countries	Encephalitis or severe allergic reaction: 1 in 1 million
Diphtheria	Death: 1 in 20	With DTaP: Continuous crying followed by complete recovery: 1 in 1000 Acute encephalopathy: 0-10.5 in 1 million Convulsions or shock, then full recovery: 1 in 14 000
Tetanus	Death: 25-70 in 100 generally 10-20 in 100 with good intensive care	
Pertussis	Pneumonia: 1 in 8 Encephalitis: 1 in 20 Death: 1 in 200	

Sources: WHO, 2010 [2]; CDC, 2011 [7].

Table 2: The reduction of VPDs globally from 1980 to 2009

VPD	1980 reported global incidence and vaccination coverage	2009 reported global incidence and vaccination coverage
Diphtheria	97 511	857
Tetanus	1 14 251	9 836
Pertussis	1 982 355	106 207
Polio	52 795	1 779
Measles	4 211 431	222 408

DTP3: third dose of diphtheria-tetanus-pertussis vaccine;
MCV1: first dose of measles-containing vaccine
Source: WHO, 2010 [4].