

Six myths about vaccines

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Commonly held fears about vaccination are putting Sydney children at risk.
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Recently released government figures show childhood vaccination has fallen to dangerously low levels in some parts of Australia, resulting in corners of the media claiming that "the vaccine debate" has been reignited.

But, scientifically, there's no debate. In combination with clean water and sanitation, vaccines are one of the most effective [public health](#)

measures ever introduced, saving millions of lives every year.

Those who claim there is a "debate" will cite a series of canards designed to scare people away from vaccinating. If you're not familiar with their claims you could easily be convinced by this anti-vaccine rhetoric.

Here's why they are wrong:

1. Vaccines cause autism

The [myth](#) that vaccines are somehow linked to autism is an unsinkable rubber duck. This myth was initiated in 1998 upon publication of a now notorious *Lancet* paper, where Andrew Wakefield –subsequently barred from practising medicine in the UK – was the first to suggest the measles mumps rubella (MMR) vaccine might be linked to autism.

What he didn't reveal was that he had multiple [conflicts of interest](#), including that he was being paid by lawyers assembling a class action against the manufacturers of MMR and that he himself had submitted an application for a patent for a single [measles vaccine](#).

It eventually unravelled for Wakefield when the paper was retracted in 2010. He was struck from the medical register for behaviour classified as "dishonest, unethical and callous" and the *British Medical Journal* accused him of deliberate fraud.

But once the idea was floated scientists were compelled to investigate, particularly when the claim stood to damage public health so dramatically. One of the most powerful pieces of evidence that there's no link between vaccines and autism comes from Japan, where the MMR was replaced with single vaccines in mid-1993 but where autism continued to rise.

After this door closed, anti-vaxers shifted the blame to thiomersal, a

mercury-containing component. Small amounts of thiomersal were used as a preservative in some vaccines, but never MMR.

Thiomersal or ethyl-mercury was removed from all scheduled childhood vaccines in 2000, so if it were contributing to rising cases of autism you'd expect a dramatic drop following its removal. Instead, as happened when the MMR was replaced in Japan, autism continues to rise.

Further evidence comes from a recently published exhaustive review examining 12,000 research articles covering eight different vaccines, which also concluded there's no link between vaccines and autism.

Yet the myth persists and probably for several reasons, one being that the time of diagnosis for autism coincides with kids receiving several vaccinations. Also, we currently don't know what causes autism. But we do know what doesn't, and that's vaccines.

2. Smallpox and polio have disappeared so there's no need to vaccinate anymore

It's precisely because of vaccines that diseases such as smallpox have disappeared.

India recently experienced two years without a single case of polio because of a concerted vaccination campaign.

Australia was declared measles free in 2005 by the World Health Organization (WHO) – before we stopped being so vigilant about vaccinating and outbreaks began to reoccur.

The impact of vaccine complacency can be observed in the current measles epidemic in Wales where there have now been more than 800

cases and one death.

Many of the people presenting with measles are in the age group that missed out on MMR vaccination following the Wakefield scare.

In many ways, vaccines are a victim of their own success, leading us to forget just how debilitating preventable diseases can be – not seeing kids in calipers or hospital wards full of iron lungs means we forget just how serious these diseases are.

3. More vaccinated people get the disease than the unvaccinated

Although this sounds counter-intuitive, it's actually true. But it doesn't mean vaccines don't work. Remember that no vaccine is 100 per cent effective and vaccines are not a force field. So while it's still possible to get the disease you've been vaccinated against, disease severity and duration will be reduced.

With pertussis (whooping cough), for example, severe complications such as pneumonia and encephalitis (brain inflammation) occur almost exclusively in the unvaccinated.

Since the majority of the population is vaccinated, it follows that most people who get a particular disease will have been vaccinated, but, critically, they'll suffer fewer complications and long-term effects than those who are completely unprotected.

4. My unvaccinated child should be of no concern to your vaccinated one

Vaccination is not just a personal issue; it's a community responsibility,

largely because of a concept known as "community immunity". This describes a level of vaccination that prevents epidemics or outbreaks from taking hold and spreading.

Some people question the validity of this concept, sometimes referred to as herd immunity, but the impact of it breaking down can be easily observed in places where vaccination levels fall dangerously low – take the measles outbreak in Wales, for example.

The other important factor about community immunity is it protects those who, for whatever reason, can't be vaccinated or are not fully vaccinated. This includes very young children, immuno-compromised people (such as cancer sufferers) and elderly people.

5. Vaccines contain toxins

A cursory search of Google for vaccine ingredients pulls up a mishmash of scary-sounding ingredients that to the uninitiated can seem like "franken-science".

Some of these claims are patently untrue (there is no anti-freeze in vaccines), or are simple scaremongering ("aborted foetuses" – in the 1960s some cells were extracted from a foetus to establish a cell line that is still used in labs today). Some of the claimed chemicals – and remember everything is made of chemicals – are present, but at such low levels as to never reach toxicity.

The thing to remember is the poison is in the dose – in high enough doses even water can kill you. There is 600 times more formaldehyde in a pear than in a [vaccine](#).

Also, if you ever read the claim that "vaccines are injected directly into the blood stream" (they're not), be sceptical of any other claims made.

6. Vaccines will overwhelm kids' undeveloped immune systems

The concept of "too many too soon" was recently examined in a detailed analysis of the US childhood immunisation schedule by The Institute of Medicine. Experts specifically looked for evidence that vaccination was linked to "autoimmune diseases, asthma, hypersensitivity, seizures, child developmental disorders, learning or developmental disorders, or attention deficit or disruptive disorders", including autism. The researchers confirmed that the childhood vaccination schedule was safe.

The amount of immune challenges children fight every day in the environment (2000 to 6000) is significantly greater than the number of antigens or reactive particles in all their vaccinations combined (about 150 for the entire vaccination schedule).

The next time you hear these myths about vaccination, you'll have some evidence to debunk them.

Provided by University of Technology, Sydney

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