

5 myths surrounding vaccines -- and the reality

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(CNN) -- With dozens of measles cases popping up in the United States, Americans are buzzing about vaccines once more -- and some old fearful myths are resurfacing.

These myths may be keeping parents from protecting their children from dangerous diseases, when there's every reason to get them vaccinated.

Vaccines prevents six million deaths worldwide every year, CNN's Dr. Sanjay Gupta writes.

And there's basically no reason not to get them. Only one in a million children has a serious adverse reaction.

Those are great odds. You're 100 times more likely to get struck by lightning than have an allergic reaction to a vaccine, Gupta says. Taking aspirin, for example, is much more likely to cause brain bleeding.

Still, five nail-biting notions continue to scare away people from the protection they need.

1. THEY CAUSE AUTISM

The fear:

This is the big one.

This was a prevalent myth that grew out of a now-discredited study published in *The Lancet*, a British medical journal, in which Dr. Andrew Wakefield linked autism and childhood vaccines.

The 1998 study was embraced by parents of autistic children, who pointed out that autism rates were going up as the occurrence of measles, mumps and rubella drastically decreased. The anti-vaccine movement gained traction when Jenny McCarthy and other celebrities joined the cause.

Researchers criticized Wakefield, but the paper panicked many parents and led to a sharp drop in the number of children getting the vaccine that prevents measles, mumps and rubella in Britain and a smaller decrease in the United States.

The fact:

Most of Wakefield's co-authors withdrew their names from the study in 2004 after learning he had been paid by a law firm that intended to sue vaccine manufacturers.

The same year, the Institute of Medicine reviewed evidence from the US, Denmark, Sweden, and the UK and found no connection between vaccines and autism.

Around 2010, another British medical journal concluded Wakefield's study misrepresented or altered the medical histories of all 12 of the patients whose cases formed the basis of his study.

The Lancet retracted Wakefield's paper in 2010. He lost his medical license.

The chief science officer at Autism Speaks, an autism advocacy group, urged parents to vaccinate their children in a statement issued this week.

"Over the last two decades, extensive research has asked whether there is any link between childhood vaccinations and autism," Rob Ring said. "The results of this research are clear: vaccines do not cause autism. We urge that all children be fully vaccinated."

2. THEY CONTAIN POISON

The fear:

Vaccines are laced with mercury that's poisoning our children and causing autism.

In the 1930s, some vaccine makers used a preservative called Thimerosal, which contained a very low concentration of a mercury compound.

It's there to prevent the growth of potentially dangerous bacteria and fungus.

The fact:

First of all, children are hardly getting Thimerosal in vaccines anymore. In 2001, the FDA stopped issuing licenses for children's vaccines containing it. Add to that, the fact that most of all routine vaccines for children under 6 years of age don't have it.

A trace amount is still used in some children's flu vaccines, says the Centers for Disease Control and Prevention.

Since the preservative has been used for decades and still is in adult vaccines, there have been many studies and none of them show a correlation with autism or other serious side effects, the FDA says.

As for autism, since the time Thimerosal was removed from children's vaccines, the percentage of

diagnosed autism cases happens to have shot up.

If Thimerosal were the cause, this wouldn't make sense.

3. THEY'RE PROFIT DRIVERS

The fear:

Doctors and insurance companies are promoting vaccination to drive profits.

The fact:

Some insurers pay the cost of vaccinations to prevent having to pay more later, when a patient gets sick.

A 2009 study found that up to a third of doctors actually lose money when giving vaccines.

4. THEY HAVE TOO MANY ANTIGENS

The fear:

Children are getting more vaccines than they used to, and it's pumping their bodies full of antigens -- the bits of vaccine that cause the body to build resistance. Taken together they're too much for a child to handle.

The fact:

Though there are more vaccines, patients are inoculated today with far fewer antigens than 30 years ago, Dr. Gupta says. In the 1980's, people received about 3,000 antigens total, as compared to 150 today.

Spreading the vaccines out over a long period of time for fear a child may be getting too high of a cumulative dose of antigens only leaves children more exposed and vulnerable to disease.

And for autism: As with Thimerosal, autism diagnoses shot up around the time antigens were being reduced in vaccines.

5. THE DISEASES ARE EXTINCT

The fear:

It's better to avoid vaccines, because children don't need them. The diseases they help prevent are

long gone, and if a child gets one anyway, it will just run its course.

The fact:

That spate of highly contagious measles breaking out right now? Unvaccinated children got it at Disneyland and spread it to other kids who aren't inoculated.

And 2014 was a big year for measles cases with 644 in the United States.

It's not harmless. It can lead to pneumonia, lifelong brain damage, and deafness, and death.

Globally, it's still a major killer of children, the World Health Organization says.

Between 2001 and 2013, 28% of children younger than 5 years of age with measles had to be hospitalized in the United States, the CDC says.

Before the measles vaccine was introduced in the 1960s, there were between 3 to 4 million cases a year, resulting in 400 to 500 U.S. deaths, the CDC says.

Measles vaccination in this country has reduced the rate of infection in the population by 99% when compared to times when no vaccine was available.

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