



# MYTHS AND FACTS ABOUT VACCINES

**Alan S. Peterson, M.D.**

*Associate Director, Family & Community Medicine  
Walter L. Aument Family Health Center*

## **1. VACCINES CONTAIN MERCURY**

Some have feared that vaccines contain mercury and can cause autism. Thimerosal is a preservative that contains about 50% mercury, but it has not been used in routine vaccines for children younger than 6 years of age since 2001. Both the flu shot and some vaccines for adults and older children can be found in Thimerosal-free versions, or with only trace amounts.

A small 1998 study by Andrew Wakefield in the *Lancet* claimed to find a link between autism and the MMR vaccine and led to falling immunization rates and subsequent disease outbreaks. Since then the study has been retracted and Wakefield has lost his license to practice in the U.K. In 2004 The Institute of Medicine released a report that found no evidence of a link between the MMR vaccine and autism, and in 2010 the CDC published similar results. Unfortunately this fraudulent report of Wakefield's made it to hundreds of websites and blogs. For those who reject science, the study is still used as a reason to reject vaccines.

## **2. VACCINES CAN HAVE SIDE EFFECTS**

True. Seizures can occur in one in 14,000 children after a DTaP shot, or one in 3,000 after MMR. Some children are at higher risk than others. Patients should follow their doctor's advice. Soreness at the injection site and fever are best treated with acetaminophen or ibuprofen.

## **3. YOU ARE SAFE IF EVERYONE ELSE IS VACCINATED**

This is the "herd" theory: if there are fewer unimmunized patients, any individual is less likely to become infected. Unfortunately, not all patients get immunized. Some cannot be vaccinated due to health or age restrictions. Children of like-minded unvaccinated families often choose the same preschools, playgroups, and schools, making it easy for vaccine-preventable diseases to spread. Unvaccinated individuals can also be infected by organisms like tetanus and hepatitis A from contaminated soil or food, not just from another person.

## **4. VACCINES GUARANTEE PROTECTION**

This is not true, as demonstrated by seasonal flu. Those who get the shot may still get the flu but it will be less severe, with far less likelihood of hospitalization or death. The chicken pox vaccine is approximately 80% effective in preventing infection and 100% effective in preventing serious illness.

## **5. TOO MANY SHOTS WEAKEN THE IMMUNE SYSTEM**

This is absolutely false. Each dose stimulates an immune response and antibodies that fight infection. Both the Advisory Committee on Immunization Practices and The American Academy of Pediatrics recommend that vaccinations be given to children simultaneously when appropriate. Multiple vaccinations at one time provide as much protection as early as possible. I have found that giving children multiple vaccinations at one visit causes less crying and pain over the long haul. When parents try to partition their child's immunizations, shots often aren't given at the earliest opportunity or aren't given at all.

## **6. VACCINES ARE FOR KIDS ONLY**

I hope none of us still believes this, though it can be difficult to convince a 40 year old who has never had influenza to get the vaccine. Annual flu shots are now indicated for everyone older than 6 months of age because of the different variations of the flu bug that go around each year. College students should get a meningitis vaccine, especially before living in a dormitory. Elderly adults can benefit significantly from pneumonia vaccines. Adults need boosters for tetanus and pertussis. Adults can transmit pertussis to infants and thus all parents and grandparents of infants should be immunized against pertussis as well as the flu. The HPV shot is not only for girls; the CDC says it should also be given to boys and men between ages 9 and 26. It prevents cervical cancer in women, but also prevents genital warts in males as well as decreases the spread of the virus to women. It could potentially "wipe out" cervical cancer in the next generation if it were given before the disease was contracted.

**7. PREGNANT WOMEN SHOULD NOT RECEIVE VACCINES**

This depends upon the vaccine. Live vaccines such as varicella and MMR should wait until after the pregnancy. The CDC as well as ACOG recommend the inactivated flu vaccine as safe for all pregnant women as their immune systems are compromised making them more susceptible to the flu. Also, the mother's antibody production helps to prevent the child from getting the flu in the first six months of life. The mother should also get the tetanus/pertussis vaccine with each pregnancy because the immune response to the present pertussis vaccine is less durable.

**8. NATURAL IMMUNITY IS BETTER**

The problem with natural immunity is the risk of known complications from the actual disease. Chicken pox parties can lead to encephalitis, pneumonia, or, if kids scratch too much, skin infections like MRSA; polio infection can cause permanent paralysis; mumps, deafness; and haemophilus influenzae type b, brain damage. The immunizations obviously are to prevent these complications.

**9. VACCINES AREN'T NECESSARY BECAUSE THE DISEASE HAS BEEN ERADICATED**

This is myth except for small pox, the only infectious human disease that has been eradicated world-wide. There are continuing outbreaks of all the other infectious diseases that we have immunizations for, and we are only a plane trip away from outbreaks of those diseases. (Polio would probably be eradicated at this point if there weren't warring factions in some other countries.)

**10. DOCTORS MAKE MONEY FROM VACCINES**

Vaccination is not a money making enterprise as it is labor intensive. Some doctors do receive financial incentives, but the bonuses support high-quality practice and help the physicians justify the manpower that goes into administering and keeping an inventory of all of them. Vaccines are only about 1.5% of total pharmaceutical revenues, leading few pharmaceutical companies to make vaccines now, which can cause supply problems. Three decades ago more than 30 companies produced vaccines, but today, about 5 companies have 80% of the market.

**11. VACCINES HAVE SEVERAL DAMAGING AND LONG-TERM SIDE-EFFECTS THAT ARE YET UNKNOWN**

Vaccines are very safe, and most vaccine reactions are the minor ones mentioned earlier. Very

serious health events are extremely rare and are carefully monitored and investigated. Vaccine-preventable diseases pose far more risk than the vaccines themselves. Benefits of vaccine greatly outweigh the risk, and many more cases and deaths would occur without vaccines.

**12. THE COMBINED DIPHTHERIA, TETANUS AND PERTUSSIS VACCINE AND THE POLIO VACCINE CAN CAUSE SUDDEN INFANT DEATH SYNDROME.**

This is absolutely false; there is no causal link between any vaccines and the sudden infant death syndrome. Vaccines are frequently blamed because they are administered at an age when sudden infant death syndrome occurs but this is pure post-hoc reasoning.

**13. CHILDHOOD ILLNESSES ARE JUST AN UNFORTUNATE FACT OF LIFE**

Vaccine-preventable diseases do not have to be "facts of life." Measles, mumps, and rubella are serious illnesses that can lead to severe complications in both children and adults, including pneumonia, encephalitis, blindness, diarrhea, ear infections, congenital rubella syndrome (if a woman is infected with rubella in early pregnancy), and death. All can be prevented with timely immunizations.

**14. INFLUENZA IS JUST A NUISANCE AND THE VACCINE ISN'T VERY EFFECTIVE**

Influenza is a serious disease that kills 300,000 to 500,000 people annually. Pregnant women, small children, infants, elderly people with poor health, and those with chronic conditions like asthma or heart disease are at higher risk for severe infection, hospitalization, and death. Vaccination reduces the chance of having severe flu or disseminating it. Avoiding the flu means avoiding extra medical care costs and lost income from missed days of work or school. Everyone needs to get a flu shot every year.

**15. YOU CAN GET FLU FROM THE FLU SHOT**

This is absolutely false and is one of the more common myths that my patients use for not getting the vaccine. Unfortunately, we give the flu vaccine at the time of year when multiple viruses are in the community. People who get ill after getting the flu vaccine naturally conclude that it's from the vaccine, but this is faulty post hoc reasoning. The inactivated flu vaccine is a completely killed vaccine and one cannot get the flu from it.