

# Can a Vaccine Harm Your Child?

Demystifying the most common concerns about vaccines and their associations to disease states

by Brad Shaw

Over the years numerous vaccines have been brought to market for a variety of diseases. Along with these vaccines have come concerns about their efficacy and safety. As with any medication, vaccines have undergone extensive research in this regard. However, certain events and studies have caused the public to become concerned that some vaccines can cause serious diseases. This article clarifies some of the most common concerns about vaccines and their associations to disease states. Anyone interested in more detailed information about vaccines and their safety should consult the Centers for Disease Control and Prevention's National Immunization Program website, [www.CDC.GOV/NIP/](http://www.CDC.GOV/NIP/).



**Even though claims have been made to discredit vaccines, studies show the benefits far outweigh the risks.**



## AUTISM

One major public concern is the notion that vaccines cause autism in children. The concern spawned from a 1998 paper that claimed a connection existed between the MMR vaccine causing gastrointestinal distress and the subsequent development of autism in children.<sup>1</sup> This paper has spurred much debate, even as experts have identified critical errors in the paper. In fact, ten of the 13 researchers in the study retracted their support of the paper's claim.<sup>2</sup> Numerous other well-controlled studies have been done to disprove the notion that the MMR vaccine causes autism. Some conclusions that resulted from these papers include:

- The percentage of children vaccinated was the same in children with autism as in other children.<sup>2</sup>
- No difference was found in the age of diagnosis of autism in vaccinated and unvaccinated children.<sup>2</sup>
- The onset of symptoms of autism

did not occur within two, four, or six months of receiving the MMR vaccine.<sup>2</sup>

- The increase in the number of children reported to have autism was not associated with an increase in the use of the MMR vaccine.<sup>3,4</sup>
- The incidence of autism was the same in children who did and did not receive the MMR vaccine.<sup>5</sup>

With the amount of evidence against the notion that the MMR vaccine causes autism, experts have concluded that the MMR vaccine does not cause autism in children.

Thimerosal is a mercury-containing preservative that was previously used in moderate amounts in vaccines. The concern with this chemical is that children could develop mercury poisoning when given multiple vaccinations at once. The FDA calculated the amounts of mercury a child could potentially be exposed to

and compared those amounts to recommendations by organizations such as the EPA, WHO and FDA. The conclusion was that by some organizations' standards, the mercury amount was too much, while according to others, the amount was tolerable. Nonetheless, in 1999, the FDA called for a large reduction, if not removal, of thimerosal from vaccines. Currently there are very few vaccines that contain thimerosal, and they contain a mere fraction of what used to be in vaccines. Another driving force that caused thimerosal to be investigated more closely were claims made that it was associated with causing autism in children. The concern that thimerosal in the MMR vaccine causes autism is a myth; MMR has been shown to not cause autism and the MMR vaccine no longer contains thimerosal. It is important to note that no study has shown a harmful effect to children due to vaccines containing thimerosal.<sup>2</sup>

## FLU VACCINE

Someone you know may have complained about feeling ill after getting an influenza vaccination. This ill feeling has fueled concern that the influenza vaccine causes the recipient to develop the flu. A randomized, double-blind, crossover trial was done to investigate this concern. The study asked veterans 65 years of age or older to report any side effects after getting the influenza vaccine or placebo. The results showed that there was no difference in the incidence of flu-like symptoms between those who received the vaccine and those who did not.<sup>6</sup>

## HEPATITIS B VACCINE

The concern that the hepatitis B vaccine causes Sudden Infant Death Syndrome (SIDS) came about when a child died from SIDS 16 hours after receiving the vaccine. This story was aired on the television program *20/20* and spurred a public reaction necessary of attention. The

problem with this claim is that this was only one child out of millions who had received the vaccine with no ill effects. While numerous infants die of SIDS annually, it is presumptuous to assume a vaccine causes SIDS solely because one child died soon after receiving the hepatitis B vaccine. When looking at the incidence of SIDS in both immunized and unimmunized infants, no evidence that hepatitis B vaccine causes SIDS could be found.<sup>2</sup>

### VAERS

Adverse events associated with vaccines are monitored by the Vaccine Adverse Events Reporting System (VAERS). This system is in place to protect the public from unsafe vaccines. If enough reports are sent to VAERS by physicians, vaccine recipients, or anyone else involved with the vaccination process, then the vaccine undergoes intense review. Also, many concerns about vaccines and medications in general can be attributed to anecdotal stories. Incorrect conclusions may be derived from these, and the conclusions may lead to widespread panic among the public. A prime example is the previously mentioned concern with SIDS and the hepatitis B vaccine.

Many vaccines have minor adverse effects associated with them, such as injection site irritation. However, major adverse effects are associated with some vaccines, most notably, the possible association of Guillain-Barré syndrome to the influenza vaccine and Menactra<sup>®</sup> (meningococcal conjugate vaccine). A recent article provided insight into how often this adverse effect occurs with Menactra<sup>®</sup>, which became available March 2005. Seventeen cases within six weeks of vaccination had been reported to VAERS as of September 2006. Currently, no causal relationship between Menactra<sup>®</sup> and Guillain-Barré syndrome can be clearly established.<sup>7</sup> However, data suggest that a trend or possible causal relationship may exist. The CDC recommends the continued immunization for meningococcal disease due to the significant risk associated with the disease. More research needs to be done to determine any causal relationship between Menactra<sup>®</sup> and Guillain-Barré syndrome.<sup>7</sup> Guillain-Barré syndrome has been reported to VAERS as

an adverse effect of the influenza vaccine<sup>8</sup>, however, more research needs to be done to establish a causal relationship.<sup>9</sup>

It is imperative that children receive immunizations according to the schedule laid out by their health care providers. Vaccines provide crucial protection against deadly diseases. Even though many claims have been made to discredit vaccines, studies to evaluate the risks associated with not receiving vaccinations show time after time that the benefits far outweigh the risks.

A final poignant example involves Japan's decision in 1975 to stop using the pertussis vaccine due to potential toxicities. In the three years prior to the discontinuation of the vaccine, there were 400 cases of pertussis and ten deaths due to the disease. In the three years following the discontinuation of the vaccine, there were 13,000 cases of pertussis resulting in 113 deaths.<sup>7</sup> Incidences such as Japan's clearly show how necessary vaccines are and that the minuscule risk associated with many vaccines is overshadowed by the number of lives that they save. ●

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