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## October 2005 Issue

### Parents Pack Newsletter

#### Possessing, Accessing and Communicating Knowledge About Vaccines

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#### Feature Article: *Babytalk* magazine publishes article about vaccine myths

In its September 2005 issue, *Babytalk* magazine published a useful article about vaccines called "10 Vaccine Myths -- Busted." The article, written by Beth Howard, carefully examined many of the myths and questions surrounding vaccines and their safety. We have received permission from the editors to reprint this article in its entirety below:

Why are vaccines under fire? Some experts say it's due to their success. "It's the natural evolution of a vaccine program," says Paul Offit, M.D., chief of infectious diseases and director of the Vaccine Education Center at the Children's Hospital of Philadelphia. "As you eliminate the diseases, people are not as compelled to get vaccines." Adds Kathryn

Edwards, M.D., spokesperson for the National Network for Immunization Information, "Many diseases are out of sight and then out of mind. So people don't see the value of vaccines."

Yet high immunization rates are necessary to keep diseases like measles and even polio from making a dangerous comeback. Here are ten myths about vaccines -and the truth behind them.

#### Myth1: Getting so many vaccines will overwhelm my child's immune system

No doubt about it, the immunization schedule recommended by the Centers for Disease Control and Prevention and the American Academy of Pediatrics (AAP) can seem daunting. Your child can receive up to 23 shots by the time she's 2 years old and as many as six shots at a single doctor visit. So it's not surprising that many parents have concerns about how vaccines might affect a child's developing immunity and often cite these as a reason to refuse a vaccine.

But it should be the least of your worries. "Children have an enormous capacity to respond safely to challenges to the immune system from vaccines," says Dr. Offit. "A baby's body is bombarded with immunologic challenges - from bacteria in food to the dust they breathe. Compared to what they typically encounter and manage during the day, vaccines are literally a drop in the ocean." In fact, Dr. Offit's studies show that in

theory, healthy infants could safely get up to 100,000 vaccines at once.

The bottom line: It's safe to give your child simultaneous vaccines or vaccine combinations, such as the five-in-one vaccine called Pediarix, which protects against hepatitis B, polio, tetanus, diphtheria, and pertussis (also known as whooping cough). Equally important, vaccines are as effective given in combination as they are given individually.

**Myth 2: As long as other children are getting vaccinated, mine don't need to be.**

Skipping vaccinations puts your baby at greater risk for potentially life-threatening diseases. "The ability of immunizations to prevent the spread of infection depends on having a certain number of children immunized," says Thomas Saari, M.D., professor of pediatrics at the University of Wisconsin Medical School in Madison. "Scientists refer to this as 'herd immunity.' Unfortunately, the level of immunization required to prevent diseases such as measles from spreading from child to child is high - 95 percent." In 2003, the national vaccination rate in children ages 19 to 35 months was only about 80 percent - though that number increases to the mid-90s when children reach school age. These rates may not be high enough to provide herd immunity, especially as exemptions from school vaccines are on the rise. In studies from Colorado, where residents claim high numbers of vaccine exemptions for medical, personal, and religious reasons, kids who are not immunized are at greater risk for disease. Case in point: They're 22 times more likely to come down with measles.

**Myth 3: Now that major illnesses have largely disappeared, we really don't need vaccines anymore.**

Don't bet on it. Despite our relatively high vaccination rates in the U.S., many American communities still have outbreaks of diseases like measles and pertussis, a respiratory illness characterized by spasms of coughing that can last for weeks or even months. In 2003, 13 children died of the infection.

Unvaccinated children can also spread infection to vulnerable family members. "Those children are more likely to give a disease to those who can't fight it off, such as a six-month-old or a grandparent living at home," says Dr. Saari. The incidence of whooping cough has been increasing since 1980, and the Centers for Disease Control and Prevention recently recommended a pertussis booster shot for 11-year-olds because the risk of passing the disease to a vulnerable relative is so high.

What's more, diseases are spread by people from foreign countries who travel here. "Air travel has extended the range of diseases from countries where people aren't immunized," says Dr. Saari. "We're no more than one airplane ride from being exposed to many diseases."

**Myth 4: Vaccines cause autism and other disorders.**

Concerns about a link between a combination vaccine for measles, mumps, and rubella - called the MMR vaccine - and the developmental disorder autism got kicked up by a case report from England seven years ago. But it has been roundly discredited. The notion has persisted because autism tends to emerge around the time that the vaccine is given - when a child is a year old. Experts stress, however, that this does not mean the vaccine caused the problem. "Not only is there no evidence that it causes autism, there's evidence that it doesn't cause autism," Dr. Offit says. "In fact, there have been 14 studies that show your risk of getting autism isn't any different if you got the MMR vaccine or if you didn't."

The Institute of Medicine backed up that conclusion in a report issued last summer. Worries linger, Dr. Offit adds, because "it's hard to unring the bell. People reasonably assume that if there is nothing to it, why was there so much smoke?" Parents have expressed similar fears about vaccines and the incidence of sudden infant death syndrome (SIDS). "Numerous vaccines are given to little babies over that first year, just when a lot of developmental changes are occurring," says Dr. Edwards. "If something happens around the time a vaccine is given, it's easy to think the vaccine caused it."

**Myth 5: My baby might get the disease it's supposed to prevent.**

"Most vaccines we give today, such as meningitis and DTaP, contain killed vaccines - not live agents that could replicate," says Dr. Edwards.

That's true of the scariest diseases doctors vaccinate against, such as polio, which was once made with live weakened polio virus. Until this type of vaccine was phased out, around 1994, a tiny fraction of people - one in 2.4 million - contracted polio from the vaccine itself. But since then, children in the U.S. have received polio vaccine made from killed virus, so there's no risk of contracting the disease from the shot. A few vaccines that are on the schedule do, however, contain live weakened virus to provoke an immune response. These include the MMR and chicken pox immunizations. "These vaccines have the potential to cause some mild illness - a little fever and rash," explains Dr. Edwards. "But the illness is much less severe than if a child naturally contracted measles or chicken pox."

**Myth 6: Vaccines can contain preservatives that are dangerous.**

Until recently, many vaccine concerns centered on the safety of thimerosal, a compound that prevents the vaccine from being contaminated by bacteria and contains a form of mercury called ethylmercury. Mercury in large quantities is known to be harmful to a child's developing brain. Worries about thimerosal's effect on children prompted its removal from nearly all childhood vaccines in 1999. (Thimerosal is still present in some flu vaccine - though you can ask your doctor for a thimerosal-free shot.)

Yet it's become clearer since then that ethylmercury does not pose the same health hazard as its cousin, methylmercury, a metal found in the environment that's known to accumulate in the body and cause harm to developing children. "The body is able to eliminate ethylmercury much more quickly than it can eliminate methylmercury," says Dr. Offit. University of Rochester researchers confirmed that when they compared mercury concentrations in the urine, blood, and stools of children who got vaccines containing thimerosal with those of kids who received only thimerosal-free vaccines. All the children had mercury levels well below the EPA's most stringent public safety limits.

Even if your baby received a vaccine that contained thimerosal, the overwhelming majority of data support a lack of association between the substance and neurological problems, says Margaret Rennels, M.D., the chair of the committee on infectious diseases of the AAP, who points out that children are exposed to mercury from many environmental sources. "The reality that a lot of people seem to miss is that the largest source of organic mercury is the environment: the air we breathe, the water we drink, and the fish we eat. That's due to the burning of coal," she says. You can lessen your child's mercury exposure by limiting the amount of fish she eats. The Food and Drug Administration says that it's safe for young children to eat albacore tuna once a week and fish that are lower in mercury (such as "chunk light" tuna, pollack, salmon, and catfish) twice a week. (Shark, swordfish, king mackerel, and tilefish, which have high mercury levels, are off the menu.)

**Myth 7: You shouldn't give a vaccine to a child who has a cold.**

It's reasonable to think that a sick child would be more likely to have a bad reaction to a vaccine or that it might present an added burden to her immune system if she's fighting off a cold. Yet studies show that having a mild illness doesn't affect a child's ability to react appropriately to the vaccine.

"Certainly if a child comes in with a fever of 102 and a rip-snorting ear infection, it's not the best time for a vaccine," says Dr. Rennels. "But a low-grade fever, mild respiratory infection, or a little diarrhea shouldn't be reasons to delay one, especially if the illness is on the way out."

Of course, vaccines can themselves trigger side effects, including fever and rash, as well as soreness at the site of the injection, but these are rarely cause for alarm. The five-in-one Pediarix is more likely to cause a low fever than the individual shots are, but many moms say the fewer injections for their child, the better. Call your doctor right away if your child has hives (which can indicate an allergic reaction), a fever of 105 degrees or higher, or convulsions.

**Myth 8: I had chicken pox when I was a kid and it isn't a big deal.**

Like several common childhood diseases, chicken pox isn't a big deal for most kids. "But on rare occasions children can die from it," Dr. Rennels observes.

Before the vaccine was introduced, many children were hospitalized each year with serious complications, including pneumonia and dangerous skin infections. "Chicken pox lesions can become infected with staph, including necrotizing fasciitis - the 'flesh-eating'

bacteria," says Dr. Rennels. Getting the vaccine is especially important now that less of the chicken pox virus is in circulation. "Children who don't get chicken pox or the vaccine are at risk of getting it as an adult, which is a much more serious illness."

**Myth 9: Vaccines can provide 100 percent disease protection.**

Not quite. The best vaccines are those made with live weakened virus, such as MMR and chicken pox, which are about 95 percent effective. The effectiveness of vaccines made with killed, or inactivated, virus is between 75 and 80 percent. That means there's a chance you could be vaccinated against a disease and still get it. But, says Dr. Edwards, if all children are vaccinated against an organism, it's less likely to hang around. That's why vaccinating an entire population is so important. "Not getting vaccinated is like failing to stop at a four-way stop," Dr. Edwards says. "If three people get vaccinated but one doesn't, the risk is not bad. But if two people don't get vaccinated, the burden of risk is greater on everyone."

**Myth 10: It's best to wait until children are older before starting to give them vaccines.**

Immunization schedules are designed to protect the most vulnerable patients from disease. If you wait to give the vaccine, you may miss the window when a child is most vulnerable. "When you get off the schedule, you really put your child at risk," Dr. Saari says.

Case in point: Last year in Wisconsin 300 children under age 1 came down with whooping cough, 177 of them less than 6 months old. Of these, half were hospitalized and three died. Yet, says Dr. Saari, "for a child to die from whooping cough in this day and age is criminal."

As our readers know, *Babytalk* supports parents' rights to make up their own mind about how to raise their kids. We try our hardest to avoid using the word "should" - except when it comes to safety. You should put your baby to sleep on her back, you should strap her into her car seat, and, yes, you should make sure she gets every vaccine on the schedule.

*Babytalk* contributing editor Beth Howard is a freelance writer and mother from North Carolina.

For more information about *Babytalk* or to see other articles, visit <http://www.babytalk.com/>.

**Spotlight: Vaccine information for the public**

Vaccine Information for the Public and Health Professionals is one of the Web sites provided by the Immunization Action Coalition. This site is a wonderful resource for parents and anyone else who may be interested in vaccine-related information. In addition to providing information about vaccines and the diseases they prevent, the site has information about vaccine concerns, people who have experienced vaccine-preventable diseases, photos, and video clips. To learn more, please visit <http://www.vaccineinformation.org/>.

**Did You Know? . . . Increased risk of disease in unimmunized children**

Studies have shown that children who do not receive vaccines are more likely to get vaccine-preventable diseases than children who were vaccinated. Unvaccinated children were 22 to 35 times more likely to get measles than children who had received a measles-containing vaccine. Likewise, they were almost 6 times more likely to get pertussis than children who had received a pertussis-containing vaccine.

**Ask the VEC -- What if people don't get immunized?**

Q. Can you tell me how the choice not to be immunized affects others?

A. Because an unimmunized person has a greater chance of getting a vaccine-preventable disease, he or she has a greater opportunity to pass the disease to others in the community who are not immunized. This includes people too young or too weak to receive vaccines. The choice not to get vaccinated may also affect people in the community who were vaccinated, but for whom the vaccine did not work or for whom

immunity has waned. In addition to the emotional and physical burdens resulting from illness, the costs for medical treatment are always greater than the price of a vaccine. Because society relies on the majority of its members to be vaccinated, some consider people who choose not to receive vaccines to be "free riders"; that is, they benefit from the fact that everyone around them has received the vaccine.

To read more about these issues, visit the ["Schools and Vaccines"](#) section of the Parents PACK Web site.

### Send us your comments

If you have any comments about this newsletter or suggestions about how we can make our Web site more helpful, please send your comments to [contactPACK@email.chop.edu](mailto:contactPACK@email.chop.edu).

#### About the Vaccine Education Center

The Vaccine Education Center at The Children's Hospital of Philadelphia is an educational resource for parents and healthcare professionals and is composed of scientists, physicians, mothers and fathers who are devoted to the study and prevention of infectious diseases. The Center is funded by the Werner and Gertrude Henle Endowed Chair in Pediatric Immunologic and Infectious Diseases, the Mabel Freeman Endowed Fund in Infectious Diseases and Vaccines at The Children's Hospital of Philadelphia, Kohl's Department Stores, and the Emily Koenig Fund for Meningitis Awareness, Education and Research. The Center does not receive support from pharmaceutical companies.

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