Vaccines: The Reality Behind the Debate

Wary parents want to protect their child from any possible risk. It's time to inject a dose of reality into the rumor-driven debate. By Kelley King Heyworth

As Summer Estall approached her first birthday, her mom, Lisa, had more on her mind than party plans. Summer was about to receive not only cake and presents, but also -- surprise! -- her fourth round of shots in ten months. "Her last vaccinations had been tough," says Estall, of Grand Forks, North Dakota. "She was her usual happy self after being examined by the doctor, but then we were called into a room where two nurses were both holding long needles. They told me to lay Summer on the table, pull her pants down, and pin down her arms. Of course, she started to scream, and it felt like I was preparing her for torture. By the time the nurses got the Band-Aids on, Summer seemed to be okay -- but I was a wreck."

However, it wasn't just the painful pricks that worried Estall about her daughter's 12-month shots. "Everywhere I go, someone's talking about the danger of vaccines," she says. "There are moms posting about their kids' side effects on just about every online parenting forum. The other day I had coffee with two friends, and one of them said she wasn't vaccinating her kids. I can't help but wonder: Should I really be injecting a healthy child with these things?"

The answer from the vast majority of medical experts is a resounding "yes." The Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP) recommend that healthy children get vaccinated against 14 diseases by age 2 (with boosters later for some), along with an annual inoculation against the flu. In fact, the government supports vaccines so strongly that any uninsured child can walk into a clinic and get his or her shots for free. "Immunizations are simply one of the greatest public-health achievements," says Mary Glodé, M.D., professor of pediatrics at the University of Colorado in Denver.

And yet, despite doctors' reassurances and mounting evidence that underscores the safety and value of vaccination, many educated, dedicated parents are still wary of vaccines -- or passionately opposed to them. Although the national immunization rate has remained stable over the past decade (76 percent of children ages 19 to 35 months were up-to-date on all of their shots in 2008), that's still short of the government's goal of 80 percent. In some pockets of the country, a rising number of parents are delaying shots for their kids or skipping certain ones altogether, citing religious or philosophical exemptions from state laws that require kids to be vaccinated in order to attend school. As a result, there have been recent outbreaks of serious diseases that vaccines had virtually wiped out in the U.S., including measles, mumps, pertussis (whooping cough), and haemophilus influenzae type b (Hib), which was once the most common cause of bacterial meningitis in kids under 5.

Infectious-disease specialists say these cases are due to a breakdown of what's known as "herd immunity." In order for a community to be fully protected against a disease, 80 to 90 percent of its population needs to have been vaccinated, says pediatrician Lance Rodewald, M.D., director of the Immunization Services Division of the CDC. Whenever coverage drops significantly below that level, a school, a church, or a neighborhood becomes susceptible to the disease. Babies who aren't old enough to get the shot yet are at the greatest risk of becoming sick.

Most of the recent measles outbreaks have been traced to individuals who visited a country where vaccine-preventable diseases still flourish. "The fact is, all of these diseases still exist -- some circulate in this country and others are only a plane ride away," says Dr. Rodewald. "They could easily become widespread again if more people refuse vaccines."

The Big Fear

Ask parents what scares them most about the shots, and you'll likely get one answer: autism. Many people believe that the increased number of vaccines -- children now get twice as many as they did in 1980 and can receive up to 20 injections by their first birthday -- are to blame for the rise in kids with autism spectrum disorders (ASD). The idea first made headlines in 1998, when Andrew Wakefield, M.D., a British gastroenterologist, published a study of 12 children in The Lancet that

linked the measles, mumps, and rubella (MMR) combination vaccine with intestinal problems that he believed led to autism. The following year, the AAP issued a warning about thimerosal, the mercury-containing preservative that was found in most vaccines. Though it didn't mention autism specifically, it suggested that the use of vaccines with thimerosal could theoretically push an infant's total exposure of mercury, a neurotoxin, above safe limits, and it recommended that the preservative be removed from shots. The vaccine-autism hypothesis was solidly in the mainstream by the time actress Jenny McCarthy went public with her belief that vaccines caused her son's autism, describing in heartbreaking detail how "the soul left his eyes" on a 2007 segment of the The Oprah Show. "It was enough to scare any mother," says Eileen Pike, of West Palm Beach, Florida, who has chosen to delay certain vaccines for her son, now 23 months.

However, at least seven large studies in major medical journals have now found no association between the MMR vaccine and ASD -- and this February, The Lancet officially retracted Dr. Wakefield's original paper. (Revelations that he had failed to disclose connections to lawyers involved in vaccine litigation also emerged.) In March, the U.S. Court of Federal Claims, Office of Special Masters, a group of judges appointed to handle cases of families who believe immunizations were responsible for their child's autism, ruled that thimerosal in vaccines does not increase the risk of the disorder. (In 2008, a federal judge did award compensation to the family of Hannah Poling, a child with mitochondrial disorder, a rare condition that can show symptoms of autism, which she was diagnosed with shortly after receiving five vaccines.) Several demographic analyses have also found that autism rates continued to rise even after thimerosal was removed from all vaccines except some flu shots.

So why are there so many stories of children developing autism shortly after immunizations -- not just in the media, but also in the Vaccine Adverse Event Reporting System, the federally cosponsored program that collects reports of suspected vaccine-related injury or illness? Experts believe that the association is almost certainly coincidental. Children get their first dose of the MMR vaccine at 12 to 15 months, the age at which autism symptoms typically become noticeable, says Paul Offit, M.D., director of the vaccine education center at Children's Hospital of Philadelphia and the author of Autism's False Profits: Bad Science, Risky Medicine, and the Search for a Cure. "It's the same reason why there are reports of SIDS deaths after DTaP (diphtheria, tetanus, and pertussis) immunizations," says Dr. Offit. "Infants start the DTaP vaccine between 2 and 6 months, which is the time they're also most likely to die from SIDS." In fact, some autism activists now believe that we should't even do more studies about a possible vaccine connection because they take attention and money away from important research that is investigating other potential causes of the disorder. "We have to move forward and be willing to accept what science tells us: Vaccines do not cause autism," says Alison Singer, president of the Autism Science Foundation and the mother of a child with autism.

Weighing The Risks

That doesn't mean that vaccines aren't capable of causing adverse effects beyond a sore arm and a slight fever. In 1986, the government created the National Vaccine Injury Compensation Program to reimburse families whose children had serious side effects, and it has awarded nearly $2 billion on 2,398 claims. But most doctors say that the odds of experiencing a vaccine-related injury are greatly outweighed by the dangers of catching a vaccine-preventable disease. The measles vaccine, for instance, can cause a temporary reduction in platelets (which control bleeding after an injury) in 1 in 30,000 children, but 1 in 2,000 will die if they get measles itself. The DTaP vaccine can cause seizures or a temporary "shocklike" state in 1 in 14,000 people, and acute encephalitis (brain swelling) in 11 in 1 million. But the diseases it prevents -- diphtheria, tetanus, and pertussis -- are fatal in 1 in 20 cases, 1 in 10 cases, and 1 in 1,500 cases, respectively.

If the FDA determines that a vaccine poses a real risk to more than a tiny percentage of children, the agency won't let it be used. "Before a new vaccine is approved, it goes through a prospective, placebo-controlled trial involving tens of thousands of children," says Dr. Offit, who was a cocreator of RotaTeq, one of two current rotavirus gastroenteritis vaccines. Once a vaccine is in use, side-effect reports are analyzed by the Vaccine Safety Datalink, a program that collects patient information from managed-care organizations. In 2001, government scientists concluded that Wyeth's Rotashield, an earlier vaccine against rotavirus, could cause one extra case of bowel obstruction for every 10,000 babies who were immunized each year, and they halted its use in the U.S. Sometimes vaccines are pulled from shelves as a precaution: In

2007, certain lots of Merck's Hib vaccine were recalled after the company found bacteria on manufacturing equipment, even though the vaccines themselves tested negative for contamination.

The Case for a "Middle Ground"

Not all parents are reassured by facts like these. After all, most have met a child with autism; probably few have seen one who has crippling polio. Moms want to eliminate even a remote chance that their child will experience side effects from a vaccine, and they may fear that multiple injections could overwhelm the immune system. In fact, a national survey of parents published in Pediatrics last month (although conducted in 2009, before the retraction of Dr. Wakefield's study), found that 54 percent of parents were concerned about the serious adverse effects of vaccines, and 25 percent believed that some vaccines cause autism.

Enter Robert Sears, M.D., author of The Vaccine Book: Making the Right Decision for Your Child. Published in 2007, it includes a different immunization schedule that delays or spaces out several vaccines so that children never receive more than two shots at a time -- and it has become a bible for many parents. Dr. Sears says that his main purpose is to make sure that children whose parents would otherwise opt out of immunizations get at least some protection. His top concern is aluminum, an ingredient that is added to half of all vaccines to boost their effectiveness. "Most experts believe the amount of aluminum contained in vaccines is safe, but studies in human infants haven't proven that," says Dr. Sears. "Spacing them out seems like the best way to limit overexposure."

Research has shown, however, that kids are exposed to more aluminum in breast milk or infant formula than through vaccines. And in 2004, The Cochrane Collaboration, an international not-for-profit health-care research organization, analyzed five studies on the effects of aluminum-containing vaccines and concluded that children who receive them are no more likely to experience any serious or long-lasting health problems than those who don't. For parents who are concerned about overburdening their child's immune system with multiple vaccines, Dr. Offit points out that young children are exposed to more antigens -- bacteria, viruses, toxins, and other substances that can stimulate disease-fighting antibodies -- in a single day of eating, playing, and breathing than they are through immunizations.

While popular with some parents, Dr. Sears's alternative schedule has been criticized by the AAP. "Vaccines protect babies' immature immune system," says Margaret Fisher, M.D., a pediatrician at The Children's Hospital at Monmouth Medical Center, in New Jersey, and chair of the AAP section on infectious diseases. "When you delay vaccines, you leave children unprotected against dangerous diseases at the time when they're most vulnerable." In 2008, for example, three of the five kids in Minnesota who developed invasive Hib disease (one of whom died) had parents who'd chosen to postpone vaccination. "People always ask me, 'Which shot can I skip?'?" says Dr. Fisher. "Honestly, I can't think of one I'd wait on."

A Safer World

At the heart of the vaccine debate is the idea that when you immunize your children you don't just protect them -- you help shield your entire community. Since some kids can't get certain vaccines because they are allergic to ingredients like eggs, or because they have immune-system deficiencies that prevent vaccines from working (such as those with cancer who are undergoing chemotherapy), many people feel that it's up to healthy children to keep vaccination rates at a level that protects the "herd" as much as possible.

This argument isn't just pitting parents against parents -- it's also turning parents against their pediatricians. "Parents often have a hard time reasonably assessing the risks involved because they've never had any experience with many of the disealses that vaccines prevent," says Parents advisor Ari Brown, M.D., a pediatrician in Austin, Texas, and author of Baby 411. "But I've seen children with serious cases of measles, mumps, and whooping cough, and I have seen a child die from chicken pox. I promise you that these are diseases you don't want your child to get."

Although some doctors are refusing to take on patients whose families don't plan to immunize, it's important for parents and pediatricians to have respectful conversations. In the end, many doctors say that the strongest statement they can

make in favor of vaccinating kids is to point to the family photos on their office walls. "Sometimes the only way that I can get through to nervous parents is by telling them that I don't do anything different for my own two children," says Dr. Brown. "Fortunately, most parents do decide to vaccinate."

That was the case last year when Lisa Estall overcame her fears and celebrated Summer's first birthday with a round of immunizations. And it was the case when Alison Singer brought her 12-year-old daughter, Jodie, who has autism, in for an H1N1 shot. "Kids were dying all across the country from this flu. Just because my daughter has autism doesn't mean she should be denied a potentially lifesaving vaccine," she says. "On the contrary, I wanted her to be protected."

Vaccines: The Reality Behind the Debate

Background Knowledge-Before you read

1. Read the above title of the Article. What is a vaccine? Why would there be a debate over them?

2. What are some reasons parents are delaying shots for their kids?

3. Is there consequences to children not receiving vaccinations? What are the consequences and who is most at risk?

The Big Fear

4. What scares the most parents about giving their children shots?

5. What is the explanation to why so many stories with children developing autism shortly after their immunizations?

Weighing the Risks

6. Explain why Doctors say that the odds of experiencing a vaccine-related injury are greatly outweighed by the dangers of catching a vaccine-preventable disease, give examples of what they mean by this.

The Case for a "Middle Ground"

7. What did Robert Sears, M.D. change about immunizations? What was his reasoning?

8. Why do some people criticize Robert Sears immunization schedule?

<u>A Safer World</u>

9. Why can certain children not get vaccinated?

10. What is meant by it's up to healthy children to keep vaccination rates at a level that protects the "herd" has much as possible?

11. After you have read the 'Vaccine Debate', would you vaccinate your own child, why or why not?

12. If you chose to vaccinate your child---> what would you tell parents who disagree with this decision?
If you chose not to vaccinate your child--→ how will you handle your child getting a disease that could be deadly?