



# Calling the Shots:

## Children and Vaccinations

by Lori Solomon

**E**very parent in the pediatrician's waiting room knows what the wails coming from down the hall mean. **Shots.** These days, babies, preschoolers, even teenagers are subjected to the infamous needle poke more often than ever before.

### Don't vaccines carry risks?

As with any medicine, a vaccine can cause side effects – from rare, serious problems, including allergic reactions, to more frequent, minor, localized reactions such as redness or swelling. Swelling or redness can occur at the injection site in up to 1-in-4 children for vaccines such as DTaP (diphtheria, tetanus and pertussis) and Hib (Haemophilus influenzae type B), according to the CDC. Mild rashes may occur in up to 5 percent of children receiving doses of MMR (measles, mumps, rubella) or the chickenpox vaccines. Severe reactions are very rare. In fact, severe allergic reactions to DTaP and hepatitis B occur in less than one in a million doses. Other serious reactions, including seizure, coma and brain damage, have been reported so infrequently that investigators have been unable to say that vaccines were the cause. While the side effects of vaccinations can sound scary, health officials say the risk of illness and death from preventable diseases is far greater. “Most known identified risks [from vaccines] are mild,” says Dr. Robert Wiskind, a pediatrician at Peachtree Park Pediatrics in Atlanta. Wiskind advises parents to look at what each vaccine wards off to gain some perspective. “Some are for very rare illnesses with very serious consequences like meningococcal meningitis. In other illnesses, like chickenpox, the vast majority [of patients who contract it] do just fine. Some, like hepatitis B, have life-long consequences. With hepatitis B, you have an increased risk for liver failure and liver cancer later in life.”

Children in this country now receive an estimated 200 million vaccine doses annually, according to the Centers for Disease Control and Prevention (CDC). The recommended immunization schedule for children has grown both in number and complexity in recent years, causing parental uncertainty over which vaccines are necessary as well as increased concern over safety. Meanwhile, health experts are trying to reassure parents that the added vaccinations are safe and essential to children's wellbeing.

“We do have more immunizations than we used to, and from my perspective that is a great thing. Now we can prevent diseases that we used to not be able to prevent,” says Dr. Melinda Wharton, deputy director of the CDC's National Center for Immunization and Respiratory Disease.

Infants and young children, who are most vulnerable to contagious and potentially deadly diseases such as diphtheria and pertussis (whooping cough), receive vaccinations early. And a lot of them. In the first 15 months of life, children may receive up to 25 shots, including five new vaccines that have been introduced to the children's immunization schedule since 1995: varicella (chickenpox); rotavirus (diarrheal disease); hepatitis A; pneumococcal (pneumonia); and influenza (flu).

But even older children face more sticks these days. Doctors recommend that 11- and 12-year-olds get vaccinations to prevent meningococcal diseases, the flu and human papillomavirus, or HPV, which can cause genital warts, cervical and anal cancers.

Some parents, especially those who have to battle to get their kids to the doctor, remain skeptical that this growing barrage of shots is really necessary. “While almost all parents know intellectually that vaccines keep their kids safe, a parent's whole life is devoted to protecting this tiny being. It's understandable that emotionally, for some, it just feels wrong watching [their kids] be stuck,” says Dr. Amy Baxter, director of emergency research for Pediatric Emergency Medicine Associates.



## Why should I put my child through this?

Vaccinations help protect against diseases or make diseases less severe if contracted. They work by introducing a body's immune system to either a dead or recognizable live piece of a disease-causing virus or bacteria (antigens). The immune system then develops antibodies, or disease-fighting cells, which are then stockpiled to fight off the disease if the body is exposed to it again. A vaccine is designed to introduce just enough of these antigens to trigger the immune system to respond, but usually not enough to cause illness.

## Do Vaccines Pose a Risk?

Parents are learning about these new vaccinations in a climate of lingering doubt and confusion over the real risks associated with vaccinations and amid warnings by health experts of the potential perils of not vaccinating. Some parents question the number of shots given in a short amount of time to young children.

Vaccinations do not overwhelm a child's immune system, the American Academy of Pediatrics maintains, and, in fact, the germs contained in the shots pale in comparison to those that children are exposed to daily while playing, eating, even breathing. The number of antigens that children fight every day is estimated to be 2,000 to 6,000 – far greater than the number in any combination of vaccines on the current vaccine schedule (or 150 for the whole schedule combined).

While the national recommendations for when and how many vaccines should be administered are the standard of care in pediatricians' practices, there is some flexibility built into the schedule and some pediatricians are willing to spread out vaccinations within a given age range. "The vaccinations must be received on time to

achieve maximum protection possible," Wharton says. "Some families choose to administer the vaccines within the range but not as many at one time. But, there is a limit to how many [office] visits most people want to make."

Allegra Goodman of Smyrna has four boys in her extended family with autism, a disorder that some parents maintain is linked to vaccines despite scientific evidence to the contrary. When Goodman had her own son, who is now 4, she did research and worked with her pediatrician on an alternative vaccination schedule that she felt comfortable with – including beginning immunizations at age 2 and not introducing new vaccines within two months of each other. She also breastfed her son until he was almost 2 – the time they began immunizations – to provide him additional immunity. "I'm not saying the vaccines caused [the autism]. It is probably some genetic predisposition, but I was not willing to take that risk," Goodman says. Altering the schedule is harder for doctors, she acknowledges. "It is not cookie-cutter and some are not supportive."

But to address concerns over vaccine safety, the National Vaccine Injury Compensation

Program was established in 1988. Since then, there have been only about 14,000 petitions filed claiming that the shots caused harm. Of those, 2,700 claims have been paid for injuries ranging from anaphylactic shock to permanent upper arm damage to polio infection caused by a vaccine.

Vaccine safety rose to the forefront of medical journals and popular news reports following the initial publication of a now-discredited study in 1998 that claimed an association between the MMR vaccine and autism. The study by British researcher Andrew Wakefield, now exposed as an "elaborate fraud" by the British Medical Journal, did ongoing damage to public health. It is now known that Wakefield misrepresented or altered the medical histories of the 12 patients who were included in his study. Five of the children whom he described as "previously normal" actually had evidence of developmental problems before receiving the vaccine, and three were never diagnosed with autism.

Additionally, Wakefield, whose medical license was revoked, failed to disclose that he had been paid more than \$670,000 by a law firm that intended to sue vaccine manufacturers. However, when the study was published, it triggered widespread alarm. Subsequently, vaccination rates plummeted, leading to spikes in disease outbreaks around the world.

*Cont'd on page 36*

# Calling the Shots: **Children and Vaccinations**

Although researchers have been unable to find any correlation between the simultaneous increases in autism rates and vaccinations, some parents remain unconvinced and are willing to forgo vaccinating their children. “We certainly had some discussion about whether to vaccinate,” says Jennifer Lockridge, a Morningside mother of a 9-month-old daughter and step-mom to a 9-year-old son with autism. “As a parent, we want to research everything and make the best decision for our child. I, myself, am a facts-based person and try to not be influenced by what is swirling around in the media. I know there are ideas, rumors and theories out there, but everything I came up with said there is a bigger risk to not vaccinate.”

## **Risk from Vaccination Refusal**

While the risk of any vaccine causing serious harm is extremely small, health experts say the risk from not vaccinating is very real. High vaccination rates are necessary to stop diseases from spreading or penetrating a community. The more people who are vaccinated, the more that helps protect those who may not be vaccinated, or whose immune systems are compromised (such as cancer and organ transplant patients), or those whose vaccinations did not fully work. CDC data shows that diphtheria, tetanus, poliomyelitis and rubella have been virtually eliminated in the United States. Hepatitis A and B have declined 89 and 81 percent, respectively, compared to pre-vaccine era estimates.

Despite some parents’ concerns about shots, the country’s vaccination rates remain



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high. In fact, in September, the CDC reported that immunization rates for 19-35 month old children for most vaccine-preventable diseases are increasing or remaining at high levels, with rates for the most commonly recommended at or above 90 percent. But according to research from Georgia’s Immunization Program, the state’s childhood immunization rates peaked in 2004 at 81 percent and have dropped to 78 percent in 2008, the most recent year that data are

available. (Within the metro Atlanta area, immunization rates varied from 93 percent in Gwinnett County to 69 percent in Clayton. Fulton’s rate was below 75 percent.)

“We have found through our work that people who refuse vaccinations cluster geographically,” says Dr. Saad Omer, an infectious disease epidemiologist at Emory’s School of Public Health. “If the refusals were spread out evenly, the risk might be lower.”

“Your community’s refusal rates affect your child’s risk. Vaccines are very good, but they are not 100 efficacious,” Omer says. So, he says, even if you do the “right thing” and get your child vaccinated, it may not be completely effective in preventing disease. If your child is surrounded by unvaccinated people who are more susceptible to disease outbreaks, “their risk goes up depending on who is in their playgroup or whom they go to school with.”

Pertussis, mumps and measles outbreaks continue to occur throughout the country. In 2010, nearly 9,500 cases of pertussis were reported in California alone, the most in 65 years. In the first four months of this year, 118 cases of measles have been reported in the country, the highest number since 1996, with many occurring in California

## **Who shouldn’t get vaccinated?**

**Your pediatrician may delay a vaccine if your child has a moderate or severe illness. Mildly ill children generally can be vaccinated.**

- Anyone who has had a serious allergic reaction – hives, difficulty breathing, shock, etc. – to a shot should not be given that vaccine again.
- Patients with certain allergies, for instance, people with a severe egg allergy, should not get an influenza vaccine. Anyone with a life-threatening allergy to baker’s yeast should not get a hepatitis B vaccine. Tell your pediatrician if your child has any allergies.
- A child with a weakened immune system due to cancer or AIDS should not be given certain vaccines.
- Certain vaccines are OK for expectant mothers, while others are not. Make sure to tell your doctor if you might be pregnant.

Source: Centers for Disease Control and Prevention

Cont’d on page 39





**“The physiology is called ‘gate control.’** The

nerve pathway is only big enough for two things. Pain doesn't have as much room to squeeze through the 'gate' past the cold and the vibration.”

Dr. Amy Baxter,  
developer of Buzzy

# The Emotional **Sting** of Vaccinations

New research shows that while childhood vaccines can prevent serious illnesses, bad shot experiences may scar kids so badly that they don't want to see doctors later on in life.

Nearly 1-in-4 adults dislikes needles so much that they will delay or forgo medical care, and 75 percent of adults won't donate blood because of a fear of needles (trypanophobia). Adults may not remember a specific event, but they hold that needle-induced trauma against the entire medical field, says Dr. Amy Baxter, director of emergency research for Pediatric Emergency Medicine Associates and a pediatric emergency physician at Children's Healthcare of Atlanta at Scottish Rite.

“As pediatricians, we only see children as children. We don't see the delayed effects of needle-phobia, when some patients actually avoid medical care later in life,” Baxter says. Current research suggests a fear of needles usually develops when a child is around 4 or 5 years old, she says.

There are several reasons shots can be so traumatic at that age, Baxter explains. Some kids can't distinguish punishment from pain. “They can't abstract that something painful is medicine to keep them safe,” she says. “Also, around age 5, kids start to have a less intense perception of pain. A 4-year-old will report higher pain than a 5-year-old for the same event.”

After Baxter's own son was so traumatized by shots that he would literally throw up at the doctor's office, she developed Buzzy. The hand-held device, which comes in the shape of a plastic bee (also available in plain black for needle-hating grown-ups), uses a combination of vibration and cold to take the sting out of shots. Currently used in 150 children's hospitals worldwide, Buzzy is about the size of a computer mouse and can also be used to lessen the pain of IVs and blood-draws. Parents may want to purchase one to tote to the doctor's office or to treat stings and splinters.

*Cont'd on page 38*



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## The Emotional **Sting** of Vaccinations



"Like running cold water when you burn your finger, it soothes the pain," Baxter explains. "The physiology is called 'gate control.' The nerve pathway is only big enough for two things. Pain doesn't have as much room to squeeze through the 'gate' past the cold and the vibration."

Studies have shown Buzzy can reduce IV access pain by about 50 percent for kids 4 years and older. Baxter has received a \$1 million grant from the National Institutes of Health to study Buzzy's effectiveness for immunizations in children "in the hopes that if Buzzy reduces pain, they won't grow up fearing doctors," she says.

The medical community may want to reexamine the vaccine schedule for kids' emotional well-being, Baxter says. "Immunizations don't hurt kids, but shots do," she says. "I want to protect kids from preventable deaths and I would absolutely have kids fully immunized, but based on my research, around 5 is a better age to give shots. With more than three shots, a child's coping mechanism decreases."

Another reason shots are hard on kids is the lack of control that children have over the situation. If your pediatrician's office allows, you should let your child make some choices, she says. Does he want to sit on mom's lap or on the table? Would he like a song or a book or game to look at? What treat would he like afterward?

"We're still analyzing how much, if any, Buzzy helps very young children," says Baxter. "In adults, the more anxious they were, the more statistically effective Buzzy was. Babies and some kids still cry no matter what, but older children who know what shots usually feel like tell us how much Buzzy helps."

Buzzy can be purchased for use at home or at the doctor's office at [buzzy4shots.com](http://buzzy4shots.com) or [amazon.com](http://amazon.com) for \$39.95.

— Lori Solomon



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# Calling the Shots

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### on vaccines and vaccine safety:

#### Centers for Disease Control and Prevention

[cdc.gov/vaccines](http://cdc.gov/vaccines)

#### Georgia Department of Public Health – Immunization Section

[health.state.ga.us/programs/immunization](http://health.state.ga.us/programs/immunization)

#### American Academy of Pediatrics

[aap.org/healthtopics/immunizations.cfm](http://aap.org/healthtopics/immunizations.cfm)

#### American Academy of Family Physicians

[aafp.org/online/en/home/clinical/immunizationres.html](http://aafp.org/online/en/home/clinical/immunizationres.html)

and Minnesota. Almost 90 percent of the cases involved people who had not been vaccinated and who had contracted the disease while traveling abroad (both U.S. residents returning from travel and international visitors). Forty percent of the patients had to be hospitalized.

Georgia has been spared outbreaks like those seen in California and Minnesota – so far. “There are pockets of measles in communities not fully immunized, and it could become more widespread if larger percentages of people are not vaccinated,” says Dr. Robert Wiskind, an Atlanta pediatrician.

In Georgia, students who are not vaccinated can enroll in school if they qualify for medical or religious vaccination exemptions. Even so, during an epidemic, or even the threat of an epidemic, of a vaccine-preventable disease, children who are not immunized may be excluded from a school, daycare or other congregate setting until they get vaccinated or the threat subsides. Depending on the severity of the outbreak, experts say, children could end up missing months of school.

Additionally, many pediatrician offices are adopting policies that bar patients who refuse to vaccinate their children. Consider this diplomatic language that appears on the website of one local practice:

“At North Fulton Pediatrics, we feel that vaccinating children and adolescents is a vital part of our responsibility to promote health and well-being. ... If you are firmly against vaccinations or you feel that you do not want to discuss this important health topic, then our practice may not be the best fit for you and your family.” □

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