

A close-up photograph of a woman with dark hair tied back, smiling warmly at a baby she is holding. The baby has light brown hair and blue eyes, looking directly at the camera. The background is a soft, out-of-focus white.

# WHAT TO EXPECT<sup>®</sup>

## GUIDE TO IMMUNIZATIONS

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What You Need To Know About  
Your Child's Vaccinations

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## THE WHAT TO EXPECT GUIDE TO IMMUNIZATIONS: What You Need to Know About Your Child's Vaccinations

Quick — what does measles look like? What are the symptoms of polio? How about mumps? If you're like most moms or dads today, you may have heard of these serious childhood diseases, but probably have only the vaguest idea of what they actually are. And that's not surprising — even many health care providers haven't come any closer to many childhood diseases than a picture in a medical textbook.

There's a reason why some childhood diseases are only a distant medical memory — at least in this country — and why being a child today in the US is so much safer than it used to be. And that reason is vaccinations, one of the most important — and successful — public health interventions in history. Thanks to vaccines, widespread epidemics of such illnesses as smallpox, polio, diphtheria, measles, rubella, and mumps — devastating childhood diseases that were once serious threats to little ones in this country — are mostly a thing of the past.

But for vaccines to continue to help protect children, children have to continue being vaccinated — and that's where you come in. Though no parent likes to see a needle headed toward his or her little one, keeping up with those immunizations is by far one of the best ways to help keep your child (and all the rest of the children and adults in your community) healthy. And, believe it or not, it's easier than you'd think — especially now that you've got help at your fingertips.



Think of the *What To Expect Guide to Immunizations* as your partner in protecting your child from vaccine-preventable childhood illnesses. It's packed with important information that you'll need to know to keep your child fully vaccinated — information about the CDC-recommended vaccine schedule, answers to your questions about vaccine safety and effectiveness, and information about the diseases they prevent, tips on how to prepare your child for the needles coming his or her way, and much more. There's also an Immunization Tracker that will help you keep a record of which shots your little one receives at each vaccine visit, plus a place for you to jot down all your health care provider's instructions and answers to your questions.



# ALL ABOUT IMMUNIZATIONS

Have questions about all the needles that are headed your child's way? What's in them? How do they work? Are they safe? And why does your child need them all, anyway? You'll find the answers to those and plenty of other common vaccine questions here.

## Importance of Vaccines

### "Why are immunizations so important?"

As a mom or dad, you're always on the lookout for ways to protect your child. You're dedicated to baby-proofing and diligent about hand washing. You wipe down the shopping cart handle before your baby touches it, intercept the puddle-dropped cookie before your tot can insert it into mouth, and steer the stroller clear of coughers at the mall. But did you know that immunizations are another important way you can help protect your little one — and the little ones around you? Here are some of the protective perks of vaccinations:

**Protection from infection.** Vaccines are one of the best ways to help keep your children healthy. Before vaccines were available, diseases such as polio, measles, rubella,

smallpox, and diphtheria routinely made children sick, sometimes causing permanent harm (such as paralysis, brain damage, loss of vision or hearing, damage to major organs), and death. Thanks to vaccines, the chances are greatly reduced that your little one will contract any of these serious yet preventable illnesses.

**Protection for your community.** Vaccines help protect not only your children, but also the children and adults around you. Many outbreaks of preventable diseases occur when children in the community do not receive the recommended vaccines. Infections in unvaccinated children can spread to other vulnerable children or adults in the community, such as infants too young to receive vaccines, people with weak immune systems or elderly adults. Keeping up with vaccines for your family can help keep other families healthy, too.



### What's in a Name?

Vaccinations provide immunity, so they're often called immunizations. What's the difference between vaccinations and immunizations? Technically not much, which is why they're used interchangeably throughout this guide.

### Vaccines: Immunity The Easy Way

Back in the days before vaccines, the most common way to become immune to a disease was to catch it — and, depending on the disease, that was a risky (and often life-threatening) business, especially for children. Today, your child can skip the illness part and become immunized the easy way — by getting vaccinated. The immune system reacts to vaccines the same way it would if you were exposed to disease, helping to make your child immune to a specific disease. And in general if your child is immune, he or she won't get sick if exposed to the disease.

## Effectiveness of Vaccines

### "Do vaccines really work?"

Vaccines are really good at what they do, working up to 90 percent of the time. Because of routine immunization, the rates of vaccine-preventable diseases (and the risks they posed to the lives of young children) have been dramatically reduced in the US and in many other parts of the world.

It might seem strange to subject your child to shots for diseases that hardly anyone seems to get anymore — right?

Wrong. Some of these diseases might be rare in the US now, but that's only because children are now widely vaccinated. If parents stopped vaccinating their children (or became lax about vaccinations), these diseases could once again become widespread — and potentially as dangerous as they once were.

Because of routine vaccines, children are better protected from more diseases than ever before. And by keeping your child's immunizations up to date, you'll be helping to keep this amazing health care track record going strong — and even get better.



## Whose Schedule is it Anyway?

**"The health care provider told me that my baby get his shots according to a recommended schedule. Who decides which shots are recommended and when they should be given?"**

The system for keeping children free of infectious disease is a thorough process that begins with the Food and Drug Administration (FDA), which decides whether a vaccine is safe and effective.

Once a vaccine is reviewed and licensed by the FDA, several expert committees — including the Advisory Committee on Immunization Practices (ACIP), the Committee on Infectious Diseases of the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP) — review the evidence on the vaccine and then decide whether to recommend it. These committees also frequently review and update recommendations on existing vaccines.

Timing of vaccines also gets lots of careful consideration. In coming up with an optimal immunization schedule, experts take into account age-specific risks for disease, age-specific risks for complications, and age-specific immune response to a vaccine. Based on all of that information and more, they determine a schedule for each vaccine that will safely and effectively protect at the youngest possible age.

Once these recommendations are in place, individual states determine which vaccines should be required for daycare and school entry. Currently, all 50 states have school vaccination laws — although there are some differences in what may be required where.

Have questions about the recommended schedule for vaccination and how it applies to your baby? Ask your health care provider, the best person to advise you on which shots your child should receive and when.

## Timing of the Shots

**"Why do I need to make sure my child gets her vaccinations at the recommended time? Wouldn't she still be protected if she gets her shots six months late?"**

They say timing is everything, and that's definitely the case when it comes to vaccines. Studies show they are most effective when given at the right time.

That's because certain diseases strike at certain ages. Vaccines are developed with this in mind, to protect when the risk is greatest. By following the recommended schedule, you'll be able to ensure that your child will get the best protection possible, as soon as possible, against vaccine-preventable diseases.

Spreading out vaccine doses more than is recommended, or delaying vaccines entirely can leave infants and young children vulnerable. Should an outbreak of a vaccine-preventable disease occur (which happens often in communities where vaccinations are not widespread and has happened here in the US, too, when vaccination rates decline), little ones who aren't getting their shots according to the recommended schedule are at risk of developing serious diseases that can lead to hospitalization, disability, and even death.

Another reason to keep up with those immunization schedules: Studies show that children who fall behind with their vaccines are less likely to be fully vaccinated later and never benefit from full protection.



Still, if you've fallen behind, that doesn't mean that you have to give up. There are effective ways to catch up, and get your child back on vaccine track (see next question).

## Catching Up on Vaccines

**"We fell behind on some of our daughter's shots. Now what?"**

Schedules may be a matter of opinion when it comes to other areas of a baby's life, but when it comes to vaccinations, sticking to that recommended timetable is definitely considered the best plan. That said, if your little one is not up to date with vaccinations, it's not too late to get started or to pick up where you left off. Late or delayed immunizations are still better than no immunizations at all. In fact, the Centers for Disease Control and Prevention (CDC) even has a recommended "catch-up schedule."

## Shots at Such a Young Age

**"My baby is so little. Why are vaccines given at such young ages? Can't I wait until she's older?"**

Why make little babies and toddlers the targets of so many "big" vaccines? Because they're also the most likely targets of the diseases these vaccines prevent, precisely because they are so young. What's more, serious complications are most likely to strike the youngest children — an infection that can make an older child or adult miserable for a few days can make a baby or toddler dangerously ill. The recommended schedule is designed to protect infants and children by providing immunity early in life, before they're exposed to life-threatening diseases. So protecting your little bundle of joy with a full schedule of vaccines isn't just a safe way to go — it's the safest way.



## The CDC Recommended Immunization Schedule

Check out the parent-friendly version of the childhood immunization schedule by going to [www.cdc.gov/vaccines/parents/downloads/parent-ver-sch-0-6yrs.pdf](http://www.cdc.gov/vaccines/parents/downloads/parent-ver-sch-0-6yrs.pdf)

AGE	DTAP	IPV	MMR	HIB	HEP-A	HEP- B	VAR	PCV	ROTAVIRUS	INFLUENZA
BIRTH										
1 TO 2 MONTHS										
2 MONTHS										
4 MONTHS										
6 MONTHS										
6 TO 18 MONTHS										
6 MONTHS ON										'2 DOSES NEEDED IF FIRST FLU SHOT
12 TO 15 MONTHS										
12 TO 24 MONTHS					*2 <sup>ND</sup> DOSE NEEDED 6-18 MONTHS LATER					
15 TO 18 MONTHS										
18 TO 42 MONTHS										
4 TO 6 YEARS										

† Two doses given at least 4 weeks apart are recommended for children age 6 months through 8 years of age who are getting a flu vaccine for the first time and for some other children in this age group.

\* Two doses of Hep A vaccine are needed for lasting protection. The first dose of the Hep A vaccine should be given between 12 months and 23 months of age. The second dose should be given 6 to 18 months later. Hep A vaccination may be given to any child 12 months and older to protect against Hep A. Children and adolescents who did not receive the Hep A vaccine and are at high risk, should be vaccinated against Hep A.

**Note:** if your child misses a shot, you don't need to start over. Just go back to your child's doctor for the next shot. Talk to your child's doctor if you have questions about vaccines. If your child has any medical conditions that put him or her at risk for infection or is traveling outside the United States, talk to your child's doctor about additional vaccines that he or she may need.

### Vaccines: Myth/Reality



**REALITY:** When it comes to vaccines, once is not enough. Getting every recommended dose of each vaccine provides your child with the best protection possible against infectious diseases and the risks they pose, especially to babies and young children. Depending on the vaccine, more than one dose may be needed to build high enough immunity to prevent disease or protect against germs that change over time, such as flu. You may also sometimes need a booster to improve immunity, which in some cases can fade over time.

**MYTH: One vaccine in a series gives a child enough protection.**

### Vaccines: Myth/Reality



**REALITY:** The schedule of recommended shots may seem overwhelming, but research shows that healthy babies safely respond to numerous challenges to their immune system every day, from germs on the floor (the ones he or she picks up with that dropped cracker) to bacteria in foods, from dust in the living room air to cold viruses floating around the supermarket. Vaccines, say experts, are an insignificant drop in the immune system bucket compared to what babies successfully tackle each day. Not only won't the vaccines overwhelm your baby's immune system, but they'll actually help strengthen it.

**MYTH: My baby's developing immune system won't be able to handle all these shots.**



### Vaccines: Myth/Reality

**MYTH:** Since the risk of getting a childhood disease is so low, there's no need to immunize my child.



**REALITY:** Low risk isn't no risk — which means that an unvaccinated baby is a baby at risk. The only disease that has been completely wiped out in the world is smallpox (which is why smallpox is the only vaccine that is no longer needed). The rest of the diseases that children are immunized against are still around and may pose a risk to anyone who isn't fully vaccinated. In fact, experts frequently say that the diseases that are uncommon in the US are only a plane ride away. That's because outbreaks in this country often begin when an unvaccinated person travels to a country where vaccination isn't routine, and where diseases like polio, diphtheria, or measles still occur. The traveler then picks up the disease, and brings it home — a dangerous souvenir that can then be passed to anyone who isn't fully vaccinated, such as infants or adults who are not fully immunized. Foreign visitors and other adults can also bring diseases into the country.

Another good reason to immunize your baby fully: today's low risks could potentially grow into high risks. If enough parents stop immunizing their children, diseases that have been under control for years can and do make comebacks, causing epidemics.

### Case in Point: Measles

Think that you don't have to vaccinate your little one because the risk of vaccine-preventable diseases is so low these days? Think again. Lapsing rates of immunizations are the reason why epidemics begin — both in this country and abroad. It's happening now and will continue to happen if parents opt not to vaccinate their children or not to vaccinate them fully or on time. Case in point, measles:

- Between 1989 and 1991, lapsing rates of MMR vaccinations among preschoolers in the US led to a sharp jump in the number of measles cases. About 55,000 people became sick and 123 died.
- 2014 saw the most measles cases since 1996 — 610 cases reported during the first 10 months of the year — mostly striking unvaccinated children and adults.

### Case in Point: Whooping Cough

There's been an overall increasing trend of whooping cough (pertussis) in the US since the early 1980s, and the rates of this preventable disease have skyrocketed recently. In 2012 there were more than 48,000 reported cases of whooping cough. In 2013, nearly 30,000 people came down with the disease. The first seven months of 2014 saw nearly 18,000 cases — representing a 30 percent increase compared to the same period the year before. The worst part about whooping cough: About 50 percent of all children under a year old who catch it need to be hospitalized, and up to 2 percent of them die.

And since most whooping cough deaths are among babies who are too young to be protected by vaccination, it's important that you follow the CDC's recommendation that all moms-to-be get the Tdap vaccine between 27 and 36 weeks of pregnancy. This way you'll pass some immunity to your soon-to-be newborn that will help protect your baby until he or she is old enough to be fully vaccinated. For added protection, be sure that everyone who comes in contact with your baby (that includes dad and grandma and grandpa, too) is up to date with the whooping cough vaccines.

## Immunity From Diseases

**"I have a friend whose daughter got chickenpox even though she was vaccinated against it. What's up with that?"**

Vaccines have a pretty great track record. In fact, they work most of the time. Occasionally, however, a child won't have a full response to a vaccine (most often to the influenza and chickenpox vaccines). In those rare cases, the vaccine doesn't protect

completely but may prevent a serious case of the disease. Studies show that most children who contract diseases they have been immunized against end up with mild cases of it.

To boost coverage, a second dose of chicken pox vaccine is recommended between 4 and 6 years. If an immunized child does end up getting chicken pox, she'll usually have very mild case of it — only a few blisters instead of the typical outbreak.



## Vaccines: Myth/Reality

**MYTH: If everyone else's children are immunized, my child can't get sick — even if I don't immunize him.**



**REALITY:** Some parents believe that they don't have to immunize their own children if everyone else's children are immunized because there won't be any diseases around to catch. That so-called "herd" theory has serious limits. Here's why:

- It's believed that herd immunity can only occur for some diseases if at least 90 to 95 percent of people are vaccinated — and every person who isn't vaccinated increases the chance that they and others will come down with the disease in question.
- There's the chance that other parents are counting on the myth of herd immunity, too. The concept of herd immunity, after all, can lull moms and dads into a false sense of security — which can lead them to skip vaccinations. Not only does that pattern decrease the effectiveness of any herd immunity, but each child who doesn't get immunized increases the risk that these contagious diseases can spread. After all, it takes just one non-immunized person to get a disease and then spread it to others who aren't immunized — and that puts every unvaccinated child at risk.
- There are those who aren't yet fully vaccinated, those who are too young to be vaccinated, and those children who can't be vaccinated because they're immune-compromised are also put at risk.
- Tetanus, a vaccine-preventable disease, isn't covered by herd immunity because it's not a contagious disease. Tetanus bacteria are found in soil, dirt, dust, or manure, and can enter the body through a wound or cut. If your child isn't vaccinated against tetanus, it doesn't matter if everyone else is — he still won't be protected.

## Combo Shots

**"Many of the shots my baby has gotten seem to be for three or four diseases at once. Isn't that too much at a time?"**

Every mom and dad wants their child to be on the receiving end of as few needle pricks as possible, while still keeping them fully protected against preventable diseases — and every health care provider would like to give as few shots as they can, too. This is the reason for combination vaccines — which combine two or more

vaccines into a single shot. More and more combos are being introduced — for instance, Pediarix, which combines the DTaP, hep B, and IPV vaccines, and ProQuad, which combines the MMR vaccine with the varicella (chicken pox) vaccine — and depending on the preference of your health care provider, your child might be in line for one or more of these. The obvious good news about these combos: fewer shots for your child. The even better news: combo shots are just as safe and effective as individual shots.

## Vaccines: Myth/Reality

**MYTH: My child can get the disease from the vaccine itself.**



**REALITY:** Many vaccines are made from bacteria or viruses that have been killed — which means they can't make anyone sick with the disease they're intended to prevent. In other words, it's impossible to catch the flu from the flu shot, or pertussis from the DTaP shot, or hep B from the hep B shot, and so on. Even those vaccines that are made from weakened live viruses (like the varicella or measles, mumps, rubella vaccines) carry only a very small risk of causing disease symptoms, and they will be mild.

## Less Ouch With Those Shots

Needle pricks can look a lot worse than they actually feel (especially to the parent who's watching that needle head for baby's tender skin). The pain is fleeting, and it's a pain with a very significant gain (protection against diseases that would hurt a lot more). Still, there are ways to help your child feel less pain with every prick:

- A little cuddle. Studies show that babies who are held by their mom or dad when they receive their shots cry less.
- A little nursing. Breastfeeding immediately before or during the shot may lessen the pain babies feel. Plus, breastfeeding offers the cuddle benefit as well.
- Something sweet. A little dab of sugar water on your baby's pacifier or tongue — given right before the shot — can minimize the ouch factor.
- Anything distracting. Many babies and young children can be easily distracted from anything, and that includes pain. Singing a song, holding up a favorite toy, reading a book can distract your young child from the pain of a needle prick — or make the time go so quickly, they won't even know what stuck them. Blowing bubbles can be especially distracting, too — and once a child is old enough to mimic that blowing, the action itself could actually minimize the pain that's perceived.
- Numb it away. Another way to avoid that yelp is to pretreat the area that will receive the needle with an anesthetic cream before the shot. Ask your health care provider if such a cream is right for your child — and if he or she can prescribe the cream before your next shot.



## Vaccine Smarts

Years of research have gone into helping to make vaccines safe. Be smart about preparing for them and following up after the shots to make them even safer:

- Be sure your child receives a checkup before an immunization. If your baby has been sick, let your health care provider know. A common cold or other mild illness isn't considered a reason to postpone a scheduled vaccine, but a moderate or serious illness – with or without a fever – might be. If your health care provider suggests postponing immunization, make sure it's rescheduled as soon as your baby is feeling better.
- Ask about reactions. Reactions to vaccines are almost always mild (a little fussiness, maybe some soreness at the injection site) and nothing to be concerned about. Still, it's a good idea to ask your health care provider for a list of possible reactions and to watch your little one for any during the 3 days after immunization (or in the case of the MMR vaccine, in the week or two afterward). As a precaution, call your health care provider if your baby experiences any of the following symptoms:
  - A fever over 104°F
  - Seizures/convulsions
  - Major alterations in consciousness within 7 days of shot
  - Listlessness, unresponsiveness, excessive sleepiness
  - An allergic reaction (swelling of mouth, face, or throat; breathing difficulties; immediate rash). Slight swelling and warmth at the injection site is common and nothing to be concerned about (a cool compress should bring relief).
- Make a note of any reactions in your child's immunization or health record.
- Make sure that the vaccine manufacturer's name and the vaccine lot/batch number is noted in your child's chart, along with any reactions you report. Bring along your child's immunization record to every checkup so that it can be updated.
- Any reactions should be reported to the Vaccine Adverse Event Reporting System (VAERS) by your health care provider or you ([vaers.hhs.gov/index](https://vaers.hhs.gov/index)). If you believe your child may have been harmed by any vaccine, contact the Vaccine Injury Compensation Program (800-338-2382) or see [hrsa.gov/vaccinecompensation/index](https://hrsa.gov/vaccinecompensation/index) for information. This government program protects both those who produce vaccine and those who receive it.



## Mercury in Vaccines

**"Is there any mercury in vaccines? I've read that could be dangerous."**

Most of the recommended childhood vaccines (MMR, IPV, varicella, and PCV, for instance) *never* contained thimerosal – an organic mercury-containing compound that prevents the growth of dangerous bacteria and fungus. In 1999, the US Public Health Service recommended removing thimerosal as a preservative from vaccines. Today, except for some flu vaccines

in multi-dose vials, no recommended childhood vaccines contain thimerosal as a preservative. (And you can ask your health care provider about using only a thimerosal-free dose if you prefer.) In all other recommended childhood vaccines, no thimerosal is present. What's more, there have been no reputable scientific studies that have associated the thimerosal in vaccines with any risk of harm to babies and young children. The risk of autism from vaccines has been conclusively disproven.

## For The Latest...

To get the most up to date information on the newest vaccine combinations available for your child, check out [www.cdc.gov/vaccines/parents](https://www.cdc.gov/vaccines/parents) or [www.WhatToExpect.com](https://www.WhatToExpect.com).



## Vaccines: Myth/Reality

**MYTH: Vaccines cause autism or other developmental disorders.**



**REALITY:** Not one reputable study shows any relationship between vaccines and autism. This non-issue received a lot of attention after a 1998 article in *The Lancet*, a medical journal, linked autism and vaccines. This study was found by the worldwide scientific community to be an elaborate fraud. As a result, the article was pulled from the journal. Many subsequent studies looking for a link between vaccines and autism have shown no link at all. In other words, there is absolutely no credibility to the theory that vaccines cause autism. They don't and never did.



## Allergies and Vaccines

Serious allergic reactions to vaccines are not common, lower than one in one million vaccinations. If your baby didn't have an allergic reaction after the first dose of a vaccine, it's highly unlikely that he or she will ever have an allergic reaction to later doses of that vaccine. More good news: Even children with known allergies (to foods, for instance, or to synthetic materials) can be safely vaccinated with all vaccines.

Should a reaction occur (usually characterized by hives, difficulty breathing, wheezing, and so on), it would most likely happen within about 30 minutes, and the health care provider would be able to treat it (with antihistamines, steroids, epinephrine, etc.). And for the next dose, the doctor can usually administer an alternative form of the vaccine that is free of the allergen that caused the problem in the first place, or rarely, if the allergic reaction was serious, omit the vaccine that caused the reaction if an alternative is not available.



## Vaccines: Myth/Reality

**MYTH: Vaccines can cause asthma, allergies, and even autoimmune diseases such as type-1 diabetes.**



**REALITY:** Science isn't always the only thing you'll turn up on internet searches about vaccines. You'll probably come across plenty of theories that science has debunked, too. And this is one of those. No wide-scale research has ever shown that vaccines cause autoimmune disorders such as diabetes or multiple sclerosis, and large well-controlled studies have found no link between vaccines and an increased risk for allergies or asthma. Bottom line: another reason not to worry about vaccines...and another reason to consult your child's health care provider or reputable sources such as the CDC about concerns you have or rumors you've heard about immunizations instead of checking in with "Dr. Google."



## Getting Vaccinated While Sick

**"My baby has a cold and is scheduled for some shots this week. Should I postpone them until he's better?"**

A mild illness (a runny nose, an ear infection, a cough, mild diarrhea, or low fever) is never any fun. But it's usually not a reason to delay a vaccination. In fact, since many little ones (especially those in daycare) have frequent colds and other minor infections, skipping a shot because of a mild illness could lead to indefinite

(and unwise) delays. On the other hand, if your child is battling a moderate to severe illness or has fever over 101°F, it's probably best to postpone his shots until he's feeling better. To play it safe, always let your health care provider know about any illness, mild or moderate, that your child may have before he's vaccinated. The doctor can help make the best decision about whether to proceed. If he or she recommends that the shot be delayed, don't forget to set up a new appointment for the vaccine, ideally before you leave — one less thing to remember later!

## Stress is Contagious

Dreading your little one's shots? Of course you are — no parent wants to see his or her child in pain, even the momentary pain of a needle prick. But even the youngest children take their emotional cues from their parents. Which means your stress over shots can be contagious. If you freak out each time the needle appears, your little one is likely to react the same way. If you're the model of mellow, your child's likely to be calmer, too. So remember who's calling the shots, and chill out next time they're called for.

## THE ABC'S OF DTAPS....AND MMRS... AND IPV



Curious about the vaccines that your baby or toddler is receiving? Wonder what's in that needle? Here are the ABCs of routine childhood vaccinations. Remember: Some vaccines can sometimes cause side effects such as soreness at the shot site, fever, fussiness or diarrhea. Just ask your health care provider what side effects may be expected with each vaccine so you'll know what to expect. You can also go to <http://www.whattoexpect.com/child-vaccinations/what-shots-to-get.aspx> for additional details on each vaccine.

### Addressing Side Effects

Sometimes the “ouch” of a vaccination doesn't end when the needle's out. Soreness or a low fever can sometimes appear afterwards, along with some fussiness. A warm compress applied after the shot can help reduce soreness, as can moving the arm or leg in which the shot was given (you can “bicycle” a baby's leg to help bring relief, or encourage a toddler to do a few rounds of head-shoulder-knees-and-toes). A non-aspirin pain reliever such as acetaminophen (after age 2 months) or ibuprofen (after age 6 months) can help with residual achiness, as well as with any low-grade fever, so ask your health care professional about those medicines before you leave the office.

### Hepatitis B Vaccine (hep B)

**THE DISEASE.** Hepatitis B is a virus that can cause liver disease and yellow skin or eyes (jaundice). It can spread through contact with infected blood or other body fluids, or from mother to baby at birth. Serious complications may include chronic liver disease, cirrhosis (scarring of the liver), liver cancer or death.

**THE VACCINE.** Hepatitis B vaccine is made from one part of the hepatitis B virus. The CDC recommends three doses. The first is usually given at birth (or shortly after); the second dose is given between 1 to 2 months; the third is given between 6 to 18 months. If the hepatitis B vaccine is administered in combination with other vaccines, doses are given at 2, 4, and 6 months instead, in addition to the newborn dose.

### Diphtheria, Tetanus, Pertussis Vaccine (DTaP)

#### THE DISEASES.

**Diphtheria** is caused by bacteria that live in an infected person's mouth or throat. It can cause a sore throat or fever, and may obstruct breathing. Sneezing or coughing can spread these bacteria from person to person. Serious complications may include heart failure, paralysis, and death.

**Tetanus** (lockjaw) is a bacterial disease that enters through the skin from deep cuts and puncture wounds. Tetanus may cause headache, irritability, and spasms in the jaw muscles. Serious complications may include inability to swallow, muscle cramps so strong that they can break a child's bones, and often death.

**Pertussis** (whooping cough) is caused by bacteria that are spread from person to person through the air. The disease can cause violent coughing spells that can affect eating, drinking and even breathing. Serious complications may include pneumonia, seizures, encephalopathy (brain infection), and death. Those complications are more common for pregnant women, babies and toddlers.

**THE VACCINE.** DTaP is a combination vaccine protecting against three diseases: diphtheria (D), tetanus (T), and pertussis (P). All three components of the vaccine are “inactivated” — meaning they are incapable of causing the disease. The “a” stands for “acellular” which means that the pertussis part of the vaccine contains only parts of the pertussis bacterium, not the entire cell.

The CDC recommends five doses of DTaP. The shots are given at 2, 4, and 6 months, followed by a booster between 15 to 18 months, and then another booster between 4 to 6 years old. A booster is also

recommended for adolescents between 11 and 12 years of age.

### Inactivated PolioVirus Vaccine (IPV)

**THE DISEASE.** Polio is a very contagious virus that can cause paralysis. Most infected people show no symptoms. It is spread through contact with the stool of an infected person or by droplets from a sneeze or cough. Serious complications may include weakness in arms or legs (or both), paralysis, and death.

**THE VACCINE.** The polio vaccine used in the US contains three types of inactivated (killed) polio virus. Children should get four doses of the vaccine at 2, 4, and 6 to 18 months, and again between ages 4 to 6 years, according to the CDC. In certain circumstances, such as when traveling to countries where polio is still common, the vaccine schedule may be stepped up.

### Haemophilus Influenzae Type B Vaccine (Hib)

**THE DISEASE.** Hib (Haemophilus influenzae type B) is caused by bacteria that are spread through the air by coughing or sneezing. It can cause ear infections and serious throat swelling. If Hib bacteria enter a person's bloodstream, they can cause meningitis, pneumonia, and other problems. Serious complications may include permanent brain damage and death.

**THE VACCINE.** Four doses are usually recommended, given at 2, 4, and 6 months, and again between 12 and 15 months of age according to the CDC (though one brand of the vaccine calls for only three doses, at 2 and 4 months and between 12 and 15 months of age).





## Pneumococcal Conjugate Vaccine (PCV)

**THE DISEASE.** Pneumococcal disease is caused by bacteria that are spread by airborne droplets, or by direct contact with infected saliva or mucus. Invasive disease can cause cough, fever and chills, chest pain, ear infections, blood infections and difficulty breathing. Serious complications may include bacterial meningitis, which may lead to death.

**THE VACCINE.** The pneumococcal vaccine is given to help prevent invasive forms of the disease, including meningitis (a brain infection) and bacteremia (blood infections) that are caused by certain strains of the disease. The CDC recommends four doses of the vaccine to be given at 2, 4, and 6 months and again between 12 and 15 months.

## Rotavirus Vaccine (Rota)

**THE DISEASE.** Rotavirus is an intestinal virus and spreads easily by hands, diapers, or objects that are contaminated by infected stool. This virus causes severe diarrhea, vomiting, and fever. Serious complication may include severe diarrhea leading to extreme dehydration which can cause death.

**THE VACCINE.** The rotavirus vaccine is an oral vaccine (a liquid given in the

mouth) that contains live (but weakened) rotavirus virus. The vaccine is given at either 2, 4, and 6 months, or at 2 and 4 months — depending on the brand.

## Influenza Vaccine

**THE DISEASE.** Flu (Influenza) is a virus that is spread from person to person by droplets from coughing, sneezing, or talking, or from surfaces that have the virus on them. The flu can cause fever, sore throat, cough, chills, and muscle aches. Serious complications may include pneumonia, inflammation of the heart, and death.

**THE VACCINE.** The flu shot contains inactivated influenza virus strains that have been determined to be the strains that will most likely cause influenza illness for that particular year. You can choose to get a thimerosal-free vaccine for your child if you want. The CDC recommends one dose yearly beginning around October or November for children 6 months of age and older. Children younger than 9 years of age receiving the vaccine for the first time need two doses at least 4 weeks apart. Once your child is 2 years of age or older, he or she may be able to receive FluMist, a yearly influenza vaccine that is delivered as a nasal mist instead of a shot (ask your health care provider if it's an option for your preschooler).

## Measles, Mumps, Rubella Vaccine (MMR)

### THE DISEASES.

**Mumps** is a virus that can cause fever, headache, and inflammation of the salivary glands which leads to swelling of the cheeks and jaws. Person-to-person transmission occurs through the air. Serious complications may include meningitis, and occasionally encephalitis or deafness and even death.

**Measles** is a virus that can cause a rash all over the body, fever, runny nose, and cough. It is very contagious and is spread from person to person through coughing, sneezing, and even breathing. Serious complications may include pneumonia, seizures, permanent brain damage, and even death.

**Rubella** (German measles) is an airborne virus that causes swollen glands, a slight fever, rash, and occasionally arthritis-like symptoms. It is a mild disease

in children. Serious complications are found in babies if the mother has been infected during pregnancy. The baby may be born dead or blind, with a damaged heart or small brain, or be mentally impaired.

**THE VACCINE.** The MMR vaccine contains weakened measles (M), mumps (M), and rubella (R) viruses.

Two doses are recommended by the CDC. The first is given at 12 to 15 months, the second between 4 and 6 years of age (though the second dose can be administered any time as long as it's 28 days after the first one). It is recommended that a dose of MMR be given early (between 6 and 12 months) if a baby will be traveling internationally during that time. Children who receive a dose before 12 months of age still should receive two more doses as recommended above.





## Varicella Vaccine

**THE DISEASE.** Chickenpox is a virus that can cause an itchy, blistery rash all over the body, and is generally accompanied by a fever and drowsiness. It is transmitted from person to person through the air or by contact with the rash. Serious complications may include skin infections, pneumonia, encephalitis, and even death.

**THE VACCINE.** The varicella vaccine is made with live (but weakened) chicken pox virus. The CDC recommends two doses of the shot, the first at 12 to 18 months and a second booster dose between 4 and 6 years of age.

## Hepatitis A Vaccine (hep A)

**THE DISEASE.** Hepatitis A is spread by personal contact or through contaminated food or water, or by coming into contact

with contaminated feces. It can cause liver disease, which can result in stomach pain, vomiting, fever, and other problems. Serious complications may include liver failure that leads to death.

**THE VACCINE.** The hepatitis A vaccine is made from inactivated (or killed) virus. Two doses are recommended for all children between 12 months and 2 years. The first dose is given when the child is 12 months of age and a booster dose is given at 24 months of age or at least 6 months after the first. The vaccine can also be given to older children if they didn't receive it earlier.

**Prior to receiving any of these vaccines, your doctor or health care provider should give you a Vaccine Information Statement for each vaccine. This information is written by the CDC and includes information about the benefits and risks of each vaccine.**

## Vaccines For Big Kids

In addition to the Tdap vaccine, two additional vaccines are recommended for your child as he or she gets older:

- **Meningococcal conjugate vaccine.** This vaccine is recommended for all children 11 to 12 years old. A booster dose is given at age 16. The vaccine prevents meningococcal disease, a leading cause of bacterial meningitis (an infection of the lining surrounding the brain and spinal cord).
- **HPV vaccine.** This vaccine is recommended for girls and boys age 11 to 12 to prevent human papillomavirus, which can cause cervical and other cancers, and genital warts. The vaccine is given in 3 doses over the course of 6 months.

## Vaccines For Grownups

Thought vaccines were just for kids? Actually, moms and dads (and grandmas, grandpas, babysitters, and anyone else in close proximity to little kids) need vaccines, too. That's because if you're vaccinated against preventable diseases, you're less likely to get these diseases and, in turn, pass them on to the little ones you love — it's as simple as that.

The CDC recommends you (and any adult caring for your baby or toddler) receive the following vaccinations, depending on your medical history and other circumstances:

- **Tetanus, Diphtheria, and Pertussis (Tdap) Vaccine:** Tdap is the DTaP formulation for teens and adults. All teens should receive one dose at 11 to 12 years of age. It is recommended that all adults in contact with a newborn update their Tdap booster. Pertussis (whooping cough) is most often passed on to babies by their unvaccinated or not-fully vaccinated parents. Expectant moms should receive a booster during every pregnancy — it's recommended at between 27 and 36 weeks.
- **Influenza (the flu) Vaccine:** If you have had any vaccine as an adult, it's probably this one. That's because the flu shot (or the nasal-spray flu vaccine) is recommended each year in the fall or winter. While the flu can be miserable at any age, it can be much more serious (even deadly) for babies and toddlers, the elderly, and anyone with a chronic medical condition or compromised immune system. Expecting? You should definitely get a flu shot, since pregnant women are more likely to have complications with the flu. Have a new baby in the house? Since babies under the age of 6 months are too young to be vaccinated, making sure everyone around them has had a flu shot is the best way to protect them. Everyone needs a new flu shot each year — the protection doesn't last from year to year, and new strains of the virus usually pop up each year. Heard that flu shots contain mercury? See page 15 for the reassuring facts.
- **Measles, Mumps, Rubella (MMR) Vaccine:** While it's likely you're already immunized against these highly contagious diseases, sometimes immunity wears off — and that can put you and your baby at risk. To play it safe, check with your health care provider to see whether you should get an MMR booster, especially if you're planning to get pregnant (or will be caring for a new baby). Same goes for grandparents, care providers, and others who will spend time around your baby.
- **Varicella Vaccine:** If you didn't have chicken pox as a child — or were not vaccinated — and you catch it as an adult, it could be a very serious case (it's much worse in adults). What's more, contracting chicken pox when you're expecting or when you have a newborn can be very dangerous for your baby — a good reason to check up on your immunization history before you conceive.
- **Other Vaccines to Consider:** Also recommended for adults with particular risk factors are the hepatitis A vaccine (if you might be exposed to hepatitis A through your work or travel, for instance, or if you live in a high incidence area or take blood products to help your blood clot) and the hepatitis B vaccine (if you're a health care worker, dialysis patient, or someone who travels to countries where the disease is prevalent, for instance). There may be new vaccines you may not have had. Check with your health care professional on what other shots you may need to help keep you and your baby healthy.



# THE IMMUNIZATION VISIT PLANNER

Take this Immunization Tracker with you to each health care provider visit so you can jot down which vaccinations your child will be receiving through age 6, and any questions you might have for your doctor. There's also a place to write down your doctor's recommendations after vaccination or other notes. (You can also download a tracker from the CDC that includes some notes about developmental milestones. Find it at [www.cdc.gov/vaccines/parents/downloads/milestones-tracker.pdf](http://www.cdc.gov/vaccines/parents/downloads/milestones-tracker.pdf).)

## In The Hospital

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 1<sup>st</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 2<sup>nd</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 4<sup>th</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 6<sup>th</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 12<sup>th</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

## 15<sup>th</sup> Month Visit

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**18<sup>th</sup> Month Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**19<sup>th</sup>-23<sup>rd</sup> Month Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**2<sup>nd</sup>-3<sup>rd</sup> Year Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**4<sup>th</sup> Year Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**5<sup>th</sup> Year Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**6<sup>th</sup> Year Visit**

DATE \_\_\_\_\_

VACCINES GIVEN \_\_\_\_\_

HCP'S RECOMMENDATIONS AFTER VACCINATION \_\_\_\_\_

QUESTIONS YOU MIGHT HAVE \_\_\_\_\_

**Additional Notes**

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**Vaccinating Preemies**

For most of your premature baby's first two years, his or her adjusted age will be the one that counts most, except in one area: immunizations. Most of a baby's vaccine schedule isn't delayed because of prematurity, so instead of receiving vaccines according to gestational age, he or she will receive them according to birth age. In other words, if your baby was born two months early, he or she will still get those first shots at age two months – not age four months.

Don't worry about your tiny baby's immune system not being mature enough or able to produce antibodies to the vaccines. Researchers have found that at seven years, even children who were born extremely small have antibody levels similar to other children the same age.



# WHAT TO EXPECT<sup>®</sup>

## GUIDE TO IMMUNIZATIONS

COMPLIMENTS OF



What to Expect has developed this vaccination guide with support from Pfizer.



**Keeping up with your child's vaccinations** is one of the best ways to keep him or her healthy. And it's easier than you might think. In this guide you'll find answers to your questions about a vaccine's safety and effectiveness; tips on preparing your child for needles (before and after!); and a tracker for you to log vaccinations and discussions with your pediatrician. And you can learn what vaccinations parents need, too. There's no better (and easier!) way to know what to expect when it comes to vaccines.



### About Heidi

Heidi Murkoff is the creator of [WhatToExpect.com](http://WhatToExpect.com) and author of the world's bestselling and best-loved pregnancy and parenting series, *What to Expect*, which includes *What to Expect When You're Expecting*, *What to Expect the First Year*, and *What to Expect the Second Year*. She is a passionate advocate for the health and wellbeing of all moms, dads, and babies, and a strong supporter of childhood vaccines.