

A Parent's Guide to

**Vaccine-Preventable Diseases
for Children**



Vaccinations:



There are many ways to protect children as they grow. Car seats, covers for electrical outlets, and playyards provide just some of the protection every baby deserves. But when it comes to protection against certain childhood diseases, the medical community strongly recommends vaccinations.

Getting your child vaccinated is important. And you probably have questions about what's ahead for you and your baby. Your doctor has provided you with this booklet to give you some facts about the ability of vaccines and the diseases they prevent. If you know other parents or guardians who need facts about vaccine-preventable diseases for children, please share this booklet with them. And if you have more questions, speak to your doctor.

A Commitment to Protect

What is a vaccine made of?

Most vaccines contain purified fragments taken from killed bacteria or viruses. Some vaccines contain live viruses, but in a very weak form that does not cause disease.

How do vaccines work?

Vaccines “teach” the immune system how to recognize and fight bacteria and viruses before an infection happens. By giving the body a small “sample” of the germ, it can develop resistance without actually getting the disease.



Why are vaccines given to babies?

Certain vaccine-preventable diseases can infect babies within the first few months of life.¹

Vaccinating small children helps provide them with protection when they need it.

Thanks to vaccines given to babies, many diseases that once killed millions of people in the United States have not been seen for many years. But in some parts of the world where vaccines are not readily available, diseases we no longer worry about in the United States continue to destroy the lives of children every single day.

Are vaccines safe?

No medication is 100% safe. However, all vaccines that are approved for use in the United States have been thoroughly tested for safety, and serious side effects are very rare.¹ Meanwhile, the benefits of vaccination are tremendous! Before vaccines were developed, polio paralyzed 10,000 children, rubella (German measles) caused birth defects in 20,000 newborns, and pertussis (whooping cough) killed 8000 children yearly.¹ But thanks to the confidence that both physicians and parents have in these vaccines, today millions of children are protected from serious, life-threatening diseases.

What about combination vaccines?

The measles, mumps, and rubella vaccine (MMR) is an example of 3 different vaccinations given in 1 shot, which is called a combination vaccine. Combination vaccines permit protection against more diseases earlier in life.² They also decrease the total number of shots a baby needs to have.

Can vaccinations cause autism or multiple sclerosis?

Studies have demonstrated that there is currently no relationship, confirmed or demonstrated, between vaccinations and autism or multiple sclerosis.³⁻⁵

What about thimerosal and mercury poisoning?

Thimerosal is a preservative that was originally put in many vaccines to stop the growth of bacteria. Some people are concerned that this preservative might expose very young children to relatively large amounts of mercury. However, there is no evidence that thimerosal-containing vaccines have ever caused harm to children receiving them. Nevertheless, the Food and Drug Administration (FDA), the medical community, and vaccine manufacturers worked together to remove thimerosal as a preservative from routine childhood vaccines.^{6,7}



Vaccinations: *A Commitment to Protect*

Can vaccinations overload a child's immune system?

No. Vaccines only contain tiny amounts of viruses or bacteria compared with the large amounts of germs children come in contact with every day. Therefore, a healthy child's immune system should have no problem handling vaccinations, even when several vaccinations are given during a single doctor's visit.

If all the other children in my community are vaccinated, why should my child be vaccinated?

Even though many children are vaccinated, diseases still exist. And the increase in international travel means that diseases are always a threat. If someone with a serious vaccine-preventable disease enters your community and your child is not vaccinated, he or she is at risk. What's more, each unvaccinated child is at risk for spreading infection to other unvaccinated children and adults, as well as to persons with weak immune systems. That's why every child should be vaccinated—for his or her own protection and your peace of mind.



Who approves and recommends vaccines?

After successful testing in thousands of people, a vaccine is approved (licensed) for use in the United States by the FDA. The vaccine is then recommended for use in specific age groups by the Advisory Committee on Immunization Practices (ACIP) and the Infectious Disease Committee of the American Academy of Pediatrics (AAP).¹

What side effects might my child experience?

The most typical side effects include a slight fever, drowsiness, and soreness at the injection site. Although extremely rare, vaccines have been known to cause serious side effects.^{1,8} For example, if your child develops a high fever or appears to be in severe pain, seek medical attention immediately.

Which childhood vaccinations are considered standard?

Current recommendations call for immunization against 13 vaccine-preventable diseases.

Depending on the vaccine, children may receive vaccinations anywhere between birth and 18 years of age.⁹ **These are the diseases:**

(Speak to your doctor about the best time to vaccinate your child for these diseases.)



Fluid in the abdomen

Courtesy of Patricia Welker, MD, Ramsey Clinic Associates, St. Paul, Minn.

Hepatitis B

- How it spreads:
Direct contact with infected blood (via blood transfusions) and other body fluids; can also be contracted through tattooing and body piercing; a pregnant woman who is infected can also infect her unborn fetus
- Symptoms:
Loss of appetite, vomiting, stomach pain and swelling, weakness, yellow skin and eyes (jaundice), fever, and headaches
- Complications of disease:
Permanent liver damage, cancer of the liver, cirrhosis, and death
- **Approximately 25% of children who develop lifelong hepatitis B infection die of related liver disease as adults¹⁰**

Diphtheria

- How it spreads:
Direct contact with infected person
- Symptoms: Sore throat, fever, chills, and difficulty swallowing
- Complications of disease:
Suffocation, paralysis, heart failure, coma, and death
- **Before the vaccine, diphtheria caused as many as 15,520 deaths in children during 1 year¹⁰**



Swollen neck

Courtesy of Centers for Disease Control and Prevention.

Tetanus

Also known as *lockjaw*

- How it spreads:
Lives in soil and enters the body through cuts and puncture wounds
- Tetanus is **not** contagious
- Symptoms:
Severe muscle spasms, including spasms of the mouth and jaw
- Complications of disease:
Broken bones from muscle spasms, breathing problems, severe heart damage, lung infections, coma, and death
- **Without a vaccine, persons of all ages in the United States could get this deadly disease¹⁰**



Severe muscle spasms

Courtesy of Centers for Disease Control and Prevention.



Courtesy of World Health Organization.

Pertussis

Also known as *whooping cough* Persistent coughing due to mucus production

- How it spreads:
Coughing and sneezing; highly contagious
- Symptoms:
Thick, sticky mucus in windpipe and severe coughing
- Complications of disease:
Pneumonia, seizures, brain damage, and death
- **Before the vaccine, between 150,000 and 260,000 cases of pertussis and up to 9000 deaths were reported each year¹⁰**



Courtesy of Children's Immunization Project, St. Paul, Minn.

Haemophilus influenzae type b (Hib)

- How it spreads:
Contact with an infected person; enters through the nose and throat
- Symptoms:
Fever, headache, vomiting, and breathing problems
- Complications of disease:
Meningitis, blindness, brain damage, paralysis, hearing loss, and death
- **Before the vaccine, Hib meningitis killed 600 children each year and left many survivors with deafness, seizures, or mental retardation¹⁰**

Swollen face

Polio

- How it spreads:
Contact with feces
- Symptoms:
Fever, severe muscle pain or spasm, headache, or paralysis. Some people experience no symptoms at all but are carriers who can spread the disease to others
- Complications of disease:
Deformed or paralyzed legs and arms, inability to breathe, and death
- **Before the vaccine, 13,000 to 20,000 cases of paralytic polio were reported each year in the United States; many children were left on crutches, in braces, in wheelchairs, and on iron lungs¹⁰**



Courtesy of World Health Organization.

Paralysis and leg deformity



Child on assisted breathing

Pneumococcus

- How it spreads:
Coughing and sneezing
- Symptoms:
Fever, chills and shaking, chest pain, coughing, fast heartbeat, fast breathing or difficulty breathing
- Complications of disease:
Pneumonia, meningitis, sepsis (an infection of the blood), brain damage, ear and sinus infections



Courtesy of Centers for Disease Control and Prevention.

Measles

Facial rash

- How it spreads:
Coughing, sneezing, or talking
- Symptoms:
Runny nose, watery eyes, fever, and rash that begins at hairline and moves downward on the body
- Complications of disease:
Pneumonia, ear infections, brain damage, seizures, and death
- **One of the most infectious diseases in the world; if measles vaccinations were stopped, it is estimated that 2.7 million people would die worldwide¹⁰**



Courtesy of Centers for Disease Control and Prevention.

Mumps

Swollen glands and cheeks

- How it spreads:
Coughing, sneezing, or talking
- Symptoms:
Swollen glands and cheeks, fever, and headaches
- Complications of disease:
Deafness, brain damage, and swelling of the testicles and sterility in male teens and adults
- **Before the vaccine, mumps was a cause of deafness and brain damage in children¹⁰**

Rubella

Also known as *German measles*



Courtesy of Centers for Disease Control and Prevention.

Rash on face

- How it spreads:
Coughing and sneezing
- Symptoms:
In children, fever, swollen glands, and light rash on face
- Complications of disease:
Can cause birth defects such as deafness, blindness, and mental retardation; can cause miscarriage and premature birth in pregnant women
- **During 1964 and 1965, before the vaccine, of the 20,000 infants born with rubella syndrome, 11,600 were deaf, 3580 were blind, and 1800 were mentally retarded¹⁰**



Courtesy of Centers for Disease Control and Prevention.

Rash with red spots and blisters

Varicella

Also known as *chickenpox*

- How it spreads:
Coughing, sneezing, or contact with chickenpox sores; usually occurs in children younger than 10 years of age
- Symptoms:
Itchy rash over entire body with many sores, fever, and sore throat

Varicella (cont)

- Complications of disease:
Lung damage, brain damage, and death; can be especially dangerous for teens and adults
- **Before the vaccine, an estimated 4 million people got chickenpox, causing 11,000 hospitalizations and 100 deaths each year¹⁰**



Yellow skin and eyes (jaundice)

Courtesy of Centers for Disease Control and Prevention.

Hepatitis A

- Can occur anywhere in the world, but immunization is especially recommended for those 2 years of age and older who are traveling to Asia, Africa, South America, Central America, the Middle East, the Mediterranean basin, southern Europe, the Caribbean, and Mexico
- How it spreads:
By eating contaminated food or drinking contaminated water, usually in developing countries; however, because hepatitis A thrives in unsanitary conditions involving food preparation, it can also occur in the United States
- Symptoms:
Loss of appetite, nausea, vomiting, stomach pain, yellow skin and eyes (jaundice), fever, headaches, and dark urine
- Complications of the disease:
Low energy levels for up to a year, hospitalization, and death, especially in those already suffering from liver disease

Vaccinations: A Commitment to Protect



Courtesy of Centers for Disease Control and Prevention.

Influenza

Influenza germs after coughing

- How it spreads:
Coughing and sneezing
- Symptoms:
High fever, chills, severe muscle aches, and headaches
- Complications of disease:
Pneumonia, swelling of the brain, and death
- **Before the vaccine, from 1918 to 1919, there were 550,000 deaths due to influenza in the United States; 21 million died worldwide¹**

References: 1. Offit PA, Bell LM. *What Every Parent Should Know About Vaccines*. New York, NY: Macmillan Inc; 1998:3,23,26,98,114-115. 2. Chen RT, Haber P, Mullen JR. Surveillance of the safety of simultaneous administration of vaccines: the Centers for Disease Control and Prevention experience. *Ann N Y Acad Sci*. 1995;754:309-320. 3. American Academy of Pediatrics: Committee on Children With Disabilities. The pediatrician's role in the diagnosis and management of autistic spectrum disorder in children. *Pediatrics*. 2001;107:1221-1226. 4. Institute of Medicine (IOM). Immunization Safety Review: measles-mumps-rubella vaccine and autism. Available at: <http://www.iom.edu/IOM/IOMHome.nsf>. Accessed November 2, 2001. 5. Ascherio A, Zhang SM, Hernan MA, et al. Hepatitis B vaccination and the risk of multiple sclerosis. *N Engl J Med*. 2001;344:327-332. 6. IOM. Thimerosal and neurodevelopmental outcomes. Available at: <http://www.iom.edu/IOM/IOMHome.nsf>. Accessed November 2, 2001. 7. Kirsche ML. Thimerosal studies in infants are reassuring. *Infect Dis Child*. May 2001;23. 8. Centers for Disease Control and Prevention (CDC). Update: vaccine side effects, adverse reactions, contraindications, and precautions: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep*. September 6, 1996;45(RR-12):1-35. 9. CDC. Certification of poliomyelitis eradication—Western Pacific Region, October 2000. *MMWR Morb Mortal Wkly Rep*. January 12, 2001;50:7-10,19. 10. CDC—National Immunization Program. What would happen if we stopped vaccinations? Available at: <http://www.cdc.gov/nip/publications/fs/gen/WhatIfStop.htm>. Accessed July 17, 2001.

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To learn more about vaccines, please visit these web sites*:

www.cdc.gov/nip/vacsafe

www.aap.org

www.immunize.org

www.vaccine.chop.edu

www.immunizationinfo.org

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