



---

## Vaccine Safety

---

---

### Frequently Asked Questions about Multiple Vaccinations and the Immune System

---

#### How many vaccines does CDC recommend for children?

Currently, CDC recommends vaccination against 16 vaccine preventable diseases for children.

#### Why does CDC recommend that children receive so many vaccinations?

Vaccines are our best defense against many diseases, which often result in serious complications such as pneumonia, meningitis (swelling of the lining of the brain), liver cancer, bloodstream infections, and even death. CDC recommends vaccinations to protect children against 16 infectious diseases, including measles, mumps, rubella (German measles), varicella (chickenpox), hepatitis B, diphtheria, tetanus, pertussis (whooping cough), Haemophilus influenzae type B (Hib), polio, influenza (flu), and pneumococcal disease.

#### Why are these vaccines given at such a young age? Wouldn't it be safer to wait?

Children are given vaccines at a young age because this is when they are most vulnerable to certain diseases. Newborn babies are immune to some diseases because they have antibodies given to them from their mothers. However, this immunity only lasts a few months. Further, most young children do not have maternal immunity to diphtheria, whooping cough, polio, tetanus, hepatitis B, or Hib. If a child is not vaccinated and is exposed to a disease, the child's body may not be strong enough to fight the disease.

An infant's immune system is more than ready to respond to the very small number of weakened and killed infectious agents (antigens) in vaccines. From the time they are born, babies are exposed to thousands of germs and other antigens in the environment and their immune systems are readily able to respond to these large numbers of antigenic stimuli.

#### I've heard people talk about "simultaneous" and "combination" vaccines. What does this mean? Why are vaccines administered this way?

A combination vaccine consists of two or more different vaccines that have been combined into a single shot. Combination vaccines have been in use in the United States since the mid-1940's. Examples of combination vaccines in current use are: DTaP (diphtheria-tetanus-pertussis), trivalent IPV (three strains of inactivated polio vaccine), MMR (measles-mumps-rubella), DTaP-Hib, and Hib-Hep B (hepatitis B). Simultaneous vaccination is when more than one vaccine shot is administered during the same doctor's visit, usually in separate limbs (e.g. one in each arm). An

example of simultaneous vaccination might be administering DTap in one arm or leg and IPV in another arm or leg during the same visit.

Giving a child several vaccinations during the same visit offers two practical advantages. First, we want to immunize children as quickly as possible to give them protection during the vulnerable early months of their lives. Second, giving several vaccinations at the same time means fewer office visits. This saves parents both time and money, and may be less traumatic for the child.

## Is simultaneous vaccination with multiple vaccinations safe? Wouldn't it be safer to separate vaccines and spread them out, vaccinating against just one disease at a time?

The available scientific data show that simultaneous vaccination with multiple vaccines has no adverse effect on the normal childhood immune system. A number of studies have been conducted to examine the effects of giving various combinations of vaccines simultaneously. These studies have shown that the recommended vaccines are as effective in combination as they are individually, and that such combinations carry no greater risk for adverse side effects. Consequently, both the Advisory Committee on Immunization Practices and the American Academy of Pediatrics recommend simultaneous administration of all routine childhood vaccines when appropriate. Research is underway to find methods to combine more antigens in a single vaccine injection (for example, MMR and chickenpox).

## Can so many vaccines, given so early in life, overwhelm a child's immune system, suppressing it so it does not function correctly?

No evidence suggests that the recommended childhood vaccines can “overload” the immune system. In contrast, from the moment babies are born, they are exposed to numerous bacteria and viruses on a daily basis. Eating food introduces new bacteria into the body; numerous bacteria live in the mouth and nose; and an infant places his or her hands or other objects in his or her mouth hundreds of times every hour, exposing the immune system to still more antigens. When a child has a cold they are exposed to at least 4 to 10 antigens and exposure to “strep throat” is about 25 to 50 antigens.

*Adverse Events Associated with Childhood Vaccines*, a 1994 report from the Institute of Medicine, states: “In the face of these normal events, it seems unlikely that the number of separate antigens contained in childhood vaccines ...would represent an appreciable added burden on the immune system that would be immunosuppressive.”

## Related Links

[Vaccine Safety Information for Parents \(/vaccinesafety/populations/parents.html\)](/vaccinesafety/populations/parents.html)

The United States currently has the safest, most effective vaccine supply in history. Years of testing are required by law before a vaccine can be licensed.

[How Do Vaccines Protect Children from Disease? \(/vaccines/spec-grps/infants-toddlers.htm\)](/vaccines/spec-grps/infants-toddlers.htm)

When they are injected into fatty tissue or muscle, vaccine antigens are not strong enough to produce the symptoms and signs of the disease but are strong enough for the immune system to produce antibodies against them.

## Related Scientific Publications

Offit P, *Deadly Choices: How the Anti-Vaccine Movement Threatens Us All*. *Basic Books Inc.*, 2010

---

Page last reviewed: February 21, 2011

Page last updated: December 7, 2012

Content source: Centers for Disease Control and Prevention

National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)

Division of Healthcare Quality Promotion (DHQP)

---

Centers for Disease Control and Prevention 1600 Clifton Road Atlanta, GA 30329-4027, USA

800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC-INFO

