

# Dog Health: Vaccinations



Almost all authorities believe that dogs should be vaccinated against common or dangerous infectious diseases. Vaccines don't always completely protect a dog from getting sick. However, they usually provide a great deal of protection and reduce the severity of symptoms if the dog does become infected. It is best to consult with a local veterinarian to come up with the best vaccination schedule for your canine companions. There are no viable alternatives to vaccines.

## What Are Vaccines?

Vaccines are liquid suspensions of dead or weakened viruses or bacteria that reduce the risk of infection by those organisms. Several types of vaccines are available for dogs:

- **Modified Live Vaccines.** Modified live vaccines trigger an immune reaction, but have lost most or all of their ability to cause infectious disease.
- **Killed Vaccines.** Killed vaccines are made from dead organisms, which can't cause infection but can stimulate an immune response. Modified live vaccines typically cause a faster, more effective, and longer-lasting immunity than killed vaccines.
- **Recombinant Vaccines.** Some newer vaccines use recombinant technology and genetic engineering to alter potentially infectious organisms.

## How Do Vaccines Work?

The immune system protects the body from things it perceives as foreign and harmful such as bacteria and viruses—antigens. Vaccines stimulate immunity by introducing killed or modified infectious agents into an animal's bloodstream. Some vaccines provide life-long protection, while others protect for a limited period of time. Because one exposure to an antigen might not trigger long-term immunity, many vaccines are given in a series. A dog is considered fully vaccinated two weeks after a vaccine series is completed. Most vaccines need to be boosted periodically to re-prime the immune system.

Puppies get antibodies from their mother across the placenta, and later in milk, which creates "passive immunity." Females vaccinated two to four weeks before being bred pass the most maternal antibodies to their offspring. Maternal antibodies are concentrated in the colostrum of mother's milk. Newborns need colostrum as soon as possible so they can absorb the large maternal antibody molecules before their digestive tract matures. **Vaccinating very young puppies is pointless, because maternal antibodies will bind to antigens in the vaccine and prevent a normal immune response.**

## How Vaccines Are Administered

Most vaccines are given by injection, either under the skin or into the muscle. Some are administered in drop or mist form into the nostrils or eyes. The most novel way to give vaccines is to put them directly onto the skin. Vaccines given together in one shot are called combination or multivalent vaccines.

## Vaccine Effectiveness

Vaccines are extremely effective in reducing the risk of infectious disease. However, no vaccine is 100 percent effective all the time. Although vaccine failure is the exception, many things could cause vaccines to fail:

- Improper handling, storage, administration, or dosage errors
- Disinfectants on the injection site

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- Failure to boost regularly
- Poor health; stress, malnutrition, weak or compromised immune system
- Immune system overload (too many vaccines; too frequent vaccination)
- Disease incubating at time of vaccination
- Heavy parasite load
- Hormonal fluctuations
- Presence of immunosuppressive drugs in the animal
- Pregnancy or maternal antibody interference
- Old age

### **Vaccine Safety**

Vaccines occasionally cause mild reactions, such as lethargy, low-grade fever, and appetite loss. Some dogs develop a small lump at the vaccination site, which usually disappears within a few weeks. If a bump at an injection site lasts longer than a few weeks, the pooch probably should be seen by a veterinarian. Very rarely, dogs may have an allergic reaction to a vaccine, called “anaphylaxis,” which is accompanied by vomiting, diarrhea, difficulty breathing and, even less commonly, collapse. Itchiness and facial swelling can also occur. Anaphylactic reactions can be severe but are not usually fatal, as long as the dog is treated immediately. Some vaccines are associated with the development of sarcomas in cats; this is extremely rare in dogs.

### **How Vaccines Are Given**

The most common protocol is to give dogs a single combination vaccine against distemper, hepatitis, parvovirus, and parainfluenza between seven and eight weeks, eleven and twelve weeks, and again at sixteen weeks of age. The vaccine in this puppy series is called “DHPP” or “DA2PP.” Boosters are recommended at twelve to sixteen months and every three years thereafter.

A combination vaccine that adds leptospirosis is available. Current recommendations are to vaccinate against leptospirosis separately from core vaccinations, and only in endemic areas. Rabies vaccines should also be given separately. When to vaccinate and which vaccines to give, depend on where a dog lives and travels, its age and health, and the preferences of its veterinarian and guardian.

### **Core Vaccines**

Core vaccines are those that the Animal Hospital Association (AAHA) and most veterinarians believe all dogs should receive. Core vaccines usually are given in a short series starting at seven or eight weeks of age, followed by boosters at varying intervals.

### **Canine Distemper**

Distemper is a contagious viral disease that causes mild to severe respiratory and central nervous system impairment primarily in young dogs. It can be fatal.

### **Hepatitis**

Because vaccination against hepatitis is so effective, this disease is rare in the United States. The modified live hepatitis vaccine protects against hepatitis and several viruses that contribute to kennel cough.

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### **Parvovirus**

Parvo is a highly contagious and potentially fatal viral disease that targets the digestive and respiratory tracts and the central nervous system. Newer modified live vaccines are more effective against parvovirus infection than killed vaccines and cross-protect against most of its known strains.

### **Parainfluenza**

The parainfluenza virus is the main infectious organism that causes kennel cough. The AAHA doesn't consider this to be a core vaccine, although it is part of the popular DA2PP/DHPP combination vaccine discussed below.

### **Rabies**

Rabies is the "great pretender," because its symptoms are so variable. Current injectable rabies vaccines are safer than older formulations. Authorities recommend vaccinating puppies against rabies between four and nine months of age, followed by a booster one year later and every three years after that, depending on the vaccine used. In many areas, vaccinating dogs (and cats) against rabies is mandatory under state law.

### **Non-Core Vaccines**

Non-core vaccines are those that only certain dogs should have, depending on where they live and travel, their lifestyle, and whether they are likely to be exposed to unfamiliar dogs in close quarters.

### **Leptospirosis**

Currently leptospirosis vaccination is considered optional. Many veterinarians only recommend it for dogs living or traveling in areas where leptospirosis infection is prevalent. Combination vaccines against distemper, hepatitis, parvovirus, parainfluenza, and leptospirosis are widely available (DHPPL or DA2PPL). The DHPPL vaccine has caused adverse post-vaccination reactions in some dogs, especially in toy breeds and young puppies.

### **Canine Parainfluenza**

Although the vaccine against parainfluenza virus is considered non-core, it is included in most of the combination "puppy series" shots. It reduces the severity of kennel cough, but doesn't prevent it. Because the parainfluenza vaccine is only effective for up to twelve months, at-risk dogs should be vaccinated every six months.

### **Bordetella Bronchiseptica**

The bordetella vaccine can help control kennel cough and other bacterial respiratory illnesses. It typically is given to show dogs and other dogs in high-density situations and provides protection for up to six months.

### **Lyme Disease (*Borellia Bergdorferi*)**

Lyme disease vaccines are recommended for dogs living in or visiting high-risk areas. The killed virus vaccine is falling out of favor and has been replaced by a newer recombinant sub-unit vaccine for dogs that might be exposed to ticks in endemic areas.