

The Vaccination Conundrum

by Libby Miller

No other subject in dogdom causes more confusion and argument than vaccinations. It's important to understand the diseases that are being protected against, the kind of vaccine being used, and the possible side effects so that you can discuss your dog's vaccination schedule with your veterinarian and make an informed decision.

How does a vaccination work?

Think of the body's immune system as an army, whose job it is to repel foreign invaders. When a virus or bacteria enters the body, the immune system recognizes the enemy and mobilizes an army of antibodies to kill the intruder. Once the war is over, the immune system remembers that particular invader, and will respond quickly if that invader shows up again.

Giving an animal a vaccine made of either dead organisms or organisms that have been modified so they can't cause the disease gives the immune army a preview of the enemy so it will be ready to leap into action and destroy the bad guys if the dog is exposed to them.

Allergic reactions occur when the army overreacts at the time of reexposure. This over-reaction can cause facial swelling, hives, vomiting, diarrhea, and rarely shock or death. Repeated exposure may cause mild reactions to become dangerous ones.

Autoimmune disease is rather like an army having a mutiny, the immune system begins to destroy its own body. There is some thought that repeated exposure to vaccines may be a trigger for autoimmune diseases.

When puppies nurse, they get "pre-made" antibodies from their mom, thus they are immediately immune to whatever their mom is immune to. After weaning, these antibodies gradually wear out and the puppy must make his own antibodies. If, at the time of

vaccination, the puppy still has a high level of maternal antibodies, the puppy's own immune system won't respond and the vaccination is useless. This is why puppy vaccinations are given as a series; we have to catch the puppy when his maternal antibodies are low enough for the vaccine to be effective, but we don't want to wait too long, and leave him defenseless.

Typically some 30% of puppies can respond to vaccines given at 9-10 weeks and the percentage rises to 100% between 12-16 weeks. Of course in any group of animals there will be a small percentage who are not able to respond to vaccines at all due to a suppressed immune system (most commonly due to malnutrition, steroids, other diseases).



What are we vaccinating against?

Distemper. This highly contagious virus is spread by aerosol droplets or contaminated objects. Once exposed, distemper takes 6-9 days to incubate before the first round of fever begins. Several days later, the fever spikes again and the signs of purulent, runny eyes and nose, squinting, depression and pneumonia begin. The patient may seem to recover from this stage only to begin having

twitching, fits, paralysis, and grand mal seizures. These neurological problems may show up weeks after the initial signs. About 50% of dogs affected with distemper will die, with about half of the survivors showing some permanent neurological problems. This disease is always lurking around and chances of exposure at some time during a dog's life are high.

Hepatitis. This adenovirus can cause anything from a mild fever to a fatality. The white blood cell count drops and blood may not clot well. Affected dogs may have depression, runny eyes and nose, thirst, very

red mucous membranes, inflamed tonsils and little blood spots on the gums. Some dogs will develop “blue eye,” a clouding of the cornea that disappears over time. This virus is spread by direct contact and may be shed for months in the urine of recovered dogs. Vaccination has reduced the incidence of this disease, so it’s rarely seen.

Leptospirosis. Dogs are generally exposed to the spiral shaped bacteria that causes leptospirosis through the urine of rats. While cows, pigs, sheep, and horses may have leptospirosis, they carry variants of the bacteria that rarely cause clinical disease in dogs. Lepto takes five to 15 days to incubate and causes symptoms of fever, inappetance, weakness, and mild conjunctivitis. As the disease progresses, the dog becomes very depressed and has labored breathing and muscle pain. Jaundice may occur at any time. Further progression may produce mouth ulcers, sloughing of the tongue, bloody vomiting and diarrhea and kidney failure. About 10% of affected dogs will die. Since this is a bacterial disease, it can be treated with antibiotics, but some patients will have permanent kidney damage. Lepto is considered a rare disease in most areas.

Parvo. Spread through the feces of infected dogs, this hardy virus can survive for months within feces at less than 20 degrees. It is easily carried on shoes, clothing, and by flies. The incubation period is generally four to seven days but may vary from two to four days. Parvo virus attacks rapidly growing cells, so it especially likes the bone marrow and the cells lining the intestine. Symptoms include depression, lack of appetite, vomiting, and bloody diarrhea. Suppression of the immune system leaves the dog wide open to secondary bacterial infections. Death usually occurs due to insurmountable dehydration, and a large percentage of infected dogs may die, despite excellent medical care.

Parainfluenza and Bordatella. Often acting in conjunction, this virus-bacteria combination causes kennel cough, which can spread rapidly through a group of dogs. After an incubation of five to 10 days a dry, honking cough develops. Pressing on the dogs windpipe may unleash a flurry of coughing, but most dogs feel fine otherwise. This disease gets better on its own, unless a secondary bacterial infection occurs which may produce fever and a longer recovery.

Corona. Taking only 24 to 36 hours to incubate, this virus spreads rapidly through exposed dogs. Corona

causes vomiting and diarrhea (sometimes bloody) and this leads to dehydration. Unlike parvo, the mortality rate is low and affected dogs generally feel better in a few days, though fluid treatment may be needed.

Lyme disease. Spiral shaped bacteria, carried most often by deer ticks, cause Lyme Disease. The incubation period (experimentally) is two to five months. Affected dogs may show intermittent lameness and fever. In endemic areas, like the northeast, upper Midwest, and west coast, up to 80% of dogs may have a positive antibody titer, indicating they have been exposed. Dogs seem to have symptoms far less often than humans, and their symptoms are usually not as severe. Dogs that do develop clinical illness can usually be treated with antibiotics.

Rabies. This viral disease is almost 100% fatal and is a human health hazard. State laws mandate the vaccination procedures for this disease, so check with your local veterinarian.

So what should I vaccinate my dog against?

A recent article in the Journal of the AVMA reported on the vaccination schedules of 27 of 30 North American Veterinary Colleges. Here are some of their recommendations. All of the schools reported that they vaccinated all dogs for distemper, hepatitis, and parvo.

Five of the schools reported that they no longer give Lepto, and five more schools were considering discontinuing its use. These schools cited the rarity of the disease, the short duration of immunity (6-8 months), and the risk of allergic reactions as reasons for no longer giving Lepto.

Corona was given routinely by five of the 27 schools. Corona was felt to be a mild, self-limiting disease with a low mortality rate. It was also felt that the vaccine had not been proven effective in testing.

Bordatella was given at 25 of 27 schools; vaccination was recommended for dogs at high risk of exposure (boarding, showing). Internasal vaccine allows for almost immediate protection.

Only nine of 27 schools provided vaccination against Lyme Disease, and then only if the owner requested it and was traveling with the dog to an endemic area.



Should I used Modified Live or Killed Vaccine?

This question continues to be discussed at length in academic circles. Advantages of modified live vaccines include longer and more complete immunity, fewer boosters needed, and less chance of allergic reactions. Disadvantages include the possibility of retained virulence, immunosuppression, shedding of the vaccine virus which may cause false positive test (some parvo vaccines), and possible long-term immune problems.

Advantages of killed vaccines include no residual virulence, less likely to cause immunosuppression or long-term immune problems. The disadvantages include shorter duration and levels of immunity, adjuvants (ingredients added to make the body have more of an immune response) may cause more allergic reactions, more boosters are needed.

