

Vaccine Allergic Reactions

With vaccination commonly recommended annually, most pet owners are accustomed to taking their pets to the vet for "yearly shots." It seems such a commonplace part of routine pet care that many people do not think about what is actually occurring within their pet's body. In fact, immunization represents stimulation of the immune system, an inherently inflammatory process. It is typical for some joint or muscle soreness to occur after vaccination, for lethargy to be observed, or for a mild fever to be present for a day or two. These reactions are not serious and generally go unnoticed. Pets may eat, drink, and exercise normally after vaccination if they want to; it is the more serious allergic reactions that need to be distinguished from the above expected phenomena.

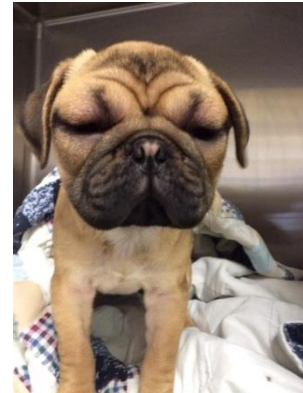
Allergic Reactions

Allergic reactions are highly individual inflammatory responses against specific proteins entering the body. These proteins can be pollens, dusts, foods, medications, or even vaccines. Within the vaccine itself, reaction can be directed against the infectious organism, stabilizers, preservatives, or residue from the vaccine organism's laboratory tissue culture.

An allergic reaction might include hives, facial swelling, or even nausea.

More serious reactions can include shock or sudden death (anaphylaxis).

The time frame after vaccination can be immediate (the Type I reaction) or anytime in the next 48 hours (the Type IV or delayed hypersensitivity reaction.)



Which Pets are likely to have Vaccination Reactions?

In October 2005, a study by Moore et al was published in the *Journal of the American Veterinary Medical Association* in which over 1 million canine medical records in over 350 separate animal hospitals were reviewed. In this study, approximately one in 250 dogs had some sort of vaccination reaction, which translated to 13 reactions for every 10,000 doses of vaccine given.

The group at greatest risk for reaction were small breed young adult (age 1-3 years) neutered male dogs. As a dog's size increased, the risk of vaccination reaction dropped. Not surprisingly, the more vaccines were given at one time, the higher the risk of reaction. Some vaccine doses include vaccine against multiple organisms. These are called multivalent vaccines and include the basic distemper-parvo vaccine for dogs and some *Bordetella* vaccines. Since giving more vaccines at once is associated with increased risk of reaction, one might expect that the use of multivalent vaccines would also increase the risk of reaction, but surprisingly this was not found to be the case. Most reactions occur the same day as the vaccine is given.

What to do during the Reaction

If your pet is having a reaction more severe than just some general malaise or soreness, you should let your veterinarian know right away. If it is after hours, it is prudent to consult the local emergency clinic. Anti-inflammatory injections can be used to halt the

inflammatory cascade before it gets dangerously out of hand. Be sure you know who to call in case of problems after your pet is vaccinated.

Vomiting may be a sign of an on-coming serious reaction, or could represent something as mild as car sickness. If vomiting is observed, let your veterinarian know right away.

What to do in the Future for the Pet who has had Reactions

There are many steps that can be taken to prevent allergic vaccine reactions in dogs known to have had reactions in the past:

Leptospirosis Vaccine

The leptospirosis portion of the DHLPP (distemper) vaccine for dogs had a reputation for being the most likely portion to cause vaccine reactions. This is largely because of the huge size of the inactivated organism that is included in the vaccine, and a traditional technique in avoiding vaccination reactions is to avoid leptospirosis vaccine.

However, in a recent study of over one million dogs, the Leptospirosis vaccine was not found to be more likely cause a reaction. This may be because of improved vaccine technology and using only portions of the organism rather than the entire bacterium. In general for any vaccine, consider what infections your pet is actually going to be at risk for and avoid unnecessary vaccination.

Avoid Giving Several Vaccinations at one Time

Keep in mind that vaccines given within two weeks of each other can interfere with each other so you do not want to separate vaccines by less than a two week period but separating vaccine can mean your pet has less stimulation to deal with at one time. Breaking up vaccines also helps determine which vaccine is the culprit.

Be Sure your Veterinarian is Aware of Your Pet's History of Vaccine Reaction

Obviously, if you know your pet has had vaccination reactions in the past, be sure to inform the veterinary personnel of this so that proper premedication can be given. Do not wait until after vaccines have been given. It is also extremely helpful to know what the reaction consisted of (a little lethargy, local soreness or mild fever is considered normal for the vaccination process). If you know what vaccines preceded the reaction, the veterinary personnel will also need to know that.

Be prepared to pay for Extra Pre-Medications and/or Observation in the Hospital

Medications can be used to head off allergic reactions before they happen, and with the use of these medications it is possible that a reacting pet can be vaccinated normally. To be safe, it is frequently recommended that the pet be observed for the rest of the day following vaccination, despite the medication. Consult your veterinarian regarding his/her recommendation. If a pet has suffered a severe or life-threatening reaction in the past, it is not worth continuing to expose the pet to the same allergen again.

Vaccination reactions severe enough to produce shock are EXTREMELY rare and are a function of an individual pet's immune response. Vaccination is an important part of responsible pet ownership and should not be omitted without specific veterinary guidance. Every hospital has its own policy regarding what vaccines are recommended for dogs and cats in general and what vaccines are required for boarding or grooming. Vaccine recommendations differ regionally and according to the pet's lifestyle as well as according to the philosophy of the veterinarian in charge of defining a particular hospital's policies.

Lumps that Develop at the Injection Sites

A vaccine includes an infectious organism that is rendered harmless but still capable of stimulating the immune system. In some instances the organism is live but weakened in some way. In other instances, the organism is killed. Some vaccine is made from killed bacterial organisms rather than viral organisms and other vaccine (such as the rattlesnake bite vaccine) is made against proteins and no infectious organism is involved. The larger the organism and the more complicated the proteins, the more local inflammation results after the injection and this sometimes translates into a firm knot or bump at the injection site. Similarly killed virus vaccine is often adjuvanted, meaning stabilizers are added to keep the dead virus concentrated in one spot for maximal immune stimulation. Adjuvanted vaccines tend to produce knots as well. These growths are typically noted a few weeks following vaccination and generally resolve on their own. These are not allergic reactions but are inflammatory reactions caused by the immune stimulation of the injection. If a lump persists longer than 3 months from the time of vaccination or is greater than 2 cm in diameter any time after vaccination, then it should be removed and biopsied. This is particularly true for cats as they have the potential to develop injection site tumors.

Reporting a Vaccination Reaction

Located in Ottawa, the Veterinary Drugs Directorate (VDD) is part of the Health Products and Food Branch of Health Canada. To protect human and animal health and the safety of Canada's food supply, the Veterinary Drugs Directorate (VDD) evaluates and monitors the safety, quality and effectiveness, sets standards, and promotes the prudent use of veterinary drugs administered to food-producing and companion animals. You can report the vaccine reaction to your veterinarian, which in turn is reported directly to the VDD or the manufacturer. The advantage of reporting reactions to the manufacturer instead of the CVB is that often the manufacturer will cover the costs of treatment as long as the reaction extends beyond the mild malaise that is a natural result of the vaccination process. Different manufacturers have different policies regarding reimbursement but if you find yourself with a significant expense from a vaccine reaction; it may be worthwhile to have your veterinarian look into reimbursement from the manufacturer.