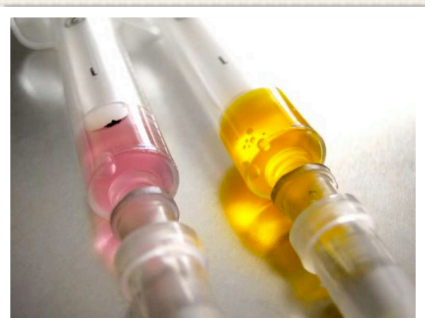


The Truth About Dog Vaccinations



The risk of a Vaccine Administered Adverse Event (VAAE) increases when multiple vaccines are given simultaneously.

Canine vaccinations play an important role in protecting dogs from contagious and lethal disease. However, they are not without cost. Despite increased publicity in recent years about the adverse effects of vaccinations, many people still assume annual vaccines for their dogs are necessary and many veterinarians continue to administer them. The question is not whether to vaccinate, but for which diseases, when, and how often?

Dog vaccinations are a double edged sword. Studies have shown that most canine vaccinations provide immunity from seven years to life, if given when a dog's immune system is mature. However, vaccinations also have considerable potential for harm. Dog owners should be informed of the benefits and risks in order to make appropriate decisions for their pets. The seemingly obvious source for this information are veterinarians and vaccine manufacturers, but a conflict of interest exists between them and the education of the public. For what vaccine manufacturer wants to fund a study

that might find their product to be unnecessary and/or harmful? And it is certainly understandable if some veterinarians are reluctant to advise against annual vaccinations, when those vaccinations represent a substantial portion of their annual revenue.

The key to reducing vaccine reactions in dogs is to reduce the number and frequency of vaccinations given. Before examining the potential unwanted consequences, here is a brief look at vaccines and their effect on the canine immune system.



This Chihuahua receives the same amount of vaccine as a Great Dane!

What Is a Vaccine?

A vaccine is one or more disease antigens that, when injected into a dog's body, causes his immune system to produce specialized proteins known as immunoglobulins, or antibodies. Antibodies fight infection and disease and neutralize the antigens by binding to them. The cells that created the antibodies (a form of white blood cell) have a memory of the antigen so that when the antigen is encountered again, the cells' "memory" enables them to

rapidly produce more antibodies i.e. to mount immunity against that pathogen. The most common dog vaccination is a combination cocktail called DHLPPC which includes pathogens for:

- Distemper
- Adenovirus-2
- Leptospirosis
- Parainfluenza
- Parvo
- Coronavirus

all in a single injection. Other vaccinations often given at the same time are:

- Rabies
- Bordatella (Kennel Cough)
- Lyme Disease
- Giardia

There are two types of vaccines, killed (inactive), and modified-live (MLV). A killed vaccine takes a virus or bacteria and renders it unable to reproduce with [heat](#) or chemicals.

The immune system doesn't readily recognize dead antigens, so the antigens are combined with substances called adjuvants. An adjuvant slows the release of the antigen and lengthens the dog's exposure to it in what is known as the "depot" effect. The immune response is improved and less antigen is required. Oils, aluminum salts, and proteins are examples of adjuvants. Killed vaccines contain preservatives such as thimerosal (which is 49% mercury), to kill germs that might have accidentally contaminated the vaccine.

“MLVs have the potential to revert to the virulent form of the disease.”

Adjuvants and preservatives share culpability for some of the adverse reactions dogs experience.

MLVs are created from isolated bacteria and viruses that have been attenuated, or weakened so as to not cause the disease. They do reproduce in the dog's cells, and provoke immunity by mimicking infection with the virulent disease agent. MLV products are preserved by freeze drying, or with small amounts of antibiotics. They produce a stronger immune system response with fewer doses than do killed vaccines, and do not require the addition of adjuvants. MLV vaccinations are thought to sometimes over stimulate the immune system, causing it to malfunction. They are contraindicated for dogs with already suppressed immune systems. MLVs have the potential to revert to the virulent form of the disease.



Delay "puppy shots" until the puppy is eight weeks old and longer when safe circumstances make it possible.

Risks and Benefits

The benefits are obvious. The dog doesn't get the diseases for which he has been vaccinated and the dog's

owner has peace of mind, and doesn't have to pay for expensive treatment when the dog becomes infected. The risks are harder to assess as unwanted side effects vary in type, number and severity from dog to dog. The likelihood of a dog having an adverse reaction depends upon his sex, age, size, health and genetic predisposition as well as the type and number of vaccines administered.

Potential Side Effects

A Vaccination Administration Adverse Event (VAAE) can be subtle or severe. Anaphylaxis, characterized by the sudden onset of symptoms such as vomiting, diarrhea, seizures and shock, is an immediate and life threatening response to vaccines that some dogs experience. The dog may experience cardiac and respiratory failure leading to death unless immediate treatment is available. Anaphylactic reactions most often occur with killed variations of vaccines such as those for Rabies, Leptospirosis, and Coronavirus. Less dramatic adverse reactions can include the following:

- localized pain and swelling at the injection site
- fever
- loss of appetite
- aggression
- depression
- skin allergies

Dogs with seasonal allergies sometimes worsen after vaccination. The distemper vaccine can cause encephalitis (inflammation of the brain). Some dogs and more commonly, cats, have developed cancers on injection sites.

Pregnant dogs vaccinated with MLV



Small white dogs are more susceptible to auto-immune disease and adverse reactions to vaccines.

products are at increased risk for abortion.

Canine Auto-Immune Disease

The most pervasive side effects of vaccination cover a spectrum known collectively as auto-immune disease. There are many different auto-immune disorders, but they all share an immune system gone awry. The dog's immune system begins to destroy his own cells as if they were the disease causing agent. Some canine diseases thought to be either caused by, contributed to or triggered by (in the case of genetic predisposition) canine vaccinations include:

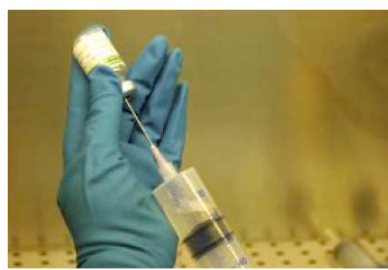
- Autoimmune Hemolytic Anemia
- Addison's Disease
- Inflammatory Bowel Disease
- Lupus
- Rheumatoid Arthritis
- Thyroid Disease
- Epilepsy

“Limit the number of vaccinations the dog receives.”

A partial list of breeds known to be vulnerable to vaccine related auto-immune disorders includes:

- American Cocker Spaniel
- Akita
- Boxer
- Dachshund
- German Shepherd
- German Shorthaired Pointer
- Golden Retriever
- Great Dane
- Greyhound
- Old English Sheepdog
- Shetland Sheepdog
- Shih Tzu
- Vizsla
- Weimaraner
- Standard Poodle

as well as many white coated (particularly small) breeds or those with coat color dilution genetics such as merling (Collies, Australian Shepherds), harlequin Great Danes, blue and fawn Doberman Pinschers, etc. A dog may exhibit symptoms in one or multiple areas. The weakened immune system leaves the dog vulnerable, especially when neither owner nor vet recognizes the real culprit and multiple vaccines continue to be administered. Vaccinations are not the only culprit in canine auto immune disorders; certain dog food preservatives, environmental toxins and pesticides are also suspect.



One key to reducing adverse reactions is to reduce the overall number of vaccinations given.

Limiting Risk: Less is More

In 2002, a landmark report published by the American Veterinary Medical Association (AVMA) Council on Biologic and Therapeutic Agents (COBTA) stated in part, "...the practice of revaccinating animals annually is largely based on historic precedent supported by minimal scientific data; unnecessary stimulation of the immune system does not result in enhanced disease resistance and may expose animals to unnecessary risks...". It is clear that the "*one vaccination protocol fits all*" mentality of previous years must be reviewed, and that the benefits of vaccination must be weighed against the potential risk for an individual dog and his circumstances. It is important that dog owners not feel intimidated into giving more vaccines than they feel is wise. The only vaccination mandated by law is the Rabies vaccine, and even that is three years into a seven year (grass roots - consumer funded) study that hopefully will demonstrate seven year efficacy. Dogs that spend time around other dogs, that are boarded frequently, or who attend dog shows and dog parks, may need more careful monitoring than dogs that never leave home. Regardless of circumstance, the good news is that there are ways to minimize risk.

Limit the number of vaccinations the dog receives. More is not necessarily better.

A study published in 2005 in the Journal of the AVA (American Veterinary Association), determined that the risk of

adverse side effects increased with the number of vaccines given simultaneously. When a dog is vaccinated with multiple pathogens, his immune system is forced to respond to them all. The various pathogens "compete" for the immune response, resulting in a lesser response over all. Consider vaccinating only for the "core" (potentially fatal) diseases: Distemper, Parvo and Rabies and Adenovirus-2. Consider the non-core vaccines in light of a dog's individual risk. There is no need to vaccinate for Lyme disease unless the dog lives in or is traveling to an area where Lyme is prevalent AND the dog's habitat or lifestyle puts him at risk. A tick carrying Lyme Disease generally must be attached to the host for 24 hours to communicate the disease, so rapid, habitual detection and removal of ticks negates the need for the vaccine. As much as possible avoid multiple disease "cocktail" vaccinations.

Limit the frequency of vaccinations with both puppies and adults. A puppy is typically given a series of "puppy shots" that begins as early as six weeks of age and concludes around sixteen weeks, followed by a "booster" at around one year. These vaccinations are wasted when the puppy is still protected by the immunity he received from his mother. Maternal antibody interference is the most common cause of vaccine failure. Exactly when the immunity conferred by the mother wears off varies between puppies, but it is known to last longer than previously thought.

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“...be aware of disease risk and to make intelligent choices.”

Up to twenty percent of 18 week old puppies have enough maternal antibodies present to interfere with successful Parvo immunization. One option is to delay vaccinating entirely until the puppy is over 22 weeks of age. Delayed vaccination undoubtedly reduces the risk of VAAEs, but requires vigilance on the part of the puppy's owner to be aware of disease risk and to make intelligent choices when exposing his puppy. The time period prior to such delayed vaccination overlaps one critical to socialization, so it is important the puppy be socialized only in places where the other dogs are known to have been immunized, such as friends' homes, and not public places such as Pet Smart where the status of dogs encountered is unknown. Certainly the beginning of a vaccination series should wait until the puppy is at least eight weeks old and longer when possible. Allow a minimum of three weeks between vaccinations.

Have adult dogs titered, and do not vaccinate when titers are adequate. A titer (pronounced TIGHT-ER), test measures the antibodies in a dog's blood, and indicates if his immune system was mounting immunity at the time his blood was drawn. Titer tests are a bit problematic in their interpretation. The dog may show no antibodies to a particular pathogen and yet his cells be fully capable of producing them when needed. The lack of antibodies doesn't always indicate a lack of protection, but rather that the memory of the pathogen had not been provoked at the time of the test. One way around this frustration is to deliberately expose the dog to the vaccine a week or ten days prior to his titer test. This is done by purchasing and mixing a vaccination of the type he is to be titered for, but instead of injecting it into the dog, put it on a cotton ball or tissue and allow the dog to sniff it, or perhaps even rub a bit of it on his nose. This increases the likelihood of the titer test result's accuracy.

Ongoing Research

Two researchers are at the forefront of the field of canine immunology, Ronald D. Schultz, Ph.D, DVM and W. Jean Dodds, DVM. They are currently working together on a Rabies Challenge study that is underway at the University of Wisconsin's School of Veterinary Medicine where Dr. Schultz is a professor and the current chair of the Department of Pathobiological Sciences. Dr. Schultz has been studying the efficacy of vaccines and immunity since the 1970's. Regarding the practice of annual vaccination, he says, "...we have found that annual revaccination, with the vaccines that provide long term immunity, provides no demonstrable benefit and may increase the risk for adverse reactions." Dr. Dodds, an expert on Canine Autoimmune Thyroid Disease and founder of the first private non-profit blood bank for animals, Hemopet, is equally recognized as an authority on canine vaccines and immunology. Dr. Dodds' limited vaccination protocol is widely followed by purebred dog breeders concerned about the incidence of adverse reaction. Regarding titering at the one year period, she says, "If the titers are sufficient, then a booster isn't needed."

Other Considerations

One concern for small dog owners in particular, is the amount of vaccine given. A Chihuahua is vaccinated with the same amount of pathogen as a Great Dane. Some researchers maintain that since at the cellular level there are the same number of receptor sites in every dog, that there is no reason to adjust dosages for body size. However studies show that the smaller a dog, the greater his potential for vaccine reaction.

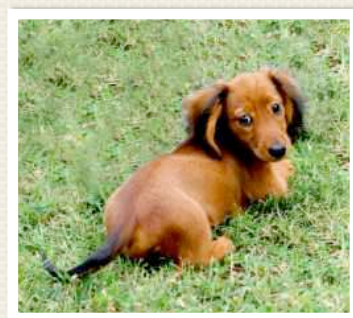
There is a period of vulnerability, particularly with Parvo, when a puppy's maternal antibodies prevent his immunization with a vaccine, and yet

are insufficient to protect him from actual infection with the virus. This is important to remember with puppies in areas with widespread incidence of Parvo.

Just as with humans, there is an emerging body of evidence on the role inflammation plays in the canine body. Long thought to be a cause of healing, it is increasingly thought to be a causative agent in disease, and not a cure. The natural response in a dog's body to vaccination is an increase in inflammation

In Conclusion

The study of canine immunology will be ongoing into the foreseeable future.



Dachshunds are among the breeds known to be vulnerable to vaccine related auto-immune

Troubling questions remain for which there are no absolute answers or all encompassing solutions. Vaccination decisions are unique to every dog and should be determined by the dog's age, health, breed, etc. Links for further reading as well as to some of the latest and most conservative vaccination protocols have been provided.

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Additional Reading and Resources

- [Everything Vaccines](#)
- [Canine Health Concern](#)
- [Dr. Jean Dodds Vaccination Protocol](#)
- [AAHA Canine Vaccine Guidelines](#)