

Vaccination Interview

with Dr. Ron Schultz – May 2013

Dr. Schultz is considered to be one of the foremost experts on immunology and vaccinations for pets.

A practice that was started many years ago and that lacks scientific validity or verification is annual revaccination. Almost without exception there is no immunologic requirement for annual revaccination. Immunity to viruses persists for years in the life of the animal.

Core Vaccines & Vaccination Schedules

The importance of vaccines and how to use them in the safest manner possible: Vaccines are important because they can prevent some very serious vaccine preventable diseases that can make animals very sick and can even kill. Since the veterinary profession started to reexamine vaccines in the 2000's, they have come up with the term "core vaccines" to identify the vaccinations that all animals should have. These vaccines are so effective that they will prevent the disease in all appropriately vaccinated animals.

Dogs should receive the following core vaccines Canine Distemper Virus (CDV), Canine Parvovirus (CPV-2), Canine Adenovirus-1 (Infectious Canine Hepatitis [ICH])/Canine Adenovirus-2 and Rabies Virus (RV). The latter is not only important for the dog, but because it is usually fatal and can be transmitted to humans, it is considered a public health issue.

Vaccine Schedules

Pets were being over vaccinated, which in some cases was causing pets to become very ill or to even die.

Dogs should not receive any vaccinations before they are six weeks of age. This is because a puppy gets some immunity through antibodies in its mother's milk. Those antibodies help protect the puppy/kitten from disease but also will interfere with vaccinations. This is why puppies and kittens receive multiple vaccinations.

Recommended vaccination schedule: Start at 8-10 weeks, give a second dose 3 to 4 weeks later and then a final dose an additional 3 to 4 weeks later, making sure it is at 14 to 16 weeks of age. By then the mother's antibodies will not interfere with the vaccinations. Studies have demonstrated that if that last dose is at 14-16 weeks of age at least 98% of puppies will get immunized, regardless of breed.

After these initial puppy vaccinations, Dr. Schultz recommends doing a

titer test or revaccination when the puppy is a year of age and then revaccinating or re-titering no more frequently than every 3 years.

What Determines How Long A Vaccine is Effective?

It's the specific vaccine and the disease it was designed to prevent that determines how long it will confer immunity. All of the core vaccines, except Rabies, are modified live vaccines. This means that they actually must infect the animal in order to have an immunization effect and therefore must contain an attenuated version of the actual virus. The immunity that is conferred by this type of vaccine, just like the core vaccines for children (measles, mumps rubella), provide long term immunity because they are live, replicating viruses, much like the immunity one would get if one were actually infected with and recovered from those diseases. Immunity conferred by these vaccines is typically many years to a lifetime. If you get measles or are vaccinated for measles as a child you will not get it again anytime in your life, even if you are exposed.

That is the same with distemper, parvo, and the other core animal vaccines. In other words, for the core vaccines that include a modified live virus, once a pet has had their puppy series and their revaccination at one year of age, they should be immune for life and should NOT require further vaccination. Instead of revaccinating annually Dr. Schultz recommends that we only consider revaccination every three or more years. His personal preference is to do titer testing every three years. A disadvantage of titers is they can be more expensive than revaccinating,

but it is much safer to do a titer because while the adverse reactions to vaccines are fairly small they still can occur.

Rabies Vaccinations

Titers can be done for Rabies but due to legal and public health requirements, revaccination for Rabies is still required every three years. Those legal requirements don't necessarily follow science or good vaccination practice, but they are the law of the land.

All states in the US now have a three year Rabies vaccination law. The initial Rabies vaccination should not occur before 12 weeks of age. The second vaccination should occur a year later and any subsequent revaccination for Rabies should not occur more often than every three years. If you travel internationally with your dog, other laws may apply.

Titer Testing, Non-Core Vaccines and Canine Infectious Respiratory Disease Complex

Titer Testing

Antibody titer testing is a good alternative to revaccinating every three years and should be considered when you bring your pet in for an annual wellness exam. An annual wellness exam is a very important part of any pet's ongoing veterinary care. Additionally, some of the non-core vaccines must be given on an annual basis because they are only

effective for a year.

Dr. Schultz recommends running titers for Canine Distemper Virus (CDV) and Canine Parvovirus (CPV-2). If you get positive results for distemper and parvo, titers are generally not needed for Canine Adenovirus-1 (Infectious Canine Hepatitis [ICH])/Canine Adenovirus-2). Titers don't need to be done more often than every three years. With regard to Distemper, Parvo and Adeno, a positive titer indicates immunity for life unless the animal contracts a severe disease that suppresses their immune system.

Non-Core Vaccines for Dogs

Non-core vaccines are not necessary for many animals and are only recommended when an animal is at risk of contracting the disease due to lifestyle and or where they live.

Dr. Schultz believes the most important non-core vaccine for the dog is the one for kennel cough or more correctly Canine Infectious Respiratory Disease Complex (CIRDC). This is a complex disease that involves a number of bacteria and viruses that can be causative. *Bordetella bronchiseptica* is the most prevalent of the bacteria that contribute to this disease. A variety of vaccines exist to reduce the severity of kennel cough. An assortment of viruses can also contribute to Canine Parainfluenza, Canine Influenza virus, and several others.

You cannot prevent kennel cough like you can prevent Distemper.

You can prevent Parvo. You can prevent Adeno, (infectious canine hepatitis). When we give the kennel cough vaccine we're hoping to reduce the severity of the disease since we can't prevent it, because it is so complex.

Other non-core vaccines for the dog that are important are Leptospirosis (caused by four different serovars/strains). Another disease that is regional for which there is a vaccine is Lyme disease.

These non-core vaccines, unlike the core vaccines, only provide short-term immunity and must be given annually. These vaccines don't confer long term immunity because of the immunity of the animal that receives them.

There are some diseases with humans too where once we get the disease we develop a lifelong immunity. An example with this with humans is measles. But with humans and animals there are also many diseases which we can get over and over again like Lyme disease and the common cold.

Kennel Cough/CIRDC

Most boarding facilities, daycares and training classes require the canine cough vaccine, even though it's not a core vaccine. Over the past 15 years the vaccines that are used for this complex group of diseases have changed, as well as the protocols for their administration. This is what

seems to work best:

Kennel Cough/CIRDC is not vaccine preventable. The vaccines only reduce the severity of the disease. Part of that is because we don't even have vaccines for some of the organisms that cause CIRDC. However, even where we do have vaccines, they are often only 60% to 70% effective. That's why a dog can be vaccinated and still get CIRDC.

For Bordetella, the most important bacterial component of canine cough, we now have an injectable vaccine which is made from a dead organism, an intranasal vaccine which is a modified live vaccine, and an oral vaccine which is made from a modified live organism. The two live vaccines are more effective than the dead vaccine. Dr. Schultz recommends revaccination on an annual basis and prefers the intranasal vaccine. It not only includes Bordetella but also canine Parainfluenza. Since the normal path of infection for these diseases is via the respiratory system, the intranasal approach is the best way to administer this vaccine.

Both Bordetella and canine Parainfluenza can also be administered by injection, but neither work as well as the vaccine that is administered intra-nasally. Some dogs will develop a cough after being given the intranasal vaccine but it is not an infection but is actually an allergic reaction to the Bordetella component of the vaccine. These dogs have not developed canine cough but because they have a hyper sensitivity to the vaccine they are coughing.

Adverse Reactions Caused By Vaccines

Vaccines do have the potential to cause harm, but for years the prevailing attitude was if a vaccine doesn't help, at least it won't hurt. Obviously this was not the case and people started to reexamine if their pets should be vaccinated so frequently, much less at all.

In general vaccines are very safe.

Autoimmune diseases are genetically controlled but can be triggered by vaccinations. Immune mediated hypersensitivities like anaphylaxis have both a genetic and a vaccine component. Adverse reactions do not always occur the first time a vaccine is administered but can occur after subsequent vaccinations when the animal becomes hypersensitive.

Certain vaccines are more likely to trigger this type of hypersensitivity. The Leptospirosis vaccine and the injectable Bordetella vaccine have also caused hypersensitivity reactions. It's often not the antigens in the vaccine, the substances that are meant to help the animal, that cause the reactions. Reactions are often caused by other ingredients in the vaccine like Bovine Serum Albumen, adjuvants, etc. By vaccinating only with the vaccines that are absolutely necessary and as infrequently as possible, we can minimize the risk of adverse reactions.

There are many adverse reactions that can occur from a vaccination. Even behavioral changes can be the result of an adverse reaction because the immune system is closely integrated with both the nervous and

endocrine system. This is why behavior can be affected by a vaccine.

The only reactions that are considered to be caused by a vaccine are those that happen immediately, within 15 minutes to an hour after vaccination. There are, however, other reactions that can happen days, weeks and even months later.

The Rabies Challenge Fund

Dr. Ron Schultz and Dr. Jean Dodds, also very involved in vaccine work, have started a study to answer the question: how long is the duration of immunity from today's Rabies vaccine used with dogs? Current vaccines are labeled by the USDA as one year or three year vaccines. In some of these cases the vaccines are actually identical.

Because Rabies is a disease that can affect humans in addition to animals it is regulated more strictly than other vaccines. The duration of immunity is actually determined by challenging previously immunized animals with exposure to the disease to see if they survive. No additional challenge tests have been done beyond three years. A goal of the Rabies Challenge Fund is to complete this study at the 5 year and 7 year points.

The Rabies vaccine given today is a killed or non-infectious vaccine. Typically the duration of immunity for vaccines of this type is much shorter than the duration of immunity for modified live vaccines. For example a distemper killed vaccine provides immunity for about a year while a distemper vaccine made with modified live virus has a duration

of immunity equal to the lifetime of the animal.

Up until the mid-1980's, the Rabies vaccine was made with a modified live virus and that vaccine likely would result in lifetime immunity. However, the USDA no longer allows this vaccine to be used in the US.

The goal of the study being conducted by the Rabies Challenge Fund is to determine if the current killed vaccine will offer immunity up to five and seven years.

A new advance in Rabies vaccines is the development of vaccines made with recombinant technology. They behave like a live vaccine but it cannot actually infect an animal with Rabies. This technology has also been used with the Distemper vaccine for the dog. That vaccine gives as long a duration of immunity as a modified live virus vaccine, up to nine years, which is considered a lifetime. Since there is no live virus in the vaccine it is also safer. It is also safer because recombinant vaccines, unlike killed virus vaccines, do not require the addition of adjuvants to help increase the immune response. It is believed that the hypersensitivity reactions to vaccines may be in part caused by these adjuvants.

The Rabies Challenge Fund is not only doing research but has also done some very effective lobbying to change the laws in all 50 states so that dogs only need to be revaccinated for Rabies every three years. Prior to that effort, there were many states that required the Rabies vaccine

annually.

The Rabies Challenge Fund is funded entirely by animal owners, not vaccine companies or any other company. The University of Wisconsin has been very generous in reducing the costs of the study since it is being funded by animal owners. Donations have come from individuals, dog clubs and others. The study is not over and fundraising is ongoing. If you are interested in helping fund this project you can find more information at (<http://www.rabieschallengefund.org/>).