

# Two Big, Common Mistakes Made With Rabies Vaccine

Since rabies is so deadly and the fact that infected pets must be euthanized, I recommend vaccinating your pet appropriately with rabies vaccine. However, many veterinarians make these mistakes that can greatly increase your pet's risk of side effects.

Analysis by Dr. Karen Shaw Becker

## STORY AT-A-GLANCE

- The rabies virus is almost always fatal; in addition, pets diagnosed with the disease are required by law to be euthanized
- Pets should be protected through vaccination as required by law and by avoiding situations in which they could be exposed to a rabid animal
- A recent retrospective study revealed interesting insights into the effectiveness of rabies vaccinations in young dogs, including incidences of vaccine failure
- Most well-loved pets are over-vaccinated against rabies over their lifetimes, and until city and state vaccine laws are amended to accept titers in lieu of vaccinations, this will continue to be a medical problem for many animals

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The rabies virus, also called acute viral encephalomyelitis, is a usually fatal inflammatory infection that affects the brain and central nervous system. In dogs and cats in the U.S., the virus is most often transmitted when an infected fox, raccoon, skunk, coyote or bat bites a pet.

Rabies is a zoonotic disease, meaning it can be transmitted to humans by infected animals. Once the rabies virus enters a pet's body, it multiplies in muscle cells, and then spreads to nearby peripheral sensory and motor nerves, which move it to the brain and central nervous system. The average time between exposure to brain involvement is three to eight weeks in dogs, and two to six weeks in cats.

Rabies must be treated as soon as symptoms appear if the pet has any chance for survival. If your dog or cat has been in a fight with another animal, has been bitten or scratched by another animal or if you suspect he may have come into contact with a rabid animal, you should take him to your veterinarian or emergency clinic immediately.

Diagnosis of rabies in a living dog or cat is done through history taking and symptom observation. Pets suspected of having rabies are quarantined in a locked kennel at a veterinary clinic for 10 days and carefully monitored. If an animal is showing progressive symptoms of the disease while quarantined, the veterinarian will take fluid samples for evaluation.

Since there is no treatment or cure for rabies, if the samples are positive for the virus, sadly, the law requires that the pet be euthanized. Death from the disease itself typically occurs in unprotected animals within seven to 10 days after the onset of symptoms. Rabies is clearly a devastating and fatal disease, so it's important to protect your pet through vaccination as appropriate and required by law, as well as to avoid situations in which your pet could be exposed to a rabid animal.

## Study Examines Effectiveness of Rabies Vaccinations

Recently, researchers in Greece published a retrospective study that looked at whether certain factors such as age, breed, number of vaccine doses and the type of vaccine influence rabies titer levels (the effectiveness of vaccination) in young dogs.<sup>1</sup> The researchers used the international standard for titers of 0.5 IU/mL or higher as an acceptable level.

All the dogs included in the study were younger than 12 months at the time of their most recent rabies vaccination, with the majority receiving their first vaccine between 3 and 6 months of age. All titer tests were performed before the dogs received their first annual booster after 12 months of age.

Titers were available for analysis for 662 dogs for the period 2008 to 2015. A little over half the dogs were male (332); the remaining 330 were female. Purebred and mixed breed dogs were equally represented, and included 215 small dogs, 75 medium dogs, 149 large dogs and 223 dogs of unknown size. Study results highlights:

- 573 dogs had an acceptable rabies titer level; the remaining 89 dogs, or 13.5%, experienced "vaccine failure" with titer levels less than 0.5 IU/mL
- 546 dogs received one vaccine before 12 months of age; the remaining 116 dogs received two vaccines
- 91% of the dogs who received two vaccines before 12 months achieved an acceptable titer level, as compared to 84% of dogs who received one vaccine
- Dogs who received two vaccines had a median titer of 13.77; dogs who received one vaccine had a median titer of 4.56 IU/mL
- The optimal time to measure titers appears to be four to six weeks after vaccination
- 88.7% of the dogs received a monovalent vaccine (designed to immunize against a single microorganism); monovalent vaccines are more likely to provide acceptable titers (91%) than polyvalent vaccines (54%; polyvalent vaccines immunize against two or more strains of the same microorganism, or against two or more microorganisms)
- Mixed-breed dogs had higher titers than purebred dogs
- Vaccine failure rates were significantly higher in puppies less than 3 months old
- Body size did not significantly affect vaccination outcome (perhaps because the size of about a third of the dogs in the study was unknown)

## Things to Know About the Rabies Vaccine

Rabies vaccines are the only vaccines mandated by law in all 50 states due to the deadly and zoonotic nature of the disease. But these vaccines, like all vaccines, have the potential for adverse reactions that can range from very mild to profound, up to and including anaphylaxis and death.

Fortunately, all 50 states now have a three-year revaccination protocol after the second vaccine is given. However, a few county and city laws may differ, so it's important to check with your veterinarian or local animal control agency for more information.

The amount of rabies vaccine given is a hotly debated topic among veterinarians. While the majority of integrative vets believe a "one size fits all" approach to vaccines puts dogs under 40 pounds at risk for substantially more rabies vaccine reactions, the law still mandates all dogs must receive a 1-milliliter dose.

Thankfully, Dr. John Robb is working to bring this issue to national attention and we're hoping the increased awareness will prompt changes in this requirement on a state-by-state basis. Some states allow for medical exemptions from rabies vaccines for pets who are ill or have had an adverse reaction in the past.

## **Recommendations to Improve Rabies Vaccine Safety**

I strongly recommend waiting until your pet is as old as allowable by law before giving the first rabies vaccination. In some states, this is 6 months. In others, it's earlier. Among several problems that can result from giving the rabies vaccine too early — as the Greek study mentions — vaccine failure, which is significantly more common in puppies under 3 months.

After the second rabies vaccine, I strongly encourage you to insist on the three-year vaccine for the remainder of your pet's life. The three-year vaccine is identical to the one-year vaccine, so you're providing the protection required by law, but at much less frequent intervals. This means fewer vaccines throughout your pet's life and less chance of an adverse reaction.

Rabies vaccinations should never be given in combination with or at the same time as another vaccine. They should be given alone, separated from all other vaccinations by at least two weeks. Because rabies is the only vaccine required by law, I recommend that it be the only repetitive vaccine you give your pet.

You can titer for all other diseases and hopefully, with future legislative changes, rabies titers will also be accepted as demonstration of protective immunity, which will prevent over-vaccination and also identify animals who have vaccine failure.

I also recommend a homeopathic detox remedy for the rabies vaccine called Lyssin, especially if your pet has had an adverse reaction. Always closely monitor the injection site after each vaccination. If you notice inflammation or any abnormality or change in the appearance of the skin, such as a lump, irritation or heat, contact your proactive veterinarian immediately.

It's the goal of the integrative veterinary community that the **Rabies Challenge Fund**, which was initially set up by immunologist Dr. Ronald Schultz and veterinarian Dr. Jean Dodds, proves that the rabies vaccine provides duration of immunity for a much longer period than three years.

Ultimately, that would mean pets receive far fewer vaccines. It will allow animals to be immunologically protected without the risk of cumulative vaccine damage over the course of their lifetime. In the meantime, please partner with the **Protect the Pets** movement in your state to help educate lawmakers about protective immunity and titers.

## Sources and References

Clinician's Brief, October 2018

American Veterinarian, February 17, 2018

<sup>1</sup> Veterinary Microbiology, Volume 213, January 2018, Pages 1-4

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