

# Non-Core Vaccine Information

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The administration of a non-core vaccine is the decision of the canine handler. There are several factors to consider. Provided here are some aspects of these vaccines with respect to protection, adverse reactions, and risk factors associated with giving the vaccine as well as not doing so. If more information is needed, we recommend further research into credible available information and to discuss these options with your veterinarian.

Some factors to consider:

- 🐕 Canines training in disease endemic areas or who may be deployed to such an area
- 🐕 High-risk breed for adverse reactions to a vaccine
- 🐕 Efficacy of alternatives to vaccination (i.e. tick repellent for Lyme disease, bottled water and meticulous decon for Leptospirosis)
- 🐕 Previous history of adverse vaccine reaction
- 🐕 Incidence of the disease as reported by the CDC, veterinary university, or other study
- 🐕 Level of protection induced by the vaccine

## LEPTOSPIROSIS VACCINE

### Protection

This vaccine protects against the bacterial organism *Leptospira interrogans*. There are over 200 recognized serovars (subtypes) of the leptospirosis organism worldwide<sup>1</sup>. The vaccine may include serovars *canicola*, *ictrtohaemorrhagiae*, and also available with *grippotyphosa* and *pomona*. Different types are prevalent in different areas of the country. Some serovars detected by testing are not currently included in a vaccination form<sup>1</sup>. This organism is often passed to dogs through contaminated water or soil. Carriers include rodents, skinks, raccoons, other dogs and people<sup>2</sup>. Leptospirosis causes potentially fatal liver and/or kidney disease.

### Efficacy

Protection for some of the serovars is reported to be 1 year; others may be only 6-8 months. High risk animals are recommended to be vaccinated twice per year<sup>2,3</sup>.

### Adverse Reactions

High incidence of acute anaphylactic reactions reported in toy breeds, puppies <12 weeks old<sup>3</sup>.

### High Risk Factors

Late summer to fall is the highest reported incidence of Leptospirosis. Dogs in suburban or rural environments have been shown to be at increased risk of leptospirosis, presumably because of greater likelihood of contact with wildlife habitats<sup>1</sup>. Wildlife within urban areas and domestic pets shedding the disease allow for occurrence within city areas as well. No consistent or distinct geographic pattern for positive test results was observed in one study but seropositivity was greater in the midwest, south-central, and northwest regions of the United States<sup>1</sup>. One study had a cluster of reported cases during the 1990's located in the Midwest<sup>4</sup>. Another study out of Minnesota isolated the organism from 100% of streams, 65% of lakes, 28% of springs, 5% of bog lakes, and 0% of marsh tested<sup>5</sup>. **Additional precautions**, especially against types of leptospirosis that are not covered by current vaccines, includes drinking only tested or bottled water and meticulous decontamination, as canines frequently groom by licking areas that may have been exposed to contaminated water.

## LYME VACCINE

### Protection

This vaccine is protection against the spirochete organism *Borrelia burgdorferi* that causes Lyme disease. Transmitted via the bite of certain ticks, it can affect joints, nervous system, and heart.

### Efficacy

After initial boosters, it is recommended as a yearly vaccine. Revaccination is recommended prior to the start of tick season (ticks carry and transmit the organism)<sup>3</sup>. However, in northeastern United States tick season is now considered year-round. Ticks are seen during every month of the year. Vaccine response in one study averaged prevention in 78%, another study stated 90%<sup>6</sup>. However, these studies did not evaluate dogs for the Lyme organism before vaccination<sup>5</sup>.

### Adverse Reactions

Adverse effects are estimated at <2%. There are concerns the vaccine may sensitize canines to the immune response, contributing to the development of Lyme disease, especially in genetically predisposed individuals<sup>6</sup>.

### High Risk Factors

Lyme disease has been diagnosed in people from all 50 states, but is thought that they acquired the disease by traveling to endemic areas<sup>7</sup>. Lyme disease is endemic in the Northeast, Northwest, and much of the North Central United States including Wisconsin, Illinois, Indiana, and Pennsylvania<sup>8</sup>. In humans, 85% of cases have occurred in the eastern coastal states from Massachusetts to Virginia, 10% from Wisconsin and Minnesota, and 4% from California. All other states account for less than 1% of the disease<sup>7</sup>. Where ticks are prevalent and the disease is endemic there is a high risk of contracting Lyme disease. Late spring and early fall are the most prevalent times of year, however ticks are seen during every month of the year in the Northeast.

Cases of Lyme disease are over-represented in Labradors and Golden Retrievers. These breeds may be predisposed to developing the disease<sup>6</sup>.

The American College of Veterinary Internal Medicine (ACVIM) considered the many arguments for and against the administration of Lyme vaccine. The only consensus was that immunization of dogs in non-endemic states is unneeded. The majority of respondents stated they would not recommend vaccination in endemic states either, however decisions regarding vaccination of individual animals is a medical decision that should be made between each owner and their veterinarian on an individual case basis<sup>6</sup>.

**Alternative methods** to vaccination to avoid transmission are based on tick repellent products (i.e. Frontline, Preventic Collar, Advantix, Defend) and meticulous tick checks on the canines. Tick control is also important in preventing other tick-borne diseases (Rocky Mountain Spotted Fever, ehrlichiosis, anaplasmosis, babesiosis, bartonellosis, and others)<sup>6</sup>.

### Tick Control Products

Frontline (fipronil) – spot-on product; decreases transmission of Lyme and ehrlichia, not washed away by swimming or bathing, kills fleas and ticks but not until 2<sup>nd</sup> day of attachment. Lyme disease requires 2-3 days of attachment for effective transmission, other diseases take one day<sup>6</sup>.

Preventic Collar (amitraz) – prevents tick attachment, needs to be applied tightly enough for skin contact (not just hair), is not active against fleas, chemical is washed away by swimming or bathing, toxic if ingested (Yohimbine antidote), often recommended to be used with fipronil<sup>6</sup>. Advantix (permethrin/imidacloprid) – tick repellent, it is not washed away by swimming or bathing with mild shampoo, repels and kills ticks as well as fleas and mosquitos; toxic to cats<sup>6</sup> (as a precaution cats should be kept away from the canine until drug is dispersed, ~ 24 hours).

## RATTLESNAKE VENOM VACCINE

### Protection

This vaccine, *Crotalus atrox* toxoid, is intended to protect dogs against the venom from the bite of the Western Diamondback Rattlesnake<sup>4</sup>. After the initial two doses, subsequent boosters are recommended annually in the spring, or one month before entering rattlesnake habitat<sup>9</sup>.

### Efficacy

No current field validation of efficacy is available. *Personal communication from Dr. William Grant, CA TF-5: 'We have vaccinated a number of high risk exposure dogs with this vaccine (>200) and no adverse reactions. We have had one dog which had been vaccinated receive a leg bite. The clinical signs were very mild following the bite. I am not sure if it was the vaccine or the amount of venom that was injected into the dog. The vaccine is only licensed for Western diamondback rattlesnake which is the most common poisonous snake in southern California.'*

### Adverse Reactions

Most reactions are local vaccine site swelling. Less than 0.1% experience mild vomiting, diarrhea, or lethargy. Acute anaphylaxis is reported as rare, 1-3 per million doses administered<sup>9</sup>.

### High Risk Factors

Rattlesnake habitats include wetlands, deserts, and forests from sea level to mountain elevations. They are most active in warmer seasons, spring to autumn, in the northern half of the United States. They may be active year-round in warmer climates, mostly in the southern half<sup>9</sup>. Ranges includes west Arkansas, east/south central Oklahoma, Texas, east/south New Mexico, Arizona, extreme southern Nevada, and southern California into Mexico<sup>10</sup>.

## INFLUENZA VACCINE

### Protection

This vaccine is intended as an aid in the control of disease associated with canine influenza virus<sup>11</sup>.

### Efficacy

The vaccine may not prevent infection altogether, but trials reveal it significantly reduces the severity and duration of clinical illness<sup>11</sup>.

### Adverse Reaction

Currently no side effects have been reported.

### High Risk Factors

Dogs at risk of exposure are those that participate in activities with many other dogs or who are housed in communal facilities, particularly where the virus is prevalent. This risk group is similar to those who receive Bordetella/parainfluenza (Kennel Cough) vaccinations<sup>11</sup>. The first recognized outbreak of canine influenza is believed to have occurred in racing greyhounds in January 2004 at a track in Florida. From June to August of 2004, outbreaks of respiratory disease were reported at 14 tracks in 6 states (Florida, Texas, Alabama, Arkansas, West Virginia, and Kansas). Between January and May of 2005, outbreaks occurred at 20 tracks in 11 states (Florida, Texas, Arkansas, Arizona, West Virginia, Kansas, Iowa, Colorado, Rhode Island, and Massachusetts). Since then, canine influenza has been documented in 30 states and Washington, DC. At this time, CIV is endemic (very prevalent) in areas of in Colorado, Florida, New York, and Pennsylvania. As of October 2, 2008, 1,079 cases of canine influenza were confirmed by the Cornell University College of Veterinary Medicine Animal Health Diagnostic Center<sup>11</sup>.

## References

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