

Section I: Canine Vaccination/Wellness Protocol

I. Puppy Vaccinations:

6 to 8 weeks DHP #1, Intestinal parasite treatment, Heartworm preventive single dose, Flea/tick preventive single dose

9 to 11 weeks DHP #2, ITBC #1, +/-Lyme #1, Intestinal parasite treatment, Heartworm preventive single dose, Flea/tick preventive single dose

12 to 14 weeks DHP #3, ITBC #2, +/-Lyme #2*, +/-Lepto#1, Intestinal parasite treatment, Heartworm preventive single dose, Flea/tick preventive single dose

15 to 17 weeks DHP #4, +/-Lepto #2, Rabies, Intestinal parasite exam, start monthly Heartworm preventive and flea/tick preventive

5 to 6 months Spay/Neuter, Heartworm Exam

*Lyme #3 is needed 6 months after second booster

II. Adult Vaccinations:

All dogs receive core vaccines. Additional vaccination recommendations are based on risk factors. Patients are classified into five groups based on their lifestyle/environment.

Group A+ = High Social/High Vector Plus Significant Tick Exposure

Group A = High Social/High Vector

Group B = High Social/Low Vector

Group C = Low Social/High Vector

Group D = Low Social/Low Vector

III. Recommended Vaccines:

Group A+	Group A	Group B	Group C	Group D
DHP, Lepto, Lyme, ITBC, Rabies	DHP, Lepto, ITBC, Rabies	DHP, ITBC, Rabies	DHP, Lepto, Rabies	DHP, Rabies

IV. Frequency of Vaccination:

DHP - Initial Series; then, at 1 year; then, every 3 years (when using a certified 3 year vaccine)

Lepto - Initial Series; then, annually

Lyme - Initial Series; then, six months and again at one year; then, annually

ITBC - Every six months

Rabies - Annually or every 3 years depending on the type of vaccine

V. Additional notes:

If an adult dog is to be vaccinated for Lyme disease, it should have a Lyme disease test performed first (example, 3DX from Idexx).

VI. Routine diagnostics recommendations:

-Intestinal Parasite Examinations should be performed every 6 months

-Heartworm Examinations are recommended every six months; however, the minimum requirement is an occult test annually.

Section II: Canine Infectious Diseases and Vaccination Information

I. General notes:

- A. Dogs past **16 weeks** of age only need 2 doses of vaccine for all the core vaccines. (If adult canine teeth are present, treat the patient as an adult.)
- B. If there is a delay of **longer than 4 weeks** between vaccinations in the primary series, this should generally be corrected by giving two final vaccines 3 to 4 weeks apart.
- C. Vaccination under anesthesia is **not recommended** due to possibility of allergic reactions.
- D. Dogs with autoimmune disorders should probably have titers instead of vaccines.
- E. Vaccination of pregnant animals is not advised.

II. Core Vaccines:

- A. Canine distemper
 1. Administer at 6 to 8 weeks and then at 3 to 4 week intervals until 14 to 17 weeks. After booster in 1 year, vaccinating every 3 years will be protective. (Shoal Creek Animal Clinic uses a certified 3 year vaccine.)
 2. Post-vaccinal complications

a. Some weimaraners vaccinated with MLV distemper will develop HOD occasionally with concurrent juvenile cellulitis. This is less frequent with the Onderspoort strain of modified live virus and should not occur with the recombinant vaccine (Merial). If the MLV virus is used in Weimaraners it should be separated from the parvo vaccine and given at 2 week intervals. The leptospirosis fraction should not be used at the same time since this might suppress immunity. Titers need to be checked for this breed 1 month after final vaccination since so many are low responders.

b. Akitas (usually less than 16 weeks) also can have a fatal post-vaccinal polyarthritis in response to MLV vaccines. The Onderspoort strains have a lower risk and the recombinant vaccine has no risk of post-vaccinal encephalitis.

3. General notes

a. Vaccinating an exposed animal will prevent disease since there is a 72 hour incubation period for the virus.

b. Brachycephalic breeds are less susceptible to the virus.

B. Canine parvovirus

1. Administer at 6 to 8 weeks and then at 3 to 4 week intervals until 12 to 14 weeks. (Note: Ron Schultz at Wisconsin recommends a final parvo booster at 16 weeks of age or older.) After booster at 1 year, vaccinating at 3 year intervals will be protective. (Shoal Creek Animal Clinic uses a certified 3 year vaccine.)

2. General notes

a. The above protocol assumes vaccination with potentiated MLV vaccine. Some breeders are using feed-store vaccines which are either killed virus or conventional MLV. In these cases, puppies **will not** be protected at the same age!

b. Certain breeds are infected with the disease more frequently and have a tendency to be low or non-responders to the vaccine (Rottweiler, Doberman, Staffordshire terrier, German Shepherd, and Alaskan Sled Dog).

c. Simultaneous infection and vaccination will not protect against disease as the virus replicates so rapidly.

C. Adenovirus (CAV-1)

1. Administer a MLV parenteral vaccine at 6 to 8 weeks and then at 3 to 4 week intervals until 12 to 14 weeks. After a booster at one year, vaccinating at 3 year intervals will be protective. (Shoal Creek Animal Clinic uses a certified 3 year vaccine.) Some laboratories can do titer checks for measuring immunity.

2. General notes

a. CAV-1 is found in dogs, coyotes, foxes, and bears. Ectoparasites can harbor the virus and may be important in natural transmission.

b. The virus survives for days at room temperature and fomites are important in transmission.

c. Severely affected animals become moribund and die a few hours after onset of clinical signs.

d. MLV vaccine to CAV-2 is used instead of MLV CAV-1 because it is cross-protective but does not have the risk of causing ocular or renal signs. Care should be taken when giving the vaccine subcutaneously since aerosolizing the vaccine can result in respiratory signs.

D. Rabies

1. Administer a single dose at 12 weeks of age. After a booster in 1 year can vaccinate every 1 to 3 years as determined by vaccine type and local laws. (Administering a 1 year vaccine annually does not cause less reactions than administering a 3 year vaccine triannually.)
2. General notes
 - a. The total volume of vaccine needs to be given, regardless of the size of the puppy. One injection of inactivated vaccine does not produce a lasting antibody titer and the second vaccination in 1 year is extremely important.
 - b. An immediate booster is recommended to the previously immunized dog or cat after a known (or highly suspected) rabies exposure.
 - c. Vaccine types
 - i. Inactivated cell culture vaccines: have large amount of antigen and are very immunogenic. With adjuvant become even more effective but some problems with allergenicity and oncogenicity
 - ii. DNA plasmid vaccine: DNA plasmid coding for rabies glycoprotein is inserted into bacteria. These are not licensed now but may be the recommended vaccines of the future.
 - d. Sustained inflammatory reactions which occur at the site of vaccination are considered precursors to sarcoma, which can develop months to years later. These are more frequent in cats than dogs.
3. Notes about Rabies
 - a. Most animals will constantly lick at the site of viral inoculation.
 - b. In animals that acquire rabies, friendly animals may become aggressive and fractious ones may become affectionate.
 - c. Dogs can go through a furious phase first and then a paralytic phase. The paralytic phase usually starts as a lower motor neuron paralysis at the infected site and progresses to involve the entire CNS. When the brain stem becomes infected can have pharyngeal spasms and laryngeal paralysis, resulting in inability to swallow, and excessive salivation.
 - d. Most dogs and cats are infected with the virus variant associated with the dominant wildlife reservoir in the region. Wildlife rabies is on the increase. In the US most of the reported dog cases are in Texas because of a large coyote rabies problem.
 - e. Dogs account for the majority of reported animal bites and the majority of people seeking post-exposure prophylaxis, although the number of cases of dog rabies is less than that of cats.
 - f. Adequate vaccination of 70% of dog and cat population is needed to prevent occurrences of rabies epidemics.

III. Non-Core Vaccines:

A. Infectious tracheobronchitis

1. Intra-nasal vaccine - for at risk animals a single dose in initial series and then every 6 to 12 months.
2. Parenteral vaccines
 - a. Parainfluenza

Administer at 6 to 8 weeks and then every 3 to 4 weeks until 12 to 14 weeks of age. Booster at 1 year and then every 3 years is considered protective. Booster yearly if in very high risk environment. Natural resistance develops with increasing age.

b. Bordetella

Administer 1 dose at 6 to 8 week and 1 dose at 10 to 12 weeks. Booster at 1 year and then annually or biannually if animal does not appear protected. No recommendation pertaining to cell wall antigen extract versus killed bacterin type vaccines.

3. General notes

a. Given most upper respiratory infections are caused by multiple agents and the fact that mucosal immunity is short-lived, it is impossible to predict protection following vaccination. The goal of immunization is to help manage the disease and prevent severe pneumonia and death.

b. Vaccination is only recommended for animals exposed to other dogs. Especially recommended for dogs in shelters, kennel, shows, large colonies, or breeding establishments.

c. The intra-nasal vaccine should **never be used** in animals with pre-existing respiratory disease. In normal animals the intra-nasal vaccine can cause minor respiratory signs, occasionally a rhinitis that requires antibiotic treatment. The intra-nasal vaccine should be used for animals which will be going to a high risk environment immediately after vaccine and is generally considered more protective.

d. Puppies which are in a very high-risk environment should receive one intra-nasal vaccine and 2 parenteral vaccines. These animals should have yearly parenteral vaccines and boosters of the intra-nasal vaccine before anticipated exposure.

e. Boosting an adult animal with an intra-nasal vaccine which has previously received parenteral vaccine **will not** boost systemic antibody levels.

f. The intra-nasal vaccine is considered to have greater efficacy in protecting against Bordetella.

B. Leptospirosis

1. For at risk animals administer in initial series with 2 vaccines 2 to 3 weeks apart (a series of 3 if in highly endemic areas) and then booster yearly in the spring. Begin vaccine series after 12 weeks of age to decrease the risk of allergic reactions and fatal complications (definitely after 9 weeks).

2. General notes

a. Indicated in endemic areas for animals which have a risk of exposure. The spirochete is found in water sources, damp soil, and in places where rodent urine is present (including urban environments). Vaccines do not provide sterile immunity (i.e. infected animal can shed organisms) and 1 year is the **maximum** duration of immunity.

b. In general, has a higher rate of post-vaccinal allergic reaction, especially in young animals. Allergic reactions are also increased when given with other adjuvanted killed products (like corona) so this should be avoided. The leptospira vaccine also increase the allergenicity of any vaccine, so any animal which has

had an allergic reaction should not receive leptospira at the same time as other vaccines. In all animals, giving the leptospira at a **different site** (even at the same time) as other combination products will reduce the allergenicity.

c. Choose a vaccine with the most commonly reported serovars. (In Georgia, the Ft. Dodge 4-serovar vaccine is recommended (grippityphosa, pomona, icterohaemorrhagiae and canicola.).

d. Generally **not recommended** for miniature dachshunds or pugs because of their increased prevalence of anaphylaxis.

e. Generally **not recommended** for toy breeds unless there is high exposure risk.

C. Lyme (borreliosis)

1. Administer a dose of vaccine at 8 to 11 weeks (check manufacturer information) and booster at 12 to 14 weeks. Thereafter should be boosted at the start of tick season (i.e. do not wait a year to booster) and yearly thereafter. May want to use 3 doses in initial series if in highly endemic area - especially if use subunit vaccine.

2. Modified Protocol

Based on work at Cornell and now recommended by experts in the field of Lyme disease (Dr. Goldstein). Administer the first and second boosters as normal and then six months later; then, at one year and yearly thereafter. This is necessary in order to have adequate antibody levels for the first year.

2. General notes

a. Indicated only for animals with risk of Ixodes tick exposure in endemic areas - does not replace the need for tick control.

b. Animals should be vaccinated before possible exposure!

c. Older animals should have a negative titer check before first vaccination. Otherwise there is the possibility of causing a post-vaccinal hypersensitivity reaction if there are already organisms in the dog's body.

d. Choosing between whole cell and subunit (OSP A only) vaccines.

i. Whole cell vaccines (Fort Dodge) provide a more robust immune response, more likely to overcome the natural variation among Borrelia and provide cross-protection. Also more likely to lead to auto-immune events and hypersensitivity if dog already is infected.

ii. Subunit vaccine (Intervet, Merial) may not be as protective but are less likely to cause post-vaccinal illness.

e. There is a recognized lyme - related acute, 100% fatal, progressive renal failure. At this time it is unknown if vaccination plays a role in the development of this syndrome or is a result of only natural infection.