

Crossroads Veterinary Hospital

Puppy Manual



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Important Phone Numbers

Crossroads Veterinary Hospital: (503) 625-4404

Crossroads Fax: (503) 625-5784

After-hours Emergencies:

Emergency Veterinary Clinic of Tualatin: (503) 691-7922

DoveLewis (Portland): (503) 228-7281

Northwest Veterinary Specialists (Clackamas): (503) 656-3999

Oregon Poison Control: 1-800-452-7165

Animal Control:

Washington County: (503) 846-7041

Clackamas County: (503) 655-8628

Multnomah County: (503) 988-7387

Oregon Humane Society: (503) 285-7722

Important Websites

Crossroads Veterinary Hospital: www.crossroadsvet.com

Veterinary Partner: www.veterinarypartner.com

- A searchable database of articles on veterinary topics written by veterinarians for pet owners.

Lost Pets:

- www.petfinder.com
- www.petmicrochiplookup.org
- www.petlink.net
- www.amberalertforpets.com

CDC “Healthy Pets, Healthy People” Program: www.cdc.gov/HealthyPets

Vaccines

Vaccine protocol

- DHPP
 - Initial vaccine at 6-8 weeks of age, then boosted every 3-4 weeks until the puppy is 14-16 weeks old
 - Boosted again at the first annual visit, then every three years
- Rabies
 - Initial vaccine at 4-6 months of age
 - Boosted at the first annual visit, then every three years
- Bordetella
 - Injectable: Initial series of two vaccines 2-4 weeks apart, then boosted yearly
 - Intranasal: Once yearly
- Leptospirosis
 - Initial series of two vaccines 2-4 weeks apart, then boosted yearly
- Lyme disease
 - Initial series of two vaccines 2-4 weeks apart, then boosted yearly

My dog's vaccines

Age	Date	DHPP	Rabies	Bordetella	Leptospirosis	Lyme	_____
6-8 weeks							
10-12 weeks							
14-16 weeks							
6 months							
1 year							
2 years							
3 years							
4 years							
5 years							
6 years							
7 years							
8 years							
9 years							
10 years							
11 years							
12 years							

Core vaccines

These are vaccines that are recommended for every dog, regardless of lifestyle. The core vaccines protect against the most serious contagious illnesses.

- DHPP
 - D is for Distemper virus: A highly contagious viral disease that affects the respiratory and nervous systems, distemper is almost always fatal.
 - H is for Hepatitis: Also referred to as “A” for adenovirus. Adenovirus type 1 causes hepatitis, while adenovirus type 2 is one of the agents in the disease known as kennel cough.
 - P is for Parainfluenza virus: A contagious respiratory virus, parainfluenza causes flu-like symptoms.
 - P is also for Parvovirus: Another highly contagious virus, parvovirus causes severe vomiting and diarrhea, and is especially deadly in puppies.
- Rabies
 - Spread by bites, rabies virus attacks the nerves and brain. Any mammal, including humans, can be infected, and once symptoms start, it is almost uniformly fatal. By law, all dogs must be vaccinated against rabies.

Non-core vaccines

Veterinarians often vary in which of the non-core vaccines they recommend. These vaccines are often tailored to the pet depending on their lifestyle.

- Bordetella
 - The bacteria *Bordetella bronchiseptica* is one of the causative agents of kennel cough, and is often required by boarding facilities. There are two different vaccines: an injectable that only contains Bordetella, and an intranasal that also contains parainfluenza and adenovirus.
- Leptospirosis
 - Leptospirosis is a bacteria, of which there are a dozen different species. It is spread through the urine and feces of infected animals, and is often carried by wildlife. It survives well in moist soil and slow-moving water.

It can cause serious illness, such as kidney and liver failure. The vaccine is often recommended for dogs that go hunting, camping or swimming.

- Lyme disease
 - Lyme disease is caused by the bacteria, *Borrelia burgdorferi*, which is spread by the bite of the deer tick. The incidence of Lyme disease is very high in parts of the Northeast and Midwest, but very low in Oregon. This vaccine is generally recommended for animals traveling to high-incidence areas outside of Oregon.

Vaccine Reactions

It is common for a pet to feel sore or lethargic for a day or so after being vaccinated. The intranasal bordetella vaccine can sometimes cause transient coughing or sneezing.

Rarely, animals can have a local reaction, such as hair loss or color change. Equally rare are allergic reactions, such as facial swelling, hives, vomiting, diarrhea or severe lethargy. If your pet were to experience the symptoms of allergic reaction, he or she should be seen right away at Crossroads or the nearest emergency clinic.

There may be a correlation between vaccines and some immune-mediated diseases, such as immune-mediated hemolytic anemia or thrombocytopenia, but the connection is not well understood.

The risk of vaccine reaction is much smaller than the risk of the diseases that vaccines protect against. However, in animals that have had allergic reactions, or auto-immune disease, we sometimes recommend discontinuing vaccines. In animals that have had mild reactions, we often have the owner give Benadryl an hour prior to their vaccine appointment.

Spaying and Neutering

Why spay or neuter?

Spaying your female or neutering your male dog provides many health and behavioral benefits, as well as preventing the births of animals in a time when our shelters and humane societies are overflowing with unwanted puppies and kittens.

How old does my pet have to be?

Although spaying and neutering can be performed in animals as young as 8 weeks old, here at Crossroads Veterinary Hospital, we usually recommend the procedure be performed at about 6 months of age.

What are the benefits of spaying and neutering?

- Reduces the risk of mammary cancer in females, especially if performed prior to the first heat cycle
- Reduces the risk of benign prostatic hyperplasia (enlarged prostate) in males
- Eliminates the risk of ovarian cancer in females and testicular cancer in males
- Makes your pet less likely to want to roam
- Often reduces unwanted behaviors such as aggression or mounting
- In females, prevents the occurrence of pyometra, a potentially fatal uterine infection
- Decreases urine odor in males, and makes male cats less likely to spray urine
- Eliminates messy heat cycles in females
- Helps control pet overpopulation

Let's dispel some myths...

- Spaying or neutering will not alter your pet's ability to work, hunt or train
- Spaying or neutering does not cause your pet to become fat or lazy, although they may require fewer calories as sterilization can alter the metabolism
- It is not just mutts filling up our shelters and humane societies—one-fourth of shelter dogs are purebred

Heartworm disease

What is Heartworm disease?

It is a parasitic disease caused by the worm, *Dirofilaria immitis*. *Dirofilaria*, or heartworms, are microscopic when young, but the adult worms can grow to up to a foot in length, and like to live in the heart and pulmonary arteries of infected dogs.

How is it spread?

By mosquitoes. When a mosquito takes a blood meal from an infected animal, it ingests the larvae, also called microfilariae, of the heartworm. It then injects the microfilariae into the next animal it bites, spreading the disease. The microfilariae then travel and grow in the new host, developing into adult worms in about six months, and settling in the right ventricle of the heart and the pulmonary arteries.

Where do you find heartworm disease?

It is endemic to the Mississippi Delta region, and is very prevalent throughout the Midwest and East Coast. It is much less prevalent in Oregon than in other parts of the country, but it is here, especially in Southern Oregon.

Can cats or people get heartworm disease?

It is rare in cats, but they can get it—particularly outdoor cats in endemic areas of the country. Most infected cats have only one or two worms—usually in the lungs. Only a couple of people have ever been diagnosed with it, and in those cases, a single worm was found, usually not in the heart, but in the liver or some other organ.

What are the symptoms of heartworm disease?

Symptoms may take a year or more after infection to develop. In a dog, symptoms are usually those of heart failure: cough, difficulty breathing, exercise intolerance, lethargy and loss of appetite. Rarely do cats show signs of heart failure—instead they may have no symptoms, or they may have asthma due to the lungs' allergic

reaction to the worms. Both dogs and cats can suffer sudden death from pulmonary embolism when the worm blocks arterial blood flow to a portion of the lungs.

How is the disease diagnosed?

A simple blood test can be performed that checks for proteins released by the worms. *Microfilariae* can also be spotted when looking at blood under the microscope.

How is the disease treated?

Dogs with the disease are often treated with a series of injections of an arsenic-derived compound called Melarsomine or Immiticide. Dogs must be hospitalized during the injection because of the high risk of allergic reaction.

Cats are not given Immiticide, rather they are usually treated with a steroid and the worms are allowed to die naturally.

How is the disease prevented?

There are many once-monthly heartworm preventative products available in both oral and topical forms. Dogs over six months of age should be tested before starting the preventative, and the preventative should be given monthly, year-round. If a dose is missed, the heartworm test should be repeated. Some veterinarians will also recommend yearly heartworm tests to make sure the preventative is doing its job.

Cats can be started on a preventative without testing first.

An added benefit of heartworm preventative products is that most also deworm for intestinal parasites such as roundworms and hookworms.

For more information, check out the following websites:

- The American Heartworm Society: www.heartwormsociety.org
 - Downloadable map of the incidence of heartworm disease in the United States: www.heartwormsociety.org/download/incidencemap.jpg
- Companion Animal Parasite Council: www.petsandparasites.org
- KNOW Heartworms (Cats): www.knowheartworms.org

Intestinal Parasites

There are many common intestinal parasites of dogs and cats. Some of them are transmissible to people, some are not. Most of them you will not see in their feces, as the adult worms do not leave the intestines unless they are dead. The worms lay microscopic eggs that are passed in the feces and that can be detected by laboratory exam.

The US Centers for Disease Control has a very good website with information about both diseases and parasites that people can catch from pets, with special sections for women who are pregnant or people who are immunodeficient due to AIDS or chemotherapy. The website is: www.cdc.gov/healthypets

Roundworms

- Roundworms are one of the most common intestinal parasites of puppies and kittens. They can be acquired while the puppy or kitten is in the womb, or through the mother's milk, or by ingesting infected fecal material. Adult animals are usually resistant to infection by roundworms.
- There are often no symptoms, but it can cause diarrhea.
- Roundworms can cause a very serious disease in children called Visceral or Ocular Larval Migrans.

Hookworms

- Hookworms are found in all ages of pets. The larvae can live in soil and infect pets by penetrating the skin or through ingestion. They can also infect puppies via mother's milk.
- Hookworms can cause bloody diarrhea and anemia.
- People can be infected through skin penetration—for example, walking barefoot in an infected yard.

Whipworms

- Whipworms are also found in all ages of pets. Infection occurs through oral ingestion of fecal material.
- Whipworms can cause bloody diarrhea.
- People can be infected, but it is not common.

Tapeworms

- Tapeworms are found in all ages of pets. They are one of the few worms that pet owners may see on their pets feces or around the pets anus. They are small, white, and flat, sometimes looking like a grain of rice. They are acquired through the ingestion of fleas or rodents, and are common in cats that hunt.
- Tapeworms don't usually cause any symptoms.
- Some species of tapeworms can be acquired by humans, but it is not common. People cannot get tapeworms directly from their pet—they must ingest a pet's flea.

Coccidia (*Isospora spp.*)

- Coccidia are single-celled parasites, or protozoa, that are more commonly found in young animals as adults develop resistance to infection. Infection is via fecal-oral route.
- Coccidia is frequently a cause of diarrhea in puppies, and can sometimes cause bloody stools.
- People cannot catch coccidia.

Giardia

- Giardia are another type of protozoa. Any age of animal can contract Giardia, which is found in water contaminated with feces.
- Giardia causes diarrhea.
- People can contract giardia by drinking from contaminated streams when camping, or by drinking contaminated well water.

Toxoplasmosis

- Toxoplasma are also protozoa, or single-celled parasites. Toxoplasma has a different life cycle than the other parasites outlined above, and is of special interest because it can cause birth defects if a woman becomes infected during pregnancy.
- Although many different animals can become infected by Toxoplasma, only cats shed the oocysts, or eggs, in their feces. Any animal that has been infected can harbor the infection in their tissues or meat.
- Infection can occur via two different routes:

- Fecal-oral route (cat feces only).
- Ingestion of raw meat (any infected mammal).
- Once infected, cats usually only shed the oocysts in their feces for a single, short period of time, once in their life. This is usually when they are kittens, and is sometimes accompanied by diarrhea. However, adult cats may shed the oocysts for a short period of time after eating a raw meal.
- After the initial infection, where the cat may or may not display symptoms of diarrhea, cats can develop a systemic infection. This can be asymptomatic, or they can develop mild flu-like symptoms, or very rarely, neurologic problems such as blindness or seizures.
- Because toxoplasmosis can cause birth defects or even miscarriage if women are infected while pregnant, there are some very important precautions pregnant women should take:
 - Avoid changing the litter box. If this is not possible, then wear gloves while changing the litter, and wash hands thoroughly afterwards.
 - Wear gloves when gardening, especially in areas where stray cats might pass through. Again, wash hands thoroughly after gardening.
 - Do not eat raw or undercooked meat.
 - Do not feed your cat raw or undercooked meat.
 - Keep your cat indoors to prevent hunting.

Parasite Control: What you can do...

- Pick up and dispose of your dog's fecal material daily.
- Clean your cat's litter box daily.
- Bring in a stool sample for your vet to check on a yearly basis.
- Have your children wash their hands after handling pets.
- Put your dog or cat on a once-monthly heartworm preventative that also contains a dewormer for intestinal parasites.
- Keep your pet on a monthly flea preventative to prevent tapeworms.

Fleas, Ticks and Ear Mites

Fleas

- Fleas are tiny, dark brown insects that live off of the blood of dogs and cats. They live on your pet, but their eggs usually fall off the pet into the environment. The eggs then hatch into larvae, which feed off of flea feces (digested blood) that fall off of the pet. The larvae then spin cocoons and become pupae. The pupae can lay dormant for months in your carpet or your pet's bedding, and are resistant to freezing and insecticides. Warmth or vibrations cause them to hatch into fleas, which then seek out a host. This entire cycle can take as little as two weeks, and as long as six months.
- Some animals are allergic to flea saliva. For these animals, even a couple of fleas can make them miserable, and they can develop secondary bacterial infections of the skin.
- Fleas can transmit diseases such as tapeworms, *Bartonella henselae* (cat-scratch fever) and *Mycoplasma hemofelis* (feline infectious anemia).
- Because of the temperate climate, fleas often survive year-round in Oregon. For pets that spend a lot of time outdoors, and for flea-allergic pets, year-round monthly flea control, such as Advantage or Frontline, is recommended.
- Over-the-counter topical products containing permethrin are **not** recommended, as they can cause serious reactions and can even be fatal to cats. Flea collars, powders and shampoos are not recommended as they are not effective.
- If you have a flea infestation, it is recommended you treat your pets with Frontline or Advantage, wash their bedding, and vacuum all areas that they frequent weekly, throwing away your vacuum bag in a sealed container after each session. You can also use an area flea treatment—sprays are preferable to bombs, as you can direct sprays under couches and seat cushions where larvae may have crawled.

Ticks

- Ticks are arthropods that range in size from a little larger than the head of a pin, to a little smaller than a dime. They like to live and lay their eggs in areas of dense

- vegetation, and will attach themselves to passing animals in order to take a blood meal.
- Ticks can transmit serious illnesses such as Lyme Disease, Rocky Mountain Spotted Fever, Ehrlichiosis and Babesiosis. These are not common in Oregon.
 - Frontline Plus and tick collars containing amitraz can help prevent ticks from attaching to your pet, although they may not kill the ticks.
 - If you find a tick on your pet, you can grasp it gently near the head with tweezers and pull it off. Most outdoor sports stores also carry tick removers in the camping section. After you remove the tick, you can clean the area with rubbing alcohol or hydrogen peroxide. A raised red bump may remain for a few days, as tick bites can be very irritating.
 - Tick infestations in yards are rare in Oregon, but if you are finding lots of ticks in your yard, you can treat the area with a spray containing Fenvalerate, which should not hurt your plants.

Ear Mites

- Ear mites are microscopic arthropods that live in and around the ears. They are much more common in cats than dogs. They are transmitted from pet to pet by direct physical contact.
- They cause itchy ears and a black, waxy discharge. Bacterial and yeast infections of the ears have a similar appearance, so it is very important to have your pet's ears checked by a vet before starting a treatment regimen.
- Over-the-counter ear mite treatments are often not very successful, and have to be used on a daily basis for a couple of weeks. There are some newer prescription treatments that only have to be applied once or twice to kill the mites.
- It is recommended that all animals in the household be treated at the same time for ear mites to prevent them from reinfecting each other.

Antiparasitics for Dogs

Topical	Adult Fleas	Flea Larvae	Flea Eggs	Ticks	Lice	Heart-worms	Round-worms	Hook-worms	Whip-worms	Tape-worms
Advantage II	✓	✓	✓		✓					
Advantage Multi	✓					✓	✓	✓	✓	
Frontline Plus	✓	✓	✓	✓	✓					

Oral	Adult Fleas	Flea Larvae	Flea Eggs	Ticks	Lice	Heart-worms	Round-worms	Hook-worms	Whip-worms	Tape-worms
Comfortis	✓									
Trifexis	✓					✓	✓	✓	✓	
Iverhart/Triheart						✓	✓	✓		
Droncit										✓
Drontal							✓	✓		✓
Drontal Plus							✓	✓	✓	✓
Pyrantel							✓	✓		
Panacur							✓	✓	✓	✓

Housetraining

To be successful at housetraining, you will need to devote a lot of time and effort for at least the first four months of the puppy's life. Do not expect your puppy to be housetrained overnight. The following are some tips to get you started:

- Create a schedule and stick to it! Taking the puppy outside at regular intervals before accidents happen is important.
 - A puppy can hold his bladder for about as many hours as he is months old, plus one. In other words, a three-month-old puppy can hold his bladder for 4 hours, and therefore should be taken outside every four hours.
 - When you are home and interacting with the puppy, you should be taking him outside every hour.
 - When you leave the house, it is a good idea to take the puppy outside twice before you go. Take him outside again right away when you get back, even if you were gone a short while.
- Associate a phrase with going to the bathroom, such as “go potty.”
- Do not punish the puppy for accidents in the house, especially if you did not catch him in the act. He will not understand what the punishment is for, and it will only serve to cause anxiety in the puppy. If you catch the puppy about to urinate inappropriately, a firm “no” should be spoken, then quickly take him outside to his designated area. Use your designated phrase to prompt him to eliminate, and praise him even if he doesn't go potty.
- If housetraining is going well, but then your puppy starts to have accidents again, consider a veterinary evaluation to rule out a urinary tract infection.
- If you are having a hard time getting your puppy to defecate outside, be sure to let him outside about 30 minutes after each meal. Spending a little extra time outside playing 30 minutes after meals, or even taking a walk around the yard a couple of times can help stimulate a bowel movement.
- Encourage behaviors where the puppy asks to go outside, such as standing at the door. Give him praise and let him outside, even if you think he is asking too often.

Crate Training

Crate training can be a great way of housetraining and giving your puppy a safe, comfortable place of his own. When used properly, a crate will allow a dog to feel safe when left alone, and prevent a puppy from getting into trouble when unsupervised. The key is to use the crate as little as possible when you are awake at home and able to supervise the puppy.

Crate training helps with housetraining because puppies usually do not want to urinate or defecate where they sleep. To ensure the puppy doesn't soil in the crate, you need to make sure the crate isn't too big. It should be big enough for your puppy to stand and turn around in easily and hold a bowl of water.

Never restrict your pet's access to water. There should always be a bowl of water available in the crate. If your puppy is having accidents in the crate, then you may not be letting him out often enough. Follow the rule of "age plus one:" the age of your puppy in months plus one equals how many hours he can be expected to hold his bladder. This may be even less for smaller dogs. Any dog, regardless of age, should not be expected to go longer than eight hours without a potty break.

Do not use the crate as punishment as you do not want your puppy to have bad associations with it. Do let your puppy out as much as possible when you are home and able to directly supervise him. Your puppy needs to learn about his environment and bond with you!

Finally, do not leave a puppy in the crate with a training collar on. Training collars, especially "choke" collars can get stuck in the bars and strangle the puppy. Ideally, no dog should be left unsupervised with a "choke" or "pinch" collar on.

Boxer Cardiomyopathy

When we use the term “Boxer Cardiomyopathy,” we are usually referring to an inherited heart condition, specific to the boxer breed, that is more properly termed Arrhythmogenic Right Ventricular Cardiomyopathy or ARVC. ARVC is a disease in which some of the muscle of the right side of the heart is replaced with fatty tissue, causing disruptions of the electrical signals that run through that muscle. The electrical signals are what make the heart beat properly, and when they are disrupted, the heart rhythm is altered, causing a condition called an arrhythmia. There are different types of arrhythmias, but in this disease, the arrhythmias are called ventricular premature beats (VPCs) or ventricular tachycardia (Vtach). These types of arrhythmias can cause the heart to beat too fast or inefficiently, and can lead to fainting or even sudden death. Sometimes, the condition can progress to the point where the heart muscle is so damaged that it cannot pump blood effectively. This leads to heart failure, symptoms of which include exercise intolerance, bloated abdomen, trouble breathing, or coughing. ARVC is an inherited condition, and any dog diagnosed with this condition should not be bred, as they will likely pass it on to their offspring.

ARVC is classified three ways:

1. Asymptomatic: The dog has an arrhythmia when tested, but shows no symptoms. These dogs are still at risk of sudden death.
2. Symptomatic: The dog’s arrhythmia leads to episodes of collapse or fainting. These dogs are also at risk of sudden death.
3. Myocardial dysfunction: In addition to the arrhythmia, the dog’s heart no longer contracts properly, leading to symptoms of heart failure.

Testing

The most accurate test for the arrhythmias caused by ARVC is called a Holter Monitor. The Holter Monitor is a portable ECG that is worn by the dog for 24 hours, during which time it is continuously recording your pet’s heartbeats. At the end of the 24 hours, the monitor is removed, and the recording is sent to a cardiology service to be

analyzed. The cardiology service quantifies any arrhythmias, and sends a report back to the primary veterinarian.

There is now a DNA test available through Washington State University that tests for the gene associated with ARVC. The test is very new, and there are not enough studies at this time to tell us how we should interpret the test, except that dogs that test positive for the gene should probably not be bred. Owners who are interested in the test can read more about it and request a cheek-swab test kit at:

<http://www.vetmed.wsu.edu/deptsVCGL/Boxer/test.aspx>

Blood pressure, chest radiographs and basic bloodwork are also a good idea to get a picture of the overall health of the patient. If the heart shows any visual abnormalities on x-rays, then it is a good idea to consult a cardiologist who can do an echocardiogram—a detailed ultrasound of the heart.

Treatment

Dogs with the first two forms of ARVC, the asymptomatic and symptomatic forms, are usually placed on an antiarrhythmic drug, such as sotalol or mexilitine. The Holter Monitor is then repeated 7 to 14 days later to evaluate the efficacy of the medicine. Omega-3 fatty acid dietary supplements are also recommended as they have been shown to reduce the incidence of arrhythmias in ARVC.

Dogs with the third form of ARVC, the form in which the function of the heart has been compromised, are best evaluated by a cardiologist who can do a detailed study of the function of the heart, and prescribe the appropriate medications.

Monitoring / Screening

After a dog is started on an antiarrhythmic drug, the Holter Monitor should be repeated to assess the efficacy of the medication. It should also be repeated after any dosage changes. Yearly Holter Monitoring, bloodwork, chest radiographs, and blood pressure may be recommended, depending on the individual patient.

We recommend running a Holter Monitor as a screening test on all boxers at about 2-3 years of age. If you are interested in the Holter Monitor test, please call 503-625-4404 to set up an appointment.