

# 360 Pet Medical

338 Gallatin Park Drive, Bozeman, MT, 59715

Monday-Thursday: 7:00am-7:00pm, Friday 7:00am-5:30pm

360 Pet Medical is the leader in Montana for multi-modal, high-quality, compassionate veterinary care. We consistently provide exceptional client experiences driven by excellent communication, high-standards, a strong staff culture, and the pursuit of cutting-edge, innovative medical practices.

This isn't just another vet. We have built 360 to be something truly special for pet owners. It starts with an important medical philosophy: Your pet's biological systems are all interrelated, and we need to make sure to treat their entire body. Sometimes this involves working with board certified specialists. Sometimes this involves alternative therapies. Sometimes this involves using state-of-the-art technology. Always, it will involve the absolute best veterinary care you can find. Because we understand the love you feel for your pet. And we believe you deserve a powerful ally in their health and well-being.

We have five, full time veterinarians on our staff: Dr. Chris Kenyon, Dr. Loni Odenbeck, Dr. Dawn McDonald, Dr. Ruth Stafford, and Dr. Jenny Ladd. Every Veterinarian here offers something special to the 360 team. Dr. Kenyon is a certified Canine Rehabilitation Therapist, as well as a certified veterinary acupuncturist. She provides physical rehabilitation in the forms of underwater treadmill, laser therapy, acupuncture, and electro-acupuncture. Dr. Odenbeck has completed advanced training in ultrasounds and echocardiograms and is now able to do those in clinic, with our brand-new, state-of-the-art equipment. Dr. McDonald has been practicing small animal veterinary medicine in Bozeman for over 9 years and has received training in advanced dentistry techniques. Dr. Stafford is especially interested in internal medicine, soft tissue surgeries, dentistry and senior wellness care and has more than twenty years of clinical experience. Dr. Ladd has her small animal acupuncture certification and is currently pursuing her Masters in Traditional Chinese Veterinary Medicine. We also have a number of specialists that help us in our clinic. Dr. Liz Layne is a board-certified Veterinary Dermatologist and visits our clinic every few months, as well as small animal chiropractors, board certified oncologists, board certified surgeons and internal medicine specialists.

We are glad to have your animals be apart of our 360 family and we look forward to growing our relationship with you!

Sincerely,

The 360 Team

## Canine Vaccines

Vaccines are a very important part of your dog's preventative healthcare plan. Especially in puppies, they are essential in preventing potentially fatal disease. We at 360 Pet Medical use the most recent research and AAHA Guidelines to individually tailor your dog's vaccination schedule according to his or her risks. Please discuss your specific goals and lifestyles with your veterinarian to determine the best option for your situation.

### **The CORE Vaccines: Canine Distemper, Parvovirus, and Rabies**

CORE vaccines are for diseases that may affect all animals and have proven to be preventable by vaccination. All three of these diseases- distemper, parvovirus, and rabies- cause major illness, if not death, in infected dogs.

Canine distemper virus can cause gastrointestinal signs, severe respiratory disease, and/or neurologic signs, such as seizures. It can be fatal in all 3 disease manifestations. There is no cure. Treatment is based on supportive care only.

Canine parvovirus causes vomiting, bloody diarrhea, and immune suppression, which may lead to sepsis and death. Untreated puppies often die. Even with aggressive and expensive treatment, the fatality rate is up to 25%. There is no cure. Treatment is based on supportive care and prevention of secondary infection.

Distemper and Parvo vaccines are given in a combination shot starting at 6-8 weeks of age and then every 3 weeks until the puppy is 16+ weeks of age. A booster is given 1 year later, and then the vaccine is given every 3 years in adult dogs. It is of the utmost importance to follow the vaccination schedule as any missed vaccines means risk to your animal.

Rabies is a fatal disease to animals and humans, and it is still present in most parts of the United States. It exists in Montana, especially within the bat population. There may be serious legal consequences for dogs who are not current on their rabies vaccine. If they bite someone there is automatically a 10-day quarantine period. However, if they are exposed to a potentially rabid animal, they would be subject to a 6-month quarantine period, or possibly even euthanasia. The rabies vaccine is given at 14-16 weeks of age. A booster is given one year later, then every 3 years. If a dog has no proof of previous vaccination, we are required to give a one-year vaccine, regardless of the age of the dog.

**The NON-CORE vaccines** are not necessary for every dog. While performing a health assessment exam, we will discuss your dog's lifestyle and best vaccine protocols for your family members.

Bordetella: Vaccinated dogs *can* get kennel cough, but the symptoms are usually milder in vaccinated dogs. Any dog that is exposed to other dogs in kennels, dog parks, daycare, etc. is at risk. Our vaccine is oral and given annually.

Leptospirosis is not a common infection in this area, but there are many cases reported in our neighboring states. It can cause severe liver and kidney disease. It is also contagious to humans (zoonotic). Dogs who are exposed to natural standing water, such as ponds and puddles, or run across marshy fields and cattle fields can be at risk. The initial series is given with the last 2 puppy visits, then annually.

Influenza, just like in people, is a highly contagious respiratory infection. The two common strains of canine influenzas are H3N8 and H3N2. The signs in both strains range from fevers, lethargy, coughing, sneezing, and a runny nose to life threatening pneumonia. While there has not been a total outbreak in this area, internal medicine specialists predict that any community is vulnerable to it. It can spread very easily by oronasal secretions and saliva. A dog can be contagious before showing any symptoms of being sick. We offer the bivalent vaccine that covers both strains of influenza. As with any respiratory disease vaccine, it does not completely protect against contracting the disease, but does reduce how ill your dog can be if they catch it. We generally recommend it for anyone using boarding, day care, or grooming facilities regularly, as well as dogs that travel out of state. The initial series is 2 vaccine 2-4 weeks apart and then an annual booster.

Lyme disease is a tick-borne disease that used to be mainly in the Midwest and Eastern states, but is now rapidly spreading to the west coast. Lyme disease in dogs is an infection for which over 90% of infected dogs will never get sick and the five to ten percent that do get sick can be easily treated with a safe, inexpensive course of antibiotics. However, the vaccination may be able to prevent the possibility of the kidney damage from the disease. The vaccination is controversial as to its need and efficacy. It is very important when you're traveling to these areas to have an effective tick preventative. Since many ticks are resistant to weaker products, it is recommended that you use a prescription strength tick product available at your veterinarian.

The rattlesnake vaccine is an optional vaccine for people that want to take every precaution in snake country. There have been no controlled studies for effectiveness of the vaccine, but the vaccine may create protective antibodies that might be useful in neutralizing some of the injected venom. Because there is so much variability in signs due to the different amounts of venom injected during bites, it can be difficult to determine if the vaccinated dog was helped by the vaccine or by the fact the snake injected little (or no) venom into the dog. The vaccine commonly can cause a sterile abscess at the site of injection. Even if the dog has been vaccinated, he will still need to be examined by a veterinarian to determine just how much treatment will be necessary.



# What To Expect After Your Pet's Vaccination



***Congratulations. By vaccinating your pet, you have taken an important step toward protecting your pet and your family.***

Vaccination is the most common veterinary preventive measure in history. It's a safe and effective way to protect pets and people from serious disease.

It's common for your pet to experience mild side effects from vaccination. Typically starting within hours of vaccination, any symptoms are most often mild and usually do not persist for more than a few days. This is a normal response by your pet's immune system during the process of developing protective immunity.

## ***Common symptoms your pet may experience***

- Mild fever
- Decrease in social behavior
- Diminished appetite or activity
- Sneezing or other respiratory signs with intranasal vaccines
- Discomfort or mild swelling at the injection site

Rare side effects, such as an allergic reaction, may occur. Your pet may experience symptoms of a more serious reaction to the vaccine within minutes or hours of the vaccination.

## ***Rare symptoms could include***

- Swelling to face and legs
- Repeated vomiting or diarrhea
- Whole body itching
- Difficulty breathing
- Collapse

If your pet experiences any of these rare symptoms, you should contact your veterinarian immediately, as your pet may require additional medical treatment.

[BeVaccineSMART.com](http://BeVaccineSMART.com)

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## LEASH-FREE AREAS

**ALL LEASH-FREE PARKS ARE CLOSED FROM 11 PM – 5 AM.**

This leash-free allowance does not relieve an owner from the responsibility of preventing their dog from being a nuisance.

### **Lewis and Bark Park •**

Fowler Ave., north of Bozeman Ponds

**Burke Park/Peet's Hill • S. Church**

**Snow Fill Site • McIlhattan Road**

**Leash-free gated area at Softball Complex • Highland Boulevard**

**Northwest portion of Regional Park • Davis and W. Oak**

**Cooper Park • S. 8th and Story**

**Centennial Park (5am to 9am) • N. Tracy and Tamarack**

## NO DOG AREAS

**ANY CEMETERY, PLAYGROUND AREA, ICE RINK, BEACH, SPORTS OR RECREATION FIELD, TO INCLUDE:**

**Bronken Fields • N. Cottonwood**

**Softball Fields • Haggerty Lane**

**E. Gallatin Recreation Area • beach and picnic areas**

**Christie Fields • S. Black & Mason**

**Gallatin County Regional Park • specified areas**

## BE A RESPONSIBLE PET OWNER

### **SCOOP YOUR POOP**

For the health and safety of everyone, please bring a bag with you & clean up & dispose of any waste created by your pet.

### **KEEP YOUR PETS ON A LEASH**

Bozeman has a leash law. Your pet must be leashed when on a walk or in parks not designated leash free. This includes both dogs and cats!

### **KEEP YOUR PETS QUIET**

Your neighbors will be much happier if your pets are quiet. Keep them from howling, barking, or whining. Uncontrolled dog barking can result in a citation.

### **DON'T NEGLECT OR MISTREAT YOUR PETS**

For the health & safety of your pet, do not leave them unattended in a vehicle in extreme hot or cold weather. Treat them with respect & provide adequate food, water, & shelter.

## BOZEMAN POLICE DEPARTMENT

**Animal Control  
Education + Enforcement**

**30 North Rouse  
Bozeman, MT**

**406.582.2000**



**OWNING PETS IN**

**BOZEMAN<sup>MT</sup>**



[www.bozemanpolice.com](http://www.bozemanpolice.com)

## HELP OTHER DOG OWNERS

WE ARE ONLY AS STRONG AS OUR COMMUNITY.

Contribute to it by being polite and patient with other dog owners, even if their dog is experiencing problems. Help them if they are in need. Do not be fearful of others' dogs, or assume that yours is unique or deserves special treatment.



- Wes Siler

## CIVIL + CRIMINAL VIOLATIONS

An officer may give a verbal warning, issue a civil or criminal citation for violations of animal regulations in Bozeman including but not limited to: not licensing your dog/cat, failing to get a rabies vaccination, or walking your dog without a leash.

**CIVIL PENALTY: \$50.00**



visit

[www.bozeman.net](http://www.bozeman.net)

for more info about off leash dog parks, licensing, and owning a pet in Bozeman.

## HOW DO I LICENSE MY PET?

**Purchase your city license at Bozeman City Hall, 121 N. Rouse Ave. between the hours of 8 am and 5 pm, Monday-Friday, or you may fill out the attached form and mail it to City Hall along with:**

- Payment covering license fees
- Proof of rabies vaccination
- Proof of Spay/Neuter (for reduced fee)

A city license is required for a dog or cat over the age of six months which lives in the city limits for more than fifteen days.

Each dog or cat over six months must also be vaccinated against rabies before obtaining a license. All area veterinarians offer these vaccinations and will supply you with a tag to put on your pet's collar.

If you own three or more cats or three or more dogs, you must apply separately at City Hall for a Kennel License, which costs \$50 annually.

## ANNUAL LICENSE FEES

	NEUTERED/SPAYED	UNALTERED
DOG	\$10.00	\$25.00
CAT	\$5.00	\$10.00

## ARE CHICKENS LEGAL TO OWN?

Urban Chickens are allowed in the city. There is a \$25 one-time permit fee for 1-6 hens (no roosters) and a \$50 one-time permit fee with inspection for 7-15 hens. Apply separately at City Hall for a permit.

## LICENSE FORM

OWNER \_\_\_\_\_

ADDRESS \_\_\_\_\_

PHONE [H/W] \_\_\_\_\_

CELL \_\_\_\_\_

**DOG #1 NAME** \_\_\_\_\_

BREED \_\_\_\_\_ SEX \_\_\_\_\_ COLOR \_\_\_\_\_

SPAY/NEUTER [Y/N] RABIES TAG # \_\_\_\_\_

EXPIRATION \_\_\_\_\_ VET \_\_\_\_\_

**DOG #2 NAME** \_\_\_\_\_

BREED \_\_\_\_\_ SEX \_\_\_\_\_ COLOR \_\_\_\_\_

SPAY/NEUTER [Y/N] RABIES TAG # \_\_\_\_\_

EXPIRATION \_\_\_\_\_ VET \_\_\_\_\_

**CAT #1 NAME** \_\_\_\_\_

BREED \_\_\_\_\_ SEX \_\_\_\_\_ COLOR \_\_\_\_\_

SPAY/NEUTER [Y/N] RABIES TAG # \_\_\_\_\_

EXPIRATION \_\_\_\_\_ VET \_\_\_\_\_

**CAT #2 NAME** \_\_\_\_\_

BREED \_\_\_\_\_ SEX \_\_\_\_\_ COLOR \_\_\_\_\_

SPAY/NEUTER [Y/N] RABIES TAG # \_\_\_\_\_

EXPIRATION \_\_\_\_\_ VET \_\_\_\_\_

**TOTAL AMOUNT ENCLOSED:\$** \_\_\_\_\_

MAKE CHECKS PAYABLE TO CITY OF BOZEMAN

### MAIL TO

City of Bozeman Finance Department  
121 North Rouse

Enclose a copy of rabies vaccination and spay/neuter proof, if applicable.





**Mail the Completed Form, a copy of your Rabies Vaccination, and spay/neuter proof to:**

PET LICENSE & CIVIL FINE PAYMENTS  
121 North Rouse Ave.  
P.O. Box 1230  
Bozeman Montana 59771-1230

	Annual License Fees	
	Neutered/Spayed	Unaltered
Dog	\$10	\$25
Cat	\$5	\$10

Owner's Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone:(H/W) \_\_\_\_\_ Cell: \_\_\_\_\_

Dog#1 Name: \_\_\_\_\_ Breed: \_\_\_\_\_ Color: \_\_\_\_\_ Sex: \_\_\_\_\_

Spay/Neuter: \_\_\_\_\_ Rabies Tag # \_\_\_\_\_ Expires: \_\_\_\_\_ Vet: \_\_\_\_\_

Dog#2 Name: \_\_\_\_\_ Breed: \_\_\_\_\_ Color: \_\_\_\_\_ Sex: \_\_\_\_\_

Spay/Neuter: \_\_\_\_\_ Rabies Tag # \_\_\_\_\_ Expires: \_\_\_\_\_ Vet: \_\_\_\_\_

Cat#1 Name: \_\_\_\_\_ Breed: \_\_\_\_\_ Color: \_\_\_\_\_ Sex: \_\_\_\_\_

Spay/Neuter: \_\_\_\_\_ Rabies Tag # \_\_\_\_\_ Expires: \_\_\_\_\_ Vet: \_\_\_\_\_

Cat#2 Name: \_\_\_\_\_ Breed: \_\_\_\_\_ Color: \_\_\_\_\_ Sex: \_\_\_\_\_

Spay/Neuter: \_\_\_\_\_ Rabies Tag # \_\_\_\_\_ Expires: \_\_\_\_\_ Vet: \_\_\_\_\_

Total Amount Enclosed: \$ \_\_\_\_\_ (Payable to City of Bozeman)

[Enclose a copy of rabies vaccination and spay/neuter proof, if applicable.](#)



# Dog PARK SAFETY

Top tips for  
making visits  
enjoyable



## Take Age-Appropriate Dogs

Parks are great for socialization and exercise; however, keep puppies four months and younger at home until vaccines are complete and they are mature enough to run with the pack.



## One Size Doesn't Fit All

Many parks have designated large- and small-dog areas. If possible, keep your dog in the area allocated for his size to avoid physical intimidation.

## Up-to-Date Vaccinations

Prevent potential exposure to disease: verify with your veterinarian that your dog's vaccinations are up to date.



## Take Dog Collar and Tags



Not all dog parks are fenced in. A dog with a collar and ID tags (and a microchip) has a better chance of being found should he run off. Keep a leash handy for safely commuting between car and park.



## Don't Take Treats

Dogs will compete for treats which can lead to snapping, fighting and injury. Leave treats in the car and reward your dog after a play session.



## Monitor Aggressive Behavior

Pay attention to your dog at all times and ensure that playtime remains friendly. If your dog or another dog is playing too rough, it's best to remove your dog from the situation.



## Bring Water

Your dog will get thirsty after running. Try to limit the intake to a small amount within an hour of playing; excessive drinking can lead to life-threatening stomach bloat, especially in large dogs.



## Beware of Heat Exhaustion

Look for signs of overheating; including profuse and rapid panting, a bright red tongue, thick drooling saliva, glassy eyes and lack of coordination. If this occurs, take your dog to a veterinarian immediately.

Sprains  
**\$232**

Cruciate  
injury with  
surgery  
**\$3,289**

Average Nationwide®  
member claims for dog  
park-related mishaps.

Heat stroke  
**\$704**

Lacerations or  
bite wounds  
**\$384**

Average Nationwide®  
member claims for dog  
park-related mishaps.



# Puppy nutrition explained



An adult dog and a puppy have very different nutritional needs. Find out exactly what your puppy needs from its diet at each stage in its development.

During the first stages of its life, a dog's nutritional needs are very different to its requirements as a healthy, adult dog. The right food should give your puppy everything it needs to develop effectively at key points in its growth, without you having to give them any supplements.

## Nutrition for one-month-old puppies

At this age, a puppy needs plenty of support for its natural defenses. Between four and 12 weeks old, puppies enter an "immunity gap" phase where the protection they've received from their mother's milk begins to wane but their own ability to develop a strong immune system isn't fully developed. The nutrition you give them during this time can provide natural boosters, like vitamin E and vitamin B. Other nutrients, like mannan oligosaccharides, help support the development of beneficial "good bacteria" in their often-delicate digestive system.

## Puppies at two months old and their nutrition

At two months, the focus should be on aiding the development of your puppy's skeletal structure. For this they need calcium and phosphorus in carefully regulated amounts; these help their skeleton grow effectively, which is essential for their overall health and particularly important in larger dogs, whose bones carry a lot of muscle and body tissue.

## Nutrition at four months old

Your puppy's skeleton is still developing at this stage, so they still need the right nutritional balance of calcium and phosphorus in their diet. Puppies absorb calcium passively—their bodies can't regulate how much they take in—and so when they're under six months old, they can't protect themselves against excessive intake. Overabsorption of calcium can result in several skeletal deformities, so stick to the recommended guidelines: 0.5 g of calcium for every kilo in body weight each day.

## Puppies and their nutrition at seven months old

By this time your puppy will be starting to build its body mass, so their nutritional requirement now is for protein. However, it needs to be the right sort; a high-quality and easily digestible protein to make it easy for their bodies to absorb and "reuse" the amino acids, building healthy body tissue and antibodies. The protein to calorie ratio should be higher in a puppy's diet than in an adult dog because they're growing rapidly. Without protein, they can suffer reduced natural defenses, poor skin and fur, and remain underdeveloped. Keep an eye on their portion sizes to make sure they don't become overweight during this crucial phase.

## Nutrition for 10-month-old puppies

Extra-small and mini breed dogs will be nearing their adult stage by 10 months old, whereas larger dogs still have a while to go. All dogs at this point need nutritional support for their joints, particularly maxi and giant dogs, as their muscles will be filling out and exerting pressure on their skeleton. Glucosamine and chondroitin are two important nutrients; these help to nourish the cartilage and the fluid that helps with normal joint function. Without these, growing puppies can end up suffering with joint problems later in life.

## Adult dogs and nutrition

As an adult, your dog will need a carefully balanced diet to avoid gaining weight. It's estimated over a quarter of all adult dogs are obese, and this can place undue pressure on bones, joints and organs, reducing your dog's quality of life. If you've given your puppy the right, nutritionally balanced food through those critical early months, while following recommended feeding amounts, by the time it reaches adulthood it should be a healthy and happy dog.

If you are unsure on how best to feed your puppy to ensure they are given the best nutrition for their age and lifestyle, speak to your veterinarian who will be able to offer recommendations.



## Diets and Heart Disease in Dogs and Cats

Mark Rishniw, BVSc, PhD, DACVIM (SA-IM), DACVIM (CA)

Date Published: 03/05/2019

Can pet diets cause heart problems?

Yes. Thirty years ago, veterinarians recognized deficiency of an amino acid (taurine) as the most common cause of dilated cardiomyopathy in cats. Cats are unable to make their own taurine (just like people can't make their own vitamin C) and must ingest it to stay healthy. Taurine is plentiful in most animal tissues. Being carnivores, domestic, feral and wild cats that hunt for their food derive adequate taurine from their diet. However, some commercial cat foods at that time contained insufficient amounts of taurine causing dilated cardiomyopathy and other health issues. This discovery resulted in pet food companies adding more taurine to the foods they manufacture. Subsequently, taurine-associated dilated cardiomyopathy in cats has all-but disappeared. It is occasionally diagnosed when cat owners feed unbalanced diets (e.g., boiled poultry or vegetarian diets).



A few years later, certain breeds of dogs were found to also have dilated cardiomyopathy in association with taurine deficiency. This was unexpected because dogs, unlike cats, are able to synthesize taurine from other sulfur-containing amino acids in their food. Investigators suspected that these breeds were unable to synthesize taurine in amounts needed to replace losses. Taurine is typically efficiently recycled in the small intestine, but various dietary factors can affect this process. When supplemented with high doses of taurine, these dogs resolved their cardiomyopathy in many cases.

Since that time, specific categories of diets have been sporadically implicated in heart disease. One group of Newfoundlands that were fed a commercial lamb-and-rice diet developed taurine deficiency and reversible cardiomyopathy. Other dogs have also been found to have taurine deficiency when fed similar lamb-and-rice diets. Occasionally, dogs fed vegan or vegetarian diets have been taurine deficient and suffering heart disease.

Most recently, Golden Retrievers have been identified as having a taurine-deficiency associated cardiomyopathy.

Is the current diet-associated cardiomyopathy caused by taurine deficiency?

The current evidence suggests that the recent "outbreak" of cardiomyopathy in dogs is likely not primarily related to taurine deficiency. Blood assays of taurine in many affected dogs show normal taurine concentrations. The observations suggesting this condition is related to taurine deficiency originate from populations where several of the affected dogs were Golden Retrievers (who are a special case, as described above). It is hypothesized by some that being taurine deficient makes these dogs more susceptible to whatever is causing the current diet-associated cardiomyopathy. Because of concerns from some veterinary researchers about the methods used to assess taurine status in the studied populations with few or no Golden Retrievers, we cannot completely rule out the role of taurine

deficiency at this time in all breeds. Time will tell.

If it's not taurine, what is the cause?

We don't know. The only common link that investigators have observed is "grain-free" diets that use lentils and other legumes (peas) as the "base ingredient." There are currently many theories, but no definitive answers explaining how these diets cause the cardiomyopathy.

Are all "limited ingredient" or "grain free" diets at fault?

Some dogs are prescribed diets to diagnose and treat allergies (skin or gastrointestinal diseases). Such diets might include a limited number of uncommon ingredients, such as salmon, kangaroo, potatoes, peas, etc. At this point, no therapeutic diets, manufactured by the major pet food manufacturers (Hills, Purina, Royal Canin), have been associated with current cases of diet-associated cardiomyopathy.

There is no medical or nutritional indication for "grain free" although some veterinary therapeutic diets recommended to diagnose and treat allergies are also grain free. They are chosen because the ingredients happen to be novel for the specific patient, but they are not used because they lack grains per se. Grain free is simply a marketing category and there is no specific benefit.

What should I do if my dog eats a grain-free legume based or other implicated diet?

First, check the ingredient label. If peas or lentils are the main ingredient (or main carbohydrate source), consider changing to a diet that contains grains.

Second, if you are reluctant to change the diet, consult your veterinarian about having a cardiac ultrasound (echocardiogram) to see if your dog has evidence of cardiomyopathy. If your dog is found to be affected, even if it's showing no clinical signs, change the diet to a grain-based commercial diet. Most nutritionists recommend using the WSAVA guidelines for selection of commercial diets.

Third, if you have a dog that is "at risk" for taurine deficiency (American Cocker Spaniel, Golden Retriever, Newfoundland, Dalmatian) and eating an implicated diet, have the blood taurine levels checked. Measure both whole blood and plasma collected at the same time to enable the most accurate interpretation of your dog's taurine status. If those are low, determine if the dog has cardiomyopathy with a cardiac ultrasound, change the diet, and supplement taurine as directed by your veterinarian.

Your veterinarian might suggest measuring taurine in other breeds as well. The more data collected, the more likely researchers will be able to resolve whether taurine deficiency plays a primary or secondary role in causing this diet-associated cardiomyopathy.

Your veterinarian or veterinary cardiologist is the one best able to advise you about the most appropriate course of action for your dog.

What about cats?

A few cat cases have been reported to the FDA, but the numbers are too small to say anything definitive. This appears to be primarily a dog problem.

URL: <https://veterinarypartner.vin.com/doc/?id=8989590&pid=19239>

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## The Savvy Dog Owner's Guide: Nutrition on the Internet

More than 75% of all American homes have computers and this is both a blessing and a curse. For dog owners, the internet provides vast amounts of information on many subjects. The information, however, is virtually unregulated and its quality ranges from excellent to pure quackery. Deciding which websites are trustworthy can be difficult!

Canine nutrition is a popular topic. There are literally thousands of websites, promoting everything from recipes for raw food and vegetarian diets; advertisements for supplements and holistic foods; recommendations for diets that allegedly prevent or cure disease; 'get-rich quick' pyramid-selling schemes for nutritional supplements and consultation services operated by 'nutritionists.' Many home-made diets are promoted - some which are almost nutritionally balanced; some that are mildly unbalanced and some that are downright dangerous!

All in all, many nutritional myths are perpetuated, many half-truths reinforced and many incorrect facts conveyed. There is, of course, some excellent information - but not nearly as much of it!

### Surfing Tips

So how can you decide what to believe? Here are some recommendations to help you when evaluating the content of websites:

**Discuss information with your veterinarian.** What you read online should enhance what your vet tells you, not replace it. If in doubt, ask him or her to help you evaluate it.

**Research the credentials of the site's author.** Is it a pet owner; a company; a veterinarian; a PhD in animal nutrition or a board-certified veterinary nutritionist? Be careful when a person marketing his or her services claims to be a 'pet nutritionist' or a 'certified nutritionist,' as there is no standardization in training for this. The exception is a veterinary nutritionist who is board-certified by the American College of Veterinary Nutrition (ACVN) or the European College of Veterinary Comparative Nutrition (ECVCN). These are veterinarians who have undergone several years of rigorous post-graduate nutrition training in approved residency programs and who have passed the ACVN or ECVCN's certifying examination.

**Read the website address.** Sites with an address ending in .com are commercial. Those ending in .edu are educational and those ending in .org are nonprofit organizations. Large pet food companies often have high-quality websites with good general nutrition information that is separate from their product information.

**Check the source of the information.** Do the authors simply state that a product 'prevents cancer' or is there a reference to a scientifically-conducted research study? It is easy - though illegal - to make unproven claims for nutritional products but it is much harder to back them up scientifically. If there is a reference, where is it from? Is it from the author's own article or promotional literature or is it from a peer-reviewed veterinary journal? Most products on the internet do not cite studies to back up their claims. Those that do often cite studies on humans or rats which may not be pertinent to dogs.

**Check the timeliness of the information.** Things change quickly in veterinary medicine and especially in the field of nutrition. Many websites are out of date. What was recommended two years ago may not be accepted practice today. A good website will be updated frequently.

**Be wary of anecdotal information.** Descriptions of one person's experience (e.g. 'When my dog was diagnosed with kidney disease I gave him 'GETBETTER' nutritional supplement and now he's cured') can be misleading. While it can be useful to hear about other people's experiences, their positive evaluations do not mean that the actual product or treatment is really beneficial. Always discuss what you've heard with your veterinarian.

**Watch out for rating websites.** Most websites that rank dog foods do so either on opinion or on criteria that do not necessarily ensure a good quality food (e.g. price, ingredients, size of the company). It's important to use more objective criteria (science, quality control) in judging a dog food.

**Be skeptical of grand claims or easy answers to difficult problems.** Remember the old adage: if it sounds too good to be true, it probably is.

If you are a critical web surfer and work with your veterinarian to analyze the information you find, you will reap the benefits of the computer age without experiencing its problems.



Below are the web addresses of some useful, accurate sources of information on nutrition:

## Nutrition Guidelines

- World Small Animal Veterinary Association Nutritional Assessment Guidelines <http://www.wsava.org/educational/global-nutrition-committee>
- American Animal Hospital Association Nutritional Assessment Guidelines <https://www.aahanet.org/Library/NutritionalAsmt.aspx>

## Tools for the Veterinary Healthcare Team

- World Small Animal Veterinary Association Global Nutrition Committee Nutrition Toolkit <http://wsava.org/nutrition-toolkit>
- Pet Nutrition Alliance – information and tools to increase awareness of the importance of optimal pet nutrition <http://www.petnutritionalliance.org>

## Pet Nutrition – General Information for Pet Owners

- National Research Council downloadable booklet: Your Dog's Nutritional Needs <http://dels-old.nas.edu/banr/petdoor.html>

## Pet Food

- Association of American Feed Control Officials: Information on regulations, labeling and other important facts about pet food <http://petfood.aafco.org/>
- FAQs about pet foods [www.tufts.edu/vet/nutrition/faq/general\\_pet\\_nutrition.html](http://www.tufts.edu/vet/nutrition/faq/general_pet_nutrition.html)
- Federal Drug Administration (FDA) Pet Food site: Information, links, food safety issues, recalls, pet food labels, reporting portal <http://www.fda.gov/AnimalVeterinary/Products/AnimalFoodFeeds/PetFood/default.htm>
- Pet Food Institute: Information on ingredient definitions, labeling regulations <http://www.petfoodinstitute.org/Index.cfm?Page=Consumers>
- Pet Food Report: Consumer's Guide to Pet Food [www.petfoodreport.com](http://www.petfoodreport.com)

## Nutrition Consultations

- American College of Veterinary Nutrition: Listing of board-certified veterinary nutritionists who will conduct nutritional consultations for veterinarians and/or pet owners [www.acvn.org](http://www.acvn.org)
- European College of Veterinary and Comparative Nutrition: Board-certified veterinary nutritionists in Europe [www.esvcn.com](http://www.esvcn.com)

## Home-cooked Diets

- American College of Veterinary Nutrition: Listing of board-certified veterinary nutritionists who will formulate nutritionally balanced homemade diet recipes for veterinarians and/or pet owners [www.acvn.org](http://www.acvn.org)
- BalanceIT: Commercial website which offers semi-customized balanced home-cooked diet recipes for pet owners with healthy pets. Veterinarians can customize pre-formulated recipes for animals with medical conditions [www.balanceit.com](http://www.balanceit.com)
- European College of Veterinary and Comparative Nutrition: Board-certified veterinary nutritionists in Europe [www.esvcn.com](http://www.esvcn.com)

## Obesity

- Pet Obesity Prevention: Useful information on assessing pets' body weight, calorie needs, and weight loss tools [www.petobesityprevention.com](http://www.petobesityprevention.com)

## Dietary Supplements

- Consumerlab: Site (with a small subscription fee for use) that independently evaluates dietary supplements (primarily for human supplements but some pet supplements are included) [www.consumerlab.com](http://www.consumerlab.com)
- Food and Drug Administration (FDA): Regulatory and safety issues of dietary supplements, adverse event reporting <http://www.fda.gov/food/DietarySupplements/default.htm>
- Mayo Clinic drugs and supplements information: Fact sheets on human supplements and herbs <http://www.mayoclinic.com/health/drug-information/DrugHerbIndex>
- National Institutes of Health (NIH) Office of Dietary Supplements: Evaluating supplements, fact sheets, safety notices, internet health info <http://ods.od.nih.gov>
- United States Department of Agriculture (USDA) Food and Nutrition Information Center: General supplement and nutrition information, links to a variety of dietary supplement websites [http://fnic.nal.usda.gov/nal\\_display/index.php?info\\_center=4&tax\\_level=1&tax\\_subject=274](http://fnic.nal.usda.gov/nal_display/index.php?info_center=4&tax_level=1&tax_subject=274)
- United States Pharmacopeia Dietary Supplement Verification Program: Independent testing of dietary supplements (human supplements only) <http://www.usp.org/usp-verification-services/usp-verified-dietary-supplements>

## Raw meat diets

- Tufts Cummings School of Veterinary Medicine raw diet fact sheet [http://www.tufts.edu/vet/nutrition/resources/raw\\_meat\\_diets.pdf](http://www.tufts.edu/vet/nutrition/resources/raw_meat_diets.pdf)
- FDA guidance document on safe handling and raw foods <http://www.fda.gov/downloads/AnimalVeterinary/GuidanceComplianceEnforcement/GuidanceforIndustry/UCM052662.pdf>

## Other

- Ohio State Indoor Pet Initiative: Nutrition and other tips for optimizing the indoor pet's environment <http://indoorpet.osu.edu/>
- USDA Nutrient Database: Full nutrient profiles on thousands of human foods <http://www.nal.usda.gov/fnic/foodcomp/search>



## Diet-Related Disease

What's in your dogs' diets could be a factor in whether they develop heart disease, according to a new FDA report.

The Food and Drug Administration announced Thursday that it is continuing to investigate a potential connection between certain diets and cases of dilated cardiomyopathy, known as DCM or canine heart disease, which can result in congestive heart failure.

The agency first announced the investigation in July 2018. Thursday's announcement named 16 pet food brands most frequently identified in 524 reported cases, which included 515 dogs and nine cats.

"We know it can be devastating to suddenly learn that your previously healthy pet has a potentially life-threatening disease like DCM," Steven M. Solomon, director of the FDA's Center for Veterinary Medicine, said in a statement. "That's why the FDA is committed to continuing our collaborative scientific investigation into the possible link between DCM and certain pet foods."

The report says large and giant breed dogs are most typically affected, with cases being most prevalent in golden retrievers, mixed breeds and Labrador retrievers. However, there have been cases of smaller breeds, too, suggesting "a lack of a genetic connection," the report notes.

In most of the cases, the dogs ate dry food formulations. The investigation also looked into the ingredients or characteristics of the dogs' diets. More than 90% of diets were "grain-free" and 93% had peas and/or lentils.

Cats are more likely to develop hypertrophic cardiomyopathy, which also is heart disease, the report notes.

## Identified brands

The report notes that the FDA doesn't yet know how certain diets may be associated with the disease.

"However, the FDA is first and foremost a public health agency, and takes seriously its responsibility to protect human and animal health," the agency said in the statement. "In the case of DCM, the agency has an obligation to be transparent with the pet-owning public regarding the frequency with which certain brands have been reported."

Here are the 16 brands most frequently identified in the report and how many cases were reported to the FDA for each:

- Acana: 67
- Zignature: 64
- Taste of the Wild: 53
- 4Health: 32
- Earthborn Holistic: 32
- Blue Buffalo: 31
- Nature's Domain: 29
- Fromm: 24
- Merrick: 16
- California Natural: 15
- Natural Balance: 15
- Orijen: 12
- Nature's Variety: 11
- NutriSource: 10
- Nutro: 10
- Rachael Ray Nutrish: 10

Other brands of pet food were identified in a [78-page FDA document](#), which also notes details of each case with the animal's breed, age and weight along with a description of the reported illness.

## **What's next**

The FDA is encouraging veterinarians to report cases by using its electronic Safety Reporting Portal or by calling their state's FDA Consumer Complaint Coordinator.

Pet owners are advised to contact their veterinarian as soon as possible if "a dog is showing possible signs of DCM or other heart conditions, including decreased energy, cough, difficulty breathing and episodes of collapse," the report said.

Learn more at [www.fda.com](http://www.fda.com)



# Dental Care for Dogs & Cats

Presented by  
NATIONWIDE<sup>®</sup>

Preventive oral care can help  
**ensure your pet's health** and  
**save you money**



## Signs of dental disease by age 3:



## Small dogs, **BIGGER** dental issues?



It's a fact: Nationwide pet insurance members with small dog breeds filed **10% more dental claims** than those with large dogs. Small dogs are prone to tartar formation, gum recession, and loss of teeth.

Amount spent by Nationwide members on pet dental conditions in 2017:

**\$19M+**



Average claim amount for pet dental cleaning

\$190

Average claim amount for treating dental disease<sup>1</sup>

\$404

## Top 5 Dental Conditions

### DOGS

### CATS

Dental disease<sup>2</sup>

Dental disease<sup>2</sup>

Oral trauma/  
fractured tooth

Gingivitis

Gingivitis

Tooth  
resorption

Benign oral  
neoplasia

Ulcerative  
stomatitis

Deciduous teeth  
and complications thereof

Oral trauma/  
fractured tooth

## How to help your pet:

1

Take your pet  
for a dental exam  
at least once  
a year.

2

Talk to your  
veterinarian  
about an  
at-home  
regimen.

3

Schedule regular  
dental cleanings  
for your pet.

Protect your pet's oral health with a pet insurance plan from Nationwide.  
Get a quote at [BestPetInsuranceEver.com](http://BestPetInsuranceEver.com) • 800-672-9259



Sources:  
American Veterinary Medical Association—[www.avma.org](http://www.avma.org)  
The American Veterinary Dental College—[www.avdc.org](http://www.avdc.org)  
American Veterinary Dental Society—[www.avds-online.org](http://www.avds-online.org)  
Nationwide claims data

<sup>1</sup>E.g. periodontitis, tooth infection/cavities/abscess. <sup>2</sup>Some exclusions may apply. Certain coverages may be subject to pre-existing exclusion. See policy documents for a complete list of exclusions. Plans may not be available in all states.

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**CHECKLIST**  
**for your pet's**  
**full body health**

*You probably see your pet every day. And he may look perfectly fine to you, but is he really? What does a normal, healthy pet look like?*



Here are a few of the basics to look for:

- EARS** Clean; no bad odor, redness, or excessive wax
- EYES** Bright and clear; no redness or cloudiness; not watery
- MOUTH** No "doggy breath," red or swollen gums, or discolored teeth
- SKIN & COAT** Healthy-looking coat for the breed; no red, flaky, or excessively dry skin; no lumps or scabs
- BONES & JOINTS** Normal activity level; no limping or trouble standing up; no hesitating to walk or use stairs
- WEIGHT** A visible "waist" or slight tuck-in behind the ribs; ribs should be easy to feel but not see

**HEART & LUNGS**

No coughing, sneezing, wheezing, or labored breathing; watch for reluctance to exercise or play; or getting tired or winded more easily than normal

**DIGESTIVE SYSTEM**

Normal appetite; no diarrhea or vomiting; watch for swollen abdomen, burping more than usual, passing gas, passing stool that's a different consistency of color, having trouble passing stool

**URINARY SYSTEM**

No accidents in the house (if house-trained); watch for urine that looks or smells different, trouble urinating, or inability to urinate (If your pet is trying to urinate and can't, seek immediate medical attention. It could indicate a life-threatening blockage!)



**YOUR HEALTHY PET** *begins with you*

Scheduling regular wellness visits with your veterinarian, keeping your pet's vaccines up-to-date, staying on top of parasite prevention, feeding a 100% nutritionally complete diet that is formulated for your pet, and getting adequate exercise can work wonders for your pet's health.



## Multidrug Sensitivity in Herding Breeds: MDR1 Gene Mutation

**MDR1 Gene Mutation:** The MDR1 gene encodes P-glycoprotein, a drug transport pump that plays an important role in limiting drug absorption and distribution (particularly to the brain), as well as enhancing the excretion of many drugs used in dogs. Some dogs, particularly herding breeds, have a mutation in the MDR1 gene, leaving them defective in their ability to limit drug absorption and distribution. These dogs also have delayed excretion of drugs that are normally transported by P-glycoprotein, making them susceptible to severe drug toxicity.

### **Drugs Affected by the MDR1 Gene Mutation:**

Acepromazine	Ivermectin	Paclitaxel
Butorphanol	Loperamide	Selamectin
Doramectin	Milbemycin	Vinblastine
Doxorubicin	Moxidectin	Vincristine
Erythromycin		Vinorelbine

### **Breeds affected by the MDR1 mutation (frequency %)**

Breed	Approximate Frequency
Australian Shepherd	50%
Australian Shepherd, Mini	50%
Border Collie	< 5%
Collie	70 %
English Shepherd	15 %
German Shepherd	10 %
Herding Breed Cross	10 %
Long-haired Whippet	65 %
McNab	30 %
Mixed Breed	5 %
Old English Sheepdog	5 %
Shetland Sheepdog	15 %
Silken Windhound	30 %

### **Testing a Dog for the MDR1 Mutation is Easy:**

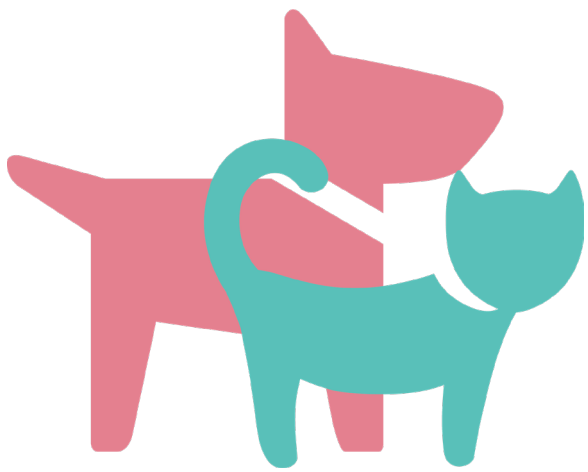
Order a testing kit by contacting the Veterinary Clinical Pharmacology Laboratory at Washington State University: [www.vcpl.vetmed.wsu.edu](http://www.vcpl.vetmed.wsu.edu) or by phone 509-335-3745



# DID YOU KNOW:

---

Fewer than half of lost dogs and one fifth of lost cats have any identification, such a collar, collar tag, or chip, when they go missing.



In a recent study of US animal shelters, only **21.9% of stray dogs** and **1.8% of stray cats** could be reunited with their owners due to lack of identification.

In the same study, **52.2% of stray dogs** and **38.5% of stray cats** with registered chips could be reunited with their owners.



Even 'inside pets' can easily be seperated from their owners, especially in areas prone to natural disasters!

Ask your veterinarian about about getting your pet microchipped with PetLink.

petlink<sup>™</sup>.net

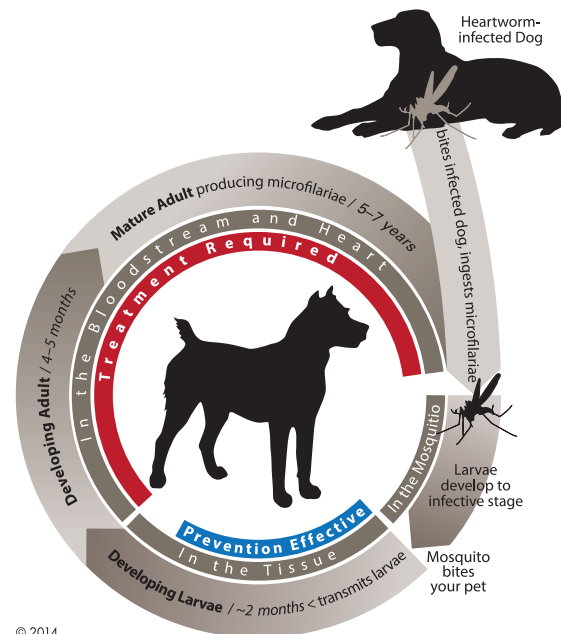
A Datamars brand





## HEARTWORM LIFE CYCLE

When a dog has a mature heartworm infection, female worms release their young (microfilariae) directly into the dog's bloodstream. When a mosquito bites a dog with microfilariae in the blood, it ingests the microfilariae along with the blood. Over the following 10 to 14 days, these microfilariae develop and mature into infective larvae inside the mosquito. When the mosquito bites another dog, the larvae are left behind to enter the fresh wound. In 6 to 7 months, these infective larvae migrate inside the dog, eventually reaching the heart and vessels of the lungs, where they continue to grow to full maturity. The mature adult worms produce microfilariae of their own, which are available in the dog's blood to infect other mosquitoes. Because heartworms may live for 5 to 7 years in the dog, each mosquito season can lead to increasing numbers of worms as they accumulate in unprotected dogs.



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American Heartworm Society  
Wilmington, Delaware

## A MESSAGE TO TAKE TO HEART

While the risk of infection in dogs varies from one region of the country to another and even from one community to another, one fact remains: heartworm disease is a threat to unprotected dogs in every state, even some parts of Alaska. Unprotected dogs, foxes, coyotes, and wolves act as reservoirs, or sources, for the spread of this serious disease. The relocation of dogs, as with humanitarian efforts following natural disasters such as Hurricane Katrina, can introduce heartworm disease into parts of the country where it is not normally found. Furthermore, unprotected dogs traveling with their owners to areas where heartworms exist will be at risk for heartworm exposure. Heartworm disease is a complicated and deadly illness—the best approach is prevention.

This brochure highlights many general aspects of heartworm disease but cannot address every detail. Comprehensive guidelines providing the most up-to-date heartworm information have been prepared to assist you and your veterinarian. Please visit the website of the American Heartworm Society ([www.heartwormsociety.org](http://www.heartwormsociety.org)) for more in-depth information regarding prevention, diagnosis, and management of heartworm disease.



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American Heartworm Society  
PO Box 8266  
Wilmington, DE 19803-8266  
[www.heartwormsociety.org](http://www.heartwormsociety.org)

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Printing underwritten by an educational grant from Ceva.

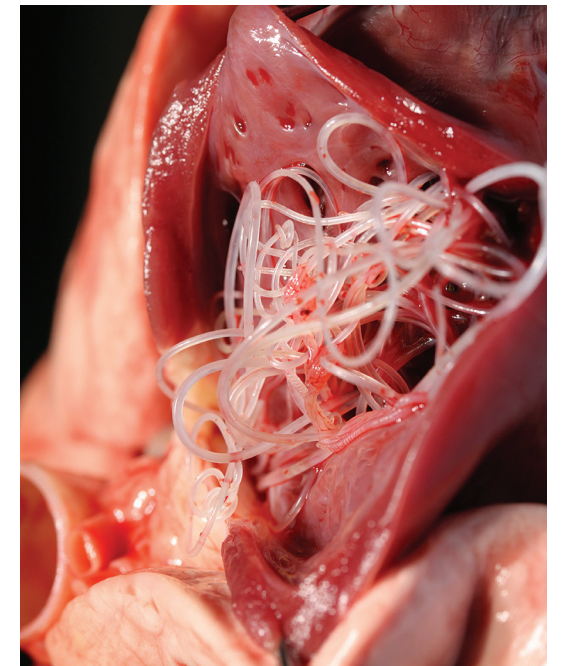
## Heartworm Disease in Dogs



## WHAT IS HEARTWORM DISEASE?

Canine heartworm disease develops when a dog is bitten by a mosquito carrying microscopic larvae of a parasite called *Dirofilaria immitis*. As a mosquito feeds, these microscopic larvae infect and begin their migration into the dog's bloodstream, where they grow into adult worms. Adult female heartworms are larger than male heartworms and can grow 10 to 12 inches in length. They make their home in the right side of the heart and vessels of the lungs (pulmonary arteries), often causing lung disease and heart failure.

Although easy to prevent, heartworm disease continues to be a major health problem for dogs living in the United States and wherever mosquitoes live. If you ever see or get bitten by mosquitoes, your dog is at risk!



Prepared and released by the



AMERICAN  
HEARTWORM  
SOCIETY™  
EST. 1974

## SIGNS OF HEARTWORM DISEASE

Some dogs can be infected for several years before symptoms develop, so heartworm disease in younger dogs may not be obvious. As heartworms slowly cause damage to the pulmonary arteries of the lungs, signs of disease may include a mild persistent cough, reluctance to exercise, fatigue after moderate activity, decreased appetite, and weight loss. Eventually, as blood flow through the diseased lungs becomes more restricted, some dogs can develop heart failure. This is commonly recognized by a buildup of fluid in the abdomen and the appearance of a “swollen belly.” Although less common, a large number of heartworms can lead to a sudden obstruction of blood flow through the heart and lungs. This blockage often becomes a life-threatening form of heart failure referred to as *caval syndrome*. Signs of caval syndrome often include a sudden onset of labored breathing, pale gums, dark red or “coffee-colored” urine, and an inability or unwillingness to move. Most dogs suffering from caval syndrome will not survive without prompt surgical removal of the heartworm blockage.

## DETECTING HEARTWORM INFECTION

Numerous blood tests are available for detecting heartworm infections in dogs, and your veterinarian will perform the test most appropriate for your dog. Keep in mind that no diagnostic test can accurately detect all heartworm infections. For example, tests cannot consistently detect infection until heartworms are at least 7 months old. Some heartworm infections may not be picked up by routine tests and more extensive testing, such as x-rays or ultrasound imaging, may be required if the

doctor suspects heartworms. Your veterinarian might also repeat the blood test at suggested intervals.

## WHO SHOULD BE TESTED?

Annual testing is recommended for all dogs to ensure that heartworm prevention is achieved and maintained. If an infection is diagnosed in its early stages, the disease may be less severe and easier to treat.

All dogs 7 months of age and older should be tested for heartworms prior to beginning a preventive program. More frequent testing might be necessary in some cases—for example, if you know that a dose of the preventive medication has been missed, if you have switched from one preventive medication to another, or if your dog has clinical signs of heartworm infection or other individual risk factors. The frequency of testing should be discussed with your veterinarian. At a minimum, retesting is recommended 6 months after first starting on the preventive medication or a missed dose, and annually thereafter.

## TREATMENT

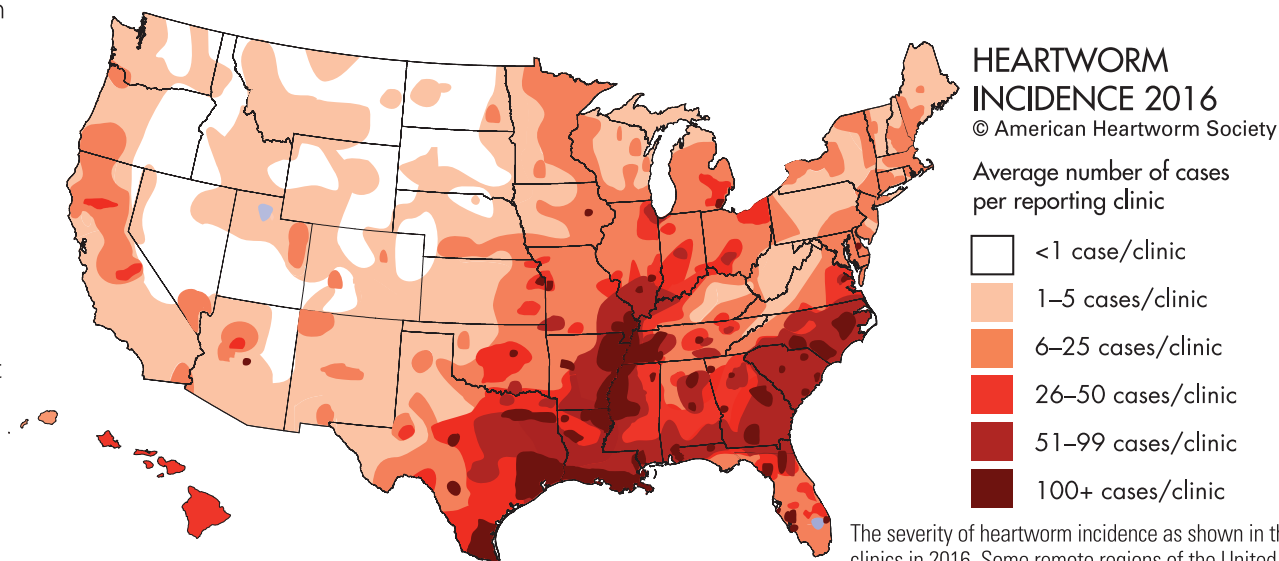
Without treatment, heartworm disease will worsen and may lead to more serious illness. Unless medical reasons identify a dog as a poor candidate, heartworm-positive dogs should be treated. Treating dogs for heartworms can also lead to serious health concerns, however, as the dead parasites can cause further injury to the lungs and pulmonary arteries. A thorough physical examination, x-rays, and blood and urine tests may be needed prior to treatment to assess your dog’s level of risk. To reduce complications, your veterinarian will educate you in great detail before initiating treatment of your dog. While the heartworm medication melarsomine hydrochloride is extremely effective in eliminating adult worms, some dogs will not be completely cleared with a single course of treatment. Testing is recommended 6 months after treatment to ensure all heartworms were killed. If tests are still positive, additional testing and further treatment may be indicated.

## PREVENTION

Heartworm preventive medications are very effective when given properly on the prescribed schedule. It is important to monitor your pet’s weight to ensure your pet falls within the weight range listed on the package. All approved heartworm preventives are safe, very easy to use, relatively inexpensive, and some provide treatment for additional parasites. Prevention is always safer and more affordable than treating adult heartworm infections.

It is your responsibility to faithfully give your dog the preventive medication as prescribed. The best way to reduce the risk of heartworm infection in your dog is to give preventive medication year-round. In addition, you can take steps to minimize mosquito exposure by limiting outdoor activity during peak mosquito times and by utilizing approved mosquito repellants.

Be certain to have all dogs tested prior to initiating or restarting any heartworm prevention program as administration of preventives can cause life-threatening reactions when given to heartworm-infected pets. Routine testing is critical to avoid a delay in detecting early infection and starting life-saving therapy.



The severity of heartworm incidence as shown in this map is based on the average number of cases in dogs and cats from reporting clinics in 2016. Some remote regions of the United States lack veterinary clinics; therefore, we have no reported cases in these areas.

## Annual testing

is recommended for all dogs to ensure that heartworm prevention is achieved and maintained.



## Which heartworm prevention is right for you?

(Every dog needs heartworm prevention)



Are you a compliant tablet giver?

(Never miss a dose, use calendar)

**YES**

**NO**

Interceptor Plus chewables

ProHeart 6 or 12 injection

Are intestinal parasites a persistent concern?

Examples: Active outdoor dog, small children in house, immunocompromised patient, dog eats feces off of ground or small mammals like mice.

**YES**

**NO**

Interceptor Plus chewables

for heartworm prevention and monthly parasite deworming

ProHeart 6 or 12 injection

separate intestinal dewormer every 6 months



# The Gonadectomy Controversy

## Exploring the available data, making the case for more information and weighing the risks with pet owners

June 23, 2017

By Katherine Skorupski, DVM, Dipl. ACVIM (Oncology)

One of the most controversial topics in the veterinary cancer field is the potential effect of gonadectomy on cancer risk. [Spaying and neutering](#) have obvious benefits with regard to population control and in preventing ovarian and testicular cancers.

However, over the past five years, several studies have found a correlation between early spay and neuter practices and cancer diagnosis.

The previously accepted connection between mammary tumor risk and spay also has been questioned. This article examines the data available connecting cancer and gonadectomy, and explores how the results can and should impact discussions with pet owners considering the procedure.



### The Hoffman Study

The largest study to date assessing the effects of gonadectomy studied the lifespan and cause of death of more than 70,000 dogs in the Veterinary Medical Database. In this study by Hoffman et al, sterilized dogs lived, on average, 1.5 years longer than intact dogs, and sterilization increased life expectancy by 13.8 percent in males and 26.3 percent in females.

The study also found that sexually intact dogs were more likely to die of infectious disease, trauma, vascular disease and degenerative disease, and sterilized dogs were more likely to die of neoplasia and immune-mediated disease.

When looking at specific cancers, intact females were more likely to die of mammary cancer, and sterilized dogs were more likely to die of transitional cell carcinoma, [osteosarcoma](#), lymphoma, mast cell tumors or prostate cancer. The results of this study have significant implications on data published in other studies, as they connect longer life with higher cancer rates.

### Mammary Tumors

In humans, the role of hormones in breast cancer development is well established. Estrogen, in particular, is known to stimulate growth of stromal and ductal tissues in the breast and increase mitotic activity of breast epithelium, and it can recruit noncycling epithelial cells into the cell cycle.

Estrogen also regulates specific genes that, when mutated, contribute to cancer development. In women, overall lifetime estrogen exposure has been correlated to breast cancer risk, which increases with a younger age at menarche, older age at menopause, fewer children and hormone replacement therapy.

Less research has been done in pets compared to humans, but data connecting ovariectomy and a decreased incidence of mammary tumors has been published since 1969.

The often-quoted study by Schneider et al found that 72 percent of dogs diagnosed with mammary tumors were intact at the time of diagnosis. Also, out of the spayed dogs, 75 percent were spayed before 30 months of age. This study also found the lowest risk of mammary tumor development in dogs spayed before the first heat, but only one dog was spayed before that occurrence and three dogs before the second heat, so results should be interpreted with caution. Further study into spay timing and mammary tumor risk is necessary.

Timing of ovariectomy also has been shown to be associated with mammary cancer risk in felines. A case-control study in cats found a decreased risk of tumor development compared to intact cats in those spayed before 2 years of age. Risk was reduced by 91 percent in cats spayed before 6 months of age, by 86 percent if spayed between 6 months and 1 year, and by 11 percent if spayed between 1 and 2 years of age. Based on this paper, it may be ideal for cats to be spayed before 1 year of age to have maximum protection against mammary tumors.

In 2012, a paper published in the Journal of Small Animal Practice aimed to systematically review the quality of publications reporting a connection between spay and risk of mammary tumors. The authors concluded that the evidence that neutering reduces the risk of mammary neoplasia is weak.

To reach this conclusion, the authors used the SIGN (Scottish Intercollegiate Guidelines Network) levels of evidence system in which only meta-analyses, systematic reviews and high-quality case control or cohort studies are considered high levels of evidence.

In veterinary medicine, there are very few studies on any topic that qualify as described, and, using these criteria, much of what we do as veterinarians would be considered to be based on weak or unsound data. As the data came into question, Hoffman's paper was published with a very strong correlation between intact reproductive status and death due to mammary cancer, strengthening the available evidence.

## **Other Cancers**

The Hoffman study found a higher risk of death due to bladder and prostate cancer, osteosarcoma, lymphoma and mast cell tumors in sterilized dogs. These dogs also lived significantly longer than their intact counterparts and had a lower risk of death from infectious, traumatic and other conditions, which likely influenced results. With these confounding factors, it's difficult to know whether the increased risk of cancer could be related to hormonal factors.

Several breed-specific publications also have reported a higher risk of diagnosis of certain cancers after gonadectomy. A study of Vizslas found a higher risk of mast cell tumors, hemangiosarcoma and lymphoma in spayed and neutered dogs.

Another study of golden retrievers also found higher risk of the same three cancers in gonadectomized dogs, and a study of Rottweilers found that risk of osteosarcoma diagnosis increased with younger age at gonadectomy.

Also, several studies have been published supporting a higher incidence of prostate and bladder cancer in neutered male dogs compared to intact male dogs.

While the findings in these studies might suggest a real correlation may exist between cancer risk and gonadectomy, some of these publications have weaknesses that must be addressed with additional research.

The Vizsla study relied on client reporting for its data, potentially biasing the results due to owner preconceptions. The golden retriever study excluded dogs greater than 8 years of age, and, along with the Rottweiler study, did not account for bias due to potentially longer lifespans in spayed or neutered dogs.

Another potential source of bias could be due to differences in owner pursuit of healthcare. Not all pet owners elect to see a veterinarian regularly, and it's possible that owners who chose to spay or neuter their dogs were more likely to seek out veterinary care. As a result, they may have been more likely to seek diagnostic tests that lead to a specific cancer diagnosis, while those who do not seek out care may die or be euthanized without a specific diagnosis. As a result of this bias, it could appear that spayed and neutered dogs have a higher incidence of cancer, and further investigation into the true influence of this bias is necessary.

Interpreting the findings of these publications and discussing them with owners in a clinical setting also should include a consideration of the real numbers.

For example, in the Hoffman study, the differences in frequency of cancer deaths were between approximately 5 and 15 percent. For example, the percentage of spayed or neutered dogs between 5 and 10 years of age that died from cancer was approximately 62 percent compared to approximately 53 percent of intact dogs.

While any single cancer diagnosis is devastating to an owner, the clinical implications of relatively small increases in diagnosis frequency should be considered.

## **Nonneoplastic Considerations**

[The effect of gonadectomy on factors other than cancer must be considered when making recommendations to owners.](#) Research has attempted to study the correlation between reproductive status and behavior, orthopedic disease and immune-mediated disease.

The data relating to reproductive status and behavioral problems in dogs are conflicting, with some studies finding a higher risk of behavioral problems in intact dogs and others finding a lower risk.

Immune-mediated diseases have been correlated with gonadectomy, and two studies have found a higher risk of diagnosis in sterilized dogs of such diseases as atopy, immune-mediated hemolytic anemia, hypothyroidism and inflammatory bowel disease.

Hormones also can play a role in bone and joint maturation, and a higher risk of hip dysplasia and cruciate tear have been found in dogs spayed or neutered before 1 year of age. Though further research is necessary, these factors may influence an owner's opinions on sterilization procedures and timing.

Ultimately, prospective studies are necessary to fully investigate the association between neutering and certain cancers. The golden retriever lifetime study currently underway will hopefully provide prospective data while controlling for breed and healthcare selection bias. This is the first prospective study that may be able to best assess cancer incidence based on a number of variables including gonadectomy.

In the meantime, conversations with owners should include consideration of the individual pet as well as owner circumstances and risk tolerance.

For owners interested in pursuing gonadectomy who are concerned about cancer risk or orthopedic effects, a recommendation to spay or neuter after 1 year of age but before 30 months of age may be a good middle ground in which mammary cancer risk is still low but risk of orthopedic disease is less.

At this time, it may be premature to make recommendations for or against gonadectomy based on available data related to risk of nonmammary cancers, given the longer lifespans found in sterilized dogs. The results of future prospective research in this field may further guide us and are eagerly awaited.

*Dr. Katherine Skorupski is an associate professor of clinical medical oncology at the University of California, Davis, School of Veterinary Medicine*

## Von Willebrand's Disease in Dogs

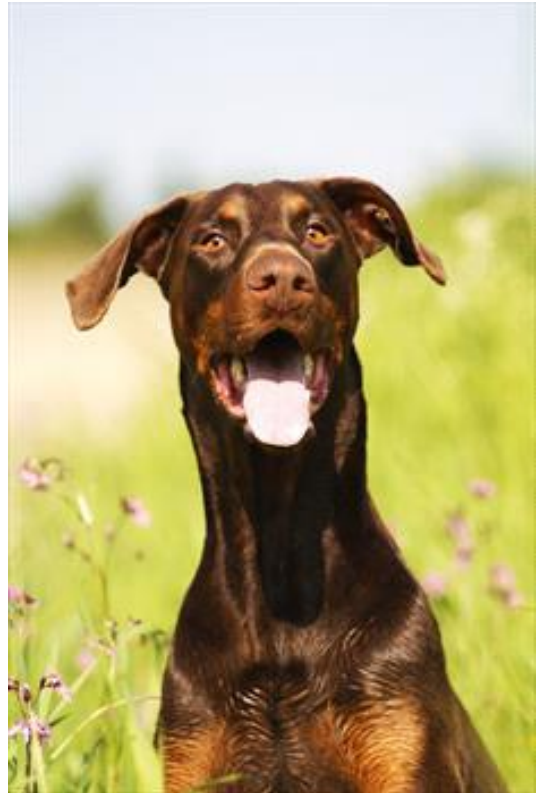
Most people are familiar with hemophilia A, an inherited blood clotting defect in human beings affecting only male children. Most people, however, are not as familiar with von Willebrand's disease and hear of it for the first time when they ask questions about breeding their dog. Von Willebrand's disease, like hemophilia A, is an inherited blood clotting defect and breeds at high risk should be screened before being allowed to breed.

Breeds routinely tested are Doberman Pinscher, Golden Retriever, Shetland Sheepdog, Rottweiler, Miniature Schnauzer, German Shepherd, German Short-Haired Pointer, Standard Poodle, and Scottish Terrier.

### What is Von Willebrand's Factor?

Von Willebrand's factor is a protein complex produced both by platelets (the blood cells involved in clotting) and by the cells lining blood vessels. It is made up of several smaller proteins bound together. Von Willebrand's disease results when there is a defect in any one of these proteins. When a blood vessel tears and bleeding occurs, platelets are called to the area to clump upon each other thus plugging up the hole and staunching the bleeding. While the platelets are in place, a cascade of blood clotting factors activates, ultimately leading to production of fibrin (the material scars are made of) to more permanently seal the vessel. Von Willebrand's factor acts as glue holding the platelets together and holding them onto the surface of the torn blood vessel. Von Willebrand's factor also serves to stabilize clotting factor VIII, one of the proteins involved in forming the fibrin clot.

When there is something wrong with a body's von Willebrand's factor, platelets do not stick together properly and inappropriate, prolonged wound bleeding occurs. Bleeding can be noted in association with minor injury or surgery but can also manifest as spontaneous bleeding, especially recurring nose bleeds, bloody urine, and/or black tarry diarrhea.





## **Types of Von Willebrand's Disease**

There are three types of von Willebrand's disease.

### ***Type I***

In Type I von Willebrand's disease, all the proteins making up von Willebrand's factor are present but only in very small amounts. This is the type common in the Doberman Pinscher, the Shetland Sheepdog, the German Shepherd Dog, and the Standard Poodle.

### ***Type II***

In Type II, the larger proteins making up von Willebrand's factor are completely absent, leaving only the smaller proteins to do the job. This creates more severe bleeding episodes and represents the type of von Willebrand's disease usually seen in German Short-Haired and German Wire-Haired Pointers.

### ***Type III***

In Type III, there is simply no von Willebrand's factor at all. This is the most severe form and is usually seen in Scottish Terriers, Chesapeake Bay Retrievers, and Shetland Sheepdogs. Von Willebrand's disease is not limited to the breeds listed here; forms of it have been found in over 50 breeds, as well as in cats and humans. Unlike the genetics of Hemophilia A in humans, which is reviewed in detail in virtually every high school biology class as an example of a classic sex-linked recessive trait, von Willebrand's disease is not as simple. Males and females are equally affected and the inheritance seems to be recessive but complicated.

## **Testing for Von Willebrand's Factor**

Knowing a dog's von Willebrand's status is important clinically when there is concern about a patient's ability to clot, and it's also important before breeding. With breeding, it is important to identify genetic carriers of von Willebrand's. A carrier of von Willebrand's should under no circumstances be bred to another carrier as this is likely to create affected dogs, so members of the classically affected breeds should be screened. There is great controversy as to whether carriers should even be bred at all as this will potentially create more carriers.

Classically, testing for this disease is accomplished by measuring von Willebrand's factor in a blood sample. The amount of factor in the patient's serum is compared to that found in "normal" dogs. The patient's results are compared to the normal and expressed in a percentage, thus it is possible for a patient to have greater than 100 percent.

Normal is considered to be 70-180 percent.

Borderline is considered to be 50-69 percent.

Abnormal (affected or genetic carrier) is considered to be less than 49% though these results in part depend on the laboratory running the test. Dogs in the "abnormal" group are at risk for bleeding and should definitely not be bred.

A dog may test differently on different days, when blood is drawn from different veins, when the dog is more excited, or if the dog is pregnant, so it may be necessary to test a dog several times before being comfortable with the result. This type of testing does not indicate what type of von Willebrand's disease the dog has and further testing by a technique called electrophoresis is needed to do this if you are interested. Knowing the type of von Willebrand's disease is unlikely to change therapy, thus further testing is not commonly done.

### ***DNA Testing***

DNA testing is currently available for many von Willebrand's breeds. VetGen offers testing for 19 breeds, vetdnacenter.com offers testing for 13 breeds and many veterinary schools offer assorted DNA testing including von Willebrand's. The company will provide a small kit that any pet owner can use at home. Sampling simply involves swabbing the inside of the patient's mouth and mailing the swab. Results should indicate if the patient is clear, affected, or a carrier.

### ***Testing Clotting Ability Prior to Planned Surgery***

A simple screening test often done before a surgery is a buccal bleeding time. A small wound is created in the mouth using a spring-loaded blade created just for this purpose (a Symplate device or Surgicutt device). The time required for clotting to occur is measured and should be under four minutes or so if platelet function is normal. The patient is generally under anesthesia at this point.

The test has previously been accomplished by clipping a toenail short and inducing bleeding but this technique has largely been abandoned as there are too many toenail variables to create a standardized test. That said, there are some issues with buccal bleeding time as well. Even though the spring load is standardized, as is the length and sharpness of the instrument, there is still some subjectivity in positioning the device as well as some patient variables (red blood cell concentration, blood viscosity etc.) that can influence results.

In a perfect world, a platelet function analyzer is used to measure what is called a collagen/ADP closure time. This is the most accurate measurement of how well platelets adhere and form clots but this technology is not readily available to most small animal hospitals at this time.

### ***Suddenly Symptoms?***

You would expect a congenital disease like von Willebrand's disease to manifest in puppyhood and in fact this is usually so. Von Willebrand's disease is usually detected when there is unexpected hemorrhage during a spay or neuter or when

screening tests are done in anticipation of surgery on a member of a von Willebrand's breed.

It is possible for borderline dogs to show signs of bleeding later on. For example, a dog with borderline von Willebrand's factor might become hypothyroid later in life and this hormonal change could be just enough to make the bleeding disorder clinically evident. This is not a common scenario with hypothyroidism but it has been reported.

### **Treatment of the Affected Dog**

When hemorrhage is occurring or is anticipated, as with a planned surgical procedure, the best treatment is administration of von Willebrand's factor by transfusion. Pure von Willebrand's factor cannot be purchased from a blood bank but a blood product called cryoprecipitate, which is particularly rich in von Willebrand's factor, can be. Complete plasma is the next best choice and is much more available than cryoprecipitate. Administration of cryoprecipitate improves bleeding time for approximately 4 hours after administration.

A hormone called DDAVP (or desmopressin acetate) can be helpful as its use seems to cause a sudden release of von Willebrand's factor into the bloodstream. After a 30-minute activation period, the use of DDAVP shortens the bleeding time for approximately 2 to 4 hours after the DDAVP injection. This method only works for dogs with Type I and not all dogs with Type I disease will respond

There are two considerations with von Willebrand's disease: screening breeding animals so that this genetic disorder is not passed on, and identifying and treating affected animals. If you have one of the at-risk breeds, consider having a screening test, especially if you are considering a major surgery. If you plan to breed your pet, von Willebrand's testing is a good idea regardless of the breed but it is a special concern for the at-risk breeds. If you have questions, your veterinarian's office will be happy to answer them.

[Wendy Brooks, DVM, DABVP](#)

*Date Published: 03/13/2004*

*Date Reviewed/Revised: 06/09/2019*



# RIGHT FROM THE START

ROYAL CANIN® Puppy and Kitten formulas are designed with the perfect combination of precise nutrients for healthy development.

## WHY ARE NUTRIENTS IMPORTANT?

Ingredients deliver nutrients—and nutrients are the building blocks of ROYAL CANIN® formulas. Each of our formulas supplies approximately 50 nutrients in precise levels to support your puppy or kitten’s developing digestive and immune systems and to support healthy growth.

## NUTRIENT GUIDE

How nutrients support the health of your puppy or kitten

	NUTRIENT	FOUND IN	BENEFIT
<b>PROTEINS</b> Build and regenerate organs and other structures.	Methionine & Cystine	Eggs, fish, wheat and corn gluteins	Supports healthy hair and skin
	Tyrosine & Phenylalanine	Milk, rice, purified supplements	Supports hair color and iris pigmentation
	Taurine	Meat, chicken, purified supplements	Supports healthy cardiac function
	L-Carnitine	Meat, purified supplements	Supports healthy weight and cardiac muscle function
<b>FATS</b> Concentrated energy source: some have structural roles for the cell or are precursors of specific hormones.	Omega-6 Fatty Acids	Soy oil, canola oil	Supports healthy hair and skin and helps reduce inflammation
	Omega-3 Fatty Acids	Fish oils	Helps reduce inflammation and supports healthy brain development
<b>CARBOHYDRATES</b> Great source of energy and provides fiber.	Starch	Rice, oatmeal, barley, corn	Provides important energy source
	Fiber	Beet pulp, psyllium, cellulose	Promotes satiety and supports healthy intestinal transit
	Prebiotics	Purified supplements, chicory root, brewers yeast extract	Supports healthy digestion and immune functions
<b>VITAMINS</b> Essential for healthy cell generation, coat appearance and a variety of other functions.	Vitamin E	Vegetables, supplements	Supports healthy immune system and supports healthy aging
	Vitamin C	Citrus fruit	Promotes generation of Vitamin E and supports healthy cells
	Niacin	Meat, fish, cereal	Supports healthy skin and coat
	Biotin	Brewers yeast, eggs	Promotes glossy coat and healthy skin
	Folic Acid	Brewers yeast, liver	Promotes cellular and nervous system health
<b>MINERALS</b> Important for bone formation, metabolism, nerve conduction, muscle function and immune function.	Calcium & Phosphorous	Mineral salts, meat, bone	Promotes growth and supports bone health
	Zinc	Wheat, mineral salts	Promotes healthy hair and skin
<b>OTHER NUTRIENTS</b>	Carotenoid Pigments	Marigold extract, corn, carrots	Supports cellular health
	Glucosamine & Chondroitin	Purified supplements, cartilage, crustaceans	Supports healthy joints
	Green Tea Polyphenols	Green tea extract	Supports healthy aging and oral hygiene

# THREE KEY ASPECTS OF A PUPPY OR KITTEN'S GROWTH PERIOD

## 1. DEVELOPING DIGESTIVE SYSTEM

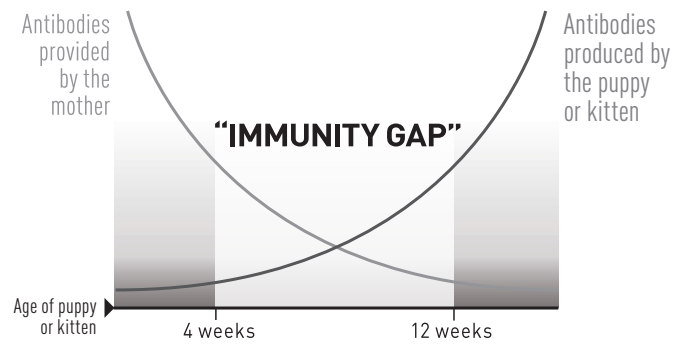
After weaning, your puppy or kitten's digestive system is not yet mature, and it is not yet ready to assimilate large amounts of food.

## 2. DEVELOPING IMMUNE SYSTEM

Between 4 and 12 weeks, your puppy or kitten goes through a crucial period of immune development—the immunity provided by the mother gradually declines, but their own defenses are not yet fully functioning.

## 3. OVERALL HEALTHY GROWTH

During the growth phase, the puppy or kitten's energy requirements are higher than those of an adult. Caloric intake must be measured to precisely meet the animal's needs to help maintain a healthy weight during the growth phase.



## FOR PURE BREED PUPPIES



- Boxer Puppy
- Bulldog Puppy
- Cavalier King Charles Spaniel Puppy
- Chihuahua Puppy
- Dachshund Puppy
- French Bulldog Puppy
- German Shepherd Puppy
- Golden Retriever Puppy
- Jack Russel Terrier Puppy
- Labrador Retriever Puppy
- Miniature Schnauzer Puppy
- Poodle Puppy
- Pug Puppy
- Rottweiler Puppy
- Shih Tzu Puppy
- Yorkshire Terrier Puppy

## FOR PUPPIES BASED ON THEIR SIZE *(Wet formulas for puppies also available)*



**X-SMALL Puppy**  
For puppies up to 8 lb\*  
up to 10 months old

**MEDIUM Puppy**  
For puppies from 23–55 lb\*  
up to 12 months old

**MINI Puppy**  
For puppies from 9–22 lb\*  
up to 10 months old

**MAXI Puppy**  
For puppies from 56–100 lb\*  
up to 15 months old

\*Recommendation based on puppy's target adult weight

## FOR KITTENS *(Wet formulas for kittens also available)*



**Mother & Babycat**  
For young kittens up to  
4 months old

**Kitten Spayed/Neutered**  
For spayed or neutered kittens  
up to 12 months

**Kitten**  
For kittens from  
4–12 months old

**Persian Kitten**  
For Persian kittens up to  
12 months old

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# Complete Coverage<sup>SM</sup>

With ASPCA Pet Health Insurance, you can choose the care you want when your pet is hurt or sick and have the comfort of knowing they have coverage.

Our coverage includes exam fees, diagnostics, treatments, and alternative therapies for:

- ✓ Accidents
- ✓ Hereditary Conditions
- ✓ Illnesses
- ✓ Behavioral Issues
- ✓ Cancer
- ✓ Dental Disease

## Simple to Customize

### Pick Your Annual Limit

You set your annual coverage limit, with choices from \$5,000 to unlimited.\*

### Add Preventive Care

Get reimbursed a set amount for things that protect your pet from getting sick, like vaccines, dental cleanings, and screenings for a little more per month.

### Select Accident-Only Coverage

If you're just looking to have some cushion when your pet gets hurt, you can change your coverage to only include care for accidents.

\*Pre-existing conditions are not covered. Waiting periods, annual deductible, co-insurance, benefit limits, and exclusions may apply. For all terms and conditions visit [www.aspcapetinsurance.com/terms](http://www.aspcapetinsurance.com/terms). Customers enrolled on product Levels 1-4 should visit the Member Center for their policy benefits. Products may vary and are subject to change.

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### HOW IT WORKS

Total Vet Bill	<b>\$3,600</b>
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Annual Deductible	- \$250
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Reimbursement %	x 90%
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**CASH BACK =**

**\$3,015**

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## Common Health Issues

CONDITION	TYPICAL COSTS	LESS OPTIONAL DEDUCTIBLE	90% REIMBURSEMENT
Linear foreign body ingestion	\$2,400	\$250	\$1,935
Bilateral cruciate rupture	\$5,800	\$250	\$4,995
Kidney failure	\$3,370	\$250	\$2,808
Hit by a car	\$1,940	\$250	\$1,521

Typical costs are for procedures in major metropolitan areas based on our research and experience. Coverage excludes exam fees, optional \$250 deductible, and sales tax where applicable.

## Actual Claim:

### The Story of Noodle

Condition: Nasal Arterial Bleeding

"Just before Christmas, Noodle, our Brussels Griffon, started bleeding from his nose. We made our decisions based on one thing: what's best for Noodle? When the dust settled, we were shocked to find out most of the expenses were covered."

— Brian O. and Michael D., New York, NY

Amount Claimed: \$19,024

**Trupanion Paid: \$16,685**

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