

## Diet-related Dilated Cardiomyopathy (DCM)

### What is this disease?

Dilated Cardiomyopathy (DCM) is a form of heart disease in which the heart muscle shows poor contractility and enlargement. This can lead to signs like exercise intolerance, collapse, problems breathing, coughing and even sudden death. Many dogs will not display symptoms until the heart disease gets very advanced.

DCM is commonly caused by a genetic/inherited predisposition in certain breeds of dogs as they age (Doberman Pinschers, Great Danes, Irish Wolfhounds, Cocker Spaniels). However, the recent concern is that veterinary cardiologists have been diagnosing more DCM in breeds of dogs that are not commonly genetically predisposed. Some of these dogs were unrelated yet came from the same household and there was a trend that these dogs were mainly eating food categorized as **grain-free, boutique, or exotic ingredient**. It has been suggested that there are dogs with genetic/non-diet-related DCM, dogs with DCM related to a deficiency of an amino acid taurine, and dogs with DCM associated with other, unidentified dietary factors. The FDA has been compiling cases and has issued a warning that these diets may be contributing to the development of nutritional-related DCM. The common link is that these diets contain one or more suspect ingredients: **Legumes (peas, chickpeas, lentils, soybeans, beans) and Potatoes (Red potatoes, White potatoes, Sweet potatoes)**. The other observation is that the companies implicated do not employ a board-certified nutritionist and often these foods have not been subjected to feeding trials on dogs.



### To stay updated on diet related DCM:

- Heart of Oregon Veterinary Cardiology Facebook page
- Tufts University board-certified nutritionist, Dr. Lisa Freeman's foodology blog: <http://vetnutrition.tufts.edu/2018/06/a-broken-heart-risk-of-heart-disease-in-boutique-or-grain-free-diets-and-exotic-ingredients/>
- FDA: <https://www.fda.gov/animalveterinary/safetyhealth/reporta-problem/ucm182403.htm>
- UC Davis Cardiac Genetics Lab: <https://ccah.vetmed.ucdavis.edu/areas-study/genetics/josh-stern-cardiac-genetics-laboratory>

### Dr. Atkinson's Diagnostic Recommendations

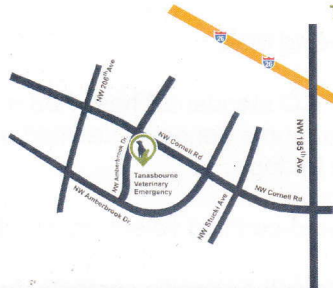
- Dilated cardiomyopathy is diagnosed by an echocardiogram by a board-certified cardiologist.
- If DCM is diagnosed through an echocardiogram in a dog that is eating a boutique, exotic, grain-free, vegetarian or home-prepared diets, then discussion of testing for taurine deficiency is warranted.
- Taurine deficiency is diagnosed using a blood test, either on whole blood or plasma. If cost is an issue, measurement of whole blood taurine is thought to be a better indicator of long-term taurine status.
- Not all dogs with taurine deficiency have DCM, and not all dogs with diet-related DCM have measurable taurine deficiency, but these cases may respond to a diet change and taurine supplementation

### We see patients at the following locations:

**Animal Dental Clinic**  
15800 SW Upper Boones Ferry Rd. Suite 300  
Lake Oswego, OR 97035



**Tanasbourne Veterinary Emergency**  
2338 NW Amberbrook Dr.  
Beaverton, OR 97006



Phone : 971-727-3059 | Fax : 503-433-1932 | [info@heartoregon.com](mailto:info@heartoregon.com)

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



Taurine is an amino acid that dogs are normally able to synthesize from other amino acids in food. Many dog and cat foods add taurine to their diets. In July 2018, the FDA issued a warning that these boutique, exotic ingredient and grain-free diets may be contributing to taurine deficient DCM. We still don't know what is causing dogs to become taurine deficient on these diets. The current theory is that something within these ingredients is binding taurine or its building blocks within the gut or that they are interfering with normal metabolism of taurine, causing patients to become deficient. The FDA took care to note that the diets themselves have adequate taurine levels, but dogs being fed these diets did not. Certain breeds (Golden Retrievers, Cocker Spaniels, Newfoundlands, English Setters, Saint Bernards and Irish Wolfhounds may be more at risk (genetically susceptible?) to taurine deficiency.

Some of the affected dogs with diet-related DCM had low blood taurine levels and improved with a diet change and taurine supplementation. However, it also has been observed that some dogs with suspected diet related DCM do not have low plasma or whole blood taurine but will show improvement with a diet change and taurine supplementation, suggesting there may be as yet other unknown dietary factors.

### ***How do we diagnose DCM?***

DCM can only be diagnosed with an echocardiogram (ultrasound of the heart). An NT-proBNP test is a blood test that can help screen for increased cardiac stretch. It is unknown if testing for NT-proBNP in areas that have limited access to an echocardiogram may be useful. Certainly, an elevated NT-proBNP is a strong indication that an echocardiogram is needed.

### ***How do we diagnose taurine deficiency?***

Taurine deficiency is diagnosed using a blood test, either on whole blood or plasma. If cost is an issue, measurement of whole blood taurine is thought to be a better indicator of long-term taurine status.

If DCM is diagnosed through an echocardiogram in a dog that is eating a boutique, exotic, grain-free, vegetarian or home-prepared diets, then discussion of testing for whole blood and/or plasma taurine deficiency is warranted. Reference ranges for taurine levels may need to be breed-specific as ongoing research suggest Golden Retrievers should be consider deficient if a whole blood taurine concentration is < 250 nmol/L.

**Not all dogs with taurine deficiency have DCM, and not all dogs with diet-related DCM have measurable taurine deficiency.**

### ***How do we treat it?***

If a dog is determined to have diet-related DCM, the first step is to change to a diet that does not contain any of the suspect ingredients, and one that is formulated under the guidance of a board-certified veterinary nutritionist. Next, taurine supplementation should be started to correct the deficiency. If a patient is determined to have DCM, the cardiologist would prescribe specific medications to support heart function and heart failure if present. Consider screening other dogs in the household eating the same diet with an echocardiogram.

### ***How do you choose a diet?***

This is a tough question to answer as we still don't know exactly what is causing diet-related DCM in dogs. Here are a few guidelines to follow:

- ☆ Choose a diet that does not contain any of the suspect ingredients as a main ingredient ("main ingredients" are any ingredients listed before the vitamins and minerals).
- ☆ Choose a diet that has undergone feeding trials.
- ☆ Diets that are "formulated to meet AAFCO standards" have had nutrient profiles run through a computer program to ensure that they should meet the minimums and maximums generally deemed appropriate for dogs. This does NOT ensure that these ingredients are digestible or bioavailable to dogs.
- ☆ Choose a company that employs a board-certified veterinary nutritionist or PhD in animal nutrition.
- ☆ For a more thorough list of questions to ask a specific company to determine if their products are adequately researched and tested, visit <<http://www.wsava.org/nutrition-toolkit>>.



***But what if my dog is allergic to grains?***

True allergies to grains are rare. Most dogs who have food allergies are reacting to the protein component (i.e. chicken, beef, etc) rather than the carbohydrate component of their diet. If your dog had issues like itchy skin, recurrent ear infections, or chronic GI upset with a grain-containing diet and has done well on grain-free, consider looking for a diet that matches the protein you are currently feeding but that does not have any of the ingredients on the suspect ingredients list. If you cannot find any diets that meet those requirements, prescription diets like hydrolyzed diets can be a nice option. As of the time of this writing, hydrolyzed prescription foods have not been implicated in any cases of taurine-related cardiomyopathy.

***But my dog has been eating this food for years and he looks great! Do I still need to switch diets? What if his taurine levels test normally?***

Not all dogs who eat these diets with ingredients of concern will develop taurine deficiency. Not all dogs who are taurine deficient will develop heart disease. Cats who are fed a taurine-free diet only develop DCM 30% of the time! But this doesn't mean that it is okay to feed a nutritionally compromised food simply because not all pets who eat it will develop disease. Remember that DCM is a "silent killer"—often dogs who develop and die of DCM have few or no symptoms. DCM generally does not cause a heart murmur or other physical exam abnormalities. If you elect to continue to feeding one of these diets given what we currently know, you are taking a risk—only you can decide whether that risk is worth the other benefits provided to your dog by feeding that particular diet.

***Can raw diets or homemade diets meet these guidelines?***

Sure... as long as they are formulated by a board-certified veterinary nutritionist! It is still important to ensure that the diet you are feeding is complete and balanced. Also, please be aware that not all veterinary nutritionists will formulate a raw food diet given the risks associated with these products to immunocompromised pets and humans.

***Can you please give me a few diets that meet the recommended guidelines?***

- Royal Canin
- Science Diet/Hill's
- Purina
- Eukanuba/lams

***Can you list some diets that have been implicated in cases of taurine-deficient DCM?***

The FDA has not listed specific brands at this point. However, there is an active Facebook group ("Taurine-Deficient Dilated Cardiomyopathy") that is collecting case information. Please understand that this is crowd-sourced data and not subject to peer review or scientific scrutiny. However, diets that have been fed to multiple dogs with taurine deficiency and/ or DCM include: Zignature, Acana, Fromm, Orijen, Canidae, Kirkland's Nature's Domain, Merrick, Nutrisource, Purevita, Natural Balance, Taste of the Wild

***If I choose to supplement taurine, what dose should I use:***

Although it is unclear whether dogs that are not taurine deficient gain any benefits from taurine supplementation, we currently recommend changing the diet and recommending taurine supplementation. Taurine supplements that appeared to have good quality control in one study included: NOW, Solgar, Swanson, Twinlab, and Vitamin Shoppe. Although the optimal dose is unknown, we recommend the following based on body weight:

- <10 kg: 250 mg q 12 hr
- 10-25 kg: 500 mg q 12 hr
- >25 kg: 1000 mg q 12hr