



## **DILATED CARDIOMYOPATHY:**

Dilated Cardiomyopathy (DCM) is a disease of the heart muscle that results in diminished contractile function and dilation of the heart.

In dogs with DCM, the muscle of the ventricle becomes weak and has decreased contractile function (called “systolic function”) and the heart dilates to help move more blood forward out to the body. As the disease progresses, the forward flow of blood diminishes, and in the severe stage, heart failure can develop.

### **What causes DCM?**

There are many potential causes of the disease but the vast majority of clinical cases are “idiopathic” meaning that the cause is unknown. There are some potentially reversible causes of DCM that you may hear about:

- Taurine is an amino acid (building block of protein) that is metabolized abnormally in some dogs. It is rare but when identified, is partially treatable.
  - Recently, grain free diets have been linked to a type of taurine deficiency DCM. The specific cause is not yet known, but is believed to be related to grain free diets high in legumes such as lentils and peas. If you are feeding your dog a grain free diet, please inform us See this link for more information: <http://vetnutrition.tufts.edu/2018/06/a-broken-heart-risk-of-heart-disease-in-boutique-or-grain-free-diets-and-exotic-ingredients/>
- Thyroid is a hormone that helps maintain metabolism, and is also essential for heart function. Less commonly, dogs with severely decreased thyroid levels (hypothyroidism), can develop reversible DCM.
- L-Carnitine is an important molecule that is essential for myocardial metabolism. In very rare and unique cases, supplementation with L-Carnitine has been shown to improve systolic function in Boxers with DCM.

Unfortunately, most cases of DCM are idiopathic or genetic and slowly progress to congestive heart failure despite treatment. There is a wide range of disease including “occult” disease, meaning that the dog has no overt signs of disease but has changes that can be detected by your cardiologist to overt disease with clinical signs of heart failure.

### **Testing for DCM**

#### ***Echocardiography***

An echocardiogram allows us to look inside of the heart and assess the heart’s structure and function. This is the best way to screen for and diagnose DCM. The echocardiogram will be repeated periodically over the course of your dog’s disease to monitor for significant changes in heart function.

### *Chest x-rays*

Dogs with DCM should be monitored at home for a cough or an increase in respiratory rate (greater than 40 breaths per minute) or effort. If any of these occur, a chest x-ray should be taken to evaluate for the presence of fluid in the lungs (called “pulmonary edema”) which is a sign of heart failure. Chest x-rays in general are not a good screen for early DCM.

### *Electrocardiography and Holter monitoring*

Dogs with DCM can also develop arrhythmias (abnormal heart rhythm) which can result in weakness or collapse episodes. Arrhythmias require close monitoring by electrocardiogram (ECG) and/or Holter monitoring (24 hour ECG) and are typically treated by specific anti-arrhythmic medications.

### *Bloodwork*

If taurine deficiency is suspected, a blood test to evaluate taurine levels in the blood is recommended. Depending on the stage or severity of your dog’s disease, medications may be prescribed, especially if your dog is in heart failure. Most cardiac medications can adversely affect the kidneys. For this reason, it is important to monitor kidney function with blood tests as new medications are introduced or dosage changes are made.

### *Genetic Testing*

You may read about genetic testing for some dogs with DCM. These genetic tests are currently specific to Boxers and Dobermans. For these breeds, genetic testing is primarily helpful for breeders. Not all genetic markers of DCM have been identified, and therefore a negative genetic test does not guarantee that your dog will not develop DCM, and conversely, some dogs with positive genetic tests, do not develop disease.

## **Medications:**

- (1) **Pimobendan (Vetmedin).** Pimobendan is an inodilator: a combination of positive inotrope (improves contraction of the heart) and vasodilator (dilates blood vessels). This results in more efficient contraction of the heart. The PROTECT study (2012) demonstrated that pimobendan can slow down the progression of disease in certain patient populations.
- (2) **ACE inhibitor (Benazepril).** An ACE (Angiotensin Converting Enzyme) inhibitor is a type of medication that prevents the production of Angiotensin II which promotes increased blood pressure and fluid retention. One study suggested that Benazepril may delay the progression of disease.
- (3) **Taurine Supplementation.** Taurine is an amino acid essential for cardiac function. In cases of suspected/or diagnosed taurine deficiency, taurine supplementation will be recommended.

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