

# Dilated Cardiomyopathy (DCM) in Dogs



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## What is dilated cardiomyopathy (DCM)?

Canine dilated cardiomyopathy (DCM) is a primary heart muscle disease that usually affects large breed dogs. DCM can have genetic, metabolic, nutritional, or infectious causes, but often the cause cannot be found. DCM is characterized by weak heart muscle function (decreased contractility), and enlargement (dilation) of the heart chambers. Recently, some non-traditional diets rich in legumes such as lentils, chickpeas and green peas or green pea products have been associated with decreased heart muscle function and in extreme cases, congestive heart failure. Irregular heartbeats (arrhythmias) often complicate DCM and can worsen cardiac function, cause worsening of congestive heart failure (CHF) signs and in some cases, increase the risk of sudden death.

DCM is usually a progressive disease. Clinical signs occur when the heart can no longer pump enough blood to meet the body's needs for oxygen and nutrients. Arrhythmias can cause clinical signs (episodes of weakness or fainting) and abnormal heart rhythms can cause some patients to die suddenly. DCM is known or suspected to be inherited in some breeds (e.g., Doberman Pinschers, Boxers, Irish Wolfhounds, Great Danes).

## How is DCM diagnosed?

DCM may be diagnosed by screening tests in "at risk" breeds, allowing earlier treatment. Common screening tests include echocardiography (to identify cardiac enlargement and decreased contractile function), Holter (24-hour ECG) monitoring (to screen for abnormal heart rhythms), and serum biomarkers such as NT-proBNP and troponin (to screen for abnormal cardiac muscle function prior to the onset of clinical signs). Similar testing, with the addition of thoracic radiographs, is used when DCM is diagnosed when signs of CHF (difficulty breathing, cough, inability to exercise, weakness/collapse) are present. Genetic testing for DCM is available for Boxers and Doberman Pinschers. In some cases, laboratory tests for thyroid function and blood taurine concentration may be submitted to identify causative factors for cardiac dysfunction.

## How is DCM treated?

If DCM is diagnosed before clinical signs occur, pimobendan may be prescribed to delay the onset of heart failure. In some cases, angiotensin-converting enzyme ("ACE") inhibitors or other medications may be added. Once CHF occurs, diuretics like furosemide are added to the above medications. Specific antiarrhythmic drug therapy may also be needed. Nutritional and metabolic supplements may be helpful. For diet-associated DCM, conventional drug therapy in addition to changing the diet may reverse some of the myocardial dysfunction in some dogs.

## How is DCM monitored by my veterinarian and my cardiologist?

In patients with DCM that do not have clinical signs of disease, recheck echocardiograms, ECGs, radiographs and Holter monitor (24 hour ECG) evaluation are useful to assess therapy and document the rate of progression of the disease. In patients receiving CHF therapy, these diagnostics may be performed more frequently and combined with intermittent lab work (blood samples) to monitor for side effects of drug therapy and to monitor for other concurrent diseases.

## Is diet important?

Diet is an important consideration in DCM patients. Some types of diets appear to be linked to development of a potentially reversible form of DCM; your dog's veterinarian may ask you about the diet your dog has been eating when DCM is diagnosed. Although information about the cause of diet-associated DCM is still incomplete, avoiding non-traditional diets rich in legumes such as lentils, chickpeas and green peas, is advised (these ingredients are frequently present in diets labeled as "grain-free"). Vegetarian, vegan or raw diets should also be avoided. Conventional diets low in legumes manufactured by commercial brands with veterinary nutritionist oversight are the most frequently recommended. Avoidance of high salt treats is ideal for most dogs with significant heart disease and moderately salt-restricted diets aid CHF treatment, but it is important that your dog's appetite remains good and that his or her caloric and protein needs are met. Ask your veterinarian for advice regarding recommended diets for your dog's age, activity level and cardiac condition.

## How can I tell how my dog is doing at home?

The goal of therapy is for your dog to behave normally at home. Monitoring breathing rate when your dog is asleep will help detect the onset or recurrence of CHF. Normal respiratory rate in sleeping dogs is less than 30 breaths per minute, and a 20% increase (i.e. to > 36 breaths per minute) over 2 days is concerning. There are two smart phone apps that can simplify obtaining and tracking the breathing rate ("Cardalis" and "My Pet's Heart2Heart") and can be downloaded from your app store. Other signs of CHF include decreased activity or appetite, coughing, weakness, fainting or distention of the belly. Identification of an increase in sleeping respiratory rate or any of these symptoms should prompt a call, or possibly a visit, to your pet's veterinarian.

## What is the prognosis of DCM?

Dogs identified by screening tests and treated before the onset of clinical signs may not develop CHF for years, especially with preemptive medical therapy. Arrhythmias may be treated whether or not clinical signs are present in an effort to reduce the risk sudden cardiac death. The average time to development of heart failure or sudden cardiac death is variable (1-4 years). Dogs with clinical signs of heart failure often survive 6 - 24 months with medications, although this may vary significantly with the breed. Dogs with diet-associated DCM that change diets may partially reverse their cardiac changes and no longer need CHF therapy, but even with anti-arrhythmic therapy, a risk of sudden death remains.

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