

# Dilated Cardiomyopathy

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Dilated Cardiomyopathy or DCM has been talked about more and more in the recent years in regards to our breed. For those that have been through this with one of your own, you know how difficult DCM can be to manage. For those who haven't, I hope this services as a detailed overview of the condition. While the genetic component behind the condition in GWP's has not been determine, I hope through education we can decrease the prevalence of DCM.

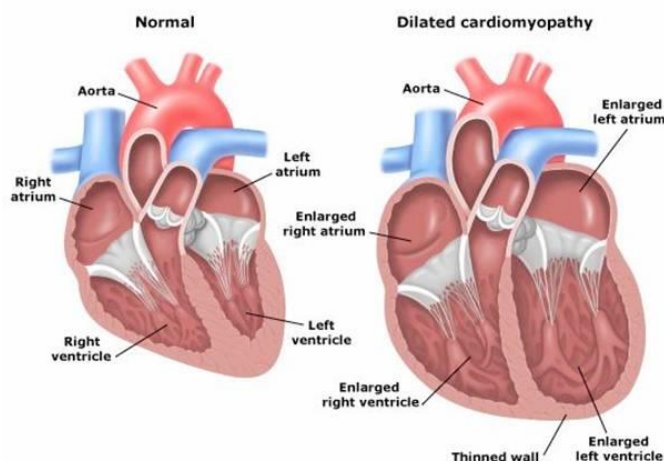
## Overview of DCM

DCM is an acquired cardiac condition primarily in the medium to large breed dogs where the chambers of the heart become enlarged. The left atrium and ventricle are the two chambers most affected although all chambers become dilated to some degree. This causes weakened contractions that decrease perfusion to all parts of the body. Eventually the inability for the heart to properly move blood will lead to congestive heart failure (CHF) and the lungs and abdomen may fill with fluid.

Most dogs will have a very long subclinical phase of the disease where they do not show their illness in any way. Clinical DCM is characterized by signs that are typical of most cardiac diseases. These signs include: lethargy, shortness of breath, coughing or excessive panting, exercise intolerance, loss of appetite, reluctance to lie down or the inability to get comfortable, abdominal distention and collapse. Dogs with clinical DCM may exhibit any degree and any combination of these signs.

## Normal Cardiac Function

Before knowing what is abnormal you must know what is normal. For the purpose of understanding DCM, first we must cover the function of the heart and normal cardiac blood flow. In very simple terms, blood flow is body to heart to lungs to heart to body and so on. In a little more detail, we will start with blood in the right atrium. Blood flows into the right atrium through the cranial and caudal vena cava from the body delivering oxygen. When the right atrium contracts blood flows through the tricuspid valve and into the right ventricle. The contraction of the right ventricle will push blood out to the lungs via the pulmonary artery where it gathers oxygen.



Oxygen rich blood then returns to the heart via the pulmonary veins and enters the left atrium. Contraction of the left atrium pushes blood into the left ventricle through the mitral valve. Contraction of the left ventricle then sends blood to every part of the body through the aorta to deliver the oxygen that is carrying so the muscles and organs can function properly. After delivering the oxygen, blood will return to the heart via the vena cava to the right atrium to go through the entire process over and over again.

## **Cardiac Function with DCM**

As stated above, DCM is characterized by a dilation (enlargement) of the chambers of the heart. The dilation of the heart chambers makes the heart walls thinner and weaker. The most affected chamber is the left ventricle, which is particularly important as it is responsible for moving oxygenated blood throughout the body.

During the subclinical phases of DCM, the heart uses compensatory mechanisms such as volume overloading and hypertrophy (enlargement) of the cardiac muscles to compensate. This allows a dog that is in the early stages of disease to not show any clinical signs and function as normal. Eventually the degree of dilation and the thinning of the left ventricular wall will become severe enough that the body can no longer compensate.

Dogs will begin to show clinical signs when the compensatory mechanisms can no longer overcome the severity of the thinning of the cardiac muscle. Because the severity of the thinning of cardiac muscle. Because the heart can no longer properly pump blood out of the left side of the heart, blood will back up in the left side of the heart and pulmonary edema (fluid in the lungs) develops. This pulmonary edema is what makes a dog show the clinical signs of the shortness of breath or panting and coughing. This will also lead to lethargy and exercise intolerance.

Although it is much less common, dilatation and failure of the right side of the heart can also occur. DCM affecting the right ventricle will cause blood to back up as it is coming back from the body. This will result in right-sided congestive heart failure and ascites (fluid in the abdomen) and pleural effusion (fluid in the chest cavity). Dogs with right-sided congestive heart failure may have abdominal distention from the ascites.

Along with the clinical signs that have been previously discussed, both a heart murmur and arrhythmia are typically auscultated during a physical exam with your veterinarian. The heart murmur may be very soft and is caused by the leaflets of the mitral valve becoming stretched apart allowing a backflow of blood when they close. The arrhythmia is very irregular. This arrhythmia is sometimes best identified with an ECG in early cases of the disease. Typically chest radiographs will be taken which will show an enlarged heart and possibly a degree pulmonary edema or pleural effusion depending on the severity.

## **Early Disease Scanning**

Identifying DCM in the subclinical stage can be very challenging. Arrhythmias may be noted with auscultation screening. Echocardiograms may be noted with auscultation screening. Echocardiograms may be able to identify the disease in most patients with subclinical disease. In certain breeds such as boxers and Doberman pincers a 24 hour ECG reading with a device called a Holter monitor is considered the most effective screening test. At this time screening is the best method that we have to decrease DCM in our breed. They have been able to identify and create a genetic test for DCM in a couple of breeds but this has not been done in the GWP at this time.

I intended to write this article on an overview of DCM. If you have a dog affected by DCM you will have to work very closely with your veterinarian in order to manage the condition. The details of treatment are very patient specific and I hope very few of us ever have to experience one of our GWP's being diagnosed with DCM.