



## Dilated Cardiomyopathy (DCM)

### What is Dilated Cardiomyopathy (DCM)?

Dilated cardiomyopathy (DCM) is a disease that results in a failure of the myocardium (the muscle of the heart) to pump blood efficiently. The volume of blood reaching the arteries is therefore reduced and more blood will remain in the heart chambers after each heartbeat, causing a so-called “volume overload”. This results in the dilation of the heart, hence the term “dilated cardiomyopathy”.

Between the left ventricle and the left atrium there is the mitral valve. As the heart dilates, so does the “annulus” of this valve. Over time, both the newly broadened annulus and the increased pressure in the left ventricle cause blood to be regurgitated through the mitral valve into the left atrium. This phase is commonly followed by an increased pressure in the left atrium and pulmonary veins, causing leakage of fluid from the vessels into the lungs (pulmonary oedema). The presence of pulmonary oedema denotes “congestive heart failure” (CHF) and this is always an indication for cardiac therapy. If there is congestive heart failure on the right side of the heart the result may be a pooling of fluid in the pleural space (pleural effusion), the liver and/or the abdomen (ascites).

### What is the cause of DCM?

DCM is an acquired disease with an

unknown cause (idiopathic). However, some conditions may resemble the clinical and ultrasonographic features of DCM, such as unrecognised congenital defects, sustained fast heart rate (tachycardia), end stage valvular disease, prolonged chemotherapy, etc.

It is important to distinguish these different disease processes from each other as the treatment options and prognoses for each may differ significantly.



### Which dogs are affected by primary DCM?

There is a specific breed predisposition in Doberman pinschers, Great Danes, Irish wolfhounds and American cocker spaniels. A genetic cause has been suggested in several breeds.

### What are the clinical signs of DCM?

The clinical presentation may be sub-

tle, with a gradual development of exercise intolerance and, sometimes, weight loss. However, more commonly, the early signs of the disease are overlooked and the disease is not diagnosed until congestive heart failure develops. In these cases the patient presents with respiratory distress caused by pulmonary oedema and occasionally a pot-bellied appearance due to accumulation of fluid in the abdomen (ascites). The presence of an abnormal heart rhythm (arrhythmia) is a common finding in dogs with DCM and, depending on the severity of the arrhythmia, affected dogs may experience fainting episodes (syncope).

### How is DCM diagnosed?

Dogs with DCM may present without any abnormal physical findings. However, a heart murmur may be detected by the vet. Chest radiographs will show an enlarged heart with or without venous distension and pulmonary oedema. However, the confirmative diagnosis is based on echocardiographic examination (ultrasound of the heart) that reveals enlarged heart chambers and reduced contractility. Electrocardiography (standard ECG or 24h ‘Holter’ monitoring) may reveal an abnormal heart

### How can we treat dogs with DCM?

The mainstay of medical therapy of CHF is the careful use of diuretics (e.g. furosemide), which results in a reduction of the overall body water and blood volume. This lowers the pressure in the veins of the lungs and thereby reduces the formation of pulmonary oedema. Since diuretics affect the kidneys, overzealous use can cause dehydration and blood salt (electrolyte) imbalances. This may be manifested as lethargy, vomiting and lack of appetite. Clinicians should therefore monitor patients on diuretics with blood tests.

Identifying this disease in its early stages is preferable as it has been proven that administering a drug called pimobendan can improve the survival time of these subclinical patients by an average of 157 days. This drug acts primarily by improving the contractility of the heart muscle, allowing more blood to be pumped into the arteries with each beat.

Pimobendan is also advised in clinical patients, often in combination with other drugs, such as ACE-inhibitors, spironalatonone and diuretics as discussed above. These medications may increase life expectancy and improve the overall quality of life. Anti-arrhythmic drugs can also be prescribed in an attempt to control life-threatening arrhythmias or control fast heart rates.

### What should be expected now?

The prognosis for a dog affected by DCM depends on several factors. Dobermans, for example, tend to have a significant shorter survival compared to other breeds (in one study 50 days vs 537 days). The presence of CHF, ascites, and altered ultrasonographic parameters, (namely decreased EF, restrictive mitral inflow pattern, increased ESV) represent negative prognostic factors. The addition of pimobendan to the standard therapy with furosemide and ACE-inhibitors can significantly increase life expectancy in dogs with CHF. However, sudden death due to severe arrhythmias is always possible.

*This handout provides a general overview on this topic and may not apply to all patients.*

*Please do not hesitate to contact us if you require any additional information ([www.cardiospecialist.co.uk](http://www.cardiospecialist.co.uk))*