



# Dilated Cardiomyopathy (DCM)

## What is Dilated Cardiomyopathy (DCM)?

Dilated cardiomyopathy (DCM) is a disease of the cardiac myocardium (the muscle of the heart) which partially loses its ability to contract and, therefore, its power to pump blood into the arteries. As a consequence of this reduced contractility, more blood will remain into the heart chambers after each heart beat, causing a so-called “volume overload”, which results in dilation of the heart, hence the term “dilated cardiomyopathy”. The inability of the heart muscle to pump a sufficient quantity of blood into the arteries will eventually induce reduced organ perfusion, in particular in the skeletal muscles, causing exercise intolerance. The volume overload of the ventricle will also affect the left atrium (the chamber located just above the ventricle and separated by the mitral valve), which initially increases in size (left atrial enlargement). This phase is commonly followed by an increased pressure in the left atrium and pulmonary veins, causing water leakage from the vessels into the lungs (pulmonary oedema). The presence of pulmonary oedema is referred to as “congestive heart failure” (CHF) and this always represents an indication for cardiac therapy.

## 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

## How can we treat dogs with DCM?

Unfortunately, a specific treatment for DCM is not available at present. However, medical management can provide symptomatic relief of clinical signs associated with CHF. The mainstay of medical therapy of CHF is the careful use of diuretics (eg furosemide), which cause the kidneys to excrete sodium (salt), which in turn causes water loss through the kidneys, resulting in a reduction of the overall body water and blood volume. This lowers pressure on the veins in the lung tissue and thereby decreases 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 monitor patients on diuretics with blood tests. Diuretics are the most important medications for animals with CHF. However, combination with other drugs, such as ACE-inhibitors and pimobendan, can increase life expectancy and improve the overall quality of life. Anti-arrhythmic drugs can also be prescribed to control life-threatening arrhythmias.

## 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 (Vetmedin) 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.

DCM, such as unrecognised congenital defects, sustained fast heart rate (tachycardia), end stage valvular disease, prolonged chemotherapy, etc.

## Which dogs are affected by DCM?

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



## What are the clinical signs of DCM?

The clinical presentation may be subtle, 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, often a heart murmur is detected by the vet during chest auscultation. Presence of pulmonary oedema induces a rapid and shallow breathing, often accompanied by abnormal lung sounds. Chest radiographs will show an enlarged heart with or without venous distension and pulmonary oedema that indicate signs of congestive heart failure (photo below). 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 rhythm.

