



## Feline Cardiomyopathy

Cardiomyopathy literally translates into heart (*cardio*) muscle (*myo*) disease (*pathy*). Hypertrophic cardiomyopathy (HCM) is the most common heart disease in cats however occasionally other forms of cardiomyopathy are recognised in this species. These other cardiomyopathies include:

- Restrictive cardiomyopathy (RCM)
- Dilated cardiomyopathy (DCM)
- Arrhythmogenic right ventricular cardiomyopathy (ARVC)

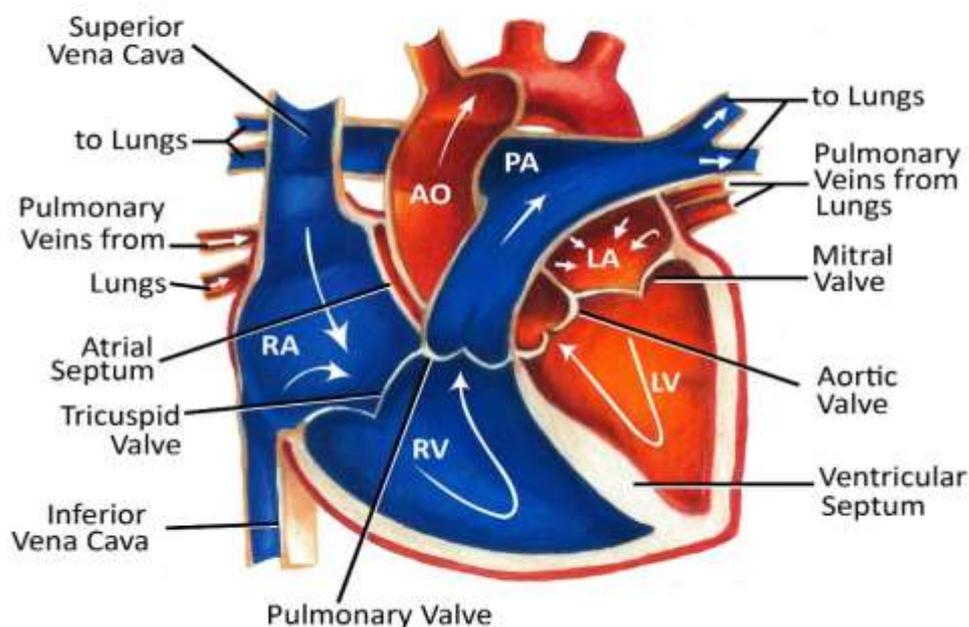
### How does the heart work?

The heart is the organ responsible for pumping blood to and from all tissues of the body. The heart is divided into right and left sides. The job of the right side is to pump oxygen-deficient blood returning from the body into the lungs where fresh oxygen is collected and carbon dioxide is removed. The oxygen-rich blood returning from the lungs enters the left side of the heart where it is pumped into the aorta then to the rest of the body via the arterial system.

Each side of the heart has two chambers, an upper atrium and a lower ventricle. Between the atrium and ventricle on each side lies a valve – the tricuspid on the right and the mitral on the left – that regulates blood flow into the chambers. As the heart pumps, these valves act as one-way gates allowing blood to flow from the atrium above to the ventricle below and preventing blood from flowing back into the atrium. From the ventricles, blood is then forced to flow out into the pulmonary artery (on the right) or the aorta (on the left) through a second series of one-way valves called the pulmonic valve and the aortic valve, respectively.



### Normal Heart



#### Key:

RA: right atrium  
RV: right ventricle  
PA: pulmonic artery  
LA: left atrium  
LV: left ventricle  
AO: aorta

### Restrictive Cardiomyopathy

This is probably the next most commonly diagnosed cardiomyopathy after HCM (however in saying this, it is not frequently encountered). The specific abnormality of the heart muscle in cats with RCM is increased stiffness of the ventricles (the left ventricle and left side of the heart are more commonly affected). This increased stiffness is due to the development of fibrous tissue within the heart muscle (a specific cause has not been identified however a genetic component is certainly possible in some cats). The left ventricle subsequently finds it more difficult to fill with blood and as a result, the pressures within the left heart increase. This in turn causes the left atrium to enlarge which eventually, if severe enough, can lead to blood 'backing up' and leaking out into the lungs. This is called congestive heart failure (CHF) and causes breathing difficulties.

Other consequences of this disease include the development of clots (most commonly causing an acute paralysis of the hind legs) and less commonly fainting/sudden death (due to heart rhythm disturbances).

Treatment is palliative only and is most commonly aimed at alleviating signs of congestive heart failure or clots. The prognosis is generally poor (weeks to months once in congestive heart failure).



## **Dilated Cardiomyopathy**

Dilated cardiomyopathy (DCM) used to be a much more common disease in cats than it is today. In the late 1980s, it was discovered that insufficient taurine in feline diets was the cause of most cases of dilated cardiomyopathy. Taurine is an amino acid that cats cannot produce and must obtain by eating meat. It is essential that the food you feed your cat contains adequate amounts of taurine. This is one reason why home-cooking for cats is risky. Once the cause of DCM was identified, all commercial diets were supplemented with taurine to prevent this disease from developing. Following the advent of taurine supplementation, DCM has become very uncommon in cats, and most cases diagnosed nowadays are idiopathic (meaning the underlying cause is unknown).

In dilated cardiomyopathy, the heart muscle loses its ability to contract (most commonly the left ventricle however the right ventricle is sometimes affected). This in turn causes progressive enlargement of the left side of the heart. Eventually, there is a build-up of fluid in the lungs (pulmonary oedema) and/or the chest cavity (pleural effusion), a situation that is referred to as congestive heart failure. Clot formation and arrhythmias are other possible consequences of DCM.

If taurine-deficiency DCM is suspected, supplementation may lead to reversal of the disease (and ultimately a cure). Unfortunately, as mentioned earlier, most cases of DCM today are not related to taurine deficiency. In such cases, treatment is aimed at managing congestive heart failure when it develops.

The long-term prognosis is considered poor. Most cats, despite medical therapy, will not survive more than a few months.

## **Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC)**

This is a rare form of cardiomyopathy in cats. The result is progressive dysfunction and enlargement of the right side of the heart. The consequences include development of right-sided congestive heart failure (fluid building up in the abdomen and/or around the lungs), heart rhythm disturbances (which can cause fainting and even sudden death) and clot formation (which may lead to the sudden onset of breathing difficulty).

Treatment is palliative and generally not successful long-term. Short-term medication for heart failure and arrhythmias is sometimes instituted.

The long-term prognosis is extremely poor and with this fact in mind many owners opt for euthanasia.



# VETERINARY CARDIAC SERVICES

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**Additional Resource:**

<http://vetmed.tufts.edu/heartsmart/>

This is a very useful and well-written resource, providing pet owners with a clear and credible source of information about veterinary cardiology.