

## Hypertrophic CardioMyopathy (HCM)

### What is the HCM?

HCM is a condition identified by a thickened (hypertrophic) left ventricular muscle and increase in cardiac muscle mass. This is the most common cardiac disease in cats and can be genetic or acquired in response to high blood pressure (systemic hypertension) or hyperthyroidism. True HCM is a genetic disease and is identified in the absence of hypertension or hyperthyroidism. 70% of heart problems in cats are due to HCM.

HCM usually occurs in young to middle aged cats. The breeds at high risk are Domestic Shorthair, Maine Coon, Rag Doll and Persians, although any breed is at risk. Recently they have identified the gene responsible, which is a gene that encodes for myosin binding protein C, a muscle in the heart.

As the heart muscle thickens, it outgrows its blood supply from the coronary arteries and the affected part of the heart muscle dies and is replaced by fibrous tissue. The fibrous tissue prevents the muscle from being able to stretch. The inability to stretch and the thickening combine to have detrimental affects on the health of cats. In addition, a common occurrence is for one of the leaflets of the mitral valve, the valve that sits in between the left atrium and left ventricle, to move in its position causing two things. This condition is called Systolic Anterior Motion (SAM) of the mitral valve. Firstly it moves into the outflow tract as the blood is pumped from the left ventricle into the aorta (which is the largest vessel in the body supplying blood to all parts of the body). As it moves into this position it narrows the diameter of the whole through which blood is pumped and as a result the velocity of the blood is dramatically increased and the left ventricle which is already abnormal has to squeeze much harder to get the blood to flow through a narrower opening. Secondly, the movement of the valve into the outflow tract leaves an opening that allows the blood from the left ventricle to flow retrograde back up into the left atrium. As a result of this, the left atrium enlarges and the blood coming into the left atrium from the lungs starts to back up, causing a build up of fluid in the lungs.

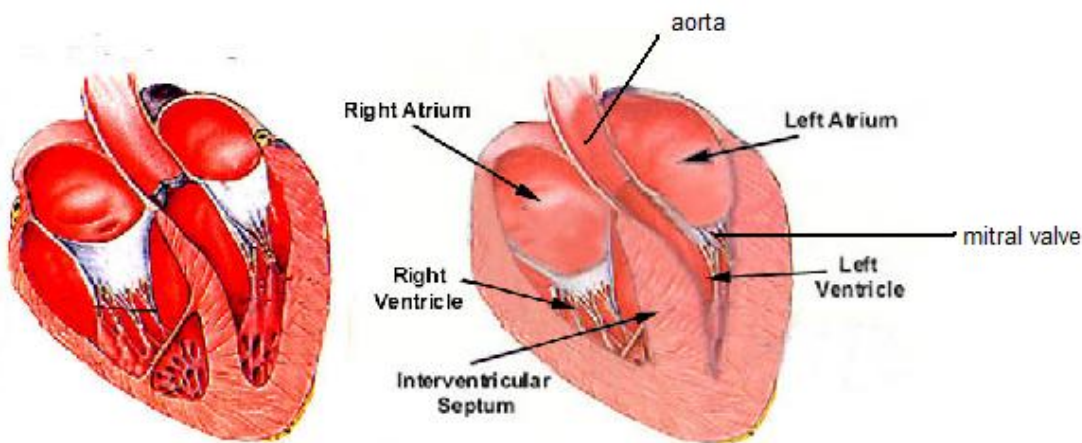
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Normal Heart

Hypertrophied Heart

### What clinical signs will your pet show with HCM

Unlike in dogs where a heart murmur first alerts the vet to heart disease, in cats a heart murmur is often not present despite heart disease. Often in the cat, heart disease will go unnoticed until it may be too late.

The early detectable signs of HCM are detected with a stethoscope. These usually are a high heart rate > 200bpm (tachycardia), murmur (not always present) and a gallop rhythm. As the disease progresses you may notice signs of lethargy, inappetance, fast and heavy breathing, coughing, cyanosis (blue gums), fainting or weakness of the backlegs

### How is HCM diagnosed?

Confirmation of HCM is diagnosed with a cardiac ultrasound. This involves watching the heart in action with the ultrasound probe and taking measurements of muscle thickness, blood velocity through valves and size of the left atrium.

### How is HCM treated?

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The aim of medical therapy is to slow the heart rate down to allow it to be in a relaxed (Diastolic) state for a longer percentage of each cycle of the heart, which then allows a better blood supply and filling to promote a better contraction. The main class of drugs used to achieve this are the same that are used in humans and they are called beta-blockers. Atenolol is the most common drug used in cats to achieve this. This drug can definitely slow the progression of the disease but will not cure it.

In addition, if there is evidence of fluid build up on the lungs or high blood pressure, other drugs such as diuretics or vasodilators may be used. This will depend on your pet severity. If clots are present than anti-clotting drugs like warfarin may be required. These come with a risk of haemorrhage.

### What are some complications of HCM?

The two main complications of HCM in cats are

#### 1. Thromboembolism

Because there is turbulent and stagnant blood in the left atrium, the risk of a clot formation becomes much higher. These clots can then pass down into the left ventricle, out through the aorta into the body and can lodge in a blood vessel which is smaller than their diameter. The most common site for their dislodgement is where the aorta splits into the vessels that supply the back legs. Hence some cats become excruciatingly painful and suddenly become paralysed in their back legs. These clots can be dissolved medically but carry a poor prognosis as more are likely.

#### 2. Arrhythmias

Because this condition is a primary disease of the heart muscle, arrhythmias can occur commonly. The main arrhythmias that occur in HCM affect the ability of the ventricles to contract, which can result in inefficient contractions of the heart. These can be treated but carry a poor prognosis

### How long can your pet expect to live?

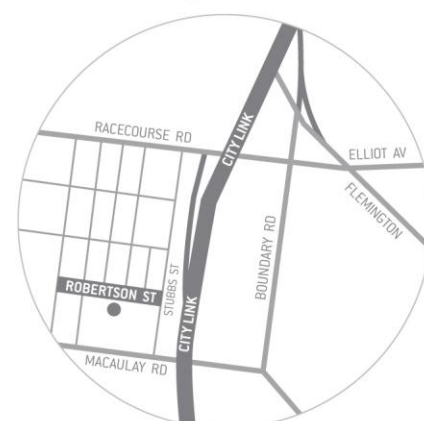
This is the most difficult question to answer as there are so many variables to take into account that no study has been able to provide a figure. However, there are numerous factors that can help us give an

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estimate on life expectancy. These are the severity of the thickening of the heart muscle, the presence of SAM of the mitral valve, the response to therapy and the presence of clots and size of the left atrium.

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