

HEART DISEASE

2. Heart failure

What is heart failure?

Heart failure is defined as the inability of the heart to maintain sufficient blood circulation to meet the body's needs. Heart failure usually describes a failure of the heart muscle (myocardial failure) or heart valve (mitral valve insufficiency or MVI). This can affect the right or the left ventricle. MVI is the most common cause of heart failure in dogs. MVI is more common in small breeds than large breeds.

Dilated cardiac myopathy (DCM) occurs most commonly in large breed dogs and often results in sudden heart failure and death.

My dog ran down the garden and suddenly dropped dead. The veterinarian said it was due to acute heart failure. What does this mean?

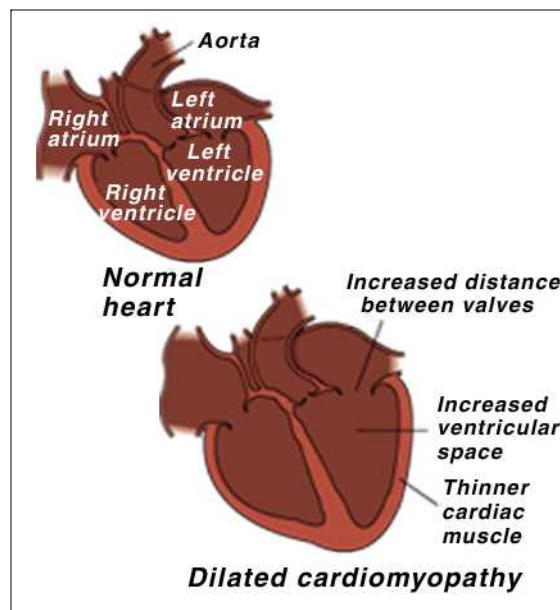
Sudden cardiac arrest can occur for a variety of reasons. Cardiomyopathy is the leading cause of acute heart failure ("heart attack") in dogs.

Is this the same as a heart attack?

In humans a "heart attack" usually refers to myocardial infarction (MI). This is death of the cells in an area of the heart muscle or *myocardium*. Cell death is usually due to oxygen deprivation caused by obstruction of the coronary blood vessels. MI is not a common disease of dogs, but it can occur. In dogs heart failure is more commonly due to either DCM or to congestive heart failure (CHF) or mitral valve disease.

What is the mitral valve?

The heart has four chambers. The upper chambers are called *atria* and the lower chambers are called *ventricles*. The heart is also divided into right and left sides. Blood flows back from the tissues and organs of the body via the vena cava into the right atrium. It is stored briefly in the right atrium and then pumped into the right ventricle, which pumps the blood into the lungs where it is oxygenated. It flows from the lungs back into the left atrium and then passes into the left ventricle which is surrounded by the largest and strongest of the heart muscles. This muscle mass is necessary to generate sufficient pressure to pump the oxygenated blood to the body. The atrium and ventricle are separated by a valve, which prevents the blood from flowing back into the atrium when the heart contracts. The valve between the left atrium and ventricle is the *mitral valve*. Because this valve must withstand tremendous pressure throughout life, it may fail and begin to "leak" as the pet ages. This can be detected with a stethoscope and is called a *mitral murmur*.



How common is mitral valve disease?

Mitral valve disease is the most common cause of heart failure in small dogs. Mitral valve disease is estimated to account for up to 80% of all canine heart disease cases seen in veterinary hospitals. In large dogs dilated cardiomyopathy is the most common cause of heart failure.

How serious is a leaking mitral valve?

Approximately 10% of all small breed dogs will develop mitral valve insufficiency (MVI). This is often described as a “heart murmur”. MVI is initially asymptomatic, or has no obvious signs. As time goes on, the leak becomes more severe and as more blood leaks back into the atrium, pumping efficiency is reduced. Eventually congestive heart failure occurs. This can take months or years from the time when the murmur was first detected.

When I took my little dog for his annual booster the veterinarian told me he had a mitral murmur but said he was not going to treat it at this stage. Is this correct?

Veterinary cardiologists differ in when they recommend medical intervention for asymptomatic heart murmurs. Newer drugs such as carvedilol may have cardio-protective benefits in dogs similar to those demonstrated in humans. Your veterinarian will carefully evaluate your pet's condition and lifestyle and make the best treatment recommendations to preserve health and vitality.

How will I know if my dog is in heart failure?

The most common clinical sign of congestive heart failure is persistent coughing accompanied by difficulty breathing. This is due to the accumulation of fluid in the lungs called *pulmonary edema*. Additionally, many dogs with CHF will fatigue more easily, have reduced stamina and not engage in playing or walking as they once did. If any of these signs develop in a pet with a heart murmur, notify your veterinarian immediately.



Does this mean that he will have a heart attack and die?

Not normally, although pets with heart murmurs are at increased risk of sudden death.

How is the leaky valve assessed?

A pet diagnosed with any heart problem will usually be evaluated by:

Auscultation or listening to the heart with a stethoscope, which is the first step in diagnosing heart disease. Pulse quality and heart rhythm are also assessed during auscultation.

Chest x-rays are then used to determine the size and shape of the heart and the presence of fluid in the lungs.

Blood and urine tests are performed to give an indication of any other disorders in the body. Liver and kidney function are often impaired in patients with heart disease.

An **electrocardiogram (ECG)** will also be run. This measures the electrical activity of the heart and allows accurate determination of both heart rate and rhythm. Any abnormal rhythms (arrhythmias or dysrhythmias) can be detected and evaluated.

Ultrasound examination (echocardiogram) utilizes sound waves to evaluate the heart's contractions and to measure the amount of blood pumped by the heart.

What does treatment usually involve?

Today there is a wide selection of drugs that are effective in controlling the effects of CHF. These include diuretics or drugs to remove fluid from the lungs and medications that act directly on the heart muscle, improving contraction and regulating rhythm. In addition, special drugs are used which dilate the arteries, and sometimes also the veins, thus reducing load on the heart and reducing blood pressure. Your dog's medical treatment will be based on the diagnostic test results and your pet's individual needs.



Is this treatment costly and is it long term?

Most dogs will require treatment for the rest of their lives. Treatment is tailored according to each patient's needs and many of the drugs and follow-up tests are relatively inexpensive and effective. Some drugs are more expensive, but are more effective at improving quality of life.

As a result of all the treatment, how much longer will my dog live?

This question is difficult to answer. It depends on the severity of the condition and the initial response to treatment. Many dogs, once stabilized, will live for months to years with little reduction in quality of life.

*This client information sheet is based on material written by Ernest Ward, DVM.
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