



HEART DISEASE

What is heart failure?

Your veterinarian may have told you that your pet has a heart murmur. A heart murmur is an abnormal heart sound, usually heard with a stethoscope. A heart murmur can be mild to serious depending on the intensity of the murmur. Heart murmurs are graded on a scale of I-VI. Grade I being very mild and likely insignificant, to VI being severe and causing degrees of cardiac insufficiency. The body can compensate for some degree of cardiac insufficiency for some period of time. Cardiac insufficiency occurs with no observable symptoms. As the heart disease progresses the body will no longer be able to compensate for the insufficiency and cardiac failure occurs. Heart Failure is a term that refers to the heart's inability to pump adequate blood to the body for its needs. There are many causes of heart failure in dogs. The two most common causes are mitral valve insufficiency (MVI) and dilated cardiomyopathy (DCM). Dilated cardiac myopathy (DCM) occurs most commonly in large breed dogs and often results in sudden heart failure and death without overt clinical signs.

Clinical signs vary depending on whether the dog has left- or right-sided heart failure. The most common symptoms are decreased stamina, coughing or difficulty breathing.

What is the difference in the signs?

Right-sided heart failure causes poor venous return to the heart. In other words, when the heart contracts instead of the right ventricle pushing the blood through the lungs for oxygenation, some returns to the right auricle. This blood is unable to be cleared from the systemic circulation and consequently becomes "congested" thus the term Congestive Heart Failure (CHF). Fluid accumulates in the abdomen and/or the chest cavity, interfering with the function of the organs in these areas. The abdomen may become enlarged with fluid called *ascites*. Fluid may also leak from veins and swelling may appear in the limbs (peripheral edema).

When CHF involves the left ventricle, blood is not pumped into the systemic circulation and builds up in the lungs. Fluid then seeps into the lung tissue resulting in pulmonary edema. This causes coughing and difficulty breathing.

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

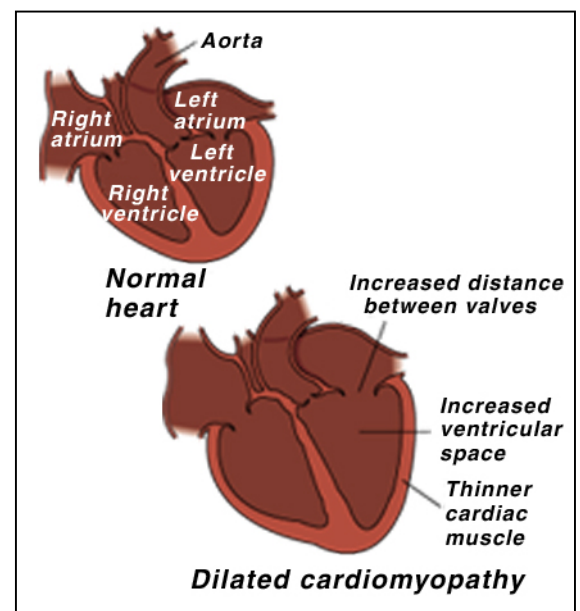
Sudden cardiac arrest can occur for a variety of reasons.

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 (myocardium). This 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 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. 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 having no obvious signs. As time goes on, the leak becomes more severe and as more blood leaks back into the atrium this results in reduced pumping efficiency. Eventually congestive heart failure occurs. This can be 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. We will carefully evaluate your pet’s condition and lifestyle and make the best recommendation to preserve health and vitality.

How will I know if heart failure is present?

The most common clinical sign of congestive heart failure is coughing or difficulty breathing. This is due to the accumulation of fluid in the lungs called *pulmonary edema*. Additionally, many dogs with CHF will tire 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 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 we have 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, sometimes also the veins, thus reducing load on the heart and reducing blood pressure.

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 are relatively inexpensive and effective.

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.

TREATMENT PLAN

1) Diagnostics

- Radiographs – helps determine size of the heart, lung involvement and disease progression
- EKG – needed to determine if arrhythmias are present
- Echocardiogram – needed to determine thickness of heart walls
- Blood pressure measurement
- Bloodwork, heartworm test, CBC, chemistries, electrolytes
- No diagnostics needed at this time

2) Medications

Medication	Dose (mg)	Amount	Instructions

3) Diet

Feed your pet a prescription diet _____. This diet is a low salt diet. Salt can cause your pet to retain fluid which would put extra load on the already damaged heart. Special low salt treats are also available from your veterinarian. Your pet should not be fed anything else – unless approved by your pet’s doctor.

No special diet is needed at this time

4) Recheck examination

- recheck in ____ days for _____
- recheck in ____ weeks for _____
- recheck in ____ months for _____

Please call us if you have any concerns or questions.