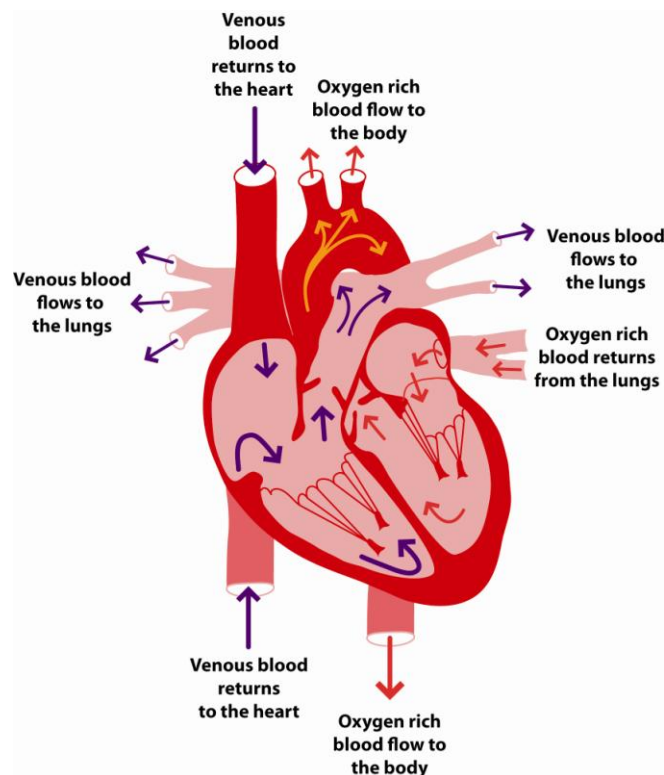


Congestive Heart Failure

What is congestive heart failure?

Congestive heart failure occurs when the heart is diseased in some way, and unable to compensate for its deteriorating function. Many different heart conditions will eventually lead to heart failure. This includes congenital defects, deterioration or malformation of the heart valves, resulting in backward leaking of blood or elevated pressure across the valve; heartworm disease; or degeneration of the heart muscle which prevents the heart from pumping effectively.

In order to understand how heart failure develops, it is important to know how a healthy heart pumps blood.



Mechanisms of heart disease

1. Valve dysfunction

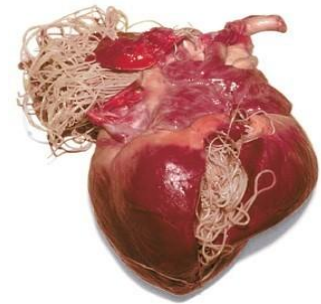
The most common form of heart disease seen in dogs is degeneration of the valves in either the left or right side of the heart, or sometimes both. Normally, these valves open to allow movement of blood into the ventricles (or the lungs/systemic circulation), and then close to prevent backwards leakage of blood. When the valves deteriorate, they become leaky and cause blood to flow backwards. This results in enlargement of the thin-walled chambers (atria), and overloads the venous circulation in the lungs (left sided heart failure) or the systemic

circulation (right sided heart failure). Fluid accumulation in the lungs causes dogs to cough, and impairs the ability of oxygen to transfer from the lungs into the bloodstream. Alternatively for right sided heart failure, fluid often leaks into the abdomen and dogs develop a pot-belly which causes discomfort and can impact movement of the diaphragm and breathing.

2. Heartworm disease

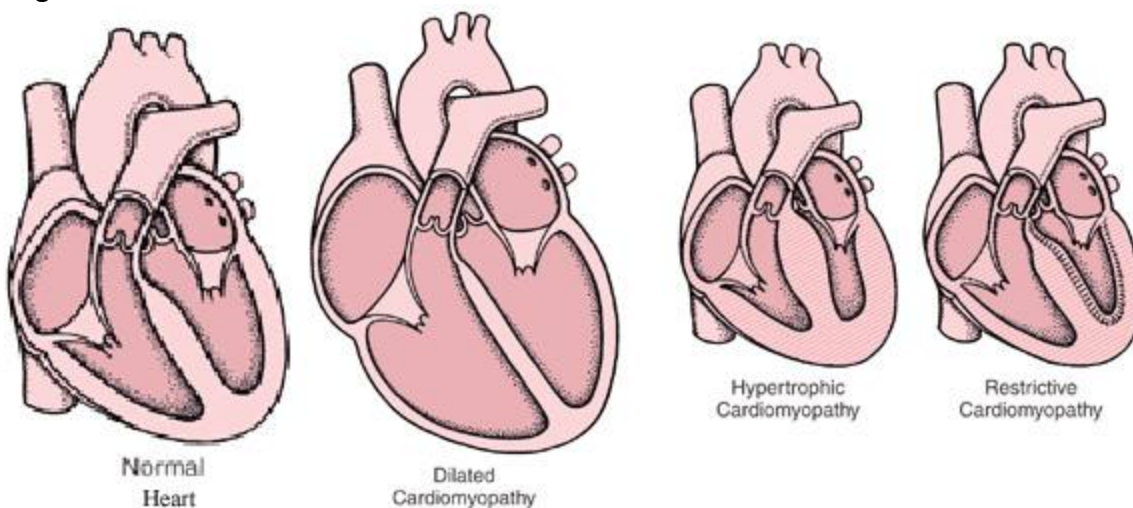
Heartworm is a disease transmitted by mosquitoes. To become infected with heartworm, a dog must be bitten by a mosquito that is carrying heartworm larvae. These larvae then are deposited into the bloodstream and travel to the heart where they grow and develop into adult heartworms.

The worms then cause proliferation of the lining of the heart and blood vessels, and obstruct blood flow, resulting in elevated pressure within the pulmonary blood vessels and signs of right sided heart failure.



3. Cardiomyopathy

Diseases affecting the heart muscle can also lead to heart failure. In dogs, dilated cardiomyopathy is the most common disease of the muscle. This occurs predominantly in large and giant breeds of dog such as Doberman Pinschers, Boxers, Irish Wolfhounds, Great Danes, Saint Bernards, but can also occur in Cocker Spaniels. This may be due to genetic problems, nutritional deficiencies or the cause may remain unknown. The heart muscle does not contract properly which results in stretching (dilation) of the chambers of the heart and can eventually cause leaky valves and congestive heart failure as well as poor cardiac output. In cats, hypertrophic cardiomyopathy is the most common disease of the heart muscle and may occur as a result of an overactive thyroid gland, a genetic condition in certain breeds (Maine Coon) or for an unknown reason. This condition involves excessive thickening of the heart wall which prevents the heart filling properly and leads to high pressures, enlargement of the atria and congestive heart failure.



Whilst we cannot cure most types of heart disease, we can use medications to manage the heart failure and potentially slow the progression of heart disease. Most animals undergoing treatment for heart failure will be placed on at least 2-3 of these medications, and as the disease progresses or with the develop of heart rhythm abnormalities other medications may be added. These medications will be required for the rest of your pet's life, but we may adjust doses periodically depending on their response to treatment or with the development of complicating factors such as kidney disease. As such, regular checkups and intermittent blood testing are vital to ensure that we can best manage the condition in your pet. Your pet may also require other monitoring tests such as blood pressure measurement or ECG (a test that assesses the heart's electrical activity and rhythm).

Frunemide (Flusapex, Frudix) – is a type of diuretic. This helps to shift fluid out the lungs and abdomen to be removed from the body by the kidneys. This drug is the medication most likely to have dose adjustments, as we like to minimize the dose your pet receives whilst still controlling the signs of heart failure. It is generally given twice daily.

Benazepril (Fortekor) – this is a medication that helps to relax the blood vessels and reduce the workload on the heart. Fortekor is given once a day.

Pimobendan (Vetmedin) – this medication helps to improve the heart muscle's ability to contract, and makes it pump more effectively. Vetmedin should be given on an empty stomach (60 minutes prior to feeding) and is given twice daily.

A very useful way of monitoring your pet's condition and response to therapy is by counting the number of breaths per minute when they are sleeping or relaxed. A normal animal should breathe less than 30 times per minute (once every 2 seconds), and an increased resting breathing rate is an early indication of progressing heart failure or need for dose adjustments.



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Date	Drug	Dose	AM	Noon	PM	Breathing rate	Cough/Other comments
	Frusemide/Frudix/Flusapex						
	Fortekor						
	Vetmedin						
	Other_____						
	Frusemide/Frudix/Flusapex						
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