Daily **Medication** Sheet

Medication to be administered	Medication type	Amount to be given	Route	Frequency	Timings of doses			
					☐	☐	☐	☐
					☐	☐	☐	☐
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My **heart** belongs to you

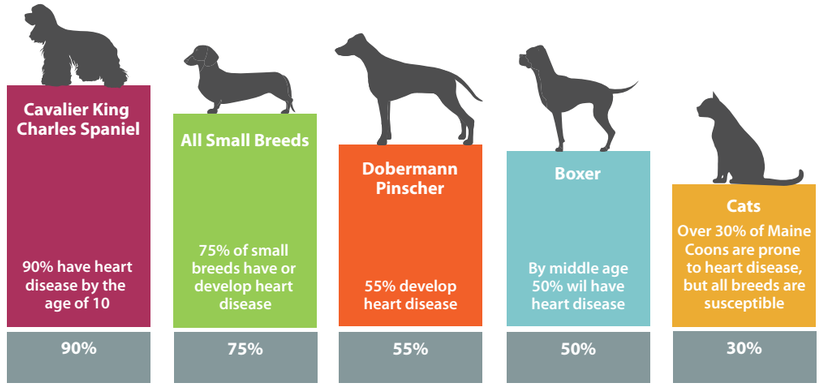
An owner's guide to the most common heart problems in dogs and cats

XL Vets Pets

My **heart** belongs to you

It is estimated that heart problems can affect around 10% of all dogs and cats in the UK.

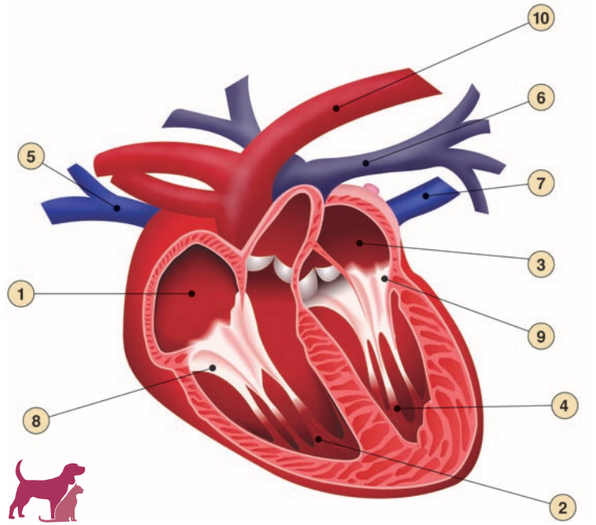
Some heart diseases may be present when the animal is born (congenital), however the majority develop in adulthood (acquired). In fact as certain breeds of dog age the occurrence of heart disease increases significantly, with 90% of Cavalier King Charles Spaniels having heart disease by the age of 10.



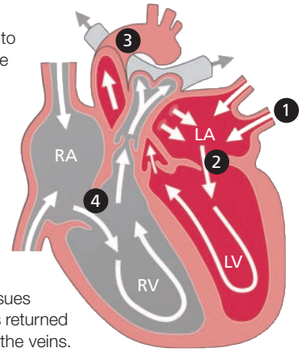
Article references for all figures shown can be found on http://www.xlvets-pets.co.uk/

This booklet aims to help you understand what can happen if your pet has a heart problem, how the condition can be diagnosed and how it can be treated.

How the heart **works**



Blood Flow



(1) Oxygenated blood comes into the left side of the heart from the lungs. It passes into the left ventricle through the left atrium.

The valve called the mitral valve **(2)** shuts and the left ventricle contracts squeezing blood up the main artery **(3)**, the aorta. This takes oxygenated blood round the body through the arteries and capillaries.

Oxygen is used by the body tissues and the de-oxygenated blood is returned to the right side of the heart by the veins.

Blood flows through the right atrium into the right ventricle, the tricuspid valve **(4)** closes and the right ventricle contracts pushing blood up the pulmonary artery and around the lungs where the oxygen is put back into the blood and returned to the left side of the heart where the whole process starts again.

Key

1. Right atrium
2. Right ventricle
3. Left atrium
4. Left ventricle
5. Vena cavae
6. Pulmonary artery
7. Pulmonary veins
8. Right atrioventricular (tricuspid) valve
9. Left atrioventricular (mitral) valve
10. Aorta

Some common types of **heart disease**

Myxomatous Mitral Valve Disease (MMVD)

Myxomatous Mitral Valve Disease (MMVD) is by far the most common acquired heart disease in dogs. This can affect any breed but is more commonly seen in smaller dogs. The problem arises when the Mitral valve in the heart degenerates and changes shape over time.

Early stages - Degeneration of the mitral valve leads to leaking of blood back into the left atrium. At this stage, there may be no external signs of any problems, but a murmur may be detected by the vet. If the heart is not enlarged, then this is classified as stage B1 heart disease.

Progression of MMVD - Over time, progressive valve leakage leads to enlargement of the left atrium and the left ventricle (volume overload) Often at this stage, the murmur gets louder, but there may not necessarily be any other signs that there is a problem. When heart enlargement can be identified, then this is classified as stage B2 heart disease. This is often when cardiologists recommend that treatment should commence.

As the disease progresses further, the left atrium dilates until the internal pressure becomes so great that it causes backward pressure on the lungs, leading to fluid accumulation in the lung tissue (pulmonary oedema). This can be the cause of life threatening breathing difficulties requiring prompt medical treatment. When pulmonary oedema develops, we call this congestive heart failure or stage C heart disease.

If the mitral valve has prolapsed it can lead to the rupture of one of the chordae tendinea. Often called the heart strings, chordae tendinea are cord-like tendons that connect the papillary muscles to the tricuspid valve and the mitral valve in the heart. The prognosis for dogs with rupture of the chordae tendinae is poor.

Dilated Cardiomyopathy (DCM)

Dilated Cardiomyopathy (DCM), can be seen in both dogs and cats, although is far more common in large breed dogs, such as Dobermanns and Great Danes. This is a disease of the heart muscle which results in thinning of the heart wall, and weakened pumping ability. The heart becomes massively dilated, rounded, thin walled and poorly contractile.

DCM can be responsible for signs of heart failure, collapse and occasionally sudden death.

Hypertrophic Cardiomyopathy (HCM)

Hypertrophic Cardiomyopathy (HCM) is the most common acquired form of heart disease in cats. Thickened left ventricular muscle leads to poor relaxation and filling, therefore poor heart function. As the heart fails, and the efficiency of the pump deteriorates all around, the left atrium dilates, eventually leading to heart failure (fluid on or around the lungs).

HCM can also be responsible for collapse and sudden death.

Spotting the **signs**

Heart disease is any condition of the heart or the five great blood vessels that enter or leave the heart - the cranial vena cava and caudal vena cava, the pulmonary artery, the pulmonary vein, and the aorta - which affects the way the heart works and prevents oxygen being transported normally around the body.

Congestive heart failure occurs when the diseased heart begins to lose its ability to pump enough blood to meet the needs of the body. This can lead to a build up of fluid on the lungs and in the abdomen.

What to look out for:

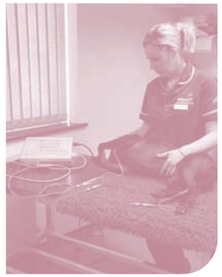
- Coughing, breathing difficulty or breathlessness
- Reduced energy levels, inability to exercise and weakness
- Swollen abdomen - through a build-up of fluid
- Poor appetite and weight loss - cats may have an increased appetite
- Fainting
- Gums can become pale in colour
- Collapse or hind limb weakness

Contact your vet to book a health check if your pet demonstrates any of these signs.

Your vet will assess your pet, and his or her heart, and recommend if any further investigation is required. Many of the signs above can be associated with other disease processes and your vet may advise further tests to identify the problem.

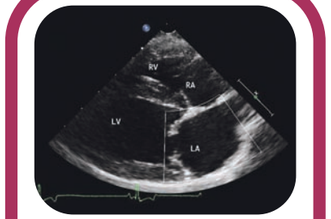
It is important to remember that some heart diseases are mild and cause no symptoms whatsoever in the animal's lifetime.

How is heart disease **diagnosed?**



A combination of tests are usually required to diagnose heart disease, **these include:**

Echocardiography
(a form of ultrasound scanning)



Echocardiogram showing an early degenerated, thickened mitral valve

Radiography
(X-rays)

Chest X- ray showing heart enlargement

Electrocardiography
(ECG)

ECG from a dog with an irregular heartbeat (arrhythmia)

Blood Pressure Monitoring

Monitoring blood pressure of a cat with heart disease

Blood Tests
(Routine)

Taking a blood sample for analysis

How is heart disease **treated**

The treatment options for heart disease very much depend on the diagnosis.

The vast majority of acquired heart diseases are managed with medication. These will have effects on the heart to improve heart function and reduce pressures that the heart has to work against.

Drugs generally work in four ways

1. Drugs that make the heart pump better, such as Pimobendan
2. Diuretics, which help to remove any extra fluid that builds up in the body. An example of this is Frusemide
3. Ace inhibitors, which decrease the amount of work the heart has to do by relaxing the blood vessels around the heart, eg. Benazepril
4. Drugs that help slow remodelling, ie changes to heart structure such as muscle thickening or muscle loss secondary to heart disease, such as Spironolactone

Often your pet will be on several medications all at once.

Other conditions such as heart rhythm abnormalities can be controlled with a pacemaker or anti-arrhythmic drugs. A pacemaker is an electrical device which is placed surgically under the skin and linked by cables to the inside of the heart. It has its effect by controlling and coordinating the contractions of the heart as it beats. Having a pacemaker fitted is a specialist procedure and will be carried out at a referral clinic.

This field of medicine is improving all the time. With the correct medicine, plus regular check ups and adjustments to the medication, your pet may have several years of good quality life.