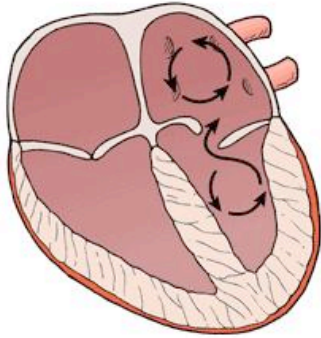


## DEGENERATIVE VALVULAR DISEASE

Chronic degenerative valvular disease is the most common type of heart disease in dogs. It is a progressive age-related deterioration of the two main valves in the heart. The mitral valve is usually affected, and is located on the left side of the heart, separating the left atrium (upper chamber) from the left ventricle (lower chamber). The tricuspid valve is a similar valve found on the right side of the heart, and can also be affected.



A prolapsed mitral valve allows blood to leak backwards into the left atrium as the heart beats.

In a healthy heart the valves close completely when the heart pumps, stopping any backflow of blood. However diseased valves allow leaks to occur, causing turbulent blood flow which can be heard with a stethoscope, called a **murmur**.

As the valve becomes weakened, it bulges back into the left atrium causing an even bigger leak. This is called **valve prolapse** (see image).

The body detects reduced forward flow and conserves water within the circulation. The heart stretches to cope with the increased blood volume, but has to pump harder as a result. Temporarily this returns cardiac output to normal, however the heart muscle weakens and eventually fails.

As the leak worsens, the increased pressure causes the left atrium to become enlarged. Blood flow into the heart slows, causing high blood pressure in the lungs and eventually fluid starts leaking out of the blood vessels. This is called pulmonary oedema, and causes coughing or difficulty in breathing. The patient is now described as being in congestive heart failure.

**Affected animals** are usually middle aged to older dogs. It is most common in small to medium sized breeds, especially the cavalier King Charles spaniel where as many as 90% of dogs may suffer to some degree by ten years of age. Other small breeds such as dachshunds, terriers, chihuahuas and miniature poodles can also be affected, as well as whippets and some larger breeds such as border collies and German shepherd dogs.

**Clinical Signs** can often include:

- Reduced ability to exercise, slowing down or even collapsing after exertion.
- Coughing or breathlessness, especially at night or first thing in the morning
- Reduced appetite, increased drinking, weight loss.

### How is it diagnosed?

- An **electrocardiogram (ECG)** is used to monitor electrical activity of the heart, and gives important information about rate and rhythm.
- **Echocardiography (cardiac ultrasound)** is the most useful test, allowing real time assessment of heart structure and colour mapping techniques can show any valve leaks. It is painless and non-invasive, and usually does not even require sedation. A small amount of hair clipping is usually necessary for cardiac ultrasound scanning.
- **Radiographs ("X-Rays")** assess overall heart size and look for fluid build up in the lungs.

- **Blood tests** may sometimes be performed to look for cardiac markers proBNP and cardiac troponin-I. These are used as standard in human cardiology and whilst they are not as reliable in dogs, they can help to determine severity of disease.

### Can it be treated?

Current research shows that there is no need to treat mildly affected dogs who are not showing clinical signs, although further studies into pre-clinical disease are underway. When dogs develop congestive heart failure, the following treatments to improve heart function and control fluid build up can significantly improve quality of life and longevity.

- **ACE inhibitors** – such as benazapril (Fortekor) help by redistributing the blood within the circulation, reducing pressure and easing the load on the heart.
- **Inodilators** - pimobendan (Vetmedin) helps the heart muscle to contract, and causes artery dilation, making it easier for the heart to pump blood out into the circulation.
- **Diuretics** – such as frusemide and spironolactone remove excess fluid which collects in the lungs and the abdomen when the heart is failing. They may cause your pet to drink and urinate more frequently than usual. Spironolactone is also now known to have the additional benefit of slowing scarring within the heart in the longer term.
- **Anti-Arrhythmics** – such as digoxin (Lanoxin), sotalol (Beta Cardone) or amiodarone help to slow heart rate or control irregular beats.

Although valves can be surgically repaired or replaced in humans this is unfortunately not successful in dogs.

### Can it be screened for?

This disease is hereditary, but screening is difficult since the disease often develops later in life, after a dog has been bred from. As a general rule heart murmurs should always be investigated before breeding. In those breeds known to develop leaking valves then dogs should be selected from families where older dogs have not become affected.

### Ongoing care of patients with valve disease

In most cases this is a slowly progressive disease, and hence asymptomatic patients with mild disease should continue life as normal. A check with your own vet every 6-12 months is usually adequate to ensure the murmur associated with the leaking valve does not suddenly become unexpectedly loud.

In cases of more advanced disease with congestive failure then more frequent reassessments are needed to make sure treatment is optimal and to ensure your dog is as comfortable as possible. Degenerative valve disease does **not** usually cause pain (such as angina), however ongoing breathlessness and coughing in advanced disease can be very distressing and tiring.

**Measuring your dog's breathing rate** at home when resting (but not sleeping) is a useful guide to control of heart failure. Less than 30 breaths per minute is ideal.

**Please contact us immediately** if your dog suddenly develops breathing difficulties, coughing, pale or blue-ish coloured gums or tongue, restlessness, and fainting or collapse.

**Useful websites** for further information include:

[www.vetmedin.co.uk](http://www.vetmedin.co.uk)

[www.thecavalierclub.co.uk/health/hearts/heartmenu.html](http://www.thecavalierclub.co.uk/health/hearts/heartmenu.html)

[www.cavalierhealth.org/mitral\\_valve\\_disease.htm](http://www.cavalierhealth.org/mitral_valve_disease.htm)