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## Myxomatous Mitral Valve Disease (MMVD) in Dogs

Myxomatous mitral valve disease (MMVD) is a common heart disease in dogs. It is especially common in older, small-breed dogs (particularly Cavalier King Charles Spaniels, Dachshunds, Chihuahuas, Terriers, Schnauzers, Bichons, and Poodles), but it can also affect medium and larger breeds.

### What is MMVD?

The mitral valve sits between the two chambers on the left side of the heart. In MMVD, the valve becomes thickened, irregular and less able to close tightly. This allows some blood to leak backwards through the valve, which creates a heart murmur that your vet may hear with a stethoscope.

Many dogs with MMVD remain well for months or years. Over time, however, the heart may enlarge as it works harder to cope with the leaky valve. If the heart can no longer compensate, fluid can build up in or around the lungs. This is called congestive heart failure.

### Stages of MMVD

| Stage           | What it means                                                                                                                                  | Typical approach                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>Stage A</b>  | Dogs at higher risk of developing MMVD, such as Cavalier King Charles Spaniels and other small breeds, but with no murmur or signs of disease. | Routine health checks and listening to the heart every 6–12 months. |
| <b>Stage B1</b> | A heart murmur is present, but the dog has                                                                                                     | No medication is usually needed. Regular                            |



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|                 |                                                                                                                        |                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|                 | no symptoms and no heart enlargement on heart scan.                                                                    | monitoring via repeat heart scans is recommended.                                                      |
| <b>Stage B2</b> | A heart murmur is present, the dog has no symptoms, but the heart is enlarged on heart scan.                           | Pimobendan is usually recommended to improve heart contractility and delay the onset of heart failure. |
| <b>Stage C</b>  | The dog has current or previous signs of congestive heart failure, such as breathing difficulty or fluid in the lungs. | Long-term medication is required, often including pimobendan, diuretics and other medications.         |
| <b>Stage D</b>  | The dog has clinical signs of congestive heart failure but is no longer responding to treatment.                       | Sadly, in these cases euthanasia is recommended.                                                       |

### How is MMVD diagnosed?

Your vet may first suspect heart disease after hearing a murmur, abnormal heart rhythm or abnormal heart rate during an examination. Further tests may be recommended to confirm the cause and assess how advanced the disease is.

These may include:

- **Echocardiogram:** an ultrasound scan of the heart, used to assess the valves, blood flow, contractility and measure heart chamber sizes.
- **Chest X-rays or ultrasound:** used if heart failure is suspected, to check for heart enlargement and fluid in the lungs.



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- **ECG or Holter monitor (a 24-hour ECG vest):** records the heart rhythm and electrical activity.
- **Specialist referral:** occasionally recommended for a more detailed cardiac assessment.

## Treatment

There are no treatments that can halt or reverse the degenerative changes to the mitral valve, as this is an age-related, progressive condition.

Treatment depends on the stage of disease. Dogs in Stage A or Stage B1 usually do not need heart medication, but they should be monitored so treatment can be started if the disease progresses.

Dogs in Stage B2 are usually started on pimobendan. Pimobendan works to improve the contractility of the heart, to help compensate for the insufficiency caused by the leaky valve. Research has shown that pimobendan can delay the onset of congestive heart failure in dogs with MMVD and heart enlargement, by up to 15 months. It is usually given twice daily on an empty stomach and is continued long term.

Dogs in Stage C need medication to control heart failure. This often includes pimobendan and a diuretic (the most commonly used are torasemide, furosemide and spironolactone), to help remove fluid from the lungs. Other medicines, such as ACE-inhibitors (such as benazepril), may also be used depending on the individual patient. Dogs in Stage C should have regular blood tests to assess the impact of the medications on the kidneys.

Once heart medication is started, it is usually lifelong. Your vet may adjust the dose over time depending on your dog's response, examination findings and monitoring results.



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Surgical repair of the affected valve has not previously been available for canine patients but is now an option in the UK. This is major open-heart surgery and so requires referral to a specialist centre to be performed (with associated costs). As above, referral can be considered for a cardiologist assessment, who will be able to discuss this option with you in greater detail.

### **Monitoring at home**

One of the most useful things you can do at home is monitor your dog's resting breathing rate. Choose a time when your dog is completely relaxed or asleep, settled on their side and the room is not unusually warm. Count how many times the chest rises in one minute. Many dogs have a sleeping breathing rate below 30–36 breaths per minute, but your vet will advise what number is important for your dog.

You can record the results in a diary or use an app such as the Cardalis Dog Heart Monitoring App to help track trends over time. Please bring your records to check-up appointments, as a rising breathing rate may be an early sign that the heart disease is worsening.

### **When to contact your vet urgently**

Please contact your vet without delay if your dog shows any of the following signs:

- Fast breathing, increased breathing effort or breathlessness
- Coughing, especially if new, worsening or occurring at night
- Lethargy or reluctance to exercise
- Reduced appetite or seeming withdrawn
- Collapse, fainting or marked weakness
- A swollen abdomen



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## Everyday care

- Before the onset of congestive heart failure, most dogs can live normally.
- If your dog is overweight, gradual weight loss can reduce strain on the heart. Your vet or nurse can advise you on a safe plan.
- Regular, gentle exercise is best for animals with heart problems. Short lead walks several times daily are preferable, avoiding the hottest part of the day during the summer months. If your dog tires or becomes distressed whilst out walking allow them to rest before continuing, and consult your vet if problems persist.
- Avoid very salty foods and treats, including many human foods and jerky-style treats. Non-traditional diets high in legumes should also be avoided.
- Do not run out of medication. Contact the surgery in good time for repeat prescriptions – we usually ask for 48 hours' notice for repeat prescriptions.
- Attend recommended check-ups, usually every 3–6 months once on long-term medication, or as advised by your vet.

## Prognosis

The outlook varies between dogs. Many dogs with MMVD live happily for a long time and may never develop heart failure. 25-50% of dogs with MMVD will go on to experience symptoms of heart failure, and this is often several years after the first detection of a murmur. If heart failure does occur, medication can provide an excellent quality of life, although survival times vary significantly between dogs.

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