



## Screening Dogs For Dilated Cardiomyopathy (vet leaflet)

Dilated Cardiomyopathy (DCM) occurs in large and giant breeds and predominantly pure-bred dogs of the following breeds: Dobermann Pinscher, Boxer, Great Dane, Newfoundland, Portuguese waterdog, Irish Wolfhound. Cocker spaniel (English and American) can also be affected despite being smaller breeds. Dobermans have a 60% chance of developing DCM during their lifetime and one third of Great Danes develop DCM. DCM is the leading cause of heart failure in dogs over 20kg.

### What are the clinical signs of DCM?

Early signs usually include reduced ability to exercise, or collapse. This can either be due to the weakened heart muscle failing to pump, or an abnormal heart rhythm (arrhythmia). However, it is not uncommon that dogs present in congestive heart failure with no prior warnings and there is not always a heart murmur present. Clinical cases of DCM are merely the 'tip of the iceberg' and more dogs can be helped by identifying them in the pre-clinical phase.

In certain breeds such as Dobermans and Boxers, **arrhythmia predominates in early disease** despite otherwise normal heart muscle function. This can cause fainting (usually during exercise or excitement) or even sudden death. For this reason, arrhythmia detected during routine examinations (such as vaccinations) should always be investigated in pre-disposed breeds. Boxers suffer almost exclusively from arrhythmia and have a form of cardiomyopathy arising from the right side of the heart, rather than the left as in other breeds. This has led to the name "Arrhythmogenic Right Ventricular Cardiomyopathy" (ARVC), which is now commonly referred to as "Boxer Cardiomyopathy".

### Screening

Screening is recommended for any dog which is at risk of DCM. It is important to diagnose this condition early as treatment improves survival by delaying the onset of congestive heart failure or sudden death. Breed – pure-bred Dobermann Pinscher, Boxer, Great Dane, Newfoundland, Portuguese waterdog, Irish Wolfhound, Cocker spaniel (English and American).

- Age – from 3-4 years of age, repeated every 1 to 2 years.
- Breeds predisposed to juvenile DCM (Portuguese Water Dog and Manchester Terrier) screening should start at 2-3 months of age and repeat every 2-3 months until adult.
- Ideally consist of **echocardiogram plus a 24-hour Holter**. Holter monitors can be hired from Heart Vets and other services, who also provide an interpretation for you.



- If this is not affordable, second best is an echocardiogram and a 5-minute ECG.
- If this is not affordable, blood testing for NT-proBNP – if >500pmol/L in Doberman or >900pmol/L in other breeds combined with a 5-minute ECG or 24-hours Holter. Cardiac biomarkers are not diagnostic and so their use is to prioritise patients to go on to have an echocardiogram and Holter or ECG.

Genetic testing is not a valid screening for DCM – dogs can still get DCM even if ‘negative’ for the mutation and testing does not cover the genetic mutations seen in the UK population of dogs with DCM.

Additional screening is recommended for any dog in these breeds that is used for breeding. I do not currently perform breeding screening as this requires to be performed by specialist cardiologist with additional training; I can recommend cardiologists to contact who perform breed screening.

## Clinical Cases

Be on the lookout for clinical cases of DCM as early signs are often subtle and easily dismissed. There may be no murmur or arrhythmia on auscultation (slow atrial fibrillation sounds like a normal heart rhythm). These dogs need early investigation to include **echocardiogram plus an ECG** (ideally 24-hour Holter but a 5-minute ECG trace may be sufficient if the owner cannot afford a Holter study).

If any of these clinical signs or physical exam abnormalities are found then investigation should be performed urgently:

- ANY arrhythmia when auscultation, even if just you think there was a skipped beat, especially if in any of the at-risk breeds. Remember, some breeds show arrhythmias as the only or earliest sign of DCM.
- Soft left apical murmur may be present.
- A gallop heart sound.
- Reduced ability to exercise
- Episodic collapse or fainting/syncope, even if the patient is fully normal on examination.
- Weight loss
- Distended abdomen which may be ascites
- Sudden death
- Usual signs of congestive heart failure – tachypnoea, dyspnoea.

Please contact me if you have a patient you think may benefit from screening or may have DCM.