

# Heart Murmurs

A heart murmur is a sound produced in the heart by the turbulent flow of blood. Due to the large size of the horse's heart, this turbulence can be normal (physiological or flow murmurs) e.g. from a fast flowing large volume of blood, or from a high blood flow rate during exercise or in cases of anaemia. Murmurs also result from abnormal blood flow through the heart e.g. back flow through a leaking valve or flow through a hole in the heart.



## Clinical signs

Heart murmurs are often discovered at a clinical examination or pre-purchase examination and can cause owners much anxiety. Although some heart murmurs can be performance limiting and / or life threatening, these are generally the exception rather than the norm. The majority of murmurs are physiological, i.e. of no consequence, and result from the passage of large volumes of blood at high speed through the large chambers of the horse's heart and major blood vessels. Indeed, a study of National Hunt horses in training revealed that close to 80% of them had heart murmurs which did not appear to be affecting their performance. Similar figures have been found in studies of human athletes.

## Grading a murmur

The intensity of the murmur (how loud it is) may give an indication of the amount of turbulent blood flow and is a crude guide as to the murmur's likely significance.

Grade 1 – can be heard faintly after a few seconds careful listening with a stethoscope.

Grade 2 – can be heard faintly straight away upon listening with a stethoscope.

Grade 3 – can be heard loudly with a stethoscope.

Grade 4 – can be heard with the stethoscope and a 'thrill' can be felt by hand

Grade 5 – can be heard with the stethoscope off the chest wall and a strong 'thrill' is present.

The position of the murmur on the chest wall gives a clue as to which part of the heart is affected; left side of the chest or right side, higher (heart base) or lower (apex).

The size of the area over which a murmur can be heard will also give an indication as to its likely significance. A very focal murmur is less likely to be significant than a comparable murmur which is heard over a large area.

The timing of the murmur in the heart cycle will also give an indication of which structures are affected and therefore the significance.



**ULTRASOUND EXAMINATION OF THE HEART CAN PROVIDE INFORMATION ON THE SITE AND SIGNIFICANCE OF A HEART MURMUR**

## KEY POINTS

- Heart murmurs are sounds produced by the turbulent flow of blood through the heart.
- Many heart murmurs are incidental findings and do not limit performance.
- Murmurs are most likely to influence performance in racehorses.
- Investigation of heart murmurs may require an ultrasound scan of the heart and electrocardiogram (ECG) at rest and during exercise.

### Diagnosis

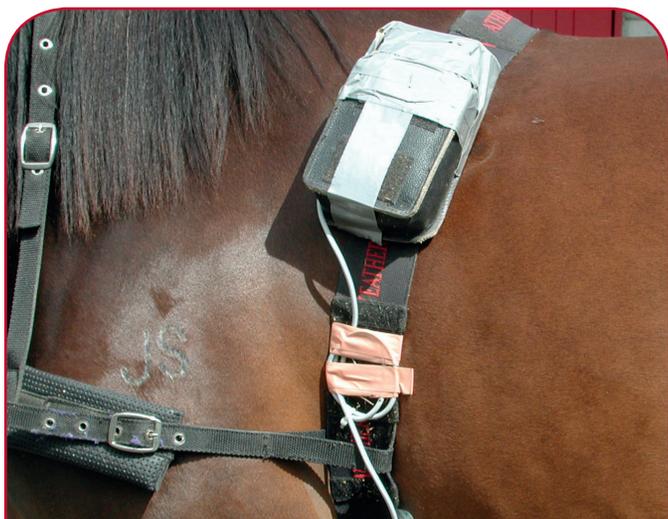
Using all the information available at a careful stethoscope examination it is often possible to localise the heart valve or structure thought to be responsible for causing the murmur and to come to an approximate diagnosis.

Having identified a murmur in your horse, the following investigations may be required:

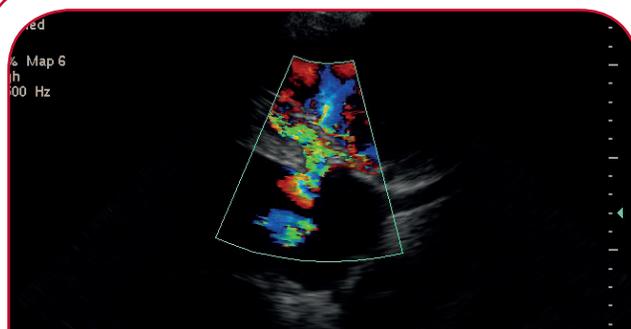
- cardiac ultrasound (echocardiography)
- resting ECG
- exercise ECG.

Some of these investigations require specialist equipment and skills which may require referral to a veterinary hospital. The availability of cardiac ultrasonography in horses enables vets to come to a more precise diagnosis and prognosis, having precisely isolated the origin of the murmur, measured the amount of backflow of blood, and checked the heart dimensions for signs of enlargement.

An electrocardiogram (ECG) looks at the electrical activity of the heart and can be used to assess rate and rhythm both at rest and during exercise using a remote device.



**A SYSTEM FOR REMOTE RECORDING OF AN ECG DURING EXERCISE.**



**ECHOCARDIOGRAM (ULTRASOUND SCAN) SHOWING ABNORMAL BLOOD FLOW IN THE HEART ASSOCIATED WITH A HOLE IN THE HEART**

### Assessing the significance

The equine heart is an enormous muscular organ which has very large reserves of output and most of the time works well below capacity. Most horses never use their heart to maximum capacity so murmurs causing mild inefficiencies are not significant to them.

Some murmurs are potentially significant in all horses. A leaking aortic valve allows backflow of blood into the heart from the aorta, which if of large enough volume, eventually causes stretching of the heart wall. Possible consequences of this stretching include rupture of the root of the aorta and ventricular fibrillation, both of which result in death.

Factors affecting the significance of a heart murmur:

- intended use of horse (e.g. what would be performance limiting in an eventer may be of no consequence to a child's pony);
- rate of progression (not determinable at a single examination, murmurs which get worse over time are obviously more significant than those which do not change);
- volume of backflow of blood;
- size of defect e.g. ventricular septal defect (hole in the heart)
- heart rate at rest;
- presence of related arrhythmia (abnormal heart rhythm)
- signs of heart failure (e.g. leg filling, weight loss, exercise intolerance).



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