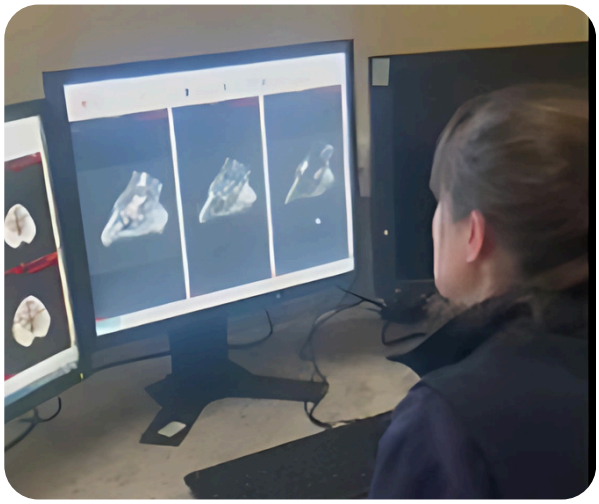
CLIENT INFORMATION SHEET

Magnetic Resonance Imaging (MRI)

What is an MRI?

• MRI stands for magnetic resonance images. These are produced by the interaction of a very strong external magnetic field with the body's hydrogen atoms. The images created have the ability to differentiate between normal and abnormal tissues at a level not currently possible with any other imaging modalities.



• We use a Hallmarq low field MRI system https://hallmarq.net/products/equine-mri/ . We have offered MRI since 2008 and scan around 160 cases a year .

What are its uses and benefits over other imaging modalities?

MRI offers several significant advantages over other imaging modalities. It provides high-contrast resolution images in any plane through the region of interest, allowing exceptionally detailed visualisation. The images generated demonstrate the anatomy of bones, joints, muscles, ligaments and tendons at a level unsurpassed by other modalities such as radiography and ultrasound. In addition to depicting normal anatomy, MRI enables the detection of tissue injury that may not be visible with other imaging modalities. As a result, it is an extremely powerful diagnostic tool for assessing the underlying causes of lameness in horses and has fundamentally transformed the way equine orthopaedic centres diagnose and manage lameness.

What areas of the body can be scanned?

We are able to scan the distal (lower) limb from the proximal suspensory region to the foot. In some cases we can scan the carpus (knee) and the tarsus (hock) of the horse

Why might my horse benefit from an MRI scan?

MRI is most commonly indicated for horses with ongoing lameness that has proved difficult to diagnose or has failed to respond to treatment. It is particularly useful in cases where lameness has been localised to the lower limb but radiography and/or ultrasonography have not identified a definitive cause. MRI is also valuable in horses that have sustained penetrating injuries to the foot, as it allows detailed assessment of the internal structures that may be affected.

The most common MRI diagnoses within the foot include:

- Navicular bone degeneration
- Deep digital flexor tendonitis
- Collateral ligament desmitis
- Traumatic arthritis
- Phalangeal bone bruising
- Navicular collateral desmitis
- Fractures
- Infected bursa or joints from nail injury

What happens during the scan?

MRI is performed as a standing procedure in the sedated horse and is usually carried out on an out-patient basis. This avoids the risks and additional costs associated with general anaesthesia, while still allowing high-quality diagnostic images to be obtained. The procedure typically involves the following steps:

- Your horse will be examined by one of our veterinary surgeons to assess lameness and evaluate general health prior to sedation.
- Shoes of the affected limb(s) and the opposite front or hind limb are removed before the scan to prevent image artefacts caused by metal.
- Once sedated, your horse will be walked into the MRI suite and the limb to be imaged will be carefully positioned within a padded magnet.
- The duration of the procedure depends on the region being assessed and how still your horse remains during the scan. On average, imaging of a pair of feet takes approximately 2.5 hours.
- During this time, around 300–500 images are acquired, capturing multiple angles of the limb or hoof and highlighting different tissue types and potential abnormalities.
- Images are reviewed as the scan progresses to ensure image quality and completeness.
- Once the scan is finished, your horse will return to its stable and will be monitored until the effects of sedation have worn off. Most horses are able to return home the same day.
- All images are reviewed in detail, and an MRI report is provided to your referring veterinary surgeon within 24-48 business hours. We will also discuss the findings with you and advise on an appropriate treatment plan.

How are the images viewed?
Following acquisition of the images they are sent through to a specialist medical imaging database system. The images are then examined by our specialists in equine veterinary diagnostic imaging and a written report of findings and differential diagnoses is provided.

Are there any safety issues or side effects to an MRI scan?

Hallmarq equine MRI systems have been used for over 30,000 standing sedated horse examinations on 44 sites in 11 countries. During this time there have been no fatalities.

Will my horse have to be anaesthetised?
No, however, image quality is affected by limb movement so sedation must be used during image acquisition. Some horses will need to be sedated for long periods of time, and this can increase the risk of colic. Therefore, some horses will have to be scanned over multiple days and we may prophylactically nasogastric tube your horse with fluids to help prevent colic.

Are there any horses that are not suitable for MRI?
Most horses are suitable for MRI, although temperament may have an influence on our decision to carry out the procedure. Horses with metal implants (previous fracture fixations), and horses with cardiac conditions that mean they cannot be sedated, may be unable to have an MRI. Given the time it takes to acquire the images, the lameness must be well localised to ensure the appropriate region is scanned.

Does my horse have to stay at the hospital?
Due to the length of time needed to complete an MRI scan and the number of images produced it is often beneficial for your horse to come in the evening prior to a scan or to stay for a night after a day of scanning. Cases will be assessed on an individual basis before and during their appointment. Things that can affect the length of stay include:

- Number of limbs and areas to be imaged
- How still your horse stands
- How much sedation is needed to acquire the scan.
- Overall health of the horse.

Please discuss the requirements for your own horse's scan with your attending clinician.
Our vets are always happy to chat and our aim is to keep the stay as short as possible whilst keeping your horse as safe as possible.

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