

Recurrent Airway Obstruction (RAO)

With an estimate prevalence of up to **20%**, Recurrent Airway Obstruction or RAO is a widespread respiratory disorder in the UK's population of horses. Also known as 'Equine Asthma', 'Heaves' or previously known as Chronic Obstructive Pulmonary Disorder, the pathogenesis of the condition involves narrowing or constriction of the lower airways and excess production of mucus. The airways have natural defence mechanisms which aim to respond to infection or inflammation. Mucus is produced by cells which line the airways to trap debris. This mucus is then normally 'wafted' up the airway to the throat where it can then be swallowed. When there is a lot of inflammation and constriction within the airways, the ability to move this mucus up the airways is impaired, which is why there is accumulation of mucus in horses with RAO.

The condition is best described as an **exaggerated immune response** to inhaled allergens in the environment. This hypersensitivity of the horse to these allergens can take years to develop and the list of potential allergic compounds in the environment is endless. **Allergens** include; dust particles, noxious gasses, mould spores, forage mites, pollens, endotoxins within hay/straw and many others. Stable dust actually contains over 50 species of mould spores which is unbelievable! Once a horse presents with clinical symptoms of RAO, they then have a susceptibility to acquiring the condition for the remainder of their lives.

The accumulation of mucus and constriction of the airways explains the clinical signs that we see in affected horses. An occasional **cough** is a prominent feature, typically worsened by exercise. RAO is the number 1 cause of a chronic cough in horses in the UK. Affected horses may not tolerate exercise as well as they normally do, they may have a discharge from both nostrils and in prolonged chronic cases they may develop a characteristic heave line on the abdomen due to the increased expiratory effort.



Example of a horse with an abdominal heave line.

Diagnosis of the condition can be made using the history, clinical signs and auscultation of the chest may reveal wheezes or crackles within the airway. Wheezes correspond to narrowing of the airways and crackles are produced due to the mucus accumulation. Endoscopy, whereby a long tube with a camera and light built in is placed down the airway can be used to visualise the trachea and lower airways. Inflammation and the presence of mucus can be present in horses with RAO. A tracheal wash or

broncho-alveolar lavage can be used to help diagnose the condition. This is where sterile fluid is put down into the airways and then collected immediately. This fluid sample will contain cells which are highly suggestive of inflammation within the airways.

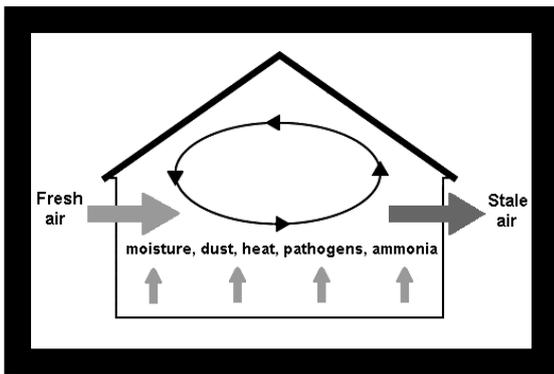
Treatment can be broken down into **medical** and environmental. **Environmental** management of horses with RAO is the most important component because until the exposure of the horse to allergens is reduced or eliminated, there is always a source of allergic reaction. Medical treatment involves the use of corticosteroids and bronchodilators. Corticosteroids aim to reduce the inflammation within the airways and bronchodilators reduce the constriction within the airways, aiding air flow. These drugs can be given either systemically (orally in a powdered form) or by

inhaler. The use of inhalers have increased in recent years, however the compliance of the horse is most commonly an issue as well as the owner having to follow strict instructions when using these devices. The use of systemic corticosteroids has been under much stipulation over recent years, however their use has not been proven to cause laminitis in healthy horses and ponies. The use of corticosteroids in horses and ponies should be on a case-by-case basis taking into account the age, breed, health and laminitic risk of the animal.



The use of an inhaler in a horse

Environmental management as mentioned previously is key to the resolution and maintenance of horses with RAO. There are a number of areas which can be tackled with the common aim of reducing or eliminating allergen exposure. **Housing** – a horse left out to graze at pasture is the ideal environment eliminating stable dusts and ventilation issues. Obviously, in a lot of circumstances, the turnout of a horse 24/7, 365 days a year is not practical or possible and so stabling is often necessary. **Feeding** – hay is one of the major fibre sources with a high percentage of allergen content. Soaking hay does reduce many inhalation allergens, however will not eliminate mould spores. Depending on how much hay is offered at one time, it is possible that the hay fed dries out sufficiently during its time in the stable to cause a problem. Steaming hay



Ventilation in a stable with throughput of airflow.

has become increasingly popular and does significantly reduce allergen content. Often haylage is the most sensible option for horses with RAO as only a few minutes exposure to hay can initiate an allergic response. **Bedding** – rubber matting, cardboard or shredded paper offer the best options for RAO horses. Straw contains a lot of dust and inhalational spores and if deep litter is used there is a build up of ammonia and other noxious gasses. Removing the horse from the stable to muck-out is always an effective way of reducing their exposure to allergens. **Ventilation** – providing enough

ventilation is important and can easily be achieved by having an alternative inlet at the back of the stable so there is a good throughput of air. **Exercise** – provided the horse is not in respiratory distress and is able to work, exercise increases movement of mucus and helps clearance.

If you have any questions regarding management of horses with RAO or any concerns your horse may have a respiratory condition, please get in touch with us to have a chat with one of our vets.