

Cinder Hill Equine Clinic



Equine Asthma

Equine asthma (EA) is the new name given to a common respiratory disease that affects horses and ponies. Previous names have included Recurrent airway obstruction (RAO), chronic obstructive pulmonary disease (COPD) and 'heaves'. The disease is similar to asthma in humans, hence the new name, and is a common reason (in particular) older horses to develop a cough and other signs of lung disease.

Common causes

Disease is caused in susceptible horses by inhalation of dust and toxins from the environment, usually when a horse is stabled. Hay and straw contain fungal spores and organic material which trigger an allergic response causing inflammation and narrowing of the lower airways. The inhaled particles that cause an allergic reaction in susceptible horses are known as allergens. What makes a horse 'susceptible' to developing EA is still being worked out, but it is likely that differences in the immune system and genetics play a role.

When hay is baled with high moisture content (above 20%), the bales can heat up and the growth of moulds (such as *Aspergillus fumigatus*, *Faenia rectivirgula* and *Thermoactinomyces vulgaris*) occurs. All hay made in the UK can have mould growth, even good quality hay. Inhalation of such spores triggers an allergic reaction in some horses and the airways become hypersensitive. There is also a similar disease seen in some horses that live out at pasture. This is called summer pasture associated obstructive pulmonary disease (SPAOPD). It produces the same clinical signs as EA and may be linked to pollens.

Predisposing factors:

- Repeated exposure to hay and straw dust containing moulds, endotoxins and inorganic material
- Dusty feeds
- Long hours in the stable (or in the case of SPAOPD out at pasture)
- Poor stable hygiene
- Inadequate ventilation

Clinical signs

The disease usually develops over a period of time. Affected horses do not have an increased temperature and they appear well in themselves, but they may have reduced exercise tolerance and not be able to perform to the best of their ability.

The first clinical signs include:

- Reduced exercise tolerance

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- Increased respiratory rate
- Increased expiratory effort (the abdominal muscles are used to force the air from the lungs and a heave line might be seen)
- Coughing, usually at the start of exercise or in severe cases in the stable too
- Nostril flaring
- Milky white nasal discharge from both nostrils, especially first thing in the morning and after exercise (this may become thick and yellow as it gets worse).

In performance horses (especially racehorses and eventers) a less severe form, known as mild equine asthma may produce no overt clinical signs, and the only indication of airway disease may be a loss of exercise tolerance.

Why do these signs develop?

The expiratory difficulty is caused by obstruction of airflow in both the large and small airways. This is due to spasm of the smooth muscle (bronchospasm) in the larger airways, and bronchospasm, inflammation and the accumulation of mucus in the small airways (bronchioles). Both lead to a reduction in airway diameter so breathing requires more effort. These changes occur within a few hours of a susceptible horse being placed in a stable or dusty environment.

If the disease is not controlled, structural changes occur in the lungs over a period of time. The chronic inflammation leads to thickening of the mucosal lining. In severe, long term disease, the alveoli (air sacs) become over-inflated and emphysema (i.e. structural destruction of the alveoli) can develop. This end stage lung disease is what is traditionally called “broken wind”.

When to call the vet?

Early diagnosis, treatment and management changes often prevent it from developing into a serious problem, so call your vet as soon as you have any concerns.

The Diagnosis

- History and clinical signs
- Auscultation (listening to the lungs with a stethoscope)
- Endoscopy (passing a scope into the lungs)
- Tracheal wash or bronchoalveolar lavage

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Medical Treatment

Once a horse has developed a hypersensitivity to stable dust, there is no cure. If treated promptly, the changes are reversible but the horse remains more sensitive to respiratory allergens than normal. The mainstay of treatment is management of the environment to minimize exposure to potential allergens in hay and straw.

Bronchodilators

Bronchodilators are used to relieve the respiratory distress experienced by horses during acute episodes. They relax the smooth muscle in the airways. Bronchodilators are useful in the short term to relieve bronchospasm, but they do not address the underlying problem of inflammation of the small airways.

The commonly used ones include:

- Clenbuterol (Ventipulmin) relieves bronchospasm and increases the speed of clearance of mucus from the airways. The drug can be given intravenously or orally. Advice should be sought from your vet regarding the dose if your horse fails to show a satisfactory response to the standard dose. At higher doses, side effects of sweating, trembling and raised heart rate may occur. With long term (more than about 2 weeks) use, horses can become resistant to the effects of Clenbuterol, so it is generally best used in acute episodes or “flare ups”.
- Inhaled bronchodilators such as Salbutamol (Ventolin) are occasionally administered using an Equine Aeromask or other inhalation devices but their duration of action is relatively short.
- Atropine or Buscopan may be given once by intravenous injection at the start of treatment to relieve acute respiratory distress. If bronchospasm is a contributory factor, the drug will be effective and provide relief within 15-20 minutes, but this can cause colic as a side effect so is not safe for regular usage.

Corticosteroids

Corticosteroids are the most effective drugs for reducing inflammation in the lungs of horses with EA. They can be administered by injection or orally, or by inhalation. Bronchodilators may be given first, to allow better distribution of the inhaled drug. Dexamethasone and prednisolone are commonly used injectable and oral forms. Once the symptoms are controlled, inhaled medication is preferable as there is less risk of side effects which include laminitis and suppression of the immune system. Immunosuppression increases the risk of the horse succumbing to bacterial infection. The inhaled corticosteroids include beclomethasone dipropionate and fluticasone propionate. The horse is treated twice a day using an inhaler. A number of systems for delivering the drug are now available. Examples are the Aeromask (which is a facemask with an attached spacer and metered dose canister) and the “Equine Haler” inhalation spacer or in smaller ponies pediatric spacing chambers can be used. Equine nebulisers have become popular and easy to use. Inhalers can be used

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through the mask as well as delivering aerosolized drugs and saline treatments to the airways of the horse.

Mucolytics

Mucolytics are medicines that help to break up the mucus so it is more easily cleared from the airways. They can be useful in cases where there is a lot of thick, tenacious mucus present in the airways. Examples include sputolosin.

Control and Management

The key to both treatment and prevention of the disease is environmental control by good stable management and stable design to minimize exposure to dust.

Turning out

All horses should have plenty of fresh air with minimal exposure to dust and fungal spores. Whenever possible, the first step in treatment of horses with EA is to turn them out completely for a period of at least two to three weeks (preferably longer). The field should be well away from the muck heap and the hay store. Bringing the horse into a stable for even a short period, e.g. for grooming or for the farrier, will cause further inflammatory changes to take place in the lungs and prolong the period of recovery. The best management for a horse with EA is to keep it permanently out at grass.

Stable design

Where it is not possible for horses to live out, changes in stable management and design may be beneficial. Good stable ventilation is essential for the horse's health. Many modern boxes have low roofs and insufficient air vents to achieve the recommended ventilation rate of 8-10 complete air changes per hour. Some suggestions to improve ventilation could include:

- Additional air inlets and outlets. To avoid draughts, air inlets should be positioned at the same height as the eaves. Ideally, each stable should have an outlet at the highest point in the roof.
- An extra window at the back of the box can improve the air quality and considerably reduce the incidence of the disease,
- Top doors should routinely be left open.
- Wherever possible, each horse should have its own air space and the side walls should reach the roof of the stable.

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Bedding

Straw is not ideal as it has higher levels of fungal contamination than a well-managed shavings, cardboard or paper bed. All beds need to be kept clean and dry. The urine and droppings must be removed each day to prevent mould growth. Deep litter is not recommended as high levels of noxious gases such as ammonia and hydrogen sulphide may be produced (mould will also grow in the bedding when it becomes damp and soiled). These gases are irritant to the respiratory tract. Rubber matting may be helpful if used with a small amount of bedding material. However, good drainage and management are required with rubber mats to prevent pooling of urine and an unhealthy atmosphere.

Mucking Out

It is essential that all the bed is removed and replaced at regular intervals. Wood shavings and paper beds that look clean can develop high levels of fungal growth after several months in the stable especially if the environment is damp.

During normal mucking out, the number of fungal spores and the dust levels in the stable is increased 3 to 6 fold, and can remain airborne for many hours. It therefore makes sense to muck out as soon as the horse is turned out so the spores and dust have a chance to settle before the horse is brought back in again. Mucking out while the horse is in the box should be avoided in all cases. Ledges and window sills should regularly be cleared of dust and cobwebs to remove dust, fungal spores, bacteria endotoxins and general dirt.

The muck heap

The muck heap should be sited as far from the stables as practical and preferably downwind.

Transport

When travelling, horses are often exposed to high dust levels. Straw and shavings in lorries and trailers quickly become musty and mixed up with old hay. The best solution is to use rubber matting and be careful if feeding hay inside the vehicle. Lorries and trailers should be well-ventilated.

Respiratory infections

Horses with EA should avoid contact with others suffering from respiratory viruses. The signs may be exacerbated following a respiratory infection.

Hay

Wherever possible, hay should be excluded from the diet altogether as even well made, good quality hay has very high levels of dust and fungal spores. Grass, haylage or vacuum-packed forage

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such as Horsehage are suitable alternatives. Steaming hay using commercially available steamers decreases dust and mould content and can be a good way to provide roughage to a horse with EA. Soaking hay will also help decrease the dust content in the hay.

Buying and storing hay

It is always worth buying the best quality hay that is available. When a bale is opened it should have a fresh, sweet smell with no visible mould or dust. Hay should be stored in a separate building from the horse because millions of fungal spores are released into the atmosphere when hay nets are filled. In order to minimise fungal growth, the bales should be raised from the floor on wooden pallets.

Soaking hay

The area within 30 centimetres around the horse's nose is called the 'breathing zone'. When a horse pulls dry hay from a net, large numbers of fungal spores and dust particles (up to 63,000 per litre of air) become airborne and are inhaled. Ideally hay should be soaked for 30 minutes to one hour in clean water just prior to feeding to significantly reduce the amount of dust inhaled. The hay net should be positioned by the door or a window. If the stable is large enough, it should be tied so there is minimal mixing with the bedding and any that is not eaten can be swept up and removed.

Vacuum-packed forage (Haylage)

Vacuum-packed forage has been developed as an alternative to hay. Grass is cut and allowed to wilt before being baled and compressed. The bales are sealed in bags to exclude air and a mild fermentation process begins. Under these conditions mould growth is inhibited and the feed will keep for up to 18 months.

Vacuum-packed forage has a higher nutritional content than most hay. It should be introduced to the diet over a period of 2 - 3 weeks and concentrates may need to be reduced. Opened packs should be used within 5 days and if the bag is accidentally punctured it should be fed immediately. A feeding guide can be obtained from the manufacturers. Hay nets with small holes slow down the intake of this forage.

Exercise

Horses with severe breathing difficulties should not be worked. Mildly affected horses should have their exercise restricted to a level they can manage comfortably, but exercise can be beneficial to help clear the lungs. During a bout of coughing, the horse should be allowed to extend its head and return to walk.