



## Air Hygiene & Coughing

### Treatment and Prevention of Airway Diseases

*Horses and ponies in the UK spend a large proportion of the year stabled. During the winter, many animals are stabled continuously except when exercising, as a result they are exposed to a wide range of particles they may inhale, and can cause disease.*

#### Air Hygiene and Particles

Air hygiene refers to the levels of airborne particles in the stable, which are small enough to reach the lower respiratory tract. These particles are less than 5µm, and thus are invisible to the naked eye! They are referred to as respirable particles. These consist of:

- Allergens: Moulds, fungi, forage mites and their faeces, pollens
- Pathogens: Bacteria and viruses
- Irritants: Plant fragments and other dusts, ammonia and other noxious gases

Stable management, and creating a dust-free environment is vital for horses with respiratory disease. Owners often have less influence over stable design. Both management and design will influence whether your horse breathes in healthy air. Although changes in stable management are usually considered in treatment and preventative regimes, improvements in stable design are often overlooked. Changing to low-dust beddings and feed will improve air hygiene. If the design of the stable is poor, there may still be excessive levels of airborne particles.

#### Effects of poor air hygiene

Symptoms that your horse is suffering through poor air hygiene can vary, but the most common ones are coughing (particularly at the beginning of work or in the morning), nasal discharge, heaves, lethargy, or in mild cases poor performance.

Recurrent Airway Obstruction (RAO) is the correct name for this disease, but this disease is often known by owners as COPD, asthma, hay fever, heaves, broken wind or dust allergy. The disease can be confused with respiratory infection. If you notice any of the symptoms, your horse should be examined by us.

RAO is primarily an irritant and allergic phenomenon, and thus entirely environment dependent. The most common allergens are moulds in hay and straw. However, barn dust, pollens and a wide variety of other substances may trigger spasms of the small airways. The key is to determine the causes as much as possible and avoid them. Infections may take much longer to heal if the horse is kept in an environment with poor hygiene.

Throughout your horse's life, you should strive to keep the amount of respirable particles to a minimum. If more than a certain number of these particles are present, disease occurs. This threshold can vary between animals and can vary during the life of the animal. For example, irritants and allergens tend to cause problems in lower concentrations as the horse gets older. Conversely, infections are more prominent in younger horses. By keeping the respirable particles as low as possible, problems in later life can be avoided. Some suggestions on keeping dust in your horse's environment down are discussed below. In known RAO sufferers, all measures may have to be taken to keep the symptoms under control.



#### What needs doing if you have a coughing horse?

Initially, provide clean air. Signs that the condition may need veterinary intervention include wheezing, constant coughing, rapid shallow breathing or heaving - where a line appears along the bottom of the ribcage at the intake of each breath - and thick nasal discharge. Some owners have learned to accept that their horse always has a few coughs at the beginning of work. Make no mistake, this is an early sign that all is not well in your horse's lungs! Leaving it untreated may only cause more hassle in the future.

A horse suffering from acute symptoms should be turned out into a dust-free, airy space such as a paddock, kept quiet and closely observed. Careful, if your horse is allergic to pollen, turnout may not be the best.

Call the hospital immediately if:

- The horse is really gasping and does not improve within the hour
- The horse has a temperature, this could indicate an infection
- If there is severe coughing that will not stop - this may indicate a blockage in the gullet or airway
- If there is a new loud roaring/snoring sound
- If the horse has had a recent chest injury

Younger horses are more likely to suffer from infections, which require drug treatment early to prevent them to have damaged lungs for the rest of their lives.

A closer examination, possibly involving passing an endoscope or camera in the windpipe, to assess the inside of the airways may be suggested to help find a longer-term solution. Many cases are reversible with aggressive treatment, particularly through good dust-free management. Horses below 8 years old that show these signs, or have a long-lasting cough, should always be examined by a vet, and further diagnostics should be instigated if simple treatment has no effect.

Treatment for coughs may involve antibiotics, bronchodilators, mucus thinners and anti-inflammatory drugs (usually steroids). These drugs can be injected or given in the feed. Recently, success for long-term sufferers has been achieved with inhaled medication. Horses seem to tolerate the masks that are needed to make the 'puffers' work for them. Inhaled therapy has the advantage of creating less side effects, compared to traditional medication.

## Stable Management

### Forage

Hay that has been baled with a high moisture content can spontaneously heat and provide the conditions in which prolific mould spores develop. A horse eating hay inhales millions of spores with each breath. Surveys have shown that up to 70% of hay fed to horses contains significant levels of mould contamination. Unfortunately a horse's eye and nose is not a good guide to hay quality, even if they are very experienced.

Soaking the hay decreases the respirable dust. Spores can become airborne if the hay is allowed to dry out before it is fed. Old soaked hay, trampled in the bedding, can result in respiratory disease in horses that are otherwise kept in very clean conditions. The hay should be thoroughly wet through out. Allowing it to soak in clean water for at least half an hour can do this. After soaking for longer than three hours, nutrients may be washed out of the hay. Steaming hay is very ineffective in reducing respirable particles.

Haylage is the cheapest low-dust hay alternative. Care should be taken if big bale haylage is used. Broken or damaged bags of haylage containing dirt or having an ammonia smell should be discarded because of the risk of botulism. Bags should be used within 5 days of opening, especially in warm weather when it will mould quickly. Complete cubed diets or chaffs offer alternative, albeit expensive, ways of meeting your horse's forage needs. Alfalfa cubes, which act as a good nutritional balance with oats, help to avoid the necessity of feeding hay.

### Bedding Materials

Straw is a particularly potent source of mould spores capable of causing Recurrent Airway Obstruction (RAO). "Clean" alternatives to straw include wood shavings, peat, sawdust, shredded paper and synthetic bedding.

Straw has almost 100 times more particles in it than wood chip. Dust-extracted woodchip is better than normal chips. Clean straw, or even woodchip, under conditions of deep litter management or in hot, humid, poorly ventilated stables may leave a potent source of respirable mould spores.

### Other Management Practices

Keep muck heaps and horses as far apart as possible because the fumes and moulds produced on these are phenomenal. Put your bed down at least half an hour before putting the horse in the stable to allow the dust to settle. When possible, the horse should be groomed outside. So that it is not made to breathe in the dust created by brushing it. Storage of hay and straw should be far away from where the horse is kept. Inhaled smoke from bonfires and smoldering muck heaps are disastrous for your horse's lungs.



### Turnout

If your horse is not sensitive to pollen, the healthiest environment for it is usually outside. Pollution from exhaust fumes and industrial gases has made this environment less healthy than some years ago. Frosty weather is more beneficial than warm conditions. Horses cope well with the cold and an extra rug will protect them against the elements.

Winter turnout with a lot of hay in varying states of decay is not ideal for RAO sufferers.

### Stable Design

Respiratory particles can remain airborne for days and are only removed by adequate ventilation. Poor drainage leads to high levels of ammonia and other noxious gases, but also increases the rate of moulding of bedding. It is important to remember that clean bedding will become heavily moulded in poorly drained/ventilated stables. Sky lights and windows allow sunlight, which has a positive effect on reducing bacteria.

## Ventilation

In a stable with clean forage and bedding, you should aim for eight air changes per hour. In the vast majority of stables, this can be achieved by natural forces of ventilation.

The air warmed by horses rises and leaves the stable, so long as the provision is made for a high extraction point. If there is no extraction in the highest point of the stable, or if the roof is not insulated, the warm air will cool down and be recirculated in the stable.

Properly placed and adequately sized roof and wall vents are essential to create a healthy environment. Just opening a door will help, but may not provide proper ventilation. Slatted arrangements as seen in cattle barns are also excellent. Walls and ceilings should ideally provide insulation to reduce condensation and should be constructed from brick or a double layer wood partition with an air gap. Floors must be impervious (ideally concrete) and sloped to allow drainage from the stable.

Modifications to traditional stable designs have generally resulted in poor air hygiene in modern stables. Most owners have an irrational fear of draughts, which has meant that ventilation is often half of the recommended 8 air changes per hour. Furthermore, many of the roofs in prefabricated wooden stables are too low. As a result, most modern stables have at least 3 times the maximum levels of respirable particles recommended for humans and at least twice the maximum amount of ammonia recommended for animals. In stables where deep litter, dusty and moulded bedding and feedstuffs are used, the concentration of particles and noxious gases is higher still. Tin roofs cool the air down too quickly, which means that it drops and is recirculated in the stable.

## Conclusion

If you are lucky enough to build new stables, ventilation should be paramount in the design. Many existing stables can be improved to be healthier. Care about what your horse eats and it's bedding should lead to thriving horses. There is no sense in waiting for a horse to develop a disease before making some of those changes in management. If you want to enjoy your horse for as long as possible, **START PROVIDING CLEAN AIR TODAY.**

RAO and infectious lung problems can be avoided or treated by providing clean air. Do not accept coughing as a normal part of your horse's life. Treatment, particularly of young horses, is vital to avoid long-term consequences.