



EQUINE ASTHMA SYNDROME

ENVIRONMENTAL MANAGEMENT & PREVENTION

INTRODUCTION

The management and prevention of mild/moderate (IAD) and severe equine asthma (RAO and SPRAO) involves three key areas: environmental control, use of corticosteroids to reduce inflammation, and administration of bronchodilators to relieve respiratory distress. The same three areas must be managed at all stages of the disease, from a horse with a chronic cough to a horse with obvious respiratory distress.¹

Several equine respiratory disorders are directly caused by or exacerbated by the inhalation of airborne dust with the most widely recognized example being severe equine asthma. Environment is considered the single most important contributor to equine asthma, with exposure to and inhalation of airborne noninfectious respirable agents (defined as the portion that is of a sufficiently small aerodynamic size [usually with a diameter of <5 µm] to allow penetration of the peripheral [smaller] airways), usually organic

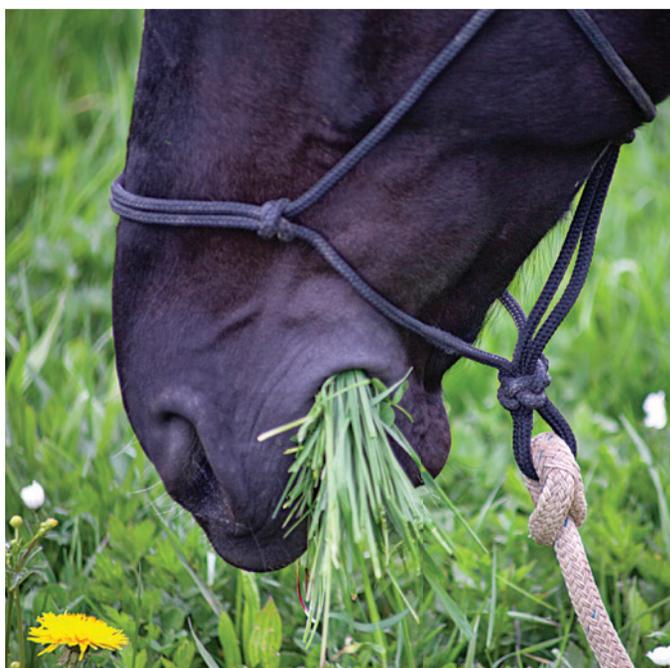
dust-derived, and allergens playing a key role in disease development and progression.¹ Organic dust contains antigens, endotoxins and a variety of particulates.

The mainstay in treatment and long-term management of severe asthma consists of decreasing the amount of dust and allergens to which the horse is exposed. These components (dust, allergens, etc.) are capable of initiating airway inflammation and together may work synergistically to induce airway inflammation in the horse.

Many affected horses live comfortably for long periods in a low-dust environment without medical therapy. However, because of the recurrent nature of the disease, any exposure or environmental increase to allergens can provoke an episode of airway obstruction and inflammation resulting in clinical disease exacerbation and progression of disease.

ENVIRONMENTAL CONTROL

Simply stated, environmental control involves reduction or elimination of dust exposure in the environment. Diet is the primary source of dust along with bedding; therefore, these should be addressed first. It is imperative to realize that many horses affected by severe asthma are extremely sensitive to the agents that provoke airway inflammation. In a horse with severe asthma in clinical remission, a few minutes' contact with hay may be sufficient to induce attacks of coughing and heaves that last for days.^{1,2} Even dirt paddocks and dusty roads near asthmatic horses may exacerbate the disease. Correct modification of both the diet and environment are key to successful long-term management of horses with severe asthma.



Green pasture (turn out) if barn-associated severe asthma

Several types of management changes are effective in reducing the clinical signs and airway obstruction¹:

- ◆ Green pasture (turn out) if barn-associated severe asthma
- ◆ Horses must remain outdoors at all times (barn-associated asthma)
 - No hay or round bales
 - Round bales are potentially high in endotoxins and organic dust content
- ◆ The use of hay nets results in³:
 - Four times higher exposure to particulates compared to ground feeding hay
 - Three times higher exposure to endotoxin in hay compared to ground feeding hay
- ◆ Feed a complete pelleted diet



Two horses eating hay

“ The mainstay in treatment and long-term management of severe asthma consists of decreasing the amount of dust and allergens to which the horse is exposed. ”

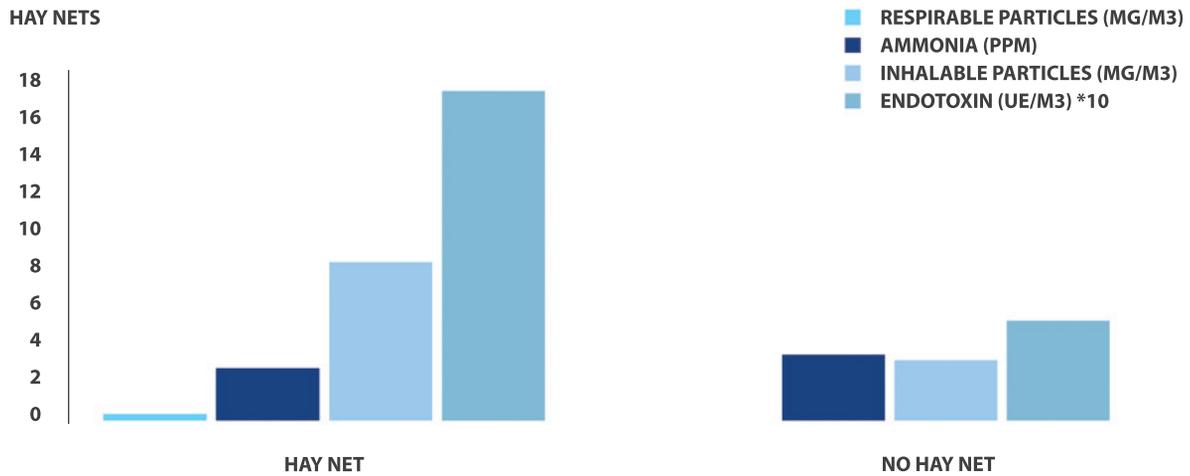
If pasture is not available:

- ◆ Feed a complete cubed or pelleted diet
- ◆ If feeding complete cubed or pelleted diet is not an option:
 - Soak hay (prevents worsening of lung function but may not result in improvement)
 - Ground feed hay
 - Grass silage is very effective in maintaining normal airway function
- ◆ The improvement in lung function provided by silage or a pelleted diet may reduce the dose of corticosteroids or bronchodilator necessary to return the horse to useful function

continued

EXPOSURE TO DIFFERENT TYPES OF RESPIRABLE DUST IN THE BREATHING ZONES OF HORSES FED HAY OFF THE GROUND VS. FROM HAY NETS.

(Modified from Ivester 2014)



Environmental management for stalled horses that do not have access to pasture:

- ◆ Must be kept in a clean, well-ventilated, low-dust environment
- ◆ Avoid storing hay above stalls in loft
- ◆ Minimize/eliminate sweeping floors when horses are stalled
- ◆ Sweep floors when horses are turned out
 - Dampen floor prior to sweeping
- ◆ Allow time for airborne dust to settle before returning horse to stall
- ◆ Straw is not recommended for bedding
 - Use low-dust bedding
 - Chopped paper, cardboard or wood shavings

Barn asthma exacerbations may be increased during heatwaves. Worsening of pulmonary function in horses with severe asthma stabled under dusty conditions on days with high barn temperature have been reported.⁴ A significant correlation has been identified between maximum daily temperature and airborne pollen concentrations.

Horses suffering from summer pasture asthma are likely triggered by outdoor molds and pollens, with exacerbations during hot and humid weather conditions; these horses are more likely to benefit from indoor housing in clean and well-ventilated barns.¹⁴ In California, a form of summer pasture-associated asthma was observed in horses eating alfalfa cubes and was treated by changing to another form of forage.

The management of the horse with SPRAO requires removal from the offending pasture and stabling the horse in a cool stall with clean hay or pelleted feed.

SUMMARY

Preventing exposure to the inciting airborne agents results in clinical disease remission as the source of the inflammatory response is avoided; however, studies have shown that horses with severe asthma maintained in a dust-free environment, although asymptomatic, have persistent airway inflammation.

Therefore, persistence with environmental management is essential. Maintaining strict environmental control for horses with equine asthma is imperative for managing the clinical signs and slowing disease progression. ■

References

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4. Bullone M, Murcia RY, Lavoie JP. Experimental and Basic Research Studies. Environmental heat and airborne pollen concentration are associated with increased asthma severity in horses. *Equ Vet J.* 2016;48:479-484.

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