

# Equine Asthma

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## **What is it?**

Many terms and abbreviations have been used in the past decade for a variety of inflammatory and hyper-reactive airway conditions causing cough in the horse.<sup>1</sup> The American College of Veterinary Internal Medicine has proposed that these various syndromes can be classified as equine asthma. So what falls under equine asthma? The two most commonly seen diseases that fall under equine asthma are known as inflammatory airway disease (IAD) and recurrent airway obstruction (RAO).

### **Inflammatory Airway Disease (IAD):**

This disease is typically seen in young horses and most commonly is characterized by exercise intolerance, intermittent cough, and horses that are normal at rest.

### **Recurrent Airway Obstruction (RAO):**

This disease is also known as heaves, broken wind, and chronic airway reactivity, and is characterized by airway narrowing (bronchoconstriction), mucus production, and bronchospasm (uncontrolled contraction of the airways). These horses are not normal at rest, unlike horses with IAD. These horses generally have an increased respiratory rate and/or cough at rest, nasal discharge, exercise intolerance, and respiratory difficulty. The classic "heave line" can be seen in these horses along the bottom of the ribs and is from hypertrophied abdominal muscles compensating for respiratory difficulty and the extra "work" necessary to breath adequately.

The term COPD (chronic obstructive pulmonary disease) is no longer used to describe this condition as COPD in humans is different from RAO in horses.

There are two forms of RAO:

1. Barn-associated type: Seen in stalled horses fed hay. Most commonly worse in Winter and Spring
2. Summer pasture-associated obstructive pulmonary disease (SPAOPD) (aka summer heaves or pasture associated heaves): Seen in horses living out on pasture more commonly in the Southeast. Most severe in Summer or early Fall.

### **What causes it?**

IAD: It is unknown what causes IAD. It is thought that it is due to repetitive pulmonary bleeding (Exercise Induced Pulmonary Hemorrhage), inhalation of aerosolized particulates (endotoxin, hay dust), gases in the stable or environment, and possibly to release of inflammatory mediators from exercise.

RAO: Multiple theories exist as to what causes RAO. This disease is similar to asthma in people and it is thought that the disease has both allergic and inflammatory components. The most common allergic triggers for RAO are mold, organic dust, and endotoxin present in hay and straw. In addition to an allergic component, there seems to be a genetic component. The incidence of RAO in horses with healthy parents is approximately 10%, and this increases to 44% if two parents are affected by the disease.<sup>1</sup>

### **Diagnosis:**

History, clinical examination, and diagnostics in the form of endoscopy, bronchoalveolar lavage (BAL), thoracic radiographs, and ultrasound are often used in the diagnosis of RAO and IAD. The cells and fluid retrieved from BAL are examined under a microscope and an increased number of white blood cells called neutrophils is suggestive of RAO. Increased numbers of mast cells and eosinophils (a type of white blood cell) can suggest IAD.

### **Treatment:**

RAO: Unfortunately this is a chronic disease and requires life-long management. It can not be treated and cured in a single setting.

1. Environmental: The most important treatment is to reduce environmental and dietary exposure to dust and mold. Round bale hay is high in endotoxin and dust content and should be avoided. Horses with barn associated RAO should be maintained on pasture full time whereas horses with pasture associated RAO should avoid pasture except for winter months. Horses that must be stalled should be kept in a clean, well-ventilated environment. It is recommended to avoid storing hay above stalls, minimize sweeping when horses are in the stalls, and to avoid exercising in dusty rings. Straw is not recommended as bedding for RAO horses. Low dust bedding such as chopped paper or cardboard can be effective.

Soaking hay and feed in water prior to feeding is recommended in mild cases to reduce dust. Hay steamers are a great way to reduce mold and dust in hay as the high temperatures help to kill any mold on the hay. Severely affected horses may have to be fed strictly a pelleted feed and have all hay removed from their diet.

2. Medications: Systemic corticosteroids and aerosolized bronchodilators are often used in treatment of RAO.

IAD: The treatment of this disease is similar to RAO except for the fact that Furosemide (a diuretic) and nasal strips may be added to cases that have EIPH (exercise induced pulmonary hemorrhage).

**Prognosis:**

Equine asthma can be a labor intensive and frustrating disease to treat. It requires owner dedication to life-long management and treatment. However, many horses with environmental and medical management go on to perform in all kinds of disciplines.

**References:**

1. House, Amanda. "Recurrent Airway Obstruction (RAO) in the Horse." 2017 American Association of Equine Practitioners. <https://aaep.org/horsehealth/recurrent-airway-obstruction-rao-horse>