



Risk Factors To Equine Respiratory Health

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There are a variety of risk factors that can contribute to respiratory health problems in horses. Often it is not just one factor that causes pulmonary issues, but a combination of one or more potential risks that should be reviewed and corrected if necessary. These primary risk factors are usually found to involve environmental factors, diet and nutrition, hygiene, and the overall health of the horse, and should all be examined closely.

ENVIRONMENTAL FACTORS

In order to prevent or reduce the risk factors contributing to respiratory disease, several important steps can be practiced at a horse facility. Maintaining air quality should be the first priority as a preventative measure in respiratory risk factors. Horses should have as much access to the outside as possible⁴. Institute an ideal ventilation system in the barn to bring in fresh air and to exhaust stale air⁷ by installing fans and vents or simply by opening windows and doors of the barn. Machinery, such as tractors, driven in and out of barns to assist with stall cleaning or raking of the arena, contributes to build-up of carbon monoxide fumes within the stable⁷. Minimize the use of these machines within the barn and arena, and if possible, use wheelbarrows or muck buckets to remove manure from the stalls.

Next, minimize dust accumulation within the barn by using a good quality, dust-free bedding⁷, de-cobweb the barn regularly, minimize human activity, such as raking and sweeping while horses are inside, and eliminate the use of leaf blowers within the stable⁹. Hay can be watered down or steamed to rid it of mould spores and dust particles before feeding to horses⁴. Hay should also be stored in a separate building from where horses are housed to reduce air pollutants and decrease fire hazard⁷. Try to avoid feeding horses on a surface where they can consume and inhale sand, dirt or dust particles into their respiratory system⁶. Ensure the area where horses are exercised is maintained and dust levels are kept to a minimum. This can be initiated by maintaining the type of footing in the arena with the use of harrowing, watering, oiling or providing special alternative footing, like rubber, to the dirt floor¹. It may even be wise to have the barn and arena spaces air tested, the airspace calculated, and for humidity and temperature to be monitored regularly. This way air quality can be improved and will be healthier for the horses enabling them to feel, look and perform better⁷.

DIET, NUTRITION & HYGIENE

Each horse owner, in consultation with their attending veterinarian, should develop a vaccination program appropriate for the horse and its

lifestyle¹¹. However, vaccination is not a substitute for good management practices within the barn and throughout the horse facility. As respiratory infections spread through horses by direct contact between animals and handlers (through inhalation) and by contaminated surfaces, it's imperative that new arrivals, symptomatic horses and even those returning from events such as shows, the racetrack or sales should be isolated and quarantined from other healthy horses on the property and this should be practiced daily¹¹.

All horses in the barn should have their own water and feed buckets which are disinfected on a regular basis along with shared water troughs. Scrub fences, stall walls and anything that may have been contaminated by respiratory secretions with disinfectants like phenolic products, iodophors, chlorhexidine or glutaraldehyde¹⁰. When traveling to shows, reduce the horse's exposure to respiratory disease by bringing their own feed, buckets and equipment while minimizing the amount of time in shared stalls or pastures at the show grounds⁵. Stalls should be cleaned frequently to reduce ammonia levels, and apply 1 to 2 pounds of hydrated lime or clinoptilolite to the stall floors and sawdust bedding after cleaning to reduce ammonia levels⁸. Ensure the manure pile is located a safe and healthy distance away from housed horses so they cannot inhale the fumes.

In summary, these are the risk factors that contribute to equine respiratory conditions and diseases and all should be explored fully to minimize the potential for illness and disease.

Environmental Factors

Outdoor Pollutants	Outdoor related toxins or detrimental chemical agents that affect the respiratory system
Indoor Pollutants	Indoor related toxins or detrimental chemical agents that affect the respiratory system
Facility Management	Affects of the lack of hygiene and cleaning regimes at horse facilities
Seasonal	Temperature and humidity ranges that negatively impact respiratory function
Transportation	Trailer shipping scenarios
Pasture Management	Overcrowding and pasture maintenance

Diet & Nutrition

Quality	Feeds and hay as well as state of water source
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Horse's Overall Health

Immunity	The ability for the horse's body's cells to combat invading pathogens that interrupt or infect respiratory function
Genetics	Congenital malformation
Age	Young horse vs. mature adult vs. senior horse
Exercise	Horse's fitness level and body temperature

This large variety of risk factors highlights the increased potential of exposure to causative agents primarily through airborne and through direct and indirect contact between horses¹. Although there are many causes of respiratory conditions and diseases, the more common contributors are:

Allergens	<ul style="list-style-type: none"> • SPAOPD (Summer Pasture Associated Obstruction Pulmonary Disease) • Mould Spores • Dust Particles
Infectious Diseases of Upper and Lower Respiratory System	<ul style="list-style-type: none"> • Viral <ul style="list-style-type: none"> o EHV (Equine Herpesvirus) <ul style="list-style-type: none"> ▪ typically types EHV-1 & EHV-4 o Equine Influenza Virus <ul style="list-style-type: none"> ▪ typically types A-equi-1 & A-equi-2 o EVA (Equine Viral Arteritis) o Equine morbillivirus pneumonia (acute viral respiratory infection) • Fungal <ul style="list-style-type: none"> o Guttural pouch mycosis • Bacterial <ul style="list-style-type: none"> o Guttural pouch empyema o Strangles (<i>Streptococcus equi</i>) o Pneumonia (<i>Rhodococcus equi</i>) • Parasitic <ul style="list-style-type: none"> o Roundworm o Lungworm
Non-infectious Conditions	<ul style="list-style-type: none"> • RLN (Recurrent laryngeal neuropathy) • DDSP (Dorsal displacement of the soft palate) • Epiglottic entrapment • EIPH (Exercise-Induced Pulmonary Hemorrhage)
Inflammatory Conditions	<ul style="list-style-type: none"> • Heaves/COPD (Chronic Obstructive Pulmonary Disease)/RAO (Recurrent Airway Obstruction) • IAD (Inflammatory Airway Disease) • Pharyngeal lymphoid hyperplasia • Arteroid chondritis
Congenital Malformations & Abnormalities	<ul style="list-style-type: none"> • NMS (Neonatal Maladjustment Syndrome) • NIE (Neonatal Isoerythrolysis) • Wry Nose • Guttural pouch tympany • Nasal septal deviation • Choanal atresia/stenosis • Tracheal collapse • Cleft palate • Laryngeal web • Perilaryngeal Accessory Bronchial Cyst

It can be said that humans have worsened the overall respiratory health in the equine population. Such man-made scenarios like outdoor pollutants, indoor horse boarding facilities, as well as poor hygiene, and lack of barn maintenance have introduced several allergens, congenital abnormalities, inflammatory conditions and infectious respiratory problems. These conditions and diseases infect horse populations through methods of airborne transmission, and indirect and direct contact, thus management practices should be developed and initiated in order to prevent or at least decrease the spread of such respiratory diseases and conditions amongst horses.

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