

## Ask the vet

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### **Exercise Induced Pulmonary Hemorrhage (EIPH)**

*My horse had a bloody nose after exercise. Should I be concerned?*

Bleeding from the nose after exercise is most likely caused by exercise induced pulmonary hemorrhage, but other conditions such as atrial fibrillation (an irregular heart rhythm), or foreign bodies, tumors, fungal infections, or trauma of the nasal passages can also result in bleeding after exercise. If you see blood from your horse's nose after exercise, you should contact your veterinarian and schedule an examination. Ideally, the horse should be examined within one hour of the episode, or if not possible, after a hard work in order to most accurately diagnose the problem.

*What types of horses are affected by EIPH?*

All horses that engage in intense exercise experience EIPH. Thoroughbred flat racers and steeplechasers, polo ponies, and eventers are most commonly affected, but again, any horses exercising intensely will experience EIPH. Fortunately most cases are mild and only a small percentage (<5%) will show outward signs of blood at the nostrils.

*What are the signs of EIPH?*

The classic sign of EIPH is blood at the nostrils. This occurs only in a small percentage of cases (<5%). Most horses that bleed are asymptomatic or show signs of poor performance. Any horse with a recent onset of poor performance that cannot be attributed to other causes should be examined for EIPH.

*What causes EIPH?*

There are two main theories as to why EIPH occurs. The first is thought to be due to an increase in the blood pressure in the pulmonary circulation that exceeds the strength of the pulmonary capillaries. These fragile capillaries rupture and release blood into the airways. Any concurrent lower airway disease, such as Inflammatory Airway Disease or Heaves can cause inflammation and add to capillary fragility. A more recent theory states that the bleeding is due to the anatomy of the running horse. The action of running causes the shoulders to compress the ribcage, thus sending a wave of pressure to the tissue of the lung in the dorsocaudal (upper back) region. The pressure wave causes the tissues to tear and bleed. The two different theories may explain why some horses respond to treatment for high blood pressure while others respond to a change in footing.

*How do you diagnose EIPH?*

EIPH is diagnosed based mainly on endoscopic examination. The exam is ideally done with 30-60 minutes after exercise. A grading system has been developed to classify the severity of the bleeding.

Grade 1: Flecks of blood in the trachea

Grade 2: More blood than Grade 1, but less than a continuous stream

Grade 3: A continuous stream smaller than half the width of the trachea

Grade 4: A continuous stream greater than half the width of the trachea

Grade 5: Airways full of blood, visible at nostrils

If you are not able to have your horse examined immediately after exercise other tests can be performed to help diagnose EIPH. A bronchoalveolar lavage (BAL) samples the cells in the lungs. The presence of hemosiderophages (cells that contain hemosiderin, a component of blood) is indicative of pulmonary hemorrhage. A tracheal wash, which samples the cells in the trachea, can be performed as a screening test, but if the blood has not made it up to the trachea, some cases may be missed. Radiographs of the lungs can be performed to identify consolidation of the dorsocaudal lung fields. However, radiographs cannot differentiate between a new episode and previous ones. They are helpful to determine if lung scarring or excessive fluid has occurred, especially in the case of poor performance.

*What effect can EIPH have on my horse's career?*

Many horses perform well despite having episodes of EIPH. Some horses will be affected acutely during the episode due to the decrease in the ability to get oxygen and the sensation of blood in the upper airways. Others will experience chronic poor performance due to lung scarring and an inability to get enough oxygen to perform up to expectations.

*How do I prevent/treat EIPH?*

Research has shown that nearly 100% of horses experience EIPH when working at maximal intensity. However, by making sure that your horse's lungs are healthy, you are taking steps to decrease the chance of EIPH shortening your horse's career. Ensure that there is good ventilation in the barn if your horse is kept in a stall. Decrease dust and other allergens. Treat any underlying lung disease such as Inflammatory Airway Disease or Heaves. If your horse experiences EIPH a period of rest should be given. Usually 4 weeks is recommended in order to allow the lungs to heal, up to 3 months for significant bleeding. If there was significant bleeding antibiotics should be given to prevent secondary bacterial infections. Antiinflammatories can be given for a short period to help decrease inflammation in the lungs and potentially decrease scarring. These should be given only after any active bleeding has stopped. There are a myriad of medications and products on the market for the treatment of EIPH. Furosimide, a diuretic, is most commonly used. Given 2-4 hours prior to exercise, it has been shown to decrease pulmonary blood pressure and prevent bleeding episodes. Unfortunately, not all horses respond to furosemide. Other popular treatments that have been tried include estrone

sulfate, aminocaproic acid, nasal strips and changing the footing that the horse works on. Again, unfortunately, some horses do not benefit from any of these treatments. Research is ongoing to investigate novel drugs and treatments for EIPH.

*Can I use furosemide during an USEF or FEI competition?*

No, it is not allowed under USEF or FEI medication rules. Under FEI medication rules it is not allowed in the system. Under USEF rules it would be allowed but not closer than 24 hours to competition with a medication form filled out. Unfortunately this time frame is too long to be helpful for EIPH. It is not allowed closer to competition because of the concerns of a rapid fluid weight loss and an advantage for horses receiving it. This is the same reason that some state racing jurisdictions don't allow furosemide or Lasix and others make people using it declare its first time use.