

Background

- 90% of Thoroughbreds and Standardbreds bleed in the lower airways and air sacs when galloped or raced hard, particularly for sustained periods. Signs include coughing and attempts to swallow after exercise and 'hitting the wall' up the home straight, losing speed to drop back, and then struggling to maintain speed to finish.
- About 2% of horses show blood at the nostrils, ranging from a drop or dribble, to a 'frothy flood' after a hard gallop. 98% of horses that bleed are 'hidden bleeders' - bleeding to varying degrees into the lower air sacs. Up to 1 - 1 ½ litres of blood can be lost before it is visible in the windpipe on scoping or at the nose. It is best to scope a horse that you suspect may have bled within 6-12 hours after a race or hard hit out.
- Most horses bleed in the home straight of a race when all-out demands increase blood pressure and concussion stress on already weakened and fatigued lung structural tissue. Blood pressures in the pulmonary artery of 140 mmHg have been recorded in racing horses, 3 ½ times the pressure in racing greyhounds or human sprint athletes.
- Once a horse bleeds, the structural damage to the blood vessel walls and the intense inflammatory reaction resulting from blood cells being trapped in the lower airways, increases the risk of repeated bleeds if a horse is continued in racing or is raced regularly. Horses over 6 years of age that have bled previously have an increased chance of repeat bleeds due to permanent lung damage.

Management

There are a number of ways to reduce the risk of bleeding in a horse, particularly once a horse has bled previously.

1. Treat Lower Airway Inflammatory Conditions

Ensure that any lower airway disease or inflammatory reaction is treated prior to returning to training. This is best achieved by giving a course of an antibiotic/mucolytic preparation, such as Bromotrimidine® powder, over a 10-14 day period as soon as possible after a 'bleed' to assist in controlling infection and aid clearing of mucus and debris from the lower airways.

2. Facilitate Lower Airway Drainage

Feed the horse below chest height to encourage lower airway drainage, if possible on the ground in an outside yard. This is especially important for the 48 hours following long distance travelling or a race to help drainage of fluid and inhaled bacteria from the lower airways, and certainly following a possible 'bleed' in the lungs.

3. Reduce Dust Inhalation

Avoid dusty bedding - dampen sawdust/shavings, avoid straw bedding with mould. Do not turn bedding quickly to release dust or 'fluff up' a straw bed. Always remove the horse from the stable when digging out or topping up bedding, leaving at least 30 minutes for dust to settle before returning the horse.

4. Dampen all feeds

Moisten grain and chaff mixes with water, molasses, apple cider vinegar and/or oil to bind dust. Dampen hay by immersing it in clean water for 3-5 minutes and then air drying it for 30-60 minutes before feeding. Feed the hay below chest height to reduce inhalation of dust and encourage lower airway drainage whilst eating.

5. Warm-up before Exercise

Ensure adequate warm-up for at least 10 minutes before fast exercise and warm-down after exercise, especially on cold mornings. Plan to work the horse in the predawn period before sunrise, or alternatively after the dawn chill, to avoid cold air as the inversion layer comes to ground level. Also try to avoid working a horse fast if the weather is hot and humid.

6. Limit Swimming

Do not allow the horse to swim hard - limit to a short swim for 60 seconds with a 60 second rest to allow the blood pressure to reduce before swimming another 30-45 seconds to limit the bursting effect of sustained blood pressure and deep breathing on weakened lung arteries and collagen fibres. It is preferable not to swim horses with a prior history of bleeding.

7. Training Program

Bleeding is thought to be caused by the combined effect of rupture of the collagen fibre interstitial or 'sandwich' layer between the blood vessel walls and lung air sacs by high blood pressure during all-out galloping. It is also postulated that concussion waves transferred from a compacted track surface up the front limbs into the chest cavity may bruise lung tissue and increase the risk of damage to these structural flexible fibres. The training program can be modified to reduce both these effects.

- Train using slow long distance aerobic exercise up to a fast canter during the initial 6-8 weeks of training to gain cardiovascular and muscle fitness, as well as allow the musculoskeletal system to adapt to exercise.
- Plan short ½ pace hit outs over 400-500 metres initially to reduce concussion and blood pressure elevations - repeat 2-3 times weekly. Try to work on a softer surface of the track out from the rail to reduce concussion.
- Introduce all-out 'hit-out' sprint-ups over 300-400 metres after a warm-up, slowing down to trotting or at a controlled canter or trot for half a lap between to allow recovery, then repeat the all-out sprint over 300-400 metres to finish the work, then cool down. This training method will reduce the length of time that peak blood pressure has to be sustained and helps to limit the concussion waves transferred up the front limbs. Repeat the sprint-ups 2-3 times weekly. Avoid long sustained all out speed work - leave this to race day. Studies have shown that as long as musculoskeletal strength and aerobic fitness is maximised by the early conditioning work, maximal fitness can be maintained by two short sprints, with a short recovery period of 1 - 1½ minutes between them on the fast work mornings every alternative day. Remember to limit swimming to two short 30-45 second swims with a resting period between.

- Provide a nutritional supplement to help maintain collagen fibre strength such as **Kohnke's Own BCS™**. The combination of bioflavonoid compounds (hesperidin powder), Vitamin E and Vitamin C have a role in providing structural compounds which are low in grain and roughage based diets to maintain repair and maintenance of collagen fibres in the structural flexible layer between the blood vessel walls and lung air sacs. Studies have shown that zinc, vitamin A, vitamin B6 and organic silicon are also important raw materials to maintain collagen integrity and assist repair processes. The high amino acid content in **BCS™** provides amino acids necessary to help maintain the structural strength of blood vessels and lung air sac walls. The combination of all these nutrients provides the structural materials for collagen strength and flexibility.
- Use frusemide (diuretic) prior to all-out training gallops. Administer frusemide injection 2 ½ - 3 hours (very early in the morning) before fast work to allow it time to reduce tissue fluid (oedema) and plasma volume in the lung tissue before galloping, thereby reducing airway and pulmonary vascular pressures. Frusemide must not be administered within 7 days of racing. Consult your own vet for specific advice.
- Observe the horse's reaction to training. If it pulls up distressed, reduce the speed of work for 3-5 days. If the horse 'hits the wall' up the straight or loses speed, have the horse scoped to check for a 'bleed' within 6-12 hours after the 'hit out' or race.
- Space the horse's races out to every 3 weeks if possible to further reduce lung stress.
- Withdraw water 6-8 hours before racing. If the horse is dehydrated or sweats during traveling, only allow it 1-2 litres of water to drink before racing, just enough to rehydrate it without adding too much extra water ballast before a race.
- If the horse bleeds again from both nostrils within 4-6 months, it is unlikely to be able to continue in training and should be retired, especially if it is over 6 years old and has had a previous severe 'bleed' out of the nostrils.

Is Bleeding Inherited?

Although it has been observed that certain types of big chested, 'hard' pulling and over-energetic horses appear to have an increased risk of bleeding in training, there is no scientific evidence to link it to an inherited risk in a bloodline of horses. The environmental conditions, especially hot humid climates, over galloping, concurrent airway disease, excessive swimming and inhalation of very cold air during early morning speed workouts without an adequate warm-up, all contribute to the risk of bleeding. Horses with a previous history of a low grade bleed have a very high risk of bleeding more severely.



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FREECALL 1800 112 227 - www.kohnkesown.com - email: info@kohnkesown.com