The eyes, which are a prominent feature of the horse’s face, are positioned on either side of the head, not in front as with dogs and cats. The horse has the largest eye of all land mammals, and because of their large size and lateral position, horse eyes are greatly exposed and susceptible to eye injury and disease.

Another predisposing factor for eye problems in the horse is the environment in which it lives. Often this is contaminated with vegetable material, dust, wind, parasites and microorganisms, including bacteria and fungi. Sharp edges from wire, fences, buckets and other hardware are also common hazards.

All these factors have the potential to harm the eye either as an acute injury or as chronic irritation. If left undetected and untreated, these eye conditions can lead to a painful eye and sometimes blindness. As a standard management practice horse owners should monitor their horses’ eyes regularly for early signs of disease and if present, seek immediate veterinary attention.

**WHAT DO HORSES SEE?**

Because the horse feeds on plants (herbivore), it represents prey for flesh eating animals so it has evolved with several unique features to give it a competitive advantage in adapting to its ecological niche. For instance, the horse has the ability to graze with its head down while simultaneously scanning the horizon for predators in a nearly complete sphere of vision. It does this by using one-eyed (monocular)

**THE VISUAL FIELD OF THE HORSE**

The horse has an exceptionally wide field of vision (almost a full sphere around its head) due to its laterally placed eyes. There is a binocular field of vision in front (65°) and a monocular field of vision (146°) on both the left and right sides of the head. The blind spot is directly behind the head.

vision on either side of its head, while at the same time using two-eyed (binocular) vision in front. When the horse lifts its head to view an object directly in front, both eyes view the object simultaneously with binocular vision, similar to the experience we share with other primates, dogs and cats. The horse also has a few small blind spots: one directly down its nose and another behind its head.

Until the 1990’s, very little was known about vision in the horse, as most of the knowledge was limited to how primates, cats and rabbits saw. Studies of the anatomy and physiology of the light detecting nerve cells (photoreceptors) within the retina of the horse, have now revealed what it might see. The horse eye is very good at detecting motion or moving objects, which would be a great advantage for an animal at risk of being hunted. Furthermore, the horse eye is efficient at detecting objects under a range of light intensities, from bright day to dusk to dark night conditions, thereby giving the horse the advantage of grazing continuously with the ability to detect predators.

**COLOURED VISION**

Contrary to former opinion, the horse does see colour, however unlike the human trichromatic colour vision, the horse has dichromatic colour vision. This means the horse does not see the full spectrum of colours that humans see, but instead it sees these same objects in different shades and combinations of yellow, blue and grey.

The following normal landmarks (structures) that can be easily recognised by the horse owner: upper and lower eyelid, eyelashes, third eyelid, lateral and medial canthus, lacrimal caruncle, cornea, pupil, corpora nigra (granula iridica) and iris.

This is similar to the visual experience of a red-green colour blind person. One might then question the benefit to the horse of red and green coloured obstacles featured in jumping, eventing and other sporting courses.

**LANDMARKS OF THE HORSE EYE**

There are many similarities between the structures of the horse eye and those in other animals. Although not all structures can be seen with the naked eye or without specialized ophthalmic equipment, there are many important landmarks that the horse owner can learn to identify.

The normal eye (eyeball, globe) should be open and the eyelids should blink occasionally. The upper eyelid has eyelashes (cilia) that point outwards. The lower eyelid does not have eyelashes. The upper and lower eyelids join at the outer corner (lateral canthus) and at the inner corner (medial canthus) with the lacrimal caruncle. The third eyelid is located at the medial canthus and acts as a window wiper to help distribute tears and dislodge debris from the surface of the eye. It is usually pigmented, but may be pink in some horses (eg Paints and Apoloosas). The pink membrane (conjunctiva) lines the inner surfaces of the eyelids and the
third eyelid and this structure can be seen when the eyelids are flipped over. The cornea, which should be perfectly clear and shiny in appearance, is like a window allowing maximum light to penetrate the eye. The pupil is oval shaped and smaller (constricted pupil) when the eye is exposed to bright light and it is larger and rounder (dilated pupil) when the eye is in darkness. On top of the upper margin of the pupil is the corpora nigra (or granula iridica), a nodular structure that is believed to act as a sunshade protecting the eye from bright light when the horse’s head is down grazing. However the lens is positioned behind the pupil and is normally not visualized unless it is diseased. By recognizing these normal landmarks, the horse owner learns to identify what is abnormal, how to communicate about these abnormal structures to the veterinarian and to appreciate whether the disease is improving or worsening.

EYE PROBLEMS – WHAT TO LOOK FOR

Ideally, the horse should be checked daily and at each opportunity the eyes should be examined from a distance: both from the front of the horse and from either side of the head. It is important always to compare the appearance of one eye with the other. Any signs of excessive blinking or closing of the eyelids could indicate a painful eye. Another sign of pain is a change in the position of the eyelashes of the upper eyelid; these lashes normally point outwards, but in a painful eye they may point downwards. The eye can be checked for any discharges and the type of discharge characterised as watery, mucky (mucoid), clear, yellow (purulent) or red (bloody). The face, eyelids, third eyelid or conjunctiva can also be checked for any swelling. The cornea and pupil should be perfectly clear and any signs of cloudiness, blemishes or swellings (masses) are considered abnormal. An eye with normal vision blinks in response to a menacing gesture (waving of the hand or shining a bright light); failure to respond could indicate a problem with vision.

SEEK ADVICE

Many eye diseases in the horse can worsen quickly. Therefore if an eye problem is identified, it is advisable to notify a veterinarian as soon as possible and arrange for the horse’s eye to be examined - ideally on that same day. It is better to examine and treat these diseases early and thus save the eye from further pain and potential blindness. It is also very important that owners do not treat eye conditions themselves, as many eye problems in horses have deteriorated from inappropriate or contraindicated use of medications, such as eye drops, ointments and oral drugs.

When contacting the veterinarian, it is important to give a concise history, the age and breed of the horse; when the eye problem was first noted; if there were any previous eye problems or medications and mention any previous illnesses or injury. It is also most helpful, if the owner can identify which structures of the eye are abnormal and report any change of vision.

Continued
When the veterinarian visits the horse on the property there are several ways in which the horse owner may assist. An eye examination must be performed in both light and dark conditions, therefore, a clean, quiet stall or stable that can be darkened is ideal. Extra lighting can be provided from power or battery-operated lights and extra darkening can be achieved with black cloth or garbage bags pinned up against windows and doorways. When access to a stable is not available, the eye can be examined with a black cloth over the heads of both the veterinarian and the horse to create a darkened environment. A small stool may be required for the examination if the horse is tall.

Usually, the horse will need to be sedated for a detailed eye examination and often the head will droop downwards making examination a little tricky. In this situation the horse’s head needs to be held up by another person, or it can be propped up with a head-rest made from a stack of four to six hay bales. A clean blanket or cloth can be placed on top of the bales. If the eye is painful, additional injections may be needed around the eye to provide extra pain relief and muscle relaxation for the examination. When the eye disease is serious and needs either intensive medical therapy or surgery, the horse may need to be floated to a dedicated equine veterinary hospital. Referral to a specialist veterinary ophthalmologist may also be offered.

**COMMON EYE PROBLEMS**

Trauma is a common cause of eye problems in the horse, especially from sharp objects - bucket handles, wire, splinters, hay stalks from hanging hay nets - and blunt injury - kicks from other horses, knocking up against posts or floats. Infections can become contaminated from vegetable material as this provides an entry for bacterial and fungal microorganisms into the eye. About 1-2% horses may lose vision in either one or both eyes from these common conditions.

Eyelid lacerations are common problems and these wounds should be stitched together as soon as possible to give a good cosmetic and functional outcome. Failure to repair will cause problems with eyelid closure and lead to corneal disease. Under no circumstances

---

**Eyes Right continued...**

When the veterinarian visits the horse on the property there are several ways in which the horse owner may assist. An eye examination must be performed in both light and dark conditions, therefore, a clean, quiet stall or stable that can be darkened is ideal. Extra lighting can be provided from power or battery-operated lights and extra darkening can be achieved with black cloth or garbage bags pinned up against windows and doorways. When access to a stable is not available, the eye can be examined with a black cloth over the heads of both the veterinarian and the horse to create a darkened environment. A small stool may be required for the examination if the horse is tall.

Usually, the horse will need to be sedated for a detailed eye examination and often the head will droop downwards making examination a little tricky. In this situation the horse’s head needs to be held up by another person, or it can be propped up with a head-rest made from a stack of four to six hay bales. A clean blanket or cloth can be placed on top of the bales. If the eye is painful, additional injections may be needed around the eye to provide extra pain relief and muscle relaxation for the examination. When the eye disease is serious and needs either intensive medical therapy or surgery, the horse may need to
Another eyelid problem seen particularly in Draft and Paint horses is squamous cell carcinoma. This may be seen first as a red sore (erosion) on the eyelid, third eyelid or medial canthus that later may develop into a raised mass. Early surgical removal of the cancer is the best treatment.

Corneal diseases are also common, especially lacerations, ulcers and stromal abscesses, which are associated with a cloudy, painful eye with a watery discharge. The large eye in the horse is susceptible to trauma, especially the cornea with its large surface area. Corneal lacerations are caused by sharp trauma and often these need to be treated surgically. A corneal ulcer can be caused by sharp or blunt trauma, chemical or physical abrasion, or chronic irritation (Figure 5) and is usually infected secondarily with bacteria or fungi or both. The depth of the ulcer relates to how many layers of the cornea have been lost. A corneal stromal abscess develops from a corneal wound in which the microorganism has gained entry into the cornea but the ulcer has healed over. The infection continues to enlarge into a yellow-white abscess within the cornea (Figure 6). Both corneal ulcers and stromal abscesses are usually treated medically with eye drops or ointments and oral or injectable drugs to help alleviate pain, inflammation and infection. Treatment may continue for many weeks or months until the ulcer or abscess has healed. Some deep ulcers and abscesses need surgery to help stabilize the cornea and remove the infection.

Uveitis (inflammation inside the eye) is another common eye disease. There are many causes for uveitis including local eye problems - secondary to corneal laceration, ulcers and abscesses - and more general medical diseases. The signs of uveitis are pain - closed eyelids with watery discharge especially in bright light - and a constricted pupil. Closer examination of the structures of the eye may reveal abnormalities of the iris, corpora nigra, pupil and lens. The treatment of uveitis usually involves long-term medication to alleviate pain and minimize further inflammation and damage inside the eye. It is important, but not always possible, to identify the cause of the uveitis and treat this underlying condition.

**BASIC NURSING OF THE EYE**

Ideally the horse with eye disease should be kept within a stable or small paddock with easy access to some shade. Fly veils or hoods may be used to protect the eye from rubbing and other irritants but it is best to discuss this with the attending veterinarian.

Ointments are the usual method of applying medications directly to the eye, because eye drops can be too difficult to administer from the bottle. It is important to wash hands before using the ointment. Ideally the eye discharge should be bathed away first. This is achieved with cotton wool soaked in hot water and applied as a hot compress around the eye to remove all discharges and previous medications. To apply the ointment, the eye must first be opened. This can be difficult due to the strong eyelid spasm in the horse. First, feel the upper bony socket (bony orbit) with the index finger and then shift the index finger downwards towards the crease (or wrinkle) of the upper eyelid skin. Lift the
skin of the upper eyelid by moving the index finger up towards the bony orbit until the index finger rests up against the bone. The lower eyelid can also be pulled away from the eye by the thumb. A 5 mm (1/4") strip of ointment is applied from the tube to contact inside margin of the lower eyelid (Figure 7). Alternatively, the strip of ointment can be squeezed onto a clean finger and applied from the finger. The eyelids are then closed and the eyelids will warm and soften the ointment as it is distributed over the surface of the eye.

PRE-PURCHASE EYE EXAM
The purchase of a horse is often subsequent to a veterinary health and soundness check. The eyes should also be examined at this stage to check for any eye diseases that may diminish the performance of the horse. An Australian study has revealed that 7.4% of racing Thoroughbreds from a group of 204 examined horses had potential vision-threatening eye conditions. Interestingly, prior to the eye examination of these horses, most of these eye conditions remained undetected because they affected the lens (cataract) or retina: structures that are located towards the back of the eye.

The unique features of the horse eye give it a visual advantage yet also predisposes it to several risks. Unfortunately, the consequences of eye injury and disease may limit the usefulness of the horse. Therefore early detection and treatment of eye problems in the horse is imperative and the horse owner has a significant role in monitoring the landmarks of the eye and detecting early eye problems.

Are Flies a Problem?

FLYGON
Insecticidal & Repellent Spray
- Repels flies & mosquitoes
- Kills fleas & lice
- Alcohol free, non stinging formula
- With natural Pyrethrins & Citronella
- Spray on or wipe on
- LASTS LONGER

Pack Sizes: 125mL, 250mL, 500mL & 5 Litres

VETSENSE
ANIMAL HEALTH

Australian Made & Owned
- Tel (02) 4577 9911 • Fax (02) 4587 7999
Email: vetsense@cmlab.com.au

Available from Veterinary Surgeons, Saddlery, Produce & Pet Stores