

Tacoma Equine Hospital

3112 – 156th Street E. Tacoma, WA 98446 ◊ 253.535.6999

THE EQUINE EYE

The equine eye has much the same design as other species' eyes, including our own, as you can see by the diagram below. Additionally, the eye has adapted based on the horse's lifestyle as a prey species in the wild. Its visual field is nearly 360 degrees, meaning a horse can see its tail with its head pointed forward. The eye has ganglion cells in the retina that are specially adapted to see movement. These modifications to protect the horse from predators have a drawback: it has a small frontal binocular field of 65 degrees. This means that the horse cannot focus on things that are close up. It uses both eyes to see until an object approaches within three to four feet, then it is forced to turn or lower its head to look with one eye.

Because the horse's eye has such a prominent position on its head, even with the protection of the boney zygomatic arch above, it is prone to injury. This newsletter will provide a summary of diseases that affect the horse's eye both internally and externally.

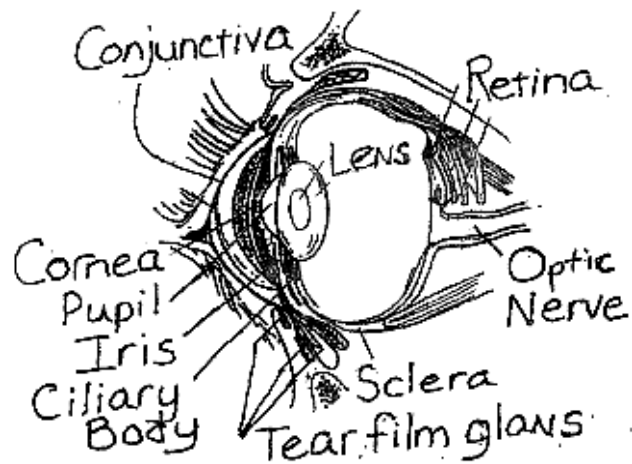
LACERATIONS

Horses seem to lacerate their eyelids very easily, but at least it's only an eyelid and not the eye itself. *Owner tip: If you feed your horse out of a narrow bucket, please wrap the connection of the handle to the bucket*

with medical or duct tape. Because the skin of the horse's head is highly vascular, lacerations on the head and eyelids of the horse seem to heal quickly and without much scarring. They also bleed and swell profusely. It is of paramount importance that the eyelid is sutured back to approximate normal anatomy. When the horse blinks, the edge of the eyelid carries moisture and nutrition through tears across the cornea so it can maintain health and clarity. If the eyelid is deformed and doesn't carry that moisture, serious corneal disease may follow.

CORNEAL ULCERS

The cornea is a fascinating anatomic structure made up of three layers of cells. Normally, the tears of the horse have infection fighting capabilities, but if the top layer of cornea is traumatized for any reason, infection can get a toehold. A non-infected laceration that affects just the top layer of cornea will heal a quick one millimeter per day. Larger and deeper lacerations/ulcers in the cornea are an equine emergency because a horse could lose its sight quickly if proper care is not initiated. Certain kinds of bacteria and fungi can actually dissolve the corneal layers or encourage the body to destroy the cornea. This is called a "melting" ulcer and permanent damage can develop within hours. If infection or trauma gets through the third layer of the cornea (called Descemet's membrane), a perforation is initiated which will most likely result in a blind eye.



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TUMORS

The three most common types of neoplasia that affect the horse's eye are melanoma, sarcoid and squamous cell carcinoma. Of the three, squamous cell carcinoma is the most difficult to control. Exposure to sun and ultraviolet rays combined with lack of pigmented skin around the eye makes this a common tumor in draft breeds, Appaloosas and Paints. Because maintaining anatomical integrity is so important for total eye health, anytime you have a space-occupying lesion involving the eyelids, surgical removal is not easy. Other options for control include freezing, injections of chemotherapy or immune therapy, radiation and laser therapy. Some of the time reconstructive surgery is necessary to preserve eye function. Since all of these therapies are extremely expensive, prevention is the best means for control. *Owner tip: If you have a horse with a white eye keep it out of the sun by using a fly mask medicated with sunscreen.*

MOON BLINDNESS

This disease is also known as periodic ophthalmia and recurrent uveitis. It is an immune-mediated disease that is the most common cause of blindness in horses and mules. The causes are many and poorly understood, but most commonly include trauma, allergy, infections by bacteria or parasites, and immune dysfunction. As the owner there are clinical signs that you must be aware of in order to call the veterinarian in a timely manner. These include excessive discharge from the eye, clear tears or thick white mucus, squinting from pain, sensitivity to light, change in the ability of your horse to see, cloudiness of the cornea, change in the color of your horse's iris, or redness to the eyelids or even itself.

In some horses this disease occurs mildly, is very treatable and will not recur again. In other horses it becomes a disease that will come and go with varying degrees of severity, sometimes becoming chronic and severe enough to cause blindness. The difference seems to be related to the horse's immune response to diseases and appears to be somewhat genetic. Thoroughbred horses tend to have the outright painful, weepy eye that is very easy for owners to detect. Their trigger may be an allergy to something or an unfavorable response to vaccination. Appaloosas are very susceptible to this disease. They have less noticeable clinical signs and no apparent discomfort, but do have inflammation that never goes away completely. Warmbloods and mules have changes deeper within the eye that cause blindness and cataracts and a mild degree of discomfort.

In all instances of uveitis, the immune system makes antibodies to infections and in the process of using these antibodies, normal eye tissue is mistakenly attacked and damaged due to the failure of the system to differentiate normal tissue from diseased tissue. The runaway inflammation and damage to the eye is what causes the clinical signs, not the original cause of the antibody production.

Treatment of uveitis depends upon the severity of the disease, but is mostly centered on controlling inflammation. Antibiotics, steroids or non-steroidal anti-inflammatories, and pupil dilators can be applied topically, injected into the eyelids or a device for application can be surgically placed in the eyelid. One of the most exciting new developments in the treatment of this disease is being studied in horses now. It is a cyclosporine implant that is placed inside the

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eye under general anesthesia that will "turn off" the cells that cause inflammation. Horses have shown an 80% improvement for three years so far in the study.

GLAUCOMA

This disease is most commonly a side effect of chronic uveitis, but can occur spontaneously in older horses, especially Appaloosas, or as a result of tumors inside the eye. Fluid pressure in the eye is what causes the round appearance of the eye. This fluid is created behind the pupil, travels to the front of the eye and exits at the border between the iris and the cornea. In chronic uveitis, inflammatory debris clogs up the outflow of fluid and so pressure builds inside the eye, causing glaucoma. Horses usually are blinded by glaucoma in two ways. When the cornea is stretched it turns an opaque blue color that is impossible to see through. Also, the increased pressure in the eye will severely debilitate the retina and optic nerve. Treatment is difficult in equine glaucoma. Topical human medications can help control the pain of glaucoma, but does not cure the causes and rarely will return sight to the eye. More advanced therapies include laser therapy to destroy the fluid producing cells of the eye to return vision. If the eye is blind and painful, sometimes taking the eye out will make the horse feel a whole lot better.

PHTHISIS BULBI

This condition is seen as a blind, shrunken eye sometimes with ocular discharge. It is generally a non-painful condition and is the end stage of some of the severe diseases we have been talking about. It is an unsightly condition to the owner, but most of the time the horse is not bothered by it. Eye removal and prosthetic implant will aid in cosmetic appearance.