



The Equine Eye

An animal will always look for a person's intentions by looking them right in the eyes.

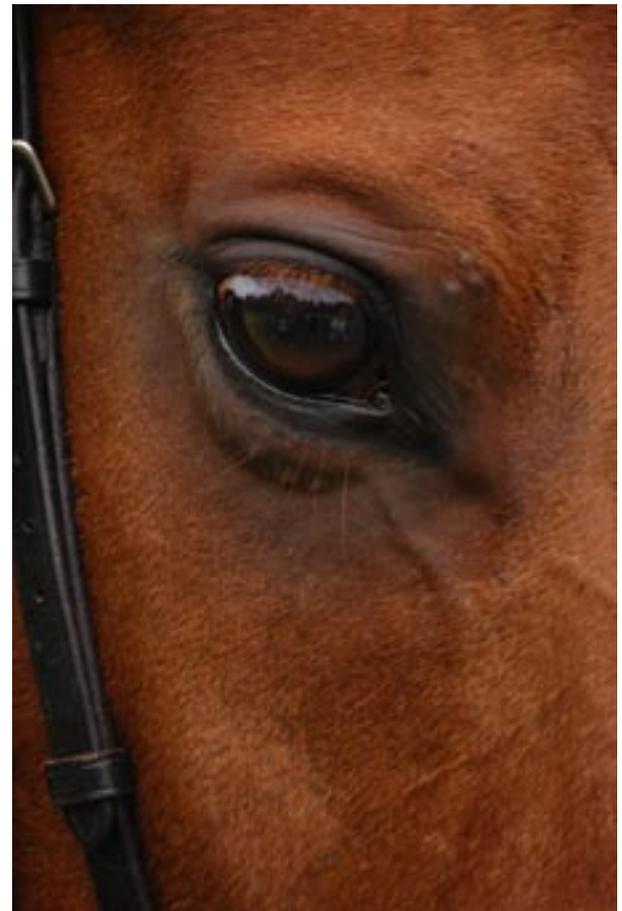
Rabbits run, possums play dead, chameleons change color and skunks spray. Other animals have horns or claws to fight off predators. Mobbing behavior is common in birds and is usually done to protect the young in social colonies. While survival techniques vary among animals, what many have in common are highly developed senses of sight, smell, or hearing to detect danger and escape.

Unlike other large prey species, horses do not have antlers, horns or cloven hooves with which to defend themselves. Instead, they have an exceptional ability to see and spot the movement of any potential

predator. Horses have survived by using a standard defense mechanism for animals in open grasslands and prairies: they frequently scan and monitor their surroundings to avoid attack by spotting a predator before it reaches a critical distance.

While most horses today are domesticated and do not have a constant need to safeguard their survival, they are expected to perform in ways that require an unnatural demand on their visual system. It seems only fair then that we become partners in the effective use of their eyes and learn how their visual system can affect behavior. For example, how does the lateral placement of a horse's eyes affect its vision?

Visual perspective/field of view. The lateral placement of the eyes, more to the side of the head than to the front, combined with a horizontally elongated, roughly rectangular pupil, provides the horse with the ability to see a very broad field of landscape, much like a camera's wide-angle lens. In fact, horses are capable of seeing almost 360 degrees around with



monocular vision, where each eye is used separately. This extensive visual field makes it difficult for a predator or a human handler to sneak up on a horse. The wide range, however, has two "blind spots" or areas where the horse cannot see. The first is directly in front of the face, in a cone-shaped area that comes to a point about 3 feet in front of the horse. The second area is right behind the head, in an area that extends over the horse's back and behind the

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DIRECTOR'S MESSAGE

Best Results Through Early Intervention



Dr. Gregory L. Ferraro

Few would argue the importance of a pair of healthy, well-functioning eyes to the well being and performance of their horse. Indeed, unimpaired sight is as important to the horse as it is to any other animal, including human. Yet few people have a good understanding of how the horse's eye functions or how their vision differs from that of our own.

Infections of or injuries to the horse's eye always have the potential to pose serious risk to their visual capacity. Severe insults can result in permanent damage very quickly, and minor incidents left unattended can progress swiftly into serious threats. Yet again, few horse owners have the ability to recognize and properly respond to those minor problems.

Of all the illnesses and injuries that can befall our beloved horses, we are generally the least prepared to deal with those related to the eye. While we can recognize the signs of colic,

we are likely to not notice the development of a corneal ulcer in the eye until the condition has progressed to the stage of significant pain and corneal damage. Many experienced horse owners can treat and care for minor cuts and abrasions themselves and have a good idea of when those acute injuries are severe enough to require the attention of a veterinarian, but too many will have trouble in assessing both the severity of an eye injury and when veterinary intervention is required.

For that reason, this issue of *The Horse Report* provides some information intended to help you assess equine ophthalmologic problems. It provides a description of the basic anatomy and function of the horse's eye as well as some common but potentially serious problems. We hope this will help you more quickly recognize any abnormalities that may appear in the eye of your horse and provide guidance as to what type of condition you may be looking at.

You will notice that we are providing very little information about how to treat these conditions. There is a very good reason for that. Basically, it is because you are not qualified to treat them! As a long-time equine practitioner, I can tell you in all honesty that if your horse's eye has a problem that you are able to recognize with your own naked and untrained eyes, then you should call your veterinarian immediately. If you follow this one bit of advice, you will have

taken the correct course of action 99% of the time.

If your horse has a painful and watering eye, don't wait a couple of days to see if it gets better on its own, and definitely do not treat it with the contents of some tube of medication left over from the treatment of another horse, five years previously.

If you see something growing on the globe of your horse's eye or some foreign object sticking out of the region of his eye socket, don't be a hero. Call your veterinarian. Remember, discretion is the better part of valor. Don't do something you will regret later. In all conditions related to the eye and its surrounding structures, the best results are always obtained through early intervention by trained and experienced equine veterinarians. Sunday-morning ophthalmologists need not apply!

Trust me on this one, read what we have written here but use it only as a means to know when you are in trouble, not as a license to practice. We want you to be informed and educated in all forms of equine health care, but part of that learning experience is to recognize your limitations. There is no more appropriate arena for the teachings of "Dirty Harry" than medical ophthalmology.

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tail. Thus, as a horse jumps an obstacle, the obstacle briefly disappears from sight just before the horse takes off.

Depth perception. The tradeoff to having monocular vision is that a horse's depth perception is somewhat more limited than a human's. The placement of the horse's eyes decreases the possible range of **binocular vision** (using both eyes at the same time). Horses use their binocular vision by looking straight at an object, raising the head when looking at a distant predator or focusing on an obstacle to jump. To use binocular vision on a closer object near the ground, such as a snake or threat to its feet, a horse will drop its nose and look downward with the neck somewhat arched. Thus, a horse will raise or lower its head to increase its range of binocular vision. Riders of jumpers allow their horse to raise its head a few strides before a jump so it can assess the jump and the proper take-off spot.

Sensitivity to light. Horses, like humans, must adapt to different light intensities varying from the dimmest star to bright sunlight on snow. One mechanism for adjusting to this wide range is to switch back and forth between two different types of photoreceptors: the **rods** and **cones** located in the **retina** of the eye, each of which has been optimized to perform best at different ends of the intensity spectrum. Rod receptors are the primary receptors used when the light levels range from virtually complete darkness to those

found at dawn and twilight. Horses are well endowed with a high proportion of rod to cone photoreceptors—about 20 million rods to 1 million cones, which makes them sensitive to light and gives them extremely good night vision. Moreover, a layer of tissue in the eye of many animals, called the **tapetum lucidum** (see *Anatomy of the Eye*



below), is thought to function to reflect light back into the retina, thereby enhancing vision in low-light conditions such as at night.

In addition to these photoreceptors and other mechanisms for adjusting to light, the horse has one of the largest eyes among land mammals, which allows more light to enter the eye. Admission of light to the eye is further improved by the horizontal elongation of the cornea and pupil and by the pupil's ability to dilate to an area six times larger than that of a human pupil.

Practically speaking, horses tend to have better vision on slightly cloudy days than on bright, sunny days. On the other hand, they are less able to adjust to sudden changes of light, such as when moving from a bright day into a dark barn. This should be taken into consideration during training, because certain tasks such as loading into a trailer may frighten a horse simply because he cannot see. It is also important in riding, because quickly moving from light to dark or vice versa will temporarily blind the horse and make it difficult for him to judge what is in front of him.

Sensitivity to motion. Horses are very sensitive to motion, because motion is usually the first alert that a predator is approaching. The horse's **retina**—the light-sensitive tissue at the back of the eye—is richly endowed with motion-detecting cells known as **rods**, evidence that the horse's eyes are optimally constructed and positioned for its survival.

Anatomy of the Eye

The equine eye is similar to the eye of most mammalian species. Essentially a piece of brain tissue—the **retina**—has been brought “outside” the brain and placed inside a tough, protective structure known as the **globe** (the eyeball). The globe is constructed in such a way that an optically clear and focusable pathway is provided, whereby light rays from the outside world pass into the globe and reach the light-sensitive retina. In turn, the retina transmits its perceived

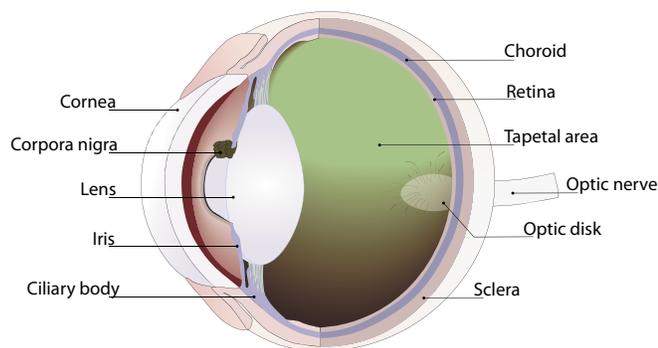
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information via the **optic nerve** to the final processing unit, the brain, where visual perceptions are converted into images.

The eyeball is protected by eyelids, comprised of two folds of skin and muscle just like the human eye. The skin has many blood vessels so that abrasions and lacerations that are properly treated heal well and are resistant to infection. The eyelid muscles are quite strong and can be opened or closed at will. Hence, examination of the equine eye often requires sedation and nerve blocks. Like most other mammalian species, the horse has a third eyelid, which is a T-shaped cartilage covered with a transparent mucous membrane known as the **conjunctiva**.



As shown in the above illustration, the **cornea** is part of the fibrous outer layer of the eye, which serves to protect the intraocular contents. The cornea is transparent and is involved in transmitting and refracting (bending) light into the eye. Although it is made up of living cells, the cornea has few or no blood vessels. The surface cornea receives its nutrition from tears, while the back portion is nourished by a clear fluid called the **aqueous humor**, which is normally present in the front chamber of the eye.

The **sclera**, like the cornea, is made up primarily of collagen fibers. It is part of the outer fibrous layer of the eye and functions to protect the interior of the eye. The **iris** and **ciliary body**, part of the middle vascular layer of the eye, perform a number of functions. The iris contains muscles that control the size of the pupil, which in turn controls the

amount of light that enters the eye. The ciliary body produces the clear aqueous humor that nourishes the front chamber of the eye. It also contains the muscles that allow for focus on both distant and close objects. This function in horses is relatively poorly developed.

The **lens** sits directly behind the iris and functions to refract light in order to produce a focused image on the retina. Like the cornea, it has no blood supply but is nourished by the aqueous humor. The **choroid** is part of the middle vascular layer of the eye and helps provide nutrition to the retina. In the innermost portion of the choroid is the **tapetum lucidum**, a layer of tissue that is thought to function to enhance low-light vision by reflecting light back into the retina.

The **retina** is made up of nervous tissue and functions to transform light into a neurologic impulse. Axons that originate from the retina—axons are a long fiber of a nerve cell (a neuron) that act somewhat like fiber-optic cables carrying an outgoing message—come together at the optic disk, where they leave the eye as the **optic nerve**. The optic nerve takes the neurologic message from the retina to the brain.

Eye Problems in Horses

Horses respond to eye discomfort much the same as people. The eyelids may become swollen, the eyes may become reddened, and there may be excessive tearing. The horse may also squint or blink constantly. Excessive rubbing of the eye on a post or foreleg may also indicate an underlying problem. If any of these signs occur, a veterinarian should be consulted for diagnosis and treatment.

One feature of eye disease is that relatively minor problems initially present with the same signs as more severe problems. Therefore, all cases of suspected eye problems should receive the attention of a veterinarian. As with virtually all other disease processes, the chances of successful treatment of these problems rely heavily on early detection. This principle is even more critical with eye disease.

The five most common eye problems in horses seen at UC Davis are:

- Traumatic injuries
- Corneal disorders
- Inflammation inside the eye (uveitis)
- Cancer on or around the eye
- Cataracts

Traumatic Injuries

Horses can sustain a wide range of traumatic injuries to their eyes and related structures. These can vary in severity from simple abrasions of the eyelids that may be treated in a “first aid” manner to full thickness lacerations of the eyelids or cornea. This latter category usually presents with sudden squinting and discharge in the form of excess tearing, mucous or blood. **All of these should be considered an emergency and require the immediate attention of a veterinarian.** The long-term prognosis depends on the structures injured.

Eyelid lacerations are frequently obvious because the affected lid is often hanging loose and there is a moderate amount of blood on the face around the eyelid. Prompt and meticulous repair by a veterinarian is essential in restoring eyelid function (including tear film distribution) and protecting the underlying cornea from exposure. It is recommended that horses receive tetanus prophylaxis and topical and systemic antibiotics to prevent infection.

Corneal lacerations are often less apparent because the only clinical sign may be intense squinting. Horses with corneal lacerations will usually vigorously resist any attempt to determine the cause of the pain. A veterinarian should assess the



This photo shows a severe laceration of the upper eyelid. Eyelid lacerations usually heal well if they are repaired soon after injury.

extent of the damage by use of sedation and nerve blocks of the eyelid muscles. Frequently such injuries can be repaired by a veterinarian, although he/she may advise referral to a veterinary ophthalmologist.

Foreign objects such as plant material, dust, sand or ash may become lodged under a horse's eyelids. If the horse will allow it, flushing the debris with water or saline solution may be helpful, but a veterinarian should still examine the eye for any further damage since the debris can scratch the cornea and cause a corneal ulcer.

If a foreign object such as a piece of wood has pierced an eyelid and become embedded, you can remove it but follow up with a full eye examination with a veterinarian to determine whether further damage has occurred from splinters. **If the eyeball itself has a foreign object embedded in it, DO NOT REMOVE IT.** Seek immediate veterinary attention as microsurgery may be required to remove the object and save the eye. Ophthalmologists at UC Davis have successfully removed foreign objects from eyes using very fine microsurgical instruments. Preventing infection

is another key element for saving an injured eye, and researchers at UC Davis have developed effective ways to administer eye medications and antibiotics every few hours using indwelling medicinal delivery systems.

Corneal Disorders

By far the most common corneal problem in horses is **corneal ulceration**. This is a condition where the most superficial cells of the cornea are abraded away. Like most eye problems, this will initially manifest as a suddenly painful eye with excessive tearing. **Corneal ulcers require immediate care by a veterinarian as they have the potential to worsen.** Because the cornea does not have blood vessels running through it to help clear an infection, the eye is more susceptible to infection from bacteria and fungus. These secondary infections can cause serious problems and complicate healing, which may result in a “melting” ulcer. Signs associated with an infected corneal ulcer include a creamy color or



Superficial corneal ulcer. If caught early and treated correctly, these will usually heal quickly.

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melting appearance to the surface of the eye. Melting ulcers are a serious threat to eye survival and require intensive treatment by a veterinarian.



Infected corneal ulcer. Note accumulation of white blood cells within the cornea.



Melting corneal ulcer. Note degraded area. This ulcer could perforate at any time and is a true emergency.

A minor wound to the cornea may occur and appear to have healed, but if an infection is introduced into the deeper layers of the cornea, a corneal abscess may develop. Again, this is a serious condition that requires immediate treatment by a veterinarian.

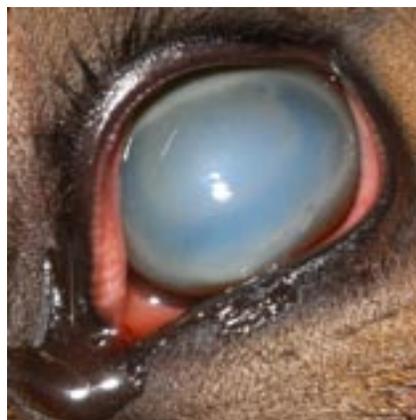
Less frequently, horses can develop **corneal inflammation**, which tends to be intermittent and of variable severity. There

are many theories about the possible causes of this type of inflammation, including autoimmune conditions and herpesvirus infection. UC Davis researchers are currently studying herpesvirus as a potential cause of this type of unexplained corneal inflammation.

Inflammation Inside the Eye (Uveitis)

The most common cause of blindness in horses is a disease known to veterinarians as **equine recurrent uveitis (ERU)**. Other common names for this condition include **moon blindness** and **periodic ophthalmia**.

As the name suggests, ERU is characterized by recurrent episodes of intraocular inflammation. Signs of an acute ERU attack include squinting, redness, cloudiness and tearing. The severity of the signs and the frequency of the attacks vary among individual horses. Blindness results from cataracts, glaucoma and retinal degeneration. It is not one attack



Active episode of equine recurrent uveitis. Note the redness to the conjunctiva, excess tearing, and hazy appearance.

that results in blindness, but the cumulative effects of many attacks.



End stage equine recurrent uveitis. Note extensive corneal scarring.

The causes associated with ERU are not completely understood. The disease itself is an autoimmune condition, but various other factors may be involved, such as leptospirosis, an infectious disease caused by a particular type of bacteria called a spirochete transmitted by rats as well as by skunks, opossums, raccoons, foxes, and other vermin.

The therapeutic approach to managing ERU is to aggressively treat acute attacks and also minimize the frequency and severity of recurrences. As mentioned above, any horse with a suddenly painful, teary eye should receive immediate attention from a veterinarian who can then make a definitive diagnosis and initiate appropriate treatment. New methods used by veterinary ophthalmologist to treat ERU involve the implantation of medicated "wafers" or injections of medication into the back of the eye. These anti-inflammatory drugs are then absorbed slowly over the course of years.

Cancer

By far the most common ocular/periocular cancer seen in horses is **squamous cell carcinoma**. These tumors typically occur in one of three locations: on the surface of the eye, on the third eyelid, or within the eyelid. These masses are often readily visible and have a “wart-like” appearance.



Squamous cell carcinoma on the eye. Note the pink growth on the left side of the photo.

Treatment of squamous cell carcinoma on the surface of the eye usually involves referral to an ophthalmologist. In addition to removing the mass, some type of freezing (cryotherapy) or radiation treatment is usually performed. If the carcinoma is on the third eyelid, it is usually treated by surgical removal of the entire third eyelid. Many general practitioners perform this procedure.

Squamous cell carcinoma within the eyelid itself is often the most challenging location because the tumors are often not noticed in this location until they are large. Treatment consists of surgical removal and some type of added treatment such as chemotherapy.

Other types of cancer such as **sarcomas** and **melanomas**, which are common throughout the body, can also affect the eyes and interfere with eye function. In most instances, a tumor may begin as a small area of roughened eyelid or a small bump. If diagnosed early, a number of treatment methods may be used.

Note that when eyelid tumors are found, it is important to examine the rest of the body for the presence of similar tumors.

Cataracts

The lens is a somewhat flattened, transparent, flexible disc consisting of layers of lens fibers. The lens sits behind the iris and helps focus the images onto the retina. A diseased lens usually responds by becoming opaque; the opacity (or cataract) may be localized or diffuse. Cataracts are often progressive in

nature and result in serious visual loss over time. The affected lens can be removed.

Cataracts can form secondary to equine recurrent uveitis (ERU) as described above. They can be treated with surgery, but because the cataract has formed as a result of months or years of intraocular inflammation, the success rates are usually not high.

Horses can be born with cataracts due to developmental or heritable causes. Congenital cataracts in newborn foals are especially amenable to surgical removal. Veterinary attention should be sought as soon as possible. Signs include a milky-appearing pupil or evidence of impaired vision (the foal stays very close to the mare, stumbles, or is reluctant to move). Once the lens is removed, the horse will be far-sighted (not able to see things up close), but many go on to live productive lives. ❖



The eye is an intricate and delicate organ. In all conditions related to the eye and its surrounding structures, the best results are always obtained through a cooperative effort of observant horse owner and experienced equine veterinarian.

Early Recognition of a Problem Saves Teekla's Eye

A Case Study from the UC Davis Veterinary Medical Teaching Hospital



Observant owners and quick-acting referring veterinarians are vital elements to providing a successful outcome to a horse with a serious problem affecting the eye. This principle was once again demonstrated one morning last summer when the owner of Teekla, a 9-year-old Friesian gelding, removed the horse's fly mask and noticed he was squinting and tearing out of his left eye. She immediately called Teekla's veterinarian who realized the seriousness of Teekla's eye problem and referred him at once to the UC Davis Veterinary Medical Teaching Hospital.

At UC Davis, Teekla was examined by ophthalmologist Dr. Steven Hollingsworth, who determined that the horse had an infected corneal ulcer characterized by a "melting" component. This "melting" appearance is a particularly worrisome

clinical sign because it means that the cornea could rupture at any time, allowing the infectious organisms to invade the inside of the eye. While it is possible to save an eye that has ruptured, the prognosis is significantly more grave.

Teekla was scheduled for emergency surgery and, within 5 or 6 hours of his owner's first noticing a problem, was on the operating table. The specific surgical procedure performed on Teekla's melting corneal ulcer was a pedicle conjunctival graft. This technique involves dissecting a finger-shaped strip of the thin membrane that covers the conjunctiva (the white part of the eye). The degraded area of cornea is then trimmed off and the graft is sutured directly onto the corneal defect. This procedure provides immediate structural support to the weak area of the cornea as well as a blood supply to help fight the infection.

Before Teekla awoke from his anesthesia, a small tube was placed under his lower eyelid. This is called a subpalpebral lavage and allows for topical medications to be applied without having to constantly pry the eyelids open. Samples taken from Teekla's left eye just before surgery revealed that the ulcer was infected with a fungus called *Aspergillus*. Teekla remained in the hospital for 4 days after surgery to ensure that everything was healing well. He then returned at 2 weeks, at 1 month, and at 2 months after the surgery to check for progress. During this time, the medications he was receiving to fight the infection were slowly tapered down.

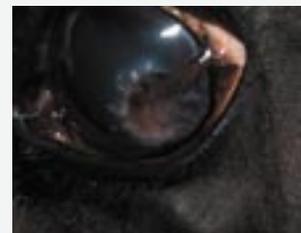
At his last recheck, the connecting portion of the graft was trimmed away leaving only a small scar where the original ulcer had been. Teekla recovered completely with no loss to his eye or vision because of the coordinated efforts of his owner, veterinarian, and ophthalmologist.



Melting ulcer on Teekla's left eye immediately before surgery.



Teekla's conjunctival pedicle graft immediately after surgery.



Teekla's conjunctival pedicle graft one month after surgery. Note how the graft has shrunken to allow for a relatively large area of clear cornea.

Preventing and Handling Eye Injuries

Eye injuries and infections are not uncommon in horses, but minor problems left untreated can quickly become serious and result in blindness if unattended. Here are some recommendations for preventing problems and some guidelines to follow if your horse should sustain an eye injury.

- One way to prevent problems is to ensure that your horse's environment is safe. Make sure that sharp edges on water troughs, metal buildings, pipes, hooks or other objects are covered, padded, or are inaccessible. Pound in or pull any old nails that may be protruding from fences and other structures.
- Keep the horse's environment as dust-free as possible.
- If your horse sustains an eye injury or develops an eye infection, contact your veterinarian immediately. (**Read the section on Traumatic Injuries on page 5 of this Horse Report**).

- If the injury is a laceration to the eyelid, clean the area very gently with a saline solution while waiting for the veterinarian. If you don't have one on hand (like the saline solution for contact lenses), you can make some. The ratio is about ¼ teaspoon of table salt to 1 cup of lukewarm water. It should taste like tears.



- If the injury consists of a foreign object such as a piece of wood that has pierced the eyelid and become embedded, you can remove it but follow up with a full eye examination with a veterinarian to determine the extent of damage. Clean the area very gently with a saline solution while waiting for the veterinarian.
- **If the eyeball itself has a foreign object embedded in it, DO NOT REMOVE IT. Seek immediate veterinary attention as microsurgery may be required to remove the object and save the eye.**
- Put a fly mask on the horse to keep flies off the eye area.
- If possible, keep your horse in subdued light, such as his stall, until the veterinarian arrives.
- With all medications prescribed by your veterinarian, make sure that you follow the instructions to the letter, including medicating your horse through the full course of treatment. Do not stop medication because you see marked improvement. This can result in an infection flaring up again. Discard all medications at the end of the treatment course.
- When working with a horse with an eye problem, be aware that he may have obscured vision and be a little more spooky than usual. Talk gently so you don't surprise him if you walk up on a "blind side".

Ophthalmology Service UC Davis Veterinary Medical Teaching Hospital

The UC Davis Veterinary Medical Teaching Hospital has a complete Ophthalmology Service for all species large and small, with an emphasis on horses. The service comprises one of the largest veterinary ophthalmology centers in the United States. It is completely equipped with sophisticated equipment for the diagnosis and treatment of all eye diseases in horses, including an operating microscope for microsurgery and a phacoemulsification unit for cataract surgery (a system that uses ultrasound to break up, flush, and remove the affected lens material). The service also uses cryotherapy and beta irradiation for eye tumors.



Dr. Hollingsworth

Dr. Steven Hollingsworth is Chief of the Ophthalmology Service at UC Davis and Assistant Professor of Veterinary Ophthalmology in the UC Davis School of Veterinary Medicine. He obtained a DVM from Purdue University and was a veterinary ophthalmologist in private practice for nine years before coming to Davis. He completed a residency in comparative ophthalmology at UC Davis in 1992 and then joined the faculty in 1994. In addition to his clinical duties, Dr. Hollingsworth teaches clinical ophthalmology to third- and fourth-year veterinary students. He also serves as Chair of the Examination Committee of the American College of Veterinary Ophthalmologists and has been a reviewer for a number of professional journals, including the *American Journal of Veterinary Research*, *Veterinary Anaesthesia and Analgesia*, *Veterinary Surgery*, and *Veterinary Ophthalmology*.

The ophthalmology department is open to both referrals and the general public. To make an appointment, call the UC Davis Veterinary Medical Teaching Hospital at (530)752-0290.

Dr. J. D. Wheat April 10, 1923 – March 4, 2009

Dr. Don (J.D.) Wheat, world renowned equine surgeon and clinician and an integral part of the UC Davis School of Veterinary Medicine, passed away on March 4, 2009. Dr. Wheat dedicated his career to the care and welfare of the equine athlete and to the training of several generations of equine practitioners. He was a role model for many students, interns, residents and graduate students, stimulating them to envision and explore new ideas for improving the care of horses.



Dr. Wheat

Dr. Wheat also left his legacy in the establishment of the J.D. Wheat Veterinary Orthopedic Research Laboratory in 1988. The laboratory conducts research on orthopedic diseases of animals, with an emphasis on musculoskeletal disorders of racehorses. The laboratory provides an environment in which complex problems presented by most musculoskeletal diseases can be addressed by using the collective expertise of investigators from several different disciplines in the basic and clinical sciences of the School of Veterinary Medicine. Dr. Wheat's interest, encouragement and continued curiosity to understand and discover better ways to treat musculoskeletal diseases provided the laboratory with a firm foundation on which to build the success it enjoys today.

Dr. Wheat was a charter diplomate of the American college of Veterinary Surgeons; recipient of the American Association of Equine Practitioners teaching award; member of the National Academies of Practice; and an inductee in the International Equine Veterinary Hall of Fame. He will be sorely missed.

Cataracts in Foals

Horses can be born with cataracts due to developmental or heritable causes—known as congenital cataracts. Foals with cataracts often present very early in life, usually at 1 to 2 months of age. Typically, the owners will notice the whiteness in the pupil of one eye almost immediately after birth. This change is often followed closely by the other eye. Visual problems experienced by the foal are noticed through behaviors such as hesitancy to go anywhere without the mare or outright bumping into things. Otherwise, the foals are usually systemically healthy, and the eyes are not painful.



Complete cataract in a foal less than 2 months old, immediately before surgery.



One week after cataract surgery. Note the incision sutures on the right and the green glow from the tapetum at the back of the eye.

Congenital cataracts in newborn foals are especially amenable to surgical removal. Veterinary attention should be sought as soon as possible. Signs include a milky-appearing pupil or evidence of impaired vision as mentioned above. Immediately before and after surgery, the foal is given a number of medications including topical antibiotics, topical anti-inflammatories (steroidal and nonsteroidal), and systemic anti-inflammatories (usually Banamine).

The surgery is performed using a technology known as phacoemulsification. This is the exact same technology and equipment used in human cataract surgery. Most of the foals spend about 5 to 7 days in the hospital after surgery. Rechecks are usually required at approximately 2 weeks and 2 months after surgery, although the interval and frequency is determined by the presence or absence of complications.

The most common post-operative problem is glaucoma. During the post-surgical period, the medications are usually reduced. Cataract surgery will usually result in the horse being far-sighted (not able to see things up close), but many go on to live productive lives.



Typical healing two months after cataract surgery.

Dr. Timothy O'Brien Honored at AAEP Convention

Professor emeritus Timothy O'Brien of the UC Davis School of Veterinary Medicine was recently honored for significantly advancing the development and training of equine veterinarians. The distinguished educator award was presented to Dr. O'Brien by the American Association of Equine Practitioners during the organization's annual meeting in San Diego. He was recognized for his efforts as an educator and mentor to the many students and colleagues with whom he has been affiliated. O'Brien, a veterinary radiologist, specialized in characterizing bone and joint problems of horses and spent much of his career at UC Davis. He has trained approximately 120 large-animal and equine surgery residents.



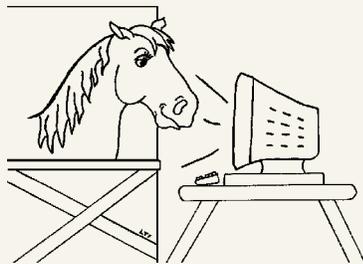
Dr. O'Brien

Urgent Need to Help Unwanted Horses in California

Before 1998, California's unwanted horses often ended up at the slaughterhouse, but with legislation prohibiting slaughter and processing plants now closed in the U.S., the problem of unwanted horses has risen to a new level. Of an estimated 9 million horses in the U.S., as many as 80,000 to 100,000 are reported each year as unwanted animals. The current economic downturn has only made a problem that has been building over several years worse. The need for a solution is now extremely urgent. In response to this crisis, a group of experts in animal control, veterinary practice and the humane community throughout the state have come together to form the **International Animal Welfare Training Institute (IAWTI)** whose goal is to create science-based solutions to welfare issues on the farm, in animal shelters and in other areas where animals and humans intersect. Public education and outreach programs are being planned to train members of the horse community about options for the care of unwanted horses.

Those interested in helping financially toward solving this problem may contact Mr. Kelly Nimitz at (530)752-7024 (kjnimitz@ucdavis.edu), Dr. John Madigan at (530)752-6513 (jemadigan@ucdavis.edu), or Dr. Gregory Ferraro at (530)752-6433.

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