

Leading the BLIND

Horses can overcome vision loss to live happy and productive lives with a little help from their friends.

On a winter afternoon in Rochester, New York, equine veterinarian Ann Dwyer, DVM, leaned over the edge of a steep precipice and looked down at her new patient. At the floor of a gully 150 feet below, a pony trotted, briskly winding between trees with total confidence. The gully and the surrounding land high above it served as the pony's home, and the only way out was a tree-studded path on ground so steep that it looked impossible to climb without tumbling over backward. But as Dwyer watched, the pony ran up and down the cliff at will, showing not the slightest hesitation even as he skirted the gully edge. And he traversed this treacherous ground without once misplacing a hoof. The feat would have been amazing for any horse, but in this case, it seemed impossible: The pony was completely blind.

When measuring the worth of horses, horse-men have always looked to the eyes. Where a horse's eyes are wide-set, we predict intelligence. Where they flash the "look of eagles," we foresee competitive grit. And where they are pale and blue, we sometimes fear an unreliable nature. While our conjectures about the look of horses' eyes may be mere superstition, the importance of

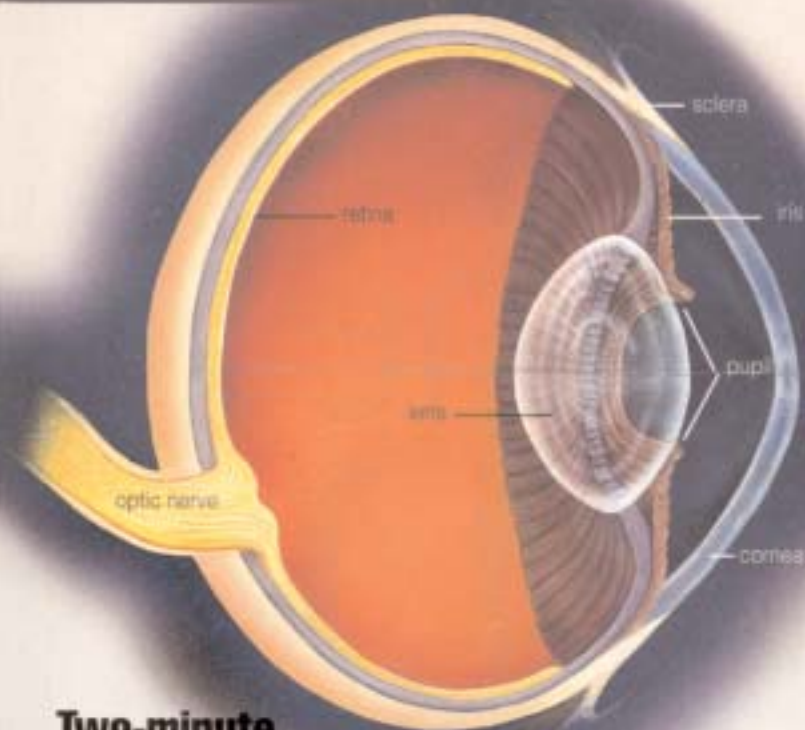
vision in horses' lives can hardly be overstated. Uniquely specialized for a prey animal, equine eyes provide a panoramic view and superb night vision; they also act as acute motion detectors and sensitive receptors for even the subtlest social cues. Simply put, says veterinary ophthalmologist Kay Schwink, DVM, Dip. ACVO, of Blacksburg, Virginia, "Horses are vision-oriented animals."

Given this, it would be reasonable to assume that horses who lose all or part of their vision are doomed to perish in a world full of dangers they can't anticipate. Yet most blind and one-eyed horses cope surprisingly well, avoiding injury and even retaining some usefulness. In fact, some blind horses have even been successful in the competitive arena.

Horses who survive the transition from light to darkness usually have two common denominators. The first is a remarkable adaptive ability that enables them to heighten their dependence on their remaining senses, learn new modes of communication and refine their relationships with handlers and other horses. The second is a conscientious owner willing to assume the role of visual guide and establish a new riding and handling vocabulary. The result is often a closer and fuller partnership.

*By Laura
Hillenbrand*

*Artwork courtesy
Linda Sutton*



Two-minute eye check

Medical Illustration by Mary Cheney

In many cases, blindness can be prevented if eye ailments are caught in their early stages. But signs can be subtle or appear minor enough to shrug off, and, as a result, eye diseases are often allowed to progress until irreparable damage is done. The key to preventing blindness lies in checking eye health regularly to become familiar with what is normal and to catch problems in their infancy. "I can't emphasize enough," says Cornell equine ophthalmologist William Rebhun, DVM, Dip. ACVO, Dip. ACVIM, "that being prompt with an eye problem is the most important part of saving the eye."

Begin by looking for signs of trouble include squinting, tearing, pus, avoidance of light, redness, cloudiness or any indication of pain. Next, take your horse into a dark stall or another dark area, place your free hand on the horse's muzzle to hold it steady and use a penlight or flashlight to examine the eye. Focus on the three trouble-prone structures of the eye, the pupil, the cornea and the iris, and always compare one eye to the other.

The pupil. To view this aperture of the eye, train the light directly into the

eye from three to six inches away. The pupil should shrink from about a one-inch oval to about half its dilated size upon exposure to light. If it is constricted before you shine the light or fails to constrict with the light, check with your veterinarian.

The cornea. This clear outer membrane can best be seen by shining the light sideways into the eye from about two inches away, at a right angle from you. Sweep the light back and forth, always keeping your viewpoint at a 90-degree angle from the light. Look for disruptions or discoloration of the surface or bleeding beneath it.

The iris. This striped, shirred skirt of tissue encircling the pupil resembles the underside of a mushroom cap. Use the same technique for examining the cornea to check the iris.

To become most proficient at checking the eye, ask your veterinarian to run through the exam with you, then perform it regularly yourself. "If you can just appreciate the iris, the pupil and the cornea, know what normal looks like and compare one side to the other," says Rebhun, "you are a big jump ahead in interpreting problems."

At the outset

While horses who lose their vision gradually or go blind in only one eye often experience an easier adjustment, most horses endure a period of fear before adapting to blindness. After all, from a physical standpoint, almost anything—from a gopher hole to a carelessly parked tractor—can be lethal to a horse who can't see it. And emotionally, most horses find the loss of visual cues disorienting and unnerving.

Horses who become blind initially respond by trying to reduce their vulnerability. Behavior during this period often includes rapid circling, freezing in place, prolonged neighing, frequent shying and increased aggressiveness. Most horses adjust after a few weeks or months, but some fall by the wayside. "I would say that about 10 percent of horses do very poorly when they go blind," says Dwyer, owner of the Genesee Valley Clinic and author of a recent study on equine⁶ uveitis. "They tend to run around in circles, bump into things and injure themselves all the time." Others do well until a disruption in their routine or a bad experience reignites panicked behavior.

While there is no rule for predicting how a horse will handle blindness, disposition seems to be crucial. "Horses who are fairly laid-back, fairly confident performers who like interaction with people are usually just fine," says William Rebhun, DVM, Dip. ACVO, Dip. ACVIM, professor of ophthalmology and large-animal medicine at Cornell University. "But horses who are flighty or hard to work with often become dangerous when they are blind." There are exceptions, of course. Some headstrong sighted horses calm down when blindness costs them their independence, while others who are flighty through a period of poor vision often relax when they become totally blind. "Seeing something poorly," says Schwink, "is scarier than not seeing it at all."

Learning to cope

While no one knows if the other senses actually sharpen after the onset of blindness, horses deprived of vision certainly become more attentive to sound, smell and tactile stimuli. They also develop techniques for expanding the utility of their functioning senses, such as cocking their ears toward walls to gauge their nearness by sound changes and locating puddles by sniffing the ground for water.

To make optimum use of their remaining senses, blind or visually impaired horses may develop

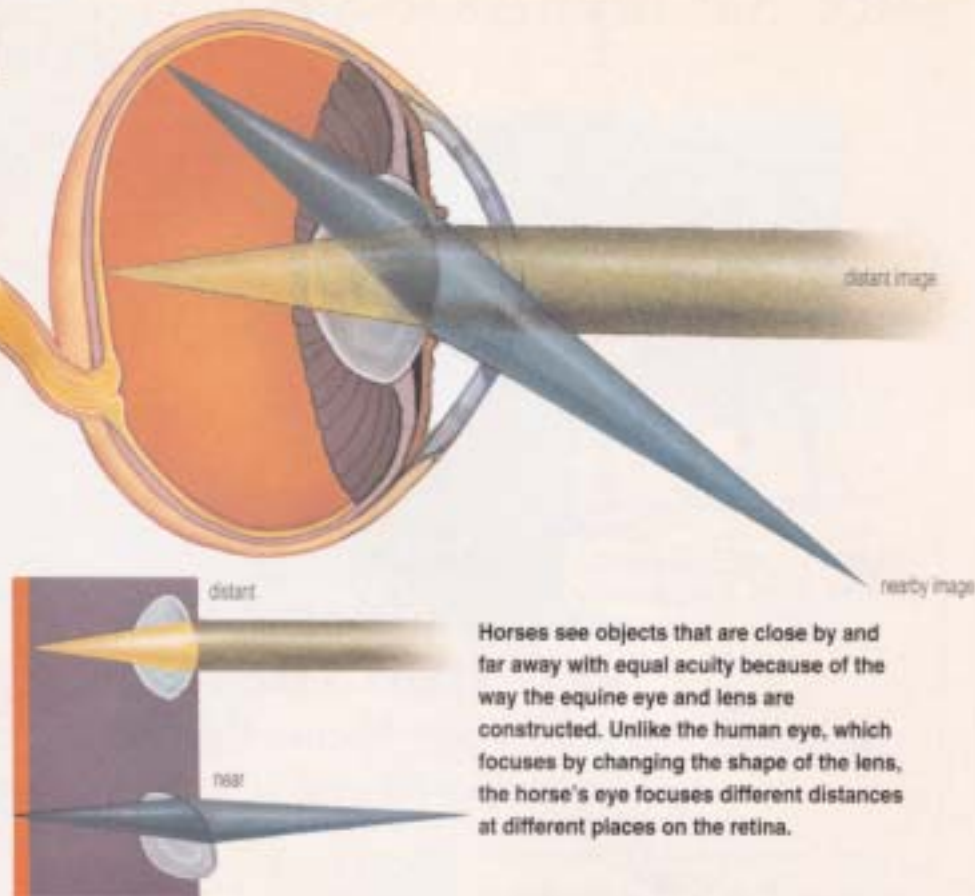
The way horses see

It looks like a harmless piece of paper to you, but when it flutters in the wind, your horse reacts as if a bomb has gone off. When you pass the same piece of paper from the other side on your way home, he heads for the hills again, as if he's never seen it before. Such antics can leave you questioning your horse's intelligence and even his sanity, but according to equine ophthalmologists, an explanation for this and many other puzzling aspects of equine behavior can be found in the horse's eyes. "To those of us who are mystified as to why horses act the way they do," says veterinary ophthalmologist Kay Schwink, DVM, Dip. ACVO, "horse vision explains a lot."

Eye placement. The world horses see looks very different from the one we see, in part because, unlike our own eyes, horses' eyes are set toward the sides of the head to spot predators from as many directions as possible. This gives them three separate fields of vision, comprising two monocular fields on each side of the body and one binocular field to the front. The monocular fields lack our kind of depth perception but offer a sweeping view, leaving only about a three-degree blind spot to the rear. The binocular field, encompassing a 60-degree area to the front, features depth precision similar to our own but a blind spot directly to the front, wide enough so that horses cannot see the center of jumps past the point at which they take off. These three fields are processed separately by the brain, so objects seen by only one field will be completely new to the other two fields, explaining why horses may spook at things they've just passed.

The effect of eye placement on equine vision may explain the adages about wide-set, prominent eyes indicating intelligence. These characteristics, says Schwink, "probably have nothing to do with intelligence but have a lot to do with how well horses see. If they don't see you coming or can't see an object in front of them, they are going to be clumsy or spooky or all the things we associate with being stupid."

Vision quality. Horses probably have poor color vision because their eyes lack the chemicals necessary to see greens and reds, but they have excellent night vision. Because of the size of their eyes, their near vision is probably poor and slow to focus. As a prey

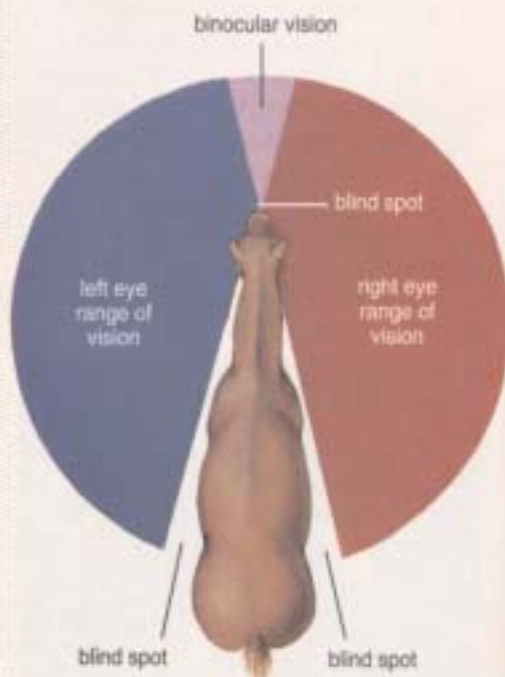


Horses see objects that are close by and far away with equal acuity because of the way the equine eye and lens are constructed. Unlike the human eye, which focuses by changing the shape of the lens, the horse's eye focuses different distances at different places on the retina.

species, they are also equipped with nerve cells specially designed to pick up tiny motions of potential predators. These super-sensitive motion detectors, coupled with horses' inability to gauge the distance between themselves and objects they see in their monocular vision, are the reason they shy from seemingly unthreatening motions at their sides. "They may not make out a clear image, but they see something move," explains Schwink. "It is a defense mechanism that has worked well for horses."

Focusing. While people have flexible lenses that focus by adjusting in shape, horses instead have retinas with sections already focused for particular distances. The effect is something like wearing bifocal glasses: Instead of adjusting their lenses to focus, horses move their heads to view an object with the section of their eye that can best focus on it. This pre-focused system is arranged so that horses can scan the horizon while they graze; the upper half of what horses see is reflected on the bottom of the retina, while the lower half is reflected on the top. Likewise, the upper portions of horses' eyes are devoted to near vision, while the center of the eye can focus on distant objects. This explains why horses raise their heads and tuck their noses to see the carrot you offer them.

Because of the placement of his eyes, the horse has three fields of vision: a monocular field on each side and a binocular field to the front. He also has a three-degree blind spot at each side of his rear end and one directly in front of his nose.



peculiar habits. Many one-eyed horses weave and swing their heads back and forth or carry them tipped or tilted. Some balk at any obstruction; at Churchill Downs in 1982, one-eyed Kentucky Derby entrant Cassalera was so panicked by the sensory deprivation of a box stall that his handlers obtained permission to build him a special stall with a 360-degree view.

Other techniques that blind horses use to stay out of harm's way include carrying their heads unusually low or high, pricking or wagging their ears constantly and navigating by running their noses along fences and walls. Using these techniques, horses make a mental map of their environment, often managing to travel the "mapped" territory so freely that observers mistake them for sighted horses.

Social problems

Because horses use visual cues to communicate with each other, total or partial blindness puts a herd member at a social disadvantage. In some cases, a blind horse's failure to react to cues is interpreted by other horses as a sign of aggression. In other situations, herd-mates take advantage of a horse's blindness, harassing him, pushing him further down in the pecking order and sometimes excluding him from the group. "A lot of horses' normal behavior involves postural reactions that they can see. They make faces at each other," says Schwink. "Obviously, a horse who can't see pinned ears or bared teeth is not going to have the expected reaction of a sighted horse until the teeth hit him."

But while some horses lose social rank after going blind, many learn to use their sighted herd-mates to their advantage through "buddy" partnerships. The assistance provided may be passive; by avoiding dangers to protect themselves, buddy horses inadvertently steer their blind companions away from trouble. But in some cases sighted horses go out of their way to lead their "charges" over easier terrain and guide them to safety, food and water. Buddies frequently learn to keep in nose-to-tail contact and to call back and forth so

The buddy system

"My broodmare took care of a totally blind gelding. He would whinny, and my mare would come back from the pasture to him. He would stick his nose to her tail, and she would take him wherever he wanted to go. She understood his blindness completely."

—Judy Chambers,
Upper Arlington, Ohio



Courtesy, Judy Chambers

the blind horse won't get lost; in one Utah wild-horse herd, in which a genetic visual defect is rampant, blind horses and their buddies whinny almost constantly to keep tabs on each other.

A helping hand

A good disposition and adaptable nature go a long way toward helping a horse adjust to blindness, but another important part of the equation involves his partnership with his handler. Ideally, the horse allows his handler to serve as his eyes, while the handler takes over as protector and guide, not taking for granted, as in the past, that the horse will react to the visual environment.

Many are surprised by the scope of this responsibility. Terrain changes, water puddles, trees and shrubbery and other mundane aspects of the physical world can be sources of injury and anxiety for a blind horse. And a careless error can have longlasting repercussions: The trust that forms the glue of this partnership is earned over time, and it can be lost forever with one moment of inattention. Keeping blind horses, says Schwink, "is a huge responsibility. It is so important that you not do anything to lose their trust."

Most often, however, horse and owner are successful in developing a command vocabulary that accommodates the needs of their partnership. It becomes second nature to use touch, pressure or verbal cues to warn the horse of hazards. One owner didn't realize how highly developed her communication with her horse had become until she watched the mare perform with another woman aboard; though the rider tried her hardest, the straightest line the pair could manage was a comical zigzag, "like they were drunk."

In most cases, the reward for the extra effort it takes to work with a blind horse is a flourishing relationship. Some owners find that their horses are more affectionate than they were in their sighted years, probably because they feel safer and less incapacitated when with the owner. Others report that horses become so trusting that those who are too cautious to go beyond a trot alone are confident enough to gallop when a familiar rider is aboard.

Through the darkness

Though nothing can guarantee that your horse will live comfortably in blindness, common-sense steps can make things easier.

■ **Be on the lookout for vision problems.** "Lots of owners never know a dog is blind until



Courtesy, Janet York

A special bond

"It has become a communicative thing between us. I can actually tell him where to put his feet. It is a combination of reins and legs. When I pick up on the reins he knows to pick up his feet to step over an obstacle. And I talk to him. It's kind of like baby talk; everybody wonders what I'm saying, but he understands."—Janet York, Penn Hills, Pennsylvania

Senses and sensibilities

One way of keeping a blind horse safe is to help him use his functioning senses to stay out of trouble.

■ **Scent.** "Owners can help blind horses cope by making use of odor," says Katherine Houpt, VMD, PhD, professor of physiology and director of the Animal Behavior Clinic at Cornell University. "Spray any protruding objects in the stable or pasture with something they can smell, such as citronella spray."

■ **Touch.** Let the horse know where you are by keeping a hand on him.

■ **Hearing.** Keep background noise, which might interfere with his hearing, to a minimum; one owner reports that her blind horse's uncooperative behavior during farrier visits ended immediately when they switched off the radio. Talk as you approach and work around the horse, and tie jingling tags on stable pets.

■ **Remaining vision.** One-eyed horses are more comfortable when you approach and work within their visual fields and keep potentially startling activity, such as passing cars, on the sighted side.

Seeing for two

"I never realized how much I had relied upon him to maneuver us around. I had to pay attention a lot more, and it took a while for me to realize that I had to tell him when to turn. When we rode in an indoor ring, I had to learn to carry my whip on the outside and allow it to scrape along the wall so he wouldn't squish me. But we got the hang of it. It is something you have to educate yourself on, and as you go along, you learn how to deal with it."—

*Becky Yocum,
Portland,
Pennsylvania*

they rearrange their furniture," says Dwyer, and the same is true of horse owners. No one suspected that the Maryland racehorse Burk's Charger had vision problems until he suddenly took a left turn during a race, slamming into the rail and crashing to the ground. The next day, they learned he had been racing—and winning—while totally blind. Learn how to check your horse's eyes, and do it regularly (see sidebar, "Two-Minute Eye Check").

■ **Give him time to adjust.** Fear at the onset of blindness is natural and doesn't necessarily mean that the horse will never adjust. Give him as long as several months to adapt in safe, consistent surroundings.

■ **Blind-proof the environment.** Study your horse's habitat and ask yourself what he might trip on, shy at, bump into or snag. Use board fencing that he can use to feel his way along, and be sure surfaces he might lean on for navigation are sturdy and free of splinters and protrusions.

■ **Go easy on changes.** Memorizing the farm layout and routine does a blind horse no good when people keep moving things around or changing the schedule. Maintain stability as much as possible, and when changes must be made, work them in gradually. One owner who needed to move her blind horse to a new stall did

so by luring her in with flakes of hay placed along the route to the stall. In three days, the mare had settled in safely.

■ **Monitor his social life.** "You don't want to keep a horse in a group that has a bully in it," says Rebhun, "because they can quickly take it out on a blind horse who can't defend himself."

■ **Attempt riding with caution.** Myriad stories attest to the saddle worthiness of nearly or totally blind horses, but some aren't safe to ride. Ease into riding cautiously in known surroundings. Because one-eyed horses have compromised depth perception, some ophthalmologists recommend not jumping them, especially if they have had no jumping experience prior to vision loss. "Use common sense," adds Dwyer. "Don't get into any situation in which your own eyes can't be the guiding light for the horse. If the horse is accepting of it, I would definitely go ahead with



Initial adaptation

"Champ had been doing very well until his buddy had to be put down because of severe colic. After he died, Champ started to get really strained. He was very nervous, very upset, and he was running into walls and trees. When horses in the other fields ran, he would get very frightened, and he became afraid of the sound of running water. We tried to introduce somebody new, but he was very afraid. It was a tough decision to make, but when I saw that there was nothing we could do to make life easier for him, I thought this isn't fair to him. We put him down last October."

—Becky Yocum, Portland, Pennsylvania

Light to dark

Fully enclosed to protect its delicate optical instruments from outside hazards, the interior of the eye is vulnerable to inflammation because it has no way of releasing pressure. As liquid accumulates inside the eyeball, the nerve cells as well as the lens can be quickly, painfully and irrevocably destroyed.

Inflammation is a common source of blindness because it results from so many causes, both internal and external. An errant whip lash, a kick from a herdmate or other blunt trauma can trigger an inflammatory reaction. Just as often, the attack comes from within: In equine² recurrent uveitis, internal parasites, trauma or infectious disease causes the immune system to identify the eye as a foreign body and attack it. In very rare cases, equine² protozoal myelitis and glaucoma² threaten equine vision.

riding because it gives horses an occupation and an interest."

■ **Stand by your decision.** "People tend to think it is cruel to keep blind horses," says Schwink. "But if the horse seems to be safe and happy, you don't need to have your neighbors making you feel guilty. Do what you believe is right for your horse and you."

For horses, holding together mentally and physically through blindness is a daunting task. But thanks to their adaptive capacities and the willingness of owners to tackle the additional caretaking responsibility, horses who lose their vision can lead happy, safe and productive lives. "Blind horses are special," says Dwyer. "I am always humbled by them." □

EQUUS thanks Mary Nelson, founder of the Equine Recurrent Uveitis Network, and Kim Spallone for their assistance in the preparation of this article. Owners of horses with equine recurrent uveitis who wish to obtain information about the network may contact Nelson at 18 Lake Dr., Mendham, NJ 07945 or call (201) 543-4788.