



Cat Watch

Expert information on medicine, behavior and health from a world leader in veterinary medicine



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A new biomarker has identified its onset months ahead of existing tests.

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A stray male cat becomes aggressive when she goes outside to feed him.

IN THE NEWS ...

Their Mission: the Million Cat Challenge

Animal shelters in the U.S. take in 3.4 million cats annually and euthanize 1.3 million of them. Two shelter medicine programs have set out to save many of those lives with the launch of the Million Cat Challenge.

The Koret Shelter Medicine Program at UC Davis, Maddie's Shelter Medicine Program at the University of Florida and hundreds of animal shelters throughout North America want to challenge animal control facilities and private shelters to reduce euthanasia.

Participating shelters can focus on one, some or all of five initiatives, depending on what's right for their organization and community, says Kay Hurley, DVM, director of the Davis shelter program.

The initiatives: Find alternatives to keep cats in homes or the community; manage intake to improve shelter conditions; remove barriers to adoption such as cost; match the number of cats cared for with requirements to assure the welfare of all; return un-owned cats to the field after sterilization and vaccination. ♦

A Cat on an Underwater Treadmill?

Rehabilitation goes mainstream as Cornell offers therapies to promote mobility and manage pain

The cat's hip problem was so painful that he required a femoral head osteotomy, the surgical removal of the top of the thighbone forming the ball and socket joint. Afterward, the supporting muscle needed to be strengthened to bear the cat's weight, but he refused to use his limb.

The solution: Exercise in an underwater treadmill twice a week for two or three weeks. Movement is easier underwater, and the resistance of the water helps strengthen



Caters News Agency

Walking in water creates resistance that helps increase muscle strength.

muscle. "It got the cat jump-started into using the leg better," says Joseph Wakshlag, DVM, Ph.D., one of 83 specialists in the U.S. certified by the American College of Veterinary Sports Medicine and Rehabilitation. He heads the Sports Medicine and Rehabilitation service at Cornell University Hospital for Animals.

Recovery from Surgery. Cats on underwater treadmills? Yes, indeed. Veterinarians

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Telltale Signs: Squinting and Red Eyes

If untreated, corneal ulcers can develop serious complications, causing the permanent loss of sight

Other than the unlikely use of goggles, one of the best ways to protect your cat's vision is to pay attention to his behavior. If he's squinting or rubbing his eyes, he could have a corneal ulcer. The painful condition is caused by an erosion of the layers of the cornea, the translucent outer covering of the eye.

Yet another telling sign is a discharge from the eye. This can range from tearing to a thick secretion. An opaque white, yellow or blue coloration may also be noticeable. Eventually, the discoloration and a cloudiness of the cornea can prevent light from entering the eye and result in blindness.

Healthy Cornea. "The cardinal signs of a corneal ulcer include discomfort, ocular discharge, redness of the white of the eye and the opacity of the cornea itself," says ophthalmologist Eric C. Ledbetter, DVM, DACVO, at Cornell University Hospital for Animals. "The cornea should be clear, and with an ulcer it often becomes opaque."

Left untreated, corneal ulcers can develop serious complications that may compromise visual acuity and permanently destroy a cat's sight if a veterinarian doesn't promptly treat it.

The cornea consists of the epithelium, which are the cells in the outermost layer;

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CatWatch

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CatWatch® (ISSN: 1095-9092)
is published monthly
for \$39 per year by
Belvoir Media Group,
LLC, 535 Connecticut
Ave., Norwalk, CT 06854-
1713. Robert Englander,

Chairman and CEO; Timothy H. Cole,
Executive Vice President, Editorial
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Postmaster: Send address corrections
to CatWatch, P.O. Box 8535, Big Sandy,
TX 75755-8535.

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SHORT TAKES

A New Biomarker Detects Kidney Disease Early On

A new test for chronic kidney disease in cats has identified its onset an average of 17 months earlier than existing methods, according to a small study published in the *Veterinary Journal*.

Researchers at Oregon State University and IDEXX Laboratory developed a biomarker — a substance indicating disease called SDMA — and used it in a controlled study of 32 older but otherwise healthy cats. When available commercially, a test based on the biomarker could alert cat owners and veterinarians to kidney disease through periodic checkups, researchers say.

"Chronic kidney disease is common in geriatric cats and often causes their death," says researcher Jean Hall, DVM, Ph.D., at Oregon State. "Damage from it is irreversible, but this is an important advance, in that we should be able to identify the problem earlier and use special diets to slow the disease."

Today the primary diagnostic test for chronic kidney disease is a blood test for levels of creatinine — a chemical waste molecule generated by muscle metabolism that is normally filtered from the blood by the kidneys and that may accumulate in the blood of cats with kidney disease. Because cats lose lean body mass with age, their creatinine levels may be normal even in the face of kidney disease, but the study found that lean body mass, even if it has diminished, doesn't affect SDMA.

Cats in the study lived at the Science and Technology Center of Hill's Pet Nutrition Inc. in Topeka, Kan. The company initiated the research to investigate how to best lengthen and enrich the lives of cats with chronic kidney disease.

The condition most commonly affects middle-aged and older cats. Its onset and progression occur over months or years, and it has no cure. According to the Cornell Feline Health Center, "The early indications of failing kidneys include a marked increase in water consumption (polydipsia) and in urination (polyuria); weight loss; apparent

decline in appetite; and, in some cases, occasional vomiting." If owners see these signs, they should seek immediate veterinary consultation for their cat.

Whiskers, the Mood Booster

Owners know firsthand the benefits that cats bring to their lives, especially in easing loneliness and isolation.

Now we're seeing science back up the belief, especially among older adults, says Jules Benson, BVSc, MRCVS, Chief Veterinary Medical Officer at Petplan.

The pet insurance company for AARP members cites research that found animal companions can improve health for older adults in these ways:

- ◆ Commitments like feeding and caring for a pet can provide structure for those at home full time. More than 54 million Americans (51.6 percent) over the age of 50 are not in the labor force, the AARP says.
- ◆ They provide opportunities for positive touch. In a study of elderly people receiving home assistance, 74 percent reported that petting their pet made them feel better.
- ◆ Owners have lower heart rates and blood pressure both at rest or when undergoing stressful tests.
- ◆ Pets' antics encourage laughter. "A good giggle can enhance intake of oxygen-rich air, stimulate the heart, lungs and muscles, increase endorphins released by the brain, strengthen the immune system, boost energy and diminish pain," Petplan says.

"A wet nose and whiskers can be the greatest natural mood booster in the world," says Natasha Ashton, the company's Co-Founder and Co-Chief Executive Officer. ♦



Bigstock

Science is weighing in on the benefits of pet ownership, such as strengthening the immune system and boosting energy.

The Common Cause of Ear Infections

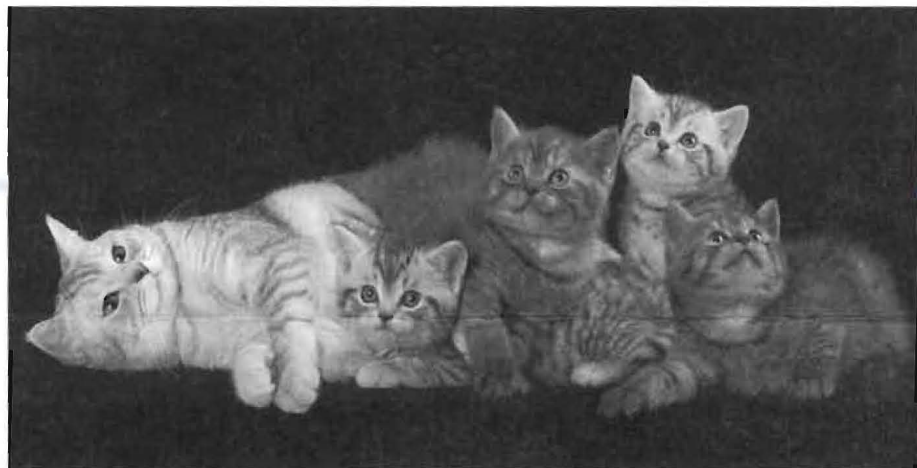
Triggers can include allergies, fleas and excessive grooming, but mites are most frequently to blame

One common reason for veterinary visits among cats is otitis externa, or inflammation of the external ear canal. "Most people believe that that the term otitis externa means an ear infection, but that isn't true. Something has to breach the normal defense mechanism of the ear to trigger the infection," says veterinary dermatologist William H. Miller, Jr., VMD, Medical Director of the Cornell University Hospital for Animals.

Once the surface of the ear canal is damaged, bacteria or yeast inside and around the canal can cause an infection. The underlying causes can include tumors, allergies, ticks or fleas, and excessive grooming and ear wax. But by far the most frequent cause in cats, especially kittens, is ear mites.

Eight-legged invaders. These tiny, eight-legged parasites in the ear canal feed by piercing the skin. "Many kittens get ear mites," says Dr. Miller. "Kittens huddle together with their mother and their littermates. If mom has it, they all will have it."

Stray cats are the most likely candidates for ear mite infestation. Allergies are a problem for other cats,



Kittens often huddle with their mother and littermates, so if the mother has ear mites, all the kittens will have them.

with some developing an allergic otitis externa with a secondary yeast or bacterial infection.

"The allergen can be a food, drug, parasite or environmental item such as pollen, dust mites or dander," Dr. Miller says. "The ear canal lining contains mast cells which degranulate (release granules) when exposed to an allergen. This degranulation causes swelling, heat, moisture and itching, which predisposes the animal to infection. External itching makes things worse."

Signs an owner might notice depend upon the disease and the individual cat. They include head shaking, ear scratching, frequent yawning, malodorous ears, ear pain, head tilting and personality changes. If a crumbly, dark brown, waxy discharge resembling coffee grounds is seen within the ears, ear mites should be suspected.

An Interior View. Diagnosis starts with a physical examination to determine whether an ear disease is actually present. Veterinarians view the ear canal, ideally all the way down to the ear drum, with an instrument called an otoscope. "This may require tranquilization or even anesthesia if the ear is very painful," Dr. Miller says.

"Cytology (microscopic examination of the cells) within the ear discharge should then be performed. Depending on the case, the discharge will be examined for parasites or stained to look for bacterial or fungal infection. In cases where an ear tumor is suspected, tumor cells can sometimes be scraped from the ear canal for diagnosis. In cases of

(continued on bottom page 7)

THE SHORT LIFE OF THE USUAL CULPRIT

Several types of ear mites exist, but the usual culprit in cats is *Otodectes cynotis*. The microscopic parasite grows from egg to adult in three weeks and has about a two-month life cycle. The mites are easily spread among animals, so if a new cat or dog is brought into the household, he should be kept separate from the others until a veterinarian gives him a clean bill of health. If it's determined he does have an infestation, check your other pets.



Otodectes cynotis, the mites most commonly affecting cats, live only about two months but can create havoc when they infest the ear.

Bayer Animal Health

THERAPIES... *(continued from cover)*

at universities and specialty practices now offer a range of therapies to help cats recover from or manage surgery, arthritis pain, obesity and neurological diseases that affect their mobility. "Medical doctors send patients to physical therapy after orthopedic injuries, surgery and heart attacks," Dr. Wakshlag says. "If people come back quicker and better after rehabilitation, why wouldn't a cat or dog?"

In fact, pet owners who have experienced the benefits of physical therapy are more likely to seek it for their pets. The American Veterinary Medical Association approved rehabilitation as a specialty in 2010. (The term physical

therapy is limited to humans.) Cornell has offered rehabilitation for some time but recently renamed the program, formerly known as pain management.

Among the techniques Cornell offers for cats are:

- ◆ **Laser therapy for pain and healing.** In Class IV laser therapy, which has long been used on human patients, the specialist directs an intense beam of light into tissues to reduce swelling, increase circulation or block a nerve's ability to send a pain signal to the brain. The light energy, which alters or stimulates cellular function, is intended to help wound



Acupuncture stimulates points on the body with heat, pressure or needles, and can be effective for chronic pain.

TECHNIQUES AND TREATMENTS FROM STEM CELL THERAPY TO MASSAGE

These are among the treatments that veterinarians increasingly use to improve cats' well-being:

- ◆ **Acupuncture:** Stimulating certain points on the body using needles, heat, pressure or laser light. Studies show it can be effective for chronic pain.
- ◆ **Massage:** Rubbing and kneading muscles and joints to relieve pain and relax contracted muscles.
- ◆ **Stem cell therapy:** Isolating stem cells from a cat's fat tissue and injecting them or delivering them intravenously to promote healing, reduce pain and inflammation, and replace or repair damaged tissue, cartilage or bone.
- ◆ **Therapeutic exercises:** Stepping over cavaletti (jump) poles, walking up or down steps or standing on wobbler boards helps improve the perception of movement and spatial orientation, coordination and strength.
- ◆ **Therapeutic ultrasound:** High-frequency sound waves stimulating tissue increase blood flow, reduce swelling and gently massage muscles, tendons and ligaments. They can help speed healing, reduce pain and relieve tight muscles and tissues.
- ◆ **Thermal therapy:** Applying heat to relax tight muscles or ice to reduce inflammation.
- ◆ **Treadmill:** Walking on one may help animals regain cardiopulmonary fitness or improve muscle strength.
- ◆ **Underwater treadmill:** Resistance generated by walking in the water increases muscle strength and helps patients with neurological deficiencies move with ease. Treadmill speed, water level and use of jets can be adjusted to provide an appropriate level of difficulty for each animal.

healing and inflammatory conditions in leg joints and the lower back.

- ◆ **Therapeutic ultrasound** for tendon and ligament injuries.
- ◆ **Transcutaneous (through the skin) electrical stimulation** for pain and neurologic problems. An electrical current is used to help with nerve regeneration after back surgery and prevent muscle atrophy from disuse.
- ◆ **Joint mobilizations and exercise regimens** utilizing ramps and everyday cat perches to keep joints mobile.

Rounding out the list: the underwater treadmill "for the right cats," Dr. Wakshlag says.

Rehabilitation specialists treat cats with complicated fractures, limb amputations and deformities that cause problems with limb usage. For instance, cats who have undergone an amputation must learn how to walk on three legs. Some Manx cats have an inherited condition called sacral caudal dysgenesis, a malformation of the vertebrae of the lower back and tail that causes tailless or bobtailed cats to have difficulty using their hind legs. "Often just using perches and treats to get them flexing and extending their legs properly can be helpful," Dr. Wakshlag says.

The University of Tennessee, the first institution to offer certification courses in animal rehabilitation, has graduated more than 850 individuals from its program since it began in 2001. Marti Drum, DVM, Ph.D., a clinical

assistant professor at the University's College of Veterinary Medicine in Knoxville, most commonly treats traumatic orthopedic injuries such as pelvic fractures, deranged stifles — in which all the ligaments of the knee are traumatically torn — and spinal cord injuries. But many senior cats could benefit from rehab, she says:

"It is estimated that up to 90 percent of geriatric cats suffer from arthritis in one or more joints, but rarely do we treat cats because signs of arthritis often go unrecognized in them. I would love to have the opportunity for more cats to receive the benefits of rehabilitation for arthritis."

Nerve Damage.

Fortunately for cats, their anatomy makes them less likely than dogs to suffer traumatic injuries. They're light on their feet and their joints are more flexible, but they are susceptible to arthritis, especially of the spine, as well as nerve damage from trauma.

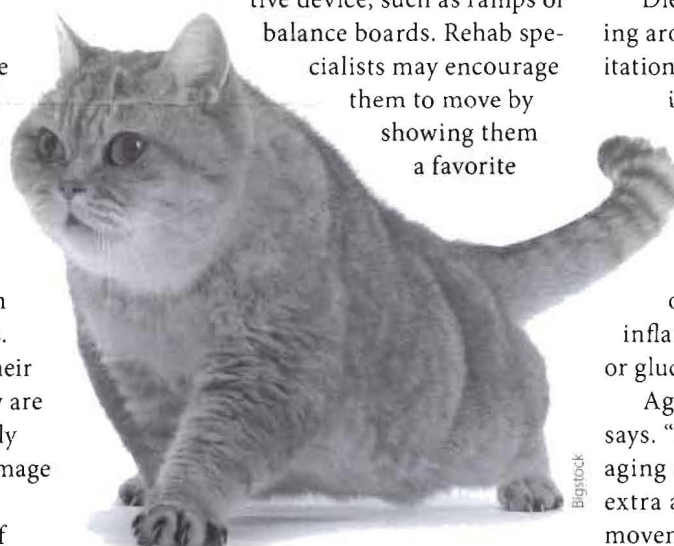
Dr. Drum recalls the case of Elmo, an obese sealpoint Siamese whose hip arthritis was so severe he couldn't and wouldn't use his litter box. However, his laidback and loving temperament, dedicated owners and sessions on an underwater treadmill helped him regain mobility.

"With a little weight loss, he began resuming normal litter box habits and eventually began jumping small heights again," Dr. Drum says. "Some of our more successful cases were geriatric cases where people were thinking of putting the animal down or were not sure what to do. I think we made very positive advancements with some of those pets as far as their ability to get up, get down, keeping them active and mobile when they were potentially near the end of their life."

Range of Motion. Rehab typically starts with evaluating the animal's range of motion in the affected area.

"We measure muscle mass, girth and fitness and then we try to improve on all of them," Dr. Wakshlag says. "We try to rebuild muscle and improve range of motion and, in effect, the joint, so we tend to use many different therapies and a lot of it is home exercise programs."

Surprisingly, some cats are good patients but compliance is often an issue. Not every cat is willing to walk on an underwater treadmill or do routines that involve an exercise ball or assistive device, such as ramps or balance boards. Rehab specialists may encourage them to move by showing them a favorite



Up to 90 percent of geriatric cats have arthritis in one or more joints, which can be exacerbated by obesity. Massage, exercise and stretches can keep joints flexible, while a diet plan from a specialist helps reduce excess weight.

treat, using catnip toys or dangling a fishing lure toy or feather.

Short Attention. Recognizing and working with the short feline attention span are also musts. When a cat indicates that he's tired of an activity, it's best not to push him. "The patients I have worked with have been very compliant, but I am also very attuned to cat behavior and tolerance during therapy," Dr. Drum says. "It is essential that all my patients are willing participants, but it is even more critical with felines since they can become very stressed. If a cat is not tolerating a therapy or exercise, then we stop."

Cats who enjoy being touched respond best to rehab. Those who dislike touch are more difficult to work with, but some owners have been successful by wearing heavy gloves to protect their hands from scratches or bites when they perform massage, exercises and stretches to help keep joints flexible with their cat at home. Some owners build small ramps and encourage their cats to walk up and down them for treats.

Diet is important, too, since carrying around extra weight makes rehabilitation more difficult. "A strict diet plan is often part of the rehabilitation plan and all rehab specialists are well versed in obesity management as part of their training," Dr. Wakshlag says.

A rehab veterinarian may recommend supplements with anti-inflammatory effects such as fish oil or glucosamine-chondroitin.

Age is not a disease, Dr. Wakshlag says. "Many ailments that come with aging are definitely treatable, and this extra attention to details regarding movement, behavior and pain management is all part of this growing area of rehabilitation in our family pets. As your cat ages and doesn't do the things that he or she used to do, which can be concerning — look up one of the American College of Sports Medicine and Rehabilitation specialists — they may be able to take off a few years and help your cat rediscover life again." ♦

TO FIND A SPECIALIST

Ask your cat's veterinarian for a recommendation for a rehabilitation specialist. The websites of the American College of Veterinary Sports Medicine and Rehabilitation (<http://vsmr.org/>) and the University of Tennessee (www.utc.edu/Faculty/David-Levine/) list facilities and individuals offering services.

CORNEA ... (continued from cover)

the stroma, which is comprised of connective tissue cells; the endothelium, a single layer of cells whose primary function is to maintain the cornea in a dehydrated state to help achieve optical clarity; and the Descemet's membrane, a thin, strong tissue that protects against infection and injury.

A corneal ulcer is an erosion of the epithelium into the stroma, where fluid from tears gives the cloudy appearance to the eye. If the erosion continues to Descemet's membrane, a deep ulcer called a descemetocele forms. Then the eye may leak and can collapse, Dr. Ledbetter says.

At this stage, surgery and tissue grafting may be necessary. "The tissue is usually harvested from the cat's own eye, but synthetic and other biological graft materials are also available," he says. "Some eyes can be saved with surgery."

Corneal ulceration has many causes, but feline herpesvirus virus (FHV-1) is overwhelmingly the most common, Dr. Ledbetter says. The highly contagious virus is transmitted by contact with saliva, ocular or nasal secretions, such as sneeze droplets, shared food and litter. The virus replicates within corneal cells and destroys them, requiring treatment with topical drugs or antiviral medication.

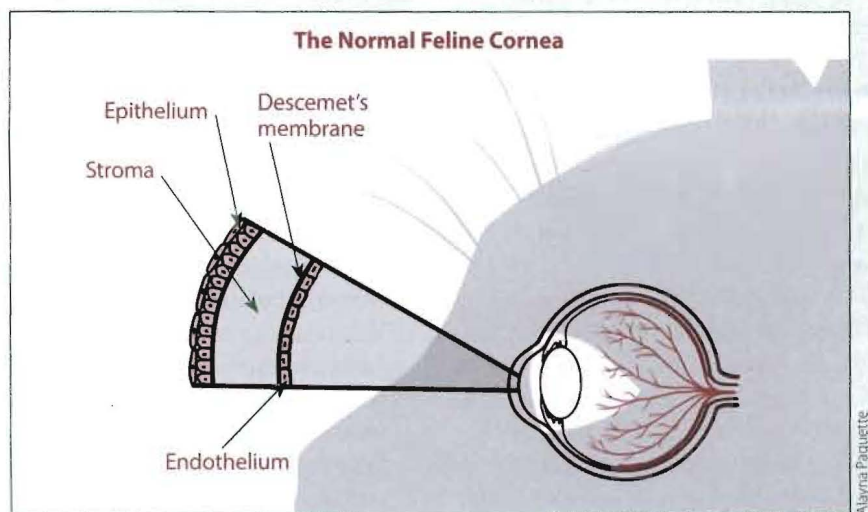


The prominent eyes of short-faced cats like Persians put them at risk of injury when they run into an object or a sharp paw from another cat.

THE ANATOMY OF THE CORNEA

The cornea, the clear coating of the eye that admits light, has layers of specialized skin cells, including:

- ◆ Epithelium, the outer layer of tissue covering the cornea, keeps foreign material, such as dust, water and bacteria, from entering the eye. It also absorbs oxygen and cell nutrients from tears and distributes them to the rest of the cornea. Its tiny nerve endings make the cornea sensitive to pain when rubbed or scratched.
- ◆ Stroma is connective tissue cells composed of water and flattened plates of collagen fibers that provide strength, elasticity and form to the cornea.
- ◆ The endothelium, a single layer of cells, mainly keeps the cornea dehydrated to maintain vision.
- ◆ Descemet's membrane, the "basement" of the endothelium, consists of transparent tissue — collagen fibers differing from those in the stroma — covering the inner surface of the cornea. It's named after the 18th-century physician Jean Descemet.



FHV-1 infection typically occurs in kittens, with an estimated 80 percent progressing to latent infection, and 45 percent of those experiencing spontaneous reactivation of the virus later in life, according to a study published in 2010 in *Journal of Feline Medicine and Surgery*.

Among the many other causes of corneal ulcers in cats:

- ◆ External injury resulting from fights, accidents, thorns or other sharp or abrasive objects coming into contact with the eye. These injuries can reduce the cornea's anatomical and physiological defenses and result in secondary corneal infections.
- ◆ Facial nerve paralysis: This can cause a disorder in a cat's blink reflex — an important function in protecting the eye. Causes can include inflammation of the middle ear or petrous temporal bone, a dense pyramid-shaped bone at the base the skull, post-surgical complications or trauma.
- ◆ External irritation: According to the Cornell Feline Health Center, other causes include ingrown eyelashes, dirt trapped beneath the eyelid or exposure to caustic or harmful chemicals such as shampoos and household cleaners.
- ◆ Bacterial infection: A variety of bacteria can infect the eye, so a culture is often needed to determine the correct antibiotic to be used.

An ulcer's progress depends on a number of factors, especially how quickly a veterinarian attends to it. A corneal ulcer can heal in a week or less with medical care. Without it — or if a cat's immune system is weakened — the body

tries to heal the cornea by sending blood vessels into the cornea. This can cause the cornea to swell and become susceptible to invading bacteria that can erode it.

Specific breeds are more susceptible to corneal ulcers, particularly short-faced cats bred to achieve a baby-like appearance, Dr. Ledbetter says. "Himalayans and Persians are kind of the poster children. They've been bred for a very specific facial look, which is more human-like and it's at the cost of protecting their eyes."

Other flat-faced breeds are the British Shorthair, Scottish Fold, Munchkin and Selkirk Rex. Their prominent eyes put them at risk of eye trauma when they run into an object or a sharp paw in a scuffle with another cat.

Testing for Tears. In an ophthalmic exam, veterinarians will stain the eye with fluorescein, an orange substance that fluoresces under a blue light to highlight foreign bodies and damage to the cornea. They might also test for tear production, obtain cultures and perform a microscopic examination of tissue.

Compared with dogs, the cause of feline corneal ulcers is more often viral, Dr. Ledbetter says. "Goal No. 1 of treatment should always be to identify and eliminate the underlying cause whenever possible."

After the cause is found and removed — or in the case of a wound, healed — the next step is to prevent secondary infections and apply a topical antibiotic or administer an antiviral medication if the cause is viral.

Antibiotic drops may be applied but are effective only for several hours. They must be applied frequently, so often longer-lasting ointments are applied. In some cases Dr. Ledbetter prescribes a drug called atropine to help control pain. A side effect is that it makes a cat light-sensitive, even for days after the medication is halted.

Atropine is known to have a bad taste, and if it gets in a cat's mouth during application, drooling can occur for a period of time. An uncomfortable cat can understandably make the next application more difficult.

The Follow-ups. A patient should be re-examined after two to three days of treatment to ensure that healing is progressing. If the ulcer isn't healing well, additional treatments or surgery may be necessary.



Eric C. Ledbetter, DVM, DACVO

A veterinarian stained this cat's eye with fluorescein, then used a blue light to reveal an infected corneal ulcer.

In addition to the cost of an Elizabethan collar as a protective measure, the fees for treating a cat with a corneal ulcer will vary from clinic to clinic, Dr. Ledbetter says. "The costs are much lower when getting appropriate treatment earlier than if treating secondary complications, such as infections. Then the costs will rise substantially."

As for recovery, he says, "In general, if it's an uncomplicated ulcer, then the prognosis is good. With secondary causes or if the problem is repetitive, then it can be guarded or poor. The critical message should be to seek appropriate care early." ♦

HEALTH

MITES ... (continued from page 3)

chronic or deep ear infections, an X-ray, CT scan or MRI may be warranted."

Treatment depends on the cause and the existence of a secondary infection. If the infection isn't too deep, a topical ear medication will be applied to the ear once to twice daily. "If the infection alone is treated, but the underlying cause can't be found or isn't addressed, the infection is likely to recur," says Dr. Miller. "If the cat has never had ear disease before, he should be examined by a veterinarian before any treatment is started. Something as simple as an ear cleaning done before the examination can change the cytologic

findings, possibly leading to an inaccurate diagnosis. Cytology of the ear debris is an essential diagnostic tool."

Ear cleaning and ear drops are usually needed. Cleaning may be done once at the clinic or at home several times each week.

However, Dr. Miller cautions, "For a good, safe home cleaning, a cat owner needs to know what he or she is doing. The technique can be learned at a veterinarian's office. Also, the type of ear cleaning product and ear drops varies, depending upon which ear disease is being treated."

Most cases are easy to treat and resolve if caught early, Dr. Miller says. "And the best way to catch otitis externa in its earliest stages is to pay attention to your pet. Notice whether your cat is flicking his ear, shaking his head more often than usual, doesn't welcome being petted around his head or has a strange odor around his head. All of these can be early signs of otitis externa. As the disease worsens, the signs will become more pronounced."

With prompt attention, however, most cats will return to normal in a week or two, Dr. Miller says. ♦



Elizabeth

Elizabeth is thankful for the assistance of **Bruce G. Kornreich, DVM, Ph.D., ACVIM**, Associate Director of the Cornell Feline Health Center, in providing the answer on this page.

**PLEASE
SHARE YOUR
QUESTIONS**

We welcome questions on health, medicine and behavior, but regret that we cannot comment on prior diagnoses and specific products. Please write *CatWatch* Editor, 535 Connecticut Ave., Norwalk, CT 06854-1713 or email catwatcheditor@cornell.edu.

COMING UP ...

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**BODY
LANGUAGE**

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INCONTINENCE

❖
**MAMMARY
GLAND
TUMORS**
❖

A Stray Becomes Aggressive When She Goes to Feed Him

Q *I've been feeding a neutered male outdoor cat for the past few weeks, and he is aggressively friendly. On two occasions, he attacked my legs with his claws when I was walking to his food bowl to fill it. I began taking a spray bottle with me and squirted him when he got too close but stopped that because I thought it would only confuse him. Lately, he has not attacked me but is still very persistent in rubbing against me to the point of almost causing me to trip. Is there anything I can do to calm him down before mealtime?*

A First, thank you very much for your concern for this kitty's well-being. It is wonderful that you care enough to feed him and to work toward figuring out a solution to this issue. As you move forward in working with him, however, it is very important that you are careful about your own well-being. Without knowing the health and vaccination status of this kitty, it is possible that if he bites or scratches you, you can come down with a problem of your own.

These problems may range from *Bartonella* (a bacteria) infection from scratches (called cat-scratch fever) to potentially life-threatening rabies infection from bites, so it is very important that you safeguard your own health as you work with him. Of course, if you have already been bitten or scratched, it would be wise to consult with a physician about how best to manage the situation.

Aggression in general is a complex behavioral problem, and there are many forms of aggression in cats, ranging from fear aggression to predatory aggression to pain-induced aggression. The best means of managing these different types varies with each cause. With respect to this kitty's behavior, it is difficult to comment specifically without seeing in person (or in kitty), but it sounds like what you are describing may be a form of play aggression.

Cats engaging in play aggression often demonstrate characteristic body postures,

such as tail-lashing and flattening of the ears against the head, followed by hiding/stalking and biting of the hands and feet of people in their vicinity. This behavior is most commonly seen in kittens but may also be seen in young adult cats.

Management of cats engaging in inappropriate play aggression usually involves the use of techniques to distract/deter the offending kitty without making physical contact with him immediately upon the onset of the unwanted behavior. Techniques including the use of a blast from a compressed air canister, shaking a can full of coins or tossing ping-pong balls or balls of aluminum foil to distract an aggressive kitty are often helpful. The use of a spray bottle may also be successful, depending upon the cat. The important point here is that, whatever techniques you choose to use, do not physically reprimand this kitty (i.e., by tapping him on the nose or slapping him), as he may perceive this as a threat and may become more aggressive.

In addition, it may be helpful to refrain from feeding this kitty while he is engaging in this behavior, as he may perceive this as a reward for acting this way. Perhaps consider putting the food bowl back in the house if he acts this way and wait until he is calm before providing him with a reward for this calm behavior by feeding him.

Of course, it is difficult to rule out other potential causes of this behavior from a distance, and you may consider consultation with a veterinary behaviorist if these techniques are not effective. Figuring out the best means of addressing this type of behavior can be complicated, in your case further complicated by the fact that this is an outdoor cat, but with patience and appropriate guidance, most of these types of problems can be resolved.

For more information on feline aggression, please visit the Cornell Feline Health Center website at: www.vet.cornell.edu/FHC/health_resources/brochure_aggression.cfm

I hope that this is helpful, and please keep in touch.

—Best regards, Elizabeth ❖

CORRESPONDENCE

The Editor
CatWatch[®]
535 Connecticut Ave.
Norwalk, CT 06854-1713
catwatcheditor@cornell.edu

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