

THIS JUST IN

Owner Gives COVID to Cat

First delta variant in U.S. cat

According to a release from the University of Pennsylvania, scientists identified a domestic house cat, treated at Penn Vet's Ryan Hospital, that was infected with the delta variant of SARS-CoV-2 through exposure from its owner. The full genome sequence of the virus was a close match to viral sequences circulating in people in the Philadelphia region at the time. The research was published in *Viruses*.

The find is the first published example of the delta variant occurring in a domestic cat in the United States. Notably, the cat's infection was identified by testing its fecal matter. A nasal swab did not result in a positive test.

This particular pet cat, an 11-year-old female, was brought to Ryan Veterinary Hospital in September with gastrointestinal symptoms. It had been exposed to an owner who had COVID-19, although the owner had isolated from the cat for 11 days prior to its hospitalization.

While this case doesn't raise alarms for the virus acquiring significant numbers of mutations as it moves between species, researchers hope to continue studying other examples to see how SARS-CoV-2 evolves. Penn Vet's Institute for Infectious and Zoonotic Disease will facilitate this look at human-animal interactions when it comes to pathogen transmission. There is currently no evidence to suggest that cats can transmit SARS-CoV-2/COVID-19 to people. ■

INSIDE THIS ISSUE

Potential New Treatment For Melanomas	2
Cornell's Genetics Study Provides Hope	2
Those Annoying Anal Glands	3
"Sudden" Blindness	4
Monitor for Parasites	6
Home Alone—Is It OK?	7
Concerned About Mute Cat	8

Cats Love Boxes and Perches

The intrigue is a mix of safety, stealth, and a little fun

Can't find your cat? Check all the little nooks and crannies in your house, from the U-bend under the sink to the top of the refrigerator to tucked under an armchair. This feline love of hide-holes, boxes, and elevated perches isn't just an isolated quirk—animal-care professionals utilize it to enrich cats' lives, and scientists have even studied it.

Boxes Are Fun

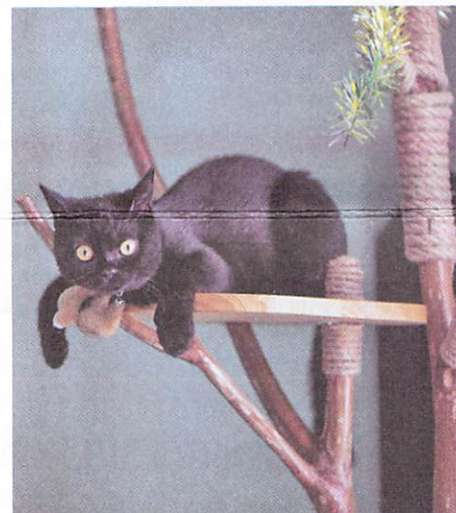
"A lot of cats enjoy playing in boxes. They may drop a toy inside and practice their 'hunting' skills," says Pamela J. Perry, DVM, PhD, behavior resident at Cornell University's College of Veterinary Medicine. Boxes and other small, enclosed spaces offer an extra challenge when playing with a toy, or the cat can use a box as an ambush zone (just hope that you aren't the target!).

The allure of boxes isn't always about having fun. "In addition, many cats find boxes comforting because it gives them a place to hide from potential threats," says Dr. Perry. "Thus, a box gives them a safe, secure place." It makes sense: A box is a perfect spot to hunker down while assessing a new situation.

A Dutch study published in *PLOS One* in October 2019 looked at the stress levels of cats who had just arrived at an animal shelter. The study found that cats who were given hiding boxes in their living quarters adjusted to shelter life more quickly and had lower stress

Cats Even Like "Fake" Square Boxes

A July 2021 study published in *Applied Animal Behaviour Science* asked owners to print out visual stimuli (in the form of shapes and other things), place them on the floor, and then observe what their cats did. It turns out cats are drawn to box outlines as well as actual boxes. Even stranger, they also would choose to sit inside a Kanizsa (optical) cube illusion.



Cats enjoy sitting in a nice high spot where they can safely watch all the activity.

levels than cats who did not have hiding spots. And the cats who were not given boxes would often flip their litterboxes to create a hiding place of their own.

"Boxes also may aid in thermoregulation by acting as an insulator and keeping the cat warm and cozy," says Dr. Perry. During cold weather, you may find your cat prefers to snuggle up in enclosed cat beds or to take over a box of clothes as her napping spot.

The Perch Advantage

"Many cats love to get up high in their environment where they have a good vantage point to observe their surroundings, which gives them a safe place to watch for threats," says Dr. Perry. Cats often choose windowsills, the back of the couch, or even a bookshelf as a favorite spot to hang out and watch over their domain.

Napping in an elevated spot gives a cat in the wild a place out of reach of larger predators and allows them to see any threats that might be approaching their perch. On the flip side, the cat can keep an eye out for any tasty prey that might wander into view below.

(continues on page 5, bottom)

Potential New Treatment For Melanomas

Electrochemotherapy offers promise

Luckily, melanomas (cancers originating from pigmented cells) are rare in cats. They most commonly occur in the iris (colored part that surrounds the pupil) and limbus (border between the transparent cornea and the whitish sclera) of the eye. Iris melanomas may be malignant, while limbal melanomas are most commonly benign.

Unfortunately, melanomas around the mouth and nose of cats tend to be aggressive and fast growing. While surgery is currently considered the best option for treating these aggressive cancers, fully removing oral and nasal melanomas in cats is challenging, and prognosis after surgical excision is poor.

A recent report from North Downs Specialist Referrals in London describes a case in which electrochemical therapy (ECT), a potential new treatment option that has been used to treat human melanomas, was used in a four year old cat with nasal melanoma. After an intravenous injection of bleomycin (a chemotherapeutic medication), electrical pulses, which make a tumor more permeable and susceptible to chemotherapy, were applied to the cat's tumor. The treatment was repeated two weeks later.

The cat did not experience any significant negative effects of this therapy and is currently in remission after 292 days. Given the fact that the current median survival time for cats with melanomas of the mouth and nose is approximately 83 days, this case report suggests that further investigation of ECT as an option to treat cats with oral and nasal melanomas is warranted. ■

Little, A., et al. "Electrochemotherapy as a treatment option for feline nasal melanoma," Journal of Feline Medicine and Surgery Open Reports, Feb. 11, 2022.

Cornell's Genetics Study Provides Hope

It can help improve diagnosis, treatment, and prevention

A wide-reaching study that was done at Cornell University may provide hope for cats who suffer from hyperthyroidism, diabetes, and feline eosinophilic keratoconjunctivitis (a chronic disease of the cornea). The study looked at 1,122 cats and involved experts from Cornell veterinary clinical faculty, the Cornell Veterinary Biobank, the Cornell Feline Health Center, and Jeff Brockman, PhD, a genomics researcher at Hill's Pet Nutrition in Maryland. This study is believed to mark the largest feline complex genetic disease-mapping study ever carried out in veterinary medicine, and it was an important step forward.

The goal for the study was to find genetic markers for diseases to narrow down the regions in the feline genome that need to be investigated to identify specific genetic defects. Such marker genes could be used to screen cats before they are bred and can lead to the identification of specific mutations that cause disease in cats. Identification of such mutations can improve our ability to diagnose, treat, and prevent genetically-mediated diseases.

Cornell researchers compared the genomes of diseased and control cats, and the study population included both purebred cats and the common domestic shorthaired and longhaired cats that make up the majority of our feline population. Using blood samples, the cats' genomes were examined by running them through a custom-designed feline mapping array donated by Hill's. This new technology can detect single variations in the genetic code at 340,000 sites across an individual cat's genome.

Originally, nine diseases were chosen for study. These diseases were: hyperthyroidism, diabetes, eosinophilic keratoconjunctivitis, hypertrophic cardiomyopathy, chronic kidney disease, chronic enteropathy, inflammatory bowel disease, small cell alimentary lymphoma, and hypercalcemia. These are all complicated diseases, so the researchers were aware that their causes were likely to be multifactorial in the cats from both genetic and environmental standpoints.

Genomic locations for hyperthyroidism, diabetes, and feline eosinophilic keratoconjunctivitis were identified in the study, which providing crucial information for future investigations focused on identifying mutations that may cause these diseases. While a great deal more work needs to be done, this landmark study represents a big step forward toward improved feline health. ■

Cornell CatWatch

EDITOR IN CHIEF

Bruce G. Kornreich, DVM, Ph.D., Dipl ACVIM
Director, Cornell Feline Health Center

EXECUTIVE EDITOR

Cynthia Foley

TECHNICAL EDITOR

Debra M. Eldredge, DVM

ADVISORY BOARD

James A. Flanders, DVM, Dipl ACVS,
Emeritus, Associate Professor, Clinical Sciences

William H. Miller, Jr., VMD, Dipl ACVD,
Professor Emeritus, Clinical Sciences

Pamela J. Perry, DVM, Ph.D.,
Lecturer Clinical Sciences,
ADVM Behavior Resident

Kelly R. Hume, DVM, DACVIM
Associate Professor, Clinical Sciences,
Oncology

CONTRIBUTING WRITERS

Eileen Fatcher, DVM
Katherine Basedow, LVT

CatWatch is an independent newsletter produced in collaboration with Cornell University College of Veterinary Medicine's Feline Health Center



College of
Veterinary Medicine

For information on pet health, visit the Cornell University College of Veterinary Medicine, website at vet.cornell.edu

Send questions and letters to the editor:

CatWatch
535 Connecticut Ave.
Norwalk, CT 06854-1713
catwatcheditor@cornell.edu

Subscriptions: \$39 per year (U.S.) • \$49 per year (Canada). For subscription and customer service information, visit www.catwatchnewsletter.com/cs or write to: CatWatch, P.O. Box 8535, Big Sandy, TX 75755-8535. 800-829-5574



CatWatch* (ISSN: 1098-2639) 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, Chief Content Officer; Philip L. Penny, Chief Operating Officer; Greg King, Chief Marketing Officer; Ron Goldberg, Chief Financial Officer; Tom Canfield, Chief Circulation Officer. ©2022 Belvoir Media Group, LLC.

Postmaster: Send address corrections to CatWatch, P.O. Box 8535, Big Sandy, TX 75755-8535.

Express written permission is required to reproduce, in any manner, the contents of this issue, either in full or in part. For more information: Permissions, CatWatch, 535 Connecticut Ave., Norwalk, Connecticut 06854-1713.

Those Annoying Anal Glands

Early intervention prevents problems down the road

Although cats aren't the butt-scooters dogs can be when anal glands start to get backed up, the problem is just as worrisome. Anal glands are supposed to discharge that foul scent in small amounts with each bowel movement. If they don't, the liquid builds up, and you could be facing some pretty unpleasant management tasks or, worse, surgery. By understanding what anal glands do and knowing early signs of dysfunction, you can keep your cat healthy, happy, and, well, less smelly.

"The most common predisposing factor for anal gland problems in cats is obesity. Other things that may predispose a cat to anal-gland issues are chronic soft stool and allergies," says Julia E. Miller, DVM, assistant clinical professor, section of dermatology at Cornell University's College of Veterinary Medicine.

When Things Get Abnormal

The anal glands are small scent glands/sacs located on either side of the anus. Normally, these glands have a thick liquid discharge that empties out a bit every time your cat has a bowel movement. The discharge contributes to the foul smell of feces and acts as a personal signature ("Fluffy was here"). Cats can also discharge anal glands when frightened.

If anal glands don't empty regularly, they can become impacted. As the fluid builds, bacteria can grow, causing swollen, painful anal glands. You might notice a red area on either side of the anus, under her tail, or a hard swelling, possibly as big as a small marble. Some cats will stop using the litterbox to defecate as they associate the box with pain from trying to pass stool due to the swollen glands.

If you try to check the area, be prepared for even your sweetest cat to react with violence. Anal-gland abscesses hurt. Once the abscessed area opens and drains, there will be less pain, but there will be a purulent, foul discharge.

Rather than scooting like a dog, cats with anal-gland problems usually lick and chew around the anus—at least at first. If the glands become impacted and then infected, you may notice an open, oozing wound under your cat's tail. And it's usually painful.

Veterinary Intervention

With an impaction, the discharge thickens to a brown, foul paste that necessitates a visit to your veterinarian. For an impaction, your veterinarian will try to manually express the glands to relieve the pressure. You may be instructed to apply warm compresses for five to 10 minutes three to four times a day before your appointment, if you can, to make this procedure easier.

Your veterinarian will apply gentle pressure on the anal sacs from outside the rectum. Ideally, the contents will empty out, giving your cat relief. Obviously, this is not pleasant for your cat, but sedation is usually not required. If your cat has an abscess, however, sedation may be needed.

Cats with an anal-sac infection may require antibiotics. Home care such as warm compresses may be recommended if your cat will tolerate it. A ruptured anal-gland abscess is generally left open to heal with cleaning at home.

Prevention

Cats who are overweight or inactive have a greater risk for anal-gland problems as they are also more prone to constipation. If the cat isn't passing feces, there is no pressure to help empty the glands. The same is true if your cat has soft stools that won't put pressure on the glands.

You can minimize your cat's chances of anal-gland problems by encouraging her to exercise using toys, play, or food puzzles. Serve her meals in one room but put her water bowl in another room

and her litterbox in a third area, so that she must move around. Many cats will retrieve if you toss items like a crumpled ball of aluminum foil or a small stuffed toy. Chasing a wand with feathers is another way to get your cat moving.

Serve meals instead of free feeding to keep control of your cat's weight. If you have multiple cats, watch while they eat to be sure no one is sneaking someone else's leftovers. If your cat needs to diet, consult your veterinarian for a good plan. Cats who lose weight too rapidly can suffer potentially fatal liver problems.

Cats with chronic anal-gland problems may benefit from regularly scheduled veterinary appointments to have their glands expressed. Your veterinarian may show you how to do this at home if you are willing to learn.

If the problem is bad, surgery may be needed. Cats can do fine without anal glands, but surgery has side effects and can result in temporary or even permanent incontinence.

Knowing the early stages of anal-gland malfunction can help you avoid major issues like surgery. The sooner you notice your cat may have impacted glands, the easier your veterinarian can resolve the problem and suggest preventive steps, including weight control, activity (assuring adequate water intake), and adding some fiber to your cat's diet. ■



A lot of licking and chewing around the anus may indicate a blocked anal gland.

“Sudden” Blindness

It seems to appear without warning, but blindness is usually a gradual process

Cats are notoriously good at hiding early symptoms of disease, often providing few clues until things get so bad that normal functioning is impossible. This often makes it seem like they are suddenly severely ill when just yesterday they appeared fine.

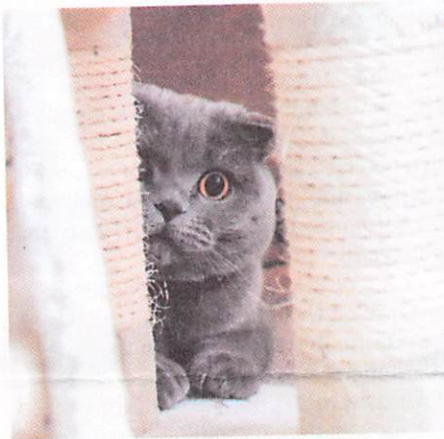
But that's rarely what happens, and vision loss is a classic example. The reality is that, until reduced vision reaches a point where your cat can no longer navigate, you may not be aware that there's a problem.

“Loss of vision caused by intraocular inflammation typically has a more insidious course but may present as ‘sudden vision loss,’ as many cats may not have obvious behavioral changes until advanced stages of disease,” says Kelly Knickelbein, VMD, assistant clinical professor of ophthalmology at Cornell University’s College of Veterinary Medicine.

Regardless of whether it is truly an acute situation or whether vision loss was coming on gradually and you were unaware, perceived sudden blindness in cats is always an emergency. If there is any chance of restoring and preserving vision, the sooner a diagnosis is made and treatment is instituted, the better the chance of recovery.

Signs of Vision Loss

- ▶ Misjudging distances when jumping on and off of things
- ▶ Avoiding jumping altogether
- ▶ Bumping into things
- ▶ Walking with unusual caution
- ▶ Seeming unsteady on her feet
- ▶ Uncharacteristically skittish
- ▶ More frequent hiding
- ▶ Pupils may appear very round in daylight, instead of normal slits
- ▶ Pupils fail to constrict if you shine a light into them



This cat appears to be hiding and her pupils appear wide for a light environment.

Causes of Vision Loss

In order to see, light must first pass through all layers of the eye (cornea, anterior chamber, pupil, lens, posterior chamber), hit the retina, and be transferred via the ocular nerve to the brain. Anything that disrupts this passage at any point along the way interferes with vision.

In addition to eye diseases themselves, there are systemic disorders—those that affect an entire system in the body—that cause “sudden” blindness. The most common in cats are low blood sugar (hypoglycemia) and high blood pressure (hypertension). Low blood sugar is most often seen in diabetic cats who receive too much insulin.

Hypertension is most often caused by chronic renal failure or hyperthyroidism in cats.

Be sure to tell your veterinarian about all medications your cat is on. Some drugs have the potential to cause blindness, such as the fluoroquinolone antibiotic enrofloxacin (Baytril), a drug used to treat particularly persistent bacterial infections. Enrofloxacin is potentially toxic to the retina in cats.

It's kind of a big deal because the retinal toxicity is idiosyncratic, which means there's no telling which cats it will happen to or why. Worse, the blindness is usually permanent. It is more likely to happen in older cats, at higher dosages, and with extended treatment. Other fluoroquinolones can potentially harm

eyesight as well, but enrofloxacin is the only one with which cases have been documented. If there is an appropriate antibiotic alternative for your cat, it's best to avoid enrofloxacin.

Taurine is an essential amino acid in cats. Dietary taurine deficiency causes retinal degeneration and blindness. As long as you feed your cat a good quality commercial cat food, however, this is not usually a concern. It can be a big concern for cats eating diets that are not nutritionally complete and balanced. This is most commonly seen with homemade diets that are prepared by owners with good intentions but without the guidance of a veterinary nutritionist.

Retinal Diseases

Far and away the most common cause of sudden blindness in cats is retinal detachment secondary to hypertension. This usually happens in older cats, as chronic renal failure and hyperthyroidism are more common in this age group. Your veterinarian can usually identify detached retinas during an ophthalmic exam and can measure systemic blood pressure to identify hypertension.

In veterinary medicine, the primary focus with blood pressure measurement is the “top” number, which is the systolic pressure, or pressure in the arteries when the heart contracts. Anything above 160 mm Hg (milligrams of mercury) is considered too high. If your cat is hypertensive and has detached retinas, bloodwork should be done to identify underlying disorders and medication to reduce blood pressure should be started right away. Some hypertensive cats, if caught early enough, will regain vision.

“In terms of cats with hypertensive retinopathy, the prognosis for the return of vision depends on how chronic the retinal disease is and whether the underlying systemic disease causing the hypertension can be managed,” says Dr. Knickelbein. “Cats with more chronic retinal detachments are less likely to regain vision, and some cats may undergo retinal degeneration following reattachment of the retina, resulting in permanent vision loss.”

Even if detached retinas are not identified on your suddenly blind cat, systemic blood pressure should always be measured, as hypertension can result in vision loss due to brain disease (hypertensive encephalopathy). Other brain disorders that cause blindness

include seizures (including the time following a seizure called the post-ictal period), anesthetic complications, inflammatory or infectious brain diseases, and cancer. Post-ictal and post-anesthetic blindnesses are usually temporary.

Progressive retinal atrophy (PRA) has been documented in the Abyssinian cat and more recently identified in the Bengal. While it is usually a slowly progressive retinal degeneration, it sometimes seems to cause sudden blindness, due to cats' previously referenced ability to hide early dysfunction. Unfortunately, there is no treatment for PRA, and affected cats will usually go completely blind within a year or two of diagnosis.

Corneal Disease

Corneal disease affecting vision is typically pretty apparent to the pet owner, as the normally clear cornea has to become pretty opaque in order to prevent the passage of light. Trauma, corneal ulcers with associated corneal edema (a bluish haze), inflammation of the cornea (keratitis) most frequently caused by feline herpesvirus, and corneal sequestrum (a localized area of dense, discolored tissue) most frequently caused by feline herpesvirus are examples of corneal disease that can interfere with vision. Again, it's usually obvious that something is wrong, which means you can should be able to get your cat to the veterinarian early in the course of disease so she can receive potentially vision-saving treatment.

Anterior uveitis (AU) is inflammation of the middle layer of the eye, which includes the iris (the colored portion of the eye) behind the cornea. AU is harder for a pet owner to spot, especially early on, but signs might include excessive tearing, squinting, sensitivity to light, and third eyelid protrusion. The iris may appear swollen and/or change colors, the pupil is usually constricted (which makes it look like a vertical slit), and blood or cellular matter might be visible in the anterior chamber (the space between the cornea and the iris).

AU can be caused by penetrating trauma to the eye, but most often occurs secondary to systemic disease somewhere else in the body. Hence, your veterinarian will recommend an "antigen hunt" for your cat. An antigen is anything that induces an immune response in the body. Common antigens in cats with

uveitis include infectious agents (bartonella, feline leukemia virus, feline immunodeficiency virus, feline infectious peritonitis, toxoplasma, feline herpesvirus, fungal infection) and cancer (lymphoma).

While AU may interfere with your cat's vision, the secondary problems it causes—such as cataracts, lens luxation (dislocation), and glaucoma—are what usually result in blindness. Fortunately, cats with cataracts usually respond favorably to surgery. Lens luxation may require medical and surgical treatment. Glaucoma in cats is generally refractory to treatment, causes blindness, and is painful, so the recommendation is usually surgical removal of the eye (enucleation). Primary cataracts and primary glaucoma, i.e., not caused by AU, are not common in cats.

Optic neuritis (inflammation of the optic nerve) usually results in sudden blindness. Like AU, it can be caused by infectious diseases (feline infectious peritonitis, toxoplasma, fungal infection) and cancer (lymphoma). If no causative



Hypertension can cause temporary or permanent blindness, and just as in humans, it's a "silent" killer with little warning.

antigen is identified, symptomatic therapy with steroids sometimes restores vision, but the prognosis for vision with this disease is always guarded.

Sudden blindness is not exceedingly common in cats, but it does happen. When it does, it is always an emergency. Getting your cat to the veterinarian as soon as possible could mean the difference between a return of vision and permanent blindness. ■

(Boxes and Perches, continued from page 1)

While you might be concerned about your cat's aerial acrobatics, seeking high perches is normal and usually safe. "Cats are very agile creatures and have excellent 'righting' reflexes, which allows them to land on their feet," says Dr. Perry. "However, a fall from a high area can cause serious injuries. Use cat trees, condos, or perches that are sturdy and have good traction so that the cat is less likely to slip. If owners are concerned about falls, start out with perches and condos lower to the ground."

Paradise at Home

It's easy to accommodate your cat's affinity for perches and boxes. "Provide boxes or small enclosed areas where your cat can retreat to take a respite," says Dr. Perry. "If your cat prefers high areas, then providing cat trees, shelves, wall-mounted stairs, and window perches can give them areas from which they can watch their environment. Vertical space is often under-utilized in homes."

Cat trees can be expensive, but you can build a playground for your cat on your own. "If you are reluctant to buy a cat tree, place a step ladder in the corner of a room or near a window to see if your cat enjoys it. If so, then investing in a cat condo or cat tree may be a great way to add enrichment to your cat's environment," says Dr. Perry.

Another option that provides your cat with a perch and plenty of visual, auditory, and scent stimuli is to build a catio. "Catio is a great way to give kitties a piece of the outdoors," says Dr. Perry. "As with any structure, make sure that the window catio is solidly built with protection from the elements, including too much sun. In addition, never leave your cat in the catio when you are not home to monitor his safety."

Even some simple DIY boxes and perches will bring your cat great joy and let him show off some natural cat behaviors. ■

Monitor for Parasites

Studies find a heavy rate of infestation in cats

In a 2021 study published in *Animals*, a peer-reviewed open-access publication, researchers found that 58.2% of cats in rescue and 82.2 % of free-roaming outdoor cats were infected with intestinal parasites.

A 2020 retrospective analysis study published in *Parasites and Vectors* evaluated 1,272,460 fecal test results from cats in the United States and found that young kittens were more frequently infected with intestinal parasites than older adult cats and that areas in the western United States had lower parasite percentages than the rest of the country, except for *Giardia*, which is found pretty much everywhere.

As if that's not enough, a 2019 study in *Biology Letters* considered the risk of intestinal parasites in indoor versus outdoor cats and found that outdoor cats are 2.77 times more likely to have intestinal parasites than indoor cats.

What Do The Results of These Studies Mean to Cat Owners?

If your cat goes outdoors, it is especially important for you to prevent, monitor for, and treat intestinal parasites.

If your cat is indoor only, the risk of a new intestinal parasite infection is low, but monitoring and appropriate treatment are prudent.

Anytime you get a new cat, it is important to check for and appropriately treat intestinal parasites and to make sure they are free of parasites before allowing them to share litterboxes with your current cats.

Why Do We Care?

Firstly, parasitic intestinal worms are gross, and no one wants to think about them, let alone see them, in their home. More importantly, they can deprive your cat of important nutrients, carry other diseases/parasites, and may contribute to chronic conditions like inflammatory bowel disease (IBD).

Finally, many of these parasites are zoonotic, meaning they are potentially contagious to people.

Many cats harboring intestinal parasites have no symptoms, which makes monitoring with periodic fecal tests even more important. Symptomatic cats may experience a combination of



We're not advocates of letting cats run free outside due to the dangers, including infection with parasites, but there's no question that they enjoy playing in the grass and sun.

vomiting, diarrhea, weight loss, poor hair coat, lethargy, and loss of appetite.

The most common intestinal worms of cats are roundworms (*Toxocara cati*, *Toxocara leonina*) and hookworms (*Ancylostoma spp*, *Uncinaria stenocephala*).

Kittens usually become infected with roundworms early in life while nursing, at which time roundworm larvae are passed from an infected queen's

mammary glands to the kittens who are nursing.

Kittens should be dewormed according to the strategic deworming recommendations for control of hookworms and roundworms from the Centers for Disease Control and Prevention (CDC) and the American Association of Veterinary Parasitologists (AAVP). This entails proactively deworming (usually with the drugs pyrantel pamoate and possibly fenbendazole) all kittens four times between 2 and 9 weeks of age, even if fecal test results are negative.

Adopted cats with no history of prior deworming should be dewormed two to three times at two- to three-week intervals. Effective monitoring involves two to three repeat fecal tests throughout kittenhood, as eggs can be shed intermittently, resulting in false negative fecal exams.

Adult cats who test positive for roundworms or hookworms should be treated twice, three weeks apart, to eliminate all life stages of the parasite.

Adult cats who go outdoors should have fecal exams done twice annually and be proactively dewormed at least quarterly. If fecal exams are repeatedly positive, then monthly preventative deworming is recommended.

(continues on page 8, bottom)

Feline Intestinal Parasites and Treatments		
Parasite Scientific Name *zoonotic	Route of Infection	Treatment
Tapeworms* <i>Dipylidium Caninum</i> , <i>Taenia spp</i> , <i>Echinococcus spp</i>	Swallowing an infected flea, eating an infected rodent	praziquantel
Whipworms <i>Trichuris spp</i>	Fecal-oral	febantel, fenbendazole, milbemycin, moxidectin (topical), and oxantel
Giardia* <i>Giardia spp</i>	Fecal-oral	fenbendazole, with or without metronidazole
Coccidia <i>Isospora spp</i>	Fecal-oral	sulfadimethoxine
Toxoplasma* <i>Toxoplasma gondii</i>	Fecal-oral, ingesting infected prey	clindamycin
Tritrichomonas <i>Tritrichomonas blagburni</i> , <i>Tritrichomonas foetus</i>	Fecal-oral	ronidazole
Cryptosporidia <i>Cryptosporidium felis</i>	Fecal-oral	tylosin, azithromycin

Home Alone—Is It OK?

If you're away for more than 24 hours, get a pet sitter

Few cats like to travel, so most of us leave cats home when we leave for vacation. But how to provide for her needs sometimes leaves owners questioning what's best. Can you just leave her on her own? For how long? Are there household changes to make?

"The personality of the cat will determine how well she will do while home alone with minimal human contact," says Pamela J. Perry, DVM, PhD, behavior resident at Cornell University's College of Veterinary Medicine. "Some cats are very outgoing and love human attention," says Dr. Perry, "so it is better to have someone stay with the cat or at the very least, check on the cat daily. Although other cats may be shy or aloof, having a pet sitter who stops by regularly is the best way to ensure that the cats are doing well."

How Long

Most experts say not to leave your cat alone for more than 24 hours, although some say 48 hours. Kittens, of course, should never be left alone.

Web cams set in your cat's favorite areas in the house can help you determine if she's doing OK when you're away. These devices are relatively inexpensive and simple to use if you have a smartphone. The trick is that you need someone willing to stop in if you see something amiss.

Feeding

If your cat is already trained to accept an automatic feeder, this device can help. If not, just grabbing one at the store and turning it on before you leave is not a good idea, as your cat may be uncomfortable with the device. Even with an automatic feeder, you need to leave small bowls of food (and water in no-tip bowls) in several areas of the house. Food gets spilled, automatic feeders stop working, and water, of course, gets dumped.

If you have multiple cats with individual foods, you need to separate the cats into rooms and provide their food, water, and litterboxes. Again, practice this separation before you take off. Note: You can purchase microchip-enabled feeders that will only open for the cat wearing the matching ID tag, but that means your cat will have to wear a collar while you're away, which may not be preferable.

Litterbox

Most of us clean our litterboxes every day. Consider how dirty they may become after 48 hours. Just adding extra litter is not the way to go because some cats are picky about how deep the litter is and may avoid the box, setting you up for future problems. Place at least one extra box for every 24 hours you're away and it won't be cleaned.

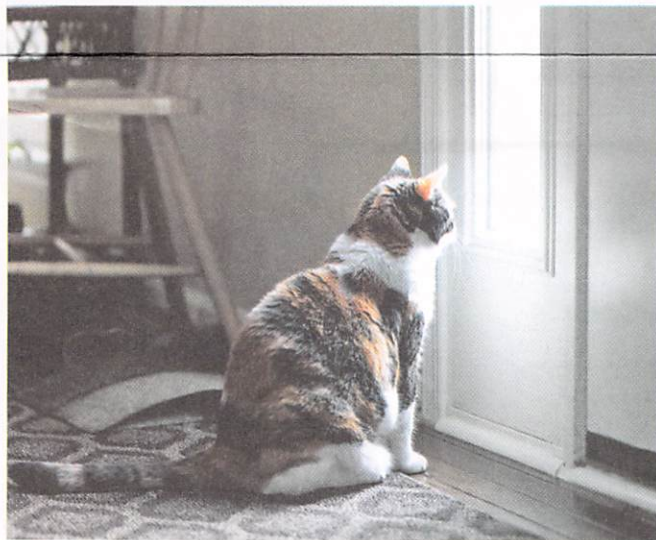
Check-Ins

You can enlist the help of a friend or a professional pet sitter to stop in and care for your cats. The best time for that person to drop in is at your cat's usual mealtimes. This is critical for cats that have medications, of course. If that isn't possible, discuss the best way to handle those medications with your veterinarian. "A better option is to have someone stay with your cat so that his normal routine can be maintained," says Dr. Perry.

Introduce your cat and pet sitter before you go away. "The pet sitter should maintain a calm demeanor and allow the cat to be the one to initiate interactions. The sitter also could offer tasty treats to the cat to encourage her to approach," says Dr. Perry. Ask the sitter to check in on the cat a couple of times before you leave, while you are at work or running errands. If you plan on boarding your cat, do an overnight stay so the staff can let you know how she does.

Safety First

It's all in the prep. You need to prepare your cat and your home with food and water setups, litterbox availability, and by removing potential safety hazards. A stressed, lonely, or frightened cat can react badly, hurting herself in the process, laying the groundwork for future bad habits. Feline pheromones can help, but again, they're something you should try prior to getting in the car to leave. Some cats do eventually adjust to the concept, especially if you begin gradually with shorter trips away. ■



Cats who feel abandoned can become destructive or eliminate outside the litterbox. Other cats adjust to the concept, with time.

House Prep for the Home-Along Cat

- ▶ Open shades/drapes, so your cat has natural light in at least a few rooms, and leave some lights on for night.
- ▶ Adjust the heat/air conditioner to comfortable levels.
- ▶ Consider leaving a TV or radio on, especially if that is a norm in your home.
- ▶ Block doors so they can't be accidentally shut by a playful cat, as it could confine her to a room without food, water, or litter.
- ▶ Get your cat microchipped, if she isn't already.
- ▶ Avoid leaving a collar on your cat when she's unattended.
- ▶ Consider unplugging unnecessary lights/appliances if you have a cat prone to zoomies.
- ▶ Remove breakable objects from tabletops.

Concerned About Mute Cat

Myriad causes could be behind the new silence

Q My 12- or 13-year-old rescue cat has gone from vocalizing normally to practically mute in about two to three weeks. He makes meowing motions with his mouth but barely audible sounds come out with an occasional hoarse squeak interspersed. Otherwise he is fine and acting, eating, etc. normally. He is a neutered, sweet, indoor-only boy who is quite adored. Is this a cause for concern?

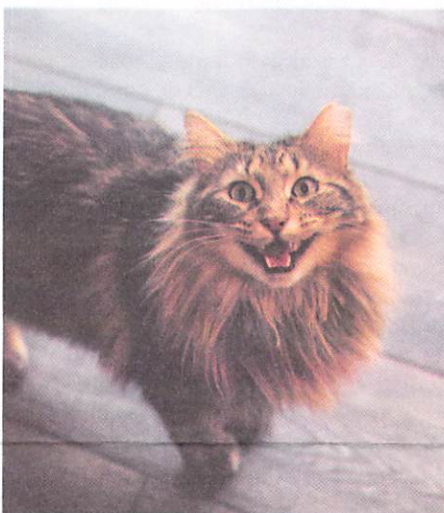
A I can understand your concern for the change in your cat's meow. The meow of a cat is produced primarily by the larynx, or "voice box" in the back of the throat. This muscular organ opens and closes to allow the passage of air to the lungs, protects the trachea and lungs from the getting food and other particles into them, and produces vocal sounds by tensing and relaxing in a coordinated fashion while air flows across it.

A number of conditions can affect the structure and function of the larynx, some of which can result in changes in the tone of a cat's meow. Perhaps a review of the most common ones would be helpful.

Any inflammation that affects the tissues of the larynx may result in changes in the tone of a cat's meow. Upper respiratory infections like calicivirus, herpes virus, and *Bordetella bronchiseptica* (kennel cough) can cause sufficient laryngeal inflammation to change a cat's "voice," as can non-infectious causes like inhaling irritants such as smoke. Allergies to inhaled irritants can exacerbate this inflammation.

In some cases, foreign bodies like plant material, linear objects like string, or bones lodged in the larynx can change the tone of their meow, and a history of having ingested any of these objects can be helpful in ruling them out.

The presence of lesions like an



Anything that affects the larynx can cause changes in your cat's "voice."

enlarged thyroid gland in hyperthyroid cats or tumors that can arise in the laryngeal region can alter the function of the larynx to the extent that vocalization is affected. In some cases, these tumors may be benign, and in others they may behave in a more malignant fashion.

Another possibility, although rare in cats, is dysfunction of the nerves that control the muscles of the larynx, resulting in laryngeal paralysis. Cats that suffer from this condition may produce rattling sounds (stertor) when they breathe, as the muscles of larynx do not open and close normally during inhalation and exhalation, resulting in a "flapping in the breeze" of a cat's breath as it passes through the larynx.

Determining the cause of the change in your cat's meow will require a careful history, physical examination, and possibly a focused examination of the laryngeal region by your veterinarian. The focused examination may require heavy sedation or general anesthesia, and your veterinarian can discuss the risks and benefits of this examination if it is deemed necessary.

I am very happy to hear that he is otherwise acting normally and doing well, as many cats with laryngeal issues show other clinical signs, including coughing, difficulty breathing and/or swallowing, nasal/ocular discharge, and/or bad breath, but I'd suggest that you consult with your veterinarian about this issue as soon as possible.

Please send us an update when you can, and best of luck. ■

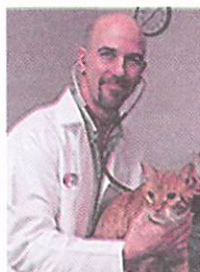
(Parasites, continued from page 6)

It is acceptable to simply monitor indoor cats with annual fecal exams, provided they were appropriately dewormed as kittens or new adult adoptees.

Intestinal parasites are common in cats, more common in cats that go outdoors, and some are potentially contagious to humans. Monitoring with periodic fecal exams is important for both indoor and outdoor cats. If helminth or protozoan parasites are identified by fecal exam, specific treatment should be administered. Proactive prevention should be considered for cats at highest risk. This can be accomplished with quarterly deworming for the most common intestinal parasites (roundworms, hookworms, and tapeworms) for cats that go outdoors.

Effective options for preventing all three of these parasites include topical Profender (emodepside and praziquantel) and oral Drontal (praziquantel and pyrantel pamoate).

Other preventatives that cover roundworms and hookworms, but not tapeworms, include the topicals Revolution (selamectin and sarolaner), Advantage Multi (imidacloprid and moxidectin), Bravecto Plus (fluralaner and moxidectin), and oral Interceptor (milbemycin). Oral Heartgard (ivermectin) prevents hookworms in cats but not roundworms or tapeworms. ■



Do You Have a Health Concern?

Send your health questions to Bruce Kornreich, DVM, PhD, DACVIM, Director of the Cornell Feline Health Center and Editor-in-Chief of CatWatch. Email to catwatcheditor@cornell.edu or send by regular mail to CatWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.



Scan this code for more information on the Cornell Feline Health Center.

Coming Up ...

- ▶ Cancer Symptoms You Should Know
- ▶ How to Handle a Feline Seizure
- ▶ Learn to Recognize Signs of Poisoning in a Cat
- ▶ Feline Heart Murmurs: Are They a Worry?