



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

THIS JUST IN

Link to Liver Cancer

Virus is similar to hepatitis B in people

A report from the University of Sydney, published in *Viruses*, says that a virus in cats that was discovered last year is now believed to be a significant factor in the development of liver cancer in cats. The researchers found the hepatitis B-like virus, called domestic cat hepadnavirus (DCH), in certain types of hepatitis and liver cancer in cats.

Domestic cat hepadnavirus infection appears to be common in companion cats, with the virus detected in 6.5 percent and 10.8 percent of pet cats in Australia and Italy respectively.

Since DCH is like hepatitis B, which is a major global concern that can lead to liver cancer and chronic hepatitis in people, the researchers wanted to know if this new virus does the same thing in cats, and they have found evidence that it does. The hope is that this study could lead toward targeted treatments and vaccines. ■

<https://sydney.edu.au/news-opinion/news/2019/10/24/cat-virus-may-be-linked-to-feline-cancer.html>



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Become an Illness Detective

Older cats require you to be on the alert

Although it may surprise you, cats are considered geriatric once they reach ten years of age, and many cats begin to show signs of age-related diseases around this time. Diseases such as chronic renal (kidney) disease, hyperthyroidism, diabetes mellitus, osteoarthritis, dental disease, and cancer are more prevalent in the older feline population.

Early identification of these diseases results in more favorable outcomes, which is why it's so important to understand the health concerns that are commonly associated with aging in cats.

Older cats are physically different from younger cats. Their immune system is less able to fend off invaders, their skin is thinner and less elastic, and the function of a number of organ systems undergoes changes that make them prone to a variety of age-associated diseases.

Their claws may become overgrown and brittle, and changes to their skin and hair, combined with arthritis that can limit range of motion, can predispose them to hair matting and skin infections.

Arthritis can also make it more difficult for them to enter the litter box, climb stairs, and gain access to higher perches.

You may notice increased urine production due to disease (e.g., kidney failure, diabetes mellitus, or hyperthyroidism). The increased soil and odor may prompt cats to eliminate in inappropriate areas. Many cats that do not mark their territory with urine may begin to do so if a condition like hyperthyroidism develops.

Your cat may show signs of hearing loss, and her eyes may become hazy. Several diseases, especially high blood pressure, can irreversibly impair a cat's ability to see.

While there are many diseases that can decrease an elderly cat's appetite, dental disease is a very common cause of this problem. Loss of sense of smell that can occur with advancing age may also decrease appetite, causing you to find smelly foods to get his attention. You can also increase the aroma by warming the food up in the microwave (but not too hot!).

Never assume that a change in your older cat is due to "aging." Contact your veterinarian if your cat is acting unusual or shows any of these symptoms:

- ▶ Greenish or yellowish discharge from the eyes and/or the nose
- ▶ Diarrhea that lasts more than two days
- ▶ Increased thirst and/or urination
- ▶ Vomiting that lasts for more than one day
- ▶ Inability to urinate or painful urination
- ▶ Increased respiratory rate/effort
- ▶ Blood in urine or stool
- ▶ Changes in activity level
- ▶ Hiding in unusual places
- ▶ Appetite changes
- ▶ Unkempt appearance
- ▶ Unsteady gait
- ▶ Weakness/collapse
- ▶ Weight loss

Finally, maintaining a schedule of twice-annual well visits with your veterinarian is important for assuring optimal health. ■



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You and your old friend may be surprised by the new need to clip nails.

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Coconut Meal for Pets

The pet industry's interest in novel ingredients continues to grow

Some cats love coconut, while others will think you're a "coconut" for offering it to them. But it's showing up as an alternative to other starches (grains, tubers, legumes) in some pet foods, according to an article by Greg Aldrich, Ph.D., in Pet Industry News. The coconut trend may be spurred by coconut's growing following in human foods.

Coconut meal comes from the white coconut "meat" inside the husk after the liquid (milk) is removed. It is usually dried and has a shelf life of around six months in cool, dry storage. Currently, there are no standards for coconut meal as a dietary component for pets, which means things like protein and fat content can vary from batch to batch.

So far, dietary studies addressing coconut products have been limited to pigs, which have different gastrointestinal tracts from dogs and cats. This lack of studies makes it difficult to characterize the potential risks and benefits of dietary coconut to cats, although there is no current evidence that it is toxic to felines. ■

<http://www.petfoodindustry-digital.com/201910/index.php#/40>



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Potential New Test for Urinary Tract Infections

Product offers results in five minutes for faster treatment

Testing for and treating urinary tract infections can be a challenge for veterinarians. First, an infection must be identified and then the ideal therapy has to be determined.

Usually, a urine sample is sent to an outside laboratory for a "culture and sensitivity," which is a test to see if bacteria are present, and if so, which antibiotics would be best to treat the infection with. Urine culture results are usually available in one to three days. Many urinary tract bacteria already show resistance to various antibiotics, making it difficult to determine the best treatment, although most veterinarians will make an early decision to get your cat started on a medication while awaiting the results of this test.

A company in England is working with veterinarians and specialists at the University of Tennessee on a product called "U Treat," reports vetsurgeon.org. Using a urine sample, this test can identify a urinary tract infection in five minutes. Subsequent testing can then identify which antibiotics can be best to treat the infection.

Bioluminescence techniques are used to remove host cell adenosine triphosphate (ATP), an energy-carrying molecule, and then to lyse (break open) bacterial cell walls to release bacterial ATP. The luminometer can then guide your veterinarian to the ideal antibiotic.

The susceptibility test (to determine the best antibiotic choice) takes about 45 minutes, so diagnosis and treatment can be carried out in about an hour. This is much faster than having to send a urine specimen out for culture and sensitivity testing at a remote laboratory.

Clinical testing of this system was performed on dogs and cats at the University of Tennessee and overseen by Dr. David Bemis, who earned his PhD at Cornell University. The U Treat system was both highly specific and highly sensitive, meaning that there were few false positives and negative results.

Rapidly identifying an effective antibiotic therapy reduces the likelihood of inducing bacterial resistance to antibiotics and provides faster relief to your pet. ■

<https://www.vetsurgeon.org/news/b/veterinary-news/archive/2019/09/30/new-test-for-uti-in-cats-and-dogs.aspx>



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Life Without Teeth

Your cat will take the change right in stride

When a person loses all their teeth, major lifestyle changes, such as dentures and diet adjustments, are usually necessary. Luckily, cats adapt more easily. They can commonly still meow and hiss and eat normally once they heal from the extraction surgery.

Cats who need full dental extraction or lose many teeth usually suffer from one of two dental problems: feline odontoclastic resorptive lesions (FORL) or gingivitis/stomatitis.

Tooth Resorption

Tooth resorption is common in cats, especially cats over 5 years old. Estimates are that 20 to 60 percent of all cats will suffer from some tooth resorption. It might be one or two teeth, or it might be a mouthful. Owners may notice their cat chewing strangely, with her head tilted, trying to chew on just one side of her mouth, or avoiding dry food to preferentially eat canned food. Alternatively, you might realize your cat is swallowing her kibble without attempting to chew it.

Diagnosing FORL requires an oral exam with special dental radiographs. The cat will need sedation and/or anesthesia. Initially, root resorption will not be especially painful but, as the surrounding gums and possibly the nerves in the center of the tooth pulp become involved, these teeth will become painful. Your veterinarian usually will suggest removing teeth showing signs of FORL. Depending on the tooth, removal may leave an open area of gum to heal, or the gum may be sutured.

Gingivitis/Stomatitis

Gingivitis/stomatitis means inflammation of the gum (gingivitis) or the whole mouth (stomatitis). Lymphocytic plasmacytic gingivitis/stomatitis (LPGS) is the most severe form of this condition.

Odontoclasts Gone Wild

An odontoclast is a cell whose function is to resorb bone. In a healthy cat, these cells help with removal of deciduous teeth. In cats with FORL, however, the cells attack the roots of permanent teeth as well.



Fortunately, cats adapt quite well to the loss of teeth, whether it's one fang or the whole mouth.

Why cats get LPGS is not clear. They may be hypersensitive to the bacteria and plaque that accumulate with dental disease. Immune-mediated diseases are also a possible cause. Calicivirus and herpesvirus infections have been implicated, with up to 88% of cats with stomatitis shedding these viruses.

For some breeds, a genetic predisposition may be to blame. Siamese, Himalayans, Somalis, and Persians are somewhat predisposed, and signs may show up in them as early as 6 months to a year of age.

Cats with stomatitis may drool, paw at their mouths, and may approach their food bowl but then back away without eating. You might notice your cat hiding (a nonspecific reaction to pain) or having bad breath. The tissues of the mouth can become inflamed, ulcerated, and painful.

Diagnosis will require sedation or general anesthesia to facilitate a full oral examination and dental radiographs. This diagnostic phase often continues directly into treatment, with a dental cleaning and removal of affected teeth.

A thorough cleaning and a dose of antibiotics combined with anti-inflammatory medication may help initially. Bovine lactoferrin, which is a bactericidal immune-modulating substance, can help, since it seems to inhibit plaque and bacteria from adhering to the oral surfaces. Dedicated home care may stave off relapses but is most successful if cases are caught early and the cat is cooperative about brushing,

The Extraction

Eventually, many cats need their teeth removed. Full dental extractions clear about 60% of feline stomatitis cases. Follow-up laser therapy can encourage healing. Once these cats have healed, they can easily eat soft food and many even eat their favorite kibble.

“Full mouth extraction is well tolerated by cats, but their recovery depends on the nature of the disease that necessitated the procedure to be performed. For example, cats suffering from advanced periodontitis or extensive tooth resorption are likely to recover more quickly than cats who receive complete dental extraction to manage chronic gingivostomatitis,” says Eric M. Davis, DVM, Dipl. AVDC (Cornell 1979), a board-certified veterinary dentist.

During healing, it is important to provide soft, easy-to-eat foods. Keeping both food and water at room temperature also encourages cats to eat and drink initially. The gums and palate harden and toughen up after healing. Many cats, however, want to transition back to their earlier diet, even if that is dry kibble.

“Cats do need some time to learn how to manipulate their tongue and cheeks to direct food toward the back of their mouth to be swallowed. The presence of teeth forms a channel to keep food in the center aspect of the mouth. Without teeth, food can end up in the sides of the mouth, and that requires the cat to figure out how to direct the food backward.

“We usually recommend that cats continue to be fed their usual diet postoperatively, but with water added to soften the food. A dietary change postoperatively can result in digestive upset. Cats do not chew dry food. The particles are almost always swallowed whole. Therefore, cats that prefer dry food can continue to be fed kibble even without teeth,” says Dr. Davis.

While no one wants their kitty to lose her teeth, cats usually recover from dental extractions well and return to their normal lives, eating their regular food once healing is complete. ■

Myth Busting

The belief that excess vitamin D causes tooth loss was fueled by one study that showed about one third of all cat foods had excessive amounts of vitamin D. However, further studies have discounted this theory.

TNR and Unowned Cats

The goal, pitfalls, and drama of trap-neuter-release

Stray cats are an issue that has challenged communities for a long time and does not have a simple solution. Although controversial, trap-neuter-return (TNR) programs are one of the most common current methods used to help address the issue of unowned cat populations, particularly feral cats who are not suitable for being placed in homes.

Also sometimes referred to as shelter-neuter-release (SNR) or return-to-field (RTF), the basic theory of TNR is simple: Trap as many stray cats as possible, spay and neuter them, offer other medical care when possible, and then return them to where they came from. The goal is to reduce the number of intact cats and thereby limit reproduction and population growth.

Why Stray Cats Are an Issue

Free-roaming cats can be a nuisance to people by making noise and damaging property and are a significant threat to wildlife, such as birds and small mammals. These cats can also spread diseases and parasites to both owned cats and to humans. The larger the population



of unowned cats, the greater the risk of disease and other problems. Feral and stray cats are also exposed to the hazards of weather, larger predators, and cars.

Solving the Problem

Accountability is part of the challenge—who is responsible for dealing with stray cats? “In most places, there is no governmental entity responsible for taking the lead on cat populations,” says Lena DeTar, DVM, DACVPM, DABVP-SMP, Assistant Clinical Professor in Maddie’s Shelter Medicine Program at Cornell University College of Veterinary Medicine. Instead, different groups or individuals get involved in different areas.

“When wildlife is impacted by feral or stray cat populations, the department of natural resources may get involved. When stray or feral cats are ill, county or municipal animal control may be asked to collect the animal. In most jurisdictions, non-governmental organizations, such as humane societies, SPCAs, non-profit clinics or special interest groups help respond to concerns about feral cats. Motivations can vary from concern about impacts on wildlife and birds, public health, or feline welfare (or all of the above),” says Dr. DeTar.

Realistic Goals

“The enormity of the feral cat problem is such that neither TNR nor Trap/Euthanize programs can possibly ‘solve’ the problem on a national scale; estimates range from 30-80 million feral cats currently living in the U.S., which far exceeds our surgical or euthanasia capacity,” says Dr. DeTar.

Research has shown that in order to get a significant reduction in population, at least 75% of the cat population must be sterilized or at least 50% of the population must be euthanized. With 30 to 80 million unowned cats out there, you are looking at sterilizing 22.5 to 60 million cats or euthanizing 15 to 40 million cats. These are staggering numbers, with staggering costs to implement. “Trapping cats is intensive, difficult work,” says Dr. DeTar, “and if new cats are attracted or added to the un-fixed outdoor cat population, trapping efforts must continue on an intensive and regular basis.”

But there is hope. “Within our communities, however, specific, proactive targeting of colonies/areas producing the largest numbers of kittens for TNR is quite impactful on local population reduction and shelter intake,” Dr. DeTar says.

A study published in the February 2016 *Journal of the American Veterinary Medical Association* looked at the intake and euthanasia rates for cats at an animal shelter in Northern California over the four years before and after the shelter initiated a SNR program modified to fit their needs.

After starting the program, the number of cats admitted to the shelter each year decreased and their euthanasia rate decreased (the latter being because feral cats that previously would have been euthanized for being unadoptable were

To Feed or Not to Feed?

Feeding feral and stray cats is a controversial topic

“More studies are needed to assess the true impacts of feeding stray and feral cats and its impact on both cat populations and wildlife,” says Dr. DeTar, but there are some guidelines to use. If you are feeding one or more stray cats, some good habits to minimize problems include only setting the food out for a limited time (i.e., half an hour a day) and cleaning bowls between feedings. Keep track of how much food is eaten to avoid putting out too much food, which would attract more cats and other animals to the feeding station. If feeding cats in preparation for trapping, feed at the same time of day to get the cats in a routine, and place the food in unset traps for a couple days to allow them to acclimate to the traps (thereby maximizing the number of cats that you will be able to trap). Be aware, too, that there may be local ordinances that would prohibit you from feeding feral cats.

Pros	Cons
Provides a balanced diet	Does not reduce hunting behaviors
Makes it easier to keep tabs on the cats or the population as a whole	Attracts more cats and wildlife
Makes trapping easier	May allow spread of disease
Can be used to relocate cats away from areas with sensitive wildlife	Promotes reproduction due to abundant food

instead returned to their territories). With fewer cats in the shelter, those cats were able to be adopted more quickly.

This is, of course, just one study in one location, and it covers a relatively short period of time. But it shows that a positive impact can be made when a community makes a plan that works for their area and is able to dedicate adequate resources to enact it.

Multimodal Approach

“TNR is not functional on its own to regulate feral cat and stray cat numbers in terms of feline population across large areas, but may work well for preventing population expansion in small communities,” says Dr. DeTar. “When combined with other efforts, such as rehoming friendly cats through adoption, removal of ill cats through euthanasia, and relocation of feeding stations away from sensitive areas/wildlife, TNR becomes a much more successful and sustainable method for responsible feral cat population management.”

Education also must play a role in controlling unowned cat populations. Many people get cats on impulse or by accident (we’ve all heard stories of cats who chose their owners rather than the other way around) without people thinking through the responsibilities that come with cat ownership.

Cat owners and prospective owners should be educated about spaying and neutering cats not intended for breeding, keeping cats indoors or on a leash to prevent harm to wildlife (and prevent roaming and unwanted litters in intact cats), and the basics of good cat care and management.

Microchipping cats is highly encouraged, so that if a cat does get loose and is picked up by someone it can be scanned and reunited with the owner rather than taking up space in a shelter. We also need to encourage a cultural shift away from the current all-too-common mentality that cats are disposable pets that can just be dumped on the side of the road when no longer wanted.

How You Can Help

“Getting involved with local or national organizations providing services [for unowned cats], giving money, or volunteering in the field are all ways that the public can get involved,” says Dr. DeTar. “Other ways to help include lobbying for reasonable ordinances regarding outdoor cat welfare, and

fostering the kittens of feral moms so they become friendly and adoptable. Finally, responsible pet ownership, spaying/neutering their own cats, and adopting spayed/neutered cats from shelters can actually go a long way to decrease outdoor cat populations.

For those looking to get even more deeply involved, organizations like Alley Cat Allies have a lot of resources and experience starting feral cat management projects.” For more information on Alley Cat Allies, check out their website at www.alleycat.org.

Looking Forward

Trap-neuter-release is not a perfect solution to the feral cat problem, but with sufficient funding and when combined with other methods of colony management it can help to reduce population numbers and minimize the impact on wildlife.

“TNR is a good interim solution for balancing feline and wildlife welfare, since we know that these cats DO NOT

Cats and Wildlife

Cats like to hunt, and will do so whether or not they are well fed by loving owners. To protect wildlife, keep your pet cat indoors unless on a leash and harness. You can also build an enclosed catio for your cat to enjoy fresh air and sunshine without terrorizing local birds.

While you’re at it, support wildlife in other areas of your life too. Donate to groups that manage or lobby for natural areas, and respect the rules when visiting parks and sanctuaries.

belong in a shelter, nor do we support killing them on sight,” says Dr. DeTar. “Future research into non-surgical sterilization methods for cats and more research/proactive action on minimizing impacts of cats (and humans) on wildlife are on-going. We look forward to exciting innovations in the years to come.” ■

You Trapped a Feral Cat! Now What?

The challenge of catching the cat is a small part of the battle

If you have some unowned cats in your area, be they new cats hanging out in your garage or an established colony in the neighboring business park, start by making a plan. Talk to other people who are interested or invested in the cats to make sure everyone is on the same page, and know where you are going to take the cats once you successfully trap them. Do you have enough traps for all of the cats? Are you taking the cats to the veterinarian you use for your pets, or are you utilizing a low-cost spay/neuter clinic? What is their schedule, and can they accommodate the number of cats you are bringing along? Will you also be vaccinating the cats or seeking other care measures such as ear cleaning, disease testing, or treatment for minor injuries? Who is paying the bill?

“Communication regarding surgery is essential, and not every organization performs procedures every day,” warns Dr. DeTar. “Before trapping, citizens should be in contact with the shelter or veterinarian providing these services regarding protocol and timing. Spay/neuter surgery for trapped cats is a generally safe and straightforward process, but veterinarians or their staff should discuss surgical risks and contingency plans with trappers, including when euthanasia will be recommended (FIV/FelV status, ill health, if a bite occurs, etc.)” The surgeon will use absorbable suture so that the cat will not need to come back for a suture removal appointment.

Also be sure to ask the veterinarian to remove the tip of an ear on each cat to indicate that they have been spayed or neutered. While not the most elegant solution, ear tipping has minimal complications and saves cats from undergoing an unnecessary second surgery if they are later trapped by a different person. If you happen to trap a cat with a tipped ear, you can release him or her right away.

“Finally, a plan should be discussed for when the cats will be fed and/or released from their traps,” says Dr. DeTar. “Usually keeping the cats in their traps indoors overnight in a quiet place is recommended, with release the day after surgery. Since cats acclimate well to outside weather, TNR can be performed any time of year.”

A Change of Voice

If your cat's meow changes, take a closer look

A subtle change in the sound of your cat's meow may indicate she has a problem with her larynx (voice box), which is composed of right and left paired cartilages that connect the oral cavity to the trachea. The air your cat breathes in goes through the larynx to the lungs, and cats with problems in the larynx may have varying degrees of difficulty breathing.

If you watch a cat with possible laryngeal problems closely, you may notice difficulty breathing, a wheeze or stridor, or gagging when eating or drinking. Weight loss may be apparent. Although these symptoms are nonspecific, they are cause for a prompt consultation with a veterinarian.

Laryngeal problems can run from mild to severe, and can be caused by a number of conditions. Common causes include inhaled irritants like dust or secondhand smoke or a respiratory infection such as herpes virus or calicivirus. Affected cats may also have congenital deformities that cause laryngeal problems, and immune and endocrine (hormonal) disorders may also affect the larynx. There is some suspicion, for example, that hypothyroidism may be a cause, but this is debatable. Myopathy (muscle disease) or nervous system problems can also trigger laryngeal problems.

Diagnosis

Your veterinarian will perform a thorough physical exam and may recommend diagnostic tests. Chest radiographs are often the first step, looking for signs of pulmonary or cardiac illness that may affect breathing. A full neurologic exam may be done to rule out neuromuscular weakness, and blood

Purring Kitty

Purring is a unique feline sound produced by an interaction between two sets of muscles, the laryngeal muscles and the diaphragm. As your cat breathes in, air hitting the vibrating laryngeal muscles produces a purring sound. Domestic cats, bobcats, cheetahs, Eurasian lynx, and mountain lions can all purr.



In one study, Burmese cats had the highest incidence of laryngitis—inflammation of the larynx—among cat breeds. Another study conducted in Europe identified Burmese littermates that suffered from acute laryngeal swelling. A congenital defect of laryngeal hypoplasia was proposed as the cause.

tests may be run to rule out infection and thyroid problems. Depending upon severity and physical examination findings, careful examination of the larynx (usually requiring sedation and/or anesthesia) may be recommended.

Typical diagnoses include:

Laryngitis. Cats with laryngitis often start with a harsh, dry cough that may progress to a soft, moist cough. Laryngitis can be painful, particularly when swallowing and/or breathing. You may notice your cat breathing with her head down and mouth open. The sound of her meow may be different. Treatment often includes anti-inflammatory medications, pain medications, antibiotics if indicated, and softened foods. Providing food and water at room temperature or slightly warmer may help your cat eat and drink normally. Laryngitis may be due to infectious rhinotracheitis or calicivirus infection, and most cats make a full recovery in cases that are not severe.

Cancer. Lymphoma is the most common laryngeal neoplasia. Radiographs of the neck and oral area may be obtained to detect laryngeal masses. If found, these are usually biopsied to check for cancer. Chemotherapy can provide prolonged periods of high quality life for cats with lymphoma

(depending upon how advanced the disease is), but it is not generally curative, and the long term prognosis may not be favorable.

Laryngeal paralysis. Although rare, laryngeal paralysis is most frequently found in older cats. It may be due to a neuromuscular abnormality or to trauma.

Cats with laryngeal paralysis often show an increase in panting and a reduced tolerance for hot weather. Abnormal respiratory sounds and other symptoms of distress may be evident, and they may vomit and/or regurgitate. These nonspecific symptoms indicate that a veterinary exam is warranted.

Cats with unilateral laryngeal paralysis typically have less significant clinical signs and can often be managed medically. However, most cases in cats are bilateral. Cats with bilateral laryngeal paralysis often benefit from surgery.

The surgery recommended for most cases is the unilateral arytenoid lateralization or “tieback.” This surgery uses a suture to permanently keep one side of the larynx open. Doing only one side minimizes the chances of aspiration pneumonia (the larynx normally closes fully to prevent food from getting down in to the lungs, where it may predispose to bacterial infection/pneumonia) while providing your cat with plenty of airflow.

Bottom Line

If your cat develops symptoms of a larynx problem, a veterinary consultation is important. While the potential causes of these symptoms are not common, they can be serious. ■



All the air your cat breathes passes through the larynx.

The Ins and Outs of Catio

Designing a catio will spark creativity

All cat lovers understand the perils of letting a cat run outside: traffic, wild animals, other domestic animals, unscrupulous people, and disease. But we also watch our cat look longingly out the window, clearly wishing for a taste of freedom. We may think he's bored or that we need to increase his exercise. The solution may be found in a catio.

A catio is a term derived from the phrase "patio for cats." It's a fully enclosed area—all sides, a roof, and floor or secured base—that a cat cannot possibly escape from and that no animal can invade. The catio must be sturdy and secure. From there, you can let your imagination run wild.

"A catio addresses some of the major health risks to cats during the warm summer months," advises Elizabeth, Cornell's Feline Health Center resident cat and our back-page columnist. "Cats are let out in an unsupervised fashion more during the warmer months (a practice that we do not endorse), exposing them to the risks of being hit by a car or getting into fights with other cats or animals. Such encounters increase the risk of health problems ranging from infectious diseases to life-threatening or even fatal injuries," she says. "A catio can help prevent these problems."

Location

Choose your spot carefully. You will need to be able to safely bring your cat out and in without him trying to escape. Some catios are built with a direct door or window entrance, so the cat is never out of an enclosure. If you rent your home, you will need to discuss the location and the structure with your landlord. It's a good idea, even if you own your home, to check with your town's coding office to ensure there are no laws that might restrict your design.

Look for a spot that will give the cat both shade and sun. If you're building a window catio, will your cat be able to go in and out as he pleases to escape the strong sun? If not, you will have to restrict the times he is in it. Never leave your cat in a catio when you are not home, as accidents can always happen.

Consider your flooring options. Popular choices include wood (like deck flooring), gravel or stone, mulch, and



A good catio has strong wire and cat perches.

grass. If you choose grass, be sure you'll be able to easily get in and out to cut the grass when it gets too long. The other options are low maintenance, but they will need occasional upkeep.

Building Considerations

Depending upon your preferences, your catio may include a solid roof, which will usually take care of the shade consideration and allow your cat to be outside when it rains. Since this is a semi-permanent structure, you need to be sure the roof can handle snow loads in your area. Your coding office can help you with roof pitch, so more snow slides off rather than building up. If you choose a metal roof, be sure you place insulation under it to stop dripping from condensation. While a wire mesh roof eliminates problems with condensation, it can still allow snow to build up, especially if it's a flat roof.

Since you want your cat to experience as much of the outside as possible, your best choice for walls is a wire mesh. Avoid chicken wire as it isn't strong and can have rough edges. A 2- x 3-inch wire mesh (sometimes called no-climb) is better. We recommend 16-gauge wire or stronger. (The lower the gauge the stronger the wire.)

Amenities

Cats like to perch, so include plenty of spots to climb and look around. Large rocks, ramps, tunnels, and cat trees are all good choices. One structure we saw had a ramp to the window of the house, so the cat could come and go as he pleased.

As you're looking at structures—there is an amazing array of commercially available catios—keep in mind that you

need to avoid anything that a collar may get caught on, if your cat wears one. This can be extremely dangerous. Better yet, consider removing the collar unless you're right there with him. Many catios are built with a bench or room for a chair for humans.

Consider spots for a scratching post, even a real piece of wood like a large branch or piece of firewood. You will need to include a litterbox, perhaps placed in the most private corner of the catio. Cat-safe plants like fresh catnip will be enjoyed as well. A water bowl is a necessity as well, but food isn't.

Be aware that your all-indoor cat who never showed interest in what lies beyond the door may change his mind when he gets a taste of outdoor living in a catio. Keep in mind that he may begin to play the "door dash" game, trying to escape when you open the door to pick up the paper or greet a guest.

If you're not a do-it-yourselfer, you can purchase a catio online (costs range from around \$300 on up) or purchase a simple dog kennel kit and make small changes to make it safe for a cat, adding some climbing and perching options. If you're looking for ideas, we found an amazing array of photos of catio designs at www.pinterest.com/arlinegrant/catio. Let your imagination run wild! ■

What You Should Know

Concerns arise with outdoor activity

- ▶ Contact with other cats through the wire is possible. Be sure your cat is properly vaccinated by discussing your plan with your veterinarian.
- ▶ Infestation with fleas, ticks, mites, a variety of intestinal worms, and other nasty little critters such as heartworms becomes more likely.
- ▶ Watch the weather. Even with shade, high temperatures increase the risk for dehydration and heat exhaustion/stroke (lethargy, vomiting, staggering, rapid/heavy breathing, red tongue/mouth). Sunburn can occur, especially with white cats.
- ▶ Extreme cold weather and snow can open the door for frostbite. If your cat doesn't want to venture out in the wet stuff, don't force the issue.

Endoscopy: What to Expect

Often recommended to find the cause of chronic diarrhea

Q I recently took my FIV-positive cat, Leo, to a veterinarian to ask about his frequent diarrhea. It is not totally liquid but varies from almost liquid to somewhat formed. My veterinarian discussed possible dietary modifications that may be helpful if this is due to a food allergy, but she also suggested that she may have to “scope” him to find the cause of the problem.

I have read a lot about FIV cats, and it seems that they do oftentimes live with diarrhea.

I decided to add a probiotic and it has improved quite a bit, but still he has some diarrhea. My question is what the scope entails and whether it may be helpful in caring for Leo.

A Thanks for getting in touch, and I hope both you and Leo are doing well. Chronic diarrhea can be caused by a number of problems in cats, and it is true that FIV-positive cats may suffer from diarrhea for prolonged periods of time. It is believed that the immunodeficiency that may occur as a result of their FIV infections may predispose them to bacterial and/or fungal infections that can affect their gastrointestinal (GI) tracts.

Endoscopy (“scoping”) refers to the use of a flexible fiber-optic camera that can be passed in to the GI tract to visualize and evaluate the various regions of the tract and to obtain samples for



Chronic diarrhea is as annoying to your cat as it is to you, plus it carries a risk of dehydration.

biopsy or culture. This procedure requires general anesthesia, but as long as Leo is otherwise healthy, anesthetic risks can likely be minimized to an acceptable level, even in a cat that is FIV positive.

Two common causes of chronic diarrhea in cats are inflammatory bowel disease (IBD) and GI lymphoma. IBD is a condition in which the walls of the GI tract become inflamed, likely due to an overactive immune system responding to components of the diet (see “IBD Is Chronic GI Inflammation” in our November 2019 issue and online at catwatchnewsletter.com). GI lymphoma is a form of cancer that is more common in cats that are infected with feline leukemia virus.

Distinguishing between these two

diseases can be difficult, and while there are some less invasive markers (i.e., B vitamin levels in the blood) that can be helpful in this regard, the only definitive way to diagnose these conditions is via biopsy of the GI tract. Biopsies can be obtained either by performing surgery—in which the abdominal wall is opened, and samples are obtained from the outside of the exposed intestine—or via endoscopy, during which samples can be obtained from inside the GI tract.

While both these procedures require general anesthesia, one major benefit of obtaining samples of the GI tract via endoscopy is that no incisions into the abdominal wall are necessary, thereby facilitating relatively quick recovery when compared to abdominal surgery.

Of course, there are other things that can cause diarrhea in cats, but I imagine that the distinction between IBD and GI lymphoma (two common causes of diarrhea in cats) may be the reason that your veterinarian is discussing endoscopy as a potential diagnostic option.

I recommend that you continue to work closely with your veterinarian to address Leo’s diarrhea, and if all other potential causes are ruled out, it may well be that endoscopy is a reasonable recommendation to arrive at a definitive answer.

Best regards to both you and Leo from all of us here at the Feline Health Center at Cornell, and best wishes for a quick resolution and answer regarding the cause of his current problem. Please send us an update when you can.

All My Best,
Elizabeth

Elizabeth works with the Cornell Feline Health Center to provide answers on this page (vet.cornell.edu/fhc/). Write to her at catwatcheditor@cornell.edu or CatWatch



535 Connecticut Ave., Norwalk, CT 06854. We welcome digital photos of your cat to consider for use with your question.

© HAPPENING NOW...

Cinder-Block’s Weight-Loss Program— Check out the videos about Cinder-Block, an 8-year-old, 45-pound cat who was surrendered to the NorthShore Veterinary Clinic in Bellingham, Wash., when the owner could no longer care for her. The story and videos have gone viral. When the cat was surrendered, veterinarian Britta Kiffney and her staff decided they could help Cinder-Block and put her on a weight-loss and exercise program with the goal of losing half her weight within a year. “I think she’s going viral because she may be the most relatable cat I’ve ever seen,” artist Alex Plante told CNN. “Who hasn’t cried on a treadmill at some point in

their lives?” See videos at <http://bit.ly/VideoCinder-Block> and <http://bit.ly/moreCinder-Block>.

PACT Act Has One More Step— The House and the Senate have both unanimously passed the Preventing Animal Cruelty and Torture Act (PACT Act). If signed by President Trump, the bill will outlaw purposeful cruelty to animals (crushing, burning, drowning, suffocation, impalement, or other violence causing “serious bodily injury” to animals). If the PACT Act becomes law, it will make these violations a federal crime with a fine and up to seven years’ imprisonment. ■

Coming Up ...

- ▶ *The Right Diet for a Diabetic Cat*
- ▶ *Are You a Candidate for Doing Foster Care?*
- ▶ *What’s Behind the Kitty Sneak Attack*
- ▶ *Litterbox Issues and FAQs*