THE CORNELL FELINE HEALTH CENTER • CORNELL COLLEGE OF VETERINARY MEDICINE

CatWatch

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

THIS JUST IN

Controlling URIs

Study finds an 87.1% drop

A trial at the Arizona Humane Society in Phoenix evaluated the effect of ultraviolet germicidal irradiation (UVGI) of the air on the incidence of upper respiratory tract infections (URIs) in kittens in a nursery. According to the Centers for Disease Control and Prevention, UVGI can kill or inactivate viral, bacterial, and fungal species.

Kittens ages 4 to 8 weeks old that were admitted to the nursery in 2016 and 2018 were included in the study. The incidence of URIs was compared between 2016 (no UVGI systems in place) and 2018 (two newly installed UVGI systems used). Researchers noted a significant decrease in URIs (87.1%), when the UVGI systems were used.

This suggests that airborne transmission of feline respiratory pathogens may be more important than previously thought. UVGI systems may be an effective adjunct to standard infection protocols in reducing the transmission of respiratory pathogens among kittens in shelters and nurseries. Additional studies are needed. ■

Jaynes, Robyn A., et al., "Effect of ultraviolet germicidal irradiation of the air on the incidence of upper respiratory tract infections in kittens in a nursery," JAVMA, November 1, 2020.

Reflux | iStock Photos

INSIDE THIS ISSUE

Cornell Researcher Focuses on Cat Coronaviruses

Feline Health Center and Winn Foundation Add Support

Cornell photo

Dr. Gary Whittaker

Gary Whittaker, PhD., professor in the Department of Microbiology and Immunology at the Cornell University College of Veterinary Medicine, is a leading researcher in the effort to better understand how feline infectious peritonitis (FIP) infects and causes disease in cats. Dr. Whittaker has been the recipient of over $750,000 in Cornell Feline Health Center (CFHC) grant support over the past 10 years.

Two of his current CFHC grants are focused on the development of diagnostic tests for detecting the coronaviral mutation that makes the infection severe, the use of fluorescent probes to light up the virus' genetic material under the microscope in tissue samples, and improving our understanding of the molecular mechanism by which coronaviruses use macrophages (a type of white blood cell) to cause FIP in cats.

In addition, Dr. Whittaker is the co-recipient of a recent $17,500 award from the Winn Feline Foundation. On this project, he will work with Susan Baker, PhD., from Loyola University to develop improved cell culture systems for feline coronavirus and on FIP vaccine development. ■

Time to Practice Your Slow-Blink Technique

Psychologists weigh in on how to build a bond with cats

A recent study by animal behavior scientists at the Universities of Portsmouth and Sussex shows that cats respond to eye narrowing, generally with a cat smile (the "slow blink"). The eye-narrowing technique seems to make the human more attractive to the cat. Eye-narrowing movements in cats have parallels with the genuine human smile (called the Duchenne smile—it engages muscles around the mouth and eyes).

The study cats were more likely to slow blink if their owner or an unfamiliar person slow blinked at them than if that person did not. The researchers noted that cats preferred to approach an experimenter after that person slow blinked at the cat than if they had maintained a neutral expression.

Professor Karen McComb, who supervised the work, said: "It's a great way of enhancing the bond you have with cats. Try narrowing your eyes at them as you would in a relaxed smile, followed by closing your eyes for a couple of seconds. You'll find cats respond in the same way and you can start a sort of conversation."

The study used two experiments, both done in the cats' homes. The first involved 14 households (10 male cats and 11 females) with the owner using the slow-blink method. The second included eight households (12 males and 12 females) with the researcher trying either a slow blink or a neutral face without eye contact. The reactions of both experiments were videotaped and analyzed. ■

Supersmario | iStock Photos

The Slow Blink

Humphrey, T., et al. "The role of cat eye narrowing movements in cat–human communication." Scientific Reports, 2020; 10 (1) DOI: 10.1038/s41598-020-73426-0

Feline Recurrent Seizures and Epilepsy

Study shows risk increases with the age of the cat

A recent study carried out in the United Kingdom looked at recurrent seizure problems and epilepsy in cats. Seizure disorders are the most common neurological problem seen in cats.

The study enrolled 285,547 cats from 282 clinics. Of these cats, 1,497 were identified as potential recurrent seizure cases, with 458 confirmed. Cats can also experience seizures from toxins and liver shunts, but cats with these problems were excluded from the study.

This study's results suggest an overall recurrent seizure disorder (RSD) prevalence of 0.16% in cats in the United Kingdom, with 24.89% classified by their regular veterinarians as epilepsy. Increasing age increased the risk of RSD, however, cats 3 to 6 years old had the highest risk of epilepsy.

A previous study of epilepsy in cats showed that secondary epilepsy was more common in older cats (over 7 years of age). Those cats tended to show neurologic deficits between seizure episodes. If seizures occurred during times of rest or significant exertion, they were more likely to be characterized as primary epilepsy.■

https://pubmed.ncbi.nlm.nih.gov/32974979/

Best Designs for Feline Kennel Space

Clear doors, perches, hiding places, and a separate litter area

A recent article in *Veterinary Practice News* says that researchers recommend feline cages have clear doors so cats can see out (or covers they can see through), shelves or perches that allow cats to climb and lounge, and a hiding place for stressful moments. If possible, an opening between two cages that allows cats to have one compartment as a living space and another for their litterbox is ideal. The goal is to make cats as comfortable as possible, which will promote good health.■

Want to Know What Your Cat Says?

Well, now we can tell you, "There's an app for that!"

Javier Sanchez, a program manager at the tech company Akvelon (Bellevue, Wash.,) who previously worked on Amazon's Alexa voice service, developed an app called MeowTalk that is purportedly programmed to translate a cat's meows. Users can assign meows in the app when they think they know what their cat is asking for, according to a story on GeekWire. During the development of MeowTalk, Sanchez consulted experts including Stavros Ntalampiras, who published a research paper called "Automatic Classification of Cat Vocalizations Emitted in Different Contexts" (*Animals,* August 2019).

Sanchez found that cats have one of nine different intents they are trying to relay when they meow at you, and each message has its own type of meow.

Owners need to "train" the app to fit their cat, usually taking sounds made in certain contexts to fit the translations. Reviews are positive, but there are some kinks that need to be worked out. One owner said the app claimed her cat said, "I love you" when the cat was hissing at another cat in the family.

And, of course, we remind you that it's up to you to decide if you truly want to know what your cat is "saying" sometimes! (In case you wondered, Sanchez owns a tabby cat named Mittens.)■

CatWatch

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The Chronic Kidney Disease Battle

Early intervention is critical, but there's help and hope

If you've been lucky enough to have a cat or three make it into later life, you've probably battled chronic kidney disease (CKD). It's one of the most common ailments of senior cats, and about a third of all cats develop it. Worse yet, it's an insidious disease that creeps up on older cats—and their owners.

The kidneys filter toxins and wastes out of the blood and recover important nutrients and electrolytes. Two-thirds or more of the normal kidney tissue must be damaged before CKD can be detected through blood tests.

The first CKD signs you'll probably notice are increased thirst and urination, weight loss, a lack of appetite, and lethargy. Some owners note bad breath or drooling, which can be associated with oral ulcers caused by the buildup of toxins in the blood. Cats who aren't feeling well may not groom themselves, so your cat may develop mats and lose that sleek coat. As waste products further build in the bloodstream, your cat may suffer from nausea and vomit.

Causes of CKD vary widely—inflammation, kidney stones or a blockage, an infection, immune system disorders, heredity—but usually CKD is considered idiopathic, meaning there is no known cause.

Making a Diagnosis

Your veterinarian will do a physical examination, which may include a blood-pressure test (hypertension is often seen with CKD). Urine will be evaluated to see if your cat can concentrate/dilute her urine, to check for protein loss, and to rule out bacterial infection. In later stages of CKD, blood tests may show anemia, an increase in blood urea nitrogen (BUN), and an increase in creatinine.

Your veterinarian can classify what stage of kidney failure your cat is experiencing by evaluating these blood tests. A newer lab test that measures the concentration of symmetric dimethyl arginine (SDMA), a waste product of protein metabolism, is being used in some clinics to detect CKD at earlier stages of the disease. An earlier diagnosis means treatment can begin sooner, which is better for your cat's prognosis.

Multi-Step Treatment

Your veterinarian may recommend modifying your cat's diet. Dietary modification is the only intervention that has been shown to improve outcomes in cats with CKD (see sidebar).

Medical therapy includes:

- Controlling hypertension, usually with oral medication
- Treating urinary protein loss, often with angiotensin converting enzyme (ACE) inhibitors
- Addressing anemia, which may be treated by replacement therapy with erythropoietin, which stimulates red blood cell production
- Stimulating appetite, using various drugs, as needed

While humans with kidney failure are often treated with hemodialysis, or simply "dialysis," this modality is not practical for most cats. It is primarily used for emergencies in which the kidneys are acutely affected, such as in a poisoning. In these situations, the cat is expected to recover relatively normal kidney function.

While some specialty clinics and university facilities offer feline kidney transplants, it's not easily done. The donor cat must be adopted and cared for by the family of the cat receiving the transplant, and the cat receiving the kidney will need anti-rejection medications for the rest of her life.

Stem cell therapy, while in its infancy for feline CKD, shows promise.

Many cats respond well to treatments that slow the progression of CKD. Although CKD cannot be cured, cats can gain years of relatively normal health and activity. It probably won't surprise you, however, to learn that some cats limit their own treatment by failing to cooperate with many therapies. ■

Extra Caution

Do not give any supplements or medications to your cat with CKD without veterinary approval. CKD can significantly affect metabolism, increasing the risk for toxicity.

What You Can Do

Dietary modification can make a big difference

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Adjusting your cat's diet is a critical part of managing CKD. Your veterinarian may recommend modifying your cat's diet to limit her phosphorus, sodium, and protein intake. He or she also may consider phosphate binders, potassium supplements, antioxidants, and/or water-soluble vitamins, which are lost with kidney failure.

You'll find a variety of commercial and prescription therapeutic diets for cats with kidney problems. Discuss your options with your veterinarian and try various ones to find one your cat likes, then do a gradual shift (over five to seven days) from her regular food. She may need anti-nausea medications until she is stabilized.

Many people find that diets with a lower protein content—even in a high-quality protein diet—are not palatable to their cats. For this reason, many owners have opted to make food at home or feed a raw diet.

If you choose this option, be sure you consult a veterinary nutritionist, because creating a balanced diet for a cat with kidney failure is not simple. You can find a board-certified veterinary nutritionist at acvn.org. In addition, the Cornell University Veterinary Nutrition Service offers fee-based nutrition consultations. You can call 607-253-3060 or visit vet.cornell.edu/hospitals/services/nutrition.

Learn to Do Sub-Q Therapy

Although increased thirst and urination are signs of kidney failure, prompting cats with CKD to drink is important. That may mean investing in a fountain if she prefers that to a bowl or giving subcutaneous (sub-q) fluids at home on a regular basis, especially as the kidney failure worsens. Giving sub-q fluids is not difficult to do, and most cats handle this well. Your veterinary team can provide you with the necessary training and support.

Anesthesia Expectations

Despite the wild rumors, there is little to fear

General anesthesia is necessary for many procedures in cats, ranging from a routine spay, neuter, or dental cleaning to more involved mass removals or fracture repairs. Having your cat go under anesthesia can be scary, but the good news is that there is only an 0.24% risk of anesthetic death in cats[1].

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Inhaled gases are usually used to maintain anesthesia (keep your cat asleep) for the duration of her procedure.

General Anesthesia

"Anesthesia" means "without sensation." Usually when a member of your veterinary team mentions anesthesia, he or she is referring to general anesthesia, where your cat's entire body is affected, and the cat is "asleep."

When a general anesthetic is used, all of the pathways in the nervous system that transmit pain from its source to the brain remain intact, but the stimulus is blunted because the brain is asleep and the patient will not experience the pain. The attending veterinarian and/or an anesthesiologist selects the types of anesthetics and specific agents to be used depending on the patient's age and general health, the nature of the procedure, which organs are involved, and the time required for the drugs to take effect.

When your cat is put under general anesthesia, she will be unconscious, with her muscles relaxed and no sensation of pain. There are also local anesthetics, which only block sensation in a limited area. Sedation falls in between being fully awake and fully unconscious and may be utilized for non-invasive procedures, such as a physical exam for an overly anxious cat, or to get your cat started on the road to full anesthesia.

Most cats are sleepy after being under anesthesia, but back to themselves within 24 hours.

Balanced Anesthesia

Most veterinarians utilize "balanced anesthesia" for their patients, combining multiple drugs to achieve maximum benefit to the cat with minimum side effects. The side effects of most drugs are dose-dependent, meaning that the more of the drug that is given, the more likely that side effects will occur. By combining multiple drugs, your veterinarian is able to give smaller amounts of each drug, reducing the risk of side effects. Some drugs also work better together than they do alone, or have complementary effects. Drug dosages are generally determined by your cat's weight.

There are generally four stages to anesthesia: pre-medication, induction of anesthesia, maintenance of anesthesia, and recovery:

1 Pre-medication. Pre-meds are usually sedatives given as an injection to calm your cat. These help to combat the stress of coming to the hospital and will reduce the drug dosages needed for induction and maintenance, but your cat will still be awake.

2 Induction. Usually done with an injection, at this stage, your cat is rendered fully unconscious. The veterinarian or technician will watch your cat closely as the induction drug is given and will only give as much as is needed to get her fully asleep, which may not be the full dose.

3 Maintenance. Inhaled gases are usually used to maintain anesthesia (keep your cat asleep) for the duration of her procedure, although injectables also can be used. Gas anesthesia can be given continuously, but clears from your cat's system quickly, allowing for a faster recovery than with many injectable drugs. Gas anesthesia doesn't have an exact "dose," but is measured by the percentage in the air inhaled by your cat. Your cat will have either a face mask or an endotracheal tube going down her throat to deliver oxygen and the anesthetic gas to her lungs. The technician monitoring her will adjust the concentration of gas as needed to keep your cat sleeping soundly.

4 Recovery. The recovery period is the transition from being fully unconscious to fully awake after the procedure has been completed. Your cat will be monitored to be sure she is breathing normally and staying calm as she wakes up.

Risks

The American Association of Feline Practitioners (AAFP) issued Feline Anesthesia Guidelines in 2018 state that: "Common complications in the immediate postanesthetic period include delayed recovery, dysphoria and emergence delirium. Delayed recovery is generally multifactorial, but often attributed to a combination of hypothermia, hypovolemia and impaired intrinsic drug metabolism. Treatment for delayed recovery is generally supportive and focused on thermal support and tissue oxygen delivery (e.g., intravenous fluids, active warming devices, and oxygen supplementation)." What this means is that your veterinarian usually can prevent or correct these common and mild complications.

Thankfully, adverse reactions to anesthesia are rare. The most common reactions include swelling or discomfort at an injection site or temporary cardiac or respiratory depression (with the latter two usually being corrected by the veterinary team promptly).

More severe complications include aspiration pneumonia, organ failure, vision loss, clotting disorders, seizures, anaphylactic shock, and death. Most feline anesthetic deaths are due to obstruction of the cat's small and delicate airway, according to the AAFP.

Before you panic, remember that very low 0.24% risk of anesthetic death. Your cat is being put under anesthesia for a good reason, and the benefits of the procedure are most often greater than the odds of a bad reaction to the anesthesia.

Cats with the following traits or conditions are at an increased risk for anesthetic complications:

- Anemia

- Brachycephalic
- Dehydration
- Diabetes mellitus
- Heart disease
- Infectious diseases
- Kidney disease
- Liver disease
- Obesity
- Senior (over 12 years old)
- Small size (under 5 pounds)

Discuss your concerns with your veterinarian and ask specific questions about your cat's case. Your veterinarian wants your cat to have an uneventful experience as much as you do and has a wide variety of tools at his or her disposal to adjust the anesthetic protocol to be as safe as possible for your cat. For example, a dehydrated kitty will be given fluids ahead of time so that she is properly hydrated before going under anesthesia.

For a cat with a heart condition, drugs that depress the cardiovascular system will be avoided or reduced in favor of others that are less likely to stress the heart. Drug dosages for an obese cat will be calculated based on her ideal weight rather than her actual weight.

Reducing Risk

A variety of things can be done minimize the risk of anesthesia for your cat, but your veterinarian will need your help and/or approval for some of them.

Before the procedure, your veterinarian/technician will usually:

- Do a complete physical exam, listening to your cat's heart and evaluating her hydration status.
- Give pre-meds to sedate your cat and minimize the amount of drugs needed to induce anesthesia.
- Place an intravenous catheter. This makes giving induction drugs easier, provides a port for fluid therapy during the procedure, and gives your veterinarian quick venous access if medications need to be given quickly in an emergency.

During the procedure, your veterinarian/technician will usually:

- Place an endotracheal tube down your cat's trachea to ensure that oxygen and the anesthetic gas go directly to her lungs. These tubes have inflatable cuffs that seal the trachea, keeping the desired gases in the lungs and any fluids or vomit out.
- Give intravenous fluids to maintain blood pressure, help with hydration, and replace any fluids lost during the procedure due to bleeding or evaporation. IV fluids also help to flush and protect your cat's kidneys and speed recovery.
- Monitor your cat continuously to make sure that her vital signs are all normal and she is not having any issues. Common monitoring equipment includes a pulse oximeter, blood pressure cuff, EKG, carbon dioxide monitor, thermometer, plus the veterinary technician and a trusty stethoscope.
- Keep your cat warm.
- Correct any issues with blood pressure, heart rate and rhythm, breathing rate, oxygenation, or temperature swiftly.
- Start pain medication if necessary depending on the procedure.

After the procedure your veterinarian/technician will usually:

- Monitor your cat until she is fully recovered. The endotracheal tube can be removed once her swallow reflex has returned.
- Keep your cat warm.
- Continue fluid therapy as needed.
- Continue pain control if needed, depending on the procedure.
- Go over after-care with you and provide you with a written discharge. This document should list side effects from the medications given that you should expect or that are a cause for concern.

When Kitty Comes Home

Give your cat a safe, quiet place to rest and recover. She will likely be a bit groggy the first night. Older cats or those with health problems may take a few days to get back to 100 percent normal behavior.

Follow feeding and medication instructions given by your veterinarian. If you have a question, ask, don't assume.

Monitor your cat for any issues, such as trouble breathing, pale gums, lethargy, or disorientation. Keep in mind any medication side effects your veterinarian may have mentioned, such as sleepiness from narcotic pain injections (normal) or vomiting from an NSAID (not normal).

No matter how well you think your cat is doing, be sure to keep all recommended post-operative visits. ■

1. Brodbelt DC, Blissitt KJ, Hammond RA, et al. The risk of death: the confidential enquiry into perioperative small animal fatalities. Vet Anaesth Analg. 2008;35:365-373

What You Can Do

The surgical process is a team event and that includes you!

Provide a Complete History: When discussing surgery, give your veterinarian a complete history on your cat. Include all medications and supplements, any medication reactions, and health history. This will alert your veterinarian to any concerns that may change the anesthetic protocol used.

Follow Instructions: Fast your cat before the procedure. Your veterinarian will tell you when her last meal before the procedure can be, but enforcing that is completely up to you. This is because she will lose her swallowing reflex while under anesthesia. If there is food or a lot of liquid in her stomach and she vomits, the vomit can end up being aspirated into her lungs, which can be life-threatening. If recommended, give an oral sedative such as gabapentin before coming to the hospital to help give an anxious cat a stress-free experience.

Say Yes to Pre-Anesthetic Screening: Depending on your cat's age and any other conditions, your veterinarian may recommend blood work, urinalysis, radiographs, or an EKG. The liver and kidneys are responsible for removing anesthetic drugs from your cat's body, so a chemistry panel is beneficial for all cats going under anesthesia so your veterinarian will know ahead of time if she will need lower doses of drugs or supportive therapy to help her recover quickly. Radiographs and an EKG are usually only recommended if a heart condition or tumors are suspected.

Sign the Consent: Expect to sign an anesthesia consent form stating that you understand the risks of your cat going under anesthesia. If you have any questions or concerns, this is the time to ask.

Fecal Transplants Can Work

All you need is a healthy donor that is a good match

Feline fecal microbiota transplants—yes, inserting feces from one cat into another—are becoming more common as a therapy for serious chronic problems, such as chronic diarrhea due to ulcerative colitis or inflammatory bowel disease. This treatment is successfully used in humans and other animals. The goal is to quickly restore the population of healthy gut microbials, overwhelming any pathogens and getting the intestinal tract back into a healthy balance.

The first step is finding a healthy donor cat without a history of gastrointestinal illness, allergies, cancer, or immune problems. Ideally, the donor cat was nursed by his mother, so he started life with a good immune boost from her milk. The cat is evaluated for a diverse, healthy microbiome (microbiota that normally reside in or on the body). Both the donor and your cat should be on matching diets so the procedure doesn't cause a dietary allergy in your cat.

Once a donor cat has been identified, the veterinarian does a full fecal evaluation and samples are screened for pathogens, bacteria, and parasites. When a transplant is prepared, the fecal material should be fresh, appear normal, and no more than 8 hours old.

The fecal material is mixed with lactated Ringer's solution (a mixture that replaces fluids and electrolytes in the body) to make a slurry that is then filtered to remove unnecessary particulate matter. The slurry is then inserted into the cat as a liquid enema. The cat must be sedated so she can be kept in a position to retain the transplant for at least 30 minutes. A second transplant is rarely required.

Alternatively, you can purchase capsules of prepared fecal transplant material for your cat. The fecal material is freeze-dried and packed into enteric-resistant capsules that should not dissolve until the capsule reaches the intestines. The same protocols for screening a donor cat and its feces should be followed as for the fresh transplant method.

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The donor cat should be on the same diet as the receiving cat.

With either method, though, your veterinarian should be involved. It is important that any medications that would influence the microbiome are avoided while the newly transplanted bacteria become established. A cat who is on a hypoallergenic or limited ingredient diet should stay on it.

Fecal transplants are still relatively new as therapies for cats with chronic intestinal problems. They show promise for the future. With more cats receiving these treatments, protocols will be fine-tuned and even more cats will be restored to good gastrointestinal health.■

Probiotics

For acute diarrhea, a quality probiotic can be the treatment of choice, with medications aimed at the pathogens causing your cat problems, to restore gut flora. However, no probiotic can match a natural healthy microbiota. For chronic conditions, bigger "guns" are often needed.

Traditional Methods

With acute diarrhea, most cats recover on their own in a day or two. If a little help is needed, medications, such as metronidazole (Flagyl), are often effective. Sometimes, the fix can be as simple as a diet change. However, some cats can't get back on track. With chronic conditions, especially, the normal gut flora can be wiped out and unable to get back in sync. For these cats, a fecal transplantation may be the boost they need.

Inflammatory Bowel Disease

No matter what type of irritable bowel disease (IBD) your cat has, he may be in pain due to the increased number of inflammatory cells in the lining of his stomach, small intestine, and colon. With IBD, a cat's immune system reacts to the presence of pathogenic agents, including bacteria or food antigens, and the mucosal lining responsible for regulating the digestion and absorption of food is impaired. Symptoms of IBD include lethargy, weight loss, vomiting, diarrhea, and a loss of appetite. It can become a messy problem, too, with uncontrollable diarrhea.

Although cats of any age can be affected, middle-aged or older cats are more susceptible to IBD. "We don't know what causes IBD, so when a cat is having uncontrollable diarrhea, vomiting, and acting lethargic, we start ruling out possible causes such as parasites and cancer, and we back our way into diagnosing IBD," says Joseph Wakshlag, DVM, PhD, Section Chief of Nutrition at the New York State College of Veterinary Medicine at Cornell. "What we do know with certainty is that cats with IBD have gastrointestinal discomfort and there is constant inflammation in their intestinal walls."

If your cat is exhibiting these symptoms, the veterinarian will most likely perform a series of diagnostic tests to rule out other conditions, such as feline leukemia virus, feline infectious peritonitis, feline immunodeficiency virus, or parasites and protozoal infections. The tests may include a complete blood cell count, a fecal examination for the presence of parasitic and bacterial agents, and abdominal X-rays and ultrasound.

However, the definitive diagnosis is achieved by the endoscopy procedure, which uses a flexible tube with optical fibers to obtain images of the cat's stomach and intestinal tract. "Your vet may want to perform an endoscopy to look at your cat's stomach, small intestine, and colon and take small surface biopsies of the stomach or intestine to confirm the diagnosis," Dr. Wakshlag says.

Skin Nodule Worries

The cause of panniculitis can be difficult to find

Feline panniculitis is an inflammation of subcutaneous fatty tissues, which is the layer of fat just under the skin. Nodules are the most noticeable symptom. They can vary from discrete lumps to generalized plaques. They can be firm or soft, possibly with reddened skin over the top or with draining tracts or ulcers. The area may be painful. The most common site for feline panniculitis is on the abdomen or back.

Although rare, cats may develop panniculitis as a reaction to a vaccination or an injectable medication. Hair loss may occur along with a lump at the site of the injection. However, the disease may be idiopathic (no known cause) or, most often, due to a pathogen (bacteria, fungi). A fine-needle aspirate will show fat cells plus inflammatory infiltrates, although a biopsy stll may be needed for the veterinarian to make the diagnosis.

Causes

"The vast majority of feline panniculitis cases are associated with infectious agents like Nocardia, mycobacteria, or Actinomycosis (bacterial infections). The infectious agent is probably introduced into the fat by a small cut or a penetrating wound. Mycobacteria are very hard to identify in tissues, so some cases are called sterile (idiopathic) when, in fact, they are not. Culturing mycobacteria and fungal pathogens is extremely difficult and has to be done by specialty labs," says William Miller Jr., VMD, DACVD, Professor Emeritus of Medicine, Section of Dermatology at Cornell. Special staining techniques at veterinary labs may identify these pathogens, but not always. Cultures are complicated and require extra time beyond what is expected for a routine bacterial culture.

An excessive nutritional intake of polyunsaturated fatty acids or vitamin E deficiency may cause panniculitis, but these are unusual. Pancreatitis has been associated with this skin problem in cats as well, although other clinical signs tend to predominate. Panniculitis may be secondary to a bite wound, especially if it becomes infected.

Mycobacterial cutaneous lesions in cats are often multiple pyogranulomas with fistulous tracts associated with purulent (puslike) drainage. Bacteria in this group are ubiquitous in nature, especially in water and wet soil. Many species are not pathogenic for animals under normal circumstances and are usually acquired after a trauma that results in open wounds, such as being hit by a car or a bite wound.

Pancreatitis and pancreatic tumors in the cat have been reported to cause sterile panniculitis. Cats with pancreatitis-associated panniculitis usually show signs of pancreatitis, which can be very nonspecific in cats. Cats with pancreatitis may vomit, have diarrhea, a fever, and may have a painful abdomen noticed upon palpation.

Treatment

Treatment varies with the suspected underlying cause. In the unusual case of a truly sterile panniculitis associated with pancreatitis, your cat will need to be treated for the pancreatitis first. The secondary panniculitis may then resolve on its own over time or may require surgical removal.

If diet is suspected, switching to a balanced diet and providing vitamin E supplementation may take care of mild cases.

Uncomplicated injection-related cases of panniculitis may respond to surgical removal and then be considered cured.

The prognosis for cats with opportunistic mycobacterial infections is guarded and depends mainly on early diagnosis and long-term treatment. Although some cats have been cured with fluoroquinolone antibiotic therapy alone, others require life-long treatment, as lesions may recur after what appears to be complete resolution. ■

Dina Damatseva | iStock Photos

This pretty kitty is receiving a subcutaneous injection.

What's an Abscess?

Cats can develop a variety of lumps and bumps on their skin—cysts, tumors, pimples—but abscesses have their own distinctive characteristics.

An abscess contains pus, a yellowish fluid that forms at the site of an infection. Although pus typically contains a certain amount of cellular debris and dead tissue, it is composed mainly of white blood cells that have been summoned by the immune system to combat invading bacteria or other microorganisms.

"Because an abscess is filled with pus," says Dr. Miller, "it will be inflamed, warm, and tender. Tumors are not usually like that, and pimples are merely superficial eruptions, affecting the outer layer of skin and minuscule by comparison to an abscess."

An abscess can occur due to a puncture wound, but it usually results from bites from other cats, since most feline mouths contains many bacteria that can cause infection.

Pus-filled eruptions also may develop internally. A penetrating wound may puncture a cat's liver or kidney, for instance, or the wall of the intestine. Although the wound may heal nicely on the skin surface, an abscess may form inside the body, and infection will make itself known only when the cat starts running a fever, becomes sluggish, and goes off its food.

If an internal abscess remains untreated and ruptures, bacteria and pus will pass into the bloodstream.

"With all of the toxins circulating through its body," Dr. Miller says, "the cat becomes septicemic, and that can kill it. If the abscess ruptures externally, however, the pus will drain out and, if the wound is small enough, it will heal by itself."

Cats with Heart Failure Rarely Cough

It occurs in people and dogs, but it's unusual in cats

Q As I was reading a past issue of *CatWatch* with an article on chronic coughs, I noted that there was no mention of congestive heart failure (CHF) as a cause of cough in cats. I am a cardiac nurse, and I know the general public does not usually have stethoscopes, but that cough is distinctive! Please tell your readers about CHF as a cause of coughing in their cats.

A Thanks for getting in touch. As you point out, cough is a sign of heart disease in people; it is in dogs, too. For reasons we don't fully understand, though, cats with heart disease rarely cough.

Feline heart disease affects 15% of all cats. Most of these cats are affected by a form of heart muscle disease that causes the heart to thicken (called hypertrophic cardiomyopathy), in many cases leading to CHF.

The most common signs of CHF (in which blood "backs up" from a failing heart and accumulates in the lungs, causing fluid to leak into the lung tissue) in cats are rapid breathing, difficulty breathing, lethargy, sudden hind-limb paralysis (due to the development of a blood clot that blocks blood flow to the hind limbs), and collapsing.

Cats with CHF not only accumulate fluid *within* their lungs, but often accumulate fluid *around* their lungs, within their chest cavities (called pleural fluid). Pleural fluid can make it difficult for them to expand their lungs to take a breath, causing them to have to exert more effort to move air into and out of their lungs.

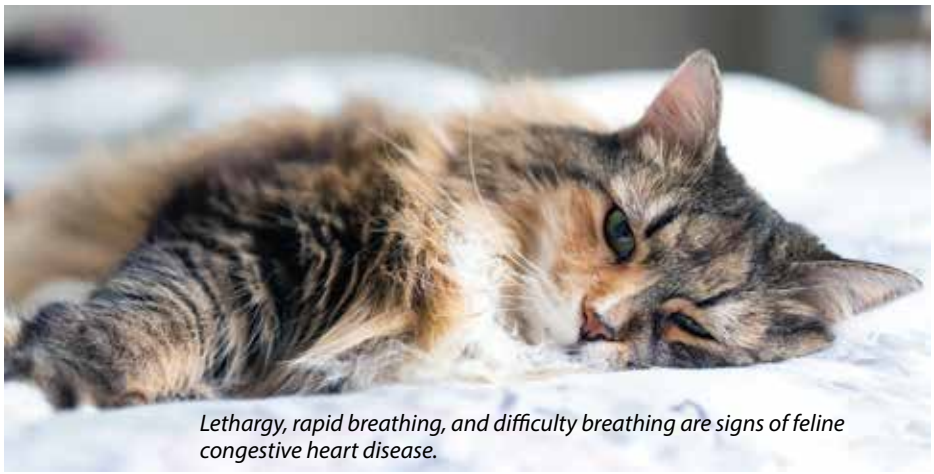
Pleural fluid can be removed by passing a fine needle through the chest wall and using suction to withdraw it (called thoracocentesis). Such removal often causes a rapid improvement in breathing.

It is rare for cats with either CHF or pleural effusion to cough, although they can experience significant and potentially life-threatening difficulty breathing. Difficulty breathing (called dyspnea) is an emergency in cats, requiring immediate veterinary attention.

The most common things that cause a cough in cats, as you have read in a previous issue, are feline asthma, bacterial or viral infections of the lungs (pneumonia), allergies, lungworm infection, and heartworm infection. In some cases, cats that are passing hairballs may produce a sound that can be mistaken for a cough. Sometimes, primary diseases of the lungs, such as cancer and some inflammatory diseases, can cause coughing in cats.

To my knowledge, we don't really know why cats with heart disease rarely cough. Cats are unique in so many physical, biochemical, cognitive, and behavioral ways (as I am sure you know), and this is just another example of a feline difference that we can't explain!

Perhaps future research will shed light on this issue, but until then we will have to accept, and be aware of, this important difference in how feline diseases present at home and in the clinic.■



Lethargy, rapid breathing, and difficulty breathing are signs of feline congestive heart disease.

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This column is written by Bruce Kornreich, DVM, PhD, DACVIM, Director of the Cornell Feline Health Center and Editor-in-Chief of CatWatch. You can write to Dr. Kornreich 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.

Coming Up . . .

- *What Research Shows About House Soiling*
- *Weapons for Fighting Kitty's Asthma*
- *Feline Oral Cavity Diseases*
- *Just Say No to Home Health Hazards*

HAPPENING NOW…

Smart Fundraiser—Feline-rescue volunteers offered nail trims for cats and kittens for a donation of $10 per cat in order to raise funds to care for shelter cats, according to *Patch,* Saint Paul, MN.

Who Ya Gonna Call?—The fire department, of course! When Jaquel Coquette realized Shadow was missing, she started combing the neighborhood, finding the meowing cat 15 to 20 feet up a tree with a pair of dogs in the yard below. Not knowing what else to do, Coquette called the fire department, who responded with a truck and ladders. Richfield City volunteer firefighter Colton Nay tried to grab Shadow, who wasn't all that trusting. Eventually, Nay coaxed the cat out of the tree, says the *Richfield Reaper,* Richfield, UT.

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Cat Hotel—At the Hotel Talisi, animal control reported the capture of T25 feral cats that were going into and out of the building, according to the *Tallassee Tribune* in Alexander City, AL. The hotel was already declared a public nuisance, but the cats—mostly homeless former housecats—add to the problem. They are also causing the city to treat areas for flea infestation.■