THE 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

Anal Sac Cancer

Surgery is first treatment

The first sign of anal sac cancer in cats is usually ulceration and discharge from the perineal area (tissue around the anus), according to a study in *JAVMA* that looked at apocrine gland anal sac adenocarcinomas (anal sac cancer). Surgery is usually the treatment, although work has been done with chemotherapy and/or radiation.

This is a tricky area for surgery. With any cancer, surgeons want "clean margins," meaning the tissue surrounding the cancer is free of cancer cells after surgery. There is not a lot of extra tissue in the rectal area to begin with and surgeons want to avoid damaging nerves and muscles involved with bowel control.

Still, removal of part of the rectal wall led to clear margins in at least three of the cats. The entire anal sac was removed in all of the cats. For cats whose tumors were not completely resected, local recurrence was common. Of the 30 cats, 11 had local recurrence and some others had metastatic disease.



sannare | Deposit Photos

It appears that aggressive surgery is the first line of treatment for this cancer. Follow up with chemotherapy and/or radiation needs to be more fully explored before it is used in the clinics. ■

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Catnip Crazy

Yes, Virginia, there is high-quality catnip

Catnip, technically *Nepeta cataria,* is a member of the mint family with a reputation for attracting cats. It is a fast-growing, tall plant with heart-shaped leaves and blossoms that are white, lavender, or pink. Most cats love it! Cats in the wild, even big cats, often seek out patches of catnip and return repeatedly.

Get Quality Catnip

Not all catnip is the same, however. When choosing catnip, look for mostly leaves and flowers—the most potent parts—with few stems. And quality catnip isn't cheap, selling for $3 to $4 an ounce.

Dried catnip products should only contain catnip—check the ingredients label for any fillers or other ingredients. It may take some experimentation to determine how your cat reacts to different brands. If you find one product he really likes, write down the manufacturer name. Hint: Prefilled catnip toys can be difficult to evaluate, but sometimes use low-quality catnip.

The quality of the plant is affected by the soil and climate where it is grown. Pesticides can linger and pose a risk to your cat. For this reason, you should never give catnip that you find outside to your cat unless you are certain that the area was not sprayed.

You can grow your own catnip using commercial kits. Give the leaves and blossoms to your cat fresh, or dry them by hanging the plant upside down until it crumbles when touched.

Catnip left out in the air loses its potency over time (anecdotal reports say in about six months). Catnip in a sealed container, however, can still make your cat's day years later. You can also freeze it to prolong its shelf life.

Natural High

Catnip contains the volatile oil nepetalactone. When a cat inhales this chemical, it is processed by the vomeronasal organ in his nasal passages, resulting in the stimulation of sensory neurons that send signals to the cat's brain. The result is a sense of euphoria or mild hallucination that lasts 10 to 15 minutes. During this time, the cat may purr, roll, rub, drool, run around, and/or sniff, lick, or eat the catnip. Cats seem to enjoy these sensations, and it's fun for us to watch too!



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There's nothing better than fresh! Our kitty has catnip flowers in her paw.

Catnip is not addictive, and a study that evaluated long-term use by cats showed no ill effects. In rare cases, cats may show aggressive behaviors after being exposed to catnip, but that usually stops once the cat is no longer under the influence. After a cat's response to catnip has worn off, it will usually take an hour or two before he will react to it again. ■

Insider Info

- **Genetics.** Catnip love may be inherited, with 50 to 80 percent of cats possessing the gene.
- **Age matters.** Kittens under 6 months of age rarely respond and may be repelled; old guys often don't care. Catnip best fits adult cats in the prime of life.
- **Crush it.** Rub or crush dried catnip in your hands to release the nepetalactone for maximum effect.
- **A little dab.** A half teaspoon of dried loose catnip is plenty. Use it as a treat, so that it remains special.

Yes, They Know Their Names



PKillustrations | Deposit Photos

They're just not going to let you know

A study published in April in *Scientific Reports 9* and done at the University of Tokyo (Saito, A et al) reports what we've all suspected: Cats recognize their names, but they don't bother to respond. The researchers determined that the cats indicated recognition of their name by moving their ears or turning their heads. Only rarely did they move their feet. The cats could discriminate their own names from general nouns, even when an unfamiliar person was speaking. ■

Canned Mouse, Anyone?

Cultured mouse meat may be on its way to our cats

Many veterinary nutritionists say the ideal feline diet would be "mouse in a can." While mouse farming has not caught on, it looks like cats may get their ideal diet via a laboratory. The Pet Food Industry reports that the company Because Animals is working on this development.

"Currently, cultured meat is expensive, including cultured mouse," Because Animals CEO Sharon Falconer says. "But one of our biggest assets is that we're working with tissue from a species where a lot is already known in terms of biochemistry."



worldofvector mouse | Deposit Photos

The project involves growing a thin layer of mouse meat tissue that is then incorporated into feline treats. The first step toward production is to achieve USDA/FDA approval of cultured mouse meat as GRAS (generally regarded as safe).

There are advantages to culture-grown meat. "Cell-cultured meat will be the highest quality meat on the market—fully traceable, antibiotic- and hormone-free, and absolutely clear of pathogenic bacteria such as *Listeria* and *Salmonella*," Falconer says. ■

Ureteral Obstruction Technique Study

The results are promising for reducing trauma in cats

A retrospective study published in *JAVMA* by a veterinary specialty hospital in collaboration with University of Pennsylvania selected 71 cats (mostly domestic shorthairs) to help determine whether using ultrasonography could show there was a ureteral obstruction and help determine the cause and location of the problem.

The results showed that ultrasonography was quite good for identifying ureteroliths (stones in the ureter causing blockage). It was less helpful for cats with ureteral strictures, such as a blood clot partially blocking a ureter.

Currently, x-rays and contrast dyes are used. Radiologists try to evaluate cats without any sedation, but that can mean studies are sensitive to movement of the cat while being evaluated. Fat in the abdomen along with intestinal loops can all interfere with a clear look at the ureters, plus feline ureters are quite small to begin with. In many cases, though, the ultrasound results were able to help veterinary surgeons develop their treatment plan.



Trbaliumivanka | Deposit Photos

The researchers noted that these ultrasounds were done by experienced board-certified veterinary radiologists and had many cases available to them via the referral nature of the hospitals. In routine practice, a veterinarian may not get much experience doing these studies. Still, more research into this area could lead to faster, safer ways to diagnose ureteroliths in cats and to differentiate them from strictures of various types. ■

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Send Ask Elizabeth questions and letters to the editor:
CatWatch®
535 Connecticut Ave.
Norwalk, CT 06854-1713
catwatcheditor@cornell.edu

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Diarrhea: Worry or Wait?

Prolonged diarrhea is a cause for concern

Diarrhea is no fun for anyone, especially if the cat doesn't make it to the litterbox or gets some of it on her fur. The good news is that occasional diarrhea is rarely an emergency and often resolves on its own.

When to Worry

"Many cases of diarrhea in dogs and cats are mild and self-limiting," says Meredith Miller, DVM, DACVIM, Section Co-chief of Small Animal Medicine at the New York State College of Veterinary Medicine at Cornell. "If a pet stops eating, is lethargic, the diarrhea is black or tarry in quality, there is associated vomiting, or the diarrhea doesn't resolve in 48 to 72 hours, then veterinary care should be sought."

Prolonged diarrhea causes dehydration because the stool passes through the gastrointestinal (GI) tract so quickly that water is not absorbed from it normally. If a cat is also vomiting, the level of dehydration will worsen. Dehydration leads to electrolyte imbalances in the body and decreases the ability of the kidneys to filter waste products from the blood. Over time, dehydration can contribute to organ failure and even death.

Black stool (or "melena") is caused by partially digested blood and may indicate bleeding in the upper part of the GI tract. Causes include inflammation, ulcers, infections, tumors, trauma, a foreign body, and bleeding in the mouth or respiratory tract. However, if the melena accompanies diarrhea, the root of the issue is more likely to be in the GI tract.



burdun | Deposit Photos

An ultrasound may be performed if your veterinarian suspects a blockage as the cause.

Bland Diet

If your cat just started having diarrhea and is otherwise behaving normally, you can help resolve the issue by giving her GI tract a break.

"Mild cases of diarrhea in both cats and dogs can be treated at home by feeding a bland diet such as boiled chicken or low-fat hamburger and white rice," says Dr. Miller. "Owners should avoid excessive treats or rich food until the diarrhea resolves."

While boiled chicken and hamburger with rice are easily digestible and less likely to irritate your cat's stomach and intestines, they are not appropriate for long-term feeding because they lack necessary nutrients.

Diarrhea that starts while switching to a new food may indicate you made the switch too fast for your cat. Go back to feeding more of the original diet, and once her stool has firmed up, resume the transition more gradually.

While most cats can switch to a new food over the course of four to five days (feeding 75 percent old food with 25 percent new food, then 50/50, then 25 percent and 75 percent), sensitive cats may need to span the transition over a week or two to allow their GI tract to adjust. If limiting your cat to a diet that she normally tolerates well and it doesn't work in a day or two, seek help.

Causes

Finding the cause of the diarrhea can be challenging, depending on the duration and severity of the diarrhea and any concurrent symptoms. A stool sample will be helpful so your veterinarian can check for parasites.

Transient causes of diarrhea include:

- Dietary indiscretion
- Switching to a new food too quickly
- A stressful event such as seeing the vet
- Internal parasites

More serious causes of diarrhea include:

- Infection in the GI tract
- Inflammation in the GI tract
- Cancer
- Toxicity
- Kidney disease
- Liver disease
- Hyperthyroidism
- Immune disorders
- Viruses, including feline distemper

Treatment

Treatment will vary, depending on the suspected or known cause. A cat that has only had diarrhea for a couple days and otherwise appears healthy may just be sent home with medications to normalize the GI tract. For cats that show other signs of illness or who have been having chronic diarrhea, the veterinarian will probably do bloodwork, plus or minus x-rays and/or an abdominal ultrasound to check for blockages.

Metronidazole (or Flagyl) is the closest thing there is to a miracle drug for diarrhea. It is antimicrobial, antiprotozoal, and anti-inflammatory. Cats usually tolerate it well, but it does have the ability to cross the blood-brain barrier, which can lead to a potential for the development of neurologic signs (thankfully this side effect is usually limited to high doses and is reversible once you stop giving the medication).

Probiotics also can help to normalize your cat's GI tract and firm up her stools. Many veterinarians will prescribe metronidazole and a probiotic together for pets with diarrhea.

The most important thing to remember is that diarrhea can progress to a much bigger problem if you just let it go. Loose stools that last more than a couple of days require treatment.■

What You Should Know

Diarrhea is a cause for concern if it's associated with:

- Melena
- Lack of appetite
- Lethargy
- Overt blood in the stool
- Lasting more than two to three days
- Tar-like consistency
- Vomiting

No Human Remedies

"Generally, human medications such as Pepto Bismol or Imodium should only be given under the direction of a veterinarian, because they may be harmful . . . or interact with other medications," says Dr. Miller.

Your Role as Flea Fighter

The tiny cat flea can put up a big battle

Ctenocephalides felis is a big name for a tiny insect that is a huge pest: the cat flea. While other fleas may infest your cat, this is the most common species to affect cats.

Fleas are amazing athletes and can jump quite high. Flea eggs are laid on their host (in this case your cat), then drop off and develop in the environment. The first larval stage is susceptible to sunlight, but can happily develop in cool, damp areas like leaf litter or in your carpet or under furniture. The pupae normally hatch in eight to 13 days but can stay in their cocoon stage for months without the stimulation of increasing temperatures and carbon dioxide. Once hatched, fleas immediately seek out blood meals and begin reproducing.

Medications for killing fleas may be adulticides that will kill adult fleas and/or they may also contain insect growth regulators, which will prevent the development of the immature flea stages.

Daily oral medications are generally not high on the list of most cat owners, but once-a-month oral flea preventatives are more palatable (no pun intended) for both cats and humans. Still, there are cats who inspire dread at the mere thought of giving them an oral medication.

Flea collars are a good option for many families, although these may not be ideal if you have other pets who might chew on the collar or neck of your cat or if your cat sleeps curled up with you or a child. The collars are generally considered to be safe if chewed but losing these collars frequently can be expensive. Some cats may have localized skin reactions to flea collars.



edu1971 | Depositphotos

Your cat may think you've lost your mind, but if fleas have already invaded, the best place to start is with a flea-shampoo bath.

Monthly topicals are popular. Depending on the exact ingredients, fleas may be repelled, killed, and/or prevented from successful reproduction. It is extremely important to use these products exactly as directed by the package label. Make sure your cat fits the age and size requirements for a certain product. Only use the feline versions (some canine versions are toxic to your cat).

There are also sprays that can be applied directly to your cat, and some of these may be effective for as long as 30 days. Extreme care must be exercised in applying these products to avoid inadvertent application to the eyes and mouth.

The Pet Poison Helpline suggests that you always check with your veterinarian before applying any of these products to your cat, and you should never use a canine flea product on a cat. Common side effects include vomiting, diarrhea, skin irritation, drooling, and even seizures. If your cat shows a reaction, bathe her and contact a pet-poison control center and/or your veterinarian.

Another good reason for having this discussion with your veterinarian is your geographical area. Some products are not as effective in one area as another, and your veterinarian is the best resource for advice in this regard.

Read labels to see if the product repels and/or kills and what pests it is effective

A Word from Cornell's Community Practice Service

Leni Kaplan DVM MS of the Cornell Small Animal Community Practice Service offers insights into the sometimes difficult choice of a flea product:

- There is no one flea product we find most effective or popular. All the products we recommend are effective.
- Not all patients respond favorably to a given product. So, a product that works great on one pet may not work as well on another.
- Pet owners have different product preferences. Some love topical products, while others prefer orals.
- Certain products will work more effectively or be better tolerated by patients depending on the patient's lifestyle and medical conditions/health status.

Finding the Right Brand

The Companion Animal Parasite Council lists the brands in this chart as safe, effective flea medications for cats. Always check with your veterinarian before using any of these products on your cat.

Product	Drug	Application	Fleas	Ticks
Activyl	indoxacarb	monthly spot-on	✔	
Advantage II	Imidacloprid, pyriproxyfen	monthly spot-on	✔	
Bravecto	fluralaner	every three months topical	✔	✔
Capstar	nitenpyram	as-needed oral	✔	
Comfortis	spinosad	monthly oral	✔	
Effipro	fipronil	monthly spot-on	✔	✔
Frontline	fipronil	monthly spot-on or spray	✔	✔
Revolution	selamectin	monthly spot-on	✔	
Seresto	synthetic pyrethroids, flumethrin, imidacloprid	eight-month collar	✔	✔
Vectra	dinotefuran	monthly spot-on	✔	

against, so you can ensure you have the defense you need. We do advise you to consider products that are also effective against ticks, as one product for both can be a safer and easier alternative for your cat than using two.

Finally, a word about natural flea-control products: Many of us are attracted to "natural" products. Remember that just because it's marked natural that doesn't mean it's safe, especially for cats who are sensitive to any drugs or herbs. Debates continue regarding the effectiveness of natural flea products, so if you are determined to use one, discuss the option with a veterinarian. ■

What You Should Do

Getting rid of fleas is hard! If your cat already has fleas:

- Bathe the cat with a cat flea shampoo (you might notice a reddish tinge to the bath water—that's dried blood passed in the flea feces/flea dirt)
- Sprinkle food-grade diatomaceous earth on all carpets and leave it in place for 24 hours; it will begin killing adult fleas within four hours (severe infestions may take longer)
- Thoroughly vacuum upholstery, mattresses, and carpets; throw away the vacuum bag
- Wash all bedding and other washables in hot water and dry on high heat
- Treat all the pets in the house—despite their name, cat fleas infest different animals
- Remember, if your cat spends time outdoors, treat your surrounding yard for fleas, too
- Choose a preventative from our chart and begin using it regularly



The cat flea is most common flea in the United States.

smwajc | Depositphotos

Are Titers the Answer?

Vaccine worries drive cat owners toward alternatives

The specter of feline vaccine-associated sarcomas—malignant growths that can appear at the injection site of some vaccines—lurks in the back of the mind of every cat owner. Although veterinarians have guidelines for tracking vaccine-related sarcomas, you still may wonder if it's wiser to skip vaccine boosters and rely instead on titers, which are blood tests that can tell you how much immunity to a specific disease remains in your cat.

Once the initial vaccination series to stimulate immunity has been given to your cat, titers can minimize how many shots your cat needs to get every year. Measurement of titers can be useful for some cats, but titer use in predicting protection from infection may be limited—and titers are not a money-saving option. By and large, titers will cost you more than a vaccination.

What Are Titers?

Titers are not vaccines, and they aren't a panacea for keeping your cat safe from deadly diseases.

A titer is one measure of immunity. It is a snapshot of how well a particular part of a cat's immune system is working to protect that cat from infection at the moment the blood is drawn for the test. It's important to realize, though, that there are other mechanisms that a cat's immune system uses to provide protection against pathogens (referred to as cell-mediated immunity).

A titer measures the concentration of antibodies your cat has produced against a disease pathogen. Antibodies, which can neutralize invading pathogens, are produced by lymphocytes in your cat's blood. Each titer is specific for one disease/pathogen.

To determine your cat's titer against an illness, a blood sample is drawn and sent to a laboratory. Once the blood arrives at the lab, it will be divided into samples that are then used to test for different diseases. Each separate sample will be sequentially diluted and mixed with a different antigen to see if there is a reaction (this reaction indicates that antibodies are binding to the antigen, which is generally a protein that is part of the disease pathogen). The more a dilute sample continues to show a reaction, the stronger the immune response (i.e. greater concentration of antibodies). For example, a sample with a titer of 1:300 suggests that the sample has a lower concentration of antibody than a sample with a titer of 1:1600.



Once your cat has had his initial vaccinations, titers are a possibility, but "buyer beware."

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To get a quantitative titer (such as 1:1600), titers need to be sent to laboratories that can do the serial dilutions. Some in-office kits offer "semi quantitative" titer results or simply indicate likely protection or lack thereof. The usefulness of these in-office tests has been the subject of debate.

A positive antibody titer means that your cat's immune system is producing antibodies to a pathogen, and if enough antibody is produced, this may provide protection from infection. This could be due to either natural exposure to the pathogen or to vaccination.

A negative result generally means one of two things:

1) Your cat has never produced antibodies to that pathogen, either because he was never exposed to the pathogen via natural exposure or vaccine, or because he was exposed to it as a young kitten and maternal antibodies passed to him in his queen's milk interfered with the production of his own antibodies, or because of a deficiency (abnormality) of his immune system.

2) Your cat produced antibodies to that pathogen in the past but, over time, their concentration has diminished.

Titers for an individual cat may support recommended booster schedules of once every three years or they may show that protective immunity runs out after just two years.

The American Veterinary Medical Association (AVMA) cautions pet owners against counting on titers as proof that

their pets are protected, unless there is research showing a direct correlation between an antibody titer level and immunity against disease exposure.

According to the AVMA principles: "For most common vaccine antigens, the correlation between serological (blood) response to vaccination, long-term serostatus, and protection in the host animal has not been adequately established. The lack of these data often precludes practitioner's ability to make well-informed vaccination decisions based on serostatus alone."

The Kansas State Veterinary Diagnostic Laboratory explains when titers should or should be used quite clearly: "In order to be useful, two criteria need to be met: 1) One needs to be able to detect a measurable immunity to a disease in a blood sample, and 2) There needs to have been challenge studies performed to associate protection with that specific titer level. A challenge study shows that animals which have a specified antibody titer did not get sick when exposed to the disease for which the titer was checked."

Are Titers Better?

Some cats probably should not get booster vaccines, including cats who have had bad reactions, cats with cancer or undergoing treatment for cancer, and cats with immune-mediated illnesses.

In addition, it's wise to look at your cat's lifestyle and determine what vaccines make sense for her. All cats should be current on rabies. The Kansas State lab, which is renowned for rabies testing, points out: "Rabies is zoonotic (can be transmitted to people) and control in rabies vectors (animals that can carry the virus and infect others) is the most efficient method in prevention of human rabies . . . laws currently do not include the use of titers in place of vaccination. The other complicating factor is that there is no agreed standard titer value that is considered protective." So even if your cat has a rabies titer done, if she bites someone and is not current on her vaccinations, she will be quarantined.

The American Association of Feline Practitioners (AAFP) Advisory Panel is not comfortable with accepting titers as proof of immunity: "Because antibody titers may not reliably correlate with, or predict, the degree of protection or susceptibility for an individual cat, the Advisory Panel recommends employing defined revaccination intervals rather than measuring antibody titers to assure protection."

That said, titers can be useful in some situations. If your kitten has received her initial series of vaccinations, a titer done two or more weeks later can indicate if her immune system responded appropriately to the vaccine. A titer also can be used to determine whether a stray cat has produced antibodies to a particular pathogen, but in reality, drawing blood is more expensive and logistically more difficult than preemptively vaccinating all cats encountered in shelter and trap-neuter-release programs.

Vaccine Duration

Several factors affect a vaccine's effectiveness and induced duration of antibody production. The first to consider is the type of vaccine. There are three basic types of vaccines:

Attenuated or modified live: Modified live vaccines are composed of modified versions of the actual pathogens and mimic a natural infection with that pathogen. These usually stimulate strong immunity. They should not, however, be used in cats with any health or immune problems or in pregnant queens, as there is potential to induce the disease itself in these cases. These vaccines must be properly handled and stored carefully to assure safety and efficacy.

Killed: Killed vaccines are noninfectious and cannot cause disease. They are generally considered safer and more stable than attenuated vaccines, but the immunity duration induced by these vaccines may be less than that of a live vaccine. Rabies is a killed vaccine.

Recombinant: Similar to killed vaccines in that they are noninfectious, recombinant vaccines are produced using DNA technology to induce bacteria to produce proteins that are subsequently administered to induce an immune response. Some feline leukemia vaccines are recombinant.

Vaccine efficacy can vary with the pathogen, any immune adjuvants (these are compounds that enhance the immune response induced) that have been added, and the method of administration.

The individual cat also plays a part in the immunity that develops after vaccination. Poor nutrition can interfere with a healthy immune response, and maternal antibodies passed to kittens through either the placenta during gestation or in milk during nursing can interfere with the development of immunity after vaccination. Some elderly cats may not show a strong immune response, and cats that are immunosuppressed due to either disease or to being treated with immunosuppressive drugs such as corticosteroids or chemotherapeutic drugs may not develop a strong immune response to a vaccination. Cats living in stressful conditions may not show strong immune responses.

The pathogens themselves also may influence immunity. A pathogen (i.e. virus) may develop an increased virulence (severity) and may undergo mutations that circumvent the immune response induced by a vaccine.

Many factors influence when and with which vaccines a cat should be immunized. Titers may be part of that health plan in rare cases. Talk with your veterinarian about your options. Overall, a defined vaccine schedule is preferred over titers to determine vaccine scheduling at this point. ■

A Little About Immunity Systems

Immune protection against pathogens is provided by two general systems in your cat. The first, humoral immunity, is the production of antibodies that bind to and neutralize pathogens. The measurement of titers evaluates this system.

The second component to the immune system is called cell-mediated immunity. This part of your cat's immune defenses involves the activation of various cells that either engulf invading pathogens or that release chemicals that ultimately lead to the recruitment of other cells in neutralization of pathogens. Cell-mediated immunity is more effective against certain pathogens than the production of antibodies. It is possible, but not certain, that for some diseases, even if your cat has a low antibody titer, she is still protected from illness by her cell-mediated immune system.



kipuxa | Deposit Photos

Heads Up on Chronic Coughs

A cough can indicate a serious illness

Coughing in cats is easy to dismiss as due to a hairball. While cats do get hairballs, that "gagging" can often be due to coughing. When cats cough, they usually crouch down, extend their elbows away from the body, and make a dry, hacking sound. The cough is frequently non-productive (nothing is expelled).

This cough should never be ignored, as it can indicate significant illness. Since the cough is usually intermittent, taking a 30-second video will help your veterinarian see what you're seeing.

Diagnosing the Cough

Prepare a detailed history for your veterinarian:

- When and how often the cough occurs
- Any possible triggers
- Presence of mucus or discharge from the eyes, nose, or mouth
- How long the coughing lasts
- Any treatments or management changes you've tried

Your veterinarian will evaluate your cat and listen to her heart and lungs. Heart murmurs, arrhythmias, wheezing, and crackling all may indicate a disorder that may require more testing.

While people and dogs with heart disease often cough, it is rare for a cat with only heart disease to cough. The most likely causes of chronic coughing in cats include parasites, pneumonia, asthma, and cancer.



A home nebulizer, like the Aerocat (trudellmed.com) shown here, may be recommended for cats with asthma.

Parasites

The parasite *Aleurostrongylus abstrusus* is the most common cat lungworm. Cats are infected when they ingest intermediate hosts—slugs and snails. The larvae replicate within the lungs, causing a marked inflammatory response. A diagnosis of lungworms is based on clinical signs, physical examination, and a special fecal test called a Baermann.

Treatment for lungworms is with anti-parasiticides. A newer topical treatment for cats combines emodepside and praziquantel and is generally effective for treatment of lungworms. Other therapies, such as steroids and bronchodilators, will aim at decreasing lung inflammation while the worms die and the lungs recover.

Cats can be infected with heartworms, just like their canine counterparts, and can develop a syndrome known as heartworm acquired respiratory disease (HARD). HARD develops as the worms migrate through the cat's body (this occurs more commonly in cats than in dogs), causing the most damage in the lungs. Symptoms are usually subtle and include coughing. Unfortunately, sudden death can occur.

Specific treatment of heartworms in cats usually is not attempted, as the drugs used to kill adult heartworms can be toxic to cats, worm burdens are generally low in cats (unlike in dogs), and the worms usually die off within one to two years (in dogs they live for a longer time).

Pneumonia

Pneumonia is not common, but it may be spread by cat-to-cat interactions. The most likely organisms are the bacteria *Pasteurella* and *Bordetella,* commonly found in shelters and catteries. Both infections often begin in the upper respiratory tract and spread to the lungs, leading to pneumonia.

The diagnosis is based on a history of exposure and symptoms (fever, nasal discharge, cough), as well as x-rays, bloodwork, and, in some cases, bacterial culture.

Treatment usually includes oxygen therapy, broad-spectrum antibiotics, supportive maintenance of hydration and nutrition, and nebulization to open the airways.

In severe cases that do not respond to initial therapy, a bronchoalveolar lavage (BAL) may be recommended. This is a diagnostic test conducted under anesthesia to retrieve samples from the lungs for microscopic examination.

Asthma

Likely the most common cause of feline cough, asthma is most frequently seen in young cats. Asthma can be triggered by many things, and in most cases, the cause is never identified. "Aeroallergens" (mold, pollens, smoke) are the usual suspects.

As in humans, asthma attacks can come on quickly, characterized by coughing and labored breathing. Loud wheezing may be heard. Cats having difficulty breathing constitute an emergency, and veterinary care should be sought out immediately.

The veterinarian may hear wheezing and the "squeak" of air moving through narrowed airways. When an asthmatic cat breathes, he struggles to expel air. X-rays often show hyperinflated lungs, a flattened diaphragm, and signs suggesting inflammation of the airways.

Initial treatment usually involves steroids, oxygen therapy, sedation to ease anxiety, and bronchodilators. A cat with asthma will likely always need monitoring and medications. Your veterinarian may recommend you keep a nebulization chamber at home for emergencies. This condition cannot be cured, but it can be managed.

Cancer

Pulmonary carcinoma is the most common primary lung cancer in cats, usually found in older cats. Other types of cancer, however, can spread (metastasize) to the lungs of cats. Symptoms can be subtle (coughing, weight loss, and decreased appetite). Diagnosis is based on x-rays, computed tomography (CT) scans, and ideally, an aspiration of the mass with microscopic evaluation of the samples obtained. This may require a specialist.

Bottom Line

It's easy to dismiss a cough as a hairball or another benign condition, but it's important to pay attention to a coughing cat and discuss the symptom with a veterinarian.■

The Diabetes Battle

It takes adjustments, but high quality of life is possible

Q My 17-year-old neutered cat was recently diagnosed with diabetes, and I am concerned about whether I can provide the care that he needs to stay healthy. Can you provide any tips for a novice to help keep him healthy?

A Thanks for getting in touch, and I understand your concern regarding your cat, but the most important thing I can tell you is that you can do it!

While treating a cat with diabetes requires adjustments, usually, with appropriate support, owners can give affected cats years of high-quality life with minimal stress. Perhaps a discussion of the main points to consider in treating this common disease would be helpful:

Diabetes mellitus affects between 0.2 and 1 percent of the feline population. Most cats have a type of diabetes that mimics that seen in people with type 2 diabetes. This condition is characterized by decreased insulin production by the pancreas and/or resistance to insulin that is produced.

Insulin is an important hormone, as it allows glucose to enter the body's cells, where it can be used as fuel. If enough insulin is not produced or the cells' response to it is blunted, cells can be starved of energy. High levels of glucose then remain in the bloodstream, where it can cause problems, including inappropriate loss of fluid by the kidneys, neurologic problems, potentially life-threatening electrolyte and pH abnormalities in the blood, and cataracts, among others.



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.

Coming Up ...

- *Perfect Care for Hairless Cats*
- *Why Compounded Drugs Are Necessary*
- *The Reasons Cats Chirp and Chatter*
- *Palliative Care for Senior Cats*



Meet Tigger, from Nebraska, whose owner is concerned about his new diabetes diagnosis.

The foundation of diabetes mellitus treatment in cats is the administration of insulin by injection. This sounds intimidating to many owners who first encounter this prospect, but giving insulin injections to most cats is not something to fear.

With the tiny volumes of insulin that are administered and the small needles that are used to inject it, most cats do not even notice that an injection is being given once they adjust to the situation. Veterinarians and their technical staff are well trained to educate owners about how to give insulin injections to their cats safely and conveniently.

The primary goals of treatment are to maintain blood glucose levels within a safe range (not too high, and, in particular, not too low, which can be dangerous) and to minimize the symptoms of diabetes, which include increased appetite, increased thirst and urination, dehydration, and weight loss.

These goals are achieved by adjusting the dose and frequency of administration of insulin in close collaboration with a veterinarian, by modifying the diet, both with respect to its composition (i.e. carbohydrate restriction is beneficial) and frequency/timing of feeding, and by making sure that plenty of fresh water is available at all times.

Recognizing when a cat's blood glucose may be too low (because of too high an insulin dose and/or a need for food intake) is an important aspect of caring for a diabetic cat.

Your veterinarians will teach you to be aware of the signs (such as lethargy, restlessness, weakness, staggering, twitching) and what to do if you see them in your cat (feed him, rub honey on his gums, get him to the veterinarian, and adjust dosages).

Generally, the initiation of insulin therapy requires the most intensive effort. Once the appropriate insulin dose and management plan have been established by your veterinarian, though, these efforts usually become much less time-consuming and stressful, and regular intermittent checkups with a veterinarian are sufficient to maintain good glycemic control and health. Of course, a veterinarian should be contacted promptly if an owner ever has any questions or concerns about their cat's health status.

The take-home message is: YOU CAN DO THIS and, with the support of your veterinary professionals, you and your baby can look forward to many happy times together in the future.

All my best,
Elizabeth

HAPPENING NOW...

Lucky Stowaway - The *Prince George Citizen* in Prince George, B.C., reports that the SPCA North Cariboo District Branch is caring for a severely emaciated stowaway cat who arrived in April from China. "The six-year-old cat was trapped inside a 40-foot shipping container for over three weeks without access to food or water, travelling from Shenzhen, China, to the Port of Vancouver, and then up to Prince George. Staff at a Prince George auto-glass distribution company found the cat among the pallets, shredded cardboard, and styrofoam inside the container. It's believed that she survived by drinking condensation that had formed on the walls."



Cat Cafe - According to WCAX TV in Burlington, Vt., Forget-Me-Not Flowers & Gifts in Barre, Vt., is working to open a Kitty Korner cat cafe where patrons can mingle with adoptable cats while they enjoy their coffee. The logistics may be tricky, though, says the report: "In addition to following the regular restaurant rules, there are rules strictly separating felines from food, including different entrances." But owner Alexis Dexter is determined to make this happen.■