

Cat Watch

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

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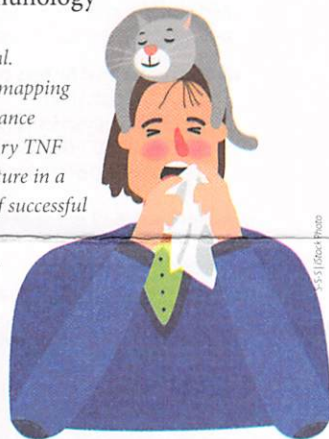
Cat Allergies

Immunotherapy may do the trick for some sufferers

Researchers from the Department of Infection and Immunity of the Luxembourg Institute of Health (LIH) investigated the ability of high doses of a specific molecule (CpG oligonucleotide) to successfully modulate the immune system's allergic response, thereby inducing a tolerance-promoting reaction in patients that are known to be allergic to cats.

The researchers analyzed the molecular mechanisms underlying this tolerance and proposed a pre-clinical allergen-specific immunotherapy approach to improve the treatment and control of this common type of allergy. The full study results were published in the journal *Allergy*, the official journal of the European Academy of Allergy and Clinical Immunology (EAACI). ■

Leonard, C., et al.
Comprehensive mapping of immune tolerance yields a regulatory TNF receptor 2 signature in a murine model of successful Fel d 1 specific immunotherapy using high-dose CpG adjuvant.
Allergy, 2021;
DOI: 10.1111/all.14716



Internal Bleeding in Cats

Symptoms of this rare, but life-threatening problem

Internal bleeding in cats can happen without warning and frequently shows no outward indication.

The most common cause of internal bleeding is trauma. For outdoor cats, potential accidents include being hit by a car, attacked by a larger animal, and falls. Indoor cats can also suffer falls, get accidentally stepped on or slammed in a door, or injured by a reclining chair.

Rat-poison ingestion, depending on the type of rat poison, can also result in internal bleeding. Other less common causes in cats include coagulopathies (bleeding disorders resulting in inability to clot) and ruptured internal tumors.

Signs to watch for include:

- ▶ Changes in breathing
- ▶ Collapse
- ▶ Hiding
- ▶ Inappetence
- ▶ Lethargy
- ▶ Pale mucous membranes
- ▶ Weakness

You may notice your cat's paws and lower limbs are cool to the touch. If there is bleeding into the abdomen, you may see abdominal distension.

An important breathing change to watch for is an elevated respiratory rate. The normal resting respiratory rate in cats is 35 or fewer breaths per minute. With internal bleeding, blood is pouring into a cavity, typically the chest and/or abdomen, which means fewer circulating red blood cells, which carry oxygen to the body tissues. As the tissues become more oxygen deficient, the brain tells the lungs to breathe faster to deliver oxygen from inhaled air at an increased rate.

Practice counting breaths per minute in your cat now, while she is well, so you're familiar with how to do this while not under stress. This will make it easier to do when there is a problem. Of course, internal bleeding isn't the only ailment that causes increases in respiratory rate. Either way, though, if your cat's respiratory rate is typically 35 breaths per minute, and now it is at 50, she needs to be seen by a veterinarian immediately.



As graceful and nimble as our cats are, sometimes they make mistakes.

Other potential breathing changes include shallow breaths and abdominal breathing. If your cat is bleeding into her chest, there is less room for the lungs to expand, resulting in rapid shallow breaths. Abdominal breathing is when you see your cat's abdomen expanding and dramatically contracting with each breath. This happens because of the extra effort necessary to try and get air in and out of the compromised lungs.

Mucous membranes you can see include the gums and the conjunctival tissue around the eyes. In good health, these tissues have a nice pink color. When there is internal bleeding, these membranes will become pale, ranging from a soft gray to white in color. You may notice loss of visible blood vessels on the whites of the eyes, and your cat's pretty pink nose may turn white.

Lethargy, weakness, and collapse usually result from the drop in blood pressure that occurs as blood leaves the vessels. Basically, your cat is entering the first stages of shock when this happens.

The bottom line is, even if your cat stays safely indoors, trauma or diseases that cause life-threatening internal bleeding are still possible. Know your cat's baseline health, including her resting respiratory rate and gum color, and learn the signs associated with internal bleeding. Time, in this instance, really can mean the difference between survival and death. ■

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The 33rd Annual Fred Scott Feline Symposium

Worldwide renowned meeting for veterinary professionals

One of the pillars of the Cornell Feline Health Center's mission is educating veterinary professionals. From veterinary students to practicing veterinarians and technicians, the Feline Health Center strives to assure that these dedicated individuals are kept up to date with the most recent information regarding feline health so that they can provide the best care for our feline friends.



The annual Fred Scott Feline Symposium is an internationally renowned professional education opportunity for feline practitioners that is hosted by the Cornell Feline Health Center. The 33rd annual symposium will be held virtually from July 30 to August 1, 2021.

The Symposium offers an opportunity for attending veterinarians and veterinary technicians to be educated by internationally recognized experts in their respective fields, and provides professional continuing education credits. The Feline Health Center looks forward to welcoming those who care for your feline friends at this year's conference. Registration details and information about this year's speakers can be found at www.vet.cornell.edu/fredscott.

Hot-Weather Hazards

Keep your cat safe by thinking ahead

Keeping your cat safe in the summer months takes a little forethought. During extremely hot, humid weather, cats are increasingly vulnerable to heat exhaustion and dehydration. The most common crisis is when a cat is left in an automobile, for even just a few minutes. The initial signs of feline heat exhaustion include rapid panting, muscle weakness, staggering, rapid heartbeat, fainting, tremors, and possibly vomiting. If the overheating (hyperthermia) is unrelieved and the cat's body temperature reaches 105°F or higher, cell damage begins, which can result in kidney, liver, and gastrointestinal dysfunction, lowered levels of blood oxygen, destruction of skeletal muscle tissue, impaired brain function, heart failure, and death.

Obese and older cats are at greater risk for heatstroke than are young, healthy animals. Densely coated cats (Himalayans and Persians), whose bodies are less able to dissipate heat, are also at elevated risk, as are brachycephalic (short nosed/flat faced) breeds, as these may lack sufficient, who may lack sufficient nasal space to allow the cooling of inhaled air.

The sun's ultraviolet rays increase the risk of squamous cell carcinoma, a type of skin cancer that usually manifests itself on nose or ear margins and can be locally destructive. Most susceptible are white or lightly pigmented cats. All cats, however, should be discouraged from basking for extended periods.

On hot days, keep your cat inside with air conditioning. If that's not possible, open windows with a tight screen and provide easily accessible drinking water. ■



CatWatch

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CONTRIBUTING WRITERS

Eileen Fatcherich, DVM
Katherine Basedow, LVT

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Cornell University
College of Veterinary Medicine
Feline Health Center

For information on your cat's health, visit the Cornell University College of Veterinary Medicine, Cornell Feline Health Center website at www.vet.cornell.edu/fhc/.

Send questions and letters to the editor:

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

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Oops! I Did It Again

Your cat might not be in control of her urinary accidents

Urinary incontinence is when your cat is unable to control (and may be unaware of) when he or she urinates. Thankfully, this is a far less common issue in cats than in dogs.

Normally, urine is produced in your cat's kidneys and travels through two tubes called ureters into the bladder. As the bladder fills with urine, it distends and stretches. When your cat urinates, he or she relaxes the sphincter between the bladder and the urethra, the tube that allows urine to exit the body. A malfunction or problem anywhere along the urinary tract can potentially lead to incontinence, or leaking of urine.

Symptoms

Symptoms of urinary incontinence include:

- ▶ Inflamed, irritated skin around the penis/vulva
- ▶ Leaking urine
- ▶ Puddles of urine where your cat sleeps
- ▶ Recurring urinary tract infections
- ▶ Urine outside the litterbox
- ▶ Wet hair between the hind legs or around the penis/vulva

Causes

A variety of conditions can cause urinary incontinence in cats. In most cases, the problem is related to the cat being unable to or having difficulty storing urine, but it can sometimes be due to problems urinating. Luckily for us, incontinence due to any cause is rare in cats.

Ectopic ureter(s) is a condition in



Manx syndrome sometimes affects Manx and other tailless cats. In affected cats, the gene that caused the tail to be short also shortens the spine, resulting in abnormal nerves and spinal cord. This can lead to problems with urination, defecation, and digestion.

which a kitten is born with one or both ureters that bypass the bladder. This results in urine running directly from the kidneys out of the body, without anything in the way to stop or store it. This can be fixed by surgically connecting the ureters to where they are supposed to attach to the bladder.

Urethral sphincter mechanism incompetence (USMI) is when the urethral sphincter that controls when urine exits the bladder isn't doing its job properly. The sphincter may be too loose all the time, resulting in chronic leaking of urine, or it may be weaker than it should be, allowing urine to push through when the bladder starts to fill

up. USMI is more likely to show up at a young age in cats than in dogs, and affected cats often have other physical abnormalities present in the urinary tract.

Nerve damage usually occurs during a traumatic event such as being hit by a car or attacked by a dog. If the nerves that control bladder function are damaged or severed, your cat will not be able to urinate normally.

Obstruction due to bladder stones, urinary tract infections, or cancer can lead to incontinence by preventing normal function of the urinary tract. Blocked cats may experience nerve damage or damage to the urethral sphincter due to the high pressure in the bladder, resulting in incontinence after being unblocked.

Feline leukemia virus can sometimes cause incontinence.

Urinary tract infections may cause your cat to feel the urge to urinate more frequently, resulting in leakage and/or house soiling.

Diagnosis

Getting an accurate diagnosis for urinary incontinence can be challenging, and often we are unable to determine the underlying cause. Your veterinarian will need a thorough history of your cat's urinary habits and any changes, and will start out by palpating the bladder as part of the physical exam and running a urinalysis to check for signs of infection or abnormal cells. A urine culture can be helpful as well, especially if your cat has been experiencing recurring UTIs.

The size of your cat's bladder over time can help provide clues to what is going on. A "big bladder" indicates trouble with urinating, while a "small bladder" indicates trouble with storing urine. Normally your cat's bladder will fluctuate in size depending on how recently he urinated, but if it is chronically large or small, that may be significant.

Diagnostic imaging that allows your veterinarian or a specialist to see the urinary tract includes radiographs (x-rays), ultrasound, and CT or MRI.

Your veterinarian may also

What You Can Do

- ▶ **Note changes in urinary habits.** Note how often and how much your cat urinates. If urine is showing up outside the litterbox, pay attention to where the accidents occur. A puddle in your cat's bed or a trail of dribbles where she walked down the hall are some of the more common signs of urinary incontinence. You may also simply notice that your cat is frequently damp around the penis or vulva or that your cat is grooming those areas more often.
- ▶ **Take your cat to the veterinarian.** This is the single most important thing you can do if you notice that your cat is urinating when and where she shouldn't or that she is dribbling urine. Even though this may very well be due to a urinary tract infection, identifying the problem swiftly will allow you to help your cat by pursuing the optimal treatment.
- ▶ **Ask about treatment side effects.** Knowing potential side effects ahead of time allows you to be prepared and to keep an eye out for any signs of a problem.

Did You Know?

Cats can also experience fecal incontinence, where the cat is not able to control defecation.

recommend doing tests to measure your cat's urine output and the pressure within different parts of the urinary tract. It is even possible to test the electrical output of the muscles involved in urination and urine storage to help determine where the problem is occurring.

Advanced testing isn't always available or practical for many cat owners. In these cases, your veterinarian may opt for a less elegant but often effective approach: Choose a treatment plan based on clinical signs, try it out, and see if it works.

Treatment

Physical abnormalities, such as ectopic ureters or abnormal anatomy in the bladder, urethra, penis, or vagina, can often be repaired surgically.

USMI is often treated medically. There isn't much research on treating incontinence in cats, so many medications are used off-label based on their effectiveness in dogs and other species. Perhaps the most common option is phenylpropanolamine (Proin). The most common side effects of this medication in cats include tachycardia (abnormally fast heartbeat), hypertension, and restlessness. Estrogens are another option, but should be used with caution in cats due to the risk of side effects such as bone marrow suppression and mammary cancer.

Manual expression of the bladder can be helpful in some cases if the cat is not able to fully empty his or her bladder on their own. By completely emptying the bladder, there will be less urine present to leak, and it will take longer for the bladder to fill back up again. The medication bethanechol is sometimes used off-label in cats to promote stronger contractions of the bladder and complete emptying during urination.

In an emergency situation or while pursuing a diagnosis, your veterinarian may place a urinary catheter to drain the bladder and/or track urine volume.

A new option for treatment of urinary incontinence is surgically implanting an inflatable silicone hydraulic occluder that acts like an artificial sphincter. A study published in the *Journal of the American Veterinary Medical Association* in 2016 described using this implant in three cats with urinary incontinence. All three cats had urinary control after the procedure, and while one had to have the device removed later due to complications, the other cats continued to do well for three and six years, respectively. ■

Toxoplasmosis: Still a Concern

This protozoal parasite can infect cats and humans

Cat lovers have heard horror stories about toxoplasmosis and pregnancy. A woman infected with toxoplasmosis during pregnancy may not show symptoms but may miscarry or suffer a stillbirth. If the baby is born, damage to the brain, eyes, or other organs may develop later in life.

Luckily, the American College of Obstetricians and Gynecologists (ACOG) is no longer advising against cats. The ACOG statement says: "You may have heard that cat feces can carry the infection toxoplasmosis. This infection is only found in cats who go outdoors and hunt prey, such as mice and other rodents. If you do have a cat who goes outdoors or eats prey, have someone else take over daily cleaning the litter box. This will keep you away from any cat feces. If you have an indoor cat who only eats cat food and doesn't have contact with outside animals, your risk of toxoplasmosis is very low."

This is a relief for cat lovers everywhere, but it doesn't change the fact that toxoplasmosis (caused by the protozoa *Toxoplasma gondii*) is a

significant zoonotic disease. The Centers for Disease Control and Prevention (CDC) has identified this protozoal parasite as one of five neglected parasitic infections of people due to its high prevalence. More than 40 million people in the United States are thought to be infected or exposed to toxoplasmosis.

Minor Illness in Cats

For most people and cats, toxoplasmosis is a minor illness. Up to 50% of all cats in some areas show antibodies to *T. gondii* without ever showing any illness. Immunocompromised cats are at greatest risk of clinical illness, including cats with FELV (feline leukemia virus) or FIV (feline immunodeficiency virus) as well as young kittens who have immature immune systems.

Cats are definitive hosts for *Toxoplasma gondii*, which means a cat is required as a host species for reproduction of the organism. Cats are the only animals that pass oocysts, the environmentally-resistant infectious stage of the parasite, in their stool to infect other animal species (including people).

Cats start shedding oocysts three to 10 days following ingestion of bradyzoites (see sidebar) in raw meat or infected prey and 19 to 48 days following ingestion of oocysts. The organism lives in the cat's intestinal tract and replicates and reproduces there, which leads to shedding oocysts in the stool.

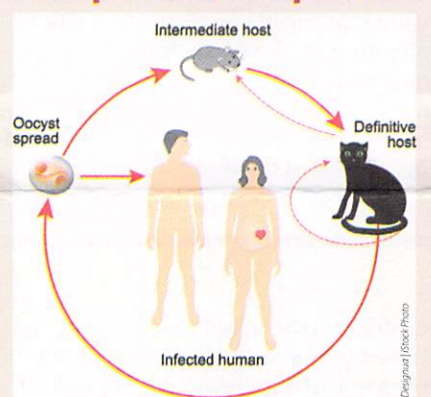
Shed oocysts become infective in one to five days and can survive for months to years in the environment. At some point, the oocysts are eaten by rodents or birds, or they are ingested by people or animals that consume plants or water that is contaminated with cat feces.

The infective oocysts are only shed for a short period (one to three weeks) during an active infection. Your cat may not show signs of illness unless she is immunocompromised in some way. Even then, the shedding period is generally over before illness is evident.

Symptoms

Signs of illness in infected cats can involve a wide range of body systems. Symptoms may start out mild and worsen over time with chronic infections. Fever, lethargy, and not eating well are common

Toxoplasmosis Spread



The oocyst stage is the infective stage. The oocysts can survive months to years in the environment and are what your cat leaves in the litterbox. At the bradyzoite stage in cats and other vertebrates, the organism can slowly multiply but not move. The encysted stage is the tachyzoites, which are found in intermediate hosts like food animals, and can be infective if eaten. This rapidly dividing life stage is responsible for symptoms.

but nonspecific. Weight loss may be noted in chronic cases. Many cats will eliminate the infection at this stage or respond to treatment.

More serious symptoms include pneumonia with difficulty breathing or hepatitis (infection of the liver) with accompanying jaundice. The heart may develop myocarditis (inflammation of the heart muscle). The most serious signs can involve the spread of the disease to the eyes and central nervous system. Once these systems are attacked, cats may show abnormal pupil size and responsiveness to light, blindness, lack of coordination, heightened sensitivity to touch, personality changes, circling, head pressing, ear twitching, difficulty chewing and swallowing food, seizures, and loss of control over urination and defecation.

People can become infected by eating infected meat. If the meat is not thoroughly cooked or not handled with proper hygiene, people can accidentally ingest cysts. Rarely, milk from infected cows and goats may contain an intermediate stage of *T. gondii*.

People also can be infected through gardening in soil contaminated by the feces of cats shedding the oocysts, but this is less common. Cats only shed infective oocysts for a short time, and gardening with gloves and practicing normal hygiene should prevent ingestion of any oocysts. Infection via consumption of uncooked vegetables that are contaminated with oocysts is also possible. Any outdoor sandboxes should be covered to prevent cats from defecating in them.

The CDC warns that people at greatest risk of infection are pregnant women and immunodeficient individuals. In utero infection is of the greatest concern, as one-third to one-half of infants born to mothers who acquired toxoplasma during pregnancy are infected. People with severely weakened immune systems, such as individuals

with HIV infections, those on chemotherapy, and those who have recently received an organ transplant are at a higher risk of severe toxoplasmosis symptoms.

Diagnosis

Theoretically, diagnosis can be done via a fecal evaluation, but most cats are diagnosed via blood tests looking for antibodies. The antibodies only show that your cat was infected with *T. gondii* at some time, not necessarily that your cat is infected now.

Two types of antibodies are routinely evaluated when checking cats for toxoplasmosis infections. High levels of IgG antibodies indicate that your cat was exposed and is most likely currently immune to this parasite. Cats with high levels of IgM antibodies are more likely to be suffering from a current infection and may be excreting infectious oocysts. The Companion Animal Parasite Council says cats that have antibodies are unlikely to shed oocysts again after that initial infection. The incidence of positive titers (presence of antibodies) in American cats has ranged from 16 to 100%, depending upon the region evaluated.

The Animal Health Diagnostic Laboratory at Cornell runs tests for toxoplasmosis. Elisha Frye, DVM at the Veterinary Support Services reports, "Our serology lab performed 119 feline *Toxoplasma gondii* IgG ELISAs on serum from 3/2019-2/2020, of which 24.37% were positive. From 3/2020-2/2021, 103 samples were tested and 38.83% were positive. This is not limited to New York state. Most of our samples are from the Northeast, but we do receive samples from across the country and internationally as well. This data was not stratified to include geographic location



Cats are hunters by nature. While a butterfly might be safe, a mouse could be carrying toxoplasmosis.

of sample submission. This testing does not detect IgM (the antibody that presents with early/acute infection)." The positive cats were all cats that had been exposed and were likely to be immune due to their antibody response.

If *T. gondii* oocysts are identified on a fecal evaluation, it is recommended that the cat be quarantined for three weeks to avoid the risk of human infection. This is most important if there is a pregnant woman or any immunocompromised people in the home.

Even infected cats only shed the oocysts for a short time. In addition, the oocysts need from one to five days to become infective. If your litterbox is cleaned daily, your risk is minimal. If your cat has been found to be shedding oocysts, it is difficult to totally sanitize a litterbox, as oocysts are hardy in the environment. Use disposable litter pans until the shedding is over.

Treatment

Treatment for toxoplasmosis is usually the antibiotic clindamycin (Cleocin), which may be combined with a corticosteroid to reduce inflammation, especially if there is eye or nervous system involvement. Most cats show a positive response in two to three days, but the full treatment of two to four weeks should be followed. If treatment starts early, it may limit shedding of oocysts. Alternative treatments are trimethoprim sulfa (Bactrim) or pyrimethamine plus a sulfonamide (Fansidar).

Preventing toxoplasmosis infections in cats requires limiting or preventing access to potentially contaminated meat, whether raw food or outside hunting and eating rodents or birds. Indoor cats are less likely to be infected. ■

Kidney Transplant Connection

A small but growing subset of immunocompromised cats includes cats that have had renal (kidney) transplants. The anti-rejection medications they take lowers their immune responses. A recent study from the University of Pennsylvania looked at both *T. gondii* antibody positive and negative cats post-transplant. The positive cats were all put on long term (basically lifelong) prophylactic treatment for *T. gondii*. Those cats did fine. Eight cats were seronegative or of unknown status; they were not put on prophylactic treatment. Those cats all became positive after transplant as a result of the immunotherapy to prevent rejection of their kidneys. Sadly, six of these untreated cats died of toxoplasmosis.

Learn to Read Your Cat's Tail

The tail is probably the most expressive feline body part

Cats are sometimes considered mysterious, inscrutable creatures. But, if you carefully observe body language, cats are quite open with their behavior, especially through the tail. Learning to read a cat's tail "language" can help you to have a better bond with your feline companion.

Our descriptions give you generalizations about tail postures, but you need to know your own cat's normal. You may find a variation! Many longhair

cats with tails heavy with hair may tend to carry their tails lower normally. Obviously, a cat with a kinked tail or a previously injured tail may have unique tail postures. Bob tail or Manx cat owners need to rely on other body language signals since the tail or stub is no help.

Context is also important in reading your cat's tail. If your cat is outside and spots a strange cat approaching, she may head off with tail high and confident. In that case, that tail posture could indicate

a willingness to defend her territory and switch to aggression rapidly.

A cat doing a stretch can look just like a cat with the whole-body puff and arched back. The difference is the piloerection, which means her hair is standing on end, and her overall appearance.

Evaluate your cat's overall posture. A calm, happy cat is relaxed, often walking around. If your cat is crouched, she is maybe fearful, planning to launch an attack, or at least highly concerned.

Learn more about feline body language as it pertains to aggression at the Cornell Feline Health Center website: tinyurl.com/CornellFECBeh. ■

Tail Language: Common Signs That Indicate Your Cat's Current Emotions

Upright and Straight. A cat strutting through the room with her tail held upright and straight tends to be a confident cat. All is well in her world. If that tail is upright but shaking or vibrating, it is usually a sign of good will as well. Many cats will combine the tail quiver with a head butt when they greet a favorite person. Male cats will often do a tail quiver right before or as part of urine marking.



Bend at the Top. If that tail has a bend at the top (not counting a natural kink), she is in a friendly mood and open to your attention. This tail posture can signal "time for play" in some cats, so take advantage of that playful mood!



Tail Down. Beware the cat with her tail held down. She is likely to be agitated and nervous about something. This could flick over to aggression easily. Best to walk on by and not try to interact.



Down and Tucked. If the tail is down and tucked tightly underneath her, this is a very scared cat. She might act aggressively out of pure fear. Be prepared for a hiss, swat, or yowl.



Flicking or Whipping. A low flicking movement of the tip back and forth tends to indicate annoyance. This is similar to a low wag of the whole tail. Your cat is irritated. A tail whipping back and forth is a true danger sign. This cat may be torn between anger and fear but either way, this is not the time for cuddling and human cat bonding. Sometimes a cat will do a lazy tail twitch when she is napping. Whether she is dreaming or simply half awake and content is not known, but this is usually a benign tail sign.



Tucked Tail. Sitting erect with her tail tucked around her body can be a content cat, or a slightly concerned cat. This is a case where you



should look at other body language for help. If her ears are flattened at all or her pupils are dilated, pass on by, carefully. If she is sitting calmly all is fine.

Puffed Tail. A puffed tail often comes with a whole body "puff" and often an arched back. This cat, or kitten, is about to explode. It may be a harmless flip into zoom mode or it could be a prelude to an attack. Walk on by very carefully or even change your route. Cats puff their hair up to look bigger. They hope that the increased size, often combined with a hiss or swat, will dissuade anyone thinking of attacking or bothering them.



Straight, with Slow Movements. A tail out straight and slowly moving back and forth is often a cat that is concentrating. Outdoors, she may be focused right before a pounce on prey. This can happen indoors too, if she is about to launch herself onto a toy or another family pet. A cat sitting on the windowsill bird watching may have similar tail movements.



Relaxed. Relaxed cats will often carry their tails straight out behind, but not stiff. Their whole posture will indicate that they are comfortable with their surroundings.



Cats that are buddies may be curled up together with tails intertwined or draped over each other. That is a trusting friendship. Kittens often twine their tails around their mothers. Your cat may curl her tail around you, including when weaving through your legs as a sign of friendship.

5 Things to Help the Arthritic Cat

Most cat owners will encounter this common problem

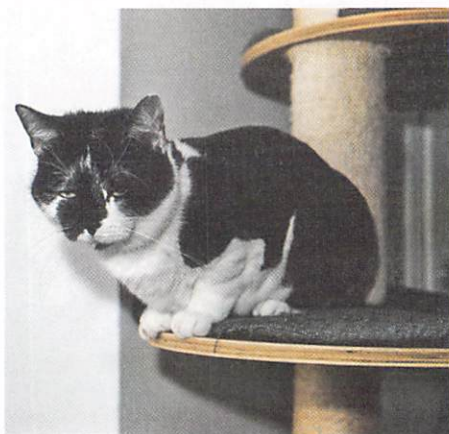
Degenerative joint disease, commonly referred to as DJD or simply “arthritis,” is a condition in which the cartilage that normally pads a joint gets worn away. This results in discomfort and loss of mobility. Arthritis can occur in any joint in your cat’s body, from her legs to her neck and back. It can be caused by inflammation from an acute injury, an autoimmune reaction, or simply by the gradual wear and tear.

Arthritis is a concern for cat owners because it can interfere with your cat’s normal activities and causes pain. And your cat may be suffering in silence. Chris Frye, DVM, DACVSMR, CVA, assistant clinical professor of Sports Medicine and Rehabilitation at Cornell University’s College of Veterinary Medicine, says, “The vast majority of cats have evidence of arthritis on exam and x-ray. Cats are unique in their ability to conceal disease; I am sure part of their superpower in that regard is to avoid sending signals to potential predators that they are injured or sick.” The American Association of Feline Practitioners estimates that up to 92% of cats develop arthritis at some point in their lives.

Thankfully, there are things you can do to tell if your cat is one of the many afflicted by arthritis, and to help her stay active and comfortable.

1 Note changes in activity. “Cats with arthritis often do not jump as well as they used to and become less active,” says Dr. Frye. You may notice that your adult or senior cat no longer scrambles to the top of the cat tree or has stopped frequenting her favorite perch on top of the bookcase. Some cats may hesitate before jumping on or off furniture or use intermediate objects as stepping stones instead of jumping directly to the desired spot. Your cat may avoid going up or down stairs, even ceasing to explore an entire floor or upper area of the house.

Other subtle signs of arthritic discomfort include stiffness in the mornings or after getting up from a rest and no longer being as interested in playing as she once was. Your cat may also seem grumpy when picked up or handled or may no longer seek out physical contact. Dr. Frye notes that



You may notice your arthritic cat be a little more “careful” about things, like slowing down, not climbing to the very top.

many senior cats have lower back pain and react negatively when petted there. While it can be tempting to write these small, gradual changes off as simply your older cat slowing down, they are signs that your cat is in pain.

Your veterinarian can help to figure out where the source of the problem is and determine if pain medications are a good fit for your cat in addition to management at home.

2 Maintain a healthy weight. Keeping your cat in trim condition will do wonders for her mobility and comfort. Excess weight puts extra stress on your cat’s joints, making sore spots without good cartilage cushion even more painful. Your arthritic cat will still need a balanced diet with high-quality protein sources, but if she is overweight, she might benefit from decreased rations or a switch to a lower-calorie diet.

3 Keep resources accessible. Cats with DJD may avoid activity that they once partook in because it is painful. Consider the location of necessities such as food, water, and litterboxes. An arthritic cat may struggle to get up on a counter to access her food and water and may have trouble getting in and out of a high-walled litter box. Move these items to areas your cat can easily reach, or provide an easier route, like a step stool.

For litterboxes, make sure both that your cat can get in and out of the box without issue and that it isn’t too far away. Going up and down stairs or traveling

long distances may be painful. Be sure to have a litterbox on each floor of your house that your cat can access.

4 Promote low-impact activity. Inactivity can lead to additional mobility challenges for your cat. Her muscles will atrophy and shrink if they are not being used, which will make her weaker. Joints that don’t use their full range of motion will become restricted over time and eventually be unable to flex and extend as much as in a young cat.

You can help to combat these issues by encouraging your cat to be active in ways that are low-impact and don’t put unnecessary strain on her affected joints. Instead of dangling a toy so that she jumps for it, hold it just high enough that she balances on two or three legs to bat at it. When playing chase games, move the toy slowly so your cat can choose a speed of pursuit that is comfortable for her. If your cat is harness and leash trained, take her for leisurely walks in your yard.

For the food-motivated cat, you can encourage low-impact exercise by arranging her food or treats in a trail that she must follow (just remember to lock up any other pets so they don’t steal her food!). You can also teach her to do tricks such as shake paws, high-five, and placing her front feet up on a box to encourage her to gently stretch and use her limbs.

5 Consider using a joint supplement. Glucosamine and chondroitin are the workhorses of joint supplements in dogs, and cats have options, too! Ask your veterinarian for a cat-safe option to help combat inflammation and promote cartilage rebuilding in your arthritic cat. ■

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A Shared Impact

“Human medicine and veterinary medicine are so closely interrelated that the fundamental science done here can have impacts for everyone.”

—Alexander J. Travis, VMD, PhD
Cornell University Baker

Institute for Animal Health, Cornell Department of Biomedical Sciences Professor of Reproductive Biology, Director, Cornell University Master of Public Health Program ■

"I'm Strong to the Finish"

Popeye considered spinach healthy—Does your cat?

Q I have a question about urinary tract stones in cats. I had an issue with kidney stones, and my doctor told me to stay away from foods with high iron content, including spinach. Recently, a certain brand of cat food has developed flavors that contain spinach. I have had many cats over the years, with a couple having issues with bladder stones. Wouldn't the same thing that my doctor told me to avoid be advisable for my cats to avoid, too?

A Thanks for getting in touch, and I completely understand your concern regarding this issue. It's important to realize, though, that while the way that cats digest and metabolize their food is, in some respects, similar to the way people digest theirs, it is quite different in others.

Perhaps a brief discussion of how urinary stones (called uroliths) form in cats would be helpful.

Uroliths are composed of different combinations of minerals and other compounds that are naturally found in urine, such as magnesium, phosphorus, and ammonium, which form struvite stones; and calcium and oxalate, which combine to form calcium oxalate crystals. If the concentrations of these minerals/compounds are high enough and the conditions are appropriate (largely determined by urinary pH), these minerals can combine to initially form



Feeding small amounts of spinach to your cat is considered acceptable.

microscopic crystals and, ultimately, larger uroliths.

The concentration of minerals and other urolith-forming compounds in the urine can be affected by dietary sources, by how much is excreted in the urine by the kidneys, and by how dilute the urine is. More dilute urine will generally result in lower urinary concentrations of a given mineral/compound if all other factors are kept constant.

Making sure that the urine is relatively dilute by assuring adequate water intake and that urine pH does not promote the formation of uroliths by modifying the diet are important aspects of preventing, and in some cases treating, feline uroliths.

Decreasing the amount of specific minerals/compounds in the diet results in a decreased excretion of them in the

urine, thereby making it less likely that they will combine to form uroliths. A good example of this is the prevention of feline struvite uroliths by decreasing the amount of dietary magnesium and phosphorus. Another is reducing the likelihood of calcium oxalate uroliths by lowering the amount of protein in the diet. This results in a decreased production of oxalate that is formed during protein metabolism, thereby decreasing the amount of oxalate excreted in the urine.

Studies have shown that some people who eat enough foods with high calcium oxalate concentrations (like spinach) have an increased risk of calcium oxalate urolith formation, and this topic is the subject of ongoing research.

There are similar concerns about feeding spinach to cats that have a history of, or predisposition to, the formation of uroliths; however, there is no current evidence that feeding relatively small amounts of spinach to otherwise healthy cats is harmful.

Small amounts of spinach can provide some important nutrients for cats. Some experts have speculated that cooking spinach decreases its calcium oxalate content, so cooked spinach is generally considered to be safer than raw spinach for cats.

While I do not know which foods you are referring to or the amount of spinach in them, it is quite possible, if not probable, that the amount of spinach in them is not harmful and may very well be beneficial.

I hope that this is helpful, and best regards to you and your kitties from all of us here at the Feline Health Center. Please send us an update when you can. ■



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 to consider for use with your question.

Coming Up ...

- ▶ *Uncontrolled Hypertension Consequences*
- ▶ *Let's Get Control of Those Fat Cats*
- ▶ *Taking Your Cat for a Walk on a Leash*
- ▶ *Helping The Stray: First, Consider Rabies*

© HAPPENING NOW...

Germans Love Cats—Cats remained the most popular pets in Germany in 2020, making up 52% of the population, according to petindustryfood.com. Overall, 47% of German households included a pet in 2020, an increase of nearly 1 million animals over 2019, according to WZF GmbH, organizer of Interzoo pet trade fair.

New First Cat—As we go to print, the Bidens announced that they are getting a cat, which will be the first White House cat since the Clintons' cat, Sox, was in residence.



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Working Heroes—The *New York Daily News* reported that some smart sanitation workers with impressive hearing grabbed a plastic garbage bag from a stack and tossed it in the back of their truck, then grabbing the next bag. But the workers heard an odd rustling and what sounded like meows coming from the truck. They decided to investigate before hitting the compact button on the truck and found that some horrible person had a tied a 10-week-old kitten into a black garbage bag. The workers didn't stop there. They went through every bag of trash in their truck to ensure the orange feline wasn't part of a discarded litter. ■