



# CatWatch

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



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## IN THE NEWS ...

### Long-Term Use of Antacids Research

The Winn Feline Foundation awarded researchers at the University of Tennessee College of Veterinary Medicine \$19,668 to study continued use of famotidine in cats.

Although famotidine (brand-name Pepcid) is not FDA-approved for veterinary medicine, it's commonly prescribed to prevent ulcers and treat gastritis, esophagitis and gastric or esophageal reflux. It's also used to help prevent stomach and duodenal ulcers in animals with kidney failure.

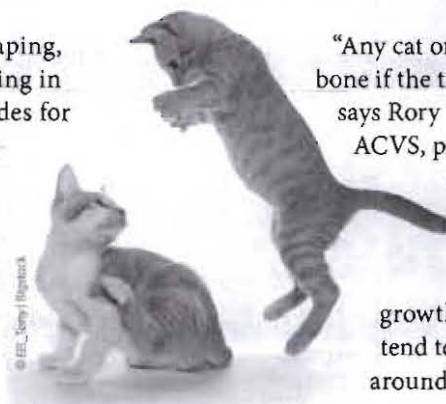
Studies in other species have shown that the antacid may become ineffective if given daily over time.

So this University of Tennessee study, led by M. Katherine Tolbert, DVM, and Adesola Odunayo, DVM, will try to determine if changing the dosage can extend the effectiveness of long-term famotidine use in cats. ♦

## When Acrobatic Prowess Fails Them

*Your cat's death-defying leaps and landings may result in a sprain or fracture, so it's important to know the symptoms*

When it comes to leaping, landing and twisting in mid-air, cats earn accolades for agility, flexibility and acrobatic prowess. It's not unusual to witness your cat leap effortlessly to the top of the refrigerator and, when ready, to land softly and easily on the kitchen floor. But despite their grace and flexible physique, cats do not always land safely on their feet and can be at risk for painful sprains, broken legs, and other fractured bones.



Rowdy play, pursued with even the best of intentions, can risk hard falls and broken bones.

"Any cat or kitten will injure a bone if the trauma is severe enough," says Rory Todhunter, BVSc, Ph.D., ACVS, professor of surgery at Cornell University College of Veterinary Medicine. "Kittens tend to break bones at growth plates, while adult cats tend to sprain the ligaments around joints or fracture their forelimbs (radius and ulna) or hind limbs (femur or tibia)."

**Intense Pain.** Your cat could be in intense pain due to breaking a leg and/or other

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## The Odds of Deafness in White Cats

*The chances of a white cat being born deaf is 22 percent, but add blue eyes and it rises to 85 percent*

If you own a white cat, you most likely love his striking snowy coat and bright eyes. But you might also know that these brilliant features have implications that go deeper than appearance. Congenital deafness — present from birth — is seen almost exclusively in white-coated cats. The deafness might affect one ear or both and will almost always be evident within several weeks of birth.

"In particular, there is a very strong relationship between deafness and white cats with blue eyes," says Brian Collins, DVM, section chief of the Community Practice

Service at Cornell University College of Veterinary Medicine.

**Limited Awareness.** Researchers have found that 17 to 22 percent of white cats without blue eyes are born deaf. The percentage rises to 40 percent if the cat has one blue eye, while 65 to 85 percent of all-white cats with both blue eyes are deaf.

About half of the owners of white cats Dr. Collins meets are aware of the strong link between deafness and coat and eye color. Awareness tends to be lower among those adopting pets from shelters

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# CatWatch

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## SHORT TAKES

### An Excavation Reveals Cats' 500-lb. Ancestor

A full-time 10-member team working at an archaeological dig in Northwest Germany has found a nearly complete skull of a saber-toothed cat that suggests that the animal existed 300,000 years ago. Scientists had believed the big cats — estimated to reach 500 pounds or more — were extinct about 500,000 years ago.

The discovery shows the cats were not as rare as previously thought, says Jordi Serangeli, a scientist at the University of Tübingen and excavation leader at the approximately 300,000-year-old site.

An examination of the skull fragments at the University of Leiden in the Netherlands revealed the animal to be representative of the European saber-toothed cat, *Homotherium*. "In total, there are three individuals of *Homotherium* present in these relatively young sediment layers," the University says about the site near the small town of Schöningen.

*Homotherium* differs from the more widely known saber-toothed tiger, *Smilodon*, which despite its name, was not closely related to tigers. More is known about the smaller *Smilodon*, perhaps because of extensive digs in the Western Hemisphere. They include "hundreds of thousands of *Smilodon* bones" found at La Brea Tar Pits in Los Angeles, according to the University of California Museum of Paleontology. The *Smilodon* had a bobtail, suggesting that it didn't chase prey but instead ambushed them.

*Homotherium* was a formidable fellow — as large as an adult lion, with long claws and razor-sharp seven-inch curved canine teeth, says the University of Tübingen, explaining that, "The saber-toothed cat was a dangerous predator that even posed a risk to the humans of its time."

The scientists so far have restored 11 *Homotherium* bone fragments to recreate an almost complete neurocranium. This recreation offers the potential to improve our understanding of the cat's visual and auditory



**More is known about the saber-toothed tiger *Smilodon* than his possible cousin *Homotherium*, perhaps due to more archeological exploration, including the discovery of thousands of *Smilodon* bones at the La Brea Tar Pits in Los Angeles.**

abilities and feeding habits, an invaluable asset for understanding the European saber-toothed cat, the university says.

Some 50 scientists from 30 institutions around the world are researching the discoveries from Schöningen. During the busy season, as many as 10 students join the full-time team to continue to work toward improving our understanding of the life of prehistoric *Homotherium*.

### No News to Us

Cats are "more social than typically given credit," say researchers at Oregon State University. They studied 50 cats from shelters and home environments, recording interest levels in food, toys, scents, and people.

The preferred choice for 50 percent of the cats tested? Interaction with people. Only 37 percent chose food. "Increasingly, cat cognition research is providing evidence of their complex socio-cognitive and problem-solving abilities," the scientists say in their report published in the journal *Behavioural Processes*. "Nonetheless, it is still common belief that cats are not especially sociable or trainable."

No difference was seen in the choices of owned or shelter cats, who were 1 to 20 years of age. (The scent was catnip; the toy, a mouse design with a shaker inside.) The researchers conclude that additional studies could help determine whether using a "cat-preferred stimulus" would help motivate cats to perform requested tasks.

To underscore the point about feline sociability, the study found that in the final session of the tests, cats spent 65 percent of their time with people. ♦



# High Cholesterol Won't Cause Heart Disease

*However, it can reflect underlying diseases of the kidney, liver, gallbladder, and bile ducts*

**W**e know our pets can have many of the same medical conditions we have, but can they have high cholesterol? Yes! Hypercholesterolemia, more commonly known as high cholesterol, means there's an elevated level of cholesterol in the blood.

When we think of high cholesterol in humans, we think of a high-fat diet that causes a medical condition that heightens our risk of heart disease. "The prevalence of high cholesterol in dogs and cats isn't known, but high cholesterol is more common in dogs than cats," says Meredith Miller, DVM, ACVIM, a lecturer in small animal medicine at Cornell University College of Veterinary Medicine.

**Evolutionary Advantage.** Because dogs and cats are carnivores naturally designed to consume a high-fat diet and metabolize fat more efficiently, they aren't predisposed to heart disease like people.

However, it doesn't mean they're in the clear. There is an upper threshold for a healthy level of fat in the diet, and when that safe threshold has been breached, cats become at risk for obesity and medical conditions associated with obesity, such as diabetes mellitus.

"Cholesterol is a modified steroid and a type of lipid/fat, and another major lipid is triglyceride," says Dr. Miller. "Hyperlipidemia is a catchall for increased cholesterol and/or triglycerides. Increases in cholesterol can indicate a problem with the liver, adrenal glands or metabolic disorders, including diabetes mellitus.

"Cats can have high cholesterol with chronic kidney disease and disorders of their biliary tree," she says. The biliary tree, or biliary system, refers to the liver, gallbladder and bile ducts and how they work together.

Recognizing overt signs of high cholesterol is difficult. "Most often there are no clinical signs associated with high

cholesterol itself. More often the signs may reflect an underlying disease process that is causing high cholesterol. Sometimes lipids can accumulate in the eye causing it to turn white," says Dr. Miller.

Other signs of high cholesterol include:

- ◆ Episodes of vomiting and diarrhea
- ◆ Abdominal pain
- ◆ Seizures
- ◆ Yellowish bumps on the skin filled with a greasy substance.

If your cat has these or any other unusual signs, it's imperative to see his veterinarian to check for underlying medical problems.

Hyperlipidemia can be primary (genetic or idiopathic, unknown cause) or secondary to other conditions. While primary hyperlipidemia is uncommon in cats, a rare few may have an inherited condition. Secondary hyperlipidemia is much more common and concerning because it may indicate an underlying medical condition, such as:

- ◆ Diabetes mellitus
- ◆ Obesity
- ◆ Pancreatitis (inflammation of the pancreas)
- ◆ Hyperadrenocorticism (over active adrenal gland)
- ◆ Cholestasis (bile duct blockage)
- ◆ Nephrotic syndrome (a kidney disorder).

Elevated blood cholesterol levels are caused by increased triglycerides, cholesterol or both, and normally occur within 30 minutes to two hours of eating a meal. The effects usually last anywhere from three to 10 hours, but if the levels remain elevated for 12 hours or longer, it typically indicates hyperlipidemia.

Diagnosing hyperlipidemia is relatively straightforward. After a physical



**A physical exam, blood test, review of medical history and discussion of diet are part of the diagnosis of high cholesterol.**

exam, the veterinarian will review your cat's medical history and discuss his diet. "High cholesterol is diagnosed on a serum biochemistry blood test that should be performed after a 12-hour fast," Dr. Miller says. Your cat may be hospitalized to ensure a strict fast — and your peace of mind.

If the results come back with cholesterol over 200 mg/dl and/or a triglyceride level exceeding 100 mg/dl (measurements of glucose in the blood), the diagnosis will be hyperlipidemia. The veterinarian will do additional tests looking for underlying medical conditions, and if necessary, begin treatment of them.

"Identifying and treating any metabolic underlying causes of high cholesterol is paramount," says Dr. Miller. If no other cause is found, changing the diet should be considered. The first treatment is switching your cat to a low-fat diet with less than 20 percent fat, which may mean getting the food directly from your veterinarian. An ultra low-fat diet is less than 10 percent fat. For some cats, commercial diets may not work sufficiently, so it may be necessary to work with a veterinary nutritionist to create an appropriate diet. Medications will be prescribed if diet alone doesn't regulate cholesterol within normal levels.

"High cholesterol in itself is not life threatening," says Dr. Miller. "The important concern is identifying and properly managing an underlying disease so your cat can live a high-quality life." ♦



**ODDS...** *(continued from cover)*

and rescues, versus those purchasing specific breeds. "With newly adopted deaf pets, sometimes people aren't aware at first that the pet is deaf."

White skin and hair color are believed to be caused by the dominant white gene (called W) in cats. They occur when the W gene suppresses pigment cells known as melanocytes. The vascular system of a cat's inner ear structures also contains melanocytes, which likely help maintain the high potassium levels of the fluid surrounding the sensory hair cells in the ear, says George M. Strain, Ph.D., a leading veterinary researcher on deafness and professor of neuroscience at Louisiana State University School of Veterinary Medicine.

When sound waves bend the inner ear hair cells, they open special channels that allow potassium into the cell. The potassium influx excites the hair cell, which in turn triggers the nerve cell that enters the brain in the auditory nerve. If high potassium levels are not maintained around the hair cells, they die and deafness results.



Researchers estimate that 65 to 85 percent of all-white cats with blue eyes are deaf.

When the W gene suppresses the melanocytes in the ear, the vascular system in the ear degenerates, and the death of the hair cells follows. The degeneration happens within a few weeks after a kitten's birth. The resulting deafness is complete, with one or both ears affected.

"The pigment genes can also affect melanocytes in the iris, resulting in blue eyes in the absence of the normal

pigment particles," Dr. Strain says. "Thus, blue-eyed cats are more likely to be deaf than animals with normal colored irises."

### COMMUNICATING WITH A DEAF CAT

Deaf cats are highly visual and tactile, and owners need to maximize their senses of sight and touch to compensate for the lack of communication via sound. Consider these tips:

- ◆ Use visual cues to get a deaf cat's attention. Flashing the lights in a room when entering can prompt the cat to look for you. Laser pointers are also useful in getting a cat's attention when he's not looking at you.
- ◆ You can also use touch and vibration when communicating. Stomping on the ground can help alert your cat to your presence. Extra stroking and cuddling can also help to enhance your bond in the absence of loving words and sounds.
- ◆ To show your affection, you can also give your cat long, loving slow blinks — sometimes thought of as the universal sign for "I love you" in cat language.

### AT-RISK BREEDS

While studies of breed-specific prevalence are lacking, purebred cats that might be at risk for congenital deafness include:

- |                            |                            |
|----------------------------|----------------------------|
| ◆ White Scottish Fold      | ◆ White Exotic Shorthair   |
| ◆ European White           | ◆ White Persian            |
| ◆ Norwegian Forest Cats    | ◆ White Oriental Shorthair |
| ◆ Ragdoll                  | ◆ White Maine Coon         |
| ◆ Siberian                 |                            |
| ◆ White Turkish Angora     |                            |
| ◆ White American Wirehair  |                            |
| ◆ White Cornish Rex        |                            |
| ◆ White American Shorthair |                            |
| ◆ White Devon Rex          |                            |
| ◆ White British Shorthair  |                            |
| ◆ White Manx               |                            |



Within a few weeks of birth, many white cats, like this Persian, are deaf in one or both ears.

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Some cats are deaf only in a single ear, known as unilateral deafness. Unilaterally deaf animals are difficult to identify by behavior, as they react to sound in much the same way that cats with complete hearing do, Dr. Strain says. If they are not identified as being deaf and they breed, they may pass on their genetic disorder to offspring.

**Unidentified Genes.** The precise genes responsible for deafness in white cats have not yet been identified (remember, the W gene controls white skin and hair color). Consequently, there are no DNA tests available. "The only action that can reduce the possibility of deaf kittens is to have hearing testing done on both parents prior to breeding, since a unilaterally (or bilaterally) deaf parent will pass on the genetic defect," Dr. Strain says. "Congenitally deaf cats should not be bred for this reason."

While deafness can be inherited (as in most cases of deafness in white cats), most cases in non-white cats are likely acquired conditions. "Hereditary congenital deafness, if it is going to develop, should be present by five weeks of age," Dr. Strain says. He notes that any cat can develop deafness later in

life from non-genetic causes, not only white ones. They include:

- ◆ Aging (presbycusis)
- ◆ Noise-induced hearing loss
- ◆ Ototoxicity (drug or chemical-related damage to the inner ear), especially from the antibiotic gentamicin
- ◆ Inner ear infection (otitis interna).

Owners may first suspect their pet's deafness due to lack of response to everyday sounds. If you suspect that your cat is deaf — or losing his hearing — seek veterinary help.

The hearing test for pets, called BAER (brainstem auditory evoked response), is available at specialty veterinary practices and schools of veterinary medicine. A specialist performs the tests, which takes about 10 to 15 minutes. (See sidebar below.)

No treatment is available for inherited congenital deafness. However, veterinarians can be valuable allies in helping you and your cat cope with hearing loss. It's sometimes simpler than you might think.

Unilaterally deaf animals tend to get along fine with hearing in only one ear. For bilaterally deaf cats, Drs. Strain and Collins recommend taking the following precautions:

- ◆ Keep bilaterally deaf cats indoors to avoid them getting hit by cars or being exposed to other physical dangers.
- ◆ Protect them from people. "Startled deaf animals can reflexively bite as a reflex, no matter how good-natured they otherwise are, so be especially careful with them around infants and toddlers," Dr. Strain says.

"It may require extra time and patience on the owner's part, but having a deaf animal is very doable," Dr. Collins says. Deaf cats can make wonderful pets. ◆

### NON-VERBAL TRAINING TIPS

Training a deaf cat is possible, but it requires special considerations since your cat cannot hear voice commands.

- ◆ Extend your arms to call your cat, and reward him when he comes with small treats.
- ◆ Stand tall and wave your arms above your head to communicate displeasure if your cat misbehaves. A product called Ssscat, from PetSafe, which emits a harmless blast of compressed air may also be useful in restricting cats' movements into areas in which they don't belong.
- ◆ Use the basic premise of clicker training, with a flashlight blink substituting for the sound of the clicker when the desired behavior is exhibited. You can also use a vibrating collar with remote controls in training but make sure it only vibrates and doesn't emit a shock.

### THE BAER HEARING TEST

The brainstem auditory evoked response (BAER) test performed by a neurologist can definitively diagnose deafness. During the 10- to 15-minute test, ear plugs or headphones placed over the cat's head deliver clicks or tones to the ears. Small electrodes placed under the skin measure the electrical response in the brain to the tones by computer.

It's rare for pets to show any evidence of pain from the placement of the electrodes, says George M. Strain, Ph.D., a researcher on deafness in pets and professor of neuroscience at Louisiana State University School of Veterinary Medicine. In most cases, he does not use sedation or anesthesia to perform BAER tests. "It is not necessary in order to obtain quality responses if patience and gentle handling are used," he says. "The use of drugs adds unnecessary risk and expense."

The BAER test is available at specialty veterinary practices and schools of veterinary medicine. A list of testing sites is available on Dr. Strain's website: [www.lsu.edu/deafness/baersite.htm](http://www.lsu.edu/deafness/baersite.htm)

### FOR MORE INFORMATION

More information on deafness in cats can be found at [www.vet.cornell.edu/FHC/health\\_information/Deafness.cfm](http://www.vet.cornell.edu/FHC/health_information/Deafness.cfm) and at [www.lsu.edu/deafness/deaf.htm](http://www.lsu.edu/deafness/deaf.htm)



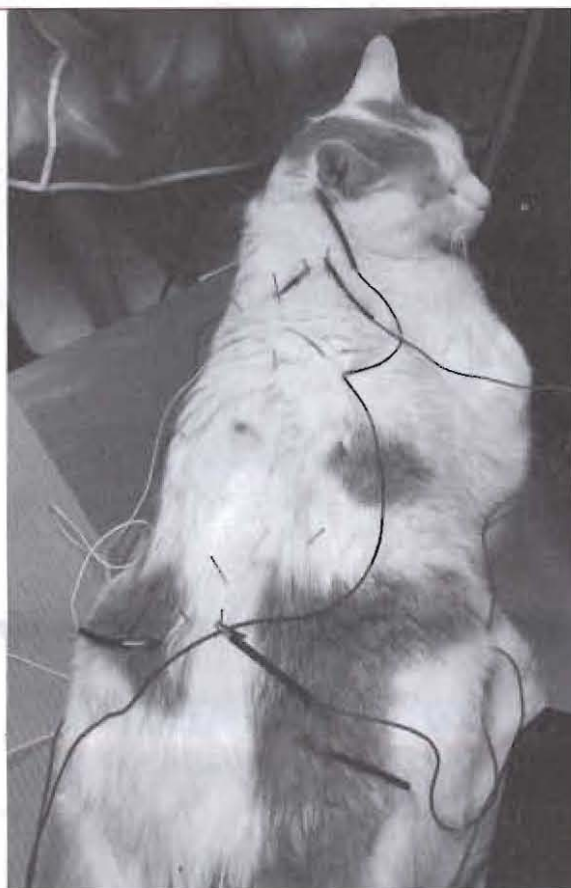
# **FRACTURES**...*(continued from cover)*

bones due to falling out of a tall tree and/or landing hard. Cats can also suffer fractured bones during attacks by other cats, dogs or coyotes roaming neighborhoods, or when being struck by a moving vehicle.

Regardless of the cause, fractures and other injuries warrant an immediate trip to the veterinary clinic. In addition to legs, the most common bone fractures in cats include the tail, femur, pelvis, and jaw.

Due to client demand — though feline patients remain few at this point — Cornell expanded its outreach in 2014 to provide a comprehensive rehabilitation program for injured pets in its Sports Medicine and Rehabilitation Service. (See sidebar below.)

"It's all about trying to improve the quality of life in pets and to help them stay stronger and more mobile for a longer period of time," says Dr. Joseph Wakshlag, assistant professor of veterinary nutrition at



**Acupuncture is one of the therapies offered** at Cornell's Sports Medicine and Rehabilitation Service. The comprehensive program is designed to help your cat fully recover from injuries.

Cornell and charter member of the American College of Sports Medicine and Rehabilitation.

**Symptoms of an Injury.** How can you determine if your cat sprained a limb or broke it? Cats are masters of disguising signs of weakness, including bone fractures. Typically, if they have a bone fracture, you can expect to see them:

- ◆ Remain in one place
- ◆ Deliberately lift the affected leg and not put weight on it
- ◆ Stop grooming
- ◆ Decline meals or hide under the bed or other places inaccessible to perceived predators.

You may also see swelling around the affected joint, which could also indicate an infection, abscess, or cyst. However, fractures involve more severe trauma, and in some instances, you may hear grating or a crackling sound

## **REHAB FOR CATS ON THE MEND**

Cornell's Sports Medicine and Rehabilitation Service offers treatments to help cats recover mobility and reduce pain after bone fractures. "Most cats don't need extensive rehab; however, on occasion there are cats who won't use the limb and then we get involved," says Joseph Wakshlag, DVM, Ph.D., Cornell Section Chief of Clinical Nutrition. Dr. Wakshlag is board-certified by the American College of Sports Medicine and Rehabilitation.

"Cats are harder to work with, but there are exercises and devices we can use to get cats using a leg that they aren't all that interested in using. This can jump start them into use on occasion," he says.

Services include underwater treadmill exercise, transcutaneous (passing through the skin) electrical nerve stimulation, acupuncture, laser therapy for wound healing, platelet-rich plasma therapy, acupuncture and extracorporeal shockwave therapy.

"In fracture repair there are some modalities like therapeutic ultrasound or shockwave therapy that can help stimulate a bone to heal, particularly if it's not healing

well on its own," Dr. Wakshlag says. "Occasionally, we see a cat who needs physical therapy, but the majority of our patients are dogs. Cats are smaller and don't seem to be as prone to injured hips, knees or disc degeneration as dogs are, but we have treated some cats here with degenerative joints and the occasional non-healing fracture."

Feline patients can sometimes pose a special challenge, especially when it comes to getting them to use underwater treadmills or exercises designed to strengthen injured or weakened limbs. "Cats have their own personalities and tend to do what they want to do — not what you want them to do," says Dr. Wakshlag. "It is easier to get a dog recovering from a leg amputation to do a three-legged stand than a cat, who will be more apt to curl up in a ball than perform a three-legged stand. We have had a couple cats who did get used to the warm water and used the underwater treadmill, but as we know, cats and water sometimes don't mix well."

For more information, please visit [www.vet.cornell.edu/hospital/Services/Companion/Sports/](http://www.vet.cornell.edu/hospital/Services/Companion/Sports/)



when the bone moves. This sound is called crepitation. Untreated, the affected area can quickly become extremely painful and infected if the fracture is open (a break in the skin) or may cause shock, especially if the fracture involves the pelvis (which may predispose to blood loss in the pelvic muscles) or spinal cord shock from a broken back.

"If there is blunt trauma to the chest, lung contusions and bleeding, the escape of air into the chest cavity can rapidly compromise breathing and oxygen exchange, resulting in death in the worst-case scenarios," says Dr. Todhunter.

Fractures fall into one of these categories, depending on the severity:

- ◆ **Greenstick fracture:** The bone may be cracked but not completely broken. Only one side of the bone cortex is disrupted. Think of this as a hairline fracture.
- ◆ **Closed fracture:** The bone is broken but the overlying skin is still intact.
- ◆ **Open fracture:** The bone can be in multiple pieces and even protrude through the skin. The cat is at risk for infection if the exposed bones become contaminated with dirt or debris or bacteria from human hands.
- ◆ **Epiphyseal fracture:** The bone is broken at the end of the bone or the soft growth plates, also near the end of long bones, especially the femur (upper hind limb) and humerus (upper front limb). These fractures tend to occur in young, growing kittens under 1 year of age.
- ◆ **Pathologic fracture:** Bones can be broken due to poor nutrition, bone infections or bone cancer.

Taking a cat with a fracture to the veterinary clinic can be daunting. Because cats have flexible spines and razor-

sharp puncturing canine teeth, approach your cat slowly and calmly. Wrap him in a thick bath towel and place him and the towel inside a pet carrier that ideally has a top opening. It is easier to place a cat from the top of the carrier rather than trying to slide him through the front opening. Do not attempt to scruff an injured cat from the back of the neck. That may make him more agitated and will not control the clawing attacks from his back legs.

Alert the nearest veterinary clinic that you are en route so that the staff can have an exam room ready.



An X-ray of a femoral (thigh) fracture shows soft-tissue swelling near the break. In addition to femoral fractures, the most common bone fractures in cats are the tail and jaw.

"If the fracture is open, the main thing to do is not to get human contaminants in the wound," Dr. Todhunter says. "Dirt and debris off the road are things veterinarians can deal with, but bacteria from human hands are much harder to treat in cats."

If you apply a splint to a broken leg, cover it in a soft bandage. Do not, however, splint fractures above the elbow or above the stifle joint (comparable to the human knee), which connects the femur, patella and tibia in the hind limbs. "In theory, the splint should immobilize the joints above and below the fracture," Dr. Todhunter says.

Anticipate that the veterinarian will X-ray your cat's injuries, clean and ster-

ilize the area and administer pain medication. Blood tests will be performed to rule out contamination and infection. Depending on the location and severity of the fracture, your cat may require orthopedic surgery. He may be fitted with a cast or require pins or surgically implanted steel plates to restore bone alignment and improve healing.

"Kittens have softer bones than adult cats, which can make surgical repair harder, but they tend to heal faster," Dr. Todhunter says. "Cats and dogs have approximately the same bone quality."

Surgical costs can range from \$1,000 to \$5,000 or more, depending on the complexity of the fracture and your area of the country.

When your cat returns home, it's important to follow the veterinarian's post-surgical advice. You'll need to be on the alert for signs of swelling or excessive discharge. If your cat needs sutures or staples, the veterinarian will remove them within 10 to 14 days.

Equally important is limiting your cat's activity to allow the broken bone to heal properly and to prevent him from chew-

ing or clawing at the bandages. Consider putting him in a large crate that contains a litter box and cushioned bedding. Or keep him in a small room without any counters for him to climb and provide necessities, such as a litter box, water and food bowls, and bedding.

Practice patience. Depending on your cat's age and the location of the fracture, it could take two to 12 weeks for the bone to mend. "Follow the treatment or postoperative instructions exactly and work with a rehabilitation specialist if possible," says Dr. Todhunter. "Remember, the cat has no free activity until the fracture is healed, which usually is confirmed by follow-up radiographs (X-rays) taken by your veterinarian." ♦





Elizabeth

Elizabeth is thankful for the assistance of the Cornell Feline Health Center in providing the answer on this page.

## Potential Causes of Bad Breath Extend Beyond Inflamed Gums

**Q** My 12-year-old Siamese cat is a darling boy, but I have noticed that his breath has become less-than-pleasant. He seems to otherwise be in good health, but I'm worried that there is something I should be doing about this. Can you provide some advice?

**A** Thanks for getting in touch. I understand that halitosis, the medical term for bad breath, can be unpleasant and can cause concern for kitty's well-being. There are a number of potential causes of halitosis, so allow me to provide a quick review of these.

Far and away, the most common cause of halitosis in cats is gingivitis, defined as inflammation (redness, swelling, pain) of the gums around the base of the teeth. Gingivitis occurs when a film (called a biofilm) accumulates on the teeth and serves as a breeding ground for bacteria, resulting in the formation of plaque. This bacteria causes the gums to become inflamed and also causes halitosis by virtue of gases that are released by these bacteria.

If unaddressed, plaque mixes with minerals in the saliva, resulting in the formation of tartar, which provides an excellent surface for even more bacteria to grow, thereby making halitosis worse. Tartar accumulation can ultimately lead to periodontitis, a condition in which the inner layers of gums and bone pull away from the teeth, forming pockets where even more bacteria can grow. If left untreated, periodontitis can lead to tooth loss.

The best way to prevent the accumulation of plaque is to brush your kitty's teeth regularly — daily is ideal — with a toothpaste that is specially designed for cats. Human toothpaste can be toxic to cats. Go to [www.partnersah.vet.cornell.edu/pet-owners/cat-teeth](http://www.partnersah.vet.cornell.edu/pet-owners/cat-teeth) to watch a seven-minute video on brushing your cat's teeth.

In some cases, halitosis may be an indication of a medical condition in parts of the body other than the mouth. Diabetic cats may devel-

op breath that some people have described as smelling sweet, and these cats will also often demonstrate increased thirst, urination and weight loss despite having ravenous appetites. Cats with kidney disease may have breath that smells almost like urine, and these cats may also show signs of increased thirst and urination, but they will often have poor appetites.

Some cats who develop diseases of the gastrointestinal tract (i.e., blockages and cancer) may develop foul breath, often in association with loss of appetite and vomiting, and cats with liver disease may develop bad breath, loss of appetite, a swollen abdomen, yellowing of the eyes, gums and, in some cases, the skin.

It's important to note that in most cases, halitosis is not an indication of a major medical problem. Halitosis combined with increased thirst/urination, vomiting, loss of appetite, ravenous appetite, lethargy, abdominal bloating, and/or yellowing of the gums, eyes, and/or skin, however, should be a cause for concern.

Immediate consultation with a veterinarian should be sought if any of these signs are observed. It is, of course, important to consult with your cat's veterinarian even if you don't notice these more concerning signs, as he/she is best equipped to help you manage this condition so that you and your kitty can live happy and healthy lives together.

Another more benign cause of intermittent halitosis in cats is the food that they eat. If your kitty just ate a bit of tuna fish or canned food with some other type of fish in it, his breath may not smell like roses for a bit afterward, but in this case, it's a matter of individual preference. I think tuna fish and mackerel smell awesome!

I hope that this brief review is helpful, and I would suggest that you talk with your cat's veterinarian and allow him/her to examine your baby to make sure that there is not a significant health issue as the basis of his bad breath. Probably not, if you haven't noticed any of the other signs, but peace of mind is a wonderful thing! ♦

—Sincerely, Elizabeth

### PLEASE SHARE YOUR QUESTIONS

We welcome questions on health, medicine and behavior, but regret that we cannot comment on prior diagnoses and specific products. Please write CatWatch Editor, 535 Connecticut Ave., Norwalk, CT 06854-1713 or email [catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu).

### COMING UP ...

♦  
KIDNEY DISEASE

♦  
FINICKY EATERS

♦  
HAIRBALLS

♦  
DISASTER PLANS

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