



# CatWatch

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



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## IN THE NEWS...

### Study Seeks to Identify Signs of Heart Disease

Human medicine has made strides in identifying clinical risk factors in heart disease. Now veterinary research hopes to do the same for hypertrophic cardiomyopathy in cats. It's the most common feline heart disease and cause of cardiovascular death.

The Animal Medical Center in New York City, with participation from a team of 27 board-certified cardiologists at 24 specialty hospitals in the U.S., wants to identify risk factors for HCM that could help improve prevention, treatment and survival.

Early signs of the disease, such as a heart murmur and increased heart rate, are vague, as are later signs like reduced activity. The disease usually strikes cats in the prime of their lives — at 4 to 6 years of age — though some as young as a year old can be affected.

The study, funded by the Morris Animal Foundation, would be the first comprehensive, long-term clinical evaluation of HCM in cats. ♦

## Do You Have a Demanding Cat?

*Insistent looming, pawing and rubbing have payoffs, but you can stop the behavior — simply ignore him*

At some point in a bid for your attention, your cat may silently hover over your desk so close to your computer keyboard that your elbow bumps him. He may nearly trip you with figure-eight moves between your legs as you head for the kitchen. He may indulge in a marathon of loud meows at the foot of your bed two hours before your alarm clock is set to ring.

If you're among the unfortunate, he may perform all of above — and more — as he



Attention-seeking at the computer is a popular pastime.

clearly crosses the line of good manners. "When it comes to the most frequent complaints of owners about their cats, demanding attention ranks third behind periuria (urinating outside the litter box) and aggression toward another cat in the household," says behaviorist Katherine A. Houpt, VMD, Ph.D., professor emeritus at the Cornell

University College of Veterinary Medicine.

Cats may be just a whisper less annoying — or their antics a bit more tolerated — than their canine counterparts. Some dogs

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## Saving Diseased and Damaged Teeth

*Advances in root canals, such as Cornell's use of rotary instruments, result in success rates equal to humans'*

Root canal treatment for cats might sound far-fetched, but they're performed at university hospitals and specialty practices around the country to save damaged and diseased teeth that might otherwise be extracted. In fact, newly available techniques and equipment in veterinary medicine have advanced the field of endodontics — the study and treatment of dental pulp — to the point where root canal treatment success rates in pets equal those in humans.

In the past three years, Santiago Peralta, DVM, chief of the Section of Dental and Oral Surgery at the Cornell Univer-

sity College of Veterinary Medicine, has helped move the animal hospital's use of hand instruments for root canal treatments to more precise rotary instruments.

**Safer Procedure.** The result: The advanced techniques provide better results and more favorable outcomes. Because rotary files are much more efficient, the length of a procedure under general anesthesia is reduced significantly, making the procedure safer.

"Rotary endodontic files are attached to an electric handpiece that allows precise

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# CatWatch

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## SHORT TAKES

### How Do You Compare to the Average Owner?

The American Pet Product Manufacturers Association issues its National Pet Owners Survey every two years — a real door-stopper with more than 500 pages. The findings are intended for businesses, marketers and media. Here's a sampling from the 2013-14 section about cat owners, who comprise 37 percent of U.S. households.

- ◆ Number of cats per household: 2.11, compared to 1.47 dogs. That equals a pet cat population of 96 million compared to 83 million dogs.
- ◆ Average cost of a cat: \$43.
- ◆ Percentage of cats obtained from friends or relatives: 43.
- ◆ Percentage of cats obtained as strays: 35.
- ◆ Average amount spent for food in the past year: \$203.
- ◆ Average amount spent on emergency veterinary visits in the same period: \$393.
- ◆ Average number of years as a cat owner: 19.
- ◆ Percentage of owners who leave their cat with a family member, friend or neighbor in their home when they travel more than two nights: 56.
- ◆ Percentage of owners who buy toys for their cats: 62.

Overall, cat owners tend to be homeowners with higher levels of employment. More than two-thirds of them live in big cities, according to the survey.

### Did You Call?

A team of researchers at the University of Tokyo evaluated 20 cats' reactions to owners' and strangers' voices and offered an intriguing explanation for the results. They measured the cats' responses through ear, tail and head movement, vocalization, eye dilation and shifting of paws.

The study, published in the journal *Animal Cognition*, showed that 50 to 70 percent of the cats turned their heads when they heard a human calling their name, 30 percent moved their ears and 10 percent mewed or moved their tails. The percentages were about the same for both owners' and strangers' voices, while responses to owners



Bigstock

**The average cat owner has two cats**, according to a national survey, and a remarkable 35 percent of them adopted strays.

were more intense. However, the cats chose to ignore their owners' calling them.

The reason the researchers suggest for the behavior: The cats' unresponsiveness is rooted in their evolution. They "domesticated themselves."

"Historically speaking, cats, unlike dogs, have not been domesticated to obey humans' orders," the researchers say. Genetic and archaeological evidence suggests housecats descended from the African wild cat *Felis silvestris* 9,000 to 10,000 years ago. They survived by feeding themselves. When humans developed agriculture, the cats preyed on rodents attracted to stores of grain.

### Cats and Coyotes

Stray and feral cats avoid coyotes in city parks and nature preserves, and as a result cause less harm to other wildlife there, according to a study conducted at the Ohio State University and published in the journal *PLOS One*. The cats also live longer and are healthier than previously thought, researchers say.

Researchers monitored 39 free-roaming cats' health, ranges and other characteristics near six Chicago parks and nature preserves — the city has a coyote population estimated at several hundred to several thousand. The scientists learned that most cats shunned the urban coyotes' habitats and remained near homes and shops. Most of the cats were in good condition, with only a few mostly minor health problems.

"Free-roaming cats aren't as diseased and short-lived as we often hear, and they're not as harmful to wildlife as some other studies have suggested, at least not in urban natural areas," says the study's lead author, Stan Gehrt, Ph.D., associate professor of environment and natural resources. ♦



# Why Haircoats Can Change Color

*Sunlight and aging are among the reasons, but so are skin and hormonal disorders, and serious disease*

If your cat's coat changes color, don't become alarmed. In many cases, it's could be a normal development. The hair of some cats, particularly those who are dark, turns gray as they age. Siamese kittens begin life with light-colored coats, without the characteristic dark "points" they will develop later on the nose, ears, tail and paws.

However, a number of medical conditions can also cause a cat's hair color to change, says dermatologist William H. Miller, VMD, Medical Director of the Cornell University Companion Animal Hospital. These conditions range from skin disorders, such as flea allergies and mange, to hormonal deficiencies such as hypothyroidism, to serious illnesses, including cancer.

**Abnormal Pigment.** "Diseases can impact the quality, texture and color of the hair," Dr. Miller says. "Endocrine disease, especially hypothyroidism, and the disorders associated with abnormal sex hormone production can alter hair color either because the hair isn't growing as fast and is subject to sun bleaching — or because the mechanism whereby the pigment is transferred to the growing hair is abnormal."

If the skin or coat has a color other than white — including brown, black, red and yellow — it's said to be pigmented. If the skin is darker than normal, it is said to be hyper-pigmented. Some conditions associated with pigment change may be more common in certain geographical areas.

For example, the temperature of the cat's environment can affect pigment change. Some coats may become darker in cold winter months while the coats of dark-colored cats can bleach to a reddish-brown color in sunny areas.

"There is a disease called vitiligo where the melanocytes — the pigment cells that produce the dark pigment melanin — disappear and don't return," Dr. Miller says. "This depigmentation can be regional or generalized. And while the coat color change by itself doesn't cause any symptoms, if the hair and underlying skin turn white due to vitiligo, then that area is particularly prone to sunburn." Vitiligo can be hereditary or caused by an autoimmune reaction.

## Breed Disposition.

Some breeds are particularly susceptible to hair color change. "Different breeds tend to get certain diseases that may or may not induce depigmentation," says Dr. Miller. "For instance, Siamese cats have temperature-sensitive melanocytes, so the hairs will lighten or darken depending on the skin temperature. If the exposed area is cold, it becomes lighter-colored. If warmed, it returns

to its normal dark color or may even become darker than normal."

In addition, Dr. Miller says, "If a cat has a high fever, hairs in hot areas may lighten in color. A classic example is 'goggles' — whitening of the fur around the eyes when a cat has a fever."

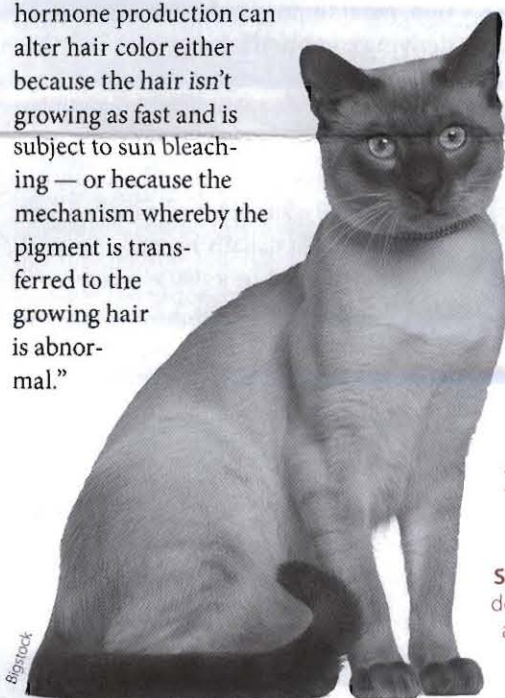
Because the amino acid tyrosine is needed to make melanin — a natural substance that determines color of the hair and skin — a diet deficient in tyrosine can cause a black cat's hair color to lighten to a reddish color. Other nutritional problems, such as copper deficiency and zinc excess, can have the same effect. However, Dr. Miller says, "Diet is rarely an issue these days since most cats eat balanced cat food diets."

**Underlying Cause.** Although any area can be affected, "Cat owners tend to notice hair color change first on the face, since that's where we look at our pets most often," Dr. Miller says. A quick diagnosis may be difficult to make. "While it's easy to document hair color change with the naked eye, the underlying cause can be determined only by a complete and thorough history and physical examination," says Dr. Miller. "This provides the veterinarian with an idea of the disorders that might be causing the color change. Such disorders can then be confirmed by the appropriate diagnostic tests and addressed."

Color change doesn't necessarily require treatment. If the color change is due to a disease other than vitiligo, the prognosis is good. If the disease can be cured, the hair color should return to normal.

If owners notice a hair color change in their cat, it's a sign that something is amiss. Paying attention to your cat's coat over time can help you gauge the quality of his health, Dr. Miller says. "Unless the owner can associate the color change with some topical insult to the hair — for example, a benzoyl peroxide shampoo — or unless the color change can be attributed to harmless sun bleaching or old age, hair color change should prompt a visit to the veterinarian." ♦

**Siamese haircoats will lighten or darken** depending on skin temperature. If the exposed area is cold, it becomes lighter-colored. If warmed, the skin returns to its normally dark color or even darker.





# Those Startling Reverse Sneezes?

*They aren't life threatening, and a few quick, easy steps like rubbing the throat can shorten an episode*

A reverse sneeze looks alarming. The cat may stand still with his elbows out and eyes open wide while rapidly snorting inward and extending his neck. An owner might panic, thinking the cat is suffocating.

A reverse sneeze also sounds alarming. "I do not know exactly how to describe it," says Andrea N. Johnston, DVM, a specialist in internal medicine and former instructor in small animal internal medicine at the Cornell University College of Veterinary Medicine. "It is a cross between a sneeze and a gag."

**Sudden Onset.** Adding to the puzzle, the cat, who was normal one moment and suddenly appeared to be choking, returns to normal immediately afterward. In the case of reverse sneezing, however, sounds and appearance usually deceive. The sneezing isn't life threatening, and owners can take some easy steps to shorten an episode.

Reverse sneezing, though common in dogs, is rare in cats. However, veterinarians encourage owners to take their pets for an exam to determine whether the episode really is reverse sneezing or a serious yet treatable condition.

An episode lasting from a few seconds to a minute or two can occur at any time in any breed. "There are many potential causes: intra-nasal foreign bodies, rhinitis and nasal neoplasia (tumors)," Dr. Johnston says. Reverse sneezing is also linked to nasal and bronchial infections and cleft palate in young cats. In older cats, causes include dental diseases and nasal tumors. Other possible causes are inflammation, nasal drip, long-term vomiting, pneumonia and mites in the nasal cavities.

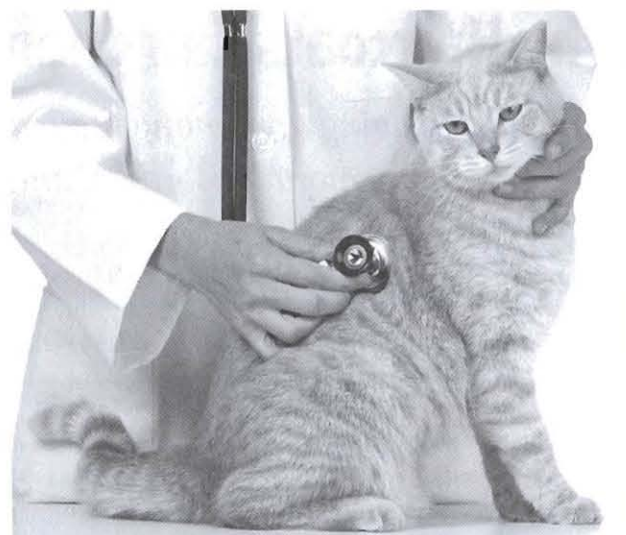
Ultimately, the exact cause is often not determined. What's known for certain: irritation in the nose, sinus or pharynx causes a throat spasm — a noisy reverse sneeze. At-home video, on your cell phone or alternate recording device, is a good tool to record the event and show your cat's veterinarian, Dr. Johnston says.

One inexpensive, budget-friendly remedy: petting. Rub the cat's sides and back, and scratch his throat. Some owners find that lightly covering the cat's nostrils causes him to swallow. Swallowing helps stop the sneezing.

"Just try to relax your pet. Petting or gentle verbal soothing may be helpful," Dr. Johnston says. "Changing environments may also benefit the cat — moving from an allergen-rich environment, such as outdoors, to a cool, calm environment, possibly indoors."

Take note of the cat's location and action immediately before the sneezing and the duration of the episode. "The duration is very dependent on the cause," Dr. Johnston says. "If the clinical signs are progressively worsening over minutes to hours, then veterinary assistance should be sought."

**When to Worry.** "Many clients describe an isolated episode of reverse sneezing," she adds. "If this is an isolated or rare event, then I tell them not to worry about it, but if it is acute (sudden) in onset, increasing in severity or frequency, then I will recommend more advanced diagnostics such as nasal CT (imaging),



Because reverse sneezing is a rarity, veterinarians encourage owners to take their cats for an exam to determine if the episode is actually sneezing or a serious but treatable condition.

rhinoscopy (a procedure in which a small camera is passed into the nasal passages) and possibly nasal biopsy."

If the sneezing seems like a problem — if it happens daily or several times a day, or if it's prolonged or accompanied by nasal discharge — visit the veterinarian.

He or she will consider the cat's medical history and the description of the sneezing. A physical exam, blood tests, allergy tests or imaging may be used to rule out upper respiratory infection, nasal tumors, polyps or other underlying conditions.

When no underlying causes are found but the problem is ongoing, or the reverse sneezing is related to allergies, the veterinarian may prescribe an antihistamine or a steroid medication — but medicine is not usually needed.

"If it is a once-in-a-while event, then I do not worry," Dr. Johnston says. "Choking is a much more obvious and worrisome scenario. If a pet's airway is blocked, then the gagging or coughing will escalate within minutes. The pet may display evidence of dyspnea (difficulty breathing) and potentially cyanosis (blue mucous membranes)."

For most cats, reverse sneezing sounds and looks scary, but it turns out that an event that may be eased by petting isn't so scary after all. ♦



**DEMANDING...** *(continued from cover)*

and cats have honed their skills at being stubborn, persistent and clingy. "I think dogs are far more demanding than cats," says Dr. Houpt. "The size of a dog's paw is generally bigger than a cat's, and a dog can bark at you at higher decibels than a cat's meow. But both can be demanding."

The best way to deal with incessant meowing: Don't engage your cat in chatty conversations. "The secret is to never answer the cat when he meows," Dr. Houpt says. "Don't answer a meow with, 'What do you want?' You should initiate the conversation with your cat — not respond to meow questions. Continue to ignore him even if he keeps at it."

The other prevalent ways cats seek attention from their owners include:

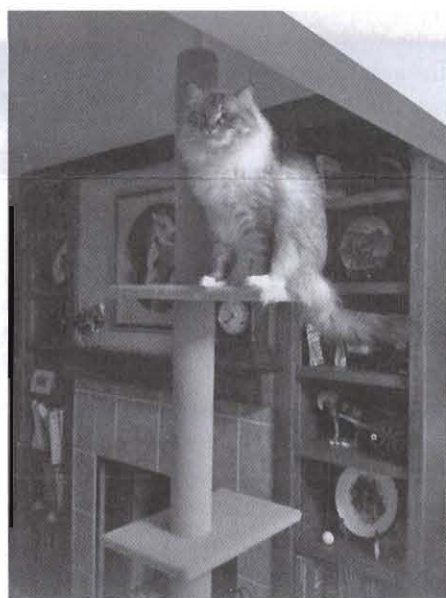
- ◆ Looming close at all times.
- ◆ Standing on the keyboard or standing between the computer monitor and keyboard.
- ◆ Rubbing against your legs when you move.
- ◆ Sitting on the newspaper, work papers or book you're trying to read.
- ◆ Leaping up on your lap when you sit down.
- ◆ Pacing back and forth and vocalizing at you.
- ◆ Nipping your hand or forearm.

To avoid surrendering to your cat's demands, look for clues behind the behavior. Cats crave daily routines, and some may vocalize when you're an hour late in serving their meal or become put off because you forgot to scoop their litter box. Your cat's clock is also set to be more active at dawn and at dusk. That's why he may disturb your sleep before your alarm goes off.

Genetics may play a role. The Siamese has a reputation for being vocal and bossy. Other purebreds, such as the Sphynx, can be clingy, wanting to be with you every minute. It may be simply that they need to be kept warm — the breed lacks a haircoat.

**Prey and Predator.** In some cats, the need to feel safe from predators kicks

in, Dr. Houpt says. "Cats are both prey and predator. Even though they have been domesticated, that fear is still hardwired into them. Some cats may feel vulnerable with their heads down in the food dish. They can't take their bowl of kibble to a safe hiding place as they could with a dead mouse. They want their people around them for protection at meal time."



**Rather than shadowing her,** Hadley keeps company with Dr. Katherine A. Houpt from a tall perch in the kitchen.

Medical conditions can also trigger a cat's sudden insistent or bossy behavior. If your otherwise-mellow middle-aged or senior cat suddenly starts long meow sessions or acts hungry even after eating a meal, play it safe and have him examined by his veterinarian.

Your cat could have hyperthyroidism. The common glandular disorder causes the thyroid gland to produce excessive amounts of the hormone thyroxine, resulting in increased appetite, sudden weight loss and hyperactivity. Or your cat may be yowling in pain because of an injury or abscess. Any sudden change in behavior warrants an immediate trip to the veterinarian, Dr. Houpt says.

While cats may not heed training cues as easily as dogs, Dr. Houpt offers

these steps to tamp down demanding behavior:

- ◆ **Don't regard your cat as a small dog.** Dogs, in general, respond appropriately when ushered into a closed room for a time-out when they're annoying you or your houseguests. "Time-out does not work well for cats," Dr. Houpt says. "It does not take much energy to meow, and some cats can meow for a long time. Make the closed room pleasant. Provide a soft place to nap, water, and if the cat is not obese, food. Clip his nails so he won't damage the door frame by scratching."
- ◆ **Engage your cat in five- to 10-minute play sessions morning and night to give him physical and mental outlets for his energy.** Have him stalk and pursue a feather wand toy or chase a laser pointer's moving beam. Or crinkle paper wads and toss them down a hallway or up and down a stair for your cat to hunt.
- ◆ **Provide company during meal time.** As mentioned, some cats feel vulnerable lowering their heads into bowls to eat.
- ◆ **Postpone the evening meal.** "There is no reason that a cat's second meal of the day has to be at 5 p.m. It could be at 9 p.m. right at bedtime," says Dr. Houpt. "Or consider putting a food bowl on a timer in your bedroom so you get a good night's sleep."
- ◆ **Practice the art of compromise.** Put a cozy cat bed on your desk to stop your cat from standing between you and the computer monitor.

In her home, Dr. Houpt has compromised with a newly rescued cat, Hadley, who tended to shadow her to every room. Since Dr. Houpt is often busy in the kitchen, she relocated Hadley's towering cat tree there. The result is a contented, quiet Hadley taking in every move from her high perch.

As your cat's demands fade, Dr. Houpt says, "You can be happy he enjoys your company and wants to be with you." ♦



## ROOT CANALS ... (continued from cover)

control of speed and torque, which reduces the chances of complications during a root canal treatment,” says Dr. Peralta, who is board-certified in veterinary dentistry. “Also, the files are made of a nickel-titanium alloy, making them incredibly flexible and more resistant to breakage and other complications compared to conventional stainless steel hand files.”

Nickel-titanium rotary endodontic instruments were first developed for use in humans more than two decades ago, but specially designed instruments for small animals started to become popular in veterinary medicine only in the past decade, Dr. Peralta says.

Today, rotary endodontics are widely available in both private practice and academic veterinary medicine. “However, because endodontics require advanced training and skills, and a large number of costly equipment and materials, root canal treatments are usually not available through general practitioners, only through board-certified specialists,” Dr. Peralta says.

The most common reason for a root canal treatment in cats is dental trauma, Dr. Peralta says. “Fractured or discolored teeth are frequently devitalized and lead to chronic low-grade pain, and sometimes acute swelling and/or drainage. The treatment options are generally a root canal treatment or extraction. Even though extraction is a valid definitive solution to a non-vital tooth, a root canal treatment offers the advantage of preserving the tooth and is a less invasive treatment option.”

In human medicine, root canal treatments can be performed on any damaged or diseased tooth in the mouth. In cats, because of the small size of their teeth, root canal treatments can be performed only on canine teeth — the long, fang-like teeth at the front of the mouth, Dr. Peralta says.



Daily brushing can help keep teeth healthy and identify dental problems early on.

Veterinary dentists perform root canal procedures when the pulp inside the tooth becomes damaged or the nerve of the tooth becomes infected. They remove the nerve and pulp, then clean and seal the tooth. The goal is to preserve the tooth's function without the pulp and nerve.

When a cat fractures his canine tooth, often only the tip of the tooth is damaged. Unfortunately, the pulp of the tooth extends to the tip of the canine tooth and is likely to be affected by even a minor crack or chip.

### AN OPTION FOR YOUNG PATIENTS: THERAPY TO RETAIN THE TOOTH'S PULP

In certain — although rare — cases when a cat's tooth is damaged, treatment options extend beyond root canal therapy and extractions. According to the American Veterinary Dental College, vital pulp therapy can be performed on recently fractured teeth in patients under 18 months of age.

Vital pulp therapy is the treatment of the tooth pulp with the intention of keeping it alive, as opposed to a root canal in which the pulp is removed from the tooth. In this therapy, a superficial layer of the pulp is removed to eliminate surface bacteria and unhealthy tissue. A medicated dressing is placed on the newly exposed pulp to stimulate healing and provide anti-bacterial properties. Finally, a protective barrier of dental composite is placed over the exposed area.

Veterinary dentists avoid performing this procedure on older patients, as there is a higher risk of failure compared to root canal therapy. Success is determined by additional X-rays approximately three to six months after the procedure. If vital pulp therapy fails, a root canal treatment might be required.

**Masking Pain.** Anyone who has ever experienced a toothache, particularly one that necessitated a root canal treatment, knows it can be extremely painful, but cats tend to hide their pain and rarely show obvious signs of discomfort. Many owners remain unaware of their cats' dental problems or dismiss other signs of problems because their pets don't seem overly bothered. However, ignoring the problem prolongs the cat's pain and can lead to more serious complications (see sidebar on the facing page).

Spotting a damaged or infected tooth requires owner vigilance. In rare cases, a fractured or infected tooth might be associated with swelling in the cat's mouth and face, or fluid draining below the eye. Antibiotics



might temporarily resolve these symptoms, but if the problem is related to a damaged tooth, it will recur.

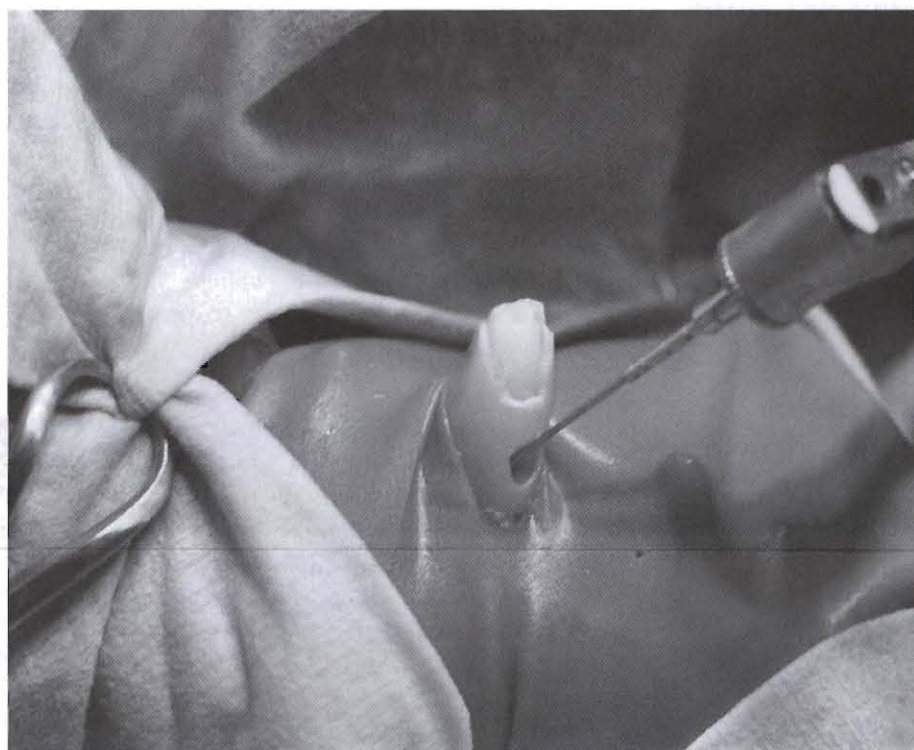
More often, owners must look for more subtle signs and behavioral changes. A cat might avoid chewing on one side of his mouth or hesitate to chew on formerly beloved toys.

Beyond observing behavior, owners should regularly inspect their cats' teeth by lifting the lip with the mouth closed. Any fractures or discolorations should be brought to the attention of a veterinarian.

If a tooth fracture is observed or an infection is suspected, dental X-rays are the first step in diagnosis. The images help the veterinarian evaluate the bone surrounding the tooth and confirm whether the pulp or nerve of the tooth has been affected.

Based on the findings, the veterinarian can determine whether tooth extraction or root canal therapy is the better option. Although preserving the tooth is desirable, in some situations an extraction might be recommended over a root canal treatment, particularly if damage to the tooth is extensive.

Cats of any age and breed can be affected by tooth fractures that warrant a root canal treatment or extraction. Younger pets, however, might have additional treatments available to them, such as vital pulp therapy



Dr. Santiago Peralta

**Cornell has moved beyond the use of hand instruments for root canal treatment** to more precise rotary instruments. The electric handpiece provides better control of speed and torque, which reduces the chances of complications.

(see sidebar), if fractures are recent. A discussion with your cat's veterinarian about all available options is the best course.

**Significant Cost:** Fees start at around \$1,000 to \$1,200 and varies depending on the tooth or teeth that

require treatment, Dr. Peralta says. "This cost usually includes pre-anesthetic bloodwork, general anesthesia, dental X-rays and the procedure." In humans, root canal treatments can be performed without general anesthesia. Understandably, pets require complete immobilization for a delicate procedure to be performed inside the mouth.

Although tooth trauma and disease in cats aren't entirely preventable, owners can reduce the risk. Tooth fractures in cats are commonly the result of trauma such as being hit by a car, falling from a height or being attacked by another animal. Although cat owners can take steps to reduce the risk, tooth fractures clearly aren't entirely preventable. Regardless of preventive measures, dental trauma can still occur. Fortunately, veterinary dentistry has made progress in only a decade, and prompt attention to problem teeth can alleviate pain and greatly enhance a cat's quality of life. ♦

## WHAT YOU SHOULD KNOW

Complications related to fractured teeth can go well beyond pain in the mouth. If ignored, a dead tooth can lead to:

- ◆ Infection
- ◆ Tooth abscess formation
- ◆ Facial swelling and fluid draining below the eyes
- ◆ Bacteria entering the bloodstream

Quite often, owners who thought that their cats were untroubled by fractured teeth report that their pets act younger and more energetic after a root canal treatment or extraction, providing further evidence that pets' pain is not always demonstrated as obviously as we might expect.





Elizabeth

Elizabeth is thankful for the assistance of **Bruce G. Kornreich, DVM, Ph.D., DACVIM**, Associate Director of the Cornell Feline Health Center, in providing the answer on this page.

## What Can Be the Cause of Really Bad Breath?

**Q** Why does my cat have such bad breath? The vet anesthetized her for a dental cleaning and found that her teeth really didn't need it. (She didn't let the vet look in her mouth at her checkup.) She has had two teeth removed, but apparently the remaining teeth are in great shape, so what else might be causing the foul breath?

**A** Thank you for contacting me about this common problem. Generally speaking, a cat's breath should not be offensive. We are not offensive creatures, so this makes perfect sense! While bad breath (halitosis) usually results from a relatively benign and manageable process, it can indicate a more serious situation.

The most common cause is a buildup of odor-producing bacteria in the oral cavity. In a manner similar to that seen in people, this buildup is often associated with dental or gingival disease. (The gingiva is a fancy word for the gums.) Plaque, a relatively soft and easily removed material, occurs when bacteria sticks to the teeth. It can accumulate if not removed and ultimately form tartar. Tartar is a much harder material and more difficult to remove. Plaque and tartar buildup can result in halitosis if not addressed in a timely fashion.

Diet can contribute to the development of plaque and tartar by having food particles become lodged between teeth and gums, thereby providing a substrate for bacterial growth.

If unmanaged, these processes may affect the gingiva's health. Some cats are prone to inflammation and/or infection of the gums that may also be colonized by bacteria (gingivitis). Gingivitis, sometimes called periodontal disease, may contribute to halitosis, and may also cause affected cats to lose their appetites, drool and paw at their mouths.

In some cases, halitosis may not be due to a buildup of bacteria in the mouth but to a more serious medical problem. Cats with kidney

disease, for example, may develop foul breath comparable to the odor of urine. It results from the buildup of toxic waste products in the bloodstream. These cats may also suffer from ulcers of the oral cavity as the severity of the problem advances. Diabetic cats may develop a sweet-smelling fruity breath, and those with certain types of liver abnormalities can develop bad breath if not diagnosed and treated properly.

Infections and other problems in the lungs and/or airways may cause a cat's breath to become unpleasant, as can some gastrointestinal problems. So you see that while halitosis is usually an indicator of dental and/or gingival disease, it is important to keep the possibility of a more significant health problem in mind.

Although it was determined to be unnecessary in your cat's case, a dental cleaning may be in order when dental and/or gingival disease is the issue. If tartar formation and/or gingivitis are not addressed early on, tooth loss may result. Regular tooth brushing and monitoring can minimize these problems. Several toothpastes on the market are designed especially for cats. It is important not to use toothpaste for people because it can cause stomach upset in cats.

You may wish to discuss routine dental care with your cat's veterinarian. You can also learn more — and see a video on toothbrushing — at the Cornell Feline Health Center's website at: <http://partnersah.vet.cornell.edu/pet-owners/cat-teeth>.

In any event, please discuss your cat's persistent halitosis with the veterinarian. If it not due to periodontal disease but another medical problem, he or she may perform diagnostics to rule out other causes and create a treatment plan.

It sounds like you are doing a good job monitoring your kitty's health and that you are being proactive about her care. Perhaps regular toothbrushing may help, but if not, with veterinary care, you will be well on your way to helping your girl stay happy and healthy.

I hope this information is helpful, and that before long your kitty's breath is a thing of beauty ... or at least not offensive any more! Please keep in touch.

—Best regards, 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, 800 Connecticut Ave., Norwalk, CT, 06854 or email [catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu).

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#### CORRESPONDENCE

The Editor  
CatWatch  
800 Connecticut Ave.  
Norwalk, CT 06854  
[catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu)

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