



# Cat Watch

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



## INSIDE

### Stem Cells Prevent Organ Rejection 2

The novel procedure helped a Siamese successfully undergo a kidney transplant.

### Why They Hunt by Night 2

The vertical slits of cats' pupils let them see in almost complete darkness.

### Often-overlooked Halloween Risks 3

Burning candles and heated oil in pot-pourri containers can cause serious injury.

### Ask Elizabeth 8

Should her 4-year-old's intermittent watery eye be a cause for concern?

## IN THE NEWS ...

### Study Seeks a Vaccine to Prevent Skin Cancer

A pathologist at Massey University in New Zealand is studying the role that papillomavirus plays in squamous cell carcinoma (SCC), a common skin cancer in cats. If caught and treated early, SCC can have a favorable outcome, according to the Cornell Feline Health Center. If the cancer's eruptions, which can resemble scabbed sores, go unnoticed, however, it can prove fatal.

Human papillomavirus is a sexually transmitted infection, estimated to cause 5 percent of human cancers. Vaccines are available to prevent the infection in people, and the Massey researcher, John S. Munday, BVSc, Ph.D., hopes his work could lead to a vaccine for cats.

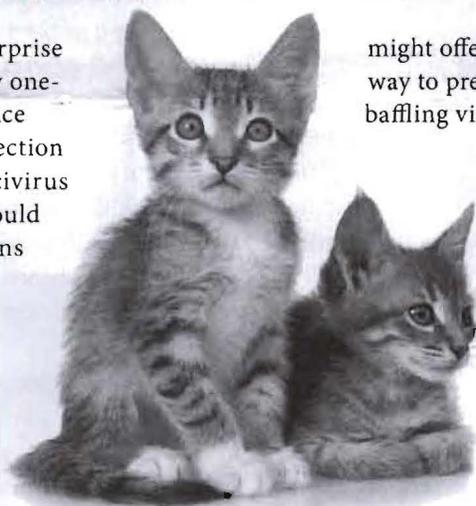
Although papillomavirus DNA has been detected in feline skin cancers, its role in their development is unknown. His evaluation of skin samples has established that a papillomavirus is associated with skin cancer in cats, Dr. Munday says. The next step is to definitively determine the role the virus may play in development of SCC in cats. ♦

## A Rare Virus Sparks Deadly Outbreaks

*Cornell researchers explore natural resistance to feline calicivirus in hopes of finding a fully effective vaccine*

It may come as a surprise to learn that nearly one-third of cats experience signs of an active infection of flu-like feline calicivirus (FCV). Most of us would think that vaccinations prevent the disease in cats, and we'd be mistaken.

The bigger question for virologists, however, is whether some cats are naturally resistant to the disease. The answer



Most cats are exposed to the calicivirus at some point, usually as kittens.

might offer the hope of finding a way to prevent infection by this baffling virus.

### Virulent Strains.

FCV usually causes a minor case of feline sniffles, but in rare instances, especially in crowded catteries and shelters, the disease can evolve into virulent strains that spark deadly outbreaks.

FCV accounts for nearly half of infectious

*(continued on page 4)*

## Another Benefit of Slimming Down

*Keeping flat-faced breeds at a healthy weight can ease breathing difficulties and avoid surgery in mild cases*

If you have a short-nosed cat who has put on some pounds and suffers breathing problems due to a condition called brachycephalic airway syndrome, one simple change could go a long way in easing his discomfort: help him slim down.

Flat-faced breeds are vulnerable to respiratory difficulties such as labored breathing and snoring as they struggle to inhale, says James A. Flanders, DVM, ACVS, Associate Professor of small animal surgery at Cornell University College of Veterinary Medicine. "Obesity worsens the symptoms of brachycephalic airway syndrome (BAS). Of all the

things an owner of a brachycephalic cat can do, weight management is the best way to avoid problems."

**Excessive Exertion.** In fact, weight loss can sometimes control the condition in cats with only mild or intermittent symptoms without the need for surgery. Likewise, avoiding situations that induce heavy breathing — such as stress, excessive physical exertion and hot or humid conditions — can be beneficial.

For most cats with BAS, however, surgery is the recommended treatment to correct structural abnormalities in their

*(continued on page 6)*

# Cat Watch

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## SHORT TAKES

### A Patient's Stem Cells Prevent Organ Rejection

Surgeons at the University of Georgia Veterinary Teaching Hospital have used a Siamese cat's stem cells to improve acceptance of his kidney transplant. The recently announced surgery on 4-year-old Arthur, performed in May, is the hospital's second successful kidney transplant using feline adult stem cells.

"To the best of our knowledge, UGA is the only veterinary facility in the world to use adult stem cells in feline kidney transplantation," says Chad Schmiedt, DVM, ACVS, head of the feline kidney transplant program.

Arthur was diagnosed with chronic renal failure a year ago. Two other teaching hospitals passed on surgery because of potential complications, UGA says. One was that Arthur's body couldn't absorb enough of the immunosuppressant cyclosporine to prevent organ rejection.

Dr. Schmiedt suggested feline adult stem cells, known as mesenchymal stem cells or MSCs, as part of Arthur's immunosuppressive treatment. "We used feline adult stem cells in one other transplant that we did last year," says Dr. Schmiedt, who notes a growing body of studies suggesting that adult stem cell therapy may be beneficial in human renal transplant patients.

MSCs are derived from fat, bone marrow and neonatal tissues such as placenta and umbilical cord. Dr. Schmiedt harvested fat cells from Arthur, and the UGA Regenerative Medicine Service grew cells from the sample. Arthur's transplant involved one surgery to harvest a kidney from the donor and another to transplant the donated kidney. The donor was a cat named Joey, and, as required by the transplant program, he was adopted by Arthur's family.

Arthur continues to receive stem cell treatments from his veterinarian, and he takes a second antirejection medication, mycophenolate, to help his body accept his new kidney.

Transplantation costs range from \$8,000 to \$12,000 for the organ recipient and \$3,000 for the donor, UGA says. Initial stem



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Sue Myers-Smith

**Arthur underwent a kidney transplant** at the University of Georgia Veterinary Teaching Hospital.

cell treatment is about \$1,500, with most owners spending \$1,000 to \$3,000 a year for medications and recheck examinations.

### Why They Hunt by Night

The unusual shape of cats' eyes — the slit-shaped pupils — give them an evolutionary advantage as nocturnal hunters. "They can see in almost complete darkness," says Richard E. Goldstein, DVM, ACVIM, Chief Medical Officer at the Animal Medical Center in New York City and a former Cornell faculty member.

"A cat can quickly adjust to different lighting conditions. Moreover, the slit shape protects the sensitive retina in daylight," Dr. Goldstein told the *New York Times*.



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**The slit-shaped pupils in cat's eyes** let them see in the dark and protect the retina in daylight.

"A cat has the capacity to alter the intensity of light falling on its retina 135-fold, compared to 10-fold in a human with a circular pupil. A cat's eye has a large cornea, which allows more light into the eye, and a slit pupil can dilate more than a round pupil, allowing more light to enter in dark conditions."

Cats have other visual advantages, he says, among them is the fact that their eyes face forward on the skull, providing wide binocular vision and depth perception to help catch prey. ♦

For more information, see "How Anatomy Shapes Their Sight" in the February 2014 issue of *CatWatch*.

## Two Often-overlooked Halloween Hazards

*Burning candles and heated essential oils in potpourri containers can cause serious injury*

Halloween poses well-known stressors and safety risks to our cats, from ringing doorbells to scary costumes. But here are two threats we may overlook: burning candles and heated essential oils in potpourri containers.

"Cats are drawn to the flickering light and the taste of many essential oils," says Gretchen Schoeffler, DVM, Section Chief of Emergency Medicine and Critical Care Services at Cornell University College of Veterinary Medicine.

**Burn Wounds.** "The most common ailments we see during this holiday are cats with burns on their paws and tails from swatting at the flickering flames and cats with horrible chemical burns on their tongues caused by lapping up essential oils from potpourri containers that spilled on their coats and they attempt to lick off," says Dr. Schoeffler, who is board-certified in emergency and critical care.

She suggests battery-operated candles placed inside real carved pumpkins or synthetic ones to convey light without the risk of triggering house fires or causing burns to a cat. "We've treated cats who have had their whiskers singed or their paws burned due to playing with open flames or stepping into hot wax."

Dr. Schoeffler's recommendation for scented potpourri: Use containers with inaccessible lids. "If cats do ingest essential oils, the oils can cause significant chemical burns to the mouth, tongue and esophagus," she says. "Rarely, we have seen cats so severely affected that they have had to be euthanized or have required extensive hospitalization and treatment, including the placement of

feeding tubes directly into the stomach, so the burned tissues can be bypassed but the cat still receives adequate nutrition."

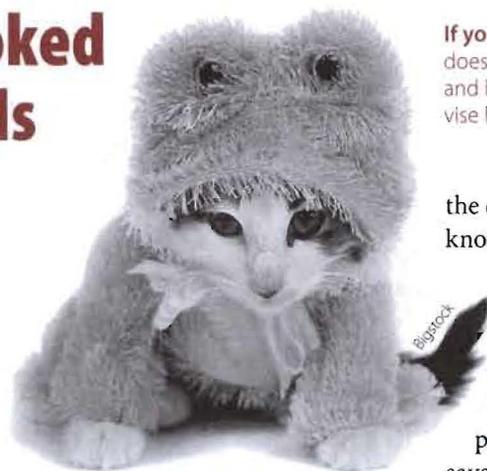
**Another Problem.** Although the luminescent liquid inside glow sticks and glow-in-the-dark jewelry might look poisonous, "The relatively small quantity of fluid generally has a low potential for toxicity" if pets break open the tubes, the ASPCA says. The fluid is dibutyl phthalate used in plastic and other products.

Typical signs in pets who have chewed on glow jewelry include drooling, hyperactivity and agitation, but the effects are short term, usually a response to the liquid's bitter taste, the ASPCA says.

**Light the Outdoors.** In your quest to make your house the spookiest on the block, consider locating Halloween lights outdoors. Indoor lights can be too great a temptation for your cat to ignore, and he could burn himself on the lights or electrocute himself by biting on the cord. "Anything that moves and dangles attracts cats who want to bat or grab or bite," says Dr. Schoeffler. "

Seeing strangers in costumes and hearing the front door open and close can frighten the most contented feline. Before the evening festivities begin, usher your cat into a bedroom or another room away from the party scene.

Offer plenty of amenities: a comfy bed, food and water bowls, a favorite toy. Mute the holiday noise by turning on the television or radio in that room and close



If your cat enjoys costumes, make sure his doesn't obscure vision or restrict movement, and has no chewable pieces. Be sure to supervise him while he wears it.

the door. This offers two benefits: you know where your cat is at all times, and you prevent him from darting out the front door and getting lost or, worse, struck by a car.

"Cats are much smarter about hiding than dogs, who are more protective of their environments," says Dr. Schoeffler. "If you know that Halloween can cause anxiety or panic in your cat, take precautions by talking with your veterinarian ahead of time. Depending on the situation, your veterinarian may prescribe anti-anxiety medication."

Also ask your veterinarian about the use of over-the-counter calming products for your cat, such as Feliway or Rescue Remedy.

**Reconsider Costumes.** Some outgoing dogs are natural born clothes hounds who love the attention they get wearing a Halloween costume. Cats, not so much. Feline dignity is at stake. "You really need to pay attention to your pet's body cues and respect him if he displays any abnormal behavior signs while in a costume, such as not moving, rolling or pawing at the costume," says Dr. Schoeffler.

Costumes can impair a cat's vision and mobility, press whiskers against his face and potentially contain small pieces that he can swallow and choke on. Instead, get your cat into the Halloween spirit by switching out his collar with a Halloween-themed one. Make sure that holiday collar contains an identification tag and that your cat has been microchipped to improve the chances of being reunited with you should he get lost.

Finally, here is sweet news about chocolate inside Halloween candy. Chocolate perennially ranks as the No. 1 danger to dogs, but cats lack sweet-tooth receptors and generally ignore this cache of candy. ❖

**VIRUS...** (continued from cover)

feline upper respiratory tract diseases, and most cats are exposed to the virus at some point, usually as kittens.

John Parker, BVMS, Ph.D., Associate Professor of virology at Cornell University College of Veterinary Medicine's Baker Institute for Animal Health, is one of a handful of specialists in the country studying FCV. He has received a \$22,500 one-year grant from Winn Feline Foundation to research susceptibility and resistance to the virus.

"The ultimate goal would be to find ways to completely prevent it. But at the moment, we're working on identifying cats who might have an in-built resistance," Dr. Parker says. "If there were cats out there who were resistant, it'd



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be important to know. For example, if you're a cat breeder and your cats by chance are resistant to FCV, it may make a difference in the cats you want to breed."

The idea that certain cats might be resistant traces back to research con-

**The ultimate goal of our study** would be to find ways to completely prevent feline calicivirus, says virologist John Parker, BVMS, Ph.D., at Cornell. "But at the moment, we're working on identifying cats who might have a built-in resistance."

ducted elsewhere. British Blue shorthair cats in that study didn't develop the disease, despite exposure. But the finding is highly speculative, as it wasn't the point of the study. "Just to be perfectly clear — we don't yet know that there are cats out there who are completely resistant to FCV," Dr. Parker says.

**DNA Collection.** He and colleagues are collecting DNA from cats' blood samples at the Cornell University Hospital for Animals — leftover samples from unrelated tests that owners gave permission to use. They hope to analyze 150 samples in a year. Based on initial observations, they expect to find genetic differences in the cell surface protein where the calicivirus attaches. It's called feline junctional adhesion molecule A, or fJAM-A for short.

If it turns out that gene variations will predict whether a cat is susceptible or resistant to the disease, Dr. Parker hopes that someday a genetic test could be developed to identify resistant cats.

Dr. Parker, who had worked as a private practice veterinarian, became

## THE SIGNS FROM MILD TO SEVERE

Symptoms are generally mild in most cases of feline calicivirus infection:

- ◆ The cat may have a stuffy nose.
- ◆ He may sneeze.
- ◆ His appetite may be a little off.
- ◆ His eyes may water.
- ◆ He may have a slight fever.

In more serious cases, however, especially in kittens:

- ◆ The cat may have difficulty breathing.
- ◆ Ulcers can erupt in the nose or mouth, prompting drooling.
- ◆ Some strains of the virus can lead to painful joints and limping.
- ◆ The cat may be depressed and lethargic.

If your cat should contract the disease, treatment is basic nursing care. Clean the eyes and nose with a moistened tissue to remove debris. Separate your pet from other cats, and keep him comfortable. His water and food bowls should be clean and available only for him, not shared. If he has an ulcer on his tongue and is not eating normally, make food tempting. Place sardines in a food processor to liquidize and mix with regular food warmed to 86 degrees Fahrenheit.

"Cats use their nose to detect smell and they like strong-smelling foods. If they can't smell, they can't eat," says Dr. Parker. "Like the common cold, there's nothing that's really going to help [cure it]. But it's usually going to get better."

Symptoms usually clear up quickly on their own. Veterinarians prescribe antibiotics only for very ill cats. Diagnosis includes dabbing a cotton swab in the ear, eye or mouth to collect discharge for testing.

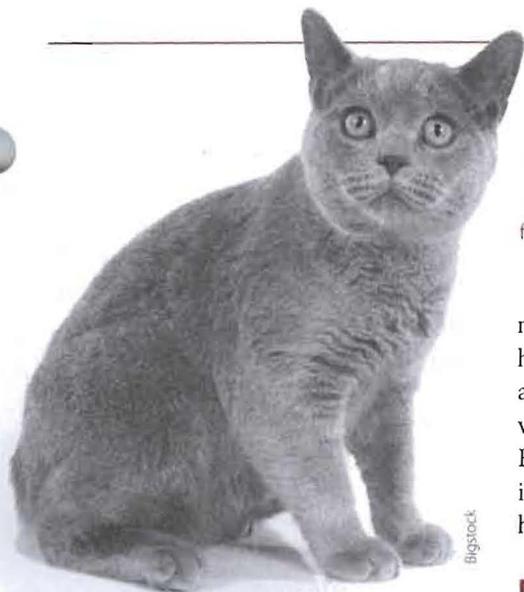
## SMALLER THAN A DOT

**This is a rendering of the surface of a feline calicivirus** using a procedure called atomic resolution.



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The diameter measures about 35 nanometers. With a nanometer equal to about one billionth of a meter, which is about 3 feet, that roughly translates to the virus being much, much smaller than a pencil dot.



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**The idea that certain cats might be resistant to feline calicivirus** originated from a study in which British Blue shorthairs didn't develop the disease despite exposure, but the finding was only speculative.

number of highly virulent isolates we had to examine, we couldn't distinguish a genetic pattern that could tell us if the virus was virulent or not. Individual FCV strains differ by about 20 percent in their genome sequence. These viruses have a high rate of mutation."

**Daunting Problem.** Taking the big-picture view, Dr. Parker says the virus typically isn't so much of a problem for an individual cat who becomes infected. It's a daunting problem for the feline world at large. That's because the virus can persist and mutate very quickly. Sometimes it will make a change that leads to a more dangerous virus.

About those vaccinations for FCV: They don't provide total protection from infection in all cats. The vaccine reduces its severity, should a cat develop the full-blown disease. "It's not that the vaccine is useless," Dr. Parker says. "It's just that it's not completely protecting against infection."

There are various ever-evolving strains of calicivirus, which can mutate even within an infected cat. Some cats

carry the virus but never become sick or show any outward symptoms at all, and vaccination makes them less likely to spread infection.

"The message I would probably give to owners is don't panic. FCV is not ebola virus," Dr. Parker says. Owners have relatively little to worry about, especially when, in most cases, the virus causes no more serious effects than a simple cold. ❖

## WHY SHELTERS STRUGGLE WITH THE DISEASE

Cats who become severely ill with feline calicivirus are often concentrated together in shelters. They may be unvaccinated and have other diseases that make them susceptible to FCV. The highly infectious virus then spreads from animal to animal.

Instead of one cat being sick, suddenly shelter officials are faced with dozens of cats sniffing and sneezing. Up to 100 percent of cats in a shelter may become affected, and occasionally high mortality — 40 to 60 percent — results from virulent strains.

The virus can cause pneumonia, making it hard for the ill cat to breathe, and he may require hospitalization. In addition, infected cats often don't become totally free of the virus and may become carriers, infecting other cats who contract it through their noses, eyes or mouths.

Overwhelmed shelters may elect to euthanize exposed cats. Quarantine can prove impractical because it could require a vaccinated cat with severe disease to be separated for months. A highly unusual form of FCV can spread internally in cats, causing infection of the liver and death, but this is a rarity.

interested in the virus when reports of virulent systemic FCV emerged. "As a virologist, I was interested in how a normally mild virus disease could become so virulent. So I decided to start working on the virus as a new faculty member at Cornell."

The puzzle at the time was: Why are some forms so extremely virulent? Research led to clues, one being that the more severe strains grow faster in the lab. "There is a correlation between rapid growth of viruses in tissue culture and virulence in cats. We looked for a genetic signature that would be indicative of virulence, but because of the high background variation in genome sequence of FCV strains and the small

## HOW THE PERSISTENT FCV SPREADS

The major route of feline calicivirus transmission is via the air, but the virus also survives on surfaces, living in moist, dark environments. A European study published in the *Journal of Feline Medicine and Surgery* says the virus can persist in the environment for a month and resists many common disinfectants. It's spread via water dishes, food bowls, floors, bedding, direct contact and sneezes.

**The recommended disinfectant:** Add one-half cup of household bleach to one gallon of cold water to wipe contaminated surfaces. But even if 99.9 percent of the virus is killed, that remaining 0.1 percent is enough to cause an infection, Dr. Parker says.

**The best advice:** Wash your hands after petting cats other than your own to reduce chances you'll pass on the virus to your cat, and, of course, vaccinate him.

**WEIGHT...** (continued from cover)

faces or throats. “When cats demonstrate clinical signs of brachycephalic airway syndrome, it is almost always related to their nostrils and occasionally their soft palates,” Dr. Flanders says. “Typically, surgical treatment can do wonders for these pets, and they do quite well afterward.”

Himalayans, Burmese, Persians and Exotic Shorthairs — a shorthaired version of Persians — are among brachycephalic breeds, but not all will necessarily suffer from the syndrome, also known as congenital obstructive upper airway disease. Owners’ understanding of the underlying causes



**Weight management** is the best way to avoid respiratory problems in brachycephalic breeds like this Burmese.

and symptoms can help in both prevention and timely treatment.

Although some people find the flattened faces of brachycephalic cats endearing, discretion should be used when breeding them.

Those who require surgery to correct their breathing problems should not be used for breeding. Some veterinarians recommend spaying or neutering them

at the time of the surgical correction of the brachycephalic abnormality.

The compressed facial structures of brachycephalic breeds lead to increased resistance in their airways. The more severe or numerous abnormalities a cat has, the more severe the symptoms are likely to be. They can include:

- ◆ Breathing with an open mouth
- ◆ Coughing and gagging
- ◆ Vomiting
- ◆ Tiring easily
- ◆ Fainting or collapsing after rigorous activity
- ◆ Snorting
- ◆ Turning blue
- ◆ Increased susceptibility to heat stroke
- ◆ Difficulty swallowing
- ◆ Hunched body posture as they try to inhale
- ◆ Eye and dental problems
- ◆ Infections in facial skin folds

**SOME AIRWAY PROBLEMS HAVE A DIFFERENT BASIS**

In some cases, upon inspection, suspected cases of brachycephalic airway syndrome turn out to be related to other issues, such as upper respiratory system infections, foreign objects obstructing the airway or allergic reactions that cause the airway to swell.

Brachycephalic airway syndrome is diagnosed based on a cat’s breed, facial shape, clinical signs and the results of a physical examination. Stenotic nares, or narrowed nostrils, are often diagnosed on visual inspection alone.

However, abnormalities that occur within or beyond the mouth, such as an elongated soft palate, hypoplastic trachea or everted laryngeal sacculles, can require heavy sedation or full anesthesia to perform the tests required to diagnose them. These tests include laryngoscopy and tracheoscopy, in which a small fiber-optic scope is inserted through the mouth to examine the larynx and trachea.

Veterinarians typically grade brachycephalic syndrome on a four- or five-point scale, with zero meaning the cat exhibits no symptoms and four to five meaning the cat has such difficulty breathing that the condition is potentially life threatening.

Cats with brachycephalic airway syndrome understandably have an increased risk in undergoing general anesthesia. Blood work and chest X-rays might be recommended before the procedure to evaluate general health. If a cat must undergo general anesthesia for diagnosis, the veterinarian will likely recommend that surgical correction be performed at the same time.

If not corrected, brachycephalic airway syndrome can eventually lead to secondary problems, such as airway inflammation and strain on the heart. Most cats are diagnosed as young adults, often by 3 years of age. The structural abnormalities in a cat’s face and head can include:

**Stenotic nares**

These severely narrowed nostrils are the most common defect in brachycephalic cats. The narrowed openings restrict the amount of air that can enter through the nose. Stenotic nares can be corrected surgically by removing a piece of tissue from the nostrils to allow better airflow.

**Elongated soft palate**

Together, stenotic nares and elongated soft palates comprise the vast majority of abnormalities in brachycephalic cats. In cats with elongated soft palates, the soft part of the roof of the mouth is simply too long for the length of the mouth. The extra soft palate tissue blocks the entrance to the trachea, or windpipe, at the back of the throat.

An elongated palate can be surgically shortened to remove the excess tissue.

**Hypoplastic trachea**

A cat with a hypoplastic trachea has a narrower-than-normal windpipe. In contrast with other causes of BAS, nothing can be done to correct a hypoplastic trachea, Dr. Flanders says.

**Everted laryngeal sacculles**

This often occurs in addition to another abnormality. The added effort that cats with BAS must devote to breathing can cause these small pouches inside the larynx to turn outward or be sucked into the airway. The everted laryngeal sacculles then further obstruct air flow. Treatment entails surgical removal of the sacculles.

Anti-inflammatory medications and oxygen therapy are often used for short-term relief of airway inflammation and breathing difficulties. However, surgery is eventually required to correct the underlying anatomical abnormalities. The cost varies from \$500 to \$3,000, depending on the hospital and extent of problems. "Some cases require only relatively minor outpatient procedures, but others are more severe," Dr. Flanders says.

The earlier problems are detected and treated, the better the prognosis. Cats with only one defect, such as stenotic nares, tend to fare better than those with multiple problems.

As with any surgical procedure, patients need to be monitored closely afterward. Because surgery results in swelling, airways can be even further narrowed during recovery, so the cat's breathing and heart rate will be closely monitored, along with other key health indicators.

**Intervention Efforts.** In some cases, intervention might be required to ensure that a cat receives adequate oxygen during recovery. Such interventions can include a nasotracheal catheter in which a tube is passed into the trachea via the nasal passage or, in more serious cases, a tracheostomy, which is an incision in the windpipe.

Veterinarians administer medication to control pain for several days after surgery. Antibiotics are usually prescribed only if there is an ongoing infection such as pneumonia. A follow-up exam will be scheduled two weeks after surgery to



Veterinary Practice News

**Stenotic nares, or narrowed nostrils,** limit the intake of oxygen. They are often diagnosed on visual inspection alone.

evaluate healing. Meanwhile, the veterinarian might recommend restricting your cat's exercise or activity.

A successful surgery will result in better breathing, higher energy levels and improved sleep. However, complications can occur. In some cats, surgery to open the nostrils can cause collateral damage to surrounding tissue and result in the collapse or permanent narrowing of the nostrils. Surgery to shorten a cat's soft palate can result in a soft palate that is too short. In these cases, the cat might suffer from reflux of food into the nasal cavity, which can cause chronic nasal infection. However, such complications are relatively rare, and working with an experienced veterinary surgeon can help ensure the best possible prognosis.

In the past 10 to 20 years, surgical options for the procedures used to correct brachycephalic abnormalities have greatly improved outcomes, Dr. Flanders says. For example, many veterinarians now use lasers, rather than traditional scalpels, to trim nasal passages and the soft palate. This results in less swelling and bleeding, and reduces recovery time.

Younger cats diagnosed with brachycephalic airway syndrome tend to have a better prognosis than older cats, as the risks associated with undergoing surgery increase with age. Timely surgical correction can be tremendously effective, however, with many cats seeing improved quality of life for many years. ♦

**THE ORIGIN OF 'BRACHYCEPHALIC'**

The term brachycephalic is Greek for "shortened head." Brachycephalic cat breeds are characterized by shortened facial bones that give the face and nose a flattened, pushed-in appearance. Because of the shorter bone structure, brachycephalic cats often have a proportionately excessive amount of soft tissue in and around their throats and noses.



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**Himalayans are among brachycephalic breeds,** but not all will necessarily suffer from the syndrome, also known as congenital obstructive upper airway disease.



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.

### 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).

### COMING UP ...

❖  
SAFE CAT FOOD  
INGREDIENTS

❖  
YOUR CAT'S  
AGE IN HUMAN  
YEARS

❖  
HOME HOSPICE  
CARE

❖  
TOXIC HOLIDAY  
PLANTS

## Should a Watery Eye Be Cause for Concern?

**Q** We have a 4-year-old female tuxedo-patterned kitty named Puff whose right eye occasionally (every few months or so) gets a little "weepy." It stays that way for a week or so before she gets it cleaned up and then it's fine until the next occurrence. Is this something we should be concerned about?

**A** Thank you for contacting me about Puff's problem. Ocular discharge is common in cats, and the causes of this unsightly and inconvenient phenomenon vary from relatively benign processes to serious diseases. It is important that you discuss your concerns with Puff's veterinarian, as he/she is best prepared to address her health issues, but perhaps my pointing out a few key points would be helpful.

The first is the cat's age. Younger cats are generally more susceptible to a variety of upper respiratory infections by both viruses and bacteria due to their immature immune systems, and it is relatively common for them to have discharge from their eyes in association with these infections.

Viral infections such as feline calicivirus and feline herpesvirus and bacterial infections such as *Chlamydia* (not to be confused with the sexually transmitted disease!) can cause symptoms, including discharge from the eyes and/or nose. In many cases, cats who are affected with these organisms may experience chronic, intermittent discharge from the eyes, even if they clear signs of overt disease.

Another thing to consider is the vaccination status of your kitty. There are effective vaccines for a number of causes of upper respiratory infections in cats (including feline calicivirus and feline herpesvirus). Although they may not be 100 percent effective (few vaccines are), they can significantly decrease the likelihood that a cat will become infected, and if he does, they may decrease the severity of the disease and the likelihood that he will infect other cats. (Be sure to see this issue's cover story on feline calicivirus.) I certainly recommend discussing an appropriate vaccina-

tion plan with Puff's veterinarian, whether this current problem is associated with an upper respiratory infection or not.

The appearance of the discharge and whether it is coming from one or both eyes can also provide clues to its cause in some cases. Generally speaking, clear, thin discharge is less concerning than yellowish, thick discharge, as the latter may suggest either a primary bacterial infection or a bacterial infection secondary to another process (such as a viral infection).

Bacterial infections may respond to antibiotics, while viral infections do not. Discharge from both eyes may suggest a diffuse, systemic problem such as a viral infection, while discharge from one eye may be seen in association with processes that are more localized (i.e., to one eye) such as a blocked nasolacrimal duct (this normal structure drains tears from the eye to the tip of the nose) or a foreign body such as plant material lodged in the eye. Allergies to inhaled substances can sometimes cause ocular discharge in cats, but in these cases the discharge would be expected from both eyes.

It is also important to look at other structures in the eye to get an idea of the general health of this important structure. Any cloudiness of the cornea (the clear covering of the eye), internal chambers of the eye or the lens (which can be seen through the pupil) or redness/swelling of the conjunctiva (pink tissue surrounding the eye) should prompt immediate attention and consultation with a veterinarian.

Other signs that should prompt immediate consultation include those that suggest discomfort of the eye, such as keeping the eye either completely or partially closed, avoiding light and/or touching the region around the eye. These signs may indicate *corneal ulceration* (damage to the cornea) and/or *glaucoma* (elevated pressure within the eye), and both are emergencies requiring immediate attention.

I hope that this is helpful. From your description, it does not sound like the situation is emergent, but it would be good to discuss these issues with Puff's veterinarian for her well being, that of other cats and your peace of mind. Please let me know how things are going, and give Puff my most sincere regards.

—Best regards, Elizabeth ❖

#### CORRESPONDENCE

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