

THIS JUST IN

## Injection to Reduce Feline Fertility

*This research may help with feral populations*

The Cincinnati Zoo's Center for Conservation and Research of Endangered Wildlife recently completed a three-year study of a novel non-surgical sterilization technique in six female domestic cats.

The cats were given an intramuscular injection of anti-Müllerian hormone transgene. This gene therapy strives to reduce fertility by acting on the development of follicles. Test matings showed no pregnancies developing after the treatment. Breeding stimulated ovulations did not occur.

The single injection method of sterilization is less stressful to the cats, less expensive than surgery, and eliminates recovery time, making it helpful for feral cats. This would not be ideal for pets, however, because the cats still show signs of heat cycles.

More studies need to be done, including those focused on understanding the effect of this technique on pyometra and mammary cancer, as sex steroid hormones are not directly influenced by this treatment. ■

*Vansandt, L.M., et al. "Durable contraception in the female domestic cat using viral-vectored delivery of a feline anti-Müllerian hormone transgene." Nature Communications, 14, 3140 (2023).*

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## Worries When Cats Drool

*Drooling is a heads up to pay attention to your cat*

Drooling in cats isn't always normal, but it isn't always cause for concern either. This behavioral manifestation may occur when a cat is happy and relaxed or stressed and anxious. Otherwise, drooling may indicate something is wrong.

### Behavior

"Many cats purr when their owners pet them, and some of those cats also drool. One theory as to why they drool while purring is that the kitty may be associating the comfort of interacting with the owner with the memories of feeding time when she was a kitten (i.e., due to classical conditioning)," says Pamela J. Perry, DVM, PhD, behavior resident at the Cornell University College of Veterinary Medicine.

"Although endorphins may be involved, there are no studies, to my knowledge, that have investigated the physiological reason for drooling while purring. In any case, unless the cat has an underlying medical issue (e.g., dental disease), I always attribute the drooling to being very relaxed and content," says Dr. Perry.

### More Worrisome Reasons

A host of other far less benign things can cause drooling in cats, including:

- ▶ **Dental diseases.** Consider gingivitis, stomatitis (inflammation in the back of the mouth), periodontal disease, and painful teeth due to a fractured tooth or tooth resorptive lesions.
- ▶ **Oral trauma.** This may occur when electrical cords or sharp objects are bitten or a foreign body, like string that gets wrapped around the base of the tongue, is ingested.
- ▶ **Eosinophilic granulomas complex.** This painful, inflammatory condition can occur in and around the mouth.
- ▶ **Neoplasia.** Cancer in the mouth, especially older cats.
- ▶ **Ulcers.** Some examples include



*Drooling can be a sign of a relaxed, content cat like this one. It's important to note the context and watch for drooling at other times.*

uremic ulcers in cats suffering from kidney failure and oral ulcers caused by calicivirus, one of the upper respiratory complex infectious agents in cats.

▶ **Toxins.** Caustic substances, some mushrooms, some toads, and permethrins, which are agents commonly used in dog flea and tick products. These are potentially life-threatening situations.

▶ **Infectious agents.** Culprits include upper respiratory disease agents (herpesvirus, calicivirus, chlamydia, mycoplasma, bordetella), bartonella (a bacteria that is spread by fleas frequently resulting in severe gingivitis), and rabies.

▶ **Gastrointestinal distress and nausea.**

▶ **Neurological disease.** This includes brain tumors, bacterial, viral, fungal, or protozoal infections of the central nervous system, and portosystemic shunts (see "Brain Problems" later in this issue).

### Bottom Line

Many causes of drooling in cats can be successfully treated, and the sooner the underlying cause is treated, the sooner your cat will feel better. ■

## New Drug To Help With Anemia In Renal Failure

*Varenzin-CA1 may be an option for cats battling this disease*

The Federal Food and Drug Administration (FDA) conditionally approved Varenzin-CA1 (molidustat oral suspension) for cats with nonregenerative anemia due to chronic kidney failure. This type of anemia is secondary to renal failure. Chronic kidney disease is a common ailment of senior cats.

In cases of anemia related to renal failure, the cat's bone marrow is unable to keep ahead of the loss of red blood cells due to their aging and being damaged. When production falls behind, the cat becomes anemic, which means she doesn't have enough red blood cells to provide the necessary oxygen to her cells. This lower level of production is often due to a low level of erythropoietin, a hormone that stimulates red blood cell production.

Treatments for anemia associated with kidney disease revolve around blood transfusion, giving extra iron so that any red blood cells produced are healthy, and using erythropoietin supplements to encourage production. There are no erythropoietin supplements approved for cats, but Varenzin-CA1 stimulates production of erythropoietin in your cat's kidneys. Increased levels of erythropoietin lead to increased production of red blood cells.

Currently, Varenzin-CA1 has conditional approval. That means it is considered safe for use in cats and is expected to be effective. Conditional approval means the drug can be used now, under veterinary prescription, to treat ill cats while the company continues to work toward full approval. The approval is given for a period of one year with the possibility of four renewals.

The initial study that has been completed had 23 cats with nonregenerative anemia related to kidney disease. Further studies will involve more cats.

Varenzin-CA1 is a liquid medication that is administered to cats once a day. It can be given for 30 consecutive days, followed by a week long pause before reinitiating therapy. ■

### Signs of Kidney Disease

- ▶ Lethargy
- ▶ Weight loss
- ▶ Poor hair coat
- ▶ Poor appetite
- ▶ Greater urine output
- ▶ Increased thirst

## New Weapons Against FOSCC in Cats

*Studies are showing progress against feline oral squamous cell carcinoma, which can be aggressive.*

Feline oral squamous cell carcinoma (FOSCC) accounts for about 10% of all feline tumors and is the most common cancer of the mouth in cats. While slow to metastasize, it is aggressive locally and has a grave prognosis even with surgery and/or radiation therapy. Three months is the average survival time after diagnosis.

Dr. Erin Dickerson and her team at the University of Minnesota looked at a drug that disrupts the mechanisms that feed cancer cells. Since cancer cells are rapidly growing, they have a high nutrient requirement.

Using a drug currently for humans with head and neck cancers, the goal was to interfere with lactic acid transport between tumor cells and fibroblasts, essentially trying to "starve out" the cancer cells. The drug shows promise for cats.

Two other studies are using light therapy to fight these cancers. Light or photodynamic therapy has two components. One is the light itself. The second is to use a light sensitive chemical that reacts with oxygen when exposed to the special light. The oxidative reaction is toxic to cancer cells.

Utrecht University researcher Dr. Sabrina Santos Oliveira is using nanotechnology to get the reactive chemical more precisely to the targeted cancer cells. Dr. Michelle Oblak, from the University of Guelph, uses a different type of nanoparticle to do the same precision targeting of the cancer cells. Both methods reduce the damage to surrounding healthy tissues. More work needs to be done, but this work is encouraging. ■

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# Feline Stomach Cancer

*Lymphoma is the most common type of gastric cancer in cats—other types are rare*

**A** cat with stomach cancer usually does not eat well, has weight loss with vomiting and diarrhea, and is usually lethargic. These symptoms are, however, nonspecific, as they can be caused by other problems, including liver disease, kidney failure, and inflammatory bowel disease. Regardless of their cause, cats with these clinical signs should be seen by a veterinarian promptly.

“The most common stomach cancer we see in cats is lymphoma. Other types of stomach tumors are rare and include leiomyosarcoma, adenocarcinoma, mast cell tumors, plasmacytomas, carcinoids, and benign polyps. To differentiate the type of stomach tumor, an ultrasound-guided fine-needle aspirate and cytology or endoscopic or surgical biopsy with histopathology must be performed,” says Skylar R. Sylvester, DVM, assistant clinical professor of oncology in the department of clinical sciences at Cornell University’s College of Veterinary Medicine.

## Diagnosis

Bloodwork and a thorough physical exam are important initial steps in finding the cause of your cat’s illness. Your veterinarian may be able to palpate a mass in the abdomen or a thickened stomach wall. Radiographs and ultrasound also may show abnormal findings. For a diagnosis, a biopsy via endoscopy or surgery is necessary. Isolated masses are more likely to be adenocarcinomas, while large areas of thickened tissues tend to be lymphomas.

## Prognosis and Treatment

Adenocarcinomas are often aggressive and have a guarded prognosis. Most cats diagnosed with this cancer are over 10 years old. Siamese cats have a genetic predisposition.

Leiomyosarcoma is an aggressive stomach and intestinal cancer that originates in the muscles of the gastrointestinal tract. This also has a poor prognosis due to its tendency to metastasize throughout the abdomen and/or to the lungs.

Cats have two basic types of gastrointestinal lymphoma, neither



*In order to differentiate the type of cancer your cat has, a number of diagnostics will be needed.*

of which are associated with feline leukemia virus (FELV) infections. Small cell lymphoma tends to be a slowly progressive cancer and often responds to chemotherapy that can be given at home. About 90% of cats with this form respond to treatment with prednisolone, which is a steroid, and chlorambucil, which is an oral chemotherapy drug. Many cats tolerate this treatment quite well. Survival times are up to four years.

Large cell lymphoma is more likely to occur in the intestines and is a nasty cancer. Surgery followed by adjuvant systemic chemotherapy may give your cat some quality time, but the prognosis is not good.

## Chemotherapy

“Chemotherapy is the most effective treatment for lymphoma. There are two types of lymphoma seen in the gastrointestinal tract of cats, small-cell low-grade lymphoma and large-cell high-grade lymphoma,” says Dr. Sylvester. “They are treated with different types of chemotherapy and have different prognoses.

“Cytology or biopsy of the cancer is needed to differentiate between the two types. The treatment for small lymphoma is oral chemotherapy given at home, and cats can live one to two years or more with this treatment. Large-cell gastric lymphoma is a much more

aggressive cancer, and cats are treated with front-line multi-agent injectable and oral chemotherapy, with survival often less than six months with treatment. However, there are some cats with large-cell lymphoma that achieve a complete remission with chemotherapy and can survive longer,” says Dr. Sylvester.

Deciding on a treatment protocol will need to be a decision individualized to your cat and her exact cancer. If she can’t be pilled without major stress to you and her, the options are limited. If she has large cell lymphoma but is massively stressed by the trips to the veterinary clinic for treatment, you may choose palliative care.

## Prevention

Vaccinating against FELV is wise. Keeping your cats indoors to limit exposure and testing any cats or kittens that are added to your family makes sense.

The association between *Helicobacter* infections and gastrointestinal problems is currently being considered in humans and dogs. A study from the Massachusetts Institute of Technology found a positive association between *Helicobacter* infections and cats with gastric lymphoma. While the bacteria may also be found in some healthy cats, certain species may contribute to the development of this cancer, and more research needs to be done to determine whether this is the case.

## Bottom Line

If your cat shows any of the signs mentioned, such as vomiting (other than obvious hairballs), diarrhea, especially if the stool is black from digested blood (melena), doesn’t want to eat, and acts lethargic, schedule a veterinary visit. These signs may be caused by a variety of health problems, all of which will benefit from early diagnosis and treatment. ■



*Skylar Sylvester, DVM, is an assistant clinical professor in medical oncology at Cornell University’s College of Veterinary Medicine*

# Feline Intestinal Blockages Are Bad News

*Surgery may be required to save your kitty*

**Y**our cat is lethargic, doesn't want to eat, and may be vomiting or having diarrhea. And his belly hurts. One potential cause is an intestinal blockage.

Intestinal obstructions happen when something that your cat can't digest gets stuck in the gastrointestinal (GI) tract. Just like a traffic jam, the foreign object prevents food and other things your cat may have eaten from moving through.

This quickly becomes unpleasant for the cat, and eventually the pressure can cut off circulation to the intestinal tissue and cause it to die. Untreated obstructions can be fatal.

The most common offenders are hairballs and fuzzy cat toys, says James Flanders, DVM, board-certified veterinary surgeon and associate professor emeritus at Cornell University's College of Veterinary Medicine.

"String, yarn, and tinsel are not as common but are much more concerning," says Dr. Flanders. "String foreign bodies can become lodged at one end (around the tongue or as a wad in the stomach). The trailing end of the string will move into the intestine and the intestine will try very hard to move the string.



Linear objects like this ribbon put cats at risk if they are swallowed, so it's best to keep these away from your cat.

## Preventing Intestinal Blockages

*Here are Dr. Flanders' practical tips for how to prevent obstructions:*

- ▶ Keep cats, especially long-haired cats, brushed and combed as much as possible to prevent hairballs.
- ▶ Avoid small fuzzy cat toys that are easy to swallow.
- ▶ Keep yarn, thread, and tinsel away from cats.

If the string stays in place long enough it can actually cut through the wall of the intestine and cause peritonitis, a potentially fatal situation."

Hair ties and rubber bands are also potentially problematic, especially if your cat eats them frequently.

## Diagnosis

As always, Step 1 is to take your ain't-doin'-right cat to the veterinarian's

office. Your veterinarian will start with a physical exam to get an idea of your cat's overall health and palpate his abdomen. They will also look in your cat's mouth and under his tongue to check for any strings or other linear objects stuck there.

Be sure to tell your veterinarian about anything that you have seen your cat eat recently that wasn't food, or anything suspicious that he was playing with, even if you didn't witness him gulp it down.

Radiographs (x-rays) can often show telltale signs of an obstruction. In some cases, the veterinarian may give your cat barium via his mouth and then take a series of x-rays to see how it moves through his GI tract. An ultrasound of the abdomen may also be helpful.

Your veterinarian will likely also recommend bloodwork both to rule out other potential causes for your cat's symptoms and to see how his organs are doing. Bloodwork can reveal signs of infection or organ failure that may occur as an obstruction progresses.

## Exploratory Surgery

Most intestinal blockages can only be treated with surgery to remove the foreign body. This is often an emergency, because leaving the blockage in place can cut off the blood supply to the intestines and cause them to necrose (die) or perforate.

Your veterinarian will recommend surgery if the radiographs show a definite obstruction or if an obstruction is suspected and no other cause for your cat's symptoms has been identified. This surgery is often referred to as an "exploratory" surgery because the surgeon doesn't know exactly what he or she will find.

Depending on the cause of the obstruction, your cat may have several incisions into his intestines. Discreet items like a coin or cat toy can often be removed in a single piece, but long or



James Flanders, DVM, emeritus associate professor, section of small animal surgery at Cornell University's College of Veterinary Medicine.

amorphous items such as a string or large hairball may need to be cut into sections and removed at multiple points.

Once the primary blockage has been removed, the surgeon will examine your cat's entire intestinal tract, feeling for any smaller items that could cause trouble, and evaluating tissue health.

Necrotic tissue will be removed so that your cat is only left with healthy intestinal tissue.

If your cat's intestines were perforated because of the obstruction, the entire abdomen will be flushed thoroughly to remove intestinal contents that seeped out. Food bits and enzymes do not belong loose in the abdominal cavity, and leaving them there can cause severe infections such as peritonitis and sepsis, even leading to death.

Once everything has been cleaned up and your veterinarian is satisfied that all potential problems have been removed, they will suture your cat back up.

### Medication Support

Most veterinarians will give injectable

antibiotics during exploratory surgery to safeguard against any intestinal contents that might leak out. Your cat may also stay on antibiotics after the surgery if he showed signs of infection or your veterinarian is concerned about one developing.

Pain meds should also be expected. Your cat will receive injectable pain medications during the procedure, and then will usually be on them for the first few days after surgery to keep him comfortable.

IV fluid therapy before, during, and after surgery will help to keep your cat hydrated and can maintain electrolytes and blood pressure.

### After Care

Your veterinarian will likely want to keep your cat in the hospital overnight after his surgery. This allows the team to monitor him closely during recovery, and to administer additional medications as needed. He will be given small meals and closely watched for any vomiting and to make sure that he is pooping normally.

"Cats usually recover fairly well from simple intestinal surgery, or a single obstruction without peritonitis," says Dr. Flanders. "Their appetite comes back within one to three days in uncomplicated cases." Your cat will be able to go home once he is eating on his own and pooping normally.

More severe cases, particularly when the surgeon must remove sections of the intestines due to compromised tissue, have a more guarded prognosis. Ill cats will be kept in the hospital for several days for supportive care. In rare cases, incisions can fail because of weak tissue and the veterinarian may have to do a second surgery.

When your cat comes home, follow discharge instructions carefully. Your veterinarian may have specific criteria for what your cat can eat and how often, and your cat's activity should be limited so his incision can heal. Stay in touch with your veterinarian to give updates on how your cat is doing. ■

## What You Should Know

### *My Cat Ate Something: Now What?*

If you see your cat eat something foolish, such as a string, toy, or other non-edible object, call your veterinarian. For some objects, your veterinarian will be able to induce vomiting in the hospital to see if your cat can throw the item back up. This must be done soon after ingestion, so that the item is still in the stomach.

Inducing vomiting is often not an option, though. For example, trying to vomit up a string could cause your cat more harm than letting it pass naturally. Instead, your veterinarian will want to examine your cat to see if the string is lodged under his tongue. Some of these cats may be candidates for immediate surgery.

If inducing vomiting is not an option, monitor your cat closely over the next week or so. Keep track of his attitude, activity level, eating habits, defecation habits, and any vomiting and notify your veterinarian immediately if you have any concerns in this regard. In some cases, your veterinarian may want to track the foreign body's progress through your cat with x-rays and/or ultrasound examinations.

## Break Up Those Hairballs

A cat heaving up slimy hairballs on your carpet is gross, but those hairballs can be harmful if they build up in the stomach for a long time and then try to leave via the other end. Regular grooming and using hairball prevention products can help to minimize hairball buildup in your cat's stomach and prevent obstruction.

One of Dr. Flanders' strangest cases involved a cat, hairballs, and a ferret. "The most unusual cat-related obstruction was actually in a ferret," says Dr. Flanders. "The ferret had three intestinal obstructions at the same time, and they all turned out to be hairballs. The hair was much longer than the ferret's hair, and upon further questioning of the ferret's owner, we found out that the ferret loved to groom their pet cat! So, they turned out to be cat hair ball obstructions in a ferret!"

Cats who groom each other can also potentially experience this problem, particularly if one of them is a long-haired cat.

## What Are the Strangest Obstructions You've Seen?

Cats will be cats, and sometimes they do weird things. We asked Dr. Flanders what his strangest exploratory surgeries revealed.

"Cats are nowhere near as interested in eating odd things as dogs are, so they tend to stay away from large, hard items," he said. "However, I do remember removing a plastic toy soldier, and in another cat, a baby sock. We assumed in both cases they must have had milk or food stuck on the surface in order to make them interesting to a cat.

"An unusual presentation caused by a foreign body was an ingested nickel that got through the stomach but got caught in the small intestine and stopped at a perfect location to block the bile duct. So, the cat appeared jaundiced in addition to experiencing vomiting."

# Brain Lesions and Tumors

*Circling, seizures, vision problems, and other neurological difficulties are all potential signs*

Signs of a brain lesion may be dramatic, like a full-blown grand mal seizure, or subtle, like a change in movement or behavior. Other signs might make you suspect that your cat has a brain tumor, but these may be due to something as simple as an ear infection. If you notice something is wrong, though, prompt veterinary consultation can make a huge difference.

“Most commonly, owners will notice a change in behavior, what we refer to as ‘dull mentation.’ Additionally, many cats will show other clinical signs such as circling, or abnormal gait or seizures, depending on the location of the lesion,” says Yael Merbl, DVM, DECVN, assistant professor of neurology in the department of clinical sciences at Cornell University’s College of Veterinary Medicine.

Neurologic signs may come on abruptly or gradually, with your cat starting to show changes in gait over time, having trouble jumping up on the couch, or showing some signs of vision loss, such as walking into furniture.

Sometimes it is just dullness, as Dr. Merbl says, with affected cats no longer wanting to play, not reacting as they normally would to a tossed treat, or failing to come when you call. Of course, every cat can have an off day, but if this happens more than once in succession, assume something is wrong and have your cat checked by a veterinarian.

## Older Cats

Cancerous brain tumors can be a concern, especially for middle aged to senior cats. While clinical signs often develop gradually, some cats show acute problems when the cancer grows beyond a threshold size. Luckily for cats, the most common type of brain cancer is a



*You might initially notice something odd, like a cat who used to bound up the stairs hesitates to do so.*

meningioma, which is often amenable to surgery if caught early. Another brain cancer commonly seen in cats called a glioma has a much worse prognosis.

Ischemic infarcts, or strokes, cause cell death in the portion of the brain that is deprived of oxygen. These can be due to bleeding secondary to hypertension (primary or secondary due to kidney disease or thyroid disease) or from a blood clot, which could result from a clotting disorder or other metabolic problems.

Severe liver disease can cause hepatic encephalopathy due to the buildup of toxins in the blood. These toxins can cross the blood brain barrier and lead to neurologic signs.

In a young kitten, this could be due to a congenital condition called a portosystemic shunt (PSS), in which an abnormal blood vessel allows blood draining from the GI tract to bypass the liver and its detoxifying action, resulting in the delivery of toxins to the various

organ systems. PSS may be amenable to surgical intervention.

Older cats with liver failure often require medical treatment with supplements, sometimes antibiotics, and often dietary changes.

There is no definitive treatment for strokes in cats. Supportive care, sometimes including the placement of a feeding tube, is important. Luckily, many cats will improve over time. Rehabilitation treatments can help with both speed and degree of recovery.

## Masquerading Diseases

Some problems, like infections of the middle ear, may cause signs similar to a brain problem, such as a head tilt, nausea, and circling. You might notice an odor or a discharge from your cat’s ear.

These infections can be painful, and your veterinarian may need to sedate your cat to fully examine her ear(s) and to thoroughly clean and flush the ear canal. Ear drops, and sometimes oral antibiotics, will be prescribed. Ear mites may be the primary problem, and they are also treated medically.

FIP, or feline infectious peritonitis, is another cause of brain problems in cats. FIP is a devastating infectious disease in young cats that can be fatal. The development of new drugs, including a compound called GS-441524, has recently provided hope for cats diagnosed with FIP. Unfortunately, these drugs are not yet FDA approved.

FIP can cause central nervous system disease involving the brain or the spinal cord (often referred to as the dry form of the disease), but it can also cause a “wet” form, in which fluid accumulates in body cavities.

## Bottom Line

If your cat shows any neurologic signs, she should have a veterinary visit scheduled promptly. A referral to a veterinary neurologist and further diagnostics may be recommended. ■

*Yael Merbl, DVM, DECVN, assistant professor of neurology in the department of clinical sciences at Cornell University’s College of Veterinary Medicine.*



## Rabies in Cats

Cats are the domestic animal most often diagnosed with rabies, with infections usually resulting from their interaction with rabid wildlife. Rabies usually manifests as a neurologic disorder. Affected cats may demonstrate seizures, gait abnormalities, dullness and/or stupor, salivation, difficulty swallowing, and aggression. Once signs of the disease appear, rabies is routinely fatal. Thankfully, rabies is preventable with appropriate vaccination, and it is crucial that cat owners comply with vaccine requirements in their jurisdiction.

# Laser Therapy for Cats

*This light therapy may relieve pain and speed healing, but more research is needed*

**L**aser therapy is nothing new, but not everyone realizes how helpful it may be to cats. It utilizes light energy to theoretically provide pain relief, decrease inflammation and swelling, and speed healing in humans and pets. LASER was originally an acronym for the therapy of light amplification by stimulated emission of radiation, but the word laser is now commonly used.

The laser instrument stimulates tiny molecules to emit light at certain wavelengths that is then amplified by a narrow beam of radiation. Light energy at different wavelengths does different things. Your laser pointer pen uses light energy at a very low level. Surgical lasers that cut tissue use light energy at very high levels. Cold laser, also known as low level laser therapy (LLLT), the one we are talking about here, uses middle-of-the-road light energy to provide pain relief and aid healing.

This targeted light energy works at a cellular level. It may decrease inflammation by dilating surrounding blood vessels. It may also decrease swelling by opening draining lymph vessels and may relieve pain by stimulating nerves to block transmission of pain signals to the brain and by stimulating release of endorphins.

Laser therapy is potentially helpful for many painful, inflammatory conditions in cats. It is most frequently used in cats for arthritis and to speed wound healing. Examples of good candidates for the application of laser therapy in cats are the geriatric cat who is slow to get up, reluctant to jump on or off furniture, no longer wants to be petted or picked up, seems stiff or is limping. It can also be used on an open wound, as laser therapy may speed up healing.

## Research Lags Behind Use

While many pet owners and practitioners swear by laser's beneficial effects, the scientific evidence is lacking. Few studies prove the efficacy of laser therapy for pets.

"Therapeutic laser for osteoarthritis in cats is currently limited by evidence," says Dr. Christopher Frye, Veterinary Sports Medicine and Rehabilitation



*This kitty is getting laser therapy on his paw. Note the cat's safety glasses.*

specialist at Cornell University's College of Veterinary Medicine. "There are only two scientific clinical trials in dogs to demonstrate some evidence."

According to Dr. Frye, the class 3b and class 4 lasers utilized by veterinary professionals do appear to have some effect. He states that more recent evidence suggests, however, that the hair should be shaved over the application site to optimize laser penetration to target tissue. This is not something that has been routinely recommended in the past.

Because laser is a targeted treatment, it is important to know exactly what you are treating and where to laser. "Laser requires a true diagnosis to determine sites of application," says Dr. Frye. "Often there are presumptive diagnoses made without confirmation of arthritis on x-ray or other imaging." This situation could lead one to believe the laser was ineffective, when it actually wasn't appropriately applied.

## Safety

Laser treatments are easy on your cat. They are non-invasive, painless, and usually do not require sedation, depending on your cat's temperament at the vet office. Effects of laser on tissue

## What You Should Know

*Discuss laser therapy with your veterinarian. It can be used on:*

- ▶ Osteoarthritis
- ▶ Tendonitis
- ▶ Musculoskeletal injury
- ▶ Post-operative pain management and healing
- ▶ Open wounds
- ▶ Abscesses
- ▶ Anal gland inflammation
- ▶ Bladder inflammation
- ▶ Asthma
- ▶ Ear infections
- ▶ Dental disease

are cumulative, so repeat treatments are usually recommended. A typical treatment protocol might be twice a week for two weeks, then once a week for two weeks, then as needed for maintenance.

"In most situations, laser is a relatively safe modality when applied by a trained user," says Dr. Frye. Protective eyewear is essential for both you and your pet, as the laser beam can cause retinal damage. The thyroid gland must be avoided, as must any potentially cancerous lesions. The laser should not be used in pregnant animals. The higher-powered lasers do have the potential to burn the skin, which is part of why it's important they be used only by trained professionals.

## Bottom Line

Laser therapy may help relieve pain and speed healing, and when applied appropriately, is relatively safe. While scientific evidence of its benefits is currently lacking, anecdotal reports of the benefits of laser continue to accumulate, making it worth a try in some cases. If your cat suffers from any of the conditions in our sidebar, discuss the potential use of laser therapy with your veterinarian. ■



*Christopher Frye, DVM, is the veterinary sports medicine and rehabilitation specialist at Cornell University's College of Veterinary Medicine.*

# Discharge from Cat's Eyes

*Clear discharge is most commonly noted*

**Q** My cat's eyes are excreting a mucus like-fluid. My veterinarian said it could be an infection or allergies and gave me a very small tube of ointment to apply to her eyes, but I wonder what the cause of this is discharge? Can you provide any insight into this?

**A** Thanks for getting in touch, and I very much understand your concern. Ocular (eye-related) discharge is a common problem in cats, and causes vary from relatively benign conditions to more serious ones that require prompt intervention. Perhaps a brief discussion of the more common causes of ocular discharge in cats would be helpful to you.

Feline ocular discharge can be broken down into two general categories:

- ▶ clear and runny (thin and not viscous)
- ▶ greenish/yellowish and thick (viscous)

Clear ocular discharge is most commonly seen in conditions that do not involve large amounts of dead white blood cells. Fluid with large numbers of these are generally referred to as purulent, characterized by the development of greenish or yellowish pus or discharge.

These include allergies to airborne allergens, environmental irritants, early trauma without bacterial infection, foreign bodies or ulcers in the cornea or conjunctiva (pinkish tissue that surrounds the eye), early/uncomplicated viral upper respiratory infections (i.e., herpesvirus, calicivirus), abnormal eyelids/lashes causing corneal trauma,



*If the discharge is not clear and is accompanied by a squinting, painful eye, a trip to the veterinarian is in order.*

and, in some cases, blockage or abnormal development of the nasolacrimal duct, a structure that normally drains tears from the eye to the nasal cavity.

In the latter case, the “discharge” is really just tears that cannot flow normally through the nasolacrimal duct (the tear duct) and spill out of the eye.

Greenish/yellowish, thick ocular discharge is caused by the accumulation of large numbers of white blood cells that respond to foreign microscopic invaders, such as bacteria and viruses, and to the presence of foreign objects such as plant material in the eye.

Generally speaking, whitish/yellowish discharge is of greater concern, and it is not uncommon for discharge to change from clear to greenish/whitish and thick as a disease process progresses (i.e., when a viral infection is complicated by secondary bacterial infection).

With respect to what to do if you notice ocular discharge in your cat, if everything else (appetite, activity level,

temperature) is normal, it is OK to monitor your cat for a few days.

Things that should prompt seeking veterinary consultation include:

- ▶ an increase in the amount of discharge
- ▶ a change from clear to whitish/greenish discharge
- ▶ signs of discomfort including pawing at the eye
- ▶ squinting
- ▶ excessive blinking

Signs of systemic illness also warrant a call to your veterinarian. These signs include lethargy, loss of appetite, difficulty breathing, nasal discharge, swelling of the eyelids or the conjunctiva, and cloudiness of the eye.

The treatment of feline ocular discharge will depend upon its cause and the severity of signs and may include just keeping the eye clean by regular cleaning with a cotton ball moistened with saline solution,

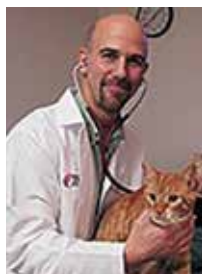
antibiotic or antiviral drops or ointment, system antibiotics, flushing of the eye to remove foreign material, antihistamines, and/or steroids to address inhalant allergies (like hay fever in people).

In less common cases, surgical intervention may be required to repair damage to the cornea of the eye, congenital defects of the eyelids and/or eyelashes, or blocked nasolacrimal ducts.

It is important that you work closely with your veterinarian and, in some cases, your veterinarian may refer you to a board-certified veterinary ophthalmologist to provide the best care for your cat.

If there is ever any doubt about whether a cat's ocular discharge warrants veterinary examination, it is always best to err on the side of caution and contact your veterinarian.

I hope that this is helpful to you, and please send us an update about your cat when you can. ■



## Do You Have a Health Concern?

Send your health questions to Bruce Kornreich, DVM, PhD, DACVIM, Director of the Cornell Feline Health Center and Editor-in-Chief of CatWatch. Email to [catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu) or send by regular mail to CatWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.



Scan this code for more information on the Cornell Feline Health Center.

## Coming Up ...

- ▶ *What to Know About Clumping Litter*
- ▶ *Cleft Palates in Cats*
- ▶ *Cat Coughing and Larynx Difficulties*
- ▶ *Horner's Syndrome in Cats*
- ▶ *Feline Health Screening Tests*