



Cat Watch

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

THIS JUST IN

Delta Variant in Lions

The source is still unknown

We already know that felines can be infected with the SARS-CoV-2 virus that causes COVID-19. Recently, though, endangered Asiatic lions in a zoo in India became ill with the delta variant of this virus. Nine lions showed signs of illness—a lack of appetite, nasal discharge, coughing—and were isolated. Unfortunately, two succumbed to the infection. In four of the lions, the viral genome sequences matched those of a human SARS-CoV-2 patient in the area.

Seven of the lions lived in a major habitat area with shared resources, while two were in a display area that had a shared moat.

Researchers feel that the shared areas and possibilities for physical contact suggest that there were opportunities for lion-to-lion transmission. The zoo was closed to the public. ■

Mishra et al. Natural infection of SARS-CoV-2 delta variant in Asiatic lions (*Panthera leo persica*) in India. *bioRxiv*, 2021.



Renan Poyntainen (iStock photo)

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5 Things: Bath Time for Kitty

Make your cat's bath a success with these five tips

Most cats don't need a bath often, but when they do, it can be a daunting enterprise for both of you. These tips may help you and your cat get through the experience with minimal trauma.



If this picture looks familiar, you're far from alone. Cats tend not to be big fans of baths in general, especially with lots of lather.

- 1 Choose a time when your cat is in a good mood.** Ideally, your cat should be happy and calm when you are going to give her a bath. This will make her more tolerant and less likely to scratch or otherwise maim you. Some good options are after a meal or after a rousing play session when she is a little tired. Timing the bath to your cat's mood may not be possible depending on the reason that she needs to be bathed (for example, if she got something toxic on her fur that must be removed immediately).
- 2 Use warm water.** Warm water is less shocking and more comfortable for your cat, especially if you need to do some serious scrubbing. The water should be comfortable for your hand. Many cats tolerate having water gently poured or sprayed over them (such as with a shower head or sink spray attachment) better than being placed in a tub full of water.
- 3 Use cat-safe shampoo and avoid the eyes.** Cat skin and hair is not the same as human skin and hair, so choose a shampoo intended for use in cats. This will help to prevent her skin from getting too dried out after the bath. Even with cat-safe shampoo, keep the suds away from your cat's delicate eyes.
- 4 Try an elevated bathing area.** Bathing your cat in a sink or raised tub can be easier than leaning over her in the tub. For one thing, an elevated work surface is easier on your back. It also gives you better leverage and stability than kneeling on the wet bathroom floor if your feline friend objects to being cleaned. Your cat may feel safer in a raised bath spot—many cats choose to play and nap in sinks because they are like hide-holes—whereas a tub may feel too exposed and vulnerable.
- 5 Towels and leashes are your friends.** Some cats freeze in horror when given a bath, allowing you to do what you need to do quickly. Others genuinely enjoy the attention and playing in water. For the rest, some gentle restraint will be needed to keep your cat in place while you suds her up and then rinse her off. For fractious cats, a towel is a great way to wrap her up and control her paws and sharp claws (just have a dry towel on the side for when the bath is over!). Leashes can be useful as a second line of restraint if your kitty tends to bolt or slash. If you have a helper, have him or her gently hold your cat's head and front end as you start the bath while also keeping hold on the leash. If working by yourself, have the end of the leash looped over one hand so you can quickly reel your kitty in if she tries to make a run for it. ■

Maybe Cats Could Help Geneticists

The feline genome is ordered similarly to humans

It's time for cats to get their day in research, says veterinary medicine genomics expert Leslie Lyons in a forum published recently in *Trends in Genetics*. Cats, she says, have the potential to be a valuable model organism for geneticists, as the feline genome is ordered similarly to that of humans.

"Using cats in research is really overlooked, since people don't realize the advantages," says Lyons, of the Department of Veterinary Medicine & Surgery at the University of Missouri. "The dog or mouse genome have rearranged chromosomes that are quite different than humans, but the domestic cat has genes that are about the same size as humans, as well as a genome that, like humans, is very organized and conserved."

Lyons writes that cats could be an asset for helping researchers better understand our genetic "dark matter." Cats have been found to have genetic diseases related to dysfunction of their genetic dark matter, making them a potential model organism for this type of research.

Cats could play a role in precision medicine for genetic diseases, in which instead of treating the symptoms researchers could fix the actual gene and what the gene does. For example, certain breeds of cats are prone to the genetic illness polycystic kidney disease, which also afflicts humans. Lyons says that if we could learn how to treat this disease in cats, we could, in theory, apply such technology to human diseases. ■

Leslie A. Lyons. Cats – telomere to telomere and nose to tail. Trends in Genetics, 2021; DOI: 10.1016/j.tig.2021.06.001. Science Daily.



AVMA/EveryCat Award for Viral Research

UC Davis professor earns the prestigious prize for 2021

Dr. Brian Murphy, a professor at the University of California-Davis School of Veterinary Medicine, was recently awarded the American Veterinary Medical Foundation/EveryCat Health Foundation Research Award for his research in two feline viral diseases: feline immunodeficiency virus (FIV) and feline infectious peritonitis (FIP). Established in 2009, the award honors a candidate's contribution to advancing feline health through their research. Dr. Murphy's work includes the exploration of the pathogenesis of the terminal phase of FIV infection (feline acquired immunodeficiency disease, or FAIDS) and identifying antiviral therapies to treat cats with FIP. ■

Donations Help Save Mika From Cancer

The Petco Love and Blue Buffalo funds paid for treatment

When her owner noticed a lump on Mika's leg, her veterinarian diagnosed injection-site sarcoma, a cancer. Mika underwent successful surgery to have the lump removed, but her cancer returned, according to Petco Love. So, this time, her owner took her to the Cornell University Hospital for Animals. Because of the Petco Love & Blue Buffalo Pet Cancer Treatment Fund, Mika received the care she needed.

"Many pets greatly benefit from radiation and chemotherapy after a cancer diagnosis, but affording treatment can be difficult for some owners," said Dr. Meg Thompson, director of the Cornell University Hospital for Animals. "We are grateful to Petco Love and Blue Buffalo for a grant that alleviates a large portion of this stress during an already challenging time for pet parents." Petco Love and Blue Buffalo have donated more than \$16 million to help fight pet cancer. ■



Mika received 14 days of radiation.



CatWatch

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Vestibular Syndrome in Cats

Odd rapid eye movements and a lack of coordination are telltale signs of vestibular syndrome

The first time you see a cat battling vestibular syndrome, you may be taken aback. The cat may circle around oddly, fall to one side, and may show a head tilt. Nystagmus—unusual eye movements where the pupils rapidly up and down—pretty much makes the diagnosis. Vestibular syndrome is most often seen in older cats, and it usually comes on without warning.

Some cats will roll frequently for 24 to 48 hours. Not surprisingly, nausea and vomiting may follow from the vestibular disturbance. The syndrome can last for two to three weeks and then, just as mysteriously, resolve on its own. Your job is to ensure your cat doesn't get hurt during an episode and to understand that the syndrome is anything but pleasant for your cat. (Note: Female cats in heat will often roll excessively and vocalize, too, but this activity is not related to vestibular disease.)

What Is It?

The vestibular system is involved in balance. An important part of this system, called the cochlea, is located within the inner ear. It communicates with a part of the brain called the medulla, located in front of the cerebellum at the top of the spinal cord, to coordinate balance, including that of the eyes. The cerebellum controls overall body movement and coordination, but is *not normally involved in vestibular syndrome's odd movements.*

Diagnosis

If you contact your veterinarian at the first signs of this syndrome—as you should—he/she will do a physical examination, including a neurological evaluation and a thorough ear exam, and will check for nasopharyngeal polyps in the back of the cat's throat (ear infections and nasopharyngeal polyps are considered possible causes). Cats with bad ear infections that require anesthesia and a thorough cleaning may show signs for a day or two post cleaning from the ear manipulations.

For most cats, the cause of vestibular syndrome is unknown, and the problem resolves on its own, although it can

recur. Advanced diagnostic testing—such as magnetic resonance imaging (MRI), cerebrospinal fluid analysis, or computerized tomography (CT)—is usually only recommended for cases that don't resolve.

In many areas of the country, feline vestibular signs show up most commonly in late summer, often in young, healthy cats with access to the outdoors.

Some antibiotic drugs, particularly the aminoglycosides such as gentamycin, can cause hearing or balance issues as a side effect. This effect is usually temporary but can be permanent. Metronidazole has been associated with temporary vestibular signs in cats. Lead poisoning, while not as common as it was decades ago, is another potential cause of the syndrome.

Vestibular syndrome that does not resolve may be due to a variety of diseases in the middle ear and/or central nervous system.

Treatment

Treatments target symptoms. The nystagmus may make some cats nauseous, prompting a prescription from your veterinarian for antiemetics (anti-nausea medications) such as maropitant citrate (Cerenia). You will be advised to

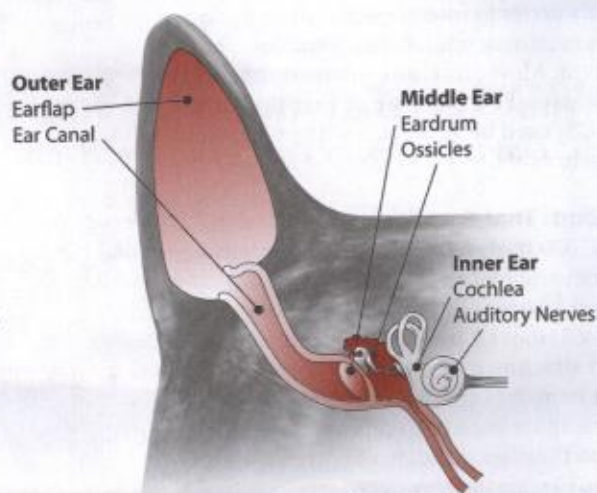
encourage your cat to keep eating and may have to give your cat subcutaneous fluids to help prevent dehydration.

Any cat with an ear or other body infection that might contribute to or cause the vestibular signs must be treated with antibiotics.

Safety First

Keep your cat confined so she won't fall down steps or off a balcony or couch. She may require assistance with elimination, starting with getting to the litterbox. Confinement to a crate with soft bedding to cushion any falls is ideal.

The nystagmus and rolling around tend to clear up in just a few days. The ataxic movement, circling, and head tilt may take longer, but generally both problems are back to normal in two weeks or so. If these signs don't resolve in a couple of weeks, however, more advanced diagnostics may be a wise choice for your cat. ■



Vestibular disorders may involve infection in the inner ear at the cochlea, which is connected to the vestibular system.

Cerebellar Problems in Kittens

A separate vestibular type of problem that manifests as ataxia (loss of control of body movements) in kittens is cerebellar hypoplasia, which means the cerebellum is smaller than it should be and not properly developed. The most common cause is exposure to or infection with feline panleukopenia virus in the queen during pregnancy. This condition won't progress but also won't improve. It is not painful.

Cerebellar hypoplasia becomes evident when kittens start to become mobile. Affected kittens show abnormal movements such as swaying, hypermetria, or goose stepping, and often head tremors. The tremors may intensify when the kitten makes purposeful actions such as attempting to eat, called intention tremors. Luckily, these kittens are not infectious or in any discomfort. With some extra supervision and care in their environment, these kittens can go on to have full and happy lives (see our August 2021 article "Cerebellar Hypoplasia Tremors" for more information, available at catwatchnewsletter.com).

The Cat-Human Bond

Yes, cats really do become attached to you

Science is slowly approaching proof of what many cat lovers already know: Cats form close bonds with their owners or other chosen special people.

By watching cat behavior, you can learn a lot about feline relationships with the humans in their lives. And, if you have a new cat, that can help you learn to evaluate your progress bonding, says Pamela J. Perry, DVM, PhD, behavior resident at Cornell University's College of Veterinary Medicine.

Hanging With the Humans

A 2017 study published in *Behavioural Processes* (Vitale Shreve, KR, et al, Social interaction, food, scent or toys? A formal assessment of domestic pet and shelter cat preferences, *Behav Processes*. 2017 Aug; 141 [pt 3]:322-328) looked at what cats prefer to interact with. Their options were human interaction, food, toys, or scent. Most cats chose interaction with humans. Food was the runner-up. This study used both pet cats with owners and shelter cats.

Bonds That Cats Form

A 2019 study (Attachment bonds between domestic cats and humans. Vitale KR, et al. *Current Biology* 2019;29:R859–R865) looked at how cats responded to an attachment test that has been used in humans, other primates, and dogs. The study used both cats and kittens and had them go through a Secure Base Test (SBT) with their owners.

For the test, each cat or kitten was brought into a room they had never seen before along with their owner. Cat and owner were together in the room for two minutes, then the owner left for two minutes. They were reunited for two minutes. The SBT classifies attachment styles as secure or insecure. Insecure attachments are further broken down into ambivalent, avoidant, or disorganized (see the sidebar for descriptions of each attachment style).

The study looked at 70 kittens ages 3 to 8 months and 38 adult cats over 1-year-old. Of the kittens, 64.3% were classified as securely attached to their owners. Of the 35.7% that were insecurely attached, most showed ambivalent attachment behaviors. Of the adult cats, 65.8% were found to have a

secure attachment and 34.2% insecure, similar to the kitten results.

The kittens were then retested six weeks later, after half of them went through a training and socialization intervention. The results remained consistent, with 68.6% of the kittens showing secure attachment and 31.4% showing insecure attachment.

Is My Cat Bonded to Me?

"Cats who are attached to their humans will solicit attention from them by approaching them (often with a tail held straight up), meowing or pawing at them, etc.," says Dr. Perry. "They also tend to

'follow' their owners from room to room, albeit sometimes at a distance. Purring and head rubbing or bunting you are other signs that your kitty enjoys your presence. In addition, many cat owners cherish the 'slow blink,' during which a cat stares at you and slowly squints or closes her eyes, as a sign of affection." If your cat is vocal, she may greet you with a chirp or meow when you enter a room or talk to her.

Forming a Bond

Not surprisingly, the bond takes time to develop. Dr. Perry suggests that you "be the source of all good resources." Instead of leaving food out, serve your cat meals, and call her when it is time. Set aside a little time at least once a day to play with, pet, or groom her if she enjoys those activities. If she likes to play with "stolen"

Feline Grief Is Very Real

Cats do mourn the loss of their human companions and other animals in the household. Signs of mourning include:

- ▶ Depression or listlessness
- ▶ Decreased appetite
- ▶ Lack of playing and social behaviors
- ▶ Changes in vocalizations (some cats may become abnormally quiet, while others may cry incessantly)
- ▶ Sleeping more
- ▶ Hiding more



If your cat seems depressed, she may well be. Humans are not the only ones who mourn loss of a loved one.

If you are caring for a cat that has lost her owner or favorite person, be patient and supportive. This is especially true if the cat has had to be moved to a new home. In addition to grieving the loss of her person, she is also undergoing the stress of a physical move. Ignore undesirable behaviors, such as increased meowing, and reward and praise her for positive behaviors. Approach your fledgling relationship just like you would forming a bond with any new cat, spending time with her at meal times and to play, or even just sitting together while she is in a favorite spot.

Talk to her quietly and often, and pet her if she enjoys petting. If she has stopped grooming herself adequately, do some light brushing once a day to help keep her coat and skin healthy (just like us, cats feel better when clean).

When you need to leave the grieving cat alone, provide enrichment activities such as food hidden in toys or a "cat TV" show with birds or fish for her to watch. If possible, she will likely enjoy having an item that smells like her first owner to cuddle with.

For cats that are extremely depressed or showing extensive negative behaviors, consult with your veterinarian or a veterinary behaviorist. There are medications that can help with stress and anxiety in cats that may be beneficial either short- or long-term to ease your cat into her new normal.

Attachment Styles

Secure attachment is when the cat shows signs of distress when the owner is out of the room but recovers quickly when the owner returns. This cat likes her owner and is confident with her owner around, doesn't like to be left alone in a strange place, but regains her confidence quickly when the owner returns.

Ambivalent insecure attachment is when the cat shows signs of distress when the owner leaves the room but remains stressed and does not recover when the owner returns, becoming clingy. This cat may not want to explore in a new environment, shows separation anxiety behaviors when the owner leaves, and overcompensates when the owner returns.

Avoidant insecure attachment is when the cat doesn't react much when the owner leaves or returns. This cat may or may not explore a new room even when the owner is present and won't show a change in behavior when the owner leaves or greet the owner when she returns.

Disorganized insecure attachment is when the cat shows a mix of ambivalent and avoidant attachment behaviors.

goods such as bottle tops, toss one of these items for her once in a while.

You can also gain your cat's trust by respecting her preferences and personal space. "Do not force your kitty to interact with you; rather, let her be the one to take the initiative," says Dr. Perry. "Some cats have a limited tolerance for time together with us, so do not overstep the boundaries—keep the interaction time short and sweet. Most of all, be patient so that she learns to trust you."

Training can be a rewarding activity for both of you. If your cat is food motivated, clicker training is a fun way to exercise your cat's mind and teach her tricks. You can use toys if your cat would rather have a feathered mouse than a crunchy snack.

Cats may not be as effusive as dogs in showing affection, but they do form bonds. So, hug your kitty and tell her how much you love her. Then watch for ways she tells you she loves you back. ■

Living With an FIV-Positive Cat

A proactive lifestyle is key to your success

Feline immunodeficiency virus (FIV) is a retrovirus that infects cats worldwide. Like the human immunodeficiency virus (HIV), FIV suppresses the immune system. For this reason, cats infected with FIV can succumb to other infections their immune systems can't fight off. It's important to realize, though, that most cats with FIV infections live normal lifespans with a high quality of life.

"The most important aspects of managing an FIV+ (positive) cat is avoiding other infections, minimizing stress, and being proactive about health care by doing things like keeping infected cats indoors, avoiding crowded housing conditions, making regular trips to the veterinarian, acting quickly if any signs of illness are observed, and perhaps, by vaccinating against other infectious diseases, although this is a controversial topic that should be evaluated on a case-by-case basis," says Bruce Kornreich, DVM, PhD, Dipl ACVIM, director of the Cornell Feline Health Center.



Well, of course you want to help this pretty, sad stray cat. But start with a trip to the veterinarian for FIV testing and checking for a microchip in case he has caring owners who want him back.

How Do They Get It?

FIV is spread primarily through the saliva of an infected cat, almost always during aggressive encounters that result in deep bite wounds. Casual contact with infected saliva, as happens with grooming each other or sharing water and food

What You Should Know About FIV Testing

Testing all cats for FIV is important. You want to be able to give an infected cat the care it needs and help minimize spread of the virus. If you're adopting a cat from a shelter, get a copy of its FIV test report. If you've adopted a stray, ask your veterinarian to do an FIV test (he or she will likely recommend this test anyway).

- ▶ **Positive is forever:** Once a cat tests positive for FIV, that cat is considered positive forever. Luckily, available tests, which screen for the presence of antibodies against the virus, are fairly accurate. There are, however, a couple of situations that can result in false negative and false positive results.
- ▶ **False negatives:** These can arise if a cat is tested before an infected cat has had time to mount an immune response against the virus. Any newly rescued cat that tests negative should be retested 60 to 90 days later to be sure.
- ▶ **False positives:** Kittens getting antibodies from an infected mother through her milk will often test positive even if they are not infected. If your kitten tests positive for FIV, have her retested after 6 months of age, when maternal antibodies will have dissipated.
- ▶ **Vaccinated cats will test positive:** Any cat that has been vaccinated for FIV will test positive, even if not infected. The most common in-clinic tests cannot distinguish between antibodies from natural infection and vaccine-induced antibodies. Because the FIV vaccine was discontinued in the United States several years ago, this is not a big concern, but because FIV cats live a long time, there may still be some FIV-vaccinated cats out there. When in doubt, polymerase chain reaction (PCR) testing, which detects actual viral RNA or DNA, can be done to confirm infection status.

Human Health Concerns

A note from the Cornell Feline Health Center: Although FIV is similar to human immunodeficiency virus (HIV) and causes a feline disease similar to acquired immune deficiency syndrome (AIDS) in humans, it is a highly species-specific virus that infects only felines. There is currently no evidence that FIV can infect or cause disease in humans.

bowls, is typically not enough to infect a cat. This is good news for indoor cats. If your cat has tested negative for FIV and never goes outdoors or sees another cat, there is very little risk of infection.

Not surprisingly, FIV is frequently found in stray and feral cat populations. Unneutered males, because of their tendency to suffer deep bite wounds from fighting, are especially at risk. As more of these FIV+ cats are being rescued and offered for adoption, here's what you need to know if you are considering adopting an FIV infected cat.

First, keep all FIV infected cats indoors so they cannot spread the virus. If you have a cat that isn't infected with FIV, it is OK to adopt an FIV infected cat and bring him into your home as long as there are no aggressive interactions between the two cats.

Second, remember that FIV is not a death sentence. There are three stages of infection, the middle one being the dormant, asymptomatic phase that can last for many years. Some cats never progress beyond this dormant middle phase, so don't let fear of a shortened lifespan keep you from opening your heart and your home to an FIV+ cat.

During the initial phase of infection, which can last between eight and 12

weeks, cats may show fever, loss of appetite, and lymph-node enlargement. As mentioned above, the next (dormant) phase can last for years, although some cats may experience a painful inflammatory condition in the mouth called gingivostomatitis.

The final phase, the clinical or terminal phase, is when infected cats start to suffer from secondary infections, including neurological disease and cancers, which are frequent causes.

Management of FIV Infected Cats

Keep FIV+ cats indoors to limit exposure to infectious agents and parasites that they may not be able to fend off. See your veterinarian at least twice a year and discuss obtaining bloodwork to screen for health problems proactively.

Feed a commercial (or veterinary nutritionist-designed) balanced and complete diet and avoid raw diets, as these can be contaminated with bacteria or parasites.

Keep core vaccinations (rabies, feline calicivirus, feline herpesvirus-1, feline panleukopenia, and, in some cases, feline leukemia) up to date. It's important to realize that FIV-infected cats may not mount as strong an immune response to vaccines as cats that are not infected.

Sadly, specific anti-viral therapies have not shown much promise. "While there are some antiviral drugs that have, in some cases, been shown to improve clinical signs in FIV-infected cats, none of these therapies have been shown to increase lifespan, and the development of resistant viral strains is of concern when using these drugs. It is important to note, though, that many cats infected with FIV will live normal lifespans provided they are managed appropriately," says Dr. Kornreich.

A few other therapies have potential

for managing the FIV+ cat. Type 1 interferons are proteins produced by white blood cells to help fight off invading pathogens.

While studies of human alpha interferon have shown no decrease in FIV viral load, clinical improvement has been shown in some FIV infected cats. Feline recombinant omega interferon has shown similar results, but this medication has not yet achieved FDA approval, making it difficult to obtain.

If your FIV+ cat suffers from anemia, recombinant human erythropoietin can help him produce red blood cells. Unfortunately, the effect may not be long lasting, as the body can form antibodies against recombinant erythropoietin. Darbopoetin, a newer, longer acting form of erythropoietin, may be a better choice, as it has been shown to be less likely to induce an immune response than other forms of this hormone.

Zidovudine is an anti-retroviral compound used in humans with HIV infection. It has shown some promise in FIV+ cats, particularly those with gingivostomatitis and/or neurologic disease. The downsides are that it can cause life-threatening bone marrow suppression and has the potential to give rise to resistant viral strains. For both these reasons, its use has been limited.

As our understanding of FIV improves and research continues to grow, our FIV+ cats can live better, longer lives. The trick is to follow strict management protocols, including being proactive about any health issues that may arise and to partner with your veterinarian to assure optimal care. ■

A Word to Our Readers:

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An indoor cat who tested negative and is content to just have a canine buddy in her home is extremely low risk for FIV.

Emergency Decisions

Here's help, but if you're not sure, call your veterinarian

What constitutes an emergency? A collapsed cat? Absolutely. And even more so if she is nonresponsive. Pause only a moment to look for a possible cause, but get on the phone to your vet immediately.

Making the decision about whether to head to the emergency veterinary clinic requires you to be quick-thinking. Your cat's life could be in jeopardy. We consider these scenarios an emergency:

Bleeding wounds: Any open wound, especially if a body cavity is open, means an immediate veterinary visit. It's worse if the wound is connected to a trauma or a fight. Any cat in an animal fight or bitten by a snake needs care right away. If you suspect the cat has an animal bite, use caution and don't touch the area or get any saliva or blood on you due to rabies risk. Handle the cat wearing gloves, and keep a blanket around her.

Burns: For optimal healing and pain control, burns need immediate attention. You may see blistered skin, singed hair, white patches, redness, and/or swelling.

Bloody diarrhea: If you see blood in a cat's diarrhea, contact your veterinarian immediately for specific advice.

Eye problems: If the cat's eye is painful, red, bulging, or the pupil is dilated, it may be an emergency. Eye problems become serious quickly.

Fracture: A fractured bone must be treated immediately. Keep in mind that not all broken bones are compound, which means you can see bone coming through the skin. A simple fracture still needs to be addressed quickly. If your cat cannot bear weight on a limb, cannot easily move, or cries out when you touch her, a fracture is a possibility.

Heat stroke: Watch for panting, drooling, a red tongue hanging out, lethargy, rapid pulse. Rapid response can make the difference between life and death or permanent damage to organs.

Paralysis: A cat who is suddenly paralyzed in the hind or other limbs may have hypertrophic cardiomyopathy (HCM) or another heart disease and may have experienced a blood clot that can block blood flow to the limbs. HCM can be a silent but deadly health problem, with affected cats going from apparently stable to death's door quickly.

Respiratory distress: You may notice



If you can't decide if it's an emergency, it's better to get a diagnosis.

her struggling to breathe, rapidly panting, or open mouth breathing. Pale or cyanotic (bluish) gums suggest that she is not getting enough oxygen to her tissues, which is an emergency.

Straining in the litterbox: A cat straining to urinate may have a urinary blockage (especially common in male cats). As toxins build in the bloodstream from the urine in the bladder, your cat can go from uncomfortable to very ill very quickly. Straining to defecate is nothing to ignore, but you can often wait overnight to make the call.

Toxin: If your cat may have eaten or been exposed to anything poisonous, call your veterinarian or the Pet Poison Hotline at 800-213-6680.

If you suspect a toxin exposure, bring along a sample of what you think your

cat was exposed to if you head to the veterinary clinic.

Trauma: Any time your cat has obvious trauma, she should be seen. Even if outwardly fine, internal injuries could be life-threatening.

Bloody Vomit: If you see blood in vomit, don't wait.

Seizures/Loss of Consciousness: Any cat with seizures and/or that collapses or loses consciousness should be evaluated by a veterinarian immediately.

Confine your cat in your vehicle. Even if she is collapsed, put her in a carrier because she could panic and escape as soon as you open the door. If you don't have a carrier, wrap her gently in a large towel or blanket and put a collar and leash on her. Ideally, one person drives while the second person holds the cat and calls to say you're arriving. ■

What You Should Know

Know where to go: It's important to know where the nearest emergency clinic is, and to put that information in an easily accessible spot, like on your refrigerator door. Many clinics only cover emergencies for their own clients, so learn your clinic's rules now.

Have an emergency fund: Remember, also, that as sad as it seems, a veterinary clinic is a business that needs to generate income to support its operations. You can expect to pay an estimated fee up front, before your cat is admitted to the hospital.

What Problems Can Wait Overnight?

While you need to make the call because you are with the cat, for the most part, if your cat is lame but otherwise fine, which means none of the conditions listed in the main story are observed, she can likely wait overnight. For example:

If your cat is lethargic, this may not be an emergency, but a call to the veterinarian is in order.

If she has an obvious draining abscess, this may not be an emergency, but warrants a veterinary consultation.

If your cat has not eaten for 24 hours, she can usually wait overnight to visit a veterinarian. Don't delay more than one day to call your veterinarian, however, as cats that don't eat can get hepatic lipidosis, a serious condition that can be fatal.

If you are in doubt about whether your cat needs to be seen, call the emergency clinic. While they may not be able to fully triage your cat over the phone, they can usually give you an idea of the seriousness of the problem, and whether he needs to be seen immediately.

Distilled Water for Kidney Disease

Research is lacking in the area of tap vs. distilled water

Q I have two older cats, each with chronic kidney disease. I feed them prescription kidney diets, both wet and dry, and they have good appetites and act as if they are very healthy.

Living here in the desert, we rely on groundwater for our domestic supply, and it has a high total dissolved solids (TDS) content—that is, it's "hard" water. I heard that giving them distilled water may help their kidney disease, but I also read that providing only distilled water can be harmful.

So, I buy distilled water and cut it with tap water at 2/3 distilled, 1/3 tap. At a recent exam, my 15-year old's blood test showed a lowering of his excessive calcium levels. My vet couldn't say if the distilled water had any benefits. Are there any studies along these lines?

A Thank you for getting in touch about this controversial issue, and I hope things are going well with your two feline friends. Perhaps a brief description of what distilled water is would be a good place to start answering your question.

Tap water (and other unpurified waters) contains dissolved electrolytes (i.e., sodium, chloride, potassium) and minerals (i.e., calcium, iron, magnesium).

The "hardness" of water is a measure of the amount of minerals found in water. Unpurified water can contain metals like arsenic, lead, and aluminum, and in some



Given the amount of effort some cats put forth to drink directly from the tap, we would bet tap would win over distilled every time.

cases, even biological contaminants such as bacteria and viruses.

Distilled water is produced by boiling water and collecting the condensation that forms from the steam produced by boiling. The boiling process leaves behind the electrolytes, minerals, metals, and other contaminants, which leaves pure water (or as close to pure as can be realistically expected).

A literature search reveals that there are no peer-reviewed scientific publications on the risks and benefits of giving cats only distilled water. In addition, there are few studies addressing this issue in people.

There are, however, numerous

anecdotal accounts of these risks and benefits that can be found online.

One condition that may benefit from a cat drinking solely distilled water is the formation of certain types of stones in the urinary tract (uroliths). Since most of these stones are composed of various minerals (calcium, magnesium), it makes intuitive sense that eliminating these minerals from drinking water may help prevent their formation, and there is some evidence in the literature that this may be the case. It is important to realize, though, that cats (and people) obtain most of their minerals from the food they eat rather than from the water they drink, so we aren't concerned about that.

Regarding the potential risks and benefits of providing only distilled water to cats with chronic kidney disease (CKD, as opposed to urolith formation), while there have been concerns raised about distilled water depleting electrolytes due not only to its lack of electrolytes, but also to the effects of the pH of distilled water on electrolyte homeostasis (the kidneys are vital for normal regulation of electrolytes), I am not aware of any scientific proof that this is the case. I am also not aware of any proven benefits of providing only distilled water to cats with chronic kidney disease.

In summary, more research needs to be done to clarify the potential risks and benefits of giving cats only distilled water, whether they are ill or well, and I think that in the interim, your idea of mixing distilled and tap water for your cats should be fine. ■

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CatWatch, 535 Connecticut Ave., Norwalk, CT 06854. We welcome digital photos to consider for use with your question.

Coming Up ...

- ▶ *How to Handle an Ingrown Claw*
- ▶ *Feeding the Cat Fighting Cancer*
- ▶ *Feline Squamous Cell Carcinoma*
- ▶ *Cholangitis in Cats*

Glasses-Wearing Cat—According to CNN, an optician specializing in pediatric glasses has a cat who is very happy to wear glasses. She has 20 pairs of them! When a young patient objects to glasses, Truffles the cat marches in sporting one of her spectacles.

Supply Shortages—A report on Reuters.com says that North American pet owners are struggling to track down certain foods from major retailers. The retailers are facing high demand from consumers with manufacturers struggling to keep up. "Costs for pet-food ingredients have climbed 8% to 20% since the pandemic began,



according to U.S. industry group the Pet Food Institute, outpacing a 5.4% jump in consumer prices in the 12 months through June," says the Reuters report. An estimated 12.5 million households added a pet during the pandemic, according to the American Pet Products Association, which increased the demand. Read more at <https://www.reuters.com/business/retail-consumer/pet-food-shortages-leave-owners-hunt-kibble-cat-treats-2021-07-29/>

Remember Oct. 29—National Cat Day is celebrated on October 29, according to NationalDay.com. It was created by animal lover Colleen Paige to bring awareness to the number of cats that need to be rescued each year. ■