



# CatWatch

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



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Vaccine-associated sarcoma has become a major concern for owners.

## IN THE NEWS ...

### Vaccination Guidelines Stress Individual Risks

Updated guidelines from the American Association of Feline Practitioners recommend a vaccination schedule based on individual cats' needs. They say assessments should include discussions of risks and benefits, health, lifestyle and the likelihood of exposure to disease.

It's important to realize that vaccination is a medical procedure and not a cookie-cutter every-cat-is-the-same protocol, says Margie A. Scherk, DVM, of Vancouver, chair of the panel that developed the guidelines. "Vaccination is an important part of preventive healthcare. However, just as with any other medical procedure, vaccination is not an innocuous procedure and unfortunately can infrequently have unpleasant or even devastating life-threatening results."

The 2013 guidelines, at <http://jfm.sagepub.com/content/15/9/785.full.pdf+htm>, include a client brochure and options for reducing the risk of injection-site sarcoma. For more information, please see Ask Elizabeth on Page 8. ♦

## Appealing to the Heart of a Hunter

*Enrichment in physical and mental stimulation can help avoid apathy, obesity and predatory aggression*

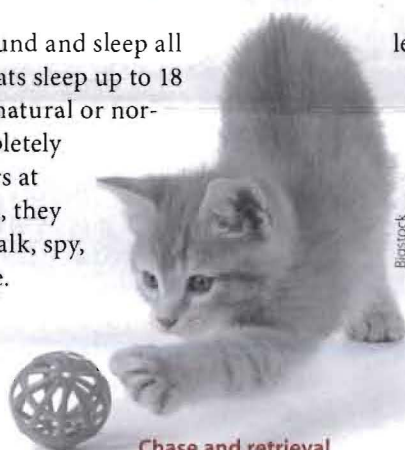
Does your cat lie around and sleep all day? It's true that cats sleep up to 18 hours a day, but it's not natural or normal for them to be completely inactive. Cats are hunters at heart. To be at their best, they need opportunities to stalk, spy, chase, climb and pounce.

"Lack of stimulation can lead to apathy, obesity and, in the worse-case scenario, predatory aggression aimed at the owner," says animal behaviorist

Katherine A. Houpt, VMD, Ph.D., professor emeritus at the Cornell University Col-

lege of Veterinary Medicine.

In behaviorist terms, cats need environmental enrichment. Because many live indoors with little or no opportunity to roam outside, it's up to us to fulfill their needs. In one way or another, enrichment feeds all of a cat's senses: sight, sound, touch, smell and taste. Here are some ways to excite his curiosity and bring zest to his life.



Chase and retrieval mimic predation.

### Play Time

"I tell cat owners to set aside a little time

(continued on page 5)

## Outwitting Animal-to-Owner Diseases

*Many don't show symptoms, but they can be prevented with good hygiene, routine worming and prompt treatment of illness*

Cats can harbor a variety of zoonotic diseases — those that can be transmitted to people. Some of the diseases are rare, while others are quite common. Although we are aware of many of these diseases, more continue to be discovered, thanks to improvements in technology and to the dedicated work of researchers in both the human medical and veterinary fields.

Only recently, for example, has the veterinary community recognized that *Staphylococcus* (staph) bacteria can be transferred from animals to their owners.

"When an animal has an active staph infection, the organism can get on the hands of people who touch the infected area," says dermatologist William H. Miller, VMD, Medical Director of the Companion Animal Hospital at the Cornell University College of Veterinary Medicine. "The organism can be transferred to a human if the person doesn't wash his or her hands. If there is an immunocompromised individual or child in the house, we recommend that they stay away from the animal while the infection is active."

Antibiotics are typically used to treat staph infections, but some strains are resistant

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## SHORT TAKES

### Unwelcome Petting Can Cause Stress, a Study Says

This will come as a shock to owners who enjoy petting their cats. Some cats like being petted and purr in delight; others only tolerate it. In fact, according to a study by an international team of animal behaviorists, when owners impose themselves on cats to pet them, the cats experience stress and release hormones linked to anxiety.

The researchers set out to study how cats cope when living with humans and other cats in single households. They said that despite cats' history as living alone in the wild, the study found they can live happily together in groups. The scientists measured stress hormones of cats living alone, in pairs and in groups of three or four in what they described as stable homes. They found to their surprise:

- ◆ The number of cats in a household was not necessarily a problem.
- ◆ Cats younger than 2 years old who were the sole feline in the home were more stressed than younger ones living in larger groups.
- ◆ Cats who avoided being petted were less stressed than those who reluctantly allowed themselves to be handled.

"It seems that those cats on whom the owner imposes him or herself are the ones we need to be most concerned about," says researcher Daniel Mills, BVSc, Ph.D., at the University of Lincoln in Lincolnshire, England.

"Many people keep groups of cats in their home, and although they might seem happy together, some people have argued that, because this is an unnatural set-up, it is not good for their welfare. Our research shows this is not necessarily the case. It seems even if they are not best friends, cats may be able to organize themselves to avoid each other without getting stressed."

The results underscore the importance of owners giving individual cats control over their environment, Dr. Mills says, suggesting that they give the cats the choice of sharing or having their own areas to eat, drink and eliminate.



**When owners impose petting**, researchers say that some cats may release hormones related to anxiety.

Scientists from the University of Sao Paulo and the University of Veterinary Medicine in Vienna also participated in the study, published in the journal *Physiology and Behavior*.

### The Cost of Accidents

In analyzing the 1.1 million claims it received in 2012, Veterinary Pet Insurance identified allergies, ear infections, vomiting and bladder infections as among the most common ailments.

When it determined the top 10 cat and dog medical conditions related to accidents, soft tissue injuries topped the list. Bruising usually resulted from falling, running and jumping, with the typical office visit costing \$169. The other common conditions associated with accidents by ranking:

2. Cruciate (knee) ligament injuries without surgery
3. Cuts or bite wounds
4. Scratch or wound on the eye
5. Cruciate ligament injury with surgery
6. Mouth trauma or fractured tooth
7. Sprain or joint injury
8. Abrasions or superficial injury
9. Foreign object ingestion
10. Torn or injured nail

Accidents accounted for 10 percent of all claims in 2012 and totaled \$37 million paid to policyholders. Although many pet accidents can't be prevented, owners can take steps to decrease the risk, VPI says. Among them: being aware of your pet's surroundings to avoid environmental dangers, such as poisonous plants, and supervising your pet's physical activity and interaction with other animals. ♦



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# When Visits to the Litter Box Increase

*It's time to check for a possible bacterial urinary tract infection, with the need for diagnosis and treatment especially urgent*

Cats and people suffer many of the same illnesses, a common one being urinary tract infections (UTIs). In women, they may account for more than 6 million visits to doctors in the United States each year. Similarly, Veterinary Pet Insurance reports that urinary bladder infections — the urinary bladder is part of the urinary tract — were the most common medical condition affecting cats in claims it processed in 2012.

The fact that a cat with a UTI has plenty of company doesn't make the condition any less uncomfortable. Nor does it make the need for treatment less urgent. Failure to treat the infections can lead to kidney infection and the formation of uroliths, or stones. Before treatment can start, however, a cat's veterinarian must identify the cause.

**Increases With Age.** Most infections are bacterial and usually involve only one organism, says Andrea N. Johnston, DVM, DACVIM, a Clinical Instructor in Small Animal Internal Medicine at the Cornell University College of Veterinary Medicine Hospital for Animals. "The incidence of bacterial UTIs increases with age and in cats with chronic kidney disease. One study identified an increased incidence of bacterial UTIs in Abyssinians and spayed female cats."

A bacterial UTI occurs when the cat's normal defense mechanisms break down, allowing the bacteria to multiply. The bacteria travel up from the urethra into the bladder and may extend from the bladder into the kidneys. "These bacteria commonly include *E. coli*, *Klebsiella*, *Proteus*, *Pseudomonas* and *Enterococcus* species," Dr. Johnston says.

Symptoms include frequent urination in small amounts — pollakiuria in veterinary parlance — straining to urinate, difficulty urinating, discolored urine,

malodorous urine and inappropriate urination. One way to determine if your cat has a problem is to watch for changes in litter box behavior. "A cat with a UTI will be in the litter box much more frequently than normal," Dr. Johnston says. And if your cat has used the litter box consistently and suddenly starts eliminating elsewhere, you should contact a veterinarian promptly.

**Definitive Diagnosis.** A physical examination, urinalysis and urine culture will be the first order of business. Highly alkaline urine that contains bacteria and an overabundance of white blood cells in a urine sample collected in a sterile fashion is suggestive of a UTI, but a urine culture is required for definitive diagnosis. The veterinarian will probably prescribe a course

**An increased incidence of bacterial urinary infections** has been found in Abyssinians and spayed female cats, according to one study.

of antibiotics. Their administration usually clears up a simple bacterial infection.

It's important for owners to continue giving their cat the antibiotic even if symptoms abate. Stopping too soon may allow residual bacteria to re-multiply. That can cause the infection's symptoms to return and also may promote bacterial resistance during a second round of antibiotics.

Veterinarians may also recommend putting a cat on a therapeutic diet designed to prevent stones from forming in the urinary tract. Stones can irritate the urinary tract and, if they

(continued on bottom of page 4)

## ENCOURAGE WATER CONSUMPTION, BUT NEVER MIND THE CRANBERRY JUICE

The most important step in preventing urinary tract infections is to treat the underlying disease, says Andrea N. Johnston, DVM, DACVIM, at Cornell. Among other measures:

- ◆ Encourage drinking. Water can help flush infection-causing bacteria from the cat's urinary tract. Make sure fresh water is available at all times. Place water in several rooms of your home to give the cat easily accessible drinking opportunities.
- ◆ Boost bathroom breaks. Have more than one litter box and place them in separate rooms to encourage more frequent elimination.
- ◆ Clean the perineum, the area between the anus and the geni-

talia. Keep it free of bacteria if this region is matted or unkempt by gently using baby wipes.

Some women have found cranberry juice to be helpful in preventing UTIs, and two studies, published in the *Journal of Veterinary Internal Medicine*, indicate that cranberry extract may be helpful in treating UTIs in dogs. However, Dr. Johnston urges caution. "Unfortunately, there is no evidence-based data on the safety or efficacy of alternative therapeutic agents for the treatment of feline or canine UTIs," she says. "Cranberry extract has not been evaluated in canine or feline clinical trials as a prevention or cure for urinary tract infections and remains of uncertain benefit."

# Those Startling Reverse Sneezes?

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

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

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

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

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

An episode lasting from a few seconds to a minute or two can occur at any time in any breed. "There are many potential causes: intra-nasal foreign bodies, rhinitis and nasal neoplasia (tumors)," Dr. Johnston says. Reverse sneezing is also linked

to nasal and bronchial infections and cleft palate in young cats. In older cats, causes include dental diseases. Other possible causes are inflammation, nasal drip, long-term vomiting, pneumonia and mites in the nasal cavities.

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

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

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

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

"Many clients describe an isolated episode of reverse sneezing," she adds. "If this is an isolated or rare event, then I tell them not to worry about it, but if it is acute (sudden) in onset, increasing in severity or frequency, then I will recommend more advanced diagnostics such as nasal CT (imaging), rhinoscopy (a procedure in which a small camera is passed into the nasal passages) and possibly nasal biopsy."

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

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

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

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

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

## HEALTH

## UTI... (continued from page 3)

grow large enough, can block the flow of urine. If the stones become lodged in the urethra, the affected cat faces a potentially fatal veterinary emergency.

Other predisposing factors for UTIs "may be congenital abnormalities in

the urinary tract, cancer, polyps, excess glucose in the urine, catheterization, prostatic disease, immunosuppressive drugs such as corticosteroids, or urine with low osmolality [number of particles dissolved in urine]," says Dr. Johnston.

The ultimate prognosis for alleviating recurring UTIs varies, depending on whether the underlying cause of the infection can be determined. A cat with a simple, first-time UTI has an excellent chance of recovery, as long as the owner makes sure he completes the full course of antibiotics. ❖

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

in the morning and at night to spend five minutes playing with the cat," Dr. Houpt says. The cat will let you know what times he likes to play. All you have to do is be there. His toys don't have to be expensive. A favorite toy is hair scrunchies that someone has worn, Dr. Houpt says. A few cats, mostly Siamese, will ingest fabric so be sure to check that the scrunchie is still intact after a play session.

Of course, plenty of other types of toys for feline entertainment are available: electronic mice to chase, catnip toys and a circular device with a ball inside that the cat can bat with his paw. "Cats usually aren't interested in that too long, but you can put their food in there so they have to scoop it out, and that, I think, is enriching," Dr. Houpt says. If you feed dry food, you can put the cat's meals inside a puzzle toy so he has to push it around to get fed.

Cats mostly enjoy interactive and predatory play. Dangle a fishing-pole toy with a feather or other object on the end for the cat to bat at or pull it for him to chase. Many cats enjoy chasing and retrieving small balls. For a simple homemade toy, crumple a piece of paper.

### I Spy

You may have seen your cat sitting in front of a window, chattering excitedly at the birds or squirrels outdoors. Cats are highly visual, more so than dogs, Dr. Houpt says. Videos and window perches are great ways to stimulate them visually. "They like videos of birds especially or a window where they can watch the real thing," Dr. Houpt says. "They'll spend a lot of time watching, even though they must be somewhat frustrated that they can't get to their prey."

An aquarium is another good way to provide visual stimulation. Many cats enjoy watching the fish swim back and forth. Just be sure to put a cover on the tank to prevent your cat from going fishing.

### Up High

Cats love to survey their kingdom from on high. If you have room and your



Interactive toys and puzzles exercise the mind and body.

budget allows, provide a floor-to-ceiling "condo" with platforms and hidey-holes at various levels for perching and hiding. "It is important to give cats things to do and places to hide," Dr. Houpt says.

### Safe Scratching

Scratching is a means of communication for cats as well as a way to groom their claws. Provide your cat with vertical and horizontal scratching surfaces placed in prominent areas, not hidden away in a corner. While most cats scratch standing on their hind legs, some prefer to have three legs on the ground, which is why they scratch your favorite carpet or the needlepoint chair covers. The most popular horizontal scratching aids tend to be made of corrugated cardboard impregnated with catnip.

A kitty condo can double as a vertical scratching post. Look for one wrapped in sisal, a rough, stiff, stringy fiber. Cats seem to prefer its texture to that of the indoor/outdoor carpeting often found on scratching posts.

### Touch Me, Feel Me

Most cats love the tactile stimulation provided by petting, massage and grooming. Just be sure you are touching the cat in a way he likes. (See Page 2 for more on

petting.) Cats are very particular about where you pet them and the amount of petting they're willing to tolerate. Favorite areas are between the cheeks, under the chin and at the base of the tail. Be leery of giving belly rubs, even if the cat appears to invite it. Many cats will bite or scratch after just a couple of strokes on the stomach.

### The Great Outdoors

It's dangerous for cats to roam freely outside, but an enclosure in your yard can give them the pleasure of rolling in the grass and doing a little bird-watching. "I'm a great advocate of catios, that is, outdoor enclosures, for cats so that they can be on the ground or at least have another view," Dr. Houpt says.

If you can't provide that, consider planting a little indoor garden for your cat with wheat grass, rye or catnip. Even a square of grass from your lawn — herbicide-free, please — will entice him to nibble.

### One Caveat

One thing you should not get to enrich your cat's life is another cat, Dr. Houpt says. "Some cats get along, but many do not. It keeps me employed, but I'd rather there were happy cats instead." ♦

## ZOONOSIS ...

(continued from cover)

to standard antibiotics, and a different course of treatment might be needed.

Transmission of staph infections, like many other zoonotic diseases, can be easily prevented with good hygiene. "In all my 37 years of treating staph infections in animals, I have never gotten an infection because I wash my hands during and after examining each animal," Dr. Miller says.

Staph is also what is known as an anthroponotic disease — otherwise known as reverse zoonosis. That means that in addition to moving from animals to humans, it can also be transferred from humans to animals.

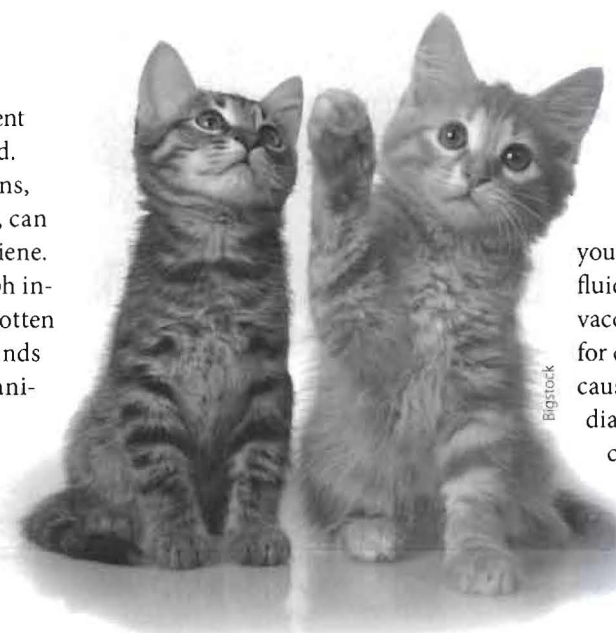
In fact, according to Armando Hoet, DVM, Ph.D., Director of the Veterinary Public Health Program at Ohio State University, reverse zoonosis is the main concern with staph infections. "With cases of staph infections rising in the U.S. [in humans], we are starting to see spillover to the companion animal side," says Dr. Hoet, who is board certified in veterinary preventive medicine. "We're seeing more cases [in pets], but it's not because it's circulating more in the animals. It's circulating more on the human side. The dogs and cats tend to be the victims."

One problem: Not all zoonotic diseases exhibit observable symptoms. "Owners should know that animals can carry infectious agents, such as toxoplasmosis, without any signs of disease," Dr. Miller says. "Good personal hygiene, routine worming of pets and prompt investigation and treatment of any disease process in the pet will minimize the frequency of a zoonotic disease."

These are among the diseases that can undergo cross-species transmission:

### Cat Scratch Disease

**Cause:** The bacterium *Bartonella henselae*, often transmitted to humans by a scratch or a bite. Kittens are likely to be infected and pass the bacteria to people,



Kittens can become infected with the bacteria causing cat scratch disease, and while showing no signs of it, transmit it to humans.

your cat, avoiding contact with his bodily fluids and washing your hands often. A vaccination for leptospirosis is available for cats. In humans, leptospirosis can cause fever, aches, chills, abdominal pain, diarrhea, vomiting and rashes. Severe cases can cause kidney or liver failure.

### Rabies

**Cause:** A bite from an animal infected with the virus, which attacks the nervous systems of animals and people — and can be

deadly to both. The disease is 100 percent preventable via vaccination and almost always fatal in unvaccinated pets. In humans, it's possible to prevent rabies infection if a series of shots is given soon after a bite. Once symptoms appear, the person rarely survives the disease.

"Fortunately, rabies isn't as common in the U.S. as it used to be," says Jeanette O'Quin, DVM, MPH-VPH, in the Department of Veterinary Preventive Medicine at Ohio State. However, there has been an increase in rabies in raccoons in the Eastern United States in recent years, she says. "That increases the risk in that area for pets and people."

### Mites

**Cause:** Certain parasites, such as scabies and Cheyletiella. They can result in skin irritations and infections in pets, and be transmitted to people, who can develop an itchy rash. Because mites usually won't reproduce on humans, symptoms should resolve once the mites are cleared from the household and pets.

### Ringworm

**Cause:** A fungus triggers this skin and scalp disease. Characterized by hair loss and a red, variably itchy rash, ringworm can be transmitted from a cat to a human via contact with an infected animal's skin or hair. One difficulty: It's possible for a

who may develop a mild infection at the point of injury. Affected cats show no signs of illness, so it's wise to avoid rough play with cats, especially kittens, and immediately clean any bites or scratches.

### Toxoplasmosis

**Cause:** The *Toxoplasma gondii* parasite. The disease passes to people in contaminated cat feces. Most exposed people don't get sick, though some develop flu-like symptoms. Pregnant women are of greatest concern because the disease can pass to the fetus and cause defects. Pregnant women should avoid cleaning litter boxes or working in the garden where cats may defecate, and all owners should thoroughly wash their hands after coming in contact with cat feces.

### Leptospirosis

**Cause:** The *Leptospira* spirochete bacteria. The infection can spread throughout the body, infecting the liver, kidneys, central nervous system, eyes and reproductive system. The extent of infection depends on the strength of your cat's immune system. Cats typically contract the disease from contaminated water, soil or mud, or contact with an infected animal's urine.

If your cat is undergoing treatment for leptospirosis, prevent its spread to humans by wearing gloves when handling

(continued on top of page 7)

## CAN YOUR CAT CATCH YOUR FLU?

Public health and veterinary research frequently focuses on zoonotic diseases — those passed from animals to humans, while far less is known about reverse zoonosis, the transmission of diseases from humans to animals. However, recent evidence suggesting that humans can transmit the flu virus to animals has raised concern among scientists.

The first recorded, probable case of fatal human-to-cat transmission of the pandemic H1N1 flu virus occurred in Oregon in 2009. Since then, a handful of similar cases have been recorded. The limited reports have prompted veterinary researchers at Oregon State and Iowa State Universities to identify more cases of this type of disease transmission to better understand the risks posed to people and pets.

As of October 2012, researchers had identified 13 cats and one dog with pandemic H1N1 infection who appeared to have come from humans. The animals' symptoms were similar to those in humans. They developed severe respiratory disease, stopped eating, and some of the animals died.

The researchers are surveying flu transmission to household cat and dog populations, and recommend that people with flu-like illnesses distance themselves from their pets. If a cat experiences respiratory problems or other illness after household exposure to someone with the flu, the pet should be seen by a veterinarian for testing and treatment.

pet to carry ringworm spores and not show any symptoms.

## Roundworms

**Cause:** The common intestinal parasite *Toxocara cati*. Roundworms aren't particularly harmful to adult cats, but a large number of the parasites can be life threatening to kittens and debilitated older cats. In the case of a small number of worms, there may be no outward signs of infection.

The disease in humans — called toxocariasis — can be contracted through contact with a cat's feces. Children are at an increased risk. Toxocariasis is one of the top parasitic causes of blindness in children in the U.S., says Dr. Hoet at Ohio State. "And it can be completely prevented just by deworming your pets on a regular basis. However, other pets can contaminate areas like yards, gardens and open play areas, so parents should prevent kids from getting dirt in their mouths, and make sure that they wash their hands after playing outside."

## Hookworms

**Cause:** Several species of parasites. Kittens are especially likely to have hookworm infections and can pass hookworm eggs in their stool. Eggs or larvae can enter the human body via direct contact with contaminated stools or dirt, and the infection can be painful, with itchy skin infections or intestinal bleeding and inflammation. As with roundworm, transmission can be prevented by avoiding contact with potentially infected feces or dirt, and through regular deworming of pets.

## Salmonellosis

**Cause:** The bacteria *Salmonella*. Although most commonly transmitted through contaminated food,



**Roundworm can be spread to people through cat feces.** It can be prevented by deworming cats, but other pets can contaminate play areas. Parents should prevent children from putting dirt in their mouths and make sure their hands are washed after playing outside.

Salmonellosis is also a pathogen that can be spread from animals to people and from people to animals via contaminated feces. It lives in the intestinal tract of many animals.

*Salmonella* germs are shed in animals' feces and can easily contaminate their environments. People can also get a *Salmonella* infection if they don't wash their hands after contact with infected animals or their environment. Signs of Salmonellosis in people include diarrhea, fever and stomach pain lasting a week. However, infections can become more severe and require hospitalization.

"The diseases mentioned here and in the sidebar have existed in cats for years and yet their actual zoonotic potential is small," Dr. Miller says. "Why? Good personal hygiene and common sense. If the cat is ill, take him to his veterinarian so the cause for the disease can be found and corrected. Hand washing with plain old soap and water can't be stressed enough." ♦



Elizabeth

Elizabeth is thankful for the assistance of **Bruce G. Kornreich, DVM, Ph.D., DACVM**, 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 ...**

❖  
**HAIRBALLS**

❖  
**ROOT CANALS**

❖  
**IS YOUR CAT  
DEMANDING?**

❖  
**WEIGHT  
MANAGEMENT**

## Vaccine-associated sarcoma: A major concern for cat lovers

**Q** I just had to euthanize my 10-year-old kitty, Luna, after she developed a fibrosarcoma following a rabies vaccination. I am terribly upset that, in trying to protect her, I may have contributed to her demise. Do I now have to be concerned about my other cats?

**A** I am very sorry to hear about your loss, and I am sure that you did everything in your power to make Luna's life wonderful. Vaccine-associated sarcoma (VAS) is a devastating disease that has become a major concern for cat lovers and veterinary professionals, and research into the mechanism of this condition is ongoing.

The recognition of VAS in cats has had a significant impact on the way that veterinarians view vaccinations and how they should be administered. Since rabies and feline leukemia virus vaccines have been identified as being more likely to result in VAS, the focus has been on these particular vaccines, but VAS may occur after any vaccine.

Vaccines come in a variety of forms. Modified live vaccines (MLV) contain a small quantity of bacteria or virus that has been modified so that it is not capable of causing clinical disease, but can still "infect" an animal. This low dose of infectious agent initiates an immune response, resulting in the production of protective antibodies. While MLV usually produce a robust immune response, they have the potential to mutate to a form of the virus that causes disease, among other problems.

Killed vaccines, in contrast, contain a form of the infectious agent that cannot cause infection but can still initiate an immune response. Killed vaccines are often combined with compounds called adjuvants, which increase the immune response of the patient and the protective immunity imparted by the vaccine. Some studies have implicated adjuvants as the cause of the majority of VAS in cats.

Other studies suggest that VAS may not be due to components of the vaccines themselves, but rather to the inflammation induced by the injections required to deliver vaccines. This

hypothesis was raised when VAS were found at non-vaccine injection sites. They have been reported, for example, at the site of microchip insertion. Subsequent studies suggest that these cases may have resulted from vaccines delivered at the same site as the microchip, and this topic remains controversial.

The incidence of VAS in cats is between 1 in 1,000 and 1 in 10,000 vaccines administered, and the average time from vaccination to the development of VAS in cats is between one and three years, although this can vary widely. The diagnosis of VAS involves the identification of a tumor at the site of a previous vaccination, followed by microscopic evaluation of a sample of the tumor (biopsy).

The treatment of VAS consists of aggressive surgical removal of all tumor tissue, followed ideally by radiation and/or chemotherapy. Although surgical removal of VAS can be quite disfiguring due to the aggressiveness of the surgery required, studies have shown that aggressive management can improve the survival of cats diagnosed with VAS. In many cases, however, VAS may recur.

The recognition of VAS in cats has altered vaccine recommendations significantly. These alterations include measures to decrease the frequency of vaccination to the minimal amount necessary to provide protection from infectious disease, case-by-case evaluation of the necessity for each vaccine based upon the living conditions of each cat, and recommendations for where vaccines should be administered so that if a VAS does develop, surgical removal will result in the least possible disfigurement of affected cats.

It is important to remember that while VAS is a risk that should not be discounted, vaccination remains a proven and vital aspect of the maintenance of your kitties' health. I encourage you to discuss your concerns with your veterinarian and to contact the Cornell Feline Health Center if you have any questions.

I hope that this is helpful and that you will discuss this issue further with your veterinarian. Remember, in spite of the emergence of VAS in cats, vaccination remains a vital component of the health care of cats everywhere.

—Best regards, Elizabeth ❖

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