

PREGNANCY IN CATS

OVERVIEW

Pregnancy is the period of gestation when the young are developing in the mother's uterus. Normal gestation in cats is 58 to 68 days (the average is 63 days).

The litter size in cats varies from one kitten to more than 10. Litter sizes are often smaller in young and old animals and largest when the mother is around three to four years of age.

Conditions that may be confused with pregnancy include mastitis (inflammation of the mammary glands), mammary gland neoplasia (cancer), abdominal enlargement due to fluid accumulation or organ enlargement, or pyometra (infection of the uterus).

WHAT TO WATCH FOR

- Nesting behavior (attempting to make a nest by tearing up papers, blankets, etc.)
- Mothering activity (this may include mothering of shoes, toys and other articles)
- Weight gain (which typically occurs after the 4th week of pregnancy)
- Abdominal enlargement or swelling
- Mammary gland enlargement. The mammary glands may be large and secrete milk or serous fluid (usually one to two days before delivery)
- Abnormal behavior. If your pet does not eat, acts lethargic or you notice excessive vaginal discharge, please call your veterinarian as soon as possible. Be aware that many cats seek seclusion before delivery, and this is considered normal delivery behavior.

DIAGNOSIS

Your veterinarian may perform some diagnostic tests to confirm your cat's health and to determine if she is pregnant. These include:

- A complete medical history and physical examination.
- Evaluating your cat's behavior and noting any potential breeding episodes
- Abdominal palpation (technique of examining the organs and other parts of the body by touching and feeling). However, kittens can seldom be felt until at least 26 to 35 days after breeding and fetuses can be difficult to feel in some cats.
- Abdominal radiographs or X-rays (the skeleton of the kitten is visible on an X-ray after 45 days of pregnancy)
- Abdominal ultrasound can be used to diagnosis pregnancy after 21 to 24 days post breeding. This is a safe and excellent way to diagnose pregnancy and verify the health of the kittens. Ultrasound can also be used to estimate litter size.
- Testing for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV)

Your veterinarian may recommend other tests (not typically done with a normal pregnancy) based on a case-by-case basis. Tests may include:

- Complete blood count (CBC). There are no practical blood or urine tests available to diagnose pregnancy in cats.
- Serum biochemistry (bloodwork to look for abnormalities in liver and kidney function)
- Urinalysis

TREATMENT

- Normal pregnancy does not usually need any “treatment;” however, it is important to see your veterinarian for regular check-ups to ensure the health of your pet.
- It is extremely important that your cat be cared for properly during the pregnancy.
- If you decide that you do not wish to have further litters, or if your pet has significant problems during the birth process, you may wish to have her spayed to prevent further pregnancies.
- Have your veterinarian recheck your cat one week before the due date. The doctor may then palpate for kittens and perform a pelvic exam to establish a rough estimate of pelvic canal size vs. kitten size to try to anticipate problems that might occur during the delivery.

HOME CARE

Good nutrition is essential for healthy kittens and mothers so feed your pet a high-quality diet formulated for pregnant or nursing cats.

- Although nutritional needs change little during the first 4 weeks of gestation, your cat's nutritional needs may double or triple during the last 5 weeks. Your veterinarian may recommend a special diet and/or vitamins for your cat.
- Be sure to provide the increased amounts of food she needs in several small meals each day, rather than feeding it all at one time. It is particularly important to feed frequent small meals during the last part of gestation. A pregnant cat may not feel like eating much as delivery nears because her abdomen is full of kittens, which leaves little room for the stomach to enlarge. Continue feeding a high-quality diet until after the kittens have been weaned.
- Be sure that fresh water is always available, since pregnancy increases your pet's fluid needs.
- Moderate exercise is recommended. Neither forced rest nor strenuous exercise is a good idea. Keeping your cat indoors is often recommended (especially during the last couple weeks of pregnancy).
- If you would like to know more precisely when delivery is near, check the rectal temperature of the mother twice daily from the 58th day of pregnancy until labor begins. Normal rectal temperature varies between 100.5 and 102.0 degrees Fahrenheit. Within approximately 24 hours of the onset of labor the rectal temperature drops nearly two degrees in most cats.

QUEENING

The more that you can learn about queening (birth of the kittens), the better prepared you will be for any difficulties that might occur. Once you know that your cat is pregnant, you should begin preparing for the birth.

Provide a queening box for the mother to begin sleeping in to ensure that she gives birth to the kittens in an area that you have chosen (but this does not always happen). Allow her access to the box so she can become accustomed to it before delivery. The box can be covered and placed in a quiet (secluded) area where she will feel comfortable and protected. Newspapers or a soft blanket or towel can also be used.

GASTROINTESTINAL PARASITES IN CATS

WORMS

Most people are aware that their pets have worms, but just what are these worms, where do they get them and how do you get rid of them? When pet owners talk about worms, they are really talking about all gastrointestinal parasites. And there are several gastrointestinal parasites that commonly affect our dogs and cats.

ROUNDWORMS

Roundworms are visible in your pet's stool or vomit. They are long and thin, similar to thin spaghetti. This parasite can pass through the placenta (only in puppies), through the milk (puppies and kittens) or be ingested (puppies and kittens). Some animals become infected after ingesting another animal with roundworm eggs. It is thought that nearly all puppies are born with roundworms since they pass through the placenta. In kittens, most become infected after nursing.

The roundworm that affects dogs is *Toxocara canis*. The roundworm that affects cats is *Toxocara cati*. The roundworm *Toxascaris leonina* is shared between dogs and cats. The roundworm eggs are very resistant to chemicals and weather and remain infective in the soil for years, which can result in repeated reinfection.

Typically, the eggs are found on the soil or grass. As the dog or cat walks by, the eggs are picked up on the animal's fur. During normal grooming, the animal then ingests the eggs. After reaching the stomach, the eggs hatch. The developing larvae continue to mature in the small intestines and become adults in about three to four weeks. At this point, the mature worms are able to reproduce and shed more eggs. These eggs pass out the intestines in the feces. Once in the soil, the eggs will become infective in about one week.

WHIPWORMS

Whipworms are another type of gastrointestinal parasite that affects dogs. The most common whipworm is *Trichuris vulpis* and it is a significant cause of large bowel diarrhea. The whipworm eggs are quite resistant and can live in the environment for up to five years.

Typically, a dog becomes infected after ingesting eggs from the environment. The eggs then hatch once they reach the stomach. It takes about three months for the eggs to mature to adults and begin shedding eggs. The adults then burrow into the small intestine and feed on blood and tissue. The eggs are intermittently passed in the feces and become infective in about one month. Since the eggs are not shed all the time, repeated fecal examinations may be necessary to diagnose whipworm infection.

HOOKWORMS

Ancylostoma caninum is the most common hookworm in the dog. *Ancylostoma tubaeforme* is the most common hookworm in the cat. The eggs are relatively susceptible to cold weather and the eggs are usually destroyed after a hard freeze. Hookworm infection can occur as the worms pass through the placenta, are spread during nursing, penetrate through the skin or are ingested.

After ingestion, the eggs hatch in the stomach and develop into adults in about two weeks. If the larvae penetrate the skin, it takes about four weeks for the larvae to mature. Once mature, the worms begin reproducing and shed eggs in the feces. It then takes two to eight days until the eggs are infective. The adult worms attach to the lining of the small intestine and feed on blood. In a severe infection, profound anemia can occur.

There are a variety of medications used to kill hookworms.

GIARDIA

Giardia are pear-shaped, one-celled organisms that infect the small intestine of dogs and cats. Most cases of Giardia in young animals cause explosive, watery diarrhea, dehydration, weight

loss and an unkempt appearance. Adult animals are capable of harboring the infection without showing clinical signs.

The eggs are susceptible to chemical disinfection. Once ingested, the infective cysts develop in the small intestine. Diarrhea can begin as early as five days after exposure and cysts can appear in the feces one to two weeks after exposure. Most domestic animals contract Giardia from drinking contaminated pond or stream water.

TAPEWORMS

Tapeworms are very common in dogs and cats and, despite what you may think, rarely cause illness. Most people see the tapeworm egg packets as they pass out the rectum and crawl on the animal's fur. These egg packets, referred to as proglottids, contain multiple eggs and appear about six to eight weeks after ingestion of an infective tapeworm egg. In order to become infective, the tapeworm egg is either ingested by a rodent, rabbit or flea. The egg then matures and becomes infective. Eggs or egg packets eaten after they pass out in the stool are not infective and do not result in more tapeworms.

There are two types of tapeworms, Taenia and Dipylidium. Taenia tapeworms are acquired when an animal ingests an infected rabbit or rodent. Dipylidium tapeworms are acquired when an animal ingests an infected flea. Once the tapeworm egg is ingested, it hatches in the stomach and begins to invade the walls of the intestines. The worm then matures to a larva and then to an adult. About 35 to 80 days later, the adults begin to shed egg packets, which pass in the stool. The adult tapeworm can survive in the intestine for about seven to 34 months.

Animals infected with tapeworms may scoot on the floor since the egg packets tend to crawl on the skin, causing itchiness.

COCCIDIA

Coccidia are intestinal protozoa that invade and infect the lining cells of the small intestine. There are many species of coccidia and almost all domestic animals can become infected. Of the numerous types that infect dogs and cats, Isospora is the most common. Coccidia spread when an animal eats infected fecal material or an infected host, such as a small rodent. Many researchers maintain that virtually all dogs and cats have been infected with the organism at one time or another during their life.

Most coccidial infections are harmless, cause minimal symptoms and are eliminated by normal body defense mechanisms. More serious coccidial infections cause severe watery or bloody diarrhea and are often seen in high-density confinement situations such as kennels, catteries and pet shops.

OBESITY IN CATS

OVERVIEW

Obesity is defined as the excessive accumulation of body fat. At least 25 percent of all cats are considered obese or are likely to become obese. It is the most common nutrition-related health condition in cats in our society.

The primary causes of obesity are overeating and lack of exercise. When regular caloric intake exceeds the energy burned, the excess is stored as fat. As little as an extra 1 percent caloric

intake can result in 25 percent increase over ideal body weight by middle age.

Most owners don't recognize that their cats are overweight until they take them to the veterinarian for another reason. Most pets begin slowly gaining weight and only a historical review of body weight reveals the insidious nature of this condition.

Cats that are overweight may experience difficulty breathing or walking or they may be unable to tolerate heat or exercise.

VETERINARY CARE DIAGNOSIS

Veterinary care should include diagnostic tests to determine overall health and to provide recommendations for weight loss.

Diagnostic tests may include:

- A thorough veterinary examination, including an accurate measure of body weight and an assessment of body condition score. A historical review of changes in your cat's body weight is often helpful in establishing a pattern of weight gain and may help identify a particular event or change in environment that relates to the increase in body weight.
- Routine blood work including a complete blood cell count, serum profile and urinalysis are necessary to determine if there is an underlying disease. If the results of these tests indicate a problem, additional tests are warranted to specifically identify the condition before starting a weight loss program.
- Assessment of your cat's current daily intake of all food, treats, snacks, table foods and exercise schedule is important in the development of a successful weight loss program. Clearly if the calculated caloric intake exceeds the calculated daily energy requirement of the cat at an ideal body weight, then excessive caloric intake is the cause of the obesity.

TREATMENT

Treatment of any concurrent or underlying disease that affects obesity is recommended.

- Lower your cat's daily caloric intake by changing the cat food product (there are several diets formulated for weight loss) or the amount fed daily.
- Increasing fiber or water intake may sometimes be necessary to satiate your cat.
- Increase exercise activity. To enhance exercise, a variety of leashes and toys are available.

HOME CARE

Weight loss should be a family effort. All members of the family must admit the animal is overweight and commit to a weight loss program. It may be helpful to maintain a log of intake (food and treats) and weight to monitor progress. It might be most effective if one person takes charge of feeding your cat, but all members can help exercise her.

To achieve significant weight loss, the diet must be changed to a therapeutic veterinary diet specifically designed for weight loss. Simply feeding less of your cat's regular food is rarely, if ever, successful. Owners must be willing to measure exactly the amount of food offered and minimize treats. If treats are necessary, offer low calorie snacks such as air popped popcorn or a piece of vegetable (such as a carrot).

Re-check visits are essential every 4-6 weeks to monitor the weight loss since adjustments to

the feeding plan are often needed. As your cat approaches ideal body weight, caloric intake must be reduced further to maintain weight loss.

Most cats require an 8-12 month weight loss plan to reach their ideal weight. Most cats do achieve ideal or near ideal body weight when the owner and family members are committed to improving the pet's health. Most owners continue feeding the weight loss diet, only at a higher food dose, to maintain their pet's ideal weight.

Specific recommendations depend upon the underlying disease. For obesity due to:

- Excessive caloric consumption – Once an ideal weight has been achieved, a low calorie food should be continued, treats and snacks should be minimized, and the exercise program continued.
- Diabetes mellitus – Regular recheck visits are necessary to monitor insulin dose and effectiveness. Body weight changes should also be checked regularly.
- Blood thyroid levels should also be checked regularly particularly if the cat is losing weight rapidly.

DIET RECOMMENDATIONS

PREVENTION

- Hill's Prescription diet w/d®

TREATMENT

- Eukanuba Restricted-Calorie®
- Eukanuba Weight Loss Formula®
- Hill's Prescription diet r/d®
- Purina CNM OM-FORMULA®
- Waltham Calorie Control®
- IVD Weight® or IVD Hifactor®

INFORMATION IN-DEPTH

There are several causes of feline obesity, but whether your cat is overweight because of overfeeding or because of a disease process, she is still taking in more calories than she is using.

Obesity in pets is more commonly due to over-eating (excessive caloric consumption) than disease. The most common cause of obesity is a chronic consumption of calories greater than actual daily energy requirement. Excessive dietary calories are stored as body fat.

Other causes of obesity are due to an altered energy metabolism. Some diseases and conditions can contribute to obesity. The most common is diabetes.

- Diabetes mellitus – There is a relationship between obesity and diabetes, where overweight and obese animals become insulin resistant. These animals often begin to show the early signs of diabetes mellitus which are excessive drinking, excessive urinating and hunger. As the disease progresses, the cat eventually loses too much weight.

Call your veterinarian if you suspect that your cat is overweight, or if your pet begins experiencing difficulty breathing or exercising or appears unable to get comfortable. Also, have a veterinarian examine your pet to determine if these abnormalities are present before instituting a weight loss program.

VETERINARY CARE IN-DEPTH

DIAGNOSIS IN-DEPTH

Your veterinarian will want to determine the cause of your cat's obesity before deciding upon treatment. Diagnostic tests that your veterinarian may wish to perform include:

- A thorough physical examination, including an accurate measure of body weight and an assessment of body condition score.
- Assessment of your cat's current daily intake of all food, treats, snacks, table foods and exercise schedule.
- Routine blood work consisting of a complete blood cell count, serum profile and urinalysis. If the results are normal, obesity is probably the result of excessive caloric intake and decreased energy expenditure. However, if the results of these routine tests indicate a potential problem, additional tests are warranted to specifically identify the condition.

Additional diagnostic tests may include:

- Blood and urine glucose levels: Diabetes mellitus can be diagnosed based upon detecting high blood glucose level and the positive detection of glucose in the urine. Sometimes a series of blood glucose measurements are needed to confirm the diagnosis.

TREATMENT IN-DEPTH

Therapy recommendations are dependent upon the underlying cause of the obesity. Take your cat to your veterinarian for a complete work-up before beginning a weight loss program to rule out major diseases.

Recommendations for obesity due to:

EXCESSIVE CALORIC CONSUMPTION

- Lower your pet's daily caloric intake by 50 percent of that required for her ideal body weight.
- Change the pet food product to one designed for weight loss and containing:
 - less than 360 kcal per 100 grams of food on a dry matter basis.
 - between 7-12 percent fat.
 - between 10-30 percent crude fiber.
 - greater than 35 percent crude protein.
- Feed your pet a prescribed measured amount of food several times daily.
- Give treats only as directed. Use specifically designed low calorie treats or give cooked or raw vegetables.
- Increase exercise activity.
- Try getting your pet to swim. Swimming is an excellent exercise for patients with orthopedic disabilities. Unfortunately, many cats hate water and swimming.
- Return to your veterinarian for monthly visits for a weight check and appropriate adjustments in meal size.

DIABETES MELLITUS

- Often in the management of diabetes, a dietary change to a veterinary therapeutic diet is necessary for controlling blood glucose levels. The food should contain a moderate level of fiber (5-10 percent) with lowered levels of readily available carbohydrates.
- Insulin treatments are individualized to the patient.
- In some cases of feline diabetes, when the cat loses weight the clinical signs of diabetes resolve and occasionally insulin treatments are no longer needed.

FEEDING YOUR ADULT CAT

WHAT CATS NEED TO EAT

Good nutrition and a balanced diet are essential elements for good health. The ideal diet for your cat includes a good quality food and plenty of fresh water. Your cat should be fed amounts sufficient to meet energy and caloric requirements. Inadequate or excess intake of nutrients can be equally harmful.

Dry cat foods have greater caloric density which means simply, there is less water in a 1/2 cup of dry food as compared to a canned food diet. Overall, the choice of "dry" vs. "canned" vs. "semi-moist" is an individual one, but most cats enjoy eating a combination of a dry food along with supplemental canned food.

Cats in the various life stages, including kitten ("growth"), adult and senior ("geriatric"), require different amounts of nutrients. Special situations such as pregnancy and nursing kittens can dramatically affect nutritional needs. Working cats need more calories, while the "couch potato" needs less (just like us).

Cats have particularly unusual nutrient needs. These include:

VITAMIN A

Your cat doesn't have the ability to convert the carotene found in plants to vitamin A. His source of vitamin A must come from liver, kidney and other organ meats. If a cat lacks vitamin A in his diet, poor growth, weight loss, damage to cell membranes and decreased resistance to disease are among the possible consequences. More importantly, female cats may fail to cycle, the embryo may fail to implant or the pregnant cat may abort or produce kittens with abnormalities, such as a cleft palate.

NIACIN

Your cat is unable to synthesize niacin from the amino acid tryptophan, due to an excess of a certain enzyme. Therefore, unlike other animals, his requirement for niacin must be met entirely from niacin present in animal tissues (plants are low in niacin). Deficiencies include weight loss, loss of appetite, unkempt fur and wounds around the mouth.

ESSENTIAL FATTY ACIDS

Your cat requires sufficient arachidonic acid, a fatty acid found only in animal tissue. Therefore, he requires some animal fat in his diet. Dermatitis and poor reproductive performance are among the deficiency symptoms.

TAURINE

Your cat's taurine requirement is quite high. Naturally he'd obtain taurine, an amino acid, from muscle meats. Fish and shellfish are also exceptionally good sources. Taurine deficiency can produce central retinal degeneration (CRD), a form of blindness. Besides CRD, deficiency symptoms of taurine include poor reproduction and dilated cardiomyopathy (heart muscle disease).

In addition to these dietary peculiarities, your cat requires a high amount of protein in his diet, about 12 percent in comparison to 4 percent for adult dogs. Unlike you, your cat does very well on a high-fat diet. Fat gives him needed energy, assists the absorption of fat-soluble vitamins, such as A and E, and adds taste. Fat also adds to his needed calories, a daily requirement of about 35 kilocalories per pound of body weight.

FEEDING

You can either feed him at least two meals a day or leave food out for snacking. In order to fulfill his needs, feed him one ounce of canned food daily, or 1/3 ounce of dry food, per pound of body weight. Most young cats (one to four years of age) are very active and self-regulate their food intake, thereby maintaining a healthy body weight.

As your cat ages, he may slow down and begin putting on extra weight. Monitor his weight — if he's becoming too fat, consult your veterinarian.

Remember, water is also an important nutrient. He needs fresh clean water daily. Your cat drinks about twice the amount of water as he consumes in dry food, though since canned cat food is greater than 75 percent water, he barely drinks when his diet consists of canned cat food only.

RECOMMENDATIONS

The Association of American Feed Control Officials (AAFCO) is an organization that publishes regulations for nutritional adequacy of "complete and balanced" cat foods. Diets that fulfill the AAFCO regulations follow the national consensus recommendations for feline foods and will state on the label: "formulated to meet the AAFCO Cat Food Nutrient Profile for... (a given life stage).

CONSIDER YOUR CAT'S AGE

- For kittens (up to 8-9 months of age): Feed your kitten a consistent canned, semi-moist, or dry cat food designed for kittens.
- For adult cats (1-9 years): Feed your cat a consistent canned, semi-moist, or dry cat food designed for an "adult" cat.
- For senior cats (8-9+ years): Feed your cat a consistent canned, semi-moist, or dry cat food designed for a "senior" cat.

CONSIDER YOUR CAT'S BODY CONDITION

- Underweight cats: Feed your cat 1-1/2 times the "usual" amount of food and make an appointment to see your veterinarian about your cat's body condition. Consider switching to a food with higher protein and fat content.
- Lean cats: Many healthy cats are a bit thin, especially active young male cats. Consider increasing total daily food or caloric intake by 25 percent. Weigh your cat every week, if possible, to chart progress.
- Chubby cats: If your cat is a bit overweight, try increasing the daily exercise routine. Gradually increase exercise over two weeks unless limited by a medical condition. Many cats like to play. If these measures fail, cut out all treats and reduce daily intake of food by up to 25 percent.
- Fat or obese cats: Stop all treats except hairball medicines if needed. Increase exercise gradually over 2-3 weeks if not limited by a medical condition. If these measures fail, reduce the total daily food amount by 25 percent to 40 percent, switch to a low fat/high fiber diet, and call

your veterinarian to discuss plans. Inquire about prescription-type reduction diets that can really be effective while providing balanced nutrition.

PREFERRED FOOD

There are a number of prominent manufacturers of high quality cat foods, including Iams (Eukanuba), Hill's (Science Diet), Nature's Recipe products, Nutra Max, Pedigree, Purina and Waltham, among others. Follow the label recommendations, but use your own judgment in determining how much to feed. Always provide your pet with fresh water.

EXERCISING YOUR CAT

DAILY EXERCISE IS IMPORTANT

Have you ever watched your cat exercise? Perhaps your kitty's exercise regimen consists of a mad dash around the house – a furry bullet dashing from room to room. Or possibly it's jumping up on horizontal (and even vertical) surfaces, tearing up the carpets and furniture, or attacking your feet in the middle of the night. Or maybe it's stalking or pawing at some moving critter, like a fly or a lizard.

Exercise is as important to your cat as it is to you. Young cats as well as healthy adult cats need periods of exercise. Even our senior pets need regular exercise to maintain their health and well-being.

We all know that exercise affects us both physically and mentally. The same is true for your cat. Your kitty can become depressed if not sufficiently stimulated. He may keep you awake at night if he does not receive enough stimulation during the day. Cats are wonderful athletes, but they generally like to exercise for brief periods only. A vigorous playtime at night may help you both get some sleep.

ORGANIZED PLAY

Organized play is important and one of the best ways to spend quality time with your pet. Play stimulates your cat mentally. When kittens play together they pick up social skills and self-sufficiency. They refine their stalking and pouncing, as well as coordination and timing required to make a kill. They learn about their environment by exploring and climbing, and they find the best spots to hide in and lie in wait for their victims.

Adult cats, too, enjoy toys that allow them to simulate natural stalking and hunting activity. Commercially available toys are often inviting, but your kitty would probably be happy with anything that he can chase or pounce on. Here are a few things you can try:

- Roll a table-tennis ball across the floor. Sit back and watch as your kitty chases, stalks and swats the ball.
- Wad up a piece of paper, attach an old tie around it so that you can drag the paper around the floor. Soon your cat will launch an attack.
- Get a tall scratching post, preferably one with "branches," that your cat can run up and down. Scratching posts assist your cat to flex his muscles and to shed old claw sheaths.
- Provide a large paper bag or cardboard box for your cat to explore.
- You can also buy elaborate gymnasiums for cats, which your cat might climb and explore.

PRECAUTIONS

- Never use string or yarn as a toy. Although your cat may enjoy them, these items can be deadly if swallowed and a portion becomes stuck around the tongue or in the intestinal tract.

- Putting your cat outside is not a particularly good way to encourage exercise. In general, the most important thing you can do to prolong the life of your cat (in addition to kitten vaccinations) is to keep your cat indoors or confined within a controlled out-of-doors area. This keeps your kitty safe from injury, animals attacks, and the spread of deadly infectious diseases from stray cats.
- Daily exercise or playtime is recommended unless there is a medical problem and your veterinarian has instructed you to limit your cat's activity.

WHEN TO CONSIDER EUTHANASIA IN CATS

A CAT'S QUALITY OF LIFE

Many cats suffer with chronic diseases, such as cancer, that can often be managed in such a way that life is prolonged, although the quality of life is greatly diminished. For most cat owners this issue greatly influences the decision concerning euthanasia. Certainly, quality of life is a personal judgment; you know your animal companion better than anyone else. And while your veterinarian can guide you with objective information about diseases, and even provide a personal perspective of a disease condition, the final decision about euthanasia rests with you.

WHAT AILING CATS SHOULD BE ABLE TO DO

If you are considering euthanasia, here are some guidelines to help you decide whether your cat would benefit. Cats with chronic or incurable diseases that are given proper medication and care should be able to:

- Eat, drink and sleep comfortably without shortness of breath
- Act interested in what's going on around them
- Do mild exercise
- Have control of their urine and bowel movements - unless the disease affects one of these organ systems
- Appear comfortable and free of moderate to severe pain

Of course, whenever there is a chronic condition, some days will be better than others and one should learn to expect the natural "ups and downs" that attend most chronic disease conditions. You must determine what balance is acceptable for your own situation. Speak with your veterinarian if you have any questions or concerns regarding the diagnosis or treatment of your cat's disease.

THE EFFECTS OF MEDICATION

If your cat is taking medication for a disease condition, ask your veterinarian if side effects of the medicine could be involved with any adverse symptoms such as lack of appetite, vomiting or diarrhea (but DON'T stop giving prescribed medication until you speak with your veterinarian). Sometimes it is the medicine, not the disease, that makes a pet appear more ill and adjusting the dose or changing the medicine can have a very positive effect.

THE HIGH COST OF CARE

Of course, some diseases are very difficult, expensive or time-consuming to treat. The medical bills that may accumulate can influence your decision regarding euthanasia. These are practical decisions that must be made relative to your own financial and family situations. Though a lack

of financial or personal resources for medical care may be a source of guilt to you, it is better to discuss the overall situation with your veterinarian rather than allow your pet to suffer without proper veterinary medical care.

THE HARDEST DECISION

Euthanasia – often referred to as “putting a pet to sleep” or “putting an animal down” – literally means an “easy and painless death.” It is the deliberate act of ending life, and pet owners that must make this decision often feel anxiety or even guilt.

Before the procedure is done, the pet owner will be asked to sign a paper that is an “authorization for euthanasia” or similar document. Euthanasia usually is performed by a veterinarian and is a humane and virtually painless procedure.

Most pet owners are given the following options for witnessing the procedure. They may be present with the cat during the euthanasia. They may wish to see their cat after euthanasia. Or they may want to say goodbye to their cat before the euthanasia and not see him after the procedure.

WILL IT HURT?

Note: The following is a description of a typical euthanasia. If you do not wish to read about this procedure, please close this document.

Euthanasia is very humane and virtually painless. First, you will be asked to sign a paper – an “authorization for euthanasia” (or similar document). Once you have decided upon your involvement in the euthanasia process, you will need to decide what you would like to have done with the remains. You can discuss your options with your veterinarian before the euthanasia procedure.

Euthanasia is usually performed by a veterinarian. The most typical procedure involves an intravenous injection of a barbiturate anesthetic given at a high concentration (overdose). In general, the euthanasia is rapid, usually within seconds, and very peaceful. Your cat will just go to sleep. On rare occasions there may be a brief vocalization or cry as consciousness is lost; this is not pain although you may misinterpreted it as such.

Within seconds of starting the injection the anesthetic overdose will cause the heart to slow and then stop, and any circulation in the body will cease. As the heart stops and the blood pressure decreases, the unconscious animal will stop breathing, circulation to the brain will cease and your pet will die peacefully.

Once your cat has died, you might observe involuntary muscle contractions or respiratory gasps about one or two minutes after the loss of consciousness and circulation. Again this is not evidence of pain or consciousness, but instead, it represents a physiologic response that occurs whenever the brain is deprived of circulation. The unconscious animal may also lose bladder or bowel control. Veterinarians often cover the pet immediately after injecting the euthanasia solution to partially shield the pet owner from these physiologic responses, which may still be disturbing.

AFTER THE GOODBYE

Before the euthanasia, discuss what you want done with the body with your veterinarian. Again, this is a matter of personal taste and preference.

- Burial at home. Many people who own their homes chose to bury their pet in their yards. Great care must be given to bury him deep enough – at least three feet - to deter predators. It is recommended to wrap your pet in plastic and place several large rocks on top of their remains before covering with earth. Many cities have ordinances against home burial so check with your local officials before laying your pet to rest.
- Cemeteries. Similar to human burial, a casket and headstone are selected. Services are available with or without viewing of the remains. Ask your veterinarian or check your local telephone directory to find a nearby pet cemetery.
- Cremation. Typically, cremation is available in most large cities. Some crematories will privately cremate your pet so you can save the ashes for scattering, burial or storing in an urn. Check with your veterinarian about contacting an animal crematory center.
- Other options. There are a few nontraditional choices available regarding the handling of pet remains. Some people choose to consult a taxidermist and others may be interested in cryogenics, which involves freezing the remains. Research and many telephone calls may be necessary to find sources for these options.

EXPLAINING PET LOSS TO CHILDREN: SIX DO'S AND DON'TS

PET LOSS & CHILDREN

Death and dying are two of the hardest facts of life to explain to children. Very often, the death of a family pet is a child's first encounter with this immutable law of nature. How we handle this event can have a far-reaching impact on our children's understanding of death and dying.

Eleven-year-old Maria, for instance, was used to greeting her cat Feifel every day after school. One day, he didn't appear. Maria and her mother found Feifel under a bed, breathing weakly. The veterinarian said Feifel had heart disease. He might be able to save him, but Feifel was 14 and suffered from several other age-related problems.

His quality of life would only grow worse. The most humane course to take was euthanasia. Later, her family held a memorial service, and Maria wrote poems about him.

AN INFORMAL GUIDE TO A CHILD'S PSYCHE

At 11, Maria understood euthanasia and the finality of death. It didn't make the grieving and sense of loss any easier, but she knew that all living things eventually die. After some time, she was able to remember her pet with more love than hurt.

But children younger than Maria often view their relationship with a pet as indefinite. They don't understand that animals run on a different biological clock, or that illness or injury may make euthanasia the best option.

At all ages, honesty is the best policy, says Marty Tously, a bereavement counselor. "That means using the words death and dying, and explaining the permanence of death. You do it gently but without confusing what dying actually means."

Tously is a counselor with the Pet Grief Support Service. She says that a child's ability to understand what death means depends on his/her emotional and cognitive development, but outlined the generally understood guideline of how children perceive death and dying:

Under 2: A child can feel and respond to a pet's death, based on the reaction of those around him or her. A child picks up the stress felt by family members, no matter what the cause.

2 to 5: The child will miss the animal as a playmate, but not necessarily as a love object. They will see death as a temporary state – something like the way leaves fall off a tree in fall but grow back in the spring. As they perceive the trauma around them, however, they may regress in their behavior (e.g., thumb sucking).

5 to 9: Children begin to perceive death as permanent, but they may indulge in “magical thinking,” believing that death can be defied or bargained with. This is also the period when children recognize a correlation between what they think and what happens. For instance, a child may resent taking care of the pet and wish – however briefly – that the pet would die. If the pet then dies, the child is often consumed with guilt. Parents need to reassure children that they did not cause the pet's death.

10 and up: Children generally understand that all living things will eventually die, and that death is total. Understanding and accepting are two different things, however. They may go through the normal stages of grief that grownups do: denial, bargaining, anger, guilt, depression and acceptance. (To learn about the stages of grief, see the story *Coping with Pet Loss*.) Or they may react in other ways:

- Depending on the age, the child may regress (sucking their thumb or temper tantrums that they had outgrown).
- An older child may withdraw from friends and family for a while. Schoolwork may suffer and they may seem uninterested in extracurricular activities.
- Children may fear abandonment. If a pet can die, then they may reason that their parents could die as well.
- Children often become intensely curious about death and what happens to the body. They may ask for details that you may find uncomfortable to explain. These are questions you should answer in a straightforward, gentle and careful manner.

DO'S AND DON'TS

Tously explains that the worst course of action is to lie (to say the animal went away) or to use confusing euphemisms, such as the phrase “put to sleep.” Children will eventually learn the truth, and lying can breed resentment and destroy trust between parent and child. “Later in life, when the child learns the truth, they'll wonder what else the parent lied about,” she says.

Likewise, euphemisms can cause anxiety or confusion because children take what you say literally. “If you say a pet is put to sleep, the child may suffer sleep anxiety,” says Tously. She recalls one child who was told his cocker spaniel just “went away.” He awaited his dog's return, and upon learning the dog had been buried wanted to unearth the dog. “If you say ‘God has taken your pet because he was special,’ the child may resent God, and fear who might be next.”

- Be open and honest. This includes the pet's health and euthanasia. “If a pet is terminally ill and needs to be euthanized,” Tously says, “the child needs to be told as soon as possible by the parent.” Again, avoid those tempting euphemisms that cloud understanding, such as telling a child the pet was put to sleep. Use the words death and dying to make your meaning clear. Some children want to be present during euthanasia and most will be very curious about the

process. Tously says you should answer their questions. As for allowing the child to be present, some veterinarians are firmly against it; others say it depends on the child's age and maturity.

- Make sure the child understands what "dying" means. Explain that the animal's body stopped working. Depending on your religious beliefs and what the child can understand, you might explain the concept of a soul. However, it is important for the child to know that the pet has died and will not be coming back.
- Be available to let your child discuss his/her feelings about what happened. You may want to hold your own service to memorialize the pet and to say goodbye formally. Some people plant trees in a special spot in the yard, others bury the pet in a cemetery so the family can visit. Encourage your child to show his/her feelings by talking or writing about the fun times they had with their pet.
- Show your own feelings. This tells the child that the pet was special and that they are not grieving alone. You can also encourage your child to open up, which can help the healing process.
- Tell your child's teachers about the loss, so they will understand why your child is behaving differently.
- Don't blame the veterinarian. Some parents, especially those who fear explaining euthanasia to their children, find it easier to lay it all on the vet. This is not only unfair to the veterinarian, but potentially harmful to the child. He or she may grow up distrusting veterinarians and, by extension, doctors and other medical professionals.

In addition, parents shouldn't throw the responsibility of telling the children what needs to be done on the veterinarian. Your veterinarian can help the parent explain why euthanasia may be the most humane option, and answer questions the child may have.

Parents often want to ease their child's hurt by rushing out and buying another pet. Tously says this is a mistake. "The last thing you want to do is convey the impression that the pet – a family member – is replaceable," she says. Wait until the child expresses an interest in another pet.

Children are very resilient, and they usually learn to accept their pet is gone. If a child persists with nightmares or seems unable to cope, however, it may be necessary to talk with a counselor.

WHERE TO TURN FOR HELP

Local shelters often hold workshops and support groups to help people after pet loss. Contact your local shelter for information. There are also a number of organizations dedicated to helping people cope around the country. To find one in your state, visit the Delta Society Web page at www.deltasociety.org/dsn701.htm

EUTHANASIA IN CATS

OVERVIEW

Euthanasia literally means an "easy and painless death." You may know it as "putting a pet to sleep" or "putting an animal down." It is the deliberate act of ending life and undoubtedly it is a difficult issue. Pet owners who must make this decision often feel anxiety or even guilt, but when a pet is very ill with little hope of recovery, the question of "When is it time?" becomes most important.

It's a common situation: Many pets suffer with chronic diseases such as cancer that can often be managed in such a way that life is prolonged, although the quality of life is greatly diminished. For most pet owners this issue greatly influences the decision concerning euthanasia. Certainly, quality of life is a personal judgment; you know your cat better than anyone else. And while your veterinarian can guide you with objective information about diseases, and even provide a personal perspective of a disease condition, the final decision about euthanasia rests with you.

VETERINARY CARE

If you are considering euthanasia, some of the following points may help you gauge your pet's quality of life.

- Pets with chronic or incurable diseases that are given proper medication and care should be able to eat, drink and sleep comfortably without shortness of breath.
- Your pet should act interested in "what's going on" around him, be able to perform mild exercise and have control of his urine and bowel movements (unless the principal disease affects one of these organ systems).
- Even your ill pet should appear comfortable and free of moderate to severe pain. Of course, whenever there is a chronic condition, some days will be better than others and one should learn to expect the natural "ups and downs" that attend most chronic disease conditions. You need to determine what balance is acceptable.

There are also veterinary issues and medical care issues that may influence your judgment. If your pet is taking medication for a disease condition, ask your veterinarian if side effects of the medicine could be involved with any adverse symptoms such as lack of appetite, vomiting or diarrhea (but DON'T stop giving prescribed medication until you speak with your veterinarian). Sometimes it is the medicine, not the disease, that makes a pet appear more ill and adjusting the dose or changing the medicine can have a very positive effect.

Of course, some diseases are very difficult, expensive or time-consuming to treat. The medical bills that may accumulate can influence your decision regarding euthanasia. These are practical decisions that must be made relative to your own financial and family situations. Though a lack of financial or personal resources for medical care may be a source of guilt to you, it is better to discuss the overall situation with your veterinarian rather than allow your pet to suffer without proper veterinary medical care.

WILL IT HURT?

The following is a description of a typical euthanasia procedure. If you do not wish to read about this procedure, please close this document now.

Euthanasia is very humane and virtually painless. First, you will be asked to sign a paper – an "authorization for euthanasia" (or similar document). If you decide to go ahead you will be given a number of options: you may be present (with the pet) during the euthanasia; you may be absent for the procedure but wish to see your pet after euthanasia; or you may want to say goodbye to your pet prior to euthanasia and not see him again. Once you have decided upon your involvement in the euthanasia process, you will need to decide what you would like to have done with the remains. You can discuss your options with your veterinarian before the euthanasia procedure.

Euthanasia is usually performed by a veterinarian. The most typical procedure involves an

intravenous injection of a barbiturate anesthetic given at a high concentration (overdose). In general, the euthanasia is rapid, usually within seconds, and very peaceful. Your pet will just go to sleep. On rare occasions there may be a brief vocalization or cry as consciousness is lost; this is not pain although you may misinterpreted it as such.

Within seconds of starting the injection the anesthetic overdose will cause the heart to slow and then stop, and any circulation in the body will cease. As the heart stops and the blood pressure decreases, the unconscious animal will stop breathing, circulation to the brain will cease and your pet will die peacefully.

Once your pet has died, you might observe involuntary muscle contractions or respiratory gasps about one or two minutes after the loss of consciousness and circulation. Again this is not evidence of pain or consciousness, but instead, it represents a physiologic response that occurs whenever the brain is deprived of circulation. The unconscious animal may also lose bladder or bowel control. Veterinarians often cover the pet immediately after injecting the euthanasia solution to partially shield the pet owner from these physiologic responses, which may still be disturbing.

HOME CARE

Keep your pet as comfortable as possible during any chronic illness or disease. Encourage him to eat and drink, unless your veterinarian has asked you not to do so, and keep him clean and dry. Speak with your veterinarian if you have any questions or concerns regarding the diagnosis or treatment of your pet's disease.

Pet loss by natural causes, trauma or euthanasia is always difficult, and there are pet loss support groups available throughout the country. If you have specific questions about euthanasia or you would like more information about pet loss support groups, please contact your veterinarian.

TRIMMING YOUR CAT'S TOENAILS

It's that time again – time to trim your kitty's toenails. But while some cats don't seem to mind when you're trimming their nails, others just plain don't like it. And they are not at all shy about letting you know how they feel – by squirming and scratching. Following these suggestions for a proper nail trim might help you give your cat a not-so-arduous manicure.

- Start young. The earlier you start clipping your kitty's claws, the better used to it she will be. Frequent trims when your cat is young will help diminish any fear. Have your veterinarian show you how to do it the first time.
- Learn the anatomy. Within the center of each toenail is the blood and nerve supply for the nail called the quick. Most cats have light colored nails so you can see the quick, a pinkish area in the middle of the nail. Cutting into the quick will result in pain and bleeding.
- Use the proper instruments. There are a variety of nail trimmers available at pet stores or your veterinarian's office. Human nail trimmers generally do not work – unless your pet is a young kitten with soft clear nails. See Toenail Trimmers.

A CLIP OR AN OVERHAUL

Before you start clipping, determine how much needs to be trimmed. The basic rule of thumb is that the nail, which curls downward, should be even with the paw pad. Whatever hangs over must be clipped.

PROCEDURE

- Hold your cat firmly or have someone else help, and if your kitty is not used to getting her nails clipped, be ready for her to squirm.
- Gently squeeze down on your cat's toe knuckles so that the nails are spread out and exposed. Place the trimmer in your dominant hand.
- Eyeball the quick and aim a few millimeters below it. If you cut into the quick, referred to as "quicking," it will hurt your cat and the nail will bleed.
- Place the trimmer flush with the pad, place the nail in the trimmer and remove the excess nail. For cats, removing just the sharp pointed tip is often enough.
- Although you will take great care not to hurt your pet, sometimes accidents happen and you will cut into the quick. Have silver nitrate products on hand – you can get them at your veterinarian's office or pet store. You can also use flour or cornstarch to stop the bleeding. If that doesn't work, apply a light bandage for about 15 minutes. If the bleeding continues, call your veterinarian.

WHEN YOUR SENIOR CAT NEEDS TO SEE A VET

SENIOR CATS AND THE VET

If your senior cat is getting biannual veterinary exams, you need not be alarmed at small changes in his behavior or expressions of minor discomfort. But one or more of the following symptoms could be caused by a range of minor or major illnesses. In these cases, it's not your job to diagnose the disorder. Observe your cat and report his symptoms to your veterinarian as soon as possible. If he's struggling to breathe or loses consciousness, take him to your veterinarian immediately.

YOUR SENIOR CAT NEEDS TO SEE A VET WHEN HE . . .

- Drinks water or urinates more often than usual
- Loses weight
- Is unusually hungry
- Vomits repeatedly
- Has diarrhea lasting for more than 3 days
- Finds it difficult to pass stool or urine
- Forgets his litter box habits
- Exhibits lameness for more than five days or in more than one leg
- Has trouble seeing
- Develops open sores on the skin that persist for more than one week
- Develops a foul mouth odor or drools excessively
- Appears to gain weight only in his abdomen
- Spends more time than usual sleeping or gazing into space
- Loses hair or scratches, especially if only in specific areas
- Is unable to eat dry food
- Collapses suddenly or has a bout of weakness
- Has a seizure (convulsion)

- Coughs or gags often
- Has bleeding from the mouth, nose or rectum
- Has a significant decrease in appetite or doesn't eat for more than 2 days

INTRODUCTION TO FELINE AGGRESSION

INTRODUCTION

Considering their size, domestic cats can make formidable adversaries. Unlike dogs, cats have not one but five attack weapons, including a widely opening mouth, well-appointed with penetrating teeth, and four dexterous paws bearing needle-sharp claws. The combination of these weapons, explosive speed, and the exquisite suppleness of a contortionist can make restraining disinclined cats more difficult than herding these independent creatures.

Every veterinarian knows that it is far better to avoid a cat's ire than it is to contend with it once the cat's enraged. Thus, the soft-shoe approach of gentle handling and minimal physical restraint is the best one to adopt when handling cats. Once a cat's anger has boiled over it is best to give the cat time out to calm down before proceeding with any necessary intervention. Or, if it's absolutely necessary to proceed immediately, it's best to resort to sedatives or full physical restraint.

TYPES OF AGGRESSION

As with other species, there are several different ways of classifying aggression. One describes aggression as either instrumental (as a vehicle to achieve some desired goal), fear-induced, territorial, sexual, irritable, maternal or predatory. This classification is commonly employed when discussing the different types of aggression in animals and is descriptive of purpose, as opposed to function. Furthermore, it has been added to over the years to include other terms such as petting-induced aggression, pain-induced aggression, and idiopathic aggression (of unknown cause).

An alternative method of classifying aggression is into affective and predatory types. The former means with enhanced mood change, and the latter refers to the relatively unemotional business of predation, i.e. procuring prey by hunting and killing. The affective variety of aggression can be further sub-divided into offensive and defensive types, with offensive aggression involving striking out at another animal in order to achieve some "selfish" goal whereas defensive aggression is self-protective and occurs in response to some real or perceived threat.

BODY LANGUAGE FOR OFFENSIVE AGGRESSION

- Ears forward or sideways
- Pupils slit like or slightly rounded
- Body posture with the rump higher than the shoulders giving a slanting-forward impression
- Eyes riveted on the target and head moving slightly from side to side
- Low pitched growl
- Tail held horizontal or vertically down with the tail tip swishing from side to side

BODY LANGUAGE FOR DEFENSIVE AGGRESSION

- Ears held flat against the head pointing backwards
- Pupils of the eyes widely dilated

- Piloerection – hair on the body standing up on end giving the cat a puffed up appearance, including a large bushy tail
- Crouching body posture or arched back
- Tail curved under or to the side
- Open mouth threat with hissing and spitting
- Claws unsheathed and ready for action

BODY LANGUAGE FOR PREDATORY AGGRESSION

- Little or no mood change except intense concentration
- Hunting stalking behavior
- Crouching and then springing
- Grasping with claws and biting

Aggression is a natural behavior for the cat and was a survival-related behavior for the cats' wild ancestors. Although cats have long been thought of as solitary creatures, it has recently been recognized that they can live in true societies and that some may develop as leaders or "alpha" cats. To achieve this status they must possess certain willfulness and be physically competent.

Cats of this persuasion will use affective offensive aggression "instrumentally" to procure certain assets and privileges for themselves in preference to other cats. In the home, this type of aggression, formerly referred to as "petting-induced aggression," may sometimes be expressed toward compliant owners. This aggression, dubbed "the dominant, alpha cat syndrome," involves biting the owner over resources such as food, toys, or resting place, as an attention-getting mechanism, and when the owner tries to make the cat do something he doesn't want to do or pets it for too long. Territorial aggression (in defense of a defined territory), maternal aggression (in defense of new kittens), and sexual aggression (between males in competition for a receptive female or occurring before or after mating by the female) are variations on the theme of offensive aggression.

Defensive, or fear aggression, whether targeted toward an offending person or another cat, is another fairly common form of feline aggression. It occurs most frequently in cats that have not been raised with appropriate exposure to other cats or people at a formative time of their development, or in cats that have had adverse exposure to people or other cats.

Many people feel that predatory aggression should not be included as a true type of aggression because it has no social or self-protective function and is not associated with significant mood change. It is, from the cat's point of view, simply a way of getting lunch. However, if you define aggression as a physical act that causes injury or death to another party, predatory aggression does qualify as a type of aggression. In the wild, predatory aggression occurs in a sequence that has arbitrarily been divided into an appetitive phase and a consummatory phase.

The appetitive phase includes the hunting, stalking, and capture of prey whereas the consummatory phase involves merely ingestion of the prey animal. Predatory aggression is most often a problem when expressed as predatory play by young kittens that pounce at people's hands or moving feet. In the older cats, predatory aggression is sometimes displaced onto moving toys, or is expressed as longing looks at goldfish bowls, birdcages, and birds fluttering outside the window. In such cases, the cat's jaw may chatter slightly as his tail switches back and forth in wishful anticipation.

Finally, there are some pathological forms of aggression that can simulate any or all of the above types of aggression. Pathological aggression may occur out of context, in response to trivial stimuli, or an exaggerated form. Hyperthyroidism (overactivity of the thyroid gland), partial seizures, infectious problems, and nutritional deficiencies are examples of conditions that may cause pathological aggression. Medical causes of aggression, like these, should be ruled out by your veterinarian before embarking on any behavior modification strategy.

10 HOUSEHOLD PLANTS THAT ARE DANGEROUS TO DOGS AND CATS

Over 700 indoor/outdoor plants contain toxic substances that may harm dogs and cats. If these plants are ingested, signs of poisoning can be mild to severe, sometimes even causing death.

Most houseplants have multiple names, so it is important to confirm that the houseplants you currently own or may purchase are not toxic to your pet.

Asparagus Fern

Asparagus fern (also called emerald feather, emerald fern, sprengeri fern, plumosa fern, and lace fern) is toxic to dogs and cats. The toxic agent in this plant is sapogenin—a steroid found in a variety of plants. If a dog or cat ingests the berries of this plant, vomiting, diarrhea, and/or abdominal pain can occur. Allergic dermatitis (skin inflammation) can occur if an animal is repeatedly exposed to this plant.

Corn Plant

Corn plant (also known as cornstalk plant, dracaena, dragon tree, and ribbon plant) is toxic to dogs and cats. Saponin is the toxic chemical compound in this plant. If this plant is ingested, vomiting (with or without blood), appetite loss, depression, and/or increased salivation can occur. Affected cats may also have dilated pupils.

Dieffenbachia

Dieffenbachia (commonly known as dumb cane, tropic snow, and exotica) is toxic to dogs and cats. Dieffenbachia contains a chemical that is a poisonous deterrent to animals. If this plant is ingested, oral irritation can occur, especially on the tongue and lips. This irritation can lead to increased salivation, difficulty swallowing, and vomiting.

Elephant Ear

Elephant ear (also known as caladium, taro, pai, ape, cape, via, via sori, and malanga) contains a chemical similar to the one in dieffenbachia, so an animal's toxic reaction to elephant ear is similar: oral irritation, increased salivation, difficulty swallowing, and vomiting.

Lilies

Many plants of the lily family are considered toxic to cats, and some are considered toxic to dogs. Cats are the only animals in which the Easter and stargazer lilies are known to be toxic. Generally, a cat's first toxic reaction to this plant includes vomiting, lethargy, and a lack of appetite, but severe kidney failure, and even death, can quickly follow if a cat is untreated. The peace lily (also known as Mauna Loa) is toxic to dogs and cats. Ingestion of the peace lily or calla lily can cause irritation of the tongue and lips, increased salivation, difficulty swallowing, and vomiting.

Cyclamen

Cyclamen (also known as sowbread) is a pretty, flowering plant that is toxic to dogs and cats. If ingested, this plant can cause increased salivation, vomiting and diarrhea. If an animal ingests a large amount of the plant's tubers—which are found at the root, generally below the soil—heart rhythm abnormalities, seizures, and even death can occur.

Heartleaf Philodendron

Heartleaf philodendron (also known as horsehead philodendron, cordatum, fiddle-leaf, panda plant, split-leaf philodendron, fruit salad plant, red emerald, red princess, and saddle leaf) is a common, easy-to-grow houseplant that is toxic to dogs and cats. This philodendron contains a chemical that can irritate the mouth, tongue, and lips of animals. An affected pet may also experience increased salivation, vomiting, and difficulty swallowing.

Jade Plant

Jade plant (also known as baby jade, dwarf rubber plant, jade tree, Chinese rubber plant, Japanese rubber plant, and friendship tree) is toxic to cats and dogs. The toxic property in this plant is unknown, but ingestion of it can cause vomiting, depression, ataxia (incoordination), and bradycardia (slow heart rate; this is rare).

Aloe Plant

Aloe plant (also known as medicine plant and Barbados aloe) is a common, succulent plant that is toxic to dogs and cats. Aloin is considered the toxic agent in this plant. This bitter, yellow substance is found in most aloe species and may cause vomiting and/or the urine to become reddish.

Satin Pothos

Satin pothos (also known as silk pothos) is toxic to dogs and cats. If ingested by a cat or dog, this plant may irritate the mouth, lips, and tongue. The pet may also experience an increase in salivation, vomiting, and/or difficulty swallowing.

Learn More

For a full list of toxic and non-toxic indoor and outdoor plants, visit the American Society for the Prevention of Cruelty to Animals (ASPCA) website at www.aspc.org or The Humane Society of the United States website at www.humanesociety.org.

ACETAMINOPHEN TOXICITY

Acetaminophen can be toxic to dogs and cats, but cats are 7 to 10 times more susceptible to acetaminophen toxicity than dogs are.

Once swallowed, acetaminophen reaches the blood stream within 30 minutes; toxic effects are rapid and damage the liver and red blood cells.

Never give a medication intended for people to your pet unless instructed to do so by your veterinarian.

What Is Acetaminophen Toxicity?

Acetaminophen is the active ingredient in Tylenol and some other related medications that are used to treat pain and fever in people. Unfortunately, this drug can be extremely toxic

(poisonous) to cats and dogs. Acetaminophen toxicity occurs when a cat or dog swallows enough of the drug to cause damaging effects in the body.

Acetaminophen is mostly metabolized (broken down and eliminated from the body) by the liver. Some of the substances that are created during this process can have harmful effects on cats and dogs. Cats are at much greater risk of toxicity than dogs because they lack certain proteins necessary for the liver to safely metabolize acetaminophen.

How Does Acetaminophen Toxicity Occur?

Many cases of acetaminophen toxicity in dogs and cats are accidental. A pet may find and chew on a bottle of pills or eat a pill that has fallen on the floor. Sadly, some cases occur because pet owners give medication intended for people to their pets without being instructed to do so by a veterinarian.

Acetaminophen is a drug meant for people. However, there are situations in which your veterinarian may prescribe a specific dosage of acetaminophen for your dog. Be sure to follow your veterinarian's dosage directions very carefully and report any vomiting or other problems right away. Cats are 7 to 10 times more susceptible to acetaminophen toxicity than dogs are. Because cats are extremely sensitive to the drug's toxic effects, acetaminophen is not given to cats.

What Are the Clinical Signs of Acetaminophen Toxicity?

Once swallowed, acetaminophen is rapidly absorbed from the stomach and intestines and can achieve significant levels in the blood within 30 minutes. The main toxic effects take two forms: Liver damage: One of the substances produced by the breakdown of acetaminophen binds to liver cells, damaging them. Severe damage can lead to liver failure.

Damage to red blood cells: One of the substances produced by the breakdown of acetaminophen binds to red blood cells. Once bound, this substance changes hemoglobin (the protein in red blood cells that enables them to carry oxygen) into a molecule that is no longer able to carry oxygen. This means that the blood can no longer supply adequate amounts of oxygen to the body's vital organs. The altered hemoglobin molecule is called methemoglobin; its lack of oxygen-carrying ability changes the color of blood from red to brown.

Cats and dogs can develop both forms of acetaminophen toxicity. However, cats are more likely to suffer hemoglobin damage while dogs are more likely to suffer liver damage. The main clinical signs associated with acetaminophen toxicity that result from liver injury and an inability of the blood to carry oxygen include:

- Vomiting
- Decreased appetite
- Lethargy (tiredness)
- Difficult or rapid breathing
- Abdominal pain
- Brown discoloration of the gums (a result of methemoglobin)
- Brown urine
- Blue gums (known as cyanosis, indicates inadequate oxygen supply)
- Swelling of the face or paws
- Shock, collapse, death

How Is Acetaminophen Toxicity Diagnosed?

Diagnosis of acetaminophen toxicity is commonly based on a history of recently chewing or swallowing pills. Your veterinarian may recommend diagnostic testing, such as a chemistry panel and complete blood cell count (CBC), to assess the extent of the damage.

What Are the Treatment and Outcome for Pets Suffering From Acetaminophen Toxicity?

Acetaminophen is absorbed and metabolized very quickly. If you realize right away that your pet has swallowed acetaminophen, vomiting can be induced to remove the drug from your pet's stomach before the body can absorb it. Another option may be to anesthetize your pet in order to flush out the contents of the stomach. Your veterinarian may also administer a special preparation of liquid-activated charcoal to slow absorption of toxic material from the stomach and intestines.

There is a specific antidote for acetaminophen toxicity. This medication, N-acetylcysteine, limits formation of the toxic substance that damages the liver and red blood cells. Additional treatments may include blood transfusions, intravenous fluid therapy, and other medications to help support and stabilize the patient.

Acetaminophen toxicity can be fatal. However, pets can survive if the condition is recognized, diagnosed, and treated quickly.

Most cases of acetaminophen toxicity are preventable. Never give medications meant for people to your pet unless instructed to do so by your veterinarian, and keep all medications in the home secured to help prevent accidental swallowing.

ADMINISTERING MEDICATIONS TO YOUR CAT

Before you leave your veterinarian's office with a new medication, be sure to address any concerns or questions with your veterinary team.

It is very important to follow all label directions carefully.

Do not risk being bitten, scratched, or otherwise injured while trying to medicate your cat. If you are unable to administer medication, your veterinarian may be able to offer other options.

Understanding the Medication Instructions

The first part of successfully administering medication to your cat is to ensure that you understand the instructions for giving the medication. These instructions include route of administration (for example, by mouth, into the ears, or into the eyes), dosing frequency (for example, once daily, every 12 hours, or every 8 hours), duration of treatment (for example, 7 days, until gone), and other special considerations (for example, give with food, follow with water).

Sometimes there is flexibility with medication instructions; for example, some medications can be given "as needed," or a twice-daily dosing schedule may be adaptable to once-daily dosing. However, for other medications, the recommended dosing instructions need to be followed closely. Before you leave your veterinarian's office with a new medication, be sure to address any concerns or questions regarding the medication with your veterinary team. For example, if your work schedule does not permit dosing every 8 hours, your veterinarian may be able to

recommend a different medication that can be given less frequently. Ask about your pet's expected response to the treatment.

It is very helpful to write a medication schedule for your pet on a calendar, including the date and time that the medication needs to be administered. This will help you to (1) avoid forgetting to give a dose and (2) remember when the course of treatment is completed. It is also very important to follow all label directions carefully. Improper storage (for example, keeping a refrigerated medication at room temperature) can affect the safety and effectiveness of medication. Additionally, it is important to give the medication for the correct length of time. Complications can occur if antibiotics are not given for the full duration of recommended treatment; in addition, some medications (such as corticosteroids) cannot be discontinued without causing illness, so it is very important to give medications as directed. If your pet experiences any medication-related side effects, contact your veterinarian promptly for advice before adjusting a dosage or discontinuing the medication.

Administering Pills

If you've never given a cat medication before, it can be difficult to know what method will work best. Some cats take pills very readily if the pill is hidden inside a treat or given with a small amount of canned cat food. Another option is canned tuna or salmon for people. Pills can also be crushed (or capsules broken and emptied) and mixed with a small amount of canned food. However, your cat must eat all of the food right away to ensure receiving the full medication dose. Also, some coated pills and capsules have a bitter taste if the capsule or coating is removed. If the medication makes the food taste badly, your cat may refuse to eat it. Before choosing one of these options, ask your veterinarian if the medication can be given with food. You will probably know after the first or second dosing if this method will work.

If you must give your cat a pill directly by mouth, here's a method that usually works. This technique takes practice and may require more than one attempt to get your cat to swallow the pill. If your cat is not used to having your hands around his or her mouth (as with toothbrushing, for example), gradually introduce your cat to this by stroking your cat's face and neck for a few moments. This should calm your cat. If you think that your cat may try to bite or scratch, do not attempt this technique; ask your veterinarian for alternative medication options:

Restraint: If your cat is well-behaved, place a towel across your lap and hold your cat gently on your lap. If you think your cat may try to scratch you or get away, you may want to wrap his body, feet, and legs in a towel; leave the head out so that you can give the medication.

Hold the pill between the thumb and index finger of your right hand (if you are right-handed).

Using your left hand, reach over the top of your cat's head and squeeze your thumb and middle finger between your cat's upper and lower teeth. Try to stay close to the back of the mouth (near the molars) and away from the canines (the long, pointy teeth near the front of the mouth). If you're doing this properly, the sides of the upper lip will curl in as your fingers curl in.

Once your fingers are inside your cat's mouth, gently tilt your cat's head back to encourage your cat to open his or her mouth.

Once the mouth is open, use your right index finger and thumb to place the pill near the base of the tongue. Then remove your hands quickly so your cat can swallow.

Rub your cat's throat lightly to encourage swallowing. Offering a small amount of water can also help.

Administering Liquid Medication

Some pet owners prefer liquid medication because administration does not require placing your fingers inside of your cat's mouth. However, if your cat refuses to swallow the liquid, this method may not be ideal. Here are some tips for administering liquid medication:

Restraint: If your cat is well-behaved, place a towel across your lap and hold your cat gently on your lap. If you think your cat may try to scratch or get away, you may want to wrap his or her body, feet, and legs in a towel; leave the head out so that you can give the medication.

Draw the medication into the dropper or syringe, and hold it in your right hand (if you are right-handed).

Place your left hand behind your cat's head to stabilize it. You can gently stroke the back of the head and speak softly to your cat to distract and comfort him or her.

Using your right hand, insert the tip of the dropper or syringe into the side of your cat's mouth. Try to stay close to the molars and away from the canine teeth.

Once the tip is inside, empty the medication into the mouth and release your cat's head.

Rub the throat lightly to encourage swallowing.

Troubleshooting Tips

If you are unable to administer medications to your cat, here are some suggestions that may help:

You may need help: If your cat won't cooperate with receiving medication, ask someone to help you restrain your cat while you control the head and give the medication.

Do not risk injury: Do not risk being bitten, scratched, or otherwise injured while trying to medicate your pet. If you are unable to administer medication, call your veterinarian and request advice or assistance.

Ask your veterinarian if a different formulation is available: Some medications are available in several forms, including pills, liquid given by mouth with an eye dropper or syringe, chewable flavored treats, and transdermal gels (the gel is absorbed into the bloodstream after being applied to the skin). If one formulation doesn't work for you, ask your veterinarian if there is another option for the medication your pet is receiving.

Consider asking the pros: Some veterinarians can arrange daily outpatient appointments for a technician or assistant to administer your cat's medication. If your schedule doesn't permit this, some veterinarians may be able to board your cat so that medication can be given until the course of treatment is completed.

ALLERGY TESTING

Allergy testing is most commonly performed to determine if a pet has atopy, also known as atopic dermatitis or allergic inhalant dermatitis.

Allergy tests can help identify the specific allergens causing a pet's allergy problem. Once a list of "problem" allergens is identified, a specialized serum containing small quantities of these allergens can be formulated specifically for your pet.

Allergy testing poses minimal risk for your pet, and in many cases the information your veterinarian gains from this testing is invaluable.

What Allergies Can Pets Have?

The most common types of allergies in pets are flea allergy, food allergy, and a condition called atopy. Atopy is sometimes called atopic dermatitis or allergic inhalant dermatitis, and it occurs when allergens that are inhaled or that contact the skin cause an allergic reaction in the body. In dogs (and, less commonly, cats), this allergic reaction is focused largely in the skin. Animals with atopy become very itchy; the resultant scratching can lead to skin injuries and subsequent skin infections. Atopy is usually first noticed in dogs younger than 3 years of age, although older pets can also be affected. Unfortunately, some pets that develop atopy continue to have problems throughout their lives.

Many types of allergens can cause a pet to develop atopy. A wide variety of pollens, grasses, dander, insect proteins (such as in cockroaches), molds, and even house dust can cause animals to develop atopy. Animals can even develop allergies to multiple allergens at the same time. Once an animal develops atopy, the condition will continue as long as the animal is exposed to the allergen that is the source of the problem.

How Is Allergy Testing Performed?

Allergy testing is most commonly performed to determine if a pet has atopy. Allergy testing can also help diagnose flea allergy dermatitis. Most veterinarians do not use allergy testing to diagnose food allergies.

The two most common types of allergy tests used in pets are intradermal skin testing and serum allergy testing:

Intradermal skin testing: Intradermal skin testing can sometimes be performed at your veterinarian's office. However, because the allergens used for this test are very specific (they vary depending on where you live), your veterinarian may refer you to a veterinary dermatologist for this test to be performed. Usually, an area of fur is shaved from your pet's side or abdomen to expose enough skin to perform the test. Using very small needles, tiny amounts of each test allergen are injected just under your pet's skin in different areas. After a brief waiting period, the injection sites are examined to measure the degree of local allergic response, such as redness or a small hive. Allergens that your pet is not allergic to will not cause a reaction, while allergens that your pet is allergic to will cause a reaction that corresponds to the severity of the allergy. Pets are monitored carefully during the procedure in case a serious reaction occurs and treatment is required.

Serum allergy testing: Serum allergy testing is performed at a laboratory using a small blood sample taken from your pet. Your veterinarian does not need to shave your pet or have special allergens on hand to perform this test. As with intradermal skin testing, the results of serum allergy testing can reveal which allergens are not causing an allergic reaction in your pet, which ones are causing a mild reaction, and which ones are causing a more serious reaction. Depending on which type of allergy test is performed, you may need to discontinue your pet's allergy medications for a period of time before the test. Otherwise, the test results may be affected. Your veterinarian will tell you which medications can be used and which ones may need to be discontinued.

What Does Allergy Testing Tell Your Veterinarian?

Allergy tests can help identify the specific allergens that may be at the root of a pet's atopic dermatitis. Once a list of "problem" allergens is identified, a specialized serum containing small quantities of these allergens can be formulated specifically for your pet. Through injection of small amounts of the allergy serum over time, many pets experience a reduced response to the allergens. This treatment, called immunotherapy, generally must be continued for several months to years to achieve results. With immunotherapy, the pet owner usually administers the allergy serum injections at home. If you are uncomfortable giving the injections, ask your veterinary care team if the injections can be given at your veterinarian's office. The first injections are more diluted, containing only tiny amounts of the problem allergens; each subsequent injection solution contains a slightly higher concentration of the allergens. Your veterinarian will schedule the injections according to specific guidelines—more frequently in the beginning, and eventually tapering to one injection every few weeks. Many pets respond to this program. Others may not, especially if they have other underlying conditions.

Is Allergy Testing Safe?

Very few risks are associated with performing allergy testing. If serum allergy testing is performed, drawing blood takes only a few seconds, and your veterinary team will take precautions to ensure that your pet is not injured during this procedure. Once blood is obtained, all further processing is performed at the veterinarian's office or at a diagnostic laboratory, so there is no risk of harm to your pet.

If intradermal skin testing is performed, there is a slight risk of an allergic reaction if your pet responds seriously to some of the allergens being tested. However, pets are monitored very closely during the testing procedure, and if a reaction occurs, medications can quickly be administered to treat the problem.

In general, allergy testing poses minimal risks for your pet, and in many cases, the information your veterinarian gains from this testing is very valuable.

BARTONELLOSIS (CAT-SCRATCH DISEASE)

Bartonellosis (also known as Bartonella infection) is a bacterial disease that can infect many different species, including cats and humans. People with weakened immune systems are at increased risk of infection.

Bartonella infection may cause chronic inflammatory conditions in cats, such as stomatitis (inflammation of the mouth), gingivitis (inflammation of the gums), and inflammatory bowel disease. Some cats may carry the disease but appear to be completely healthy.

Bartonellosis is primarily transmitted to cats by fleas. It can be transmitted to humans from cats through a scratch or bite. The disease is rarely transmitted to humans by fleas.

Treatment of bartonellosis includes administration of antibiotics and other medications, as necessary, to manage inflammation and pain.

Regular application of flea and tick preventives, as recommended by your veterinarian, is important for helping prevent the spread of bartonellosis.

What Is Bartonellosis?

Bartonellosis is a disease caused by several bacteria of the Bartonella family. Bartonella organisms can cause bacterial infection in many species, including humans. Certain strains of Bartonella are known to infect cats. Bartonella organisms can be transmitted from a cat to a human via a bite or scratch, so bartonellosis in humans is commonly called cat-scratch disease.

Cats can become infected with Bartonella through exposure to infected fleas. For this reason, cats that roam outdoors are at greater risk for exposure. There is some evidence that ticks may also transmit the disease.

Some reports state that 12% to 50% or more of cats have been infected with Bartonella. The risk of exposure varies greatly depending on the region of the United States. Areas with warmer climates have a higher incidence of fleas and, therefore, a higher percentage of cats infected with Bartonella.

Signs of Bartonellosis

Many cats that have been exposed to Bartonella do not get sick and, therefore, do not show clinical signs of disease. However, these cats may still transmit the disease to humans.

Clinically affected (sick) cats may have various clinical signs, including chronic inflammatory conditions that affect the eyes, mouth, respiratory tract, gastrointestinal system, and even the heart. More specific clinical signs may include:

- Uveitis (inflammation of a part of the eye)
- Stomatitis (inflammation of the mouth)

- Gingivitis (inflammation of the gums)
- Chronic upper respiratory disease (sneezing, nasal and eye discharge)
- Inflammatory bowel disease (chronic vomiting and/or diarrhea)
- Fever

Infected cats may show one or more of the signs listed above. It is very important to discuss these illnesses with your veterinarian because other diseases may also cause these signs. Symptoms of bartonellosis in humans generally occur about 3 weeks after a cat scratch or bite and include fever and swollen lymph nodes along with a number of other possible symptoms. Consult with your physician regarding any concerns or questions about Bartonella infection.

Diagnosis and Treatment

Your veterinarian may perform a blood test on your cat to check for Bartonella infection. The test indicates the presence of antibodies, which the body uses to fight specific infections. A positive test result means that your cat has been exposed to Bartonella. If your cat is showing signs of disease and has a positive test result, your veterinarian may recommend antibiotics to treat the disease. There is controversy about whether to treat cats that test positive for Bartonella but are not showing signs of illness. It is best to discuss treatment options with your veterinarian.

Prevention

Regular application of flea and tick preventives, as recommended by your veterinarian, will help to prevent Bartonella infection.

To reduce risk of human infection from cats, keep your cat's nails trimmed and do not tease or entice play that may result in a bite or scratch from your cat. If you have difficulty trimming your cat's nails, take him or her to your veterinarian or a professional groomer for nail trimming.

BATHING YOUR CAT

Reasons to Bathe Your Cat

Cats, by nature, are very good groomers. They have pointy structures on the surface of their tongues, called papillae, which are designed to be an essential grooming tool. While they do a good job on their own, there are situations when your cat may need a bath:

- If your cat comes in contact with a potentially hazardous substance or sticky material
- If you are allergic and want to keep pet dander to a minimum
- If your cat goes/or gets outside and comes in contact with dirt or fleas

Preparing For A Bath

Even the calmest of cats may become stressed around water. Preparation prior to bath time will assist you in creating a low stress environment for the bathing process. Make sure you have shampoo labeled for feline use and appropriate age, a washcloth for wiping your cat's face/head, and a soft towel to dry your cat after bathing. Also, wear appropriate clothing to shield your arms from scratching/biting.

It may be beneficial to have another person assist you in restraining your cat during the bath. If you are comfortable doing so, you can trim your cat's nails the night before bathing to minimize the chance of scratches. If you have a long-haired cat, a good brushing prior to bath time will reduce the amount of loose/matted fur.

The Bath

We recommend using a bathtub or sink with a spray nozzle to assist in wetting and rinsing your cat. If you don't have this, you can use a regular sink or tub by filling it with 3 to 5 inches of lukewarm water. Test the water to make sure it is not too hot or too cold for your cat.

If you are using a spray nozzle, wet down your cat's entire body with warm water. Try to avoid getting water in the eyes, ears, and nose. If you are using a sink or tub without a spray nozzle, gently place your cat into the tub and use your hand or a washcloth to wet down the fur.

Carefully massage the shampoo into the fur, paying close attention to the labeled directions regarding the amount of product and length of time needed to effectively clean your cat. Don't forget to lather those hard-to-reach areas, such as under the armpits. Avoid getting any shampoo in your pet's eyes, ears, nose, or mouth. Use the washcloth to wipe the face/head with water.

Use the spray nozzle to rinse your cat thoroughly. If you are not using a spray nozzle, use the water in the tub to rinse the cat. Drain and refill the sink or tub a few times to make sure you have removed all of the shampoo from the fur.

Check the cat thoroughly for any areas that have not been well rinsed. Long-haired cats can take longer to rinse. Also, don't forget to check the feet, under the chin, under the abdomen and chest, and any other areas that can be hard to rinse. Shampoo residues left on the skin and fur can be irritating; the cat may also lick them off later, which can cause illness.

When rinsing is complete, towel dry your cat. Since your cat will still be damp, be sure to keep your cat in a well-controlled climate until completely dry. You may also try to use a hairdryer, on a low setting, to assist in drying if your cat will tolerate it.

Caution!

If you use a blow dryer to dry your cat, make sure the dryer does not get too hot.

BITE-WOUND ABSCESSES IN CATS

An abscess forms when infection, inflammation, and damaged cells cannot be cleared by the body.

Abscesses can occur when bacteria are deposited under the skin (as with bite wounds or other wounds).

Abscesses can cause pain, fever, and lethargy (tiredness) until the infection is cleared up.

Abscesses are treated with antibiotics and possibly surgery, depending on the size and severity of the infection.

Keeping cats indoors is a good way to prevent abscesses caused by bite wounds.

Rabies is passed through bite wounds, and prevention/quarantine should be considered when treating an abscess associated with a bite wound.

What Is an Abscess?

An abscess is a pocket of pus that is formed when the body's immune system is unable to quickly clear a site of infection. Pus is a liquid collection of inflammatory cells, bacteria, and damaged tissue. Abscesses can form in any part of the body and often result from bacterial infections in bite wounds, tooth roots, and anal glands. Abscesses just under the skin are quite common in indoor/outdoor cats. This article focuses on abscesses that form when a cat is bitten by another cat or a wild animal.

Cats that are allowed outdoors are the most likely to have bite-wound abscesses because these cats have the opportunity to fight other animals. During a fight, the skin can be punctured by a

tooth or a claw. Bacteria on the tooth or claw are deposited under the skin, and the immune system activates to fight off a possible infection and promote healing. Unfortunately, if the body's initial attempt is unsuccessful, the skin may heal over the wound and trap the bacteria, damaged tissue, and inflammatory cells under it. At this point, there is no easy way for this material to leave the body and a pocket of liquid pus forms.

What Are the Signs of an Abscess?

An abscess usually presents as a painful, fluid-filled lump under the skin. You may see a small scab over a puncture wound near the lump, but sometimes abscesses aren't even noticed until they break through the skin and pus oozes from the site. Sometimes cats develop a fever before the abscess is obvious and the only change noticed is that their appetite and activity level may have decreased.

How Are Abscesses Diagnosed and Treated?

If you believe your cat has an abscess, it is important to go to your veterinarian as soon as possible. Once an abscess forms, it is very difficult for the body to remove the material and fight the infection by itself. An untreated abscess can lead to deeper or more widespread infection. Antibiotics are needed to help fight the infection. However, the abscess commonly needs to be drained in order for healing to occur. In some cases, a sample of the fluid may be sent to a diagnostic laboratory to identify the bacteria and the most appropriate antibiotic. If an abscess is allowed to progress, permanent damage could result.

Since it is difficult for the body to clear the buildup of pus, it is often necessary to open an abscess and flush it with solution to allow the pus to drain. If the abscess pocket is large and there is concern that another abscess may form before the antibiotics take effect, your veterinarian may choose to place a surgical drain to promote removal of fluid for a few days. Then, once the antibiotics have controlled the production of pus, the drain can be removed and the wound can heal completely.

One of the biggest concerns with bite wounds is the spread of infectious diseases like feline immunodeficiency virus (FIV, also known as feline AIDS) and rabies. Only cats can get FIV, but the rabies virus is fatal and can be transmitted to people. Even if your cat's rabies vaccination is up-to-date, state regulations may require your veterinarian to administer a booster vaccine if your cat is bitten. If your cat is overdue for or has not received a rabies vaccination, it is possible that your cat will have to be quarantined for a period of time. Each region has its own regulations regarding rabies exposure and quarantine procedures. Your veterinarian will advise you about the law in your location.

How Can I Prevent Abscesses?

The best way to prevent bite wound abscesses is to keep your cat indoors. Even though fights sometimes occur among housemates, transmission of infectious diseases like rabies is less likely among a group of vaccinated indoor cats. If you do choose to allow your cat outdoors, you should be sure to do the following:

Spay or neuter your cat—this will make your cat less likely to become territorial and get involved in fights.

Keep your cat's rabies vaccinations up-to-date—rabies is a deadly virus that can be prevented from causing disease with regular vaccinations.

Check your cat frequently for bite wounds, lumps, or other injuries.

BLADDER STONES AND KIDNEY STONES

Urinary stones are made of minerals and can form anywhere in the urinary tract of dogs and cats.

These stones can irritate the bladder lining and obstruct urine flow from the kidney to the bladder or from the bladder out of the body.

Signs may include more frequent urination, blood in the urine, urinary accidents, or recurring urinary tract infections.

Pets with a blockage may be unable to urinate, may strain or vocalize (whimper or yelp) while urinating, or may vomit and seem tired, and should be seen by a veterinarian immediately.

Stones may be caused by certain diets, urinary tract infections, or metabolic disorders; some breeds of animals are more likely to have stones.

Stones are usually diagnosed with an abdominal radiograph (x-ray) or with an abdominal ultrasound.

Some stones may be dissolved with special diets, but others may require removal with surgery or other methods.

Pets with a history of stones may require special diets to help prevent recurrence.

What Are Bladder and Kidney Stones?

Bladder and kidney stones are hardened accumulations of minerals found in urine. Common minerals involved include struvite, calcium oxalate, and urate. Dogs and cats can develop stones anywhere in the urinary tract. Stones can form in many different shapes and sizes. Certain breeds of animals may be more likely to form certain kinds of stones. Dalmatians, for example, are more likely to develop urate stones.

Stones can have sharp edges. They can irritate or become embedded in the lining of the bladder, causing the tissue to become thickened and inflamed. They can also form inside the kidneys.

Stones can cause serious problems when they lodge in the ureters (the thin tubes connecting each kidney to the bladder) or the urethra (the narrow tube that allows urine to flow from the bladder out of the body). When the normal flow of urine from the kidney to the bladder is obstructed, urine (and pressure) can build up in the kidney, potentially causing kidney infections or kidney failure.

If a stone obstructs the urethra, the pet is unable to urinate, and the urine builds up inside the urinary tract. This occurs more commonly in male pets because, compared with females, they have a longer and very narrow urethra. When pets are unable to urinate, it's a medical emergency, and a veterinarian should see the pet immediately.

What Causes These Stones?

Stones are often caused by a change in the normal pH of the urine, making it too acidic (low pH) or too basic (high pH), or by diseases that alter the mineral balance in the body. Factors that can lead to the formation of stones include:

- Type of food the pet is eating
- Urinary tract infections
- Vitamin supplements
- Metabolic diseases
- Genetic predisposition (breed of animal)
- What Are the Signs of Bladder and Kidney Stones?
- Most stones are found in the bladder. Pets with bladder stones may show no signs at all or may exhibit signs such as the following:
- More frequent urination
- Blood in the urine

- Urinary accidents
- Recurring urinary tract infections
- Signs of a possible urinary blockage include:
- Straining to urinate
- Inability to urinate
- Crying in the litterbox (cats)
- Vomiting
- Anorexia
- Painful abdomen
- Lethargy (tiredness)

Pets with kidney stones may show no signs or may have persistent blood in the urine. If a blockage affects the kidneys, the pet may have pain near the middle of the spine (where the kidneys are located) or may drink and urinate more.

How Are Urinary Stones Diagnosed?

Some veterinarians may be able to feel stones in the bladder by applying gentle pressure with their hands. In most cases, an abdominal radiograph (x-ray) is required. Since some stones do not appear on regular radiographs, contrast medium (a sterile solution that appears bright on radiographs) may need to be injected into the urinary tract to help make the stones more visible. An abdominal ultrasound may also be helpful to visualize stones.

If the urethra is obstructed with a stone, the veterinarian will usually be able to feel a firm bladder, and the pet may have signs of pain.

Testing the urine is helpful to determine if a urinary tract infection is present and if the urinary pH is normal. Sometimes crystals may be found in the urine, which may provide a clue as to the type of stone involved. Still, the only way to identify the type of stone with certainty is to send sample stones to a laboratory for analysis. This is important because treatment will vary depending on the stone.

How Are Bladder and Kidney Stones Treated?

In pets with blockages, emergency surgery is usually required. If the pet is not blocked, some stones can be dissolved by feeding the pet a special diet. This food, available only through veterinarians, will help modify the urine pH and dissolve the stones.

Some types of stones cannot be dissolved by diet and must be removed from the bladder using other methods, including:

Voiding urohydropropulsion: While the pet is sedated, small stones may be flushed out by filling the bladder with fluid and applying pressure to empty it (only works for small stones)

Basket retrieval: A small scope (a long, thin device with a tiny camera) is inserted into the urethra while the animal is under anesthesia, and stones are found and removed (not possible in male cats)

Laser lithotripsy: A small scope is inserted into the urethra, and a laser is used to break up the stones into smaller pieces which then may pass through the urethra (not possible in male cats)

Surgery: The bladder is opened through the abdomen, and the stones are removed

While kidney stones may be removed by surgery, this procedure may affect kidney function.

Another alternative, which is usually only available at universities, is called extracorporeal shock wave lithotripsy. In this procedure, shock waves are used to break up stones in the kidneys and ureter so that they become small enough to pass in the urine.

Once stones are removed, they are generally submitted to a diagnostic laboratory so their type/composition can be determined. Once the stone composition has been determined by lab

analysis, pets may need to be fed a special diet and/or given medication for the rest of their lives to help prevent recurrence.

BRINGING A NEW KITTEN HOME

Your kitten must receive veterinary care before being introduced to other cats.

Your kitten must be vaccinated against various diseases on a schedule, beginning at 2 to 3 months of age.

Your kitten should be spayed or neutered by 6 months of age.

Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats.

The Basics

Bringing a new kitten home is exciting. The following guidelines will help you and your kitten adjust to this big change in your lives.

Kittens can leave their mother and littermates after they have been weaned, usually at 8 to 10 weeks of age. Like human babies, kittens require special care, including veterinary care, feeding, and socialization. The best time to bring a kitten home is when you have at least 1 or 2 days to focus on helping him or her adjust to new surroundings.

To safely transport your new kitten home, you'll need a carrier. Leaving mom is a big deal for your kitten; a carrier will help him or her feel more secure. Don't use another pet's carrier because its smell could be stressful to your kitten. Place a towel in the carrier for warmth and to absorb urine in case of an accident. Carry an extra towel.

Before your kitten has contact with other cats, he or she must be tested for feline leukemia virus and feline immunodeficiency virus, given a physical examination, tested and treated for parasites, and vaccinated. This will prevent the spread of a disease or parasites to other pets. If you have other pets, talk to your veterinarian about how to introduce your kitten to them.

Before you bring your kitten home, prepare a small room or space that will be his or her own for the first few days or weeks. Having a smaller area to explore at first will help your kitten get comfortable with his or her new home. Cats don't like to eat next to the litterbox, so place the litterbox on one side of the room and the food and water dishes on the other. Make sure that your kitten can get in and out of the litterbox without help; it might be necessary to provide a litterbox with low sides. To help your kitten feel secure, make sure that the room has hiding places. If there isn't furniture to hide beneath, place cardboard boxes on their sides or cut doorways into them. Providing a warm, comfortable bed is essential. You can purchase a pet bed or line a box with something soft; using a sweatshirt that you've worn will help your kitten get used to your scent.

When you bring your kitten home, put the carrier in the room you've prepared. Open the carrier door, but let your kitten come out when he or she is ready. After your kitten comes out, leave the carrier in the corner as another hiding place. Every day, scoop out the litterbox and provide fresh food and water.

Your kitten may hide at first, but he or she will explore when no one is watching, becoming more comfortable with his or her new home. Your kitten will likely want plenty of attention from you — you're his or her new mother/littermate!

After your kitten has been to your veterinarian, becomes comfortable in his or her room, and develops a regular routine of eating, drinking, and using the litterbox, you can let him or her venture into the rest of your house. At this point, you need to make sure that your kitten stays

safe and has enough privacy to eat, sleep, and use the litterbox. Keep your kitten's bed, litterbox, and food/water dishes in the same place so that he or she knows where to find them.

Veterinary Care

Kittens receive some immunity (protection against disease) from their mothers at birth and through nursing. Because this immunity slowly wears off, kittens should be vaccinated against various diseases on a schedule, beginning at 2 to 3 months of age. Ask your veterinarian for details.

Intestinal parasites are common in kittens. Fecal examinations and treatments (dewormings) are usually repeated until two consecutive fecal examinations have negative results. External parasites (fleas, ticks, and mites) are treated with products approved for use on kittens.

Kittens should be spayed or neutered by 6 months of age. This helps to control pet overpopulation and reduces the chance of behavior problems and some medical conditions.

Feeding

Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats. A mother cat's milk provides everything a kitten needs during the first 4 weeks of life. Cow's milk should never be given to kittens or cats because it can give them diarrhea. Most kittens are completely weaned between 8 and 10 weeks of age. At 6 to 7 weeks of age, kittens should be able to chew dry food. Feed a name-brand kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label until your kitten is approximately 9 to 12 months old. When your kitten is 3 to 6 months old, feed him or her three times per day. When your kitten is 6 months old, start feeding twice daily.

Socialization

Cats learn how to socialize with each other from their mother and littermates; therefore, if possible, kittens should remain with their mother and/or littermates until they are about 10 weeks old. Kittens that have human contact before they are 10 to 12 weeks old are more likely to interact well with people throughout their lives. Handling and playing with your kitten can help you bond with him or her. Feral (wild) cats haven't been socialized with people as kittens and may fear and avoid people throughout their lives. Your kitten should be gradually introduced to other pets with care and supervision. Ask your veterinarian for advice on the best way to do this. Enjoy your new kitten, and let your veterinarian know if you have any questions.

Kitten Supplies

Brand-name kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label

Food and water bowls; ceramic and metal are preferred because some pets are sensitive to plastic

Cat toys that don't have small parts or string that can come off and be swallowed

Cat brush; brush your kitten gently twice weekly

Cat toothpaste and toothbrush; it's best to start toothbrushing during kittenhood; aim for at least three times per week

Breakaway collar and identification tag

Scratching post and/or pad; when your kitten uses it, reward him with praise and/or a feline treat

Litterbox

Litter; low-dust, unscented scoopable litter is best

Cat carrier

Cat bed

CARDIAC ARRHYTHMIAS IN CATS

An arrhythmia is an irregularity in the rate and/or pattern of the heartbeat.

Cats of any age or sex may experience arrhythmias.

Rhythm disturbances may be caused by many factors, including diseases, drug reactions, and underlying heart conditions.

Signs may include weakness and difficulty breathing.

Diagnosis may require an electrocardiogram (ECG), blood work, chest radiographs (x-rays), and possibly an echocardiogram (ultrasound evaluation of the heart).

Control or management of the arrhythmia may include treatment for the underlying disease, antiarrhythmia medications, and possibly a pacemaker.

What Is a Cardiac Arrhythmia?

A cardiac arrhythmia is an abnormality in a cat's heartbeat. It may be associated with the rate (too fast or too slow), an irregularity in the heartbeat pattern, or a problem in the location where electrical signals are formed in the heart. Some arrhythmias may be harmless and do not require treatment, while others can be serious and life threatening.

Cats of any age or sex may experience arrhythmias. Certain breeds are predisposed to specific types of heartbeat abnormalities. For example, Maine Coon cats and Persian cats seem predisposed to developing cardiomyopathy (a problem with the heart muscle that can be associated with changes in heart rate and rhythm).

What Causes an Arrhythmia?

There are many types of heart rhythm disturbances, and just as many potential causes. While heart disease can cause an arrhythmia, an arrhythmia does not necessarily indicate that your cat has a heart condition. Other causes of heart arrhythmias include:

- Hyperthyroidism (too much thyroid hormone in the blood)
- Imbalances in electrolytes (substances in the blood)
- Anemia
- Drug reactions
- Tumors
- Trauma

What Are the Signs of an Arrhythmia?

Cats with arrhythmias that are relatively harmless may show no outward signs. In many cases, however, an arrhythmia can lead to heart failure, changes in blood pressure, and alterations in blood flow to vital organs. Cats with these types of arrhythmias may show signs such as:

- Weakness, depression
- Difficulty breathing
- Pale gums
- Collapse
- Sudden death

How Is This Condition Diagnosed?

Your veterinarian may note an irregularity in the heartbeat when listening to your pet's heart with a stethoscope. An electrocardiogram (ECG) can provide additional information to further define the type of arrhythmia present.

If your veterinarian suspects that the abnormality is caused by a heart condition, he or she may recommend chest radiographs (x-rays) and/or an echocardiogram, which is an examination of the heart using ultrasound equipment. Depending on your pet's condition, the veterinarian may refer your pet to a veterinary cardiologist (a heart specialist).

Since many other factors besides heart disease can cause arrhythmias, your veterinarian will probably also suggest doing blood work to look for underlying diseases or conditions.

How Are Arrhythmias Treated?

If the arrhythmia is caused by an underlying condition, such as hyperthyroidism, treating the underlying disease may help resolve the arrhythmia. Otherwise, the goal of treatment is to eliminate or manage any discomfort your cat may have and prevent dangerous arrhythmias from leading to sudden death.

Numerous medications can help control arrhythmias. Many of these drugs may have side effects, so be sure to ask your veterinarian if there are signs you should watch for. In some cases, it is recommended that a pacemaker be implanted for long-term control of the arrhythmia.

Once your pet is diagnosed with an arrhythmia, your veterinarian may recommend periodic recheck examinations to evaluate your pet's heart rate/rhythm and assess your pet's response to treatment. Blood work, echocardiography, and other diagnostic tests sometimes need to be repeated periodically to help protect your pet's health.

CARING FOR ORPHANED KITTENS

Orphaned kittens should be taken to a veterinarian immediately. Your veterinarian can give you advice on caring for kittens and might be able to provide you with contact information for animal rescue groups.

During the first few weeks of life, kittens need proper nourishment, warmth, socialization, and help with urinating and defecating.

Don't give regular cow's milk to kittens because it doesn't contain the protein and nutrients that kittens need and it can give them (and adult cats) diarrhea.

Orphaned kittens should be taken to a veterinarian immediately. Your veterinarian can give you advice on caring for kittens and might be able to provide you with contact information for animal rescue groups. During the first few weeks of life, kittens need proper nourishment, warmth, socialization, and help with urinating and defecating.

Feeding

Kittens need two to three times as many calories as an adult cat. A mother cat's milk provides all of a kitten's nutritional needs during the first 4 weeks of life. Newborn kittens may nurse every 1 to 2 hours.

If you find orphaned kittens, ask your veterinarian or an animal welfare group to help you find a mother cat with a small litter because she may be able to nurse the kittens. If you cannot find a foster mother cat, ask your veterinarian to teach you how to bottle feed kittens with a commercial kitten formula milk replacer. Don't give regular cow's milk to kittens because it

doesn't contain enough of the protein and nutrients that kittens need and it can give them (and adult cats) diarrhea.

Kittens should be fed while on all four legs or lying upright on their stomachs (the same position for nursing from the mother). If kittens are bottle fed, they must be burped by holding them to your shoulder and gently rubbing their backs. Be careful not to overfeed or underfeed kittens; your veterinarian can teach you how to tell when kittens are full. Notify your veterinarian immediately if a kitten refuses to take a bottle, seems weak, or has problems nursing from a bottle.

For the first 3 weeks of life, orphaned kittens are usually bottle fed with kitten formula milk replacer every 2 to 4 hours. When kittens are 3 to 4 weeks of age, feed them a kitten milk replacer mixed with small amounts of moist, easily chewable, commercial kitten food four to six times each day. You can warm the milk replacer and mix it with some "mashed" kitten food in a shallow saucer. During this period, milk replacer should gradually be decreased and replaced with free access to clean water. Feed a name-brand kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label ensuring that the food is nutritionally balanced for kittens. Look for this AAFCO label whenever selecting food for a kitten or adult cat to ensure that the diet is appropriate for the life stage of the cat. By 6 to 7 weeks of age, kittens can be offered dry or canned commercial kitten food. At 6 to 12 weeks of age, kittens should be fed four times a day. At 3 to 6 months of age, kittens should be fed commercial kitten food three times a day. Kittens can be weaned onto adult cat food when they approach 9 months of age.

Weight

An average birth weight for kittens is about 3.5 ounces, depending on breed and litter size. During the first weeks of life, a kitten's body weight may double or triple. Kittens should gain 0.25 to 0.5 ounces daily until weaning. If a kitten looks too thin (e.g., ribs are showing) or its belly looks too fat, ask your veterinarian if your kitten's weight is within a healthy range.

Providing Warmth

For the first 2 weeks of life, orphaned kittens must be kept warm. Please ask your veterinarian about the ideal temperature of heat sources such as a heating pad or a hot water bottle wrapped in a towel. Be sure that the heat source is not too warm; kittens can be seriously burned. Also, the heat source should be placed so that the kitten can move away from it to cool down. If you use a heating pad, monitor it to ensure that it is functioning properly and that the temperature setting is not too high.

Socialization

To be properly socialized to people, kittens should be handled from 2 through 7 weeks of age; this period is considered an important time for socialization. If you are caring for kittens younger than 2 weeks, consult your veterinarian for guidelines about how much they should be handled. Kittens that have human contact before they are 10 to 12 weeks old are more likely to interact well with people throughout their lives. Kittens must be handled gently; therefore, young children should be supervised when handling kittens. To aid socialization, orphaned kittens should be kept with their littermates until they are about 10 weeks old.

Encouraging Excretion

After feeding, a mother cat grooms her kittens, especially in the anal area. This stimulates urination and defecation (excretion), which kittens need help with until they are 3 weeks old. To encourage orphaned kittens to excrete, after each meal, dip a soft washcloth or a cotton ball in warm water and gently massage the kitten's anal and urinary areas; the warmth, texture, and movement mimic a mother cat's tongue.

When kittens are 4 weeks of age, teach them to use a litterbox by placing them in it after meals. Leave some waste in the litterbox; the scent can help direct kittens to it when they have to excrete. One side of the litterbox can be cut open to make it easier for kittens to get in and out.

Cleaning

Kittens tend to get messy during feedings, so they need to be cleaned regularly. Gently wipe them clean using a washcloth moistened with warm water. Dry them immediately with a towel or hair dryer set on low.

Veterinary Care

An initial veterinary examination should be scheduled as soon as you obtain an orphaned kitten. Birth defects and other health issues can be brought to your attention. This initial examination is also an ideal time to address any feeding questions or other concerns about home care.

Intestinal parasites are common in kittens. Deworming medication can be given when the kittens are approximately 3 weeks old. Fecal examinations and dewormings are usually repeated every 3 to 4 weeks until two consecutive fecal examinations have negative results. External parasites (fleas, ticks, and mites) are treated with products approved for use on kittens. Orphaned kittens need to receive initial vaccinations at 8 or 9 weeks of age. Testing for infectious diseases such as feline leukemia and feline AIDS is usually performed at this time if testing was not done earlier.

Kittens should be spayed or neutered by 6 months of age. This helps to control pet overpopulation and reduces the chance of behavior problems and some medical conditions.

CARING FOR YOUR NEW KITTEN

Kittens should be fed a nutritionally complete, name-brand kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label. Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats.

Don't give regular cow's milk to kittens because it doesn't contain the protein and nutrients that kittens need and it can give them (and adult cats) diarrhea.

Your kitten must receive veterinary care before being introduced to other cats. Your kitten must be vaccinated against various diseases according to a schedule, beginning at 2 to 3 months of age.

Kittens should be spayed or neutered by 6 months of age. This helps to control pet overpopulation and reduces the chances of some behavioral and medical problems.

During the first 8 to 10 weeks of life, kittens have specific needs for nourishment, warmth, socialization, and excretion. If you find orphaned kittens younger than 8 to 10 weeks of age, take them to a veterinarian immediately. Your veterinarian can give you advice on caring for them and might be able to give you contact information for animal rescue groups. For more information, see the Care Guide titled “Caring for Orphaned Kittens.”

The following information pertains to caring for kittens that are at least eight to 10 weeks of age, the time at which they can safely be taken from their mother and littermates. For optimal social development, a kitten should remain with its mother and/or littermates until 12 weeks of age. A kitten that is taken from its mother before weaning is complete may develop the troublesome behavior of suckling on nearby items or fingers.

Feeding

Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats. Kittens should be fed a name-brand, nutritionally complete kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label. This ensures that the food is nutritionally balanced for kittens. Kitten food should be fed until adulthood, which begins between 9 to 12 months of age. Consult your veterinarian for the exact amount to feed and for help creating a long-term feeding schedule suited to your kitten’s needs. When your kitten is 3 to 6 months old, feed him or her three times per day. When your kitten is six months old, you may consider feeding twice daily.

Cow’s milk should never be given to kittens or cats because it is nutritionally inadequate and can give them diarrhea.

Clean, fresh water should be available at all times and changed at least daily.

Veterinary Care

Your kitten should have a physical examination by a veterinarian as soon as possible. This examination can provide an opportunity to (1) identify birth defects and other health issues, (2) address questions about feeding and other home care, and (3) schedule a preventive health plan.

To prevent the spread of a disease or parasites, your kitten should be separated from all other household pets for a quarantine period of at least a few weeks. During this time, your veterinarian should test your kitten for parasites and infectious diseases such as feline leukemia virus and feline immunodeficiency virus—especially if this testing was not performed before you obtained your kitten. Observe your kitten closely for any signs of illness. Any problems should be reported to your veterinarian before introducing your kitten to your other pets. Contact your veterinarian immediately if your kitten has any of the following:

- Lack of appetite
- Poor weight gain
- Vomiting
- Swollen or painful abdomen
- Lack of activity
- Diarrhea
- Difficulty breathing
- Coughing or wheezing
- Constant or frequent crying
- Pale gums
- Swollen, red eyes or eye discharge

- Nasal discharge
- Inability to pass urine or stool

Your kitten must be vaccinated against various diseases according to a schedule, beginning at 2 to 3 months of age.

Intestinal parasites are common in kittens. Fecal examinations and treatments (dewormings) are usually repeated until two consecutive fecal examinations have negative results. External parasites (fleas, ticks, and mites) are treated with products approved for use on kittens. Ask your veterinarian for details.

Your kitten should be spayed or neutered by 6 months of age. This helps to control pet overpopulation and reduces the chance of some behavior problems and medical conditions.

Socialization

After the quarantine period discussed above, your kitten can be gradually introduced to other pets with care and supervision. Ask your veterinarian for advice on the best way to do this. Handling and playing with your kitten daily can help you bond with him or her. Monitor children closely to help prevent injury to the kitten or family members.

Creature Comforts

Before you bring your kitten home, prepare a small room or space that will be his or her own for the first few days or weeks. Even if you don't have to quarantine your kitten from other pets, having a small area to explore at first will help your kitten get comfortable with his or her new home.

Cats don't like to eat next to the litterbox, so place the litterbox on one side of the room and the food and water dishes on the other. Make sure that your kitten can get in and out of the litterbox without help; it might be necessary to provide a litterbox with low sides.

To help your kitten feel secure, make sure that the room has hiding places. If there isn't furniture to hide beneath, place cardboard boxes on their sides or cut doorways into them.

Providing a warm, comfortable bed is essential. You can purchase a pet bed or line a box with something soft; using a sweatshirt that you've worn will help your kitten get used to your scent. Enjoy your new kitten, and let your veterinarian know if you have any questions.

Kitten Supplies

- Brand-name, nutritionally complete kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label
- Food and water bowls; ceramic and metal are preferred because some pets are sensitive to plastic
- Cat toys that don't have small parts or string that can come off and be swallowed
- Cat brush; brush your kitten gently twice weekly (daily for long-haired cats)
- Cat toothpaste and toothbrush; it's best to start toothbrushing during kittenhood; aim for at least three times per week
- Breakaway collar and identification tag
- Scratching post and/or pad; when your kitten uses it, reward him or her with praise and/or a feline treat
- Litterbox
- Litter; low-dust, unscented, non-clumping litter is best

- Cat carrier
- Cat bed

CAT LITTER

Most cats prefer unscented, scoopable (sandlike) litter.

Many owners prefer scoopable litters because they control odors and absorb liquid (clump) well. Cats may stop using the litterbox if something about it becomes unappealing.

What You Need to Know

A variety of cat litters are available commercially, including litters made of clay, plastic, wheat, sawdust, newspaper pellets, and corn cobs. The choice depends on what matters most to you and your cat. You may have to try a few to see what you and your cat like. Most cats prefer unscented, scoopable litter because of its sandlike texture. Many owners prefer scoopable litters because they control odors and absorb liquid (clump) well, making it easy for owners to scoop out urine “balls.” This leaves the remaining litter dry and odor free.

Unscented litters are preferred by cats because they want to be able to identify some of their own scent in their litter. Perfume, fragrance, or deodorizer is not necessary to prevent litterbox odor and can make a litter undesirable to a cat. If you scoop out the wastes at least twice a day, the litterbox should be odor free.

If you require a completely dust-free litter, you might prefer newspaper pellets, which have an ingredient that helps control odor. Regular shredded newspaper isn’t recommended because it’s messy and doesn’t control odor.

A Cat’s Basic Requirements for Litter

The litter should be acceptable for standing on.

It should allow easy digging.

It should be odorless.

Reasons a Cat Won’t Use the Litterbox

Cats are usually easy to litter train because they are naturally clean and prefer to bury their waste. However, cats may stop using the litterbox if something about it becomes unappealing. If your cat won’t use the litterbox, try addressing the following bulleted list, but do not punish your cat. He or she may have a medical or behavior problem that your veterinarian can address. The type of litter was changed. Most cats prefer an unscented, scoopable (sandlike) litter. If you have a new kitten or cat, provide the litter that he or she has been using. If you would like to start using a different litter, gradually start mixing it into the original litter so that your cat won’t reject it.

The litterbox location was changed. Most cats prefer a quiet place with several escape routes.

The litterbox is dirty. Scoop it out at least twice daily, add new litter as needed, and wash the box with baking soda or an unscented soap and fill it with clean litter at least once every 2 weeks.

The litterbox is too small.

The type of litterbox was changed.

The litterbox has a liner or hood, which some cats dislike.

The litterbox isn’t easily accessible.

There aren’t enough litterboxes. Provide one litterbox per cat, plus one extra box.

There’s too much litter in the litterbox. Most cats prefer the litter to be one to two inches deep.

Your cat's food dishes are too close to the litterbox.
If you continue to have litterbox issues with your cat, let your veterinarian know.

DECLAW SURGERY IN CATS

Scratching is a natural cat behavior, but it can be destructive in a household. Declaw surgery generally involves the removal of all or a portion of the last bone in each digit of the forepaws.

Younger cats (under a year of age) tolerate the surgery better than older or obese cats. Declawing is painful and can often be avoided by training cats to use scratching posts, keeping nails trimmed, or applying commercially available covers to the nail tips.

What Is Declaw Surgery?

Declaw surgery, also known as onychectomy, generally involves the surgical removal of the claw and all or a portion of the last bone in each digit. It is usually performed on the front paws only. Younger cats (under 1 year of age) tolerate the procedure better than older or obese cats that bear more weight on their paws.

Why Are Cats Declawed?

Scratching on surfaces is a natural behavior for cats. It's how cats sharpen their claws and mark their territory. But when cats scratch on household items like furniture, stereo speakers, rugs, and screen doors, it can be seen as destructive behavior. In most cases, this behavior can be avoided by training cats to scratch on more appropriate surfaces, such as scratching posts, and by keeping their nails trimmed.

Because the procedure can be very painful, it's best to explore other alternatives before deciding to declaw your cat. Cats that go outdoors generally shouldn't be declawed because it deprives them of a primary mode of defense against other animals.

What Are the Alternatives to Declawing?

There are a number of steps you can take to prevent destructive scratching:

Keep nails trimmed: The staff at your veterinary clinic can show you how to trim your cat's nails safely, or they can perform this procedure for you if you are uncomfortable trimming your cat's nails.

Provide appropriate alternatives: Scratching posts are available at most pet stores. You can sprinkle catnip on the post to enhance its appeal, or provide treats to reinforce good behavior for using the post.

Avoid punishment: Never spank your cat or yell at it for inappropriate scratching behavior. If your cat scratches on furniture, just say "no," and bring the cat to the scratching post. When your cat is scratching on furniture, you can also try spraying him or her with a water bottle, as long as the cat doesn't realize you are controlling the water.

Make furniture less appealing: Cover popular scratching sites with aluminum foil, plastic, or double-sided tape. You can also use scent deterrents, which are available at most pet stores.

Try nail covers: Soft vinyl caps (available at pet stores) are glued to the tip of each nail every 6 to 8 weeks to blunt the effects of scratching.

Are There Different Kinds of Declaw Surgeries?

Yes. The technique varies depending on the preference of the veterinarian. There are two traditional surgical techniques, which involve using either a scalpel or a clipper to remove the claw.

A third surgical technique uses a laser to remove the claw. With this procedure, there is relatively little bleeding, and some cats (especially young cats that are not overweight) have less

postoperative pain. Laser declawing tends to be more expensive than other techniques, and not every veterinarian has the equipment to perform this procedure.

A final technique, called a tendonectomy, does not remove the claws, but instead cuts the tendons on the underside of the paw. With this procedure, the claws remain retracted in the paw, so they generally can't cause harm as long as they are trimmed on a regular basis.

How Do I Care for My Cat After Surgery?

Replace your regular litter with shredded newspaper or commercial litter made of newspaper until your cat's paws have healed. This is to prevent granules of litter from becoming embedded in the healing tissues.

Your veterinarian can provide some kind of pain medication, either in the form of a skin patch and/or oral pain medications.

Some cats may experience temporary lameness after declaw surgery. If you notice any swelling, bleeding, or discharge, or if the lameness doesn't improve, see your veterinarian.

DENTAL CLEANING

85% of all pets have periodontal disease by the time they are 3 years of age.

Dental disease can result in bad breath, painful chewing, and tooth loss.

Bacteria under the gum can travel to the heart, kidneys, and liver.

A professional dental cleaning is required to remove plaque and tartar from a pet's teeth and to assess the health of the mouth.

A thorough dental cleaning requires that the pet be under anesthesia.

Regular, at-home dental care can help improve the health of your pet's mouth and lengthen the intervals between professional dental cleanings.

It's estimated that 85% of all pets have periodontal disease by the time they are 3 years of age.

Periodontal disease is a progressive disease of the supporting tissues surrounding teeth and the main cause of early tooth loss.

Periodontal disease starts when bacteria combine with food particles to form plaque on the teeth. Within days, minerals in the saliva bond with the plaque to form tartar, a hard substance that adheres to the teeth. The bacteria work their way under the gums and cause gingivitis— inflammation of the gums. Once under the gums, bacteria destroy the supporting tissue around the tooth, leading to tooth loss. This condition is known as periodontitis. Gingivitis and periodontitis make up the changes that are referred to as periodontal disease. The bacteria associated with periodontal disease can also travel in the bloodstream to infect the heart, kidneys, and liver.

A professional veterinary dental cleaning is the only way to remove tartar from the teeth and under the gum tissue to protect your pet's health. With a professional dental cleaning and follow-up care, gingivitis is reversible. Periodontal disease is not reversible, but diligent at-home dental care and regular veterinary cleanings can slow down the progression of the condition.

What Is a Dental Cleaning?

During a dental cleaning (sometimes called a prophylaxis), (1) plaque and tartar are removed from a pet's teeth and (2) the health of the entire mouth (tongue, gums, lips, and teeth) is assessed. A thorough dental cleaning can be accomplished only while the pet is under general anesthesia. Anesthesia keeps your pet free of pain during the dental procedure and allows your veterinarian to fully inspect the teeth and remove tartar from under the gums. During anesthesia, a soft plastic tube is inserted into the trachea (the main airway in the throat) to

support the patient's breathing. Placement of the tracheal tube also prevents inhalation of bacteria that are aerosolized during the dental cleaning.

A dental cleaning may include the following:

- Removal of visible plaque and tartar from the teeth
- Elimination of plaque and tartar from under the gum
- Probing of dental sockets to assess dental disease
- Polishing to smooth enamel scratches that may attract bacteria
- Dental radiographs (x-rays) to evaluate problems below the gum line
- Application of fluoride or a dental sealer
- Removal or repair of fractured or infected teeth
- Dental charting so progression of dental disease can be monitored over time
- Inspection of the lips, tongue, and entire mouth for growths, wounds, or other problems
- How Do I Know if My Pet Needs a Dental Cleaning?
- Regular inspection of your pet's mouth is important to catch dental disease in the early stages. Tartar may appear as a brownish-gold buildup on the teeth, close to the gum line. Redness or bleeding along the gum line may indicate gingivitis. Other signs of dental disease include:
 - Bad breath
 - Drooling
 - Pawing at the mouth
 - Difficulty chewing
 - Loose or missing teeth

If you notice any of these signs in your pet, schedule an appointment with your veterinarian.

What Are the Benefits of a Dental Cleaning?

A professional dental cleaning removes not only the visible plaque and tartar on the teeth surfaces but also the bacteria under the gums. This eliminates potential sources of infection to the mouth and other organs and protects your pet from pain and tooth loss.

What Can I Do to Keep My Pet's Teeth Clean?

Once a dental cleaning has been performed, you can take a number of steps at home to keep your pet's teeth clean and lengthen the intervals between dental cleanings.

Your veterinarian may recommend a plaque prevention product—a substance that you apply to your pet's teeth and gums on a weekly basis. The product adheres to the teeth surface to create a barrier that prevents plaque from forming.

Just as in people, daily brushing can help remove food particles from between your pet's teeth. You can use a child's toothbrush or purchase a finger brush from your veterinarian. Human toothpastes should be avoided because they contain ingredients that should not be swallowed by your pet. Your dog or cat may like the taste of pet toothpaste, which is available in flavors such as chicken, seafood, and malt.

Several dental diets and treats can also help keep plaque and tartar to a minimum. The diets tend to have larger kibbles to provide abrasive action against the tooth surface when chewed. Or they may contain ingredients that help prevent tartar mineralization. Ask your veterinarian which diets or treats are appropriate for your pet.

DIARRHEA

Diarrhea is feces that is looser or more watery than normal.

Pets with diarrhea may defecate more frequently than usual, have accidents in the house, and may have blood, mucus, or parasites in their feces.

Puppies and kittens with diarrhea, as well as pets showing signs of vomiting and lethargy (tiredness), should be seen by a veterinarian immediately.

There are numerous causes for diarrhea, including eating garbage or foreign material, a sudden change in diet, viruses, and bacterial overgrowth.

Diagnostic tests may include fecal tests, blood work, abdominal radiographs (x-rays), abdominal ultrasound, and endoscopy with biopsy (tissue sample).

Treatment varies with the cause but usually includes special diets and/or medications.

What Is Diarrhea?

A pet with diarrhea has looser or more watery feces than normal and sometimes more frequent stools as well.

Many cases of diarrhea may resolve in a day or two without treatment. Pets that experience diarrhea for more than a few days, or show more severe signs, such as vomiting, loss of appetite, or lethargy (tiredness), should be seen by a veterinarian immediately. Puppies and kittens with diarrhea are especially susceptible to dehydration and require a veterinary exam.

What Are the Signs of Diarrhea?

In addition to loose or watery stools, pets with diarrhea may show signs such as:

- Mucus or blood in the stools
- Worms in the stools
- Accidents in the house
- Defecating with increased frequency
- Straining to defecate
- Other signs that may indicate a more serious problem:
- Nausea or vomiting
- Loss of appetite
- Lethargy (tiredness) or weakness
- Abdominal pain
- Weight loss

What Causes Diarrhea?

There are many causes for diarrhea. Most commonly, it occurs when a pet eats something that is not part of his or her normal diet, such as garbage, or when the diet is changed abruptly.

When changing from one kind of pet food to another, it's best to make a slow transition over a week, gradually mixing in more of the new food and less of the old food. This transition allows the pet's digestive system to adjust and decreases the likelihood of diarrhea.

Other potential causes of diarrhea include:

- Bacterial overgrowth in the digestive tract
- Viruses
- Parasites
- Ingestion of foreign objects, such as toys, bones, and fabric
- Food allergies
- Inflammatory bowel disease
- Antibiotics and other drugs
- Toxins
- Pancreatitis
- Diseases in other organs (such as liver disease)

- Cancer

How Is Diarrhea Diagnosed?

Diagnosis may depend on the severity of the pet's clinical signs and the length of time the pet has experienced the problem. Diagnostic tests may include:

Fecal tests for internal parasites, bacterial overgrowth, and viral infections, such as canine parvovirus

General blood tests to check for systemic diseases (diseases that affect the whole body)

Specific blood tests, such as thyroid panels, pancreatic tests, or feline leukemia virus tests

Abdominal radiographs (x-rays) to visualize possible obstructions and foreign bodies

Abdominal ultrasound

Endoscopy and biopsy (tissue sample) for chronic diarrhea cases

What Are the Treatment and Outcome for Diarrhea?

Treatment varies depending on the cause. In mild cases, your veterinarian may recommend a bland diet (a diet that will be easy for your pet's body to digest). If there is bacterial overgrowth, your pet may need probiotics or oral antibiotics to restore the normal balance of bacteria in the digestive tract. Medications to firm the stool or treat parasites may be necessary. Diarrhea caused by ingestion of foreign objects may require surgery.

More chronic cases of diarrhea are often treated with special diets and medications. In some cases, the cause may not be completely cured and may need to be managed throughout the pet's life.

EXAMINATION AND RABIES VACCINE

Regular examinations are essential to maintaining your pet's health.

A thorough physical examination checks every major body system.

Periodic vaccine risk assessments help ensure that your pet is properly immunized against infectious diseases.

Rabies is a deadly disease that is generally fatal in all species. Vaccination against rabies is required by law in most states.

Why Are Annual Examinations Important?

Regular physical examinations are essential to maintaining your pet's health. A thorough examination checks every major body organ and system.

Eyes—The eyes will be checked for redness, cloudiness, or discharge.

Ears—Many pets suffer from ear infections. Your veterinarian will examine your pet's ear canals for possible signs of an ear problem: debris, waxy buildup, or trauma caused by scratching.

Mouth—Your veterinarian will look in your pet's mouth for signs of dental disease and for broken or missing teeth. If he or she sees any problems, your veterinarian may recommend a thorough dental examination and cleaning for your pet.

Respiratory system—Your veterinarian will listen to your pet's heart and lungs.

Digestive system—Your veterinarian will "palpate" (feel) your pet's abdomen for signs of discomfort and to check that the major organs are the right size and shape.

Musculoskeletal system—Your veterinarian will palpate all your pet's major muscles and bones to check for signs of weakness or pain.

Skin and haircoat—Your veterinarian will check of all your pet’s “lumps and bumps.” If anything suspicious is found, a biopsy or lump removal may be recommended.

Laboratory tests—During a routine examination, your veterinarian may also want to take samples of your pet’s blood, urine, and feces to obtain additional information about your pet’s health or to ensure that specific body systems are functioning properly.

During your pet’s examination, your veterinarian will also ask you many questions about your pet’s behavior, lifestyle, and health history since your last visit. The answers to these questions will help your veterinarian determine what preventive care recommendations he or she should make in order to help keep your pet healthy. Based on your pet’s age, lifestyle, and disease risk, your veterinarian will recommend vaccinations for your pet. In virtually every state, vaccination against rabies is required by law.

What Is Rabies?

Rabies is a deadly disease caused by a virus that attacks the central nervous system. All warm-blooded animals, including wild animals, dogs, cats, and humans, can get rabies. Once clinical signs appear, rabies is generally fatal. However, the disease is also generally preventable through vaccination.

Rabies remains prevalent in wildlife populations—primarily raccoons, bats, foxes, and skunks. Pets are at risk of contracting the disease from wild animals and potentially transmitting it to humans.

The virus can have an incubation period lasting from days to months. Rabies is usually transmitted through contact with the saliva of an infected animal; most pets and people become infected through a bite wound. An animal’s saliva becomes infective once the virus has traveled through the animal’s nervous system from the initial bite site to reach the brain and, ultimately, the salivary glands. Once the virus enters the salivary glands, the animal can pass the infection to other animals or humans through its saliva. Animals with rabies are referred to as rabid.

Prevention

Because of the potentially serious human health implications, rabies vaccination of dogs is required by law in virtually all states, and many states also require cats to be vaccinated.

Vaccination is the most effective way to prevent the disease in animals and, in doing so, to safeguard human health. Today’s rabies vaccines are very safe and effective.

Other forms of rabies prevention include:

Keeping your pet away from wildlife.

Ensuring that all other dogs or cats your pet comes in contact with are vaccinated.

Minimizing contact with stray animals. Do not feed stray animals with unknown vaccination status or allow them to remain near your home and pets.

Vaccination helps protect your pet from unnecessary euthanasia or extended quarantine if he or she has contact with a rabid animal. Any pet that bites a person and has an unknown or out-of-date vaccination status may be subject to quarantine or euthanasia, depending on state laws.

FEEDING YOUR NEW KITTEN

Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats.

Cow’s milk should never be given to kittens or cats because it can give them diarrhea.

Feed a name-brand kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label, starting when your kitten is 3 to 4 weeks old.

Proper nutrition is especially important for kittens, which need two to three times as many calories and nutrients as adult cats. A mother cat's milk provides all of a kitten's nutritional needs during the first 4 weeks of life. A newborn kitten may nurse every 1 to 2 hours.

If you find an orphaned kitten, ask your veterinarian or an animal welfare group to help you find a mother cat with a small litter because she may be able to nurse the kitten. If you cannot find a foster mother cat, ask your veterinarian to teach you how to bottle feed the kitten with a commercial milk replacer for kittens. Cow's milk should never be given to kittens or cats because it can give them diarrhea.

At 3 to 4 weeks of age, give your kitten a commercial milk replacer for kittens and small amounts of moist, easily chewable, commercial kitten food in shallow bowls four to six times each day. Feed a name-brand kitten food with the American Association of Feed Control Officials (AAFCO) statement on the bag or label until your kitten is approximately 9 to 12 months old. You can warm the milk replacer and mix it with the kitten food. By 6 to 7 weeks of age, offer your kitten a dry commercial kitten food. At 8 to 10 weeks of age, most kittens are completely weaned from their mother's milk. At 6 to 12 weeks of age, feed your kitten four times a day and gradually decrease the amount of milk replacer. At 3 to 6 months of age, feed your kitten commercial kitten food three times a day. When your kitten is 6 months of age, begin feeding him or her twice daily.

An average birth weight for kittens is about 3.5 ounces, depending on breed and litter size. During the first weeks of life, a healthy kitten's bo

FELINE ARTHRITIS

Thinning of joint cartilage can lead to a vicious cycle of joint deterioration, reduced mobility, and pain.

Supportive care is important, and treatment may include pain medication, NSAIDs, corticosteroids, supplements, massage, acupuncture, warm compresses, and/or surgery. Regular, moderate exercise may help delay feline arthritis.

What Is It?

Arthritis is a joint problem that can reduce mobility and cause pain. Arthritis can be caused by injury, infection, the body's own immune system, or developmental problems. The most common form of arthritis is called osteoarthritis (osteo = bone; arthr = joint; itis = inflammation) or degenerative joint disease. Normally, joints form smooth connections between bones. Osteoarthritis involves thinning of joint cartilage (a protective cushioning between bones), buildup of fluid within the joint, and the formation of bony growths within the joint. Over time, this can lead to reduced joint mobility as well as pain.

Signs and Diagnosis

Signs of arthritis include the following:

- Stiffness after exercise
- Wasting away of muscle
- Limited movement
- Joint swelling
- Trouble getting up, laying down, walking, climbing stairs, or jumping
- A grating sound in a joint

Recognizing arthritis in cats can be difficult because the condition progresses slowly and cats don't complain about their aching joints. Also, some owners assume that signs of arthritis are "normal" in older animals.

Bringing your cat in for an annual checkup can help our veterinarian identify clinical signs early. Radiography (x-rays) can reveal bony growths and joint abnormalities.

Treatment

Getting or keeping your cat slim can help by decreasing the load on his or her joints.

Feeding your cat the right amount of high-quality food should help with weight control.

Carefully monitored exercise on soft surfaces can help affected cats. Ask your veterinarian for more details.

- Because arthritis is aggravated by the cold and damp, keep your cat warm and dry. Padded cat beds can help.
- Warm compresses can soothe affected joints.
- Massage can increase your cat's flexibility, circulation, and sense of well-being. Professional animal massage therapists are available.
- Pain medication, including nonsteroidal antiinflammatory drugs (commonly called NSAIDs), may help relieve signs. Never give your cat a drug without your veterinarian's recommendation.
- NSAIDs are commonly prescribed by veterinarians to reduce pain and inflammation associated with arthritis.
- Corticosteroids can be used to suppress inflammation, but they are usually used for short periods.
- Disease-modifying osteoarthritis drugs (DMOADs) can be an important part of managing osteoarthritis.
- Glucosamine and chondroitin have been used to help manage arthritis in animals.
- Acupuncture isn't just for people. It's painless and has shown some success in animals.
- Surgery may be a good choice in advanced cases of feline arthritis. Your veterinarian can tell you more.
- A low-stress environment, plenty of affection, and supportive care can help improve your cat's quality of life.
- Aids for Arthritic Cats
- Slip-free flooring
- Soft bedding
- Ramps (instead of steps)
- A warm, dry environment
- Help with grooming

Prevention

Regular, moderate exercise and a high-quality diet can help delay aging, manage body weight, and keep your cat's musculoskeletal system in good shape. Ask your veterinarian to recommend an exercise program and a diet that are appropriate for your cat.

Caution: Many human and canine pain relievers are poisonous to cats.

FELINE ASTHMA

Feline asthma can be a life-threatening condition.

Affected cats show signs of breathing difficulty, coughing, and wheezing. Long-term treatment is often necessary to control the clinical signs and promote easier breathing.

What Is Feline Asthma?

Feline asthma is a respiratory condition that involves constriction and inflammation of the airways in the lungs. Any cat can develop asthma. The underlying cause of asthma remains unknown, but allergens in the air have been implicated in some cases. When a cat develops asthma, mucus forms in the respiratory tract, and the airway walls swell and spasm. These changes can cause wheezing, coughing, and difficulty breathing. Without treatment, a severe asthma attack can even be fatal.

Signs of Feline Asthma

- Coughing
- Wheezing
- Lethargy (tiredness)
- Open-mouth breathing
- Difficulty breathing
-

Clinical signs of feline asthma can occur very quickly or more slowly over a period of days or weeks. Mild clinical signs may be limited to occasional coughing. Some cats also vomit or stop eating. A severe asthma attack can be associated with signs such as open-mouth breathing with the neck extended and exaggerated chest movements as the cat struggles to breathe. Severe asthma attacks are considered a medical emergency. If you suspect that your cat is having breathing problems, contact your veterinarian immediately.

The clinical signs associated with feline asthma can resemble those of other respiratory problems. For example, feline heartworm disease can cause asthma-like clinical signs known as HARD (heartworm-associated respiratory disease). Heart disease, bronchitis, and respiratory infections can cause clinical signs similar to those of feline asthma.

Diagnosis of Feline Asthma

No single test can diagnose feline asthma. Diagnosis often starts by evaluating your cat's medical history for episodes of occasional coughing, wheezing, or abnormal breathing. Physical examination may reveal a cough when the throat is rubbed, wheezing over the trachea (a large airway in your cat's neck), and abnormal sounds when your veterinarian listens to your cat's lungs using a stethoscope. In some cases, wheezing and abnormal lung sounds can even be heard without using a stethoscope.

An x-ray of a cat with asthma may show an abnormal pattern in the lungs. However, in some cases, the x-rays appear normal.

Asthma can look similar to other respiratory diseases, such as heartworm infection, heart disease, and respiratory infection, so your veterinarian may recommend special tests to help rule out those conditions.

Treatment of Feline Asthma

There is no cure for feline asthma. Treatment focuses on administering medications that open up (or dilate) the airways, reduce inflammation, and promote easier breathing.

Asthma attack: If your cat is experiencing an asthma attack, contact your veterinarian immediately for treatment. Keeping your cat calm is very important during transport, as an excited cat may have even more difficulty breathing. When you arrive, your veterinarian will administer medications to help dilate your cat's airways, reduce inflammation, and help your cat breathe easier. Oxygen therapy is also sometimes necessary. If your cat is having a serious asthma attack, your veterinarian may recommend hospitalization for continued treatment and observation.

Maintenance treatment: Cats that are diagnosed with asthma usually require long-term medical treatment. Medications are available to dilate the airways, reduce inflammation, and promote easier breathing. There is even a cat inhaler that can be used to relieve asthma attacks. After evaluating your cat, your veterinarian will recommend the best medications to control your cat's asthma.

Although the underlying cause of asthma is often unknown, some veterinarians recommend trying to remove potential allergens like dust, aerosols, and smoke from the cat's environment. A common source of dust can be cat litter. Fortunately, you can find low-dust brands of cat litter at many pet stores and retail outlets. In addition, using an air purifier that contains a HEPA filter may help to remove allergens from the air.

FELINE DISTEMPER AND FELINE LEUKEMIA

Feline distemper and feline leukemia are serious infections that can be fatal.

Cats that go outside are at increased risk for exposure to feline distemper and feline leukemia. Vaccination can protect cats from disease associated with feline distemper and feline leukemia.

What Are Feline Distemper and Feline Leukemia?

Feline distemper is the common name for the feline panleukopenia virus (FPV), also called feline parvovirus. Despite the name feline distemper, this contagious disease does not affect a cat's temperament. Rather, FPV causes serious disease in infected cats and can be fatal.

Feline leukemia virus (FeLV) is also contagious among cats. Unlike many other viruses that enter specific cells in the body and destroy them, FeLV enters certain cells in a cat's body and changes the cells' genetic characteristics. This permits FeLV to continue reproducing within the cat each time infected cells divide. This allows FeLV to become dormant (inactive) in some cats, making disease transmission and prognosis (outlook) difficult to predict.

How Do Cats Become Infected With Feline Distemper and Feline Leukemia?

Once a cat is infected with FPV, it may shed virus in body fluids (most notably urine and feces) for a few days or up to 6 weeks. If another cat encounters an infected cat (or its body fluids) during this time, transmission is likely. However, FPV can also live in the environment, such as contaminated bedding and other items, for up to 2 years, so contact with contaminated objects can also spread the infection.

FeLV is generally transmitted when a cat comes into contact with saliva from an infected cat. Certain "social" behaviors, such as mutual grooming and sharing food or water bowls, can spread the disease. Kittens can become infected during fetal development or during the first days of life as their mothers nurse and care for them.

Unlike FPV, FeLV does not live for very long in the environment, so a cat must have contact with an infected cat for the disease to spread. However, predicting which cats can transmit the disease is complicated because some cats that are contagious don't develop signs of infection.

Signs of Feline Distemper and Feline Leukemia

Feline distemper attacks the intestinal tract and the immune system, greatly reducing the number of white blood cells in the circulation. Your cat's body needs white blood cells to help fight infection, so cats with FPV tend to develop severe infections involving the intestines. These infections can quickly overwhelm the body's defenses, causing death. Other clinical signs can include the following:

- Fever
- Vomiting
- Lethargy (tiredness)
- Dehydration
- Diarrhea

Some cats become suddenly ill from FPV and die within hours of showing clinical signs. For many other cats, clinical signs become progressively worse over a period of days. Kittens infected before birth or during the first few days of life can develop severe brain and nerve damage, resulting in permanent difficulty standing or walking if the kitten survives the infection. Some cats infected with FeLV do not develop clinical signs or long-term complications associated with the virus. The immune system of some cats can eliminate the infection before the cat becomes sick. In other cats, the virus can "hide" in the bone marrow, where it is difficult to detect until it begins to cause problems later in life. Other cats become carriers of the disease or experience various illnesses before eventually dying of FeLV-associated complications.

Because FeLV can affect almost any organ system in the body, clinical signs can vary significantly. Signs of FeLV can include the following:

- Fever
- Lethargy (tiredness)
- Leukemia (a low number of white blood cells)
- Anemia (a low number of red blood cells)
- Chronic respiratory infections
- Chronic dental and gum infections
- Cancer of the lymphatic system (and other cancers)
- Diagnosis and Treatment

Sophisticated testing of blood and body fluids can be used to diagnose FPV infection, but many veterinarians make the diagnosis based on clinical signs and the presence of a severely low white blood cell count. Treatment is mainly supportive and consists of administering fluids to combat dehydration, antibiotics to help treat infections, and other medications to help control vomiting and other clinical signs.

Diagnosis of FeLV infection is more complicated because there are several stages of disease and not every cat handles FeLV infection the same way. Blood tests detect the disease in many cats, but for other cats, the bone marrow must be examined to confirm infection. Some cats may test positive on blood tests when they are young kittens but test negative later if their immune system has been able to eliminate the infection. Similarly, some cats may test negative at one point and test positive later, as the virus progresses through various stages in the body. Because FeLV infection can have many clinical presentations, your veterinarian may want to

test your cat if he or she seems to be ill—especially if a fever is present. Some cats need to have multiple tests done to confirm infection.

No medication can eliminate FeLV. Most treatments are aimed at managing the clinical signs and complications.

Vaccination and Prevention

Several vaccines are available for preventing disease associated with FPV and FeLV. Most of the available FPV vaccines are combination vaccines that also protect against feline herpesvirus (rhinotracheitis) and calicivirus; some also protect against FeLV. All of the available FPV and FeLV vaccines have been tested and found to be safe and effective when administered as directed.

Kittens are generally vaccinated against FPV and FeLV around 8 to 9 weeks of age. Booster vaccinations are given 3 to 4 weeks later, followed by boosters every 1 to 3 years for FPV (depending on exposure risk) and annual boosters for FeLV (as long as the risk for exposure remains). Cats that go outdoors, live with other cats, or visit grooming or boarding facilities are at greater risk for exposure to FPV and FeLV compared with cats that stay indoors and have limited contact with other cats.

The FPV vaccination is recommended for all cats. But if risk for exposure to FeLV is low, your veterinarian may not recommend the FeLV vaccine for your cat. Ask your veterinarian about his or her recommendations for protecting your cat from FeLV.

Keeping the environment clean can help prevent the spread of FPV and FeLV. Although FPV can be killed in the environment by cleaning with a dilute bleach solution, the virus can live on surfaces for up to 2 years and is resistant to many other cleaning products and disinfectants. Be sure to wash hands and change clothes after handling an infected cat. Similarly, bowls, blankets, towels, toys, litterboxes, and other items should be cleaned with bleach (if possible) to reduce the risk of further disease spread. FeLV is killed by many disinfectants and does not live for very long in the environment, so a cat must have contact with an infected cat for the disease to spread. Keeping sick cats separated from healthy cats can reduce the likelihood of spreading FPV and FeLV.

Any new kitten or cat being introduced into the home should be examined by a veterinarian as soon as possible and separated from all other household pets for a quarantine period of at least a few weeks. During that time, the new cat should be tested for FeLV and monitored closely for any signs of illness. Any problems should be reported to your veterinarian before introducing the new cat to your other pets.

FPV and FeLV are not considered contagious to humans but are contagious to cats. If your cat is known or suspected to be infected with either of these viruses, contact your veterinarian promptly to discuss how you can protect your other pets.

FELINE STOMATITIS

Feline stomatitis is a severe, painful inflammation of a cat's mouth and gums.

Dental disease, certain viruses, and some other inflammatory conditions can cause feline stomatitis.

The long-term outcome can vary. Many cats require long-term treatment to control the condition.

What Is Feline Stomatitis?

Feline stomatitis is a severe, painful inflammation of a cat's mouth and gums. In most cases, the condition causes ulcers to form in the mouth; these ulcers can involve the lips, tongue, gums, and back of the throat. Cats of any age or breed can be affected.

There is no single cause of feline stomatitis. Dental disease (particularly periodontal disease) is commonly implicated as a cause of stomatitis in cats. Periodontal disease results from the accumulation of plaque (bacteria) on and around the teeth, which causes inflammation involving the gums and tooth support structures.

In many cases, the cause is assumed to be immune-mediated, meaning that the cat's immune system attacks its own oral tissues as an abnormal response to bacteria in the mouth. Other medical conditions that can be associated with stomatitis include infection with viruses (such as feline leukemia virus [FeLV], feline immunodeficiency virus [FIV], and calicivirus) and bartonellosis.

What Are the Clinical Signs of Feline Stomatitis?

Feline stomatitis is extremely painful. In some cases, a cat suffering with this condition may be in too much pain to open his or her mouth to eat. In other cases, the cat may try to eat, but scream and drop the food as soon as it touches the mouth. Other clinical signs may include the following:

- Drooling (sometimes with blood)
- unkempt hair coat (because grooming is painful)
- Refusal to eat
- Bad breath
- Weight loss
- Pawing at the face or mouth

How Is Feline Stomatitis Diagnosed?

Examining the mouth of a cat with stomatitis can be difficult because the cat is reluctant to open his or her mouth. Your veterinarian may recommend sedation to facilitate a more complete examination.

Results of basic blood tests, such as a chemistry panel and complete blood cell count (CBC), tend to be unremarkable in cats with stomatitis. However, your veterinarian may recommend specific testing for underlying diseases such as FeLV, FIV, and bartonellosis.

Sometimes, a small sample of tissue from the mouth is submitted to a laboratory for biopsy. However, the diagnosis is commonly based on clinical signs and physical examination findings. A dental examination and dental x-rays can help your veterinarian determine the extent of periodontal disease.

What Are the Treatment and Outcome for Feline Stomatitis?

Because the condition is very painful, initial treatment generally includes giving medication to control pain and inflammation. Antibiotics are also commonly administered. Some cats may be willing to eat soft food, so owners may be advised to puree canned food until the cat's mouth heals.

Severe periodontal disease has been implicated as a cause of feline stomatitis. Although stomatitis is difficult to completely cure and treatment tends to be long term, your veterinarian will likely recommend managing dental disease as part of the overall treatment plan. A thorough

dental cleaning may be recommended, and many cats do well if the molar and premolar teeth are removed. Because tooth surfaces provide areas for bacteria to attach, removing the teeth can help control periodontal disease and minimize the bacteria that provoke the immune system in cats with stomatitis. Cats tend to do very well without their teeth.

If the cat has an underlying illness that can be treated, such as bartonellosis, treatment should be pursued.

Long-term outcome can vary. Many cats with stomatitis require long-term treatment with anti-inflammatory medications (and antibiotics intermittently) to control the condition. At-home tooth brushing and other dental care are recommended to reduce the accumulation of plaque and associated inflammation in the mouth.

FELINE URETHRAL OBSTRUCTION

Feline urethral obstruction is a potentially fatal condition, usually seen in male cats, during which urine is prevented from leaving the bladder.

The urethra may be plugged with mucus, urinary sediment, or small bladder stones.

Diet and bladder infections can have a role in the formation of urinary stones and sediment.

Treatment involves relieving the blockage and treating complications caused by the obstruction.

Feeding a special diet, increasing water intake, and treating urinary tract infections early can reduce the risk of future urethral obstructions.

What Is Feline Urethral Obstruction?

Urine flows from the kidneys down the ureters and into the bladder, where it is stored until it is released through the urethra. A urethral obstruction occurs when the urethra becomes blocked, preventing urination. There are many possible reasons for a blockage, including urinary stones, mucus or sediment plugs, blood clots, tumors, and scarring. Although any animal is susceptible to a urethral obstruction, male cats are at greater risk for urethral blockage than dogs or female cats because their urethras are narrow and long, making them easier to plug.

A urethral obstruction is usually caused by a buildup of solid material in the bladder that is unable to fit through the urinary opening. Urinary sediment (crystals), mucus, and inflammatory cells can accumulate in the urine and form a urethral plug. In addition, bladder stones (alone or in combination with other material) may get caught in the urethra on their way out of the body. Urethral obstruction can cause life-threatening complications. If urine is prevented from exiting the bladder, pressure within the urinary tract can damage the kidneys. Urine contains metabolic waste products that the body needs to eliminate; urethral obstruction causes these toxins to build up. Another possible complication of urinary obstruction is scarring of the urethra, which makes it even narrower and prone to future blockages. In addition, the bladder wall may be stretched to the point where muscle function is lost; in the worst cases, it ruptures.

A urethral obstruction is an emergency situation, and you should go to your veterinarian immediately if you suspect that your pet is “blocked.” If not treated quickly, pets with a urinary obstruction can die from complications.

What Are Signs of Feline Urethral Obstruction?

If your male cat tries multiple times to urinate and produces just a few drops of urine or none at all, chances are good that he is completely or partially blocked. As the condition progresses, he may show evidence of abdominal pain and yowl when touched or when trying to urinate. Within 24 hours, he may become lethargic, not wanting to get up, move, or eat. If left untreated, a

urinary obstruction can be fatal. It is very important to get your pet to the veterinarian as soon as you suspect a urinary obstruction.

How Is Feline Urethral Obstruction Diagnosed and Treated?

As soon as you arrive at your veterinarian's office, your pet will be examined to determine if his bladder is enlarged and whether an obstruction is likely. If an obstruction is confirmed, hospitalization for emergency treatment and stabilization will likely be recommended. Diagnostic testing, procedures, and treatments will be aimed at evaluating the pet, relieving the obstruction, and addressing the complications associated with the obstruction. Your veterinarian may recommend any or all of the following:

- Diagnostics
- Blood work to assess toxin levels and hydration status
- Urinalysis to look for an infection and/or crystals
- Urine culture to determine if there is an infection and, if so, what bacteria may be responsible
- Radiographs (x-rays) to look for bladder or urethral stones

Procedures

Intravenous catheter placement, which allows for fluids and medications to be administered
Removal of urine directly from the bladder, which allows for easier urinary catheter insertion
Urinary catheter placement (under heavy sedation or general anesthesia), which provides a way to flush the bladder and keep it empty for 1 to 3 days while inflammation subsides

Treatments

- Intravenous fluids, which maintain blood pressure, correct dehydration, and help the body rid itself of toxins
- Antibiotics, which treat bacterial infections
- Antispasmodics, which relax the urethra in order to allow material to pass through it
- Cystotomy (surgery to remove bladder stones)
- Perineal urethrostomy, which is surgery to make the urethral opening permanently larger, thus reducing the risk of future obstructions
- Long-term dietary changes and urine monitoring

How Can I Prevent Feline Urethral Obstruction?

Unfortunately it is very difficult to prevent feline urethral obstructions, as it is not always known what causes them in the first place. Bladder infections may have a role in the formation of urinary sediment and stones, so infections should be treated promptly. Increasing water intake may also be beneficial. Several diets can help reduce the risk of urethral obstruction in cats that are prone to this problem. Ask your veterinarian if your cat should be on a special diet to reduce the risk of urethral obstruction.

FELINE URINARY PROBLEMS

Cats can develop serious urinary problems, so it's important to learn how to recognize trouble signs early.

If your cat is unable to urinate, this is an emergency requiring immediate veterinary attention.

A veterinary checkup is very important for a cat that changes his or her litterbox habits.

There are several effective methods for treating and preventing urinary problems in cats.

The Basics

Here's how your cat's urinary system works. The kidneys filter waste and toxins from the blood. These waste products then become part of the urine in the kidneys. Urine leaves the kidneys through narrow tubes called ureters, which empty into the bladder. When your cat urinates, the bladder is emptied through a tube called the urethra. Feline urinary problems are usually grouped into conditions of the lower urinary tract (the bladder and urethra) and the upper urinary tract (the kidneys and ureters).

Urinary problems can make it difficult for your cat to store or pass (eliminate) urine. Storage problems result in inappropriate leakage of urine; causes of storage problems include bladder muscle problems, nervous system problems, and injury to the urinary system. Elimination problems involve a decreased ability or an inability to urinate; causes include blockage by stones or growths, muscle problems, and nervous system problems. Cats with elimination problems usually try to urinate often but only release a small amount of urine. Urinary blockage is an emergency requiring immediate veterinary attention.

Signs and Diagnosis

A thorough examination and history of your cat can help your veterinarian determine whether your cat has a urinary problem. Ultrasonography, radiography (x-rays), and urine and blood testing may help make a diagnosis.

Here are some signs that your cat may have a urinary problem:

- Frequent trips to the litterbox, where your cat may or may not urinate
- Urinating outside the litterbox
- Blood in the urine
- Crying or straining when urinating
- Inability to urinate
- Urinating smaller amounts
- Disinterest in food or water
- Hiding
- Disinterest in being handled
- Vomiting
- Abdominal pain
- Treatment

There are several effective treatments for feline urinary problems. Treatment may include surgery, a special diet, and/or medication, depending on the cause of the problem. Cats undergoing treatment need to be monitored and tested regularly.

Prevention

To help ensure that your cat's urinary system is healthy, become familiar with your cat's eating, drinking, and litterbox habits. Your cat is a creature of habit, so he or she probably goes to the litterbox around the same time every day. A change in your cat's habits may be a clue that something is wrong. Watch out for anything suspicious, such as a litterbox that isn't being used. The following can help maintain your cat's urinary system:

- Supply plenty of fresh water, and keep the bowl clean.
- Provide an adequate number of clean litterboxes (one per cat plus one more litterbox in multicat households).
- Encourage your cat to play and exercise, and keep him or her at a healthy weight.
- Bring your cat to your veterinarian at the first sign of trouble.

FELINE URINE MARKING

Feline urine marking is a normal form of communication between cats.

Cats mark with urine to claim their territory.

Urine marking occurs most commonly in male cats that have not been neutered.

A cat that is urine marking typically stands upright with its tail erect, and sprays a small amount of liquid on walls and other vertical surfaces.

A diagnosis is made once other medical and behavioral reasons for urinating outside the litterbox have been ruled out.

Neutering or spaying the cat is the most effective treatment.

Treatment also may include methods to reduce stress in the cat's environment and/or anti-anxiety medications.

What Is Feline Urine Marking?

Feline urine marking is a behavior in which cats mark a location with urine to notify other cats of their territory. Often it occurs near door and windows as a way to communicate to neighborhood tomcats wandering through the yard. Although this is a normal behavior in cats, most owners consider it unacceptable when it occurs in the house. Any cat can exhibit marking behaviors, but it tends to occur in male cats that have not been neutered.

Although hormones may be behind urine marking, stress and anxiety also are causes. Any changes in the household, such as the addition of other pets, workers in the house, or a recent vacation by the owner, may compel the cat to reassert its territory.

What Are The Signs Of Urine Marking?

A cat that is urine marking typically stands upright with its tail erect, and sprays a small amount of liquid on walls and other vertical surfaces. This is different than a cat that is simply urinating outside the box, and not attempting to mark its territory. In those cases, the cat will squat, and eliminate urine on a horizontal surface. Occasionally, a marking cat may spray on horizontal surfaces, such as bedding or laundry.

How Is Urine Marking Diagnosed?

Your veterinarian will probably want to check a urine sample to make sure that your cat doesn't have a medical reason for urinating outside the litterbox. If the urinary tract is inflamed, infected, or irritated by urinary crystals, there are treatments that can relieve the signs and encourage the cat to return to the litterbox. Some other medical conditions, such as bladder stones, diabetes, and kidney disease, also can cause a cat to urinate outside the litterbox. Your veterinarian may recommend additional tests, such as blood work and x-rays, to investigate these and other possibilities.

There may be other reasons why your cat is eliminating outside the litterbox. Cats are fastidious creatures, and may avoid the box if it is not clean enough, if they don't like the scent or texture of the litter, or if the box is located near a high traffic area in the house. Again, in these cases, the cat is usually urinating on horizontal surfaces, rather than on vertical surfaces.

Once other causes of inappropriate elimination are ruled out, a diagnosis of feline urine marking may be made.

How Is Urine Marking Treated?

The most effective treatment for urine marking is to neuter or spay your cat, if it has not been done already. Ninety percent of male cats stop marking once they have been neutered. Reducing stress in the cat's environment may help, as well. Synthetic pheromone products are available from your veterinarian in spray or plug-in diffuser forms. These products have a calming effect on many cats.

To discourage neighborhood cats from approaching doors and windows, consider using a spray deterrent that is activated by motion detectors. You also should supply your cat a place to escape from children or other pets in the household, such as a room, cubby, or perch. If all else fails, ask your veterinarian if anti-anxiety medications may be appropriate for your pet.

FRUCTOSAMINE TESTING

A fructosamine test is a blood test that helps monitor diabetic patients.

Checking a pet's fructosamine level can help your veterinarian ensure that a pet's diabetes is being adequately managed.

To perform a fructosamine test, a small amount of a pet's blood is taken and submitted to a laboratory for analysis.

The fructosamine level is used to estimate a pet's average blood glucose level over the previous 2 to 3 weeks.

What Is Fructosamine Testing?

Fructosamine testing involves checking the level of fructosamine in the blood, and this testing is one of the ways a diabetic pet is monitored. Fructosamine is a protein that binds very strongly to glucose (sugar) in the blood. Because fructosamine occurs in proportion to blood glucose, it can provide an accurate estimate of the amount of glucose in the blood. When fructosamine is measured, it helps determine the average glucose level for the previous 2 to 3 weeks.

Fructosamine testing is often the preferred method for monitoring the glucose level in cats because it is not affected by stress, which can cause a sharp increase in the blood glucose level in cats. Fructosamine monitoring can be used in combination with blood glucose curve monitoring (which is a series of single glucose level checks) and other tools to help monitor diabetic patients.

How Is Fructosamine Testing Performed?

For a fructosamine test, a small amount of blood is taken from the patient and submitted to a laboratory for analysis. Drawing blood generally takes only a few seconds, and the test result is usually available within a few days. The analysis measures the amount of fructosamine protein in the blood sample. The test results indicate whether the animal has excellent, good, fair, or poor glucose control.

What Are the Benefits of Fructosamine Testing?

Fructosamine testing is a helpful tool for estimating blood glucose control in diabetic patients. Because this testing checks the glucose level for the previous 2 to 3 weeks, the fructosamine level is not affected by the stress that may occur during an office visit or when the blood sample is taken. Pets, especially cats, can become extremely stressed when visiting a veterinary office for any reason. Stress may cause an abnormal increase in the blood glucose level. If a diabetic cat is stressed when the glucose level is checked, the stress-related increase in glucose can result in a high blood glucose reading that doesn't represent the cat's true blood glucose level.

Checking the fructosamine level is a good way to distinguish between falsely high glucose from stress and truly high glucose from uncontrolled diabetes.

Many veterinarians recommend periodically checking the fructosamine level of stable diabetic patients and of recently diagnosed diabetic patients that are being stabilized (with or without insulin). Your veterinarian will discuss with you how often this testing should be done. Combining fructosamine test results with other information about your pet, such as appetite consistency, weight gain or loss, and frequency of drinking and urination, helps your veterinarian determine if a pet's diabetes is being well managed. If your pet is receiving insulin, this information will help your veterinarian determine if the insulin dosage is acceptable or if an adjustment should be made. Sometimes, your veterinarian may recommend additional testing (such as urine testing or direct measurement of the blood glucose level) to see how well your pet is responding to diabetes management.

HEARTWORM DISEASE IN CATS

Heartworm disease attacks the lungs, heart, and related blood vessels. It is serious and potentially fatal.

Heartworms are transmitted through the bite of an infected mosquito.

There is no approved treatment for heartworm disease in cats.

Illness is easily and effectively avoided by giving preventive medications.

What Is Heartworm Disease?

Heartworm disease is a serious and potentially fatal condition that affects dogs, cats, and up to 30 other species of animals. It is caused by parasitic worms (heartworms) living in the major blood vessels of the lungs and, occasionally, in the heart. These worms are transmitted (as microscopic larvae) through the bite of an infected mosquito. The scientific name for the heartworm parasite is *Dirofilaria immitis*.

Despite the fact that heartworm disease is virtually 100% preventable, many cats are diagnosed with it each year. Although cats are considered resistant to heartworms and sometimes can fight off an infection on their own, heartworm disease can still be a serious health problem for cats, resulting in significant illness and even death. Keeping a cat indoors does not prevent infection. Multiple studies have shown that more than 25% of heartworm-infected cats live indoors.

The American Heartworm Society (AHS) estimates that one million dogs in the United States have heartworm disease today, and this number may be rising. Wherever dogs are infected, studies have shown that cats are likely to be infected, too.

Signs of Heartworm Disease

Cats usually have fewer heartworms than dogs, and the worms may not grow as big. However, because cats are generally smaller than dogs and have smaller blood vessels, the presence of even a few worms can cause lung damage. Some cats with heartworm disease never show any signs. When present, the signs of heartworm infection in cats can be confused with signs of many other diseases, including feline asthma. Affected cats may vomit, cough, and have difficulty breathing. This condition is called heartworm-associated respiratory disease (HARD). Sometimes, the only sign of infection is sudden death.

Diagnosis

Heartworms are spread through the bite of a mosquito, and dogs serve as the source of infection for other dogs and for cats. When a mosquito bites an infected dog, it withdraws blood that contains immature heartworms (called microfilariae [pronounced micro-fill-air-ee-ay]).

These microfilariae mature inside the mosquito to become infective larvae. When the mosquito eventually bites another dog or a cat, the larvae enter the new host. In dogs, these larvae often mature to become adult heartworms, which produce more microfilariae and continue the heartworm's life cycle.

The life cycle of heartworms in cats is slightly different from the life cycle in dogs. For example, many heartworms die during development in a cat, so they don't live long enough to produce microfilariae. Additionally, the immune system of some cats can eliminate the heartworm infection before the worms reach adulthood. For these reasons, heartworm testing in cats is more complicated than the process in dogs. Many types of tests conducted on different occasions may be necessary. Negative test results do not necessarily rule out heartworm infection, and positive results (depending on the test) do not always confirm infection. Many veterinarians use heartworm antigen and/or antibody tests to begin the screening process for heartworm disease in cats. Each of these tests has strengths and limitations, and neither test will, by itself, identify heartworm disease in all infected cats:

Antibody testing: "Antibodies" are specific proteins that the body produces in response to invasion by a foreign organism. Heartworm antibody tests detect antibodies produced by a cat in response to the presence of developing heartworms (heartworm larvae). A positive result on an antibody test could indicate an early infection or a previous infection (that the cat's immune system already eliminated), but not necessarily a current one. In fact, many antibody-positive cats do not have adult heartworms. Additionally, some cats with heartworms don't produce antibodies the whole time they are infected, so a cat that has a mature (adult) infection may actually test negative on an antibody test.

Antigen testing: "Antigens" are proteins that the body can recognize as belonging to a foreign organism. By identifying certain antigens that are found in adult female heartworms, researchers have developed tests that can detect these antigens to tell if a cat is infected with adult heartworms. Many veterinarians use a rapid-result test called a "SNAP" test to begin diagnosing heartworm disease in cats. The SNAP test is very accurate, can be performed in your veterinarian's office using a very small amount of blood, and takes only a few minutes to complete. There is even a combination SNAP test that can detect heartworm disease as well as feline leukemia (FeLV) and feline immunodeficiency virus (FIV) at the same time. The feline heartworm antigen test only identifies the antigen associated with adult female heartworms. Therefore, it will not detect an infection when only larvae are present or when only adult male heartworms are present. If your veterinarian obtains a questionable result on the SNAP test, additional testing may be recommended.

Some veterinarians use an outside laboratory to perform feline heartworm antibody and/or antigen testing. In these cases, results are generally available within a few days. Diagnosis of feline heartworm disease may involve other types of diagnostic tests besides blood work. Sometimes, evidence of heartworms can be seen on ultrasound images or radiographs ("x-rays") of the heart and lungs. Unfortunately, these tests can also be inconclusive.

Treatment

In cats, there is no real treatment for heartworm disease itself. Your veterinarian will determine how to monitor your pet and manage the signs of disease. In some cases, surgical removal of the worms may be recommended. However, this surgery is costly and has some risks.

Prevention

Safe, easy-to-give, effective medications are available to prevent heartworm disease. These monthly oral or topical (“spot on”) medications are inexpensive compared to the dangers of the disease for your cat. Ask your veterinarian which method and schedule of heartworm prevention are best for you and your pet.

HEPATIC LIPIDOSIS

Hepatic lipidosis, or fatty liver disease, is the most common liver disease of cats in North America.

It is caused by inadequate food intake or by diseases that may cause a cat to lose its appetite. Diagnosis may require blood tests, abdominal radiographs (x-rays), abdominal ultrasonography, and a liver biopsy.

Treatment requires intensive feeding, often through a feeding tube, which may remain in place for several weeks or months.

Many cats require initial hospitalization, followed by home care and periodic blood tests.

What Is Hepatic Lipidosis?

Hepatic lipidosis, also known as fatty liver disease, is the most common liver disease of cats in North America. As the name implies, fatty liver disease is a condition in which fat accumulates inside liver cells, causing liver dysfunction.

What Causes Hepatic Lipidosis?

The cat’s unique metabolism requires food on a daily basis. Any time a cat doesn’t eat for a few days, fat may be deposited within liver cells. A cat may lose its appetite for any number of reasons, such as an abrupt diet change; stress (e.g., a new pet in the house); or if someone forgets to feed it. Once this occurs, the cat often refuses to eat anything, even the most delectable treat.

In many cases, cats lose their appetite because of underlying diseases, such as diabetes, pancreatitis (inflammation of the pancreas), inflammatory bowel disease (IBD), kidney disease, or heart disease.

What Are the Signs of This Disease?

Cats with hepatic lipidosis are usually middle aged and often female. Typically, they are overweight and begin to lose weight rapidly.

Signs of fatty liver disease include:

- Anorexia (loss of appetite)
- Weight loss
- Lethargy (loss of energy)
- Vomiting
- Diarrhea or constipation
- Jaundice (yellowing of the skin, whites of the eyes, or gums)

Most cats with hepatic lipidosis are extremely sick and will not regain their appetite without help. If left untreated, these cats will often die.

How Is Hepatic Lipidosis Diagnosed?

Your veterinarian may recommend a number of blood tests to help diagnose if your cat has hepatic lipidosis and to determine if there is an underlying disease that may be causing it. Cats with fatty liver disease typically have elevated liver enzymes, a change that can be detected through blood testing. Another blood test, called a bile acids test, may also be recommended, so the veterinarian can assess how well the liver is functioning.

Abdominal radiographs, or x-rays, typically show an enlarged liver in cats with this disease. Your veterinarian may also recommend abdominal ultrasonography.

The clearest way to diagnose hepatic lipidosis is with a liver biopsy. In some cases, a needle may be used to take a small sample of the liver. This procedure is relatively painless for the cat and can often be done during the ultrasound examination. However, the sample is relatively small, so diagnosis may be difficult. In such cases, the cat may need to be anesthetized so the veterinarian can surgically open the abdomen and obtain a slightly larger sample of the liver tissue.

Additional tests may be required to determine if other diseases led to the cat's loss of appetite. These diseases must be treated to ensure resolution of hepatic lipidosis.

How Is This Disease Treated?

Most cats with hepatic lipidosis are extremely dehydrated and require initial hospitalization and fluid therapy. The most critical aspect of treatment, however, is ensuring that the cat receives adequate nutrition. Depending on your cat's condition, you may be able to try force-feeding your cat high-protein, high-calorie gruel through a syringe. However, most owners have little success with this approach, and it may cause the cat undue stress.

In most cases, the veterinarian will recommend that a feeding tube be placed to ensure that the cat receives proper nutrition. A very narrow tube may be inserted down the cat's nose and into the stomach, so that a liquid diet may be administered into the tube using a syringe. However, some cats will not tolerate this, and the narrow tube limits the amount and type of food that can be administered. Your veterinarian may recommend placing a wider tube through the cat's neck, into the esophagus and stomach, or through the abdominal wall directly into the stomach. These feeding tubes are fairly well tolerated and need to remain in place until the cat is eating on its own, which may take several weeks or even months.

Your veterinarian will recommend a diet for tube feeding and calculate the exact amount of food your cat should receive daily. It's important that you follow these recommendations closely to help your cat's liver return to its proper function.

Before and after each feeding, the tube should be flushed slowly with warm water. The food should also be warmed slightly and administered slowly, to prevent vomiting. Your veterinary care team will show you how to care for the feeding tube at home and how to administer food and water to your cat.

Your veterinarian may recommend other medications, such as appetite stimulants, antiemetic medications, and antibiotics. There are several supplements that also may be helpful.

If your veterinarian has diagnosed other diseases in addition to hepatic lipidosis, these conditions will require treatment as well. The prognosis is best for cats diagnosed with hepatic lipidosis only.

When you are tube-feeding your cat at home, your veterinarian will schedule recheck examinations with periodic blood tests to monitor your cat's progress. Once your cat is eating on its own, the feeding tube may be removed.

HOW TO ADMINISTER EAR MEDICATION TO YOUR CAT

Many outer ear infections in cats require medicine to be put directly into the ear. Follow your veterinarian's recommendations closely.

Always put health and safety first. If the procedure seems dangerous to you or very painful for your pet, stop and consult your veterinarian.

The Basics

Many outer ear infections in cats require medicine to be put directly into the ear. This procedure can be relatively easy, as long as you follow a few simple guidelines. The most important guideline is to always put health and safety first. If, for any reason, your pet becomes so agitated that you feel you are at risk of being bitten or scratched, stop. If the procedure seems excessively painful for your pet, stop and get your veterinarian's advice.

Some cats may also need ear cleanings at home. Your veterinarian can tell you whether and how often to clean your cat's ears.

Severe infections or ones that involve the middle or inner ear may require oral medication in addition to an ear medication.

Follow Recommendations

The ear is a very delicate structure. It is very important to closely follow your veterinarian's recommendations for medicating your cat's ear. Treating too frequently or too aggressively can make the problem worse, not better. Sensitive, already inflamed parts of the ear can be damaged. It is important to use only medicines prescribed by a veterinarian.

What You Need

- Old clothes
- Safe, easy-to-clean work area (e.g., tile or linoleum floor, water-resistant walls)
- Towel
- Ear medication prescribed by your veterinarian
- Cotton balls or tissues

Technique

There are several techniques for applying ear medication. The simplest one is described here. Please follow your veterinarian's instructions.

- Choose a space that's easy to clean (e.g., bathroom, laundry room, shower stall). Applying the medicine can be messy.
- Wear old clothes and keep a towel handy.

- If necessary, gently restrain your cat (see Restraining Your Cat, below). You may need a helper.
- Hold the medication bottle or tube just over the opening of the affected ear and gently squeeze the prescribed amount of medicine into the ear. For liquid medicines, do not squeeze the bottle too hard, as a powerful stream can irritate tender, inflamed ear structures. Note: If an ear medication requires refrigeration, do not store it at room temperature; however, allow it to reach room temperature before use to make it more comfortable for your pet.
- Fold the earflap down against your cat's head and try to prevent your cat from shaking his or her head too much. Gently massage the very base of the ear to distribute the solution as far as possible into the ear canal. Ask your veterinarian to demonstrate this massage.
- Keep the medicine in the ear for the prescribed amount of time.
- Allow your cat to shake his or her head to remove some of the medicine. (This is the messy part.)
- Use cotton balls or tissues to gently wipe away any discharge, loosened debris, and remaining medicine from the earflap, side of the neck, hair below the ear, and opening of the ear canal. Do not use cotton swabs because a sudden shake of the head or slip of the hand could result in a cotton swab puncturing the delicate eardrum or pushing debris inside the inner ear canal.
- Please contact your veterinarian if you are experiencing difficulties in administering any medication.

Signs of Ear Trouble

- Odor
- Scratching/rubbing at ears or side of head
- Discharge
- Debris
- Shaking/tilting of the head
- Pain
- Head shyness (not wanting the head or ears to be touched)
- Irritability

Restraining Your Cat

Although some cats are willing to sit or lie quietly while you clean their ears, most object. Here are some tips on how to keep your cat from wiggling while you work:

- Place your cat on a stable work surface that you can stand next to, and allow him or her to lie down, either in an upright "sphinx" position or flat on his or her side. While standing next to your cat, put the arm you will use to treat the ear over your cat's shoulders, and use your upper arm and elbow to press your cat against your torso to help keep him or her still. You can use your other hand to hold your cat's head still and keep the earflap back. If necessary, move to your cat's other side or turn your cat around to treat the other ear.
- If you don't have a high work surface, you can use the same method while seated on the floor, either holding the front of your cat's body partially against your body or with your cat in your lap.
- Alternatively, cats can be wrapped in a large towel and held against your body, leaving only the head free. Be sure not to wrap your cat too tightly.
- If your cat struggles, talk to him or her calmly. Stop if he or she becomes extremely agitated. Massaging the base of the ears (unless they are painful) should feel good to your cat and may help calm him or her enough that you can resume treatment.
- Be sure to reward good behavior.

HOW TO ADMINISTER EYE MEDICATION TO YOUR CAT

Many eye conditions in cats require medicine to be put directly into the eye.

Follow your veterinarian's recommendations closely.

Always put health and safety first. If the procedure seems dangerous to you or very painful for your pet, stop and consult your veterinarian.

The Basics

Many eye conditions in cats require medicine to be put directly into the eye. This procedure can be relatively easy, as long as you follow a few simple guidelines. The most important guideline is to always put health and safety first. If, for any reason, your cat becomes so agitated that you feel you are at risk of being bitten, stop. If the procedure seems excessively painful for your cat, stop and get your veterinarian's advice.

Follow Recommendations

The eye is a very delicate structure. It is very important to closely follow your veterinarian's recommendations for medicating your cat's eye. Treating too frequently or too aggressively can make the problem worse, not better. Sensitive, already inflamed parts of the eye can be damaged.

It is important to use only medicines prescribed by a veterinarian and to treat for the full length of time prescribed. Do not stop treatment early, even if the problem seems to be resolved.

What You Need

- Safe work area
- Eye medication prescribed by your veterinarian
- Moist cotton balls or tissues

Technique

There are several techniques for applying eye medication. Only one is described here. Ask your veterinarian to demonstrate application of the prescribed medicine and follow his or her recommendations.

If necessary, gently restrain your cat (see Restraining Your Cat, below). You may need a helper. Using moistened cotton balls or tissues, gently wipe away any discharge from around the eye. Hold the affected eye open with the fingers of one hand. If the medication is liquid (eye drops), hold the upper and lower eyelids apart; if the medication is an ointment, gently pull down on the lower eyelid to create a small gap between the lid and the eye. You may see a white membrane (the third eyelid) partly covering the eye.

With your other hand, gently squeeze the prescribed amount of medicine into the eye. Drops can be applied to the center of the eye or in the gap between the eye and the lower lid; ointment can be placed in the gap. Do not touch your cat's eye with the medicine container or your fingers.

Note: If an eye medication requires refrigeration, do not store it at room temperature; however, allow it to reach room temperature before use to make it more comfortable for your pet.

Either allow your pet to blink to move the medicine across the eye, or, using a very light touch, hold the eye closed for a moment and gently massage.

Use cotton balls or tissues to gently wipe away any excess medication or discharge.

Reward your cat with a treat.

Contact your veterinarian if you have questions or difficulty administering any medication.

Signs of Eye Trouble

- Excessive tearing
- Discharge
- Red eyelids
- Third eyelid visible
- Squinting or closing eye
- Cloudy or dull-looking surface; visible mark on surface
- Pawing at face
- Swelling or bulging around, near, or in eye

Restraining Your Cat

Keeping your cat still while you medicate his or her eye is important so that you do not accidentally damage the eye or touch the eye with the medicine container. Here are some tips: Place your cat in your lap and allow him or her to lie down flat on his or her side. Put one arm—the one you will use to hold the eye open—on top of your pet's body, and use your upper arm and elbow to help keep him or her still. Do not use excessive force to hold your cat still.

If your cat will not stay in your lap, you can use the same method while seated on the floor. Your cat may be more comfortable sitting upright.

Alternatively, cats can be wrapped in a large towel and held against your body, leaving only the head free. Be sure not to wrap your cat too tightly.

If your cat struggles, talk to him or her calmly. Stop if he or she becomes extremely agitated.

HOW TO ADMINISTER A TOPICAL MEDICATION TO YOUR CAT

Many conditions in cats require medicine to be applied to the skin.

Follow your veterinarian's recommendations closely.

Always put health and safety first. If the procedure seems dangerous to you or very painful for your pet, stop and consult your veterinarian.

The Basics

Many conditions in cats require medicine to be applied to the skin. This procedure can be relatively easy, as long as you follow a few simple guidelines. The most important guideline is to always put health and safety first. If, for any reason, your pet becomes so agitated that you feel you are at risk of being bitten or scratched, stop. If the procedure seems excessively painful for your pet, stop and get your veterinarian's advice.

Follow Recommendations

Topical medications come in several forms—creams, ointments, lotions, and patches.

Applicators may or may not be provided. It is important to closely follow your veterinarian's recommendations for applying these medications. Treating too frequently or too aggressively can make the problem worse, not better. Sensitive, already inflamed skin can be further damaged. It is important to use only medicines prescribed by a veterinarian and to treat for the

full length of time prescribed. Do not stop treatment early, even if the problem seems to be resolved.

What You Need

- Safe work area
- Medication prescribed by your veterinarian
- Latex or other gloves (if recommended)
- Elizabethan collar (if necessary; ask your veterinarian for advice)

Technique

Your veterinarian will recommend the best technique for applying the medication, depending on whether it is a cream, ointment, lotion, or patch. If the medication comes with an applicator, follow the manufacturer's instructions on how to use the applicator.

When applying topical medications, be aware of the following issues:

- Some medications should be allowed to dry before people (especially children) or other pets come in contact with the treated cat. Follow instructions on how long to wait before allowing your cat to interact with family members.
- If you are applying medication to inflamed or damaged skin, be careful not to further irritate the area with too much rubbing.
- If you are using a patch (e.g., for pain control), be very careful that it does not come off and become stuck to a person or another pet.
- If your cat consistently licks the medication off, ask your veterinarian about using an Elizabethan collar—a cone-shaped collar that fits over your cat's head to prevent licking.
- If your cat will not sit still while you apply the medication, you may find it easier to hold your cat on your lap. You may want to place a folded towel across your lap to reduce the chance of being scratched if your cat tries to get away. Alternatively, cats can be wrapped in a large towel and held against your body, exposing only the head and the area to be treated. Be sure not to wrap your cat too tightly.

HOW TO GIVE YOUR CAT A PILL

Medicines in pill or capsule form are prescribed to treat a variety of conditions.

It is important to use only medicines prescribed by a veterinarian and to treat for the full length of time prescribed.

Do not stop treatment early, even if the problem seems to be resolved.

The Basics

Medicines in pill or capsule form are prescribed to treat a variety of conditions, but many cats dislike taking pills. Some medicines that are usually prescribed as pills or capsules can be changed (compounded) to a liquid or a powder for easier administration. If you have trouble giving your cat pills, ask your veterinarian if compounding is possible for specific medicines.

Follow Recommendations

It is important to use only medicines prescribed by a veterinarian and to treat for the full length of time prescribed. Do not stop treatment early, even if the problem seems to be resolved. You can ask your veterinarian to demonstrate how to give the prescribed medicine.

Technique

Some cats will eat a pill or capsule if it is hidden in a treat or in their regular food. However, many cats will eat the treat or food and leave the pill. Also, if the pill is in food, it may be hard to tell whether your cat has taken the pill on time (or at all) if he or she eats throughout the day. Cat treats designed to hide pills are available in many stores. Ask your veterinarian if the prescribed medicine can be given with treats or food and if there are any restrictions on what your cat should eat while taking the medicine.

A more reliable method of giving a cat a pill is:

- Put one hand on top of your cat's head, holding firmly—but not too tightly—so that the tips of your thumb and middle finger touch the corners of the mouth.
- Tilt the head back. Your cat may open his or her mouth automatically at this point.
- Hold the pill between the first finger and thumb of your other hand. Use the tip of the middle finger of this hand to gently push down on your cat's lower jaw. Be careful to place your finger on the short teeth at the very front of the mouth, not on the longer “canine” teeth at the corners.
- Drop or quickly place the pill as far back in your cat's throat as you can. Do not push the pill down.
- Hold your cat's mouth closed and stroke his or her throat (or blow on his or her nose) to encourage swallowing.
- Give your cat a reward (like a treat approved by your veterinarian) to make it a more pleasant experience.
- When using this technique, be aware of your cat's mood. If he or she gets agitated and seems likely to bite, stop and try again later or contact your veterinarian.
- Contact your veterinarian if you have questions or difficulty administering any medication.
- Restraining Your Cat
- You may need help keeping your cat still while you administer medicine. If you don't have a helper handy, place your cat in your lap. Put one arm—the one you will use to hold the head—on top of your pet's body, and use your upper arm and elbow to help keep him or her still. Do not use excessive force to hold your cat still.
- If your cat will not stay in your lap, you can use the same method while seated on the floor. Your cat may be more comfortable sitting upright.
- If your cat struggles, talk to him or her calmly. Stop if he or she becomes extremely agitated. Contact your veterinarian if you have questions or difficulty administering any medication.

HOW TO TELL IF YOUR CAT IS SICK

Any change in your cat's normal behavior, such as increased lethargy (tiredness), changes in appetite, weight loss, or hiding in the house may be indications that your cat is ill.

Male cats that frequent the litter box but are unable to urinate should be seen by a veterinarian immediately.

If your cat has eaten string, and a portion of the string is still visible, leave the string in place, and see your veterinarian as soon as possible.

If your cat becomes ill outside of normal clinic business hours, call an emergency veterinary clinic for guidance.

Some illnesses require immediate veterinary attention, so when in doubt, call a veterinary professional.

How Can I Tell if My Cat Is Sick?

Any decreases in energy level, appetite, or weight may signal that your cat is not feeling well. If your male cat is squatting to urinate, but no urine appears, call your veterinarian immediately. It

is common for the urinary tract in male cats to become blocked. This condition is not only extremely painful; it's a medical emergency.

It is also common for cats to ingest string, yarn, or dental floss, which can cause problems in the intestinal tract. If you notice a string hanging from your cat's mouth or anus, do not pull the string out. Leave the string in place and bring your cat to the nearest veterinary clinic.

Other signs that your cat may be ill include:

- Bloody urine or accidents outside the litter box
- Increased drinking and/or urination
- Vomiting
- Diarrhea or bloody stools
- Constipation
- Sneezing or nasal discharge
- Runny eyes or holding one eyelid shut
- Difficulty breathing
- Limping or inability to use hind legs
- Unusual lumps, bumps, or swellings
- Bad breath or excessive drooling
- Hiding or yowling
-

If you are concerned that your cat may have a fever, you can measure its temperature with a thermometer in the rectum. Normal temperature for a cat is 100.5 to 102.5 degrees Fahrenheit. If your cat's temperature is above or below this range, contact your veterinarian.

What Should I Do if I Suspect That My Cat Is Sick?

If your cat shows signs of illness, don't wait—call your veterinarian at once. If it is outside of normal clinic business hours, contact an emergency veterinary clinic. Some illnesses may require immediate veterinary attention, so it's in your cat's best interest for you to ask if it needs to be seen right away.

If your cat goes outdoors, you may not always know when he or she has been exposed to toxins or suffered trauma from cars, dogs, or cat fights. Internal injuries may not be immediately apparent, but should be attended to as soon as possible. If you suspect that your cat may have been injured, call your veterinarian.

HYPERTHYROIDISM AND YOUR CAT

Hyperthyroidism occurs when a cat's thyroid gland (an organ located at the front of the neck) produces excess amounts of thyroid hormone.

Hyperthyroidism tends to affect middle-aged and older cats.

Hyperthyroidism causes the heart to pump faster, which can lead to other problems such as high blood pressure and heart disease.

In some cats with hyperthyroidism, the thyroid gland becomes noticeably enlarged.

There are three ways to treat hyperthyroidism: medication, surgery, or radiation therapy.

Because the exact cause of hyperthyroidism is unknown, it is difficult to determine what measures to take to avoid it.

What Is Hyperthyroidism?

If your older cat starts losing a lot of weight despite having a ravenous appetite, the problem might be hyperthyroidism. Hyperthyroidism occurs when a cat's thyroid gland (an organ located at the front of the neck) produces excess amounts of thyroid hormone. The problem is usually caused by a benign (noncancerous) tumor on the thyroid gland, although a small percentage of thyroid gland tumors in cats can be malignant (cancerous).

Hyperthyroidism tends to affect middle-aged and older cats. Thyroid hormones play an important role in controlling the body's metabolism, so most cats with hyperthyroidism tend to burn up energy too rapidly and lose weight despite having an increased appetite. Increased thirst and urination are also associated with this disease. Hyperthyroidism causes the heart to pump faster, which can lead to other problems such as high blood pressure and heart disease.

What Are the Typical Signs of Hyperthyroidism?

The typical signs of hyperthyroidism include the following:

- Weight loss, usually despite an increased appetite (although some cats have a decreased appetite)
- Restlessness or hyperactivity
- Diarrhea and/or vomiting
- Increased thirst and urination
- Irritability or nervousness
- Unkempt hair coat
- Lethargy (tiredness) or weakness

How Is Hyperthyroidism Diagnosed?

In some cats with hyperthyroidism, the thyroid gland becomes noticeably enlarged. During physical examination, your veterinarian may be able to feel an enlarged thyroid gland, which can feel like a small bulge on the front of your cat's neck. After performing a thorough physical examination, your veterinarian will likely recommend blood tests to check for elevated levels of thyroid hormone.

If hyperthyroidism is diagnosed, your veterinarian may need to run additional tests to further evaluate your cat's health status and better predict which treatment is most appropriate. These tests might include:

- Additional blood work
- Urinalysis
- Radiographs (x-rays)
- Electrocardiogram (ECG)
- Ultrasound examination of the heart
- Check of your cat's blood pressure

What Are the Treatment Options for Hyperthyroidism?

There are three ways to treat hyperthyroidism: medication, surgery, or radiation therapy. Medication prevents the thyroid from overproducing thyroid hormone but does not cure the condition. Medication must therefore be given for the rest of the cat's life in order to keep the disease under control. Periodic blood testing to check thyroid hormone levels is also recommended for the duration of therapy.

Surgical removal of the affected thyroid gland is another course of treatment. If your cat is healthy enough to undergo anesthesia and surgery, this option can offer a more permanent solution to hyperthyroidism.

Radioactive iodine therapy involves giving your cat an injection that destroys the diseased thyroid tissue without harming other organs. Because of the regulations associated with handling radioactive materials, this treatment is not available at all practices. This type of therapy can also be expensive and may require a week of hospitalization.

Your veterinarian will evaluate your cat and recommend the most appropriate treatment option.

Is Hyperthyroidism Preventable?

Because the exact cause of hyperthyroidism is unknown, it is difficult to determine what measures to take to avoid it. Regular physical examinations and wellness blood work that includes screening for increases in thyroid hormone levels are recommended to help make an early diagnosis and initiate prompt treatment.

IBUPROFEN AND NAPROXEN TOXICOSIS

Ibuprofen and naproxen can be toxic to dogs and cats, but cats are much more susceptible to this toxicity than dogs are.

A single 200-milligram ibuprofen tablet can be toxic to a cat or small- to medium-sized dog; toxic effects can occur rapidly and damage the kidneys and stomach.

Ibuprofen and naproxen are drugs intended for humans that should not be given to pets.

Never administer human medications to your pet unless instructed to do so by your veterinarian, and keep all medications in the home secured to help prevent accidental swallowing by pets.

What Is Ibuprofen and Naproxen Toxicosis?

Ibuprofen is the active ingredient in medications like Advil and Nuprin. Naproxen is similar to ibuprofen but is longer-acting; it is the active ingredient in medications like Aleve and Naprosyn.

Ibuprofen and naproxen are widely used to treat pain, fever, and inflammation in people.

Unfortunately, these drugs can be extremely toxic (poisonous) to cats and dogs. Toxicosis occurs when a cat or dog eats enough of one of these drugs to cause damaging effects in the body.

The damaging effects of ibuprofen or naproxen in pets include inhibiting blood flow to the kidneys and interfering with the production of compounds that help protect the inner lining of the stomach. Therefore, toxic effects of ibuprofen and naproxen in dogs and cats include kidney damage that can lead to kidney failure and severe stomach irritation that can progress to stomach ulcers.

How Does Toxicosis Occur?

Many cases of ibuprofen and naproxen toxicosis in dogs and cats are accidental. A pet may find and chew on a bottle of pills or eat a pill that has fallen on the floor. Because these drugs are so potent, a single 200-milligram ibuprofen tablet can be toxic to a cat or small- to medium-sized dog.

Sadly, some cases of toxicosis occur because pet owners give human medication to their pet without being instructed to do so by a veterinarian. Ibuprofen and naproxen are intended for human use and should not be given to pets.

What Are the Clinical Signs of Ibuprofen and Naproxen Toxicosis?

Once swallowed, ibuprofen and naproxen are rapidly absorbed from the stomach and intestines. Depending on the amount of drug ingested, toxic effects can occur within an hour, but some signs can take a few days to appear. The most common side effect is stomach irritation. In mild cases, this may cause vomiting. In severe cases, it can cause the pet to vomit blood; the irritation can also be severe enough to cause stomach ulcers and stomach perforations (punctures in the stomach wall that allow stomach acid to leak into the abdomen). If stomach bleeding is severe, blood transfusions may be necessary to save the patient.

Ibuprofen and naproxen toxicosis can also inhibit blood flow to the kidneys, which can cause kidney failure. Extremely high toxic doses of these drugs can also affect the brain, causing altered mental status, seizures, and coma. Other clinical signs associated with toxicosis can include the following:

- Vomiting (sometimes with blood)
- Diarrhea (may be darker in color due to digested blood)
- Appetite loss
- Dehydration
- Abdominal pain
- Pale gums (secondary to blood loss)

How Is Ibuprofen and Naproxen Toxicosis Diagnosed?

Diagnosis of ibuprofen and naproxen toxicosis is commonly based on a history of recent swallowing of one of these drugs. Your veterinarian may recommend diagnostic testing, such as blood work (a chemistry panel and complete blood cell count [CBC]) and urinalysis to assess the extent of the damage. If stomach perforation or kidney failure are suspected, additional diagnostic testing is warranted.

What Are the Treatment and Outcome for Ibuprofen and Naproxen Toxicosis?

Ibuprofen and naproxen are absorbed by the body very rapidly. If swallowing is recognized right away, vomiting can be induced to remove the drug from the stomach before the body can absorb it. Another option may be to sedate the pet to flush out the contents of the stomach. Your veterinarian may also administer a special preparation of liquid-activated charcoal to slow absorption of material from the stomach and intestines. This step may need to be repeated every few hours, as these medications have a long-lasting effect.

There is no specific antidote for ibuprofen or naproxen toxicosis. Treatment may include intravenous fluid therapy, blood transfusions, medications to help heal stomach damage, and other medications to help support and stabilize the patient. Hospitalization may be required so that blood values, urine output, and vital signs can be monitored.

Ibuprofen or naproxen toxicosis can be fatal. However, pets can survive if the condition is recognized, diagnosed, and treated quickly. The amount of drug involved also has a direct effect on recovery and long-term outcome.

Most cases of ibuprofen or naproxen toxicosis are preventable. Never administer human medications to your pet unless instructed to do so by your veterinarian, and keep all medications in the home secured to help prevent accidental swallowing.

KITTEN SOCIALIZATION

Socialization is the learning process through which kittens become accustomed to being near various people, animals, and environments.

Proper socialization can help eliminate behavior problems in the future and create a better bond between the pet and the family.

When introducing kittens to new people, pets, or environments, provide praise or treats so the kitten associates a positive experience with each new stimulus.

Do not introduce your kitten to other cats until he or she has been properly vaccinated; consult your veterinarian to determine when your kitten is ready to be around other cats.

What Is Kitten Socialization?

Socialization is the learning process through which a kitten becomes accustomed to being near various people, animals, and environments. By exposing kittens to different stimuli in a positive or neutral way, before they can develop a fear of these things, owners can reduce the likelihood of behavior problems in the future and help build a stronger bond between pets and the rest of the family. The critical time to socialize a kitten is during the first 3 to 4 months of its life.

Why Is Kitten Socialization Important?

Unfortunately, behavior problems remain the top reason that pets are relinquished to animal shelters. Proper socialization will help make kittens more tolerant of changes in their environment and help prevent common behavior problems in the future.

Why Should I Consider Kitten Kindergarten?

Attending a kitten training class led by a training specialist gives your kitten an opportunity for socialization with other kittens and with children and adults. Kitten kindergarten classes are offered by some veterinary clinics and pet supply stores.

Reputable training facilities will require that your kitten is vaccinated and dewormed before attending the course to ensure that kittens aren't exposed to diseases or parasites when their immune system is still developing. Vaccinations should be given at least 10 to 14 days before the class. Before attending class, kittens should test negative for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV). Kittens should also be free of potentially contagious diseases such as upper respiratory infections and ringworm. Check with the training facility about their specific requirements. Also, consult your veterinarian to determine when your kitten is ready for class.

How Else Can I Socialize My Kitten?

The goal of socialization is to expose your kitten to different people, animals, environments, and stimuli in a safe manner, without overwhelming your pet.

Start by familiarizing your kitten with your touch. Whenever possible, you should handle your kitten's paws, ears, mouth, and body. Once your kitten is comfortable with being handled, it will be easier for you to trim nails, brush teeth, clean ears, and give medications.

Next, introduce your kitten to people of different ages, sexes, heights, and races. If your kitten tolerates it, allow other people to touch his or her paws, ears, mouth, and body. This will help your kitten be more comfortable with being handled by others at the veterinary clinic or grooming facility.

It's also important for your kitten to learn to be comfortable around other animals. Kitten kindergarten is a safe place to expose your pet to other kittens, because vaccination is usually

required for all participants. In general, you should avoid exposing your kitten to other cats until he or she has been properly vaccinated. Exposing your kitten to an infectious disease, such as panleukopenia (feline distemper), when his or her immune system is still developing can have devastating results.

Kittenhood is also a great time to familiarize your kitten with all the sights and sounds of his or her world, from riding in a car to being around a vacuum cleaner. Once your kitten has been properly vaccinated, you can take your kitten to places such as the grooming or boarding facility to expose him or her to different sights, sounds, and smells. Each time you introduce your pet to a new stimulus, make sure to provide positive reinforcement in the form of praise, petting, or treats so that your pet associates a positive experience with new people, pets, or environments. If your kitten will be indoor only, with limited exposure to other pets or environments, you may want to limit the number of pets and environments your kitten interacts with during the socialization period to minimize potential exposures to infectious diseases. Always discuss your socialization plans with your veterinarian before exposing your kitten to other pets and environments.

MEDICAL CAUSES OF WEIGHT LOSS

A variety of medical conditions can cause weight loss.

Weight loss is not a disease—it is a sign of an illness. Therefore, the treatment for weight loss depends on the underlying cause.

Regular physical examinations, routine wellness screening tests, and periodically weighing your pets at home can help with early detection of medical problems that can cause weight loss.

When Is Weight Loss a Cause for Concern?

Weight loss can result from decreased intake of calories, malnutrition (inappropriate diet), inadequate absorption or digestion of food (leading to malnutrition), or alterations in metabolism that make the body burn more calories than it is taking in. However, weight loss is not always an immediate cause for concern—it can be normal for pets to lose or gain small amounts of weight from time to time. For example, dogs may gain a little weight in the winter due to decreased activity and then lose those extra pounds when the weather warms up and activity increases. In fact, many pets fluctuate within a range of a few pounds on a regular basis.

Determining when weight loss is a problem can be quite subjective, but the following criteria are causes for concern:

- A pet is eating normal or increased amounts of quality food but is losing weight.
- The cause of weight loss is unknown.
- The amount of weight lost is significant (especially if it has occurred over a brief period of time).
- Weight loss is accompanied by other signs of illness.

What Medical Problems Can Cause Weight Loss?

Here are just a few of the medical conditions that can cause weight loss in dogs and cats. Some of these conditions are quite common and easily treatable, whereas others are life-threatening and require a long-term commitment to treatment or management:

- Malnutrition due to poor diet or underfeeding
- Anorexia (loss of appetite)
- Intestinal parasites

- Intestinal maldigestion (inability to digest food properly)
- Intestinal malabsorption (inability to absorb nutrition properly)
- Inflammatory bowel disease or other causes of chronic diarrhea
- Thyroid disease (in cats)
- Heartworm disease (in dogs)
- Diabetes
- Kidney failure
- Heart failure
- Liver disease
- Cancer

How Are These Medical Problems Diagnosed?

Medical history and physical examination findings provide valuable information for your veterinarian. The medical history may include trying to determine what and how much the pet is eating, how long the weight loss has been occurring, and whether any other signs of illness have been observed. Physical examination findings may reveal evidence of underlying illness. For example, a cat with thyroid disease may have an increased heart rate and enlarged thyroid glands in the neck.

Initial diagnostic testing to begin looking into the cause of your pet's weight loss may include blood work, such as a serum chemistry profile, complete blood cell count (CBC), and thyroid panel. Urinalysis and fecal testing can also be helpful early in the diagnostic process. Additional testing for specific diseases, such as cancer, may include taking radiographs (x-rays), performing ultrasound examinations of the chest or abdomen to look for irregularities in these areas, or taking biopsies (small tissue samples) from lymph nodes or other organs. More targeted testing may be recommended based on the results of preliminary tests.

How Is Weight Loss Treated?

Weight loss is not a disease—it is a sign of an illness. Therefore, the treatment for weight loss depends on the underlying cause. Fortunately, most conditions that cause weight loss are manageable or curable. Sometimes a diet change may be involved, but in other cases effective treatment of the underlying problem resolves the weight loss without altering the pet's diet at all. If you suspect your pet may be losing weight, schedule an appointment with your veterinarian so that diagnostic testing can begin.

Can Medical Causes of Weight Loss Be Prevented?

Providing high-quality nutrition is a good way to help prevent weight loss in pets. It is also important to make sure (especially in a multipet household) that your pet is eating adequate amounts of food. Sometimes, one pet can "bully" another away from food, or one pet may eat significantly more than another. It may be necessary to feed pets in different rooms or feed cats on an elevated counter or platform to help prevent dogs in the house from stealing the cats' food.

Some of the medical problems that cause weight loss cannot be prevented. However, regular physical examinations, routine wellness screening tests (including fecal and heartworm testing), and periodically weighing your pets at home (if possible) can help with early detection of medical problems that can cause weight loss. In many cases, early diagnosis means better treatment options and improved quality of life for sick pets.

PREVENTING HEARTWORMS AND FLEAS

Heartworms and fleas are parasites that can cause serious problems. Fortunately, these parasites can be prevented by using safe, effective, and easy-to-administer medications. Heartworm disease damages the heart, lungs, and related blood vessels and can be fatal. This disease is transmitted through the bite of an infected mosquito.

Heartworm disease in dogs is treatable, but in some cases, treatment can be costly and complicated. There are no approved products for heartworm treatment in cats. Fleas are widespread, blood-drinking parasites that can transmit tapeworms and cause flea allergy dermatitis.

Prevention of heartworms and fleas is the best option for your pet.

Why Worry About Heartworms?

Heartworm disease is serious and potentially fatal. It affects dogs, cats, and up to 30 other species of mammals. Heartworm disease has been reported in all 50 states. It is caused by parasitic worms (heartworms) living in the major vessels of the lungs and, occasionally, in the heart. Heartworms are transmitted (as microscopic larvae) through the bite of an infected mosquito. The scientific name for the heartworm parasite is *Dirofilaria immitis*.

Heartworms can cause a variety of medical problems affecting the lungs, heart, liver, and kidneys. Any of these problems, alone or in combination, can lead to death. While treatment is available for dogs, it can sometimes be costly and complicated. In cats, heartworms can cause a respiratory disorder that mimics feline asthma. However, there is no approved medical treatment for heartworm disease in cats.

Although heartworm disease is virtually 100% preventable, many pets are still diagnosed with it each year. The American Heartworm Society (AHS) estimates that 1 million dogs in the United States are infected with the disease and that its incidence may be rising. Cats are susceptible to heartworms, too, and even indoor cats are at risk. Studies have shown that more than 25% of heartworm-infected cats live indoors.

Why Worry About Fleas?

The flea that most commonly affects pets is called the cat flea. Its scientific name is *Ctenocephalides felis*. The dog flea (*Ctenocephalides canis*) is much less common but can infest pets as well. Fleas not only make pets and people miserable but can cause serious health problems. In mild cases, pets may only be troubled by persistent itching and scratching. In some unfortunate animals, however, fleas can also cause an extreme allergic reaction resulting in intense itching. This causes the pet to scratch excessively, leading to skin damage, hair loss, scabs, and skin infection. This condition, called flea allergy dermatitis, can become severe enough to require extensive treatment. The bite of just a single flea can cause this kind of reaction in some highly allergic pets.

Fleas can also transmit tapeworms to pets and people. In some cases, they can play a role in transmitting an unpleasant disease called cat-scratch fever, between cats and humans. And in severe infestations, particularly in old, ill, or young animals (puppies or kittens), feeding fleas can remove so much blood from a pet that they can cause a debilitating and even life-threatening anemia.

Fleas can be found almost everywhere at any time of year. Depending on where you live, they may seem less prevalent during cooler months, but they can still survive through the winter on pets and in homes. They can be brought into your yard or even your home by wildlife, such as raccoons, opossums, and small rodents.

Treating Heartworm Disease

In dogs, if heartworm disease is detected early enough, it can be treated before permanent damage is done to the heart, lungs, and blood vessels. However, if the infection has been present for a long time or consists of a large number of worms, the risk of complications can increase. In these cases, treatment can be more expensive and complicated, and dogs may need many months to recover from the infection. Hospitalization may be required.

For cats, there is no approved medical treatment for heartworm disease. Your veterinarian can discuss with you how to monitor your cat and manage the signs of disease. Antibiotics, steroids, and other medications are sometimes recommended. For cats with severe breathing problems or other complications, hospitalization may be needed. In some cases, surgical removal of adult worms may be attempted. However, this surgery is costly and has some risks.

Treating Fleas

Once a flea infestation is established, it can be very difficult to eradicate due to the complex life cycle of these pests. Fleas have four life stages: eggs, larvae, pupae, and adults. Several of these stages can live in the environment (off of your pet). For every flea you see on your pet, there are probably hundreds more lurking in their egg, larval, or pupal forms in your pet's living environment, just waiting for the right conditions to hatch or develop into blood-sucking adults. As a result, treatment for their removal is usually multi-pronged and may take several months of consistent effort.

First, you must treat every pet in your home, whether or not you see fleas on them. Some flea treatment products target adult fleas, whereas others may also kill the immature stages (eggs, larvae, or pupae). Ask your veterinarian which option is recommended for your pets.

Other management measures may include frequent vacuuming of carpets and laundering of pet bedding to remove fleas, eggs, larvae, or pupae that may be hiding in those places. In some cases, your veterinarian may also recommend treating the home with an area spray or fogger. If your pet is allowed outside, your veterinarian may want to discuss treating "flea-friendly" outdoor areas (such as crawl spaces, shrubs, and moist/shaded areas) with pesticides.

Prevention

Fleas and heartworms can be easily prevented by using safe, effective, and easy-to-administer monthly medications. Some of these products are given orally, whereas others are applied topically to the pet's skin (these are called spot-on medications). There is also an injectable heartworm preventive for dogs that can be administered every 6 months by your veterinarian. Some heartworm and flea preventive products have the added benefit of also controlling other internal parasites of concern, such as roundworms and hookworms (in dogs and cats) and whipworms (in dogs). Some products also target other external parasites, such as ticks and mites.

In some cases, the best protection for your pet may not be the use of a single product, but rather the simultaneous administration of more than one product to effectively control parasites. Your veterinary team can help you decide which strategy may be best for your pet.

Preventing heartworms and fleas before they can become a problem is the safest, smartest, and most effective way to combat these parasites and keep your beloved canine and feline friends healthy! Ask your veterinarian which product(s) he or she recommends for your pet's situation.

Caution: Some parasite control products cannot be used on cats. Consult your veterinarian regarding which specific products can be used for cats to safely prevent fleas and heartworms.

TICKS AND YOUR CAT

Ticks can transmit dangerous diseases, like cytauxzoonosis, when they attach to a cat and feed. Your veterinarian can recommend safe and effective products to help protect your cat from ticks. You should never remove a tick with your fingers. Tweezers or tick removal tools work well. When in doubt, ask your veterinary care team for assistance removing a tick.

What Are Ticks?

Ticks are small, eight-legged parasites that must drink blood in order to survive and reproduce. Ticks don't fly, and they can't jump (unlike fleas). In fact, ticks are more closely related to spiders and mites than to "insects" like fleas. Of the hundreds of tick species, approximately 80 are found in the United States. Ticks can feed on a variety of hosts, including cats, birds, dogs, and people.

Why Are Ticks a Problem for Cats?

It may be tempting to dismiss the importance of ticks on cats, because cats are less likely to be diagnosed with Lyme disease and some of the other diseases that ticks transmit to people and dogs. However, there are still reasons to be concerned about your cat coming into contact with ticks.

If a cat is heavily infested with ticks, the parasites can drink enough blood to cause anemia (severe blood loss). Additionally, if your cat brings ticks into the house, your family members could be exposed to Lyme disease and other diseases that ticks can transmit if they bite people. Ticks can transmit a disease called cytauxzoonosis (pronounced sight-oh-zo-uh-nosis) to cats. This disease causes serious illness and even death in infected cats. Cytauxzoonosis is actually caused by two parasites. The first parasite, an infected tick, bites a cat and transmits the second parasite, a single-celled parasite called *Cytauxzoon felis*, to the cat. Once infected with *Cytauxzoon felis*, the cat may develop severe clinical signs, including:

- High fever
- Lethargy (tiredness)
- Appetite loss
- The infection progresses very quickly (over a period of days) and many infected cats die from this disease.
- Less commonly, cats can also contract tularemia from tick bites. Signs of this disease include:
 - Loss of appetite
 - Oral ulcers
 - Fever
 - Enlarged lymph nodes

- Painful abdomen

-

Humans can become infected with tularemia if they are bitten or scratched by a cat with the disease.

There is a popular myth that cats groom themselves so frequently and thoroughly that they remove all of their ticks. However, ticks can attach to the face, ears, and other areas that are difficult for cats to groom. This means that even a cat that grooms meticulously can still have a problem with ticks.

How Do Cats Get Ticks?

Despite a very popular myth, ticks don't fall or jump out of trees onto a host. However, ticks can climb, and they tend to attach themselves to shrubs and blades of tall grass. They can also live in dens of rodents and other small mammals. One species of tick can even live indoors.

When a host walks by and brushes against the grass or shrub where the tick is waiting, the tick climbs onto the host. Once on a new host, the tick eventually finds a location to attach and feed. Cats that roam or hunt rodents and small mammals are likely to be exposed to ticks, especially if they have access to wooded areas. However, even indoor cats can be exposed to ticks if dogs or humans bring ticks into the house.

How Can I Protect My Cat From Ticks?

Keeping your cat indoors can reduce the risk of exposure to ticks. If you have other pets that go outside and can bring ticks into the house, use an effective form of tick control and check them daily for ticks. If your cat must go outside, limiting exposure to wooded areas, tall grass, and other tick habitats is a good idea. However, this can be difficult if the cat roams freely and has access to these areas.

Safe and effective tick-control products can be used on cats to help protect them from ticks.

There are many options, so ask your veterinarian about the best choice for your cat.

Remember that ticks are successful parasites that can be difficult to kill. Even if you are using an effective tick control product, you should still check your cat daily for ticks and remove any as soon as you find them. You should never remove a tick with your fingers. Tweezers work well, but be sure to grasp the tick close to the head and pull gently to avoid leaving the mouthparts imbedded in the skin. There are also tick removal tools that are very easy to use. Avoid using lighter fluid, matches, or other products that may irritate the skin or cause other injuries to your cat. When in doubt, ask your veterinary care team for assistance removing the tick.

ULTRASONOGRAPHY

Ultrasonography is a diagnostic technique that allows your veterinarian to look inside your pet's body without surgery.

Ultrasonography uses reflected sound waves to create images of organs or spaces inside your pet's body.

Ultrasonography is painless and noninvasive. In many situations, it can be conducted while the pet is awake.

What Is Ultrasonography?

Ultrasonography is a type of diagnostic technique known as an imaging study. This means that when a doctor performs ultrasonography (sometimes called an ultrasound study) he or she can see pictures, or "images," of parts of the patient's body. Other examples of imaging studies include x-rays (radiography) and MRI (magnetic resonance imaging).

Ultrasonography uses high-frequency sound waves—ultrasound—to create a picture of what is inside your pet’s body. It is a noninvasive, painless way to diagnose and evaluate many common diseases. Ultrasonography is a very good method for evaluating fluid-filled structures (like the bladder) as well as organs like the liver, spleen, kidneys, and heart.

How Does It Work?

Ultrasonography requires a special machine that can create ultrasound waves. This machine is connected to a small probe that your veterinarian can hold against your pet’s skin. The probe sends out painless ultrasound waves that bounce off of structures (e.g., organs) in your pet’s body and return to a sensor inside the ultrasound machine. The ultrasound equipment collects these reflected “echoes” and uses them to generate images that are viewable on a screen. In ultrasound images, dense areas (e.g., bone) appear whiter or brighter because they reflect more sound waves back to the sensor; less dense areas, such as fluid, reflect fewer sound waves and appear darker. The term “echogenicity” refers to how reflective an object is—that is, how many echoes it sends back. The denser the object, the higher its echogenicity.

What Is It Used For?

Ultrasound waves can generate excellent images of abdominal organs, such as the following:

- Liver
- Spleen
- Gallbladder
- Adrenal glands
- Pancreas
- Kidneys and urinary tract
- Parts of the stomach and intestine
- Reproductive organs
-

Ultrasonography can also detect the presence of fluid, such as blood or urine. Ultrasound waves cannot penetrate bone, so ultrasonography cannot be used to see objects hidden behind bones, such as the brain.

Because ultrasonography creates images that the doctor sees right away, it can be used to evaluate the heart as it beats for the motion of heart valves and chambers, blood flow through the heart, and contractions of the heart muscle. It can also be used to assess the heart for defects.

Ultrasonography is useful for assessing fetal health and monitoring pregnancy in breeding animals.

Ultrasonography can also play a role in diagnosing and “staging” cancer. Tumors and masses can be located, counted, and measured using ultrasonography, which can be valuable when a veterinarian is looking for evidence of cancer spread. In the same way, ultrasonography can help in monitoring a patient’s response to cancer therapy.

The Ultrasonography Examination

In most cases, ultrasound examinations are conducted while the pet is awake. Tranquilizers and anesthesia are generally not required, and food and water restrictions are usually not necessary. The haircoat will be clipped over the area to be scanned. This allows the ultrasound probe to be placed directly against the skin without interference from body hair. A nonirritating

gel will be placed on the pet's skin before the examination. This gel provides lubrication, allowing the probe to slide over the skin. It also prevents any air from getting between the probe and the tissue being scanned; this improves the quality of the ultrasound image. The ultrasound examination is noninvasive and painless and typically takes less than 40 minutes to complete. Ultrasonography is a minimally invasive diagnostic option.

UNDERSTANDING PET FOOD LABELS

Understanding pet food labels is the first step in choosing the right food to help make an optimal nutritional plan for a pet.

Animals require specific nutrients from the ingredients in their foods.

The new regulation to include calorie information on pet food labels might help decrease the number of overweight pets.

Pet owners can be passionate about choosing the best food for their pets, but with thousands of pet food products on the market, how do pet owners make the best choice? Pet food labels are a good place to start. Understanding the label information can help pet owners make informed decisions about the food they feed their pets.

Which Part of the Label Helps Assess Quality?

The following key components of a pet food label help evaluate nutritional information:

A nutritional adequacy statement from the Association of American Feed Control Officials (AAFCO; a nongovernment advisory organization with representative officials from every US state)

A list of ingredients (in descending order by weight)

A guaranteed analysis

The AAFCO nutritional adequacy statement declares whether the product or treat is complete and balanced and whether it should be fed under veterinary supervision. The following types of nutritional adequacy statements can appear on a pet food label:

Animal feeding trials using AAFCO procedures substantiate that the product provides complete and balanced nutrition for all life stages or a particular stage.

The product is formulated to meet the nutrient levels established by AAFCO for a particular life stage or for all life stages.

The product is intended for intermittent or supplemental use only.

The presence of either of the first two statements indicates that a food can be used as the sole source of nutrition. "Complete and balanced" indicates that a food has all the recognized, required nutrients in the proper proportions, when fed appropriately.

In a feeding trial, a product is fed to a specific number of dogs or cats for a minimum of 6 months to determine whether it provides adequate nutrition. By conducting feeding trials, pet food companies ensure that animals in a particular life stage (i.e., gestation, lactation, growth, adult maintenance) will obtain proper nutrition from a food. Feeding trials also provide some assurance of palatability and the availability of nutrients.

When a food is formulated by calculation or chemical analysis, the nutrients may meet the maximum or minimum levels established by AAFCO, but because the finished product is not fed to animals, availability and palatability are not assessed.

The nutritional adequacy statement regarding intermittent or supplemental feeding applies to treats or to veterinary diets that require a veterinarian to monitor the pet.

What Should I Know About the Ingredients?

The following are important to know about pet food ingredients:

Each ingredient, including additives, must be listed in the ingredients statement.

Ingredients are listed in descending order by weight. However, this does not reveal the amounts of the ingredients. For example, wheat germ meal, wheat bran, and wheat flour are all components of wheat, but they may provide different nutrients. The ingredient list is valuable when a patient has a confirmed allergy and must avoid a certain allergen.

AAFCO defines what ingredients can or cannot be called. For example, according to AAFCO, corn gluten is the part of the commercial, shelled corn after removal of the larger portion of the corn's starch and germ.

What Do the Percentages on the Label Mean?

AAFCO regulations require pet food manufacturers in the United States to include a guaranteed analysis that lists percentages of certain nutrients on pet food labels. These percentages (i.e., minimum protein and fat; maximum fiber and water) are listed on an as-fed basis. "As fed" simply means the percentage of each nutrient, including water or moisture, contained in the final product the pet consumes. To compare products on a level "playing field," pet owners should always use the dry matter (without moisture) equivalent listed on pet food labels. If a dry matter basis is not used, canned food appears to have a lower concentration of nutrients than dry food because the latter contains approximately 10% water and canned food contains approximately 75% water.

What Are the "Chemicals" in the Ingredients?

Pet owners may be concerned to see "phylloquinone," "α-tocopherol," "cobalamin," and "ascorbic acid" listed on their pets' food until they learn that these are the technical names for vitamins K1, E, B12, and C, respectively. α-Tocopherol is also an antioxidant. Antioxidants are added to foods to balance the nutrient profile and preserve fats; therefore, preservatives are not universally bad for pets and prevent foods from becoming rancid.

What Are the By-products on the Label?

Many pet owner questions about pet food result from misunderstandings about particular ingredients. Pet owners may incorrectly think that by-products are only the undesirable parts of animals, such as hooves, feathers, and beaks. However, by definition in the pet food industry, meat by-products are clean parts other than meat, such as lungs, kidneys, and spleens. By-products are an excellent source of amino acids, protein, vitamins, and minerals. For example, poultry by-products contain 70% protein on an as-fed basis and are highly digestible.

Who Ensures the Quality of Pet Foods?

Several governing agencies have a role in regulating pet food. The Food and Drug Administration (FDA) has authority over pet foods. The FDA establishes certain labeling regulations for animal food and enforces regulations about contamination. Feed control officials from the US Department of Agriculture (USDA) work with the FDA to inspect facilities and enforce regulations within each US state. AAFCO defines ingredients and has an agreement to

work with FDA scientists to ensure the safety of ingredients. Owners can voluntarily submit reports using the FDA Safety Reporting Portal:www.safetyreporting.hhs.gov.

Are Organic or Natural Ingredients Better?

As more pet foods are manufactured to meet the demand for “organic” and “natural” ingredients, pet owners need to understand these terms. AAFCO has defined “natural” as originating from animals or plants. AAFCO has no regulatory definition for “organic,” which refers to the procedure by which organic ingredients are grown, harvested, and processed. There is no evidence that organic food is more beneficial to animals than nonorganic food. Pet foods that meet the human standard for organic (at least 95% of the content by weight, excluding salt and water, must be organic) may display the USDA organic seal on their packaging. The FDA uses “natural” to describe food and “organic” to describe food and the way in which it was processed.

Are the Feeding Guidelines Right for My Pet?

Complete and balanced pet foods must include feeding directions on their labels. However, one set of feeding guidelines cannot account for the great variation in metabolic rates and nutritional needs among individuals. In addition, breed, temperament, environment, and many other factors can influence food intake. Feeding guidelines provide a good starting point for clients but may overestimate the needs of some pets, leading to weight gain. Therefore, pet owners (with guidance from a veterinary professional) may have to adjust the feeding guidelines on a case-by-case basis to achieve a healthy, lean body condition in pets.

Why is My Pet Gaining Weight on New Food?

The size of a “cup” is commonly misunderstood. The feeding guidelines on pet food labels refer to a standard 8-oz measuring cup, so if a pet owner is using a 12-ounce coffee mug or other larger “cup,” it is easy to accidentally overfeed a pet. Also, the amount of calories fed to a pet can vary greatly depending on the brand of food. When pet owners change their pet’s food, they are often unaware that there can be a large discrepancy in the amount of calories in different foods.

Why Aren’t Calories Listed on the Label?

Calorie content is not on most pet food labels, but that may be changing in the future. The format of pet food labels was derived from large animal feed packaging, which does not legally require the inclusion of calorie content. AAFCO recently voted to mandate the inclusion of calorie content on pet food labels.

Conclusion

If read correctly, pet food labels can provide important information for optimizing pet nutrition. Clients should educate themselves about the myths and misconceptions regarding pet foods and their labels. Clients with questions about a pet food or its label should contact their veterinary hospital or the pet food manufacturer.

For more information on pet food labels, visit the FDA’s Web site at:<http://www.fda.gov/animalveterinary/resourcesforyou/ucm047113.htm>.

URINALYSIS AND EARLY KIDNEY DISEASE DETECTION

In kidney disease, the kidneys do not function properly.

Acute (sudden) kidney disease may be reversible, but chronic (long-term) kidney disease is usually progressive, meaning that it worsens over time.

Kidney disease can be detected early with the help of a urinalysis.

A urinalysis is an examination of a dog's or cat's urine to assess the health of the urinary tract, including the kidneys, and organs such as the liver and the pancreas.

Ideally, the urine sample should be obtained by a relatively painless procedure called a cystocentesis, in which a needle is placed directly into the urinary bladder.

To evaluate kidney function, the urinalysis should be interpreted with the results of a blood test called a chemistry panel.

Your veterinarian may recommend a urinalysis if your pet is showing signs such as increased drinking, increased urination, and urinary accidents.

A urinalysis may also be part of a routine screening examination, especially in older pets.

What Is Kidney Disease?

Kidney disease is a broad term meaning that the kidneys are not functioning properly. Acute kidney disease occurs quickly, often over the course of a few days, and is caused by a lack of oxygen to the kidneys or exposure to toxins such as antifreeze, pesticides, and some medications. If treated promptly, acute kidney disease may be reversible. Chronic kidney disease occurs over the course of months to years and is usually progressive, meaning that it worsens over time. Early detection and treatment of chronic renal disease can slow the progression of the disease and help keep your pet more comfortable.

What Are the Signs of Kidney Disease?

Pets with kidney disease may display any or all of the following signs:

- Increased drinking
- Increased urination
- Anorexia and weight loss
- Vomiting
- Lethargy
- Constipation or diarrhea

How Can Kidney Disease Be Detected Early?

When the kidneys begin to fail, they lose their ability to concentrate urine. Urine that was once deep yellow in color becomes dilute (more clear in appearance). While the difference in concentration isn't always obvious to the naked eye, it can be detected by a urinalysis.

However, you may notice that your pet is drinking more water, urinating more frequently, and urinating in inappropriate places.

What Is a Urinalysis?

As the name implies, a urinalysis is the analysis of a pet's urine. While a urinalysis is generally performed to evaluate the health of the urinary tract, including the kidneys, it can also provide information about the state of organs such as the liver and the pancreas.

How Is a Urinalysis Performed?

Ideally, a urine sample should be obtained by cystocentesis—a relatively painless procedure in which a needle is placed through the abdominal wall directly into the urinary bladder. A urine sample obtained in this manner is not contaminated by bacteria in the lower urinary tract. Urine samples can also be retrieved by placing a catheter (rubber tube) up the urinary tract into the bladder, but this procedure often requires anesthesia and may be difficult to perform on female pets. Samples obtained by “free catch” into a cup while the pet urinates or taken off the floor or exam table are usually contaminated with bacteria but may be sufficient for evaluating kidney function.

During a urinalysis, the technician will first evaluate the urine color and clarity or cloudiness. The urine is then assessed for specific gravity, which measures the ability of the kidneys to concentrate urine. Insufficient ability to concentrate urine is noted by an abnormal specific gravity and is often one of the first signs of early kidney disease.

The urine is then applied to a treated dipstick that changes color to identify the pH (acidity or alkalinity) of the urine and the presence of several substances, such as protein, glucose, red blood cells, and white blood cells. For example, the presence of glucose in the urine often indicates diabetes. Protein in the urine may be a sign of kidney damage. Finally, the urine is centrifuged to separate the solids from the liquid, and the sediment is examined under a microscope for crystals, red blood cells or white blood cells, bacteria, and other abnormal substances.

What Other Tests May Be Done to Detect Kidney Disease?

A urinalysis should be evaluated with the results of a chemistry panel blood test. In early kidney disease, a low specific gravity may be the only abnormality identified. When the kidneys lose the ability to concentrate urine, the pet begins to urinate larger amounts. To make up for this loss of fluid, the pet drinks more than usual.

As kidney disease progresses, the concentrations of blood urea nitrogen (BUN) and creatinine rise in the blood. These two waste products are normally removed from the blood by the kidneys. When the kidneys aren't functioning efficiently, the waste products increase in the blood and can be identified by the chemistry panel. A diagnosis of kidney failure can be made by confirming a loss of urine-concentrating ability combined with increased BUN and creatinine blood levels.

Your veterinarian may recommend a radiograph (x-ray) to examine the size and shape of the kidneys. The kidneys may also be visualized by ultrasound.

What Are the Benefits of Kidney Function Testing?

Kidney function testing can identify acute kidney disease so that proper treatment may potentially reverse the condition. While early detection of chronic kidney failure can't stop the progression of the disease, treatment can help slow the process and help make your pet more comfortable. For example, a low-protein diet has been shown to help slow kidney disease progression.

VACCINE-ASSOCIATED SARCOMAS IN CATS

Vaccine-associated sarcomas are cancerous tumors that occur at vaccination sites in cats. Approximately 1 to 2 out of every 10,000 vaccinated cats develop this condition.

Your cat should be seen by a veterinarian if you notice swelling at the vaccination site that grows larger after 1 month, is bigger than 2 cm (0.79 inches), or persists for more than 3 months.

Diagnosis is made via a surgical biopsy (tissue sample).

Treatment requires wide surgical excision (removal), often followed by radiation or chemotherapy.

Because the risks of contracting a serious infectious disease are greater than the risks of developing a tumor, it's generally recommended to keep cats current on vaccines.

You should discuss the risks and benefits of vaccination with your veterinarian.

What Is a Vaccine-Associated Sarcoma?

Cats can develop cancerous tumors called fibrosarcomas, or sarcomas, at the locations where they have been vaccinated. These aggressive tumors can appear just months after vaccination, or many years after the fact.

While these tumors are very serious, they are not very common. It's estimated that approximately 1 to 2 out of every 10,000 vaccinated cats develop this condition.

What Causes These Sarcomas?

Vaccines help protect cats from dangerous infectious viruses by stimulating an immune response (forming antibodies) against the virus. Vaccines generally contain very tiny amounts of the target virus, or protein particles derived from the virus. When this material is introduced into the body in a vaccine, the body's immune system responds through a series of steps that include making antibodies and modifying other cells that will recognize the target organism later. These changes constitute an immune response. When the vaccinated individual encounters the "real" organism later, the body recognizes the organism and reacts to protect the vaccinated individual from becoming sick.

Live viruses can create an immune response, but they also have the potential to infect the animal. To prevent this, the viruses in vaccines are modified or killed to make the vaccines safer. In many cases, killed viruses cannot stimulate an immune response as effectively as modified or live viruses. A substance called an adjuvant is added to these vaccines to help the animal mount a more effective immune response over a longer period of time.

While no one is exactly sure what causes vaccine-associated sarcomas, it has been suggested that the adjuvant, combined with local inflammation, may be a contributing factor. Although these tumors have not been linked to a single brand of vaccines, they are more commonly associated with feline leukemia virus (FeLV) and rabies vaccines.

What Are the Signs of a Vaccine-Associated Sarcoma?

If your cat develops a swelling in the skin after a vaccination, don't panic. Some vaccines can cause a mild reaction, which usually resolves in a few weeks. However, you should monitor the area and bring your cat to the veterinarian if the swelling:

- is growing in size 1 month after vaccination
- is greater than 2 cm (or 0.79 inches) in diameter
- persists longer than 3 months

Vaccine-associated sarcomas can be locally aggressive (meaning they can start just under the skin but quickly invade deeper structures, like muscle) and grow relatively fast. They can

metastasize (spread) to other locations in the body, such as the lungs. Over time, the tumors can become large, unmovable, and ulcerated.

How Are These Sarcomas Diagnosed?

The best way to diagnose these tumors is by obtaining a surgical biopsy (tissue sample) and submitting it to a laboratory for analysis. At the same time, your veterinarian may recommend radiographs (x-rays) to determine if other areas of the body are affected.

How Are Vaccine-Associated Sarcomas Treated?

These tumors must be removed surgically, while your cat is under anesthesia. Before surgery, it may be necessary for your cat to undergo a computed tomography (CT) scan to help the surgeon determine how much tissue to remove. It is extremely important that the entire tumor is removed, or it may return in a more aggressive form.

Surgical removal is often followed with radiation therapy to eliminate any microscopic cancerous cells that may still be in the tissues. Some cats may require chemotherapy as well.

Should I Stop Vaccinating My Cat?

The chance of your cat contracting a serious disease is much higher than the chance of your cat developing a vaccine-associated sarcoma. So it's generally recommended to keep vaccines current.

At the same time, veterinarians are taking every precaution to help reduce the risks associated with vaccines, including:

- Eliminating unnecessary vaccines: If your cat is indoor only and is never exposed to other cats, it may not be necessary for your cat to receive certain vaccines.
- Reducing the number of vaccines given in a single location: Multiple vaccines in one location may induce inflammation, so different vaccines are generally given in different areas of the body. There are standardized locations where each vaccine should be given that help veterinarians determine which vaccines are more likely to produce a problem.
- Injecting vaccines in the limbs: In the past, vaccines were commonly given between the shoulder blades. However, tumors that occur there are difficult to remove. If an aggressive tumor develops in a limb, complete removal (which may include amputation of the leg) is more likely, which can save the life of a cat.
- Extending the interval between vaccinations: Some vaccines are available that last for up to 3 years, eliminating the need for annual vaccination.

It's a good idea to discuss the risks and benefits of vaccination with your veterinarian to determine which vaccines are right for your cat.

WHY DO I NEED TO VACCINATE MY PET?

Vaccination is an important weapon against infectious diseases.

Some diseases, like rabies, are transmissible to humans, so protecting your pets also protects your family members and community.

Pets that stay indoors also can be exposed to infectious diseases, so even indoor cats can benefit from vaccinations.

Vaccines are safe and generally well tolerated by most pets.

Vaccine selection and scheduling should be an individualized choice that you and your veterinarian make together.

Companion animals today have the opportunity to live longer, healthier lives than ever before, in part due to the availability of vaccines that can protect pets from deadly infectious diseases. Over the past several decades, the widespread use of vaccines against diseases like rabies has saved the lives of millions of pets and driven some diseases into relative obscurity.

Unfortunately, infectious diseases still pose a significant threat to dogs and cats that are unvaccinated; therefore, although vaccine programs have been highly successful, pet owners and veterinarians cannot afford to be complacent about the importance of keeping pets up-to-date on their vaccinations.

How Do Vaccines Work?

Although there are many types of vaccines, they tend to work through a similar principle. Most vaccines contain a very small portion of the virus or bacterium that is the infectious agent. Some vaccines contain small quantities of the entire virus or bacterium, whereas others contain particles that are part of the infectious organism. When this material is introduced into the body in a vaccine, the body's immune system responds through a series of steps that include making antibodies and modifying other cells that will recognize the target organism later. When the vaccinated individual encounters the "real" organism later, the body recognizes the organism and reacts to protect the vaccinated individual from becoming sick.

Why Does My Pet Need Vaccines?

Vaccines protect your pet

Vaccines are one of our most important weapons against infectious diseases. Some diseases, such as "kennel cough," in dogs and rhinotracheitis in cats can be transmitted directly from pet to pet. If your pet is ever around other animals, such as at a kennel, dog park, grooming salon, or daycare facility, exposure to infectious disease is possible. Even pets that look healthy on the outside may be sick, so keeping your pet's vaccines up-to-date is a good way to help prevent illness.

Even primarily indoor pets can be exposed to diseases

Even if your pet doesn't have direct contact with other animals, some diseases can be transmitted indirectly. For example, parvovirus infection, which is potentially fatal, is spread through contact with feces from an infected dog. Even if your dog never has contact with a dog infected with parvovirus, exposure to the virus can occur through contact with feces from an infected dog, such as in a park or on a beach. Lyme disease—a dangerous infection that is carried by ticks—is another disease that your dog can be exposed to without coming into contact with other dogs.

In cats, panleukopenia infection is potentially fatal and spread through contact with body fluids (mostly urine and feces) from an infected cat. Once a cat is infected with panleukopenia, it may shed virus in body fluids for a few days or up to six weeks. Panleukopenia can live in the environment (such as on contaminated bedding, food bowls, litter boxes, and other items) for a very long time, so contact with contaminated objects can spread the infection to other cats. Additionally, if a pet owner is handling an infected cat, failure to change clothes and wash hands thoroughly with the correct disinfectant can expose other cats to the disease.

So, even pets that spend most of their lives indoors or have very limited contact with other animals are not completely safe from exposure to infectious diseases.

Vaccines protect your family and community

Some infectious diseases, such as leptospirosis in dogs and rabies in dogs and cats, are zoonotic diseases. That means humans also can become infected. In the case of rabies and leptospirosis, both diseases can cause serious illness and death in infected individuals – including humans. Protecting your pets against these diseases also protects the rest of your family members, as well as other pets and people in your community.

Are Vaccines Safe?

All of the available vaccines for dogs and cats have been thoroughly tested and found to be safe when administered as directed. Most pets tolerate vaccines very well, although reactions can occur in some cases. Some pets can seem a little “tired” after receiving vaccines. But notify your veterinarian if your pet develops breathing problems, facial swelling, vomiting, hives, redness on the skin, or other unusual changes after receiving a vaccine. You also should tell your veterinarian if your pet has ever had a problem in the past after receiving a vaccine.

Which Vaccines Does My Pet Need?

Many vaccines are available for dogs and cats, but every pet does not need to receive every available vaccine. So how do you know which vaccines your pet should have? The American Animal Hospital Association (AAHA) and the American Association of Feline Practitioners (AAFP) have summarized vaccine recommendations to help veterinarians clarify how to best protect dogs and cats through the use of vaccine programs. AAHA and AAFP evaluated the available vaccines and categorized them to provide guidelines on how commonly they should be used. Vaccines are categorized as core, non-core, or not recommended. A core vaccine is one that all pets should receive. The core vaccines for dogs are rabies, distemper, adenovirus-2, and parvovirus; and the core vaccines for cats are rabies, rhinotracheitis (feline herpesvirus-1), panleukopenia (feline distemper), and calicivirus. Non-core vaccines are optional ones that pets can benefit from based on their risk for exposure to the disease. Examples include the vaccines against Lyme disease and leptospirosis in dogs, and the vaccines against feline leukemia virus and feline immunodeficiency virus (or feline AIDS) in cats. Categorization of a vaccine as “not recommended” does not mean that the vaccine is bad or dangerous. This designation simply means that widespread use of the vaccine is not currently recommended.

Because core vaccines are recommended for all pets, your veterinarian will recommend keeping these vaccines up-to-date at all times. The decision regarding non-core vaccines should be made after you and your veterinarian have discussed the vaccines in question and whether your pet might benefit from receiving them. Factors to consider include your pet’s lifestyle (how much time your pet spends outside), where you live, where you travel with your pet, and how often your pet has contact with other animals. Bear in mind that vaccine recommendations and your pet’s lifestyle can change. Your veterinarian may want to discuss modifying the vaccine recommendations to ensure that your pet is well protected.

What Is The Recommended Schedule For Vaccines?

Puppies and kittens generally receive their first vaccines when they are around six to eight weeks of age (depending on the vaccine and manufacturer’s recommendations). Booster vaccines are generally given during your puppy or kitten checkup visits; your veterinarian can discuss the recommended schedule with you. Vaccines are generally repeated a year later. Although puppies and kittens are considered especially vulnerable to some diseases, it is also very important for adult pets to be up-to-date on vaccines. Traditionally, many vaccines were

repeated yearly, during regular checkup examinations. However, research has shown that some vaccines can protect pets for longer than one year. In light of these findings, the AAHA and AAFP guidelines note that some vaccines don't need to be repeated more frequently than every three years. The decision regarding how often your pet needs vaccine boosters depends on several factors, including your pet's overall health status and risk for exposure to the diseases in question. Your veterinarian may recommend annual boosters after considering your pet's lifestyle and disease exposure risk. The decision regarding how often to administer any vaccine (annually, every three years, or not at all) should be an individualized choice that you and your veterinarian make together.

Vaccination remains one of the most important services your veterinarian offers, and although vaccination is a routine procedure, it should not be taken for granted. It also allows a regular opportunity for your veterinarian to perform a physical examination, which is very important for keeping your pet healthy. Protecting patients is your veterinarian's primary goal, and developing an appropriate vaccine protocol for your pet is as important as any other area of medicine.