2

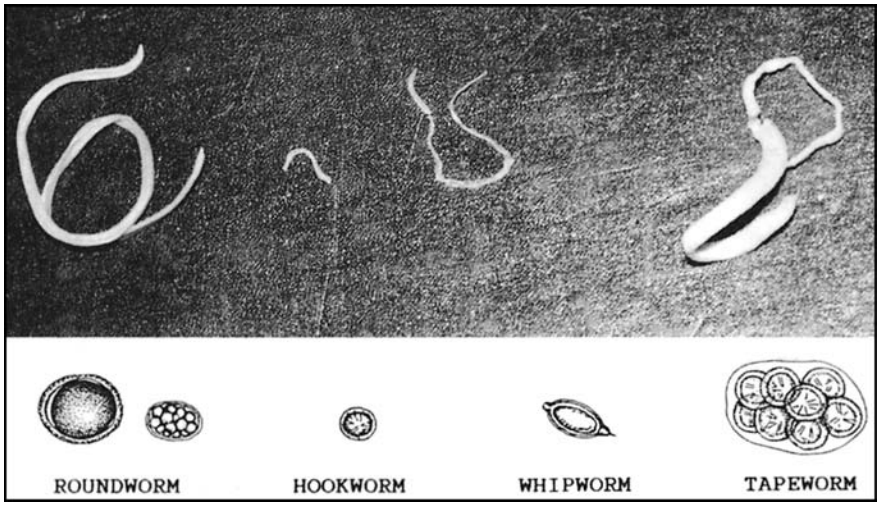
GASTROINTESTINAL PARASITES

Most cats will suffer from internal parasites at some time in their lives. Kittens can be infected through nursing. Cats who go outside, especially if they hunt, are also prone to picking up parasites. Even cats who live completely indoors may be exposed from a new cat joining the family or by catching a mouse that snuck into the house. Mosquitoes and fleas inside your home can also carry parasites.

The ideal parasite lives in its host without causing serious health problems. However, once parasite populations reach a certain size, clinical signs of illness become evident in the animal in which they live. If worms are causing a problem, there is often some change in the appearance of the cat's stool, which may include the passage of mucus or blood. There is also a decline in the cat's general health. You may note decreased appetite, loss of weight, sometimes protrusion of the third eyelid, diarrhea, and anemia.

Ascarids (roundworms), tapeworms, and hookworms are the most common intestinal parasites in cats. Healthy adult cats develop a certain degree of immunity to parasites, which helps keep any populations down. This varies with the individual parasite, though. For example, some parasites, such as tapeworms, return time after time. It is probable that cats, like dogs, develop a resistance to certain intestinal parasites whose larvae migrate in the animal's tissues (such as ascarids and hookworms), although this has not been proven in cats. Tapeworms have no migratory phase and thus cause little buildup of immunity.

Resistance to ascarids also appears to be age-related. Kittens and young cats show less resistance and, in consequence, may experience a heavy infestation. This can lead to marked debility or even death. Cats over 6 months of age are less likely to show significant clinical signs.



Common adult feline worms, showing the relative size and appearance of adult worms and eggs. (There are two species of roundworm eggs.)

Immunosuppressive drugs, such as cortisone and some chemotherapy drugs, have been shown to activate large numbers of hookworm larvae lying dormant in an animal's tissues. Stressful events, such as trauma, surgery, severe disease, or emotional upsets, can also activate dormant larvae. This leads to the appearance of eggs in the stool.

During lactation, dormant ascarid larvae are activated and appear in the queen's milk. Therefore, a heavy parasite problem might develop in the litter even when the mother was effectively dewormed. This can happen because none of the deworming agents are completely effective against larvae that are encysted in the tissue.

Deworming Your Cat

Although some deworming medications are effective against more than one species of worms, there is no medication that is effective against them all. Accordingly, for a medication to be safe and effective, a precise diagnosis is required. It is also important that the medication be given precisely as directed. Natural side effects, such as diarrhea and vomiting, must be distinguished from toxic reactions. All dewormers are poisons—ideally, they are more poisonous to the parasites than they are to the hosts. For these reasons, it is advisable to deworm your cat *only* under veterinary supervision.

DEWORMING KITTENS

A very large proportion of kittens are infested with ascarids. Other worms may be present, too. It is advisable to have your veterinarian check your kitten's stool before treating her for ascarids. Otherwise, other worms and internal parasites, such as coccidia, may go undetected.

Worm infestations are particularly harmful in kittens who are subjected to overfeeding, chilling, close confinement, or a sudden change in diet. Stressful conditions such as these should be corrected before administering a deworming agent. Do not deworm a kitten with diarrhea or other signs of illness, unless your veterinarian has determined that the illness is caused by an intestinal parasite.

Kittens with ascarids should be dewormed at 2 to 3 weeks of age and again at 5 to 6 weeks (see *Ascarids*, page 60). If eggs or worms are still found in the stool, subsequent treatment should be given. Due to public health considerations, many veterinarians recommend deworming kittens with a safe dewormer every month until 6 months of age.

DEWORMING ADULT CATS

Most veterinarians recommend that adult cats be dewormed only when there is specific evidence of an infestation. A microscopic stool examination is the most effective way of making an exact diagnosis and choosing the best deworming agent.

It is not advisable to deworm a cat who is suffering from some unexplained illness that is assumed to be caused by worms. *All dewormers are poison*—meant to poison the worm, but not the cat. Cats who are debilitated by another disease may be too weak to resist the toxic effects of the deworming agent.

Cats of all ages, particularly those who hunt and roam freely, can be subject to periodic heavy worm infestations. These cats should be checked once or twice a year. If parasites are identified, they should be treated. It is reasonable to deworm outdoor cats routinely for ascarids and tapeworms, even without a positive stool sample. Many anthelmintics are safe for repeated use. Tapeworms segments may be seen frequently, and when discovered, they should be treated. Cats with tapeworms may need to be treated as often as four or five times a year.

A queen should have her stool checked before breeding. If parasites are found, she should receive a thorough deworming. This will not protect her kittens from all worm infestations, but it will decrease the frequency and severity of any parasite infestation. It will also help to put her in the best condition for a healthy pregnancy.

Common Deworming Medications

Medication	Ascarids	Hookworms	Tapeworms	Comments
Epsiprantel	No effect	No effect	Good	
Fenbendazole	Good	Good	Good	Also treats giardia
Ivermectin	Fair	Good	No effect	Also prevents heartworm
Milbemycin oxime	Good	Good	No effect	Also prevents heartworm
Piperazine	Good	No effect	No effect	
Praziquantal	No effect	No effect	Good	
Praziquantel with pyrantel	Good	Good	Good	
Pyrantel pamoate	Good	Good	No effect	
Selamectin	Good	Good	No effect	Also prevents heartworm

HOW TO CONTROL WORMS

The life cycles of most worms are such that the possibility of reinfestation is great. To keep worms under control, you must destroy the eggs or larvae *before* they reinfest the cat. This means good sanitation and maintaining clean, dry quarters for your cat. It also means controlling intermediate hosts, such as fleas and rodents.

Cats should be kept as indoor pets, but some cats may live or go outside and others may have safe enclosures that are outside. For outside enclosures, cats should not be crowded together on shaded earth, which provides ideal conditions for seeding eggs and larvae. A watertight flooring surface, such as cement, is the easiest to keep clean. Hose it down daily and allow it to dry in the sun. Concrete surfaces can be disinfected with lime, salt, or borax (1 ounce per 10 square feet; 2 ml per .9 sq m). Remove stools from the cat pens daily. Lawns should be cut short and watered only when necessary. Stools elsewhere in the yard should be removed at least twice a week.

Fleas, lice, cockroaches, beetles, waterbugs, and rodents are intermediate hosts of tapeworms or ascarids. It is necessary to get rid of these pests to control reinfestation, as described in *Eliminating Fleas on the Premises* (page 139).

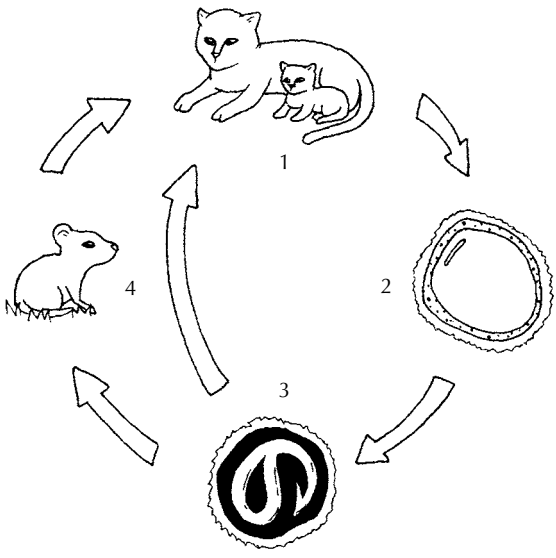
Stool and wet areas should be removed daily from the litter box. The litter box should be kept clean and dry and should be washed frequently with a solution of bleach and boiling water. Rinse thoroughly and dry completely before refilling with litter.

Many internal parasites spend the early stages of their life cycle in another animal and can only infect the cat and develop into adults when the cat preys on and eats this other animal. Accordingly, cats should not be allowed to roam and hunt. Be sure to thoroughly cook all fresh meat before feeding it to your cat.

Catteries that have continuous problems with worms often have other problems, too. These problems include skin, bowel, and respiratory difficulties. Steps should be taken to improve the management of the cattery, especially sanitation measures.

Ascarids (Roundworms)

Ascarids are the most common worm parasite in cats, occurring in a large percentage of kittens and in 25 to 75 percent of adults. There are two common species that infest the cat. Adult ascarids live in the stomach and intestines and can grow to 5 inches (13 cm) long. The eggs are protected by a hard shell. They are extremely hardy and can live for months or years in the soil. They become infective in three to four weeks after being passed out in stool.



Life cycle of *Toxocara cati*

The cat passes eggs in her stool or larvae in her milk (1). The larvae infect her nursing kitten. Eggs from the stool (2) develop into larvae (3) and are eaten by rodents (4). The cat then eats the rodents while hunting. If the larvae pass through the kitten before maturing, the mother cat can also reinfest herself while grooming her kittens.

Cats acquire the disease by ingesting the eggs, perhaps through contact with soil containing the eggs, by them licking off their feet, or by eating a host animal, such as a beetle or rodent, which has acquired encysted larvae in its tissues. The larvae are then released in the cat's digestive tract.

Larvae of the common feline ascarid *Toxocara cati* are capable of migrating in tissues. Eggs, entering orally, hatch in the intestines. Larvae are carried to the lungs by the bloodstream. There, they become mobile and crawl up the trachea where they are then swallowed. This may cause bouts of coughing and gagging. They return to the intestines and develop into adults. This version of migration is most common in kittens.

In adult cats, only a few larvae return to the intestines. The others encyst in tissues and remain dormant. During lactation, these dormant larvae are released, reenter the circulation, and are transmitted to kittens in the mother's milk. When the queen is shedding larvae in her milk, she may not pass any eggs in her stool. Therefore, it makes sense to deworm both mother and kittens starting about 3 weeks of age, even if a fecal exam is negative.

Deworming the queen before or during pregnancy does not prevent all ascarid infestation of kittens after birth, but it will decrease the frequency and severity. Medications do not eliminate encysted larvae.

The second most common feline ascarid is *Toxascaris leonina*. This ascarid is not passed via the milk into nursing kittens but can be acquired by ingesting the eggs or by eating infected rodents.

Ascarids usually do not produce a heavy infestation in adult cats, but may do so among cats who do a lot of hunting. In kittens, a heavy infestation can result in severe illness or even death. Such kittens appear thin and have a pot-bellied look. They sometimes cough or vomit, have diarrhea, are anemic, and may develop pneumonia as the worms migrate from the blood vessels to the air sacs of the lungs. Worms may be found in the vomitus or the stool. Typically, they look like white earthworms or strands of spaghetti that are alive and moving.

Treatment: Pyrantel pamoate is a safe, effective choice and can be used in nursing kittens. Kittens should be dewormed by 3 weeks of age to prevent contamination of their quarters by ascarid eggs. A second course should be given two to three weeks later to kill any adult worms that were in the larval stage at the first deworming. Subsequent courses are indicated if eggs or worms are found in the stool. Many veterinarians suggest deworming kittens monthly until 6 months of age.

Pyrantel pamoate dewormers can be obtained from your veterinarian. You do not have to fast your cat before using this medication. Be sure to follow the directions of the manufacturer about dosage. Milbemycin, ivermectin, and selamectin are also very effective dewormers, but they are generally used in older kittens and adult cats.

Public health considerations: Ascarids can cause a disease in humans called visceral larva migrans. This is considered to be a serious public health

problem and is one of the top *zoonotic* diseases. Most cases are caused by the canine ascarid, *Toxocara canis*, but *Toxocara cati* also can produce this disease. Some cases are reported each year, usually from areas with a mild climate. Children are most frequently affected, and often have a history of eating dirt. Outdoor sandboxes should be covered when not in use to prevent cats from using them as litter boxes, and gloves should be worn when gardening.

When a human eats an ascarid egg, larvae develop as in the cat. However, because humans are not a definitive host, the larvae do not progress to adult ascarids. Instead, they migrate in the tissues and wander aimlessly, causing fever, anemia, liver enlargement, pneumonia, and other ill effects. In children, the migrating larvae may enter the eye, leading to a disease called ocular larva migrans and potentially causing the loss of that eye. The disease runs its course in about a year. It is best prevented by controlling infestation in dogs and cats through periodic deworming and good sanitation.

Hookworms

Hookworms are small, thin worms about ¼ to ½ inches (.6 to 1.3 cm) long. They fasten to the wall of the small intestines and draw blood from the host. There are four species of hookworms that afflict the cat. Hookworms are not as common in cats as they are in dogs. They are most prevalent in areas that have high temperature and humidity (for example, in the southern United States), where conditions are favorable for the rapid development and spread of larvae.

A cat acquires the disease by ingesting infected larvae in soil or feces or by direct penetration of the skin (usually the pads of the feet). In rare cases, a cat may acquire the parasite by eating mice that host the larvae. The immature worms migrate through the lungs to the intestines, where they become adults. In about two weeks, the cat begins to pass eggs in her feces. The eggs incubate in the soil. Depending on conditions, larvae can become infective within two to five days after being passed.

The typical signs of hookworm infestation are diarrhea, anemia, weight loss, and progressive weakness. With a heavy infestation, stools may be bloody, wine-dark or tarry-black, but this is uncommon. A hookworm infestation can be fatal in very young kittens. The diagnosis is made by finding the eggs in the feces.

Newborn kittens do not acquire the infection *in utero* but might via the milk of the queen. Chronic infestation is a more common problem in adult cats than it is in kittens.

Many cats who recover from the disease become carriers via cysts in the tissue. During periods of stress or some other illness, a new outbreak can occur as the larvae are released.

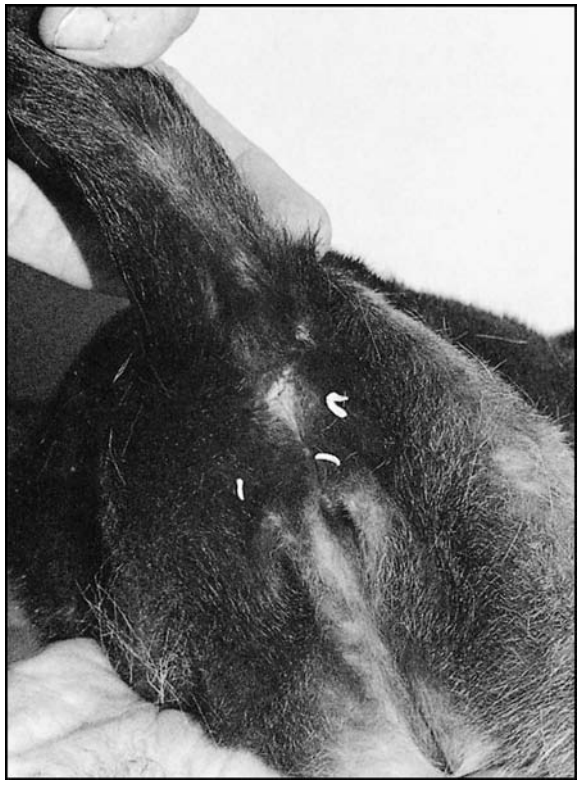
Treatment: Pyrantel pamoate and selamectin have become the deworming medications of choice because of their safety and effectiveness. Milbemycin and ivermectin are also very effective dewormers but are generally used only in older kittens and adult cats. Two treatments are given two weeks apart. The stool should be checked to determine the effectiveness of treatment.

Kittens with acute signs and symptoms require intensive veterinary management. To prevent reinfestation, see *How to Control Worms*, page 59.

Public health considerations: A disease in humans called cutaneous larvae migrans (creeping eruption) is caused by hookworm species. Larvae present in the soil penetrate the skin and travel through the body. It causes lumps, streaks beneath the skin, and itching. The condition is self-limiting.

Tapeworms

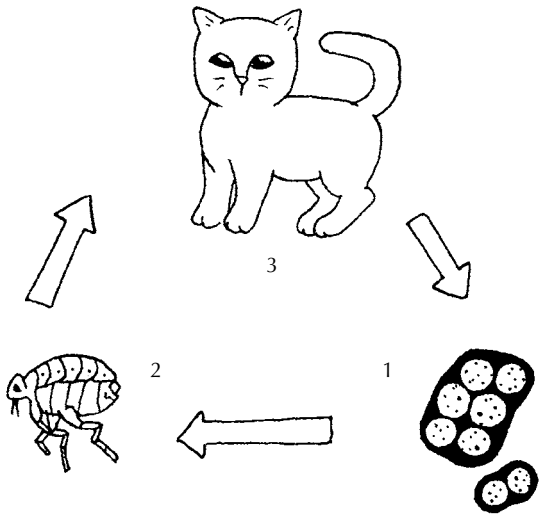
Tapeworms are the most common internal parasite in adult cats. They live in the small intestines, and vary in length from less than 1 inch (25 mm) to several feet (1 foot is .3 meters). The scolex (head) of the parasite fastens itself to the wall of the gut using hooks and suckers. The body is composed of segments that contain egg packets. To eliminate tapeworm infection, the head must be destroyed. Otherwise, the worm will regenerate.



Tapeworm segments can sometimes be found crawling in the fur around the anus of an infested cat.

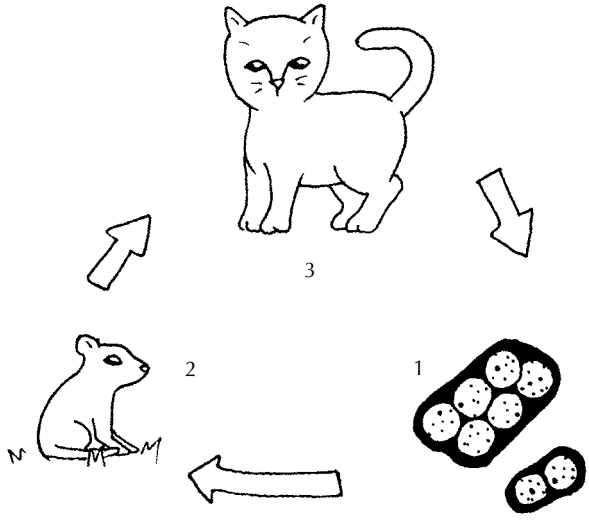
The body segments containing the eggs are passed in the feces. These are called proglottids. Fresh moist segments are capable of moving. They are about .25 inches (6.3 mm) long. Occasionally, you might see them in the fur about your cat's anus or in her stool. When dry, they resemble grains of rice.

There are two common tapeworm species found in cats; both are



Segments pass in the stool and around the cat's rectum (1). The segments or individual egg packets are eaten by fleas (2). The cat then ingests fleas while grooming (3).

Life cycle of *Dipylidium caninum*



Segments pass in the stool and around the cat's rectum (1). The segments or individual egg packets are eaten by rodents (2). The cat then ingests the rodent while hunting (3).

Life cycle of *Taenia taeniaeformis*

transmitted by an intermediate host. *Dipylidium caninum* is acquired from fleas or lice that harbor immature tapeworms in their intestines. These insects acquire the parasite by eating tapeworm eggs. The cat must bite or swallow the insect to become infested. The tapeworm *Taenia taeniaformis* is acquired by eating rodents, uncooked meat, raw freshwater fish, or discarded animal parts.

Dibothriocephalus latus and *Spirometra mansonoides* are two uncommon tapeworms cats might acquire from eating uncooked freshwater fish or a water snake. *Spirometra mansonoides* is seen primarily in outdoor cats along the Gulf Coast region. *Dibothriocephalus latus* might be seen in the Gulf Coast region or around the Great Lakes. *Echinococcus* tapeworms are rarely found in cats.

Treatment: Praziquantal is one of the most effective medications for both common species of cat tapeworm. Other suitable treatments are fenbendazole and espiprantal. Use under veterinary guidance. Deworming must be combined with control of fleas and lice (see *A Suggested Flea-control Program*, page 138), in the case of *Dipylidium caninum*, and by preventing roaming and hunting in the case of other tapeworms.

Public health considerations: A child could acquire a tapeworm if they accidentally swallowed an infected flea. Except for this unusual circumstance, cat tapeworms do not present a hazard to human health.

Other Worm Parasites

All the parasites in this section occur rarely in cats. Heartworms are discussed in chapter 11 (see page 326). Eye worms occur among cats living on the West Coast of the United States. They are discussed in chapter 5 (see page 192). Pinworms, which are a common cause of concern to families with children, are not acquired or spread by cats.

TRICHINOSIS

Trichinosis is acquired by ingesting uncooked pork that contains the encysted larvae of *Trichina spiralis*. It is estimated that 15 percent of the people living in the United States have, at some time, acquired trichinosis, although only a few clinical cases are reported each year. The incidence is probably somewhat higher in cats and dogs. Signs include muscle pain, headaches, and joint pain.

Prevent this disease by keeping your cat from roaming, particularly if you live in a rural area. Cook all fresh meat (your own *and* your cat's).

Treatment: This involves using the drug mebendazole, under the supervision of your veterinarian.

STRONGYLOIDES

There are two primary species of this parasite: *Strongyloides cati*, which is mainly found in subtropical climates and may be seen in the southern United States; and *Strongyloides stercoralis*, which is actually a human parasite but can

be passed to cats (and then back again.) These are not common parasites. Signs of infestation include diarrhea with blood and mucus.

Treatment: The treatment is ivermectin or thiabendazole.

WHIPWORMS

These are slender parasites, 2 to 3 inches (50 to 76 mm) long that live in the cecum (the first part of the large intestine). Since they are thicker at one end, they have the appearance of a whip. Whipworms are usually found incidentally and are not known to cause disease in cats.

Treatment: No treatment is necessary.

FLUKES

Flukes are flatworms ranging in size from a few millimeters up to an inch or more in length. There are several species that colonize different parts of the cat's body, including the lung, liver, and small intestines. Gastrointestinal flukes are acquired by eating infected raw fish and small prey such as snails, frogs, and crayfish. It is suspected that the fluke parasite *Alaria marcianae* could also be passed to kittens of infected queens through the mother's milk.

Signs of fluke infestation vary and are often minimal. Infection should be prevented by cooking fish and restricting your cat's hunting opportunities.

Treatment: Professional diagnosis and treatment are required. Drug treatment is difficult and is not always successful.

STOMACH WORMS

These parasites are most likely to affect cats living in the southwestern United States. There are primarily two species of stomach worms that affect cats. The infection is acquired by eating beetles, cockroaches, crickets, lizards, or hedgehogs that have ingested eggs from the soil, in the case of *Physaloptera praeputialis*, or by contact with vomitus from an infected cat in the case of *Ollulanus tricuspis*.

Recurrent vomiting is the most common sign. Veterinary diagnosis is necessary to distinguish stomach worms from other causes of vomiting and to determine the specific species causing the infection. Eggs are not usually found in the feces, but worms may be detected by gastric *lavage* or by checking the vomitus. Prevent this disease by keeping your cat from roaming and hunting.

Treatment: The most effective dewormers are tetramisole for *Ollulanus* species and ivermectin or levamisole for *Physlaoptera*.

Protozoal Parasites

Protozoa are single-celled animals that are not visible to the naked eye but are easily seen under a microscope. They are usually carried by and live in water. A fresh stool specimen is required to identify the adult parasite or its cysts (called oocysts), because these disease agents are not usually identified by the standard fecal flotation techniques.

GIARDIASIS

This disease is caused by a protozoan of the *Giardia* species. Cats have their own species-specific version of *Giardia*. Cats acquire the infection by drinking water from streams and other sources that are contaminated with infective cysts.

Most infections in adult cats are subclinical. Young cats and kittens can develop a diarrhea syndrome characterized by the passage of large volumes of foul-smelling, watery stools. The diarrhea maybe acute or chronic, intermittent or persistent, and may be accompanied by weight loss.

Diagnosis is made by finding the protozoan or its characteristics cysts in saline smears of fresh stool. Smears from rectal swabs are satisfactory. A negative smear does not exclude giardia, as cysts are shed only intermittently. Three negative fecal smears collected at least two days apart should be obtained before the diagnosis is excluded. Serology tests (*ELISA* and *IFA*) are now available.

Cats do not seem to develop an immunity to giardiasis, so prevention includes cleaning up areas of stagnant water where the protozoa may flourish and/or keeping cats away from those areas. The indoor environment should be thoroughly cleaned as well.

Treatment: Giardiasis responds well to Flagyl (metronidazole). Because Flagyl causes developmental malformations in the fetus, it should not be administered to pregnant queens. Metronidazole also prevents bacterial overgrowth and may influence existing immune disorders in the intestines. Other effective drugs are available, such as febendazole. There is now a vaccine available for giardiasis, but it is rarely recommended because the disease is usually mild and responds well to treatment.

TOXOPLASMOSIS

This disease is caused by the protozoan *Toxoplasma gondii*. Cats are likely to acquire the infection by consuming infected birds or rodents or, rarely, by ingesting oocysts in contaminated soil. Cats are the primary host for this obligate intracellular parasite (a parasite that can only exist inside the living cell of another organism), but it can infect other warm-blooded animals.

Evidence strongly suggests that cats (and people) can also get the disease from eating raw or undercooked pork, beef, mutton, or veal or unpasteurized dairy products that contains toxoplasma organisms. In cats, the oocysts develop in the intestines and are passed out in the feces, so the feces of infected cats present another source of infection. These infective oocysts are only passed for a very short time after initial exposure. Cats and humans can transmit toxoplasma *in utero* to their unborn offspring.

Feline intestinal toxoplasmosis is usually asymptomatic. When symptomatic, it affects the brain, spinal cord, eyes, lymphatic system, and lungs. The most common signs are loss of appetite, lethargy, cough, and rapid breathing. Visual and neurological signs may be evident. Other signs are fever, weight loss, diarrhea, and swelling of the abdomen. Lymph nodes may enlarge. Kittens may exhibit encephalitis, liver insufficiency, or pneumonia. Prenatal infection may be responsible for abortion, stillbirths, and unexplained perinatal deaths, including the fading kitten syndrome. Many cats that show clinical signs are concurrently infected with feline immunodeficiency virus (FIV) or feline leukemia virus (FeLV).

The finding of *T. gondii* oocysts in the cat's stool indicates the cat is currently infective to other cats and people. Serologic tests (including *ELISA*) will show whether a cat has ever been exposed. A positive test in a healthy cat signifies that the cat has acquired active immunity and is therefore not a source of human contamination.

To prevent this parasite, cats should not be fed raw meat or allowed to hunt. They also should not be given unpasteurized dairy products. If you have an indoor cat who eats only cat food, she's not likely to ever be infected.

Treatment: Antibiotics such as clindamycin are available to treat active infection and prevent the intestinal phase of oocyst shedding.

Public health considerations: About half the human adult population shows serological evidence of having been exposed in the past. Men and women with protective antibodies probably will be immune to infection. However, the disease is a particular hazard when a pregnant woman without prior immunity is exposed to it. Immunocompromised people are also at risk.

Toxoplasmosis infection in a pregnant woman can result in abortion, stillbirth, and birth of babies with central nervous system infection. Cats are the only animals who pass on the infectious stage of this parasite through their feces, and this has given rise to the incorrect assumption that pregnant women should not have cats. If you are pregnant, *it is not necessary to get rid of your cat!* The majority of human cases—by a wide margin—come from eating raw or undercooked meat, particularly lamb or pork. Unpastuerized dairy products can also be a source of infection. Wash fresh vegetables carefully, because oocysts can also cling to bits of soil. And wear gloves while gardening to avoid contact with infected soil.

It is important to understand the mode of transmission from cats to understand how minimal the risk is. Even a cat with an active toxoplasmosis infection is only capable of passing it on for seven to ten days *of her entire life*, when there's an acute infection. It takes anywhere from one to three days for oocysts shed in the feces to become infectious—which means the litter box would have to sit unscooped for one to three days before the infection could be passed on. Then, to become infected from cat feces, a person would have to touch the feces and then touch an opening in their body.

Pregnant women can be tested to determine if they have had prior exposure, in which case they have acquired immunity and there is no risk. They can also take precautions to avoid contact with fecal material from cats by wearing gloves when gardening and cleaning the litter box.

Prevent the disease in your cat by keeping the cat from roaming and hunting. Wear disposable plastic gloves when handling the cat's litter. Remove stools every day from the litter box. Dispose of the litter carefully so that others will not come into contact with it. Clean and disinfect litter boxes often using boiling water and a diluted bleach solution. Cover children's sandboxes when not in use to keep them from being used as a litter box by stray cats.

Cook all fresh meat, both yours and your cat's, maintaining a temperature of at least 150°F (65.5°C, medium well). Wash your hands with soap and water after handling raw meat. Clean all kitchen surfaces that have been in contact with raw meat.

COCCIDIOSIS

Coccidiosis usually targets young kittens shortly after weaning, although adult cats can be affected. The disease is highly contagious. Immunity following recovery from infection is short-lived. Cats who recover often become carriers and shed adult oocysts in their feces.

There are several species of coccidia. Only *Cystoisospora* (formerly known as *Isospora*) *felis* is directly transmitted by fecal contamination from cat to cat. Other species use birds and animals as intermediate transport hosts. These species complete their life cycle when the transport host is eaten by the cat. Kittens acquire Cystoisospora felis from mothers who are carriers.

Five to seven days after ingesting the oocysts, infective cysts appear in the feces. Much of the life cycle takes place in the cells lining the small intestines. Diarrhea is the most common sign of infection. The feces are mucuslike and tinged with blood. In severe cases, a bloody diarrhea may develop. These cases are complicated by weakness, dehydration, and anemia.

Coccidia can be found in the stools of kittens without causing problems, until some stress factor, such as overcrowding, malnutrition, weaning problems, an outbreak of ascarids, or shipping reduces their resistance. Normal fecal flotations will pick up these parasites.

Treatment: Offer a bland diet and encourage fluid intake. A severely dehydrated or anemic cat may need to be hospitalized for fluid replacement or blood transfusion. Kittens are more likely to require intensive care than adult cats.

Supportive treatment is important, since in most cases the acute phase of the illness lasts about ten days and the cat then recovers. Sulfonamides and nitrofurazone are the antibiotics of choice.

Known carriers should be isolated and treated. Cat quarters and runs should be washed daily with disinfectants and boiling water to destroy infective oocysts.

TRICHOMONIASIS

Trichomoniasis is caused by the protozoan *Tritrichomonas foetus*. In cats, *T. foetus* infects and colonizes the large intestines, and causes chronic, recurrent diarrhea, sometimes tinged with blood or *mucus*. Infection is most commonly seen in kittens and cats from catteries, where, presumably, the organism is spread among cats by close contact. There has been no evidence of spread from other species. Diagnosis is by fecal examination.

Treatment: Treatment with the various antiprotozoal drugs is usually unsuccessful. Most cats will slowly overcome the infection on their own. However, this can take nine months or more. It appears that most infected cats continue to shed low levels of the organism in their feces for many months after the diarrhea has resolved.