



Zoonotic and Other Diseases Shared Among People, Common Pets, and Ferrets

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Diseases that can be transmitted from animals to people (zoonotic) and to other pets are of particular concern to pet owners. When such a disease is present, an owner must be concerned about that pet, themselves, other people in the household, and even other pets.

Any person or pet with a weakened or under-developed immune system will be at greater risk for picking up a contagious disease. Young children; the elderly; people receiving chemotherapy, radiation therapy, or organ transplants; and people with AIDS or other immunosuppressive diseases are at particular risk. Pets in similar categories are also at greater risk.

There are several parasites that can infest ferrets and people. Although the incidence of tick-borne illness in the ferret is unknown, ticks can be carried into the home on ferrets that have been outdoors and be transmitted to people. Ringworm, a fungal infection, does occur in ferrets and also can be transmitted to people. Roundworms are uncommon in the ferret, but according to Dr. Fox (*Biology and Diseases of the Ferret*, 1988), the ferret can serve as an intermediate host. Roundworms are potentially transmissible to people and other pets. All new ferrets or those in contact with other pets should receive a routine fecal exam to test for parasites.

The most common parasite that infests both ferrets and people is the cat flea. Ferrets that go outside or live in households with other pets that go outside are at greater risk. People or pets that are allergic to fleas will have more severe reactions. Although there are no approved flea products for ferrets, products made for cats and kittens have been used. Treatment of the cage and house are also important. Some veterinarians have used the new spot-on products safely and successfully (these are also not approved). Ferret owners should consult their veterinarians before treating this problem. (*For more information about the spot-on products Advantage and Frontline, see AFR 1998, Issue 3.*) Because tapeworm infestations can result from the ingestion of fleas, ferrets with fleas should be watched closely for these parasites.

Scabies is caused by a mite that lives within the skin of many mammals. People can get this mite from contact with ferrets, dogs, cats, or other mammals. The problem is most commonly seen in

newly purchased ferrets or in ferrets exposed to new dogs. Ferrets can be treated with Ivermectin injections.

Giardia is a small, parasitic protozoan that can be found in the intestines of many mammals and birds. This parasite can be contracted from contaminated water supplies or from fecal material from infected pets. People can be exposed to feces when cleaning cages or litter boxes, or even when holding and handling pets. The usual symptoms of giardia in ferrets are diarrhea, weight loss, and other gastrointestinal signs. Treatment with Metronidazole and Albendazole have been used to treat affected ferrets.

Cryptosporidia are microscopic parasites that also inhabit the intestinal tract and are spread via the feces. People and pets with poor immune systems are particularly prone to this parasite and can be severely affected. Birds, reptiles, and many mammals are susceptible. Cryptosporidia is very difficult to treat. Recently, treatment with Paromomycin has shown some promise.

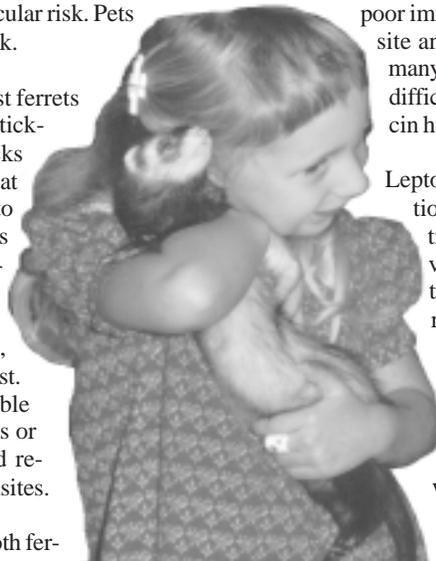
Leptospirosis is another disease that is worthy of mention as a risk for the domestic ferret. Dogs are routinely vaccinated for this disease, but there is not a vaccine available for the ferret. Leptospirosis is transmitted by rodents, and ferrets in contact with rodents or other infected animals are at risk. While this disease is not common in the ferret, it is possible that it is simply underdiagnosed in cases of unidentifiable illness and death in ferrets.

Ferrets are also susceptible to infection by heartworms. Heartworms are spread by mosquitoes, which must bite an infected dog and then bite the ferret. The worm cannot be spread from ferrets to dogs or other animals. Detection of the worms is difficult since microfilaria (infant worms) are not present, and tests for antigens use species-specific antibodies. There are no

approved treatments for ferrets. (*For more information about the treatment of heartworms in ferrets, read the article by Deborah Kemmerer, DVM, on page 18.*)

Several bacterial infections in ferrets can be passed on to people. Salmonella is perhaps the most famous of these. All mammals, birds, and reptiles can harbor salmonella and all are susceptible to some degree. Most people who contract salmonella from pets are immunocompromised. Diarrhea or other gastrointestinal distress are the most common signs. Salmonella is spread through fecal material. Ferrets that are fed raw meat or are kept in close proxim-

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Ferrets and people are a great combination as long as preventive measures are taken against zoonotic diseases.



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ity to pet reptiles are at greater risk. Treatment is controversial because of the difficulty in elimination the organism and the threat the bacteria poses to people. Even after treatment, a ferret may transmit salmonella to people; so if treatment is attempted, owners must be warned of the continuing risks. Treatment is with antibiotics indicated by culture and sensitivity.

Ferrets can also be infected with *Mycobacteria*, the agent that causes tuberculosis. Ferrets appear susceptible to *M. bovis*, *M. avium*, and *M. tuberculosis*. Vomiting, diarrhea, wasting, and respiratory signs are most commonly seen in affected ferrets. People, birds, mammals, and occasionally, other pets, are at risk. History and clinical pathology will point to this disease. Skin sensitivity tests can be attempted, but negative results are not conclusive. Although treatment protocols have been proposed, treatment (versus euthanasia) is controversial because of the risk to people exposed to the bacteria.

Ferrets do become infected with a campylobacter-like bacteria that has recently been identified as *Desulfovibrio* or *Lawsonia*. This bacteria is the presumed causative agent of proliferative bowel disease. Hamsters and swine are susceptible to infection, but this problem does not appear to be a concern for people. Treatment is difficult, especially in advanced cases. Antibiotic therapy is the treatment of choice. Until proven otherwise, it should be assumed that this bacteria can be passed among ferrets, hamsters, and swine, including pot-bellied pigs.

Ferrets are also susceptible to several viruses: two of these can be passed on to people. Other animals in the house can be susceptible to other viruses that can affect ferrets. Rabies is a fatal virus that can be passed on to any mammal (including ferrets and people, although it has never been known to be passed from a ferret to a human). Wild animals, especially racoons, skunks, coyotes, bats, and woodchucks, usually serve as the reservoir for the virus. The virus will usually take one or two forms. The most famous form is the "mad" form, indicated by behavioral changes, aggression, excessive saliva, and neurological signs. Many cases, however, will present with progressive weakness, depression, anorexia, and with or without neurological signs. Ferrets that go outside or that are kept with unvaccinated dogs or cats are at greater risk.

There is not treatment for rabies in domestic animals. For people there are treatments that can be used in cases of known or suspected exposure. Once symptoms are seen in people, however, treatment is very difficult. Vaccines are available for ferrets, dogs, cats, and horses. Imrab-3 (Merial) is the only rabies vaccine approved for ferrets. These vaccines are required by law in most, if not all, states. People who work with stray animals or wildlife should consult with their doctor about the human vaccine. Unfortunately, there is no test for rabies that can be performed on a living ferret. State law usually regulates the treatment of ferrets bitten by animals known or suspected to be rabid. Under certain circumstances euthanasia and postmortem testing are mandated. Vaccination of domestic pets is critical in preventing this serious virus.

Influenza virus can be passed from ferrets to people, although it is more commonly passed from people to ferrets. Everyone knows the nasal and ocular discharges, congestion, fever, anorexia, and malaise associated with influenza. People with the flu must either be very careful when handling ferrets or avoid contact with ferrets all together. The virus is more serious for very young or old people and ferrets. There are no specific treatments. In many cases it is important to provide supportive care.

Canine distemper first presents as a respiratory problem with signs very similar to the influenza virus. If a ferret survives the respiratory phase, however, a neurological phase will then occur. Dogs and other related animals, including wolves, coyotes, foxes, etc., are all susceptible to this virus. There is no treatment for this disease. FERVAC-D (United Vaccines) is the USDA-approved canine distemper vaccine for ferrets.

Aleutian mink disease is not seen as commonly as it once was. Signs include lethargy, anorexia, weakness, wasting, tremors, paralysis or paresis, and urinary incontinence. The disease can be transmitted among mink, ferrets, and other related animals. The virus can survive for months, even years, outside of an animal's body, so direct contact is not needed for transmission. The virus is more common in ferrets that are exposed to commercial mink or related wild animals. There are no specific treatments for this virus, so treatment is confined to supportive care. Immunostimulants have also been employed. Treatment is not very successful.

There are some reports that ferrets are less susceptible to those strains of the virus that are more virulent in mink, however, there are several reports of transmission between ferrets and mink. Therefore, it is best not to keep ferrets and mink together or near each other. If they are kept at the same facility, separation of species and proper husbandry are crucial.

Ferrets should not be allowed to drink aquarium water. This water could pass on any number of bacteria. It is not known, but it is possible, that parasites such as giardia or cryptosporidia could be transmitted in this manner.

It should be noted that there are many diseases that cannot be passed between species. There is no evidence that parvovirus (feline distemper), feline leukemia virus, or feline immunodeficiency virus can be transmitted to ferrets.

Toxoplasma, a parasite that can affect a fetus being carried by a pregnant woman, cannot be transmitted by ferrets. Pregnant women, however, should avoid cleaning litter boxes because of the risk of other diseases being transmitted through ferret fecal matter.

Whenever people choose to bring home a ferret (or any other pet), they are taking on some risk for certain infections. There are, however, many steps that can be taken to reduce this risk:

- 1) Keep wild animals out of our houses and areas where ferrets and other pets and their food are kept.

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- 2) Store food in containers that can be sealed and kept dry.
- 3) Wash hands after handling pets, their cages, food bowls, litter boxes, etc.
- 4) Do not clean cages, bowls, or litter pans on food preparation surfaces, kitchen sinks, bathroom sinks, or bathtubs/showers.
- 5) Cages should not be kept in or near areas where food is prepared.
- 6) Do not feed raw meat or unpasteurized dairy products.
- 7) People who are at risk (children, elders, or immune-compromised individuals) need to take special precautions.
- 8) Pregnant women should take special precautions.
- 9) Do not keep incompatible animals together (eg, ferrets and mink).
- 10) If you are having any medical problems, be sure to notify your doctor of the types of animals you are in contact with.
- 11) Obtain ferrets from reliable sources. Buy only healthy looking animals.

Sources

- Fox, James G. *Biology and Diseases of the Ferret*. Lea & Febiger, Philadelphia 1988.
- Hillyer, Elizabeth V and Quesenberry, Katherine E. *Ferrets, Rabbits, and Rodents: Clinical Medicine and Surgery*. W.B. Saunders Company, Philadelphia 1997.