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FeLV & FIV

Feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) are among the most common infectious diseases of cats. Risk factors for infection include male gender, adulthood, and outdoor access, whereas indoor lifestyle and spay/neuter are associated with reduced infection rates. While they can be life-threatening viruses, proper management can give infected cats longer, healthier lives.

FIV: Feline Immunodeficiency Virus

The feline immunodeficiency virus is closely related to the human immunodeficiency virus HIV. Much of the general information that has become common knowledge for HIV also holds true for FIV. Basically, FIV is a virus that causes AIDS in cats; however, there is a long asymptomatic period (no symptoms) before "AIDS" occurs. When treating an FIV+ cat our goal is to prolong this asymptomatic period.

Life expectancy of the FIV+ cat is variable. Approximately 18% die within 5 years of infection. An additional 18 percent are still alive in that time frame but are experiencing illness from their immune-suppressed state. The remaining cats appear normal in that time frame and many go on to live long lives.

The feline immunodeficiency virus is not transmissible to humans in any way.

How is Diagnosis Made?

Most of the time FIV infection is discovered using a screening test performed in your vet's office. Once a cat has been identified as positive by a screening test, a follow-up confirming test called a Western Blot test is the next step. Once this test is positive, the cat is considered to be truly infected. If a cat is already very sick and the screening test is positive, it is generally considered truly infected.

In a household with multiple cats, it is important to test all the cats when one cat comes up FIV+. It is important to know who is infected and who is not. Cats that test negative should be tested annually as they are at higher risk for infection. It is generally considered unnecessary to isolate the negative and positive cats from each other. Knowing a cat's status tells you which cats need additional care and environmental changes.

There is no vaccination for FIV. Previous vaccines have been withdrawn from the US due to interference with testing. These early vaccines were not very protective.

How did my Cat get Infected?
The virus concentrates in saliva so the major route of virus transmission is by bite wounds that occur during fighting. There are other means of spreading the virus but they are less common. Mother cats cannot readily infect their kittens (except in the initial stages of infection). FIV can be transmitted during breeding and via improperly screened blood transfusions. Casual contact such as sharing food bowls or snuggling and grooming is very unlikely to be associated with transmission.

Isolation of an FIV+ cat is not necessary in a stable household unless the FIV+ cat is likely to fight with the other housemates. It is important not to introduce any new cats as this is likely to lead to fighting and consequent virus transmission.

What do I do Now?
Some lifestyle changes will be needed now that you know you have a FIV infected cat.

Keep your Cat Indoors Only
Now that you know your cat has an infectious disease, *the responsible thing is to prevent the spread of this disease in your community.* This means that your cat will need to be an indoor cat only and not just for the good of the community but *also to minimize his exposure to infectious diseases*. Cats who are used to living outdoors will make a fuss about being allowed outside. It is crucial that you do not give in as this will simply reinforce the crying and fussing. If you just allow the fussing to run its course, it will cease and the cat will get used to the new indoor only life.

Cats who are inclined to slip past people entering the home when the door is open can be managed by leaving them in a closed room when someone is out of the house. This way, when someone arrives home, the cat does not have access to the front door.

Nutrition
There are currently numerous fad diets involving raw foods for pets. Uncooked foods, especially meats, can include parasites and pathogens that a cat with a normal immune system might be able to handle but an FIV+ cat might not. Stick to the major reputable cat food brands.

Nutrition is very important in the FIV+ cat. The immune system requires many nutrients to function. Your cat should be started on a good micronutrient supplement (minerals and vitamins) as well as a lysine supplement.

Vaccination
There is some controversy in regard to what is best for vaccinating an FIV+ cat. There is some evidence that vaccinating the FIV+ cat may encourage the virus to activate. If you live in an area where vaccination is legally required, then you should continue to vaccinate your cat normally. Similarly, if your cat goes outdoors <u>despite the above recommendation</u>, then you should continue to vaccinate your cat normally. If your cat is indoors only and no other cats in the home go outside, then it is reasonable to forgo vaccination unless they come to be required for boarding or for elective veterinary procedures.

Parasite Control
The last thing an FIV+ cat needs is fleas, worms, or mites. This is especially true now that he is going to be an indoor cat. There are numerous effective products on the market for parasite control. Consult with your vet about which parasites you should be especially concerned with and which product is right for your cat.

General Monitoring
The healthy FIV+ cat should have a check-up at least twice a year. Annually, a full blood panel and urinalysis is recommended. It is important to be vigilant of any changes in the FIV+ cat. Small changes that one might not think would be significant in an FIV- cat should probably be thoroughly explored in an FIV+ cat. Any weight loss in particular should be addressed.
Keeping your cat indoors is the most significant step in disease prevention that you can do.

Although they become ill much more often and more severely, many cats infected with FIV respond as well as their uninfected counterparts to appropriate medications and treatment strategies. However, a longer or more aggressive course of treatment is often needed. Few attempts have been made to evaluate anti-viral drugs, immunomodulators, or alternative therapies in large controlled studies of naturally infected cats. ***To date, no treatment has been shown to reverse retrovirus infection in cats.***

The Immune-Suppressed Owner
It is not recommended for an immune-suppressed human to live with an immune-suppressed pet. Both immune-suppressed humans and cats are susceptible to infections of opportunistic organisms. They shed larger numbers of those organisms than one might naturally come into contact with in the environment. Immune-suppressed cats (and humans) can serve as an amplifier for infectious agents. An immune-suppressed cat can increase an immune-suppressed human's exposure to infectious agents and vice versa. The same is true for multiple immune-suppressed cats living together.

If possible, there should be only one immune-suppressed individual per home … human or cat.

More Information:
- https://catvets.com/public/PDFs/PracticeGuidelines/RetrovirusGLS-Summary.pdf
- https://veterinarypartner.vin.com/default.aspx?pid=19239&id=4951815
- https://www.vet.cornell.edu/departments-centers-and-institutes/cornell-feline-health-center/health-information/feline-health-topics/feline-immunodeficiency-virus-fiv

FeLV: Feline Leukemia Virus

Feline leukemia virus, a retrovirus, is a common infection of cats. It is the cause of more cat deaths, directly or indirectly, than any other organism and is widespread in the cat population. FeLV is much more contagious and causes more serious disease than FIV.

How is Diagnosis Made?

Most of the time FeLV infection is discovered using a screening test performed in your vet's office. Once a cat has been identified as positive by a screening test, a follow-up confirming test called an indirect immunofluorescent antibody assay (IFA) test is the next step. Once this test is positive, the cat is considered to be truly infected. If a cat is already sick and the screening test is positive, it is generally considered truly infected.

How did my cat get infected?

FeLV transmission most commonly occurs through close social contact. Contact with saliva from infected cats is a primary mode of transmission because the concentration of the virus is high in saliva. But the virus is also shed in blood, urine, feces, nasal secretions, and milk. Sharing food and water dishes, using the same litterbox, mutual grooming, and bite wounds are all possible methods of transmission. Infected cats can infect their fetuses during pregnancy and when nursing. Transmission can also happen via blood transfusions or contaminated needles/instruments.

The Disease

FeLV is a complicated virus. There are four separate classes of FeLV infection:

- ♥ *Abortive infections* are those in which the exposed cat produces an effective and early immune response. This prevents viral replication and eliminates virus-infected cells. These cats are negative for circulating viral antigens and viral genetic material.
- ♥ *Regressive infections* are those in which viral replication is limited, but a small population of virus-infected cells remains. These cats are antigen-negative, but the virus can be detected in a small percentage of blood cells by polymerase chain reaction (PCR), a type of blood test. These cats may go on to eliminate the virus completely. These infected cats are not viremic (and therefore not contagious), but may be infectious through blood transfusion.
- ♥ *Latent infection* refers to the cats in which a moderate number of infected cells remain. These cats are antigen-negative but PCR-positive. The latently infected cells do have the potential for the virus to re-activate, but the cats are not contagious as long as the infection remains latent.
- ♥ *Progressive infections* are those in which virus replication is not eliminated; both viral antigen and genetic material can be detected in the blood of these cats. The cats are actively shedding virus (primarily in saliva and feces). These cats are likely to become ill with FeLV-related disease.

Symptoms

There are no specific clinical signs associated with this disease. However, FeLV infection can lead to several distinct types of syndromes, including:

- ♥ Cancers (leukemia, lymphoma, fibrosarcoma, osteochondroma, etc.)
- ♥ Neurologic problems may occur secondary to lymphoma and infiltration of the brain and spinal cord. The virus itself may be toxic to the brain and spinal cord.

    - The neurologic signs may include abnormal behavior, vocalization, hyperesthesia, muscle weakness, paralysis, anisocoria (differently sized pupils), urinary incontinence, and blindness.
- ♥ Blood diseases (including bone marrow suppression, hemolytic anemia, neutropenia, platelet disease, etc.)
- ♥ Immunosuppressive disease
    - Increased number of secondary infections, including respiratory infections and fever.
    - Because various body systems can be affected, cats may experience: enteritis (inflammation of the small intestine), liver disease, jaundice, bruising, abortion, fading kitten syndrome, cutaneous horns, kidney disease, enlarged kidneys, enlarged spleen, uveitis (eye redness and inflammation), polyarthritis (arthritis in multiple joints), weight loss, etc.
    - Decreased antibody production, lymphocytes (a type of white blood cell that protects the body against infections), and overall decreased immune response.

Because the disease impacts many systems, if a previously untested cat doesn't respond to the normal/usual treatment for a disease process, your veterinarian may consider that FeLV could be interfering with healing and will recommend testing.

Treatment
There is no effective treatment for feline leukemia virus. Symptomatic and/or secondary disease treatment may include chemotherapy, glucocorticoids, interferon, Protein A, and supportive treatment.

Prognosis
The prognosis for infected cats is highly variable. It depends upon the specific disease the cat gets during the course of infection and the availability of supportive treatment for secondary infections. A small percentage of FeLV-positive cats may remain healthy for several years, but the prognosis for persistently FeLV-positive cats is poor. Most infected cats will die within three years from the time of diagnosis.

Prevention of FeLV
There are several preventive measures that can be taken to decrease the risk of contracting FeLV. Routine testing, as well as vaccination of cats determined to be at risk, are key factors in FeLV prevention.

- ♥ Adult cats can be FeLV tested, and then vaccinated if they are negative. FeLV vaccination of infected cats does not affect the carrier state, the capacity to infect other cats, or the development of disease in the infected cats. Booster vaccinations are generally used in adult cats only if they have continuing risk of exposure.
- ♥ Cats are most vulnerable to the virus as kittens. Kittens should be vaccinated with a recombinant vaccine. ***Leukemia is almost entirely preventable with just two kitten vaccines and a booster one year later.*** After that, even if the cat is exposed, the vaccines will help protect it -- plus the cat will naturally be more resistant to infection because of its age. Kittens may be tested at any age. However, infection in newborn kittens may not be detected until

weeks to months after birth. Therefore, several FeLV tests during the first six months of life may be necessary to feel confident about a negative test result.

- ♥ All kittens or adult cats that test negative by the first ELISA screening test, but with a known or suspected exposure to FeLV, should be retested. Although the majority of cats will test positive within several weeks, the final retest of negative cats should be no sooner than 90 days post-exposure.
- ♥ In large populations, a test and removal program will likely need to be instituted.
- ♥ Multi-cat households with FeLV positive cats should be maintained as a closed colony. (No new cats should be brought into the household to prevent the spread of infection to the new arrivals.)
- ♥ Healthy FeLV-infected cats should be housed indoors and kept away from other cats to limit the risk of disease transmission; veterinary checks should be performed at least every six months.

Notes

Retroviruses are unstable, live for only minutes outside the cat's body, and are readily destroyed by most disinfectants. Because the feline leukemia virus is so unstable, a new, healthy cat can be brought safely into a "contaminated" house within days of the departure of an FeLV-infected cat.

Public Health Implications

FeLV has been the subject of many studies. Although human infection with FeLV might be possible, no human has ever been known to become infected with FeLV. Also, no human leukemia has ever been traced back to FeLV infection. Currently, FeLV in cats is not regarded as a human health hazard.

More Information

- https://www.vet.cornell.edu/departments-centers-and-institutes/cornell-feline-health-center/health-information/feline-health-topics/feline-leukemia-virus
- https://catvets.com/public/PDFs/PracticeGuidelines/Guidelines/Vaccination/FelineLeukemiaVirus_FactSheet.pdf
- https://veterinarypartner.vin.com/default.aspx?pid=19239&id=4951934

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