



# Feline Leukemia Virus Infection

## Basics

### OVERVIEW

- A retrovirus that causes inability to develop a normal immune response (known as “immunodeficiency”) and development of tumors in domestic cats

### GENETICS

- No genetic susceptibility to infection by feline leukemia virus (FeLV)

### SIGNALMENT/DESCRIPTION OF PET

#### Species

- Cats

#### Breed Predilections

- None

#### Mean Age and Range

- Number of cases highest between 1 and 6 years of age
- Mean—3 years of age

#### Predominant Sex

- Male-to-female ratio—1.7:1 (that is, males are 1.7 times more likely to have feline leukemia virus infection than are females)

### SIGNS/OBSERVED CHANGES IN THE PET

- Onset of feline leukemia virus—associated disease—usually occurs over a period of months to years after infection
- Associated diseases—may be related to inability to develop a normal immune response (immunodeficiency) or to development of tumors or cancer
- Clinical signs of FeLV-induced inability to develop a normal immune response (immunodeficiency) cannot be distinguished from those of feline immunodeficiency virus (FIV)-induced immunodeficiency
- Signs depend on the type of disease (inability to develop a normal immune response [immunodeficiency] or tumor/cancer) and occurrence of secondary infections
- Enlarged lymph nodes (known as “lymphadenomegaly”)—mild to severe
- Upper respiratory tract disease—inflammation of the nose (known as “rhinitis”), inflammation of the moist tissues of the eye (known as “conjunctivitis”), and inflammation of the cornea (known as “keratitis”; the “cornea” is the clear outer layer of the front of the eye), seen in 18% of cases
- Persistent diarrhea

- Inflammation of the gums (known as “gingivitis”), of the mouth (known as “stomatitis”), and/or of the tissues surrounding and supporting the teeth (known as “periodontitis”)
- Long-term (chronic), nonresponsive or recurrent infections of the external ear and skin; abscesses
- Fever and wasting (seen in 42% to 53% of cases)
- Lymphoma (a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white-blood cell formed in lymphatic tissues throughout the body)—most common FeLV-associated cancer
- Leukemia
- Fibrosarcomas (cancer that develops from fibrous tissue)—in pets co-infected with mutated sarcoma virus; most frequently in young cats
- Disorders usually affecting the nerves to the legs and paws (known as “peripheral neuropathies”); progressive wobbly, incoordinated or “drunken” appearing gait or movement (known as “ataxia”)

## CAUSES

- Cat-to-cat transmission—bites; close casual contact (such as grooming); shared dishes or litter pans
- Transmission of the virus from the mother cat (known as a “queen”) around the time of birth—fetal and newborn kitten death from 80% of affected queens; transmission across the placenta or through the milk in at least 20% of surviving kittens from infected queens

## RISK FACTORS

- Age—kittens are much more susceptible to infection than are adults
- Male—result of behavior
- Cat allowed outside; free-roaming cats
- Multicat household

## Treatment

### HEALTH CARE

- Outpatient for most cats
- Inpatient—may be required with severe secondary infections, low red-blood cell count (known as “anemia”), or extreme weight loss with muscle wasting (known as “cachexia”) until condition is stable
- Blood transfusions—emergency support; multiple transfusions may be necessary
- Management of secondary and opportunistic infections—primary consideration; “opportunistic infections” are infections caused by organisms that usually do not cause disease, but are able to cause disease because the cat's body and/or immune system has been weakened, in this case by the feline leukemia virus infection
- Supportive therapy (such as fluids and nutritional supplements) may be useful

### ACTIVITY

- Normal

### DIET

- Normal
- Diarrhea, kidney disease, or long-term (chronic) wasting—may require special diet

### SURGERY

- Biopsy or surgical removal of tumors
- Dental cleaning, tooth extraction, biopsy of the gums

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Zidovudine (Retrovir)—antiviral agent; may lead to clinical improvement, but does not clear virus
- Medications to alter the immune response (known as “immunomodulatory drugs”)—may alleviate some clinical signs; interferon (Roferon) may increase survival rates and improve clinical status; *Propionibacterium acnes* (ImmunoRegulin); acemannan (Carrisyn)

- *Mycoplasma haemofelis* infection—suspect in all cats with low red-blood cell counts due to the destruction of red-blood cells, in which the body is producing new red-blood cells (known as “regenerative hemolytic anemia”); oxytetracycline or doxycycline; short-term use of steroids, administered by mouth, if needed
- Lymphoma (a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white-blood cell formed in lymphatic tissues throughout the body)—management with standard combination chemotherapy protocols; periods of remission average 3–4 months; some cats may remain in remission for much longer
- Blood disorders or disease and leukemias—less responsive to medical treatment; for low red-blood cell count (anemia), try erythropoietin (Epogen); for low neutrophil count (known as “neutropenia”), try Neupogen
- Yearly vaccination for respiratory and intestinal viruses with inactivated vaccines recommended

## Follow-Up Care

### PATIENT MONITORING

- Varies according to the secondary infections and other manifestations of disease

### PREVENTIONS AND AVOIDANCE

- Prevent contact with feline leukemia virus—positive cats
- Quarantine and test incoming cats before introduction into households currently with one or more cats

#### Vaccines

- Several commercial feline leukemia virus vaccines are available
- Test cats for FeLV before initial vaccination; if prevaccination testing is not done, advise clients that the cat may already be infected
- Vaccinate kittens at 8–9 weeks and 12 weeks of age; administer booster FeLV vaccine at 1 year of age; revaccinate every 2–3 years thereafter

### POSSIBLE COMPLICATIONS

- Exposure of non-feline leukemia virus–infected cats to infection
- Development of disease related to inability to develop a normal immune response (immunodeficiency)
- Development of tumors or cancer
- Death

### EXPECTED COURSE AND PROGNOSIS

- Cats that persistently have feline leukemia virus in their blood (known as “FeLV viremic cats”)—more than 50% succumb to related diseases within 2–3 years after infection

## Key Points

- Keep feline leukemia virus–infected cats indoors and separated from FeLV-negative cats, to protect them from exposure to secondary disease-causing agents and to prevent spread of FeLV to other cats
- Good nutrition is important
- Control secondary bacterial, viral, and parasitic infections

# Notes

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