

What is FeLV?

FeLV is a virus causing a variety of symptoms including deficiency of the immune system, anaemia and tumours.

How does a cat catch it?

It is found in the saliva of infected cats and can only be transmitted by direct (cat to cat) contact, particularly if they lick each other. It is a fragile virus which does not survive long on hands, bowls or cages and can be killed easily with disinfectant. Your cat cannot catch FeLV by using the same basket or bowl as an infected animal.

Cats of any age can catch it, but kittens under 4 months old are particularly susceptible. After 4 months of age, the kitten's resistance to FeLV gradually increases. However, this resistance can be weakened by prolonged exposure to infection, or by large doses of the virus - eg if the cat enters a household with a large number of infected cats.

The virus can cross the placenta to the unborn kittens and, usually, all the kittens born to an infected mother will have the disease. It is possible, although rare, for a cat to have the virus in her mammary glands (and therefore in her milk) but not in her bloodstream, so that - although she tests negative for FeLV - her kittens will become infected as they suckle.

FeLV does **not** infect humans, non-feline animals or birds

What are the clinical signs?

There is a long incubation period (months to years) before infection develops into disease - however 85% of cats with the virus die within 3.5 years of becoming infected.

One effect of FeLV is to suppress the cat's immune response, leaving him more susceptible to other infections.

If a young, or middle-aged cat keeps on getting ill, takes time to recover, gets a fever or is listless for no reason, you should have him tested for FeLV and feline immunodeficiency virus (FIV). If your cat has spontaneously aborted her kittens, or suffers from infertility or anaemia, you should also have the cat tested.

80% of FeLV-positive cats die due to their suppressed immune response, while the rest die from FeLV-related cancers - the most common being tumours called

lymphosarcomas.

- **Thymic lymphosarcoma** generally affects young cats up to 2 years old. It grows in the thymus (an organ in the chest in front of the heart) causing fluid to gradually fill the chest and press on the lungs. The cat will breathe rapidly or through the mouth. Over 90% of cats with thymic lymphosarcoma are FeLV-positive.
- **Multicentric lymphosarcoma** generally occurs in young to middle-aged cats. The tumours arise in the lymph nodes and can be detected under the chin, behind the knees and in front of the shoulders. Two thirds of cats with multicentric lymphosarcoma are FeLV-positive.
- **Alimentary lymphosarcoma** usually affects middle-aged and older cats, growing in the small intestine or colon and causing weight-loss and diarrhoea. Only one third of cats with alimentary lymphosarcoma are FeLV-positive.

All cats in contact with a cat that has a lymphosarcoma should be FeLV tested. Although some cats with these tumours are FeLV-negative, cases of lymphosarcoma are more common in households where FeLV is endemic. FIV is also associated with tumours.

After the thymus, lymph nodes, intestine and colon, the kidneys, nervous system and eyes are the next most common areas to be affected. Lymphosarcoma is the tumour most likely to affect a cat's eyes.

Although FeLV is known as the "leukaemia virus", actual leukaemia is less commonly diagnosed, but nearly half of all FeLV infected cats are anaemic. FeLV is also associated with liver failure, enteritis, infertility, abortion, reabsorption of kittens and stillbirths.

Can FeLV be treated?

Vets must treat each case of FeLV individually, depending on the clinical signs. A cat which shows its immune deficiency by having chronic cat 'flu would require almost constant antibiotic treatment. Cats with lymphosarcoma may be treated with chemotherapy.

In a report of 103 cases treated by chemotherapy the tumour regressed in 62%, who survived an average of 7 months. Only 1 in 5 treated cats survived for more than 12 months. Treatment of lymphatic or myeloid leukaemia's is generally unsuccessful.

The figures

85% of cats with FeLV die within 3.5 years of infection

80% of FeLV-positive cats die due to their suppressed immunity

20% die of FeLV-related cancers - eg lymphosarcomas

Over 90% of cats with thymic lymphosarcoma have FeLV

66% of cats with multicentric lymphosarcoma have FeLV

33% of cats with alimentary lymphosarcoma have FeLV

FeLV Testing

Testing for FeLV remains the best method of control, as no vaccine is 100% effective. Most vets can perform a quick blood test in their surgeries, which detects a part of the virus called *p27*. All positive "in-practice" FeLV test results should be confirmed by virus isolation (where the virus is grown in a cell-culture), immunofluorescence or FeLV DNA PCR. This is because around **50%** of positive in-house results are **false positives** (when the result indicates that the cat has the disease when, in fact, it does not). Virus isolation is carried out at Glasgow and Bristol University Veterinary Schools.

In around 5% to 10% of cats with positive p27 results, no virus can be detected on virus isolation. These cats are "**discordant**" and are not infectious, but should be tested every 1-2 months. Most will become negative on both tests eventually, but some will become positive.

Clinically well cats should **NEVER** be euthanased on a p27 test result alone - in case the result is a **false positive**

A **latent** infection is when a cat has no whole virus in his bloodstream (therefore is not infectious to other cats) but has the virus in his bone marrow or another organ. This produces p27 that can get into the bloodstream and be detected in the test. Latency may be confirmed by bone marrow biopsy, but this procedure is complex and expensive.

Some p27 tests on sick cats can give **false negative** results (failure to detect infection despite its presence), so they should always be retested by virus isolation or immunofluorescence.

When can you test for FeLV?

It can take anywhere from 2-8 weeks for the infection to produce virus in the blood. Cats can be tested from birth, but if they have only recently become infected, the test result may be inaccurate. For this reason, it is recommended that cats be tested twice - 12 weeks apart.

Another reason to test twice is that a small percentage of FeLV-positive cats are in the process of developing immunity - after which they will become negative. Cats testing positive twice, with a 12 week gap between tests will be permanently infected.

In nature, many cats that are exposed to FeLV recover. They have no p27 in their blood, but may have antibodies to the virus. There is a test for these antibodies (virus neutralising) that must not be confused with either the p27 or the virus isolation tests.

A positive **virus neutralisation** test means that the cat has recovered and is immune

Testing

Testing is the best method of FeLV control.

Clinically well cats should **never** be euthanased on a positive p27 test result alone - in case the result is a false positive.

50% of positive in-house FeLV tests are **false positives**.

Positive FeLV tests **must** be confirmed by virus isolation or immunofluorescence tests.

Cats should be tested **twice** - with a 12 week interval between tests.

A positive **virus neutralisation** test indicates recovery and immunity.

Vaccination

Several different FeLV vaccines exist, for cats of at least 9 weeks old. All recommend an initial course of two doses, 3-4 weeks apart and an annual booster. If your cat is pregnant, ask your vet to check whether the brand they use is safe for pregnant queens. Sick cats should never be vaccinated.

It is perfectly normal for a cat to be a bit "off-colour" for 24-48 hours after vaccination, but take him back to the vet if he seems distressed.

Does the vaccine cause positive FeLV tests?

No - the test looks for part of the virus itself, not antibodies to the virus.

Does an indoor cat need to be vaccinated against FeLV?

The disease cannot be brought in from outside on shoes, clothes, etc - unlike feline parvovirus (FPV), which can. So, FeLV vaccination is not required for cats kept indoors. However, if your cat ever gets outside by accident - he will be just as much at risk as every other cat of contracting FeLV.

Can you mix infected with vaccinated, uninfected cats?

As no vaccine is ever 100% effective, you should not let FeLV-positive and FeLV-negative cats mix. Even if the negative cats are FeLV vaccinated, they may not be fully protected. The only exception is when the negative cats are known to have high virus neutralising antibody titres. Vaccination is an adjunct to - and **not** a replacement for - FeLV testing.

All cats that have been in contact with an FeLV-positive cat should be tested

What about a pregnant or nursing queen who is FeLV-positive?

In both cases, the kittens are at high risk of becoming infected. If a pregnant queen is healthy, she should be spayed - as this is kinder than waiting for the kittens to be born. If she has already had the kittens, they should be tested for FeLV and euthanased if they are infected.

New PCR (polymerase chain reaction) test from Bristol University

A new test has recently been developed by Langford Veterinary Diagnostics at Bristol University which can detect the presence of the FeLV virus in the cat's blood. This test quantifies the amount of FIV DNA in the cat's blood and is especially useful in cases where there is a suspicion of FeLV infection after a negative p27 test.