To Test or Not to Test: Making Sense of FeLV and FIV Testing

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Feline retroviral testing is commonly performed via in-house ELISA tests, now offered by various manufactures. These tests are used in shelter and rescue settings as well as general and specialty small animal practices, but they are often used inconsistently between various groups and the information provided by the tests is frequently misunderstood. In many environments, this misunderstanding can have dire consequences for the cats and kittens in care.

Every year, shelters and rescue organizations spend thousands and thousands of dollars on testing for retroviral diseases, not to mention other resources, such as time and staffing, to perform these tests. With less than 2.5% of the North American feline population testing positive for either FIV or FeLV (1), individual organizations must carefully consider whether resources should be dedicated to testing every cat for these diseases. A low prevalence of disease within a certain population may make utility of in-house screening testing of non-clinical cats even more futile due to the increase in false positives.

FIV & FIV Testing

Feline immunodeficiency virus (FIV) is a retroviral disease leading to the inability of the immune system to fight off disease. While once considered a death sentence in many shelter facilities, it is now more widely accepted that cats infected with the virus, spread primarily through bite wounds, can live long, happy lives with good nutritional and medical care. The risk of transmission of disease is low between friendly animals and can be greatly reduced via reproductive sterilization.

The in-house test for FIV detects the presence of antibodies, the immune response to the virus, circulating in the blood. It is important to remember that if an animal has been vaccinated for FIV, many of the vaccines will cause the test to show as positive because the cat will have circulating antibodies responding to exposure to the vaccine. In these cases, it is impossible to distinguish with an in-house ELISA test, the difference between true infection and vaccination. However, a recent study has found that the Witness and Antigen Rapid ELISA tests are able to distinguish between vaccinated cats and true positives (2).

Besides interference by vaccination, the age of the animal and incubation period may also effect the results of in-house FIV testing. Because the test detects antibodies to the disease, a kitten may test as positive for the disease due to circulating maternal antibodies. These antibodies have generally dissipated by 5 to 6 months of age, so if a kitten tests positive, it is recommended that the kitten should be retested after 6 months old.

On the other hand, an animal may have a negative test result, even if they have been infected with the virus, if they are tested during the incubation period, which is usually 2 to 4 weeks, but can be as long as 12 months. It is recommended that an animal be retested at 60 days, minimum, if there is a positive test result or if there has been potential exposure within the last 60 days.

Western Blot laboratory tests are another method of testing for specific FIV antibodies and traditionally considered the standard for confirming in-house antibody tests, but the American Association of Feline

Practitioners Feline Retrovirus Management Guidelines suggest that the Western Blot tests are less sensitive and specific than the in-house ELISA tests. **FeLV & FeLV Testing**

Feline leukemia virus (FeLV) is a retroviral disease, similar to FIV, but traditionally carries more of a grave prognosis than FIV infection. It is still not uncommon for cats coming up as FeLV positive on in-house ELISA tests to be euthanized by shelters or not accepted by transfer programs due to a poorer prognosis and greater risk of transmission than FIV.

FeLV is considered more of a "friendly" cat disease, as it can be spread by sharing dishes, grooming, and nursing, as well as bite wounds. However, adult cats with a healthy immune system have a much greater chance of fighting off infection if exposed to the virus than kittens with immature immune systems or cats who are otherwise immunocompromised

FeLV testing can be a bit more complex than FIV testing due to the variety of stages and forms of infection. Most resources site a progressive and a regressive form of the disease. The progressive form, also known as the persistent form, is when the virus is actively replicated by the body and shed. These animals are more likely to develop FeLV and succumb to associated disease. The regressive, or latent, infection is when the immune system is able to respond to the infection and prevent development of disease. These animals are less likely to shed the virus as well. There is some suggestion that the two states may be fluid, making diagnosis and management decisions more difficult.

The in-house ELISA test that most facilities are most familiar with, detects circulating soluble antigen in the blood, unlike the FIV ELISA test. Thus, this test is not influenced by vaccination status of the animal. While the ELISA test is highly sensitive and specific for detection of the FeLV soluble antigen, testing is complicated by the ability for the animal to possibly fight the infection or develop a latent infection. In other words, the test is sensitive and specific for that particular moment in time.

A negative ELISA test does not rule out potential for development of FeLV, depending on when the animal may have been exposed, nor does a positive test determine that a cat will be persistently infected and succumb to FeLV-associated disease. The soluble antigen may still be circulating in the blood long after the body has cleared the infection, resulting in a positive ELISA test without true infection.

For this reason, an IFA (immunofluorescent assay) laboratory test should be considered as a confirmatory test for any ELISA positive tests. Several studies showed that approximately a third of all positive in house ELISA tests were shown to be negative on initial IFA confirmatory tests. IFA tests are confirmation of viral replication, or true infection, while ELISA tests show exposure and potential for development of disease.

So What Does it Mean for Your Organization?

The complexities of testing for these retroviral diseases in cats makes it difficult to provide definitive disease status information to potential adopters. If a positive test result may not really mean the cat is infected or a negative may not really mean the cat will not develop disease, what beneficial information comes from testing and how do we best communicate that? In some situations, perhaps testing isn't necessarily the best course of action or use of available resources. There are many, many factors involved in making the decision to test or not to test:

- Does your organization currently test? Why or why not?
- What are the options for animals who test positive? Can they be held for retest? Are resources available to submit blood for further testing?
- What are the expectations of the community? (e.g. adopters, veterinarians, etc.)
- How educated are your staff members on the diseases, testing, and what the results mean?
    - Are staff trained in obtaining samples for the tests and in test interpretation? If so, who trains them?
- What information is being provided to adopters about these diseases?
- What is the rate of occurrence in the organization's cat population?
- Is it worth the resources involved to catch the small percentage of infected individuals?
- Could the animal been exposed more recently than the test would detect?
- Is the animal going to be placed with other cats while in the shelter?

Whatever the decision for use of regular testing for your organization, public education and understanding is paramount. And, like any other diagnostic test, these tests should be used to gather information in conjunction with the individual animal's history, including potential for previous exposure, as well as clinical signs.

In this presentation we will discuss all of these factors and provide a resource to help your organization make a decision about retroviral testing that is best suited for the cats and your community.

1. Levy JK, Scott HM, Lachtara JL, Crawford PC. Seroprevalence of feline leukemia virus and feline immunodeficiency virus infection among cats in North America and risk factors for seropositivity. J Am Vet Med Assoc. 2006; 228:371–376.

2. Westman ME, Malik R, Hall E, Sheehy PA, Norris JM. Determining the feline immunodeficiency virus (FIV) status of FIV-vaccinated cats using point-of-care antibody kits. Comp Immunol Microb. 2015; 42:43–52.