IDEXX Reference Laboratories Introduces a RealPCR™ Test for Feline Immunodeficiency Virus (FIV)

As the leader in pet health-care innovation, IDEXX Laboratories continues to support the advancement of feline retrovirus diagnostics. In an effort to bring the latest technology to practice, IDEXX Reference Laboratories is introducing the Feline Immunodeficiency Virus (FIV) RealPCR™ Test.

**Background**

FIV is a complex retrovirus of the genus *Lentivirus*. There are at least five different subtypes (clades; A, B, C, D, E) of FIV found in domestic and wild felids throughout the world. Subtypes A and B appear to predominate in the United States, but a single cat may harbor multiple subtypes due to an apparent lack of cross-protection among the clades. FIV primarily infects lymphocytes and integrates its genetic information into the genomic DNA of infected lymphocytes. Over time, there is a selective and progressive loss of CD4+ T-helper lymphocytes, which primarily results in impaired cell-mediated immunity.

**Prevalence and Transmission**

Estimated prevalence of FIV among the pet population is 1%–4% with higher prevalence rates (4%–24%) observed for those cats at high risk or with clinical signs consistent with the immunodeficiency syndrome. Prevalence increases with age, as infection is more common in cats 6 years and older, and is affected by gender, with male cats four times more likely to be FIV infected than female cats. Transmission generally occurs through direct inoculation of saliva during fighting. Other parenteral routes of transmission are possible, including blood transfusion. Transmission through intimate contact appears less likely.

**Clinical Information**

Most cats infected with FIV develop antibodies against the virus by 8 weeks postinfection. Once infected, cats remain infected for life. After a clinically asymptomatic period, which may last for many years, infected cats can experience a steady decline in immune function making them susceptible to opportunistic infections (bacterial, fungal, protozoal and parasitic). In a recent study, however, a comparison of the survival rates of over 1,000 FIV-infected cats to a matched control group showed cats manage their infections well with survival rates of 94% and 80% at 3 and 6 years postinfection, respectively. The clinical signs of FIV are nonspecific and generally include fever, chronic weight loss, stomatitis, gingivitis, diarrhea, uveitis, chronic kidney disease, neurologic signs and neoplasia.

**Diagnosis**

FIV serology, using a reference laboratory ELISA or SNAP® test, is the recommended screening test for FIV infection. FIV-specific antibodies provide definitive diagnosis of infection in cats that are known not to be vaccinated for FIV. Although highly accurate, it is important that all positive screening results be confirmed using an alternate serologic method. For instance, if an in-house ELISA is used for screening and gives a positive result, a serum sample should be submitted to a reference laboratory for testing by either ELISA or Western blot analysis. Antibodies produced as a result of vaccination with the killed, whole virus vaccine are indistinguishable from those produced as a result of natural infection. Vaccinal antibodies may persist for a year or longer and interfere with the diagnosis of FIV by serology. If a cat is antibody positive, as confirmed by a second serologic test, and its vaccination history is in question, or if a cat has been vaccinated for FIV but infection is still suspected, then additional testing by the PCR methodology may help determine if the cat is infected.

The FIV RealPCR Test detects the presence of viral nucleic acid, including both genomic DNA and viral RNA, in peripheral blood leukocytes. A positive FIV RealPCR test result confirms that the cat is infected with FIV, as the IDEXX test is highly specific (see table). A negative PCR result, however, does not rule out infection. Given the numerous FIV subtypes, high rate of genetic mutation and possibly low levels of genomic integration or viral replication, PCR will provide false-negative results in some infected cats. For those cats, the viral DNA may be below the limit of detection or an infection with an uncommon strain of FIV that is not detected by the current PCR assay may be present. Continuous improvements to the assay are directed at minimizing false-negative results.
Sensitivity and specificity of the FIV RealPCR™ Test

Samples
- Sensitivity for FIV-infected cats*: 80.5% 36
- Specificity for FIV-negative cats†: 99.9% 96
- Specificity for FIV-negative, vaccinated cats‡: 99.9% 92

* Cats testing positive for FIV on the PetChek® FIV Ab, SNAP® Feline Triple™ and Western blot tests
† Cats testing negative for FIV on the PetChek® FIV Ab, SNAP® Feline Triple™ and Western blot tests
‡ Eighteen FIV-negative (uninfected) cats enrolled in a vaccination study

Using the FIV RealPCR Test in your practice

FIV positive or negative

The FIV RealPCR Test is the first highly specific diagnostic that detects the presence of FIV nucleic acid to confirm active infection.
- The FIV RealPCR Test should only be considered in serologically positive cats with an unknown vaccination history or in cats that have been vaccinated for FIV but infection is still suspected.
- Although the FIV RealPCR Test is highly specific for infection, it cannot rule out infection or determine FIV vaccination status.
- Given the limitations of interpretation, the FIV RealPCR should not be used to alter decisions regarding FIV vaccination protocol.
- FIV PCR testing is not recommended as a screening diagnostic for FIV.

Order the FIV RealPCR Test

2866  FIV RealPCR™ Test

Specimen Requirements: 2 mL EDTA whole blood

References

Recommended Reading

The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions and cautions.