



WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

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DIAGNOSING FELINE PARVOVIRUS IN A SHELTER ENVIRONMENT

PROJECT STUDY: Optimization of the diagnosis of feline parvovirus (panleukopenia) infection in a shelter environment.

Principal Investigators: Dr. Linda Jacobson, Kyrsten, Janke, Kathy Ha, Jolene Giacinti, Roxanne Chan; Toronto Humane Society

Final report summary, W19-003

Feline panleukopenia is a highly infectious disease that causes severe gastroenteritis in shelter kittens and cats. It can be fatal and can cause severe shelter outbreaks if affected cats are not rapidly diagnosed and isolated. Shelters have historically struggled with this because the only rapid available test was a test developed for the dog parvovirus, which is similar to the cat virus but not identical. One of the widely used rapid tests is the SNAP ELISA test. One study showed that this test only identified about 60% of infected cats and another showed that it identified more than 90%. Anecdotally, the shelter experience has been that the first study is likely to be the correct one.

On the other side of this problem, if a test incorrectly identifies a kitten as positive for the disease when it is in fact not infected, this can lead to unnecessary isolation during the critical developmental phase, or even euthanasia in shelters that are unable to treat this disease. There are concerns that the newer PCR test, which is very sensitive, could result in false-positive results after vaccination for panleukopenia.

The standard sample used for testing is stool. The investigators wanted to know if vomit or rectal/anal swabs could help them diagnose panleukopenia earlier, because kittens with the disease do not always get diarrhea or may not get it early in the disease. Rapid diagnosis and isolation are very important.

The study's main findings regarding early and accurate diagnosis were:

- The SNAP ELISA test only identified about 60% of positive cases (using the recommended stool samples). This agrees with the first study mentioned above.
- Based on the colour change used to identify positive results, weak-positive results were as reliable as more strongly positive results for the SNAP ELISA. This means even a faint positive spot on the test result kit should be taken seriously in a sick animal.
- Very few vomit samples could be collected and although results were promising, the sample size was too small to draw any conclusions about the usefulness of this sample type.
- Using the anal/rectal swab, the SNAP ELISA test only identified about a third of positive cases. This sample type is inferior to a stool sample, probably because the amount of sample is too small.

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The investigators were interested to know how long cats would pass this virus in the stool (shed virus) after becoming sick, because this determines how long the cats need to stay in isolation after they have improved. There is very little previously published research about this.

- It was difficult to collect samples from many cats after recovery because they were fostered or adopted very quickly. Only some foster parents and adopters brought in samples. Therefore, the sample size was smaller than the investigators would have liked.
- All but 1 of 16 cats had stopped shedding by day 14 and no cats (of 12) were shedding by day 21 after infection.

Using a test panel and a stool test for worms, the investigators found fewer other infections in the stool of sick animals than they would have expected, and there was no obvious connection between having a second infection and shedding panleukopenia virus for longer. The sample size here was, however, small.

Shelter kittens are routinely vaccinated from 4 weeks of age and revaccinated every 2 weeks until 20 weeks of age (or every 3 weeks in a foster home). This is to protect the kittens from infection in a high-risk setting. When the investigators looked at test results in healthy cats and kittens for 21 days after vaccination, they found that:

- False-positive results occurred on day 3 and day 7 after vaccination, for 4 samples using the SNAP ELISA test and 13 samples using the PCR test. There were no false-positives before and after these time points.
- False-positive results were more likely to occur in kittens than in adult cats.
- False-positives were more likely if there were other infections present.

These results indicate that shelters need to be cautious about interpreting panleukopenia test results, especially PCR results, within 7 days of vaccination. All information known about the animal needs to be considered before the test result can be interpreted.

The findings will improve the ability to interpret panleukopenia test results and help to make recommendations about which test should be chosen, how results should be interpreted and how long isolation should last.

Publications: Two manuscripts are in preparation.

Presentations: June, 2020 at the Online Kitten Conference

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