

DISEASE INFORMATION FACT SHEET

Feline panleukopenia



This Disease Information Fact Sheet accompanies the 2013 AAFP Feline Vaccination Advisory Panel Report published in the *Journal of Feline Medicine and Surgery* (2013), Volume 15, pp 785–808.



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Disease facts

Feline panleukopenia is a highly infectious disease with often high mortality, caused by feline parvovirus (FPV). Clinical signs include lethargy, anorexia, vomiting, diarrhea and fever, and, in most cases, a profound leukopenia.^{1–3} In utero or early neonatal infection with FPV can cause cerebellar hypoplasia.^{4,5}

FPV is primarily spread via the fecal–oral route, and the virus is remarkably stable in the environment, remaining infectious for up to a year, depending on the conditions.⁶ Both a contaminated environment and fomites (eg, cages, food bowls, litter boxes, health care workers), therefore, play an important role in transmission. Vaccination is generally very effective in controlling the disease, though it does still occur in some high-risk situations. Examples of this include shelter cats of questionable vaccination status, young kittens with variable/unknown levels of maternally derived antibodies (MDA), and premises where previous cases have occurred without adequate disinfection taking place.

Although FPV is a long established disease of cats, the closely related canine parvovirus (CPV-2) emerged suddenly in 1978 as a host range variant of FPV and spread rapidly within the dog population. Although its precise source is unknown, it has been suggested that it originated from a wild carnivore reservoir host.^{7–9} CPV-2 initially lacked the ability to infect cats, but CPV-2 variants have now emerged (CPV-2a, CPV-2b, CPV-2c) that have largely replaced the original CPV-2, and these

The 2013 Report of the Feline Vaccination Advisory Panel of the American Association of Feline Practitioners (AAFP) provides practical recommendations to help clinicians select appropriate vaccination schedules for their feline patients based on risk assessment. The recommendations rely on published data as much as possible, as well as consensus of a multidisciplinary panel of experts in immunology, infectious disease, internal medicine and clinical practice. The Report is endorsed by the International Society of Feline Medicine (ISFM).

do have the ability to infect cats and in some cases may cause clinical parvoviral disease.^{7,10–12} There is also evidence that CPV-2 type viruses may be shed in the feces of apparently healthy cats, though the epidemiological significance of this is not yet clear.^{10,13} Current data from cross-neutralization and challenge studies suggest that FPV vaccination affords good protection against these CPV variants,^{10,14,15} but further studies are needed to confirm these observations.

Vaccine types

There is only one serotype of FPV, and vaccines are generally highly effective in preventing disease. Modified-live (ML) and inactivated adjuvanted vaccines for injectable administration are available. ML intranasal vaccines are also marketed in some countries.

Onset and duration of immunity

In general, onset of protection is considered to be from 1–3 weeks after the second vaccination, and manufacturers recommend revaccination after 1–3 years.¹⁶ Natural immunity following infection with virulent virus is probably lifelong, and published serological and challenge data also indicate that injectable FPV vaccines induce immunity for at least 3 years,^{17,18} to up to 7 or more years.^{19,20} Whether ML intranasal FPV vaccines offer more rapid onset of protection than injectable ML vaccines is unclear. Serological studies have shown no differences between the two routes of administration in either the rate or proportion of cats seroconverting or their antibody titers post-vaccination.^{21,22}

There is considerable variability in the duration of MDA^{23–26} and it has been suggested that quantifying serum antibodies of either the queen or kittens before primary kitten vaccination may be useful in some situations to determine the optimum time for vaccina-

tion.²³ Interestingly, a recent study also found significant differences in the performance of vaccines from different manufacturers in their ability to overcome low levels of MDA.²³

Vaccine safety

Serious adverse events associated with FPV vaccines are rare. Vaccination of pregnant queens with ML FPV vaccines, including intranasal vaccines, may result in reproductive problems and/or neurological disease in developing fetuses. ML injectable or intranasal vaccines containing FPV should not be given to kittens less than 4 weeks of age due to the risk of cerebellar hypoplasia²⁷ or clinical panleukopenia. If vaccination is considered essential in such a situation, inactivated vaccines should be used.^{2,28}

Other vaccine considerations

Post-vaccinal fecal shedding of ML vaccines may interfere with fecal parvovirus diagnostic testing for up to 2 weeks post-vaccination.^{22,29}

Advisory Panel Recommendations

Vaccination against panleukopenia is considered core. MDA may interfere with immunization when antibody titers are high during the neonatal period, and kittens will be at greatest risk of infection in the period between waning MDA and effective vaccine-induced immunity. MDA titers generally wane sufficiently to allow immunization by 8–12 weeks of age.⁶ However, there is considerable variation between individuals, with some kittens having no or low levels of MDA at 6 weeks of age, and others failing to respond to a final vaccination given at 12–14 weeks of age, indicating that in some cases MDA may last longer.^{23–26}

Because of this variability, the initial series of vaccinations should begin at 6–8 weeks of age and be repeated every 3–4 weeks (or 2–3 weeks in shelters) until 16–20 weeks of age. However, in some countries vaccines are only licensed for use from 8–9 weeks of age.

Revaccination should take place at 1 year of age after kitten vaccination or 1 year after the primary course in older cats. Thereafter, cats should be vaccinated no more frequently than once every 3 years. (For cats at high risk, see appropriate sections in the Report, pages 791–794.)

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DISEASE INFORMATION FACT SHEETS

- ✦ Feline herpesvirus 1
- ✦ Feline calicivirus
- ✦ Feline panleukopenia
- ✦ Rabies
- ✦ Feline leukemia virus
- ✦ Feline immunodeficiency virus
- ✦ Feline infectious peritonitis
- ✦ *Chlamydomydia felis*
- ✦ *Bordetella bronchiseptica*

GENERAL INFORMATION FACT SHEET

- ✦ The immune response to vaccination: a brief review

SUPPLEMENTARY FILES

Fact Sheets accompanying the 2013 AAFP Feline Vaccination Advisory Panel Report are available, together with the Pet Owner Guide included in Appendix 2, at <http://jfm.com>
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PET OWNER GUIDE (APPENDIX 2, pp 807–808)

- ✦ Vaccinations for Your Cat