# Feline Panleukopenia

<table>
<thead>
<tr>
<th>Animal Group(s) Affected</th>
<th>Transmission</th>
<th>Clinical Signs</th>
<th>Severity</th>
<th>Treatment</th>
<th>Prevention and Control</th>
<th>Zoonotic</th>
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</thead>
<tbody>
<tr>
<td>Felidae; limited other carnivores</td>
<td>Oronasal exposure to virus; transplacental</td>
<td>Depression, anorexia, severe dehydration, leukopenia</td>
<td>Subclinical to fatal</td>
<td>Fluid therapy, antibiotics, antiemetic, analgesics</td>
<td>Vaccination; disinfection</td>
<td>No</td>
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**Fact Sheet compiled by:** Ray Wack; updated by Christine Molter  
**Sheet completed on:** 1 March 2011; updated 3 November 2012  
**Fact Sheet Reviewed by:** Ray Wack, Lynelle R. Johnson  
**Susceptible animal groups:** Felidae, mustelids, procyonidae, viverridae, hyena  
**Causative organism:** Feline Parvovirus (FPV), in rare cases, canine parvovirus 2a, 2b or 2c  
**Zoonotic potential:** None known  
**Distribution:** Worldwide  
**Incubation period:** 2-7 days, rarely up to 14 days  
**Clinical signs:** Subclinical cases are possible in cats > 1yr of age, or those with partial protection from maternal antibody. Death presents in peracute cases. Acute cases present fever, anorexia, depression, vomiting, diarrhea, hematochezia, severe dehydration, septic shock and DIC. In transplacental infections, ataxia and tremors are observed in kittens due to cerebellar hypoplasia, which can be observed as early as 4 weeks of age.  
**Post mortem, gross, or histologic findings:** Virus replicates in and destroys rapidly dividing cells especially in bone marrow, lymphoid tissue and gastrointestinal tract mucosa. Transplacental infection may result in cerebellar hypoplasia, retinal dysplasia, embryonic resorption, fetal mummification, abortion or stillbirth.  
At necropsy, signs of sepsis and dehydration. Intestinal crypts can be dilated and contain sloughed epithelial cell debris. Blunting and fusion of villi may be present. Eosinophilic intranuclear inclusion bodies are rare.  
**Diagnosis:** Hemogram often shows panleukopenia (WBC <3,000) with neutropenia being more common than lymphopenia, and thrombocytopenia and anemia. Definitive diagnosis can be made with IFA staining of tissue samples, PCR amplification and identification of virus DNA or virus isolation.  
**Material required for laboratory analysis:** Serum titers can be used to document successful vaccination using hemagglutination inhibition testing of serum (1 ml). Tissue samples can be tested for presence of virus using fluorescent antibody staining of histopathology section. Virus particles can be identified in feces using virus isolation, PCR amplification and identification of virus DNA or electron microscopy.  
**Relevant diagnostic laboratories:**  
- Washington Animal Disease Diagnostic Lab  
  Bustad Hall Room 155N  
  Pullman WA 99164-7034  
  509-335-9696  
  waddl@vetmed.wsu.edu  
  www.vetmed.wsu.edu/depts_waddl/  
- Animal Health Diagnostic Center  
  College of Veterinary Medicine, Cornell University  
  PO Box 5786
### FELINE PANLEUKOPENIA

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<th>240 Farrier Rd</th>
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<tr>
<td>Ithaca, NY 14852-5786</td>
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<tr>
<td>Phone: 607-253-3900</td>
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<tr>
<td>Fax: 607-253-3943</td>
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<tr>
<td><a href="https://ahdc.vet.cornell.edu">https://ahdc.vet.cornell.edu</a></td>
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**Treatment:** Aggressive fluid therapy is needed to correct dehydration, antibiotics to treat or prevent sepsis, antiemetif if vomiting, analgesia for abdominal pain, nutritional support for hypoglycemia and anorexia. Leukopenia, thrombocytopenia, hypoalbuminemia, and hypokalemia are negative prognostic factors in domestic cats with panleukopenia.

**Prevention and control:**

**Vaccination:** Most cats produce a robust long lasting immunity following illness or vaccination. Vaccinated queens generally transfer protective levels of antibodies to kittens through colostrum. The first vaccination is usually given at 6-9 weeks of age with booster vaccines given every 3-4 weeks with the last dose being administered when the kitten is greater than 18 weeks old, to ensure that interfering maternal antibodies do not inactivate the modified live virus or block vaccine response. Pregnant, immunosuppressed, sick cats or kittens < 4 weeks of age should not be vaccinated.

Unvaccinated adults should be given a total of 2 doses of the vaccine 3-4 weeks apart. Vaccine titers suggest that triannual or longer booster intervals are effective. Greater than 95% of domestic cats respond to primary vaccination series with protective titers that may last more than 7 years. A few non-domestic cats have been documented to be non-responders, so determination of titers is recommended. Killed vaccines are often used in non-domestic cats due to rare cases of vaccine induced disease with modified live vaccines. Felo-vax PCT (Fort Dodge Animal Health) is a commonly used killed vaccine given as a 1 ml dose regardless of the size of the cat.

**Control:** Virus shed in all secretions in the acute phase and in feces for up to 6 weeks after recovery. Susceptible animals should not be with or in close proximity to positive animals until they have been vaccinated and protective antibody titers have been demonstrated. Transmission on fomites is common, thus stringent infectious disease control protocols are required. All surfaces should be disinfected with products labeled and proven effective against paroviruses. It may also be necessary to bathe recovered animals especially if they are to be exposed to juveniles for whom vaccine protection cannot be assured.

**Suggested disinfectant for housing facilities:** Virus is very resistant to inactivation, survives long time in environment, transmitted on fomites. Household bleach (6%) applied to a clean surface at 1:32 dilution and peroxygen disinfectants are recommended.

**Notification:** None required

**Measures required under the Animal Disease Surveillance Plan:** None

**Measures required for introducing animals to infected animal:** Susceptible animals should not be introduced to infected animals until protective antibody titers have been demonstrated in the animals to be introduced. Viral shedding may occur for at least 6 weeks in infected animals and viral particles may remain infectious in the environment for more than a year.

**Conditions for restoring disease-free status after an outbreak:** Multiple swabs for PCR amplification and identification of feline panleukopenia DNA should be collected from infected and exposed animals to assure that viral shedding has stopped.

**Experts who may be consulted:**

James Evermann, MS, PhD
Washington Animal Disease Diagnostic Lab
Bustad 155d
### References:


