**Aleutian Disease**

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<td>Mustelids; most common in farm-raised mink; rarely observed in ferrets over last several years.</td>
<td>Vertical (not reported in ferrets) and horizontal transmission (air, direct contact with urine, feces, or blood; contact with contaminated fomites.</td>
<td>Chronic wasting, weakness, reproductive failure, melena, CNS signs, and renal failure.</td>
<td>The disease can be fatal; some pet ferrets are carriers and may not show clinical signs for years.</td>
<td>No effective therapy although; anti-inflammatory or immune suppression treatment may minimize organ damage and clinical signs in pet ferrets.</td>
<td>Biosecurity in facilities; test and cull positive animals or minimally isolate in pet situations.</td>
<td>No.</td>
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**Fact Sheet compiled by:** Gwen E. Myers  
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**Fact Sheet Reviewed by:** A. Hossain Farid; Katrina Ramsell  

**Susceptible animal groups:** Mustelids; notably, mink, weasels, and ferret.  

**Causative organism:** Parvovirus.  

**Zoonotic potential:** None has been identified. However, rare reports of a possible relationship between Aleutian mink disease parvovirus (AMDV) and human infection are noted. Two mink farmers with vascular disease and microangiopathy similar to that in mink with Aleutian disease were found to have AMDV-specific antibodies and AMDV DNA. These findings raise the suspicion that AMDV may play a role in human disease. See article at the end of sheet marked.  

**Distribution:** Worldwide; predominantly on mink farm operations; uncommonly reported in pet ferrets recently.  

**Incubation period:** Variable, but long period inapparent carrier state can occur. AMDV can be detected in blood by PCR in most animals within 10 days post-infection. Viral replication reached its peak around 10 days post-infection thus incubation period is considered short.  

**Clinical signs:** Pathogenesis of this disease is an immune system response of producing a large increase in antibodies resulting in a hypergammaglobulinemia. The formed antigen/antibody complexes are unable to neutralize the virus but they are deposited and cause damage within various tissues and organ systems, including kidneys, liver, bile ducts, respiratory system, spinal cord, gastrointestinal tract, urinary bladder, and blood vessels. Subsequently, inflammation occurs with an elevation in plasmacytes and lymphocytes and significant inflammation will result in disease with the organs affected. However, ferrets with mild inflammation may have no clinical signs.  

**Post mortem, gross, or histologic findings:**  
**Gross:** Hepatomegaly, splenomegaly, renal changes (varying from swelling, petechiation to atrophy and pitting), and enlarged mesenteric lymph nodes. Infected ferrets may have few or no gross lesions.  
**Histologic:** Plasma cell infiltration in the kidneys, liver, spleen, lymph nodes, and bone marrow; bile duct proliferation; membranous glomerulonephritis and fibrinoid arteritis; lymphoplasmacytic meningitis.  

**Diagnosis:** Presumptive diagnosis is based on clinical signs and hypergammaglobulinemia. Common testing modalities: counterimmunoelectrophoresis (CEP), ELISA, and PCR. Tissue biopsies usually done post-mortem.
### ALEUTIAN DISEASE

**Material required for laboratory analysis:** Blood; serum for CEP/ELISA; urine, saliva, feces, tissues for PCR.

**Relevant diagnostic laboratories:**
- PCR and virus sequencing:
  - Weymouth AD Laboratory, Weymouth Nova Scotia (CIEO)
  - Nova Scotia Department of Agriculture Pathology Laboratory, Truro, Nova Scotia (CIEP)
  - Dalhousie University Faculty of Agriculture
c/o Hosain Farid, Ph.D.
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Agricultural Campus
P.O. Box 550
Truro, Nova Scotia, B2N 5E3, Canada
a.farid@dal.ca
(902) 893-6727

- PCR and ELISA testing:
  - Blue Cross Animal Hospital
  - Attention: Dr. Blau – CEP tests
  - 401 N. Miller Avenue
  - Burley, Idaho 83318
  - Phone: (208) 678-5553
  - Fax: 208-677-8957

- PCR and ELISA:
  - University of Georgia
  - Infectious Diseases Laboratory
  - 110 Riverbend Rd.
  - Riverbend North, Room 150
  - Athens, GA 30602
  - (706) 542-8092

- PCR:
  - Wisconsin Veterinary Diagnostic Lab
  - 445 Easterday Lane
  - Madison, Wisconsin 53706
  - (608) 262-5432

**Treatment:** No effective treatment. Selective breeding for mink that can tolerate the virus.

**Prevention and control:** Test and cull on mink farms; no vaccine option. Strict biosecurity and quarantine in ferret colonies and shelters. Ferrets in a seropositive household should have no exposure to ferrets outside of the household although cagemates are considered already exposed.

**Suggested disinfectant for housing facilities:** Clean environment with 10% bleach solution. Steam clean pens and spray with 2% sodium hydroxide.

**Notification:** None required.

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

**Measures required for introducing animals to infected animal:** Not recommended - infected animals should be isolated or culled.

**Conditions for restoring disease-free status after an outbreak:** Following removal of infected animals and
environmental cleaning, restocking can be considered. Identify the source and route of infection to prevent re-infection.

**Experts who may be consulted:**
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**References:**