# KOI HERPESVIRUS

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<th>Animal Group(s) Affected</th>
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<td>Fishes, specifically members of the genus <em>Cyprinus</em>.</td>
<td>Horizontal and via fomites and possibly arthropod vectors.</td>
<td>Signs may be non-specific but can include, enophthalmia, branchitis, hemorrhagic gills, branchial necrosis, areas of skin depigmentation, and blisters.</td>
<td>Mortality may reach 100% and frequently is over 80%.</td>
<td>None.</td>
<td>Strict biosecurity and quarantine protocols should be followed based on information available through the OIE and USDA.</td>
<td>No.</td>
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**Fact Sheet Reviewed by:** Denise Petty; Thomas Waltzek; Ruth Francis-Floyd  

**Susceptible animal groups:** Carp and koi (*Cyprinus carpio*) with evidence that goldfish (*Carassius auratus*) and other cyprinids can be non-clinical carriers of the virus.  

**Causative organism:** Cyprinid herpesvirus-3 (Koi Herpesvirus or KHV).  

**Zoonotic potential:** None  

**Distribution:** Global, especially in temperate geographical areas, except for Australia. The disease was first identified in England, 1996.  

**Incubation period:** Incubation period varies depending on water temperature; most cases are detected at 22°-25.5°C. Latent infections can likely persist for months or even years. Arthropods such as the fish louse (*Argulus* sp.) are likely vectors.  

**Clinical signs:** Clinical signs include, but are not limited to, lethargy, enophthalmia, depigmented areas and blisters of the body surface, branchitis, branchial hemorrhage, branchial necrosis, and high mortality.  

**Post mortem, gross, or histologic findings:** At necropsy, affected fish may have generalized – possibly sanguineous – edema, organ hemorrhage, intestinal inflammation, branchial hemorrhage, branchial necrosis, mottled organs, and excessive abdominal adhesions.  

**Diagnosis:** Diagnosis can be made directly with viral isolation from spleen or caudal kidney on a susceptible cell line such as Koi Fin (KF); this technique usually requires sacrificial euthanasia. Non-lethal direct methods utilizing polymerase chain reaction (PCR) that can be performed on blood, gill tissue biopsies, and feces. Non-lethal indirect methods include enzyme-linked immunosorbent assay (ELISA) and virus neutralization (VN) on blood, but currently test is not available. Positive indirect method samples only indicate that a fish has produced antibodies to the virus and may not, or ever have been, infected with KHV although this can vary by testing specificity.  

**Material required for laboratory analysis:** Live, moribund fish are the best specimens for an accurate diagnosis. Virus isolation from appropriate tissues is superior to PCR and the indirect methods abovementioned.  

**Relevant diagnostic laboratories:** Testing is available at various approved state and federal laboratories.  


**Treatment** None are effective or recommended.
**References:**

Koi herpesvirus


