# VIBRIOSIS

| Animal Group(s) Affected | Transmission | Clinical Signs | Severity | Treatment | Prevention and Control | Zoonotic |
|---|---|---|---|---|---|---|
| Marine and brackish fish.<br><br>Occasionally reported in freshwater fish.<br><br>Commonly found in mollusks and crustaceans. | Unknown in many cases.<br><br>Fish to fish contact and oral transmission is suspected.<br><br>Some species may use invertebrate vector. | Acute or chronic forms.<br><br>Nonspecific, e.g., lethargy, darkening, ulcers, petechial hemorrhages, erythema, coelomic distension, ocular, neurologic, or respiratory signs. | Significant mortalities possible in outbreaks (>50%). | Systemic antibiotics based on culture and sensitivity and regulations. | Appropriate water quality and reduction of other stressors (e.g., over-crowding, elevated temperature).<br><br>Effective vaccines available for *V. anguillarum.* | Many strains are zoonotic. |

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**Susceptible animal groups:** Over 50 species of marine and brackish fish (including elasmobranchs) are susceptible and disease is occasionally reported in freshwater fish.

**Causative organism:** *Vibrio* spp. are pleomorphic Gram negative rods. Some can be primary pathogens, but most are ubiquitous in the environment and cause secondary disease. More than 20 serovars may cause disease: *Vibrio anguillarum* (salt water furunculosis), *V. salmonicida* (hitra or cold water vibriosis), *V. alginolyticus, V. cholerae, V. fischeri, V. harveyi* (*carchariae*), *V. ichthyoenteri, V. logei, V. ordalli, V. parahaemolyticus, V. pelagius, V. splendidus, V. tapetis, V. vulnificus*; *Moritella viscosa, M. marina; Photobacterium damselae damselae, P. damselae piscicida*.

**Zoonotic potential:** Many species have zoonotic potential through skin wounds or ingestion of infected shellfish.

**Distribution:** Worldwide; first reported in North America in 1953.

**Incubation period:** Variable.

**Clinical signs:** Acute or chronic presentation occurs with non-specific clinical signs, e.g., lethargy, inappetance, skin darkening, scale loss, ulcers, hyperemia, petechiation, erythema, coelomic distension from ascites or organomegaly, corneal edema or ulceration, and exophthalmia. Neurologic or respiratory signs may be observed. Many fish die acutely without external signs and mortalities may be >50%. High index of suspicion in a zoo/aquarium setting after shipping or other stressors.

**Post mortem, gross, or histologic findings:** Visceral petechiation, congestion and/or necrosis of organs (especially kidney), organomegaly (especially spleen), and fibrinous adhesions can be observed. Weakly motile, pleomorphic, Gram negative rods may be present. Inflammation, which may be granulomatous, can be observed histologically.

**Diagnosis:** Pure bacterial culture from lesions, blood, or organs (especially kidney and spleen) with consistent

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clinical signs is supportive for diagnosis, although the organism may be commensal in elasmobranch tissues. Selective media available (e.g., TCBS) but these organisms can grow well on blood agar and other nutrient-rich media. Incubation temperature needs to be lower for *Vibrio salmonicida.* Serology not available.

**Material required for laboratory analysis:** Aerobic culturette and/or blood culture vials. Tissue swabs or preferably tissue samples for culture. Transport at 4°C.

**Relevant diagnostic laboratories:** Laboratories specializing in fish pathogens, although regular laboratories may be able to culture and identify *Vibrio* spp.

**Treatment:** Systemic antibiotics (e.g., trimethoprim sulfa, tetracyclines, florenfenicol, aminoglycosides) are needed but treatment should be adjusted as indicated by culture and sensitivity results and should follow all relevant legislation. For foodfish, follow guidelines for FDA-approved antibiotics (e.g., oxtetracycline). Nutritional support and supportive care can assist treatment. Immunostimulants, e.g., glucans, alginate or ascorbic acid.

**Prevention and control:** For outbreaks in aquaculture stocks, regulations may require movement restrictions, depopulation, and disinfection of premises. Most serovars, however, are ubiquitous, secondary pathogens. Control of stressors (e.g., temperature, water quality, stocking density, organic load, nutrition) is sometimes enough to control infection. Selective breeding has been used in salmonids to develop resistance to *V. anguillarum*. Immersion vaccine for *V. anguillarum* in salmonids (Novartis) is available and autogenous vaccines may be considered.

**Suggested disinfectant for housing facilities:** Susceptible to most common disinfectants (e.g., sodium hypochlorite and other chlorine-based disinfectants, ethanol, iodophors, quaternary ammonium compounds, and peroxygen compounds).

**Notification:** None required.

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

**Measures required for introducing animals to infected animal:** To be avoided with *V. anguillarum*. Other *Vibrio* spp. are ubiquitous, but avoid introducing animals if clinical signs are present.

**Conditions for restoring disease-free status after an outbreak:** Not applicable in most settings.

**Experts who may be consulted:** Most fish clinicians will be familiar with vibriosis and can be consulted if an outbreak is encountered.

**References**


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