

# Zoonoses Associated with Fish (Including Aquarium Fish)

This document provides information on various diseases that can be passed from food, bait, ornamental, and tropical fish and shellfish species to people. The zoonotic diseases associated with fish contact are primarily bacterial infections. These include *Mycobacterium*, *Erysipelothrix*, *Campylobacter*, *Aeromonas*, *Vibrio*, *Edwardsiella*, *Escherichia*, *Salmonella*, *Klebsiella* and *Streptococcus iniae*. Often these infections do not make fish appear ill but can cause serious illness in humans. Persons with specific medical conditions such as a chronic illness, immunodeficiency and pregnancy may be at higher risk of developing disease or complications from a zoonotic disease and should consult with their physician before working with animals.

Clinical symptoms of bacterial infection in fish are usually not specific to the bacterial agent. Symptoms in ill fish may include lack of appetite, lethargy, ulceration or reddening/hemorrhage of the skin, raised or lost scales, abdominal distension, unusual behavior or poor swimming ability and bulging eyes (exophthalmia). Careful examination and sample collection with cultures are required to identify which bacterial agent is causing disease. Some fish may be infected carriers and show no symptoms at all.

Various *Mycobacterium* species including *Mycobacterium marinum*, *M. fortuitum* and *M. chelonae* and others can be found in a diverse variety of fish species. All can be associated with acute or chronic disease in fish but most fish are long-term carriers before clinical disease is detected. Persons infected with mycobacteriosis may develop “fish tank granulomas” which appear as skin ulcers or nodules usually on the hands. Immunosuppressed persons can develop lymphadenitis & pulmonary disease similar to tuberculosis or more severe disseminated disease.

*Streptococcus iniae* is a gram-positive bacteria carried by freshwater and marine species which can cause cellulitis, arthritis, endocarditis, meningitis or death in infected persons. Most persons have been infected via an existing wound or fresh puncture wound while handling live or dead fish. *Erysipelothrix rhusiopathiae* is a common soil and water pathogen which may also be acquired by fish contact on an existing or fresh skin wound. Persons with erysipelas may develop a local skin infection, a widespread skin infection or a systemic infection which can spread to the heart and heart valves. Any person with open skin sores, wounds or scrapes should avoid direct fish contact and should not immerse or splash wounded skin with aquarium water. Gloves and/or protective sleeves should be worn and when possible use brushes, tubing or other mean to clean the fish tank or housing area instead of hands.

*Campylobacter*, *Aeromonas*, *Vibrio*, *Edwardsiella*, *Escherichia*, *Salmonella* and *Klebsiella* are other pathogens which may be transmitted by contact with abraded skin or wounds or accidental ingestion of contaminated water or other materials. *Aeromonas* is more common in freshwater species and *Vibrio* is more likely in saltwater species. Contact may result in wound infections and ingestion can result in gastroenteritis with vomiting and diarrhea. More severe & potentially life-threatening disease and septicemia may occur in immunosuppressed persons.

Transmission of zoonotic diseases from animals is primarily by direct contact, indirect contact with insect vectors and contaminated inanimate objects, oral ingestion or inhalation of aerosolized materials. We can protect ourselves from most diseases by using the following basic hygiene procedures:

- Do not eat, drink, apply makeup or use tobacco products while handling animals or in animal housing areas.
- Wear eye and respiratory protection when appropriate.
- Wear gloves and/or protective sleeves when handling aquarium water, animals, animal tissues, body fluids and waste, and wash hands after contact.
- Wear dedicated protective clothing such as a water-proof coat or apron when handling animals. Launder the soiled clothing separate from your personal clothes and preferably at the animal facility.
- Cover abraded skin, cuts, scrapes or sores and do not allow wound contact with fish, fish-contaminated materials or aquarium water. Persons with infected wounds indicated by swelling, redness, pain and draining fluids with or without a fever should seek medical treatment.
- Keep animal areas clean and disinfect equipment after using it on animals or in animal areas. Use cleaning techniques that do not aerosolize dirty water or other materials.

Most importantly, familiarize yourself about the animals that you will be working with and the potential zoonotic diseases associated with each species. If at any time, you suspect that you have acquired a zoonotic disease, inform your supervisor and seek medical care.

**If you have further questions, contact:**

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