Zoonotic Diseases – Amphibians

Individuals who work with animals should be informed regarding potential zoonoses (diseases of animals transmissible to humans) and other potential hazards associated with animal exposure, as well as best practices for personal hygiene. This information sheet is directed toward those who work with amphibians.

Potential Zoonotic Diseases

The overall incidence of transmission of disease-producing agents from amphibians to humans is low. However, a few agents that are found in amphibians and aquarium water have the potential to be transmitted. In general, humans acquire these diseases through ingestion of infected tissues or aquarium water, or by contamination of lacerated or abraded skin. Exotic amphibians can produce highly dangerous skin secretions, and should be labeled as such and handled with protective gloves.

An important feature of many of these organisms is their opportunistic nature. The development of disease in the human host often requires a preexisting state that compromises the immune system. If you have an immune-compromising medical condition, or you are taking medications that impair your immune system (steroids, immunosuppressive drugs, or chemotherapy), you are at risk for contracting diseases and should consult your physician.

The following is a list of potential amphibian zoonoses.

Salmonella: This bacterium inhabits the intestinal tract of many animals and humans. Salmonella occurs worldwide and is easily transmitted through ingestion, either direct or indirect. Common symptoms of the illness are acute gastroenteritis with sudden onset of abdominal pain, diarrhea, nausea and fever. Antibiotic treatment is standard for the illness.

Sparganosis: While unlikely in this area, amphibians can become intermediate hosts to the pseudophyllidean cestode of the genus Spirometra. Disease in humans is primarily caused by ingestion of meat or contaminated water. Contact with the muscles of infected frogs is also considered a mode of transmission. Common symptoms include a nodular lesion (bump) that develops slowly and can be found on any part of the body. The main symptom is itching, sometimes accompanied by urticarial rash. Human sparganosis can be prevented by avoiding ingestion of contaminated water and meat, and avoiding direct contact with infected muscles.

Other diseases: Escherichia coli and Edwardsiella tarda are additional zoonotic organisms that have been documented in amphibians. Human infections are typically acquired through wound contamination or ingestion of contaminated water resulting in gastroenteritis type symptoms, such as nausea, vomiting, and diarrhea.
Allergic Reactions

Human sensitivity to amphibian proteins in the laboratory setting is rare. It remains possible, however, to become sensitized to amphibian proteins through inhalation or skin contact.

How to Protect Yourself

- **Wash your hands.** The single most effective preventative measure that can be taken is thorough, regular hand washing. Wash hands and arms after handling amphibians and aquarium water. Never smoke, drink, or eat in the animal rooms or before washing your hands. Keep wet hands off of mucus membranes.
- **Wear gloves.** Wear sturdy, impervious gloves when hands are immersed in water for a significant length of time, or if you have any cuts or abrasions on your hands or arms.
- **Seek medical attention promptly.** If injured on the job, promptly report the accident to your supervisor even if it seems relatively minor. Minor cuts and abrasions should be immediately cleansed with antibacterial soap, and then protected from exposure to amphibians and aquarium water. Seek treatment at the University of Colorado Hospital Emergency Department on the Anschutz Medical Campus for serious injuries.
- **Tell your physician you work with amphibians.** Whenever you are ill, even if you’re not certain that the illness is work-related, always mention to your physician that you work with amphibians. Many zoonotic diseases have flu-like symptoms but would not normally be suspected. Your physician needs this information to make an accurate diagnosis. Questions regarding personal health should be answered by your physician.

Resource

Contact the EHS Occupational Health Clinic with any questions, 303-724-9145.