

Zoonoses: Diseases Transmitted from Animals to Humans

Our topics for this week are::

- **How zoonotic diseases are transmitted**
- **Relative susceptibility of humans to zoonoses**
- **Prevention of zoonotic disease transmission**

A zoonosis is any infectious disease of animals that can be transmitted to humans under natural conditions.

Incidence

Of the more than 1400 known infectious diseases of humans, 60% are zoonotic. Most are associated with the gastrointestinal tract and transmission is fecal-oral. More than 50 zoonotic diseases are known to be present in the U.S. These include rabies, salmonellosis, ringworm, plague, tularemia, psittacosis, among others.

Means of Transmission

Transmission of zoonotic disease can be by contact, including bites or scratches; oral or ocular, aerosol (inhaled), or vector-borne.

Risks

Every animal can carry some diseases that humans could acquire. However, handling apparently healthy domestic animals using basic sanitary practices, such as keeping hands away from eyes, nose, and mouth, keeping skin cuts covered, and washing hands after handling animals carries very little risk of acquiring zoonotic disease. High-risk animals for transmitting zoonoses are the young, females giving birth, and unvaccinated, stray, or feral animals. Others include those fed raw meat diets, kept in crowded conditions, and with internal or external parasites. In addition, all reptiles and wild or exotic species are high-risk sources of zoonotic diseases. Stressful handling, including prolonged transportation, or overcrowding of animals can increase the risk of animals shedding disease organisms.

Risks of Transmission

The risk of disease transmitted from animals is greater among people with immature, declining, or impaired immune systems. Young children and immunosuppressed adults should especially avoid nursing calves, all reptiles, and baby chicks and ducklings. Children, 5-years-old or younger, should have supervised exposure to animals due to immature immune systems and a tendency to put unwashed hands in their mouths. Animal handlers that are more than 70-years-old may have increased risk of zoonoses from declining immune responses. Some conditions, diseases, or treatments in humans, regardless of their age, may lower their resistance to zoonoses.

Diseases that suppress immunity include systemic diseases such as HIV, congenital immunodeficiencies, diabetes mellitus, chronic renal failure, alcoholism, liver cirrhosis, malnutrition, and certain cancers. Pregnancy may also reduce the nonpregnant immune response. Treatments for cancer, organ or bone marrow transplants, and autoimmune diseases can depress immunity. Splenectomy and long-term hemodialysis are also treatments that can suppress immunity.

Prevention

Keeping animals healthy can also decrease the risk of zoonosis transmission to humans. Routine veterinary care, vaccinations, and parasite screenings should be maintained. High quality food is advisable. Dog, cat, or ferret foods that contain any supplementary egg, poultry, or meat products should have been adequately cooked. Raw pet foods can be sources of zoonotic bacteria, such as Salmonella. Pets should be prevented from drinking from toilet bowls or eating garbage, hunting wildlife, or eating other animal's feces. All pets should be kept away from areas where human food is prepared.

Handler Sanitation and Health Precautions

Hand washing is essential to controlling the transmission of disease. Alcohol-based rubs are effective against most disease-producing agents if the hands are not visibly soiled with organic material. If bitten or scratched, the wound should be thoroughly cleaned with warm soapy water, compression should be applied if bleeding persists, and a physician should be consulted. Special precautions are needed if working with animals with diarrhea, or skin or mouth sores. Pregnant women should not handle cat litter or ewes in the process of lambing. All animal handlers should be vaccinated against tetanus every 10 years, as recommended by the U.S. Centers for Disease Control. Veterinary personnel are also advised to receive pre-exposure vaccination against rabies and have serum titers checked every two years.

Some animal-related diseases are transmitted to humans indirectly via ectoparasite vectors, such as mosquitoes (encephalitis viruses), ticks (Rocky Mountain Spotted Fever and many others), and fleas (Cat Scratch Disease). The animal carrying the ectoparasite may or may not become ill. Ectoparasites are controlled in dogs and cats with individually applied topical insecticides and acaricides.

Rodents and birds can also be disease vectors. These are controlled by eliminating entry to animal dwellings and hiding places. Access to food sources should be eliminated by maintaining food storage in rodent-proof sealed containers and proper disposal of garbage.

Recommendations to Prevent Zoonotic Diseases

- Thoroughly wash your hands after feeding or touching animals or moving their waste; do not dry hands on clothing
- Do not permit animals to eat from human plates or utensils
- Keep pets supervised to prevent hunting at will and do not feed raw meat
- Do not eat or drink in animal handling areas
- Wear appropriate clothing when handling animals
- Do not kiss animals
- Wash cuts thoroughly
- Wear gloves when gardening
- Keep animal environment reasonably clean and prevent children from playing where there is animal waste.
- Clean cat litter daily and wash your hands immediately afterwards
- Keep animals from household areas where human food is prepared or handled
- Do not bathe pets in sinks or bathtubs used by humans
- Deworm animals on regular basis and provide reasonable control of fleas, ticks, and mosquitoes
- Avoid stray animals
- Do not keep wild animals as pets
- Vaccinate animals against zoonotic diseases and maintain tetanus vaccinations in all animal handlers and rabies vaccinations in high risk animal handlers
- Use proper low-stress handling techniques and containment practices and facilities to reduce stress-induced shedding of zoonotic diseases
- Routinely train animal handlers on the prevention of zoonotic disease and animal handling safety measures

If you have comments or you're interested in particular animal handling subjects, contact us at CBC@BetterAnimalHandling.com

Now let's recap the key points to remember from today's episode:

- 1. Zoonotic diseases comprise more than half of all human infectious diseases.**
- 2. Health and age can affect a handler's immunity to zoonotic diseases.**
- 3. Handlers should wash their hands after each time they handle an animal.**

More information on animal handling can be found in my books, *Animal Handling and Physical Restraint*, *Concise Textbook of Small Animal Handling*, and *Concise Textbook of Large Animal Handling* all published by CRC Press and available on Amazon and from many other fine book supply sources.

Additional information is provided at: www.betteranimalhandling.com . This website has more than 250 past podcasts with notes on handling of dogs, cats, other small mammals, birds, reptiles, horses, cattle, small ruminants, swine, and poultry.

Don't forget, serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.