

## **Preventing Transmission of Disease from Farm and Ranch Animals to Humans**

Our topics for this week are:

- **High risk sources of zoonotic diseases from large animals**
- **Animal handlers at higher risk to get zoonotic diseases**
- **Proper sanitation, vaccinations, and personal protective equipment against zoonoses**

A zoonosis is any infectious disease of animals that can be transmitted to humans under natural conditions. 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. Examples include rabies, salmonellosis, cryptosporidiosis, plague, sporotrichosis, psittacosis, and ringworm.

Means of exposure to zoonoses are varied. Direct transmission can be contact with animal saliva, blood, urine, or feces with handler eyes, nose, or mouth which can occur from splashing of body fluids or eating, smoking, or touching the face. Contamination of a skin cut, scratch, or crack with animal saliva, blood, urine, or feces are also forms of direct transmission. Indirect transmission can include inhalation of contaminated dust. Vector-borne indirect transmission can be the bite of a fly, mosquito, tick, or flea carrying a zoonotic organism.

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 diseases.

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. Young children and immunosuppressed adults should especially avoid nursing calves and baby chicks and ducklings.

Systemic diseases in handlers such as HIV, congenital immunodeficiencies, diabetes mellitus, chronic renal failure, alcoholism, liver cirrhosis, malnutrition, and certain cancers can depress immunity. Pregnancy may also reduce the nonpregnant immune response. Treatments for cancer, organ or bone marrow transplants, and autoimmune diseases can also depress immunity.

High-risk animals for transmitting zoonoses are the young, females giving birth, and unvaccinated wild or exotic species. Others include those kept in crowded conditions or with internal or external parasites.

Special precautions are needed if working with animals with diarrhea, or skin or mouth sores. Keeping animals healthy can also lower the risk of zoonosis and transmission to humans. Routine veterinary care, vaccinations, and parasite screenings should be maintained. High quality food is advisable.

### **Sanitation and Avoiding Exposure:**

Hand washing is essential to controlling the transmission of disease. Proper procedure is to:

1. Clean fingernails and remove rings.
2. Wet hands.
3. Apply an olive-size amount of liquid soap to a palm.
4. Scrub both hands while counting to 20, slowly.
5. Rinse thoroughly and dry with paper towels

All animal handling locations should have a means for handlers to wash hands. Animal handlers should keep their fingernails short and, if necessary, use moisturizers to keep the skin from cracking and creating portals of disease entry. Alcohol-based rubs are effective against most disease-producing agents if the hands are not visibly soiled with organic material. If the skin is broken by cuts or pointed penetrations, the wound should be thoroughly cleaned with soapy water. Compression should be applied, and if bleeding persists, a physician should be consulted. Pregnant women should not handle ewes in the process of lambing.

### **Vaccinations:**

All animal handlers should be vaccinated against tetanus every 10 years, as recommended by the U.S. Centers for Disease Control. Horse handlers are particularly at risk. Handlers of hogs or poultry should be vaccinated with the current human influenza virus vaccine. Veterinary personnel are also advised to receive pre-exposure vaccination against rabies and have serum titers checked every two years.

### **Potential Diseases**

Some animal-related diseases are transmitted to humans indirectly via ectoparasite vectors, such as mosquitoes (encephalitis viruses) and ticks (Rocky Mountain Spotted Fever and many others). The animal carrying the ectoparasite may or may not become ill. Livestock are protected from ectoparasites by using dusters, dust bags, back rubbers and oilers, pour-ons, impregnated ear tags, feed-through larvacides, or boluses of insect growth regulators. Premise control may include sprays, traps, and baits. Yards need to be mowed frequently enough to keep grass height short. Pastures and pens should be either cleaned of manure or harrowed on a weekly basis, and manure piles and other compost should be turned weekly. These vectors 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.

The greatest zoonotic risks to food animal and mixed practice veterinarians are Campylobacter, ringworm, and rabies. Equine veterinarian zoonotic risks have recently been greatest for West Nile virus (acquired from mosquitoes).

### **Personal Protective Equipment**

Personal protective equipment (PPE) should be considered in possible zoonotic risk situations. PPE can include protection of the eyes with properly fitted goggles or ANSI-approved face masks.

Ears should be protected from excessive noise with earmuffs or molded ear plugs (cotton plugs are insufficient). Protection for the torso can be lab coats, coveralls, gowns, or aprons. Long sleeves protect against scratches and splashes. Hands are typically protected with rubber or nitrile gloves. The scalp can be partially protected from exposure to cuts, splashes of infectious liquids, and ringworm with a hat. Feet may be protected with closed-toe, slip resistant, water impermeable shoes or boots.

### **Summary of Recommendations to Prevent Transmission of Zoonotic Disease:**

Our recommendations to prevent large animal zoonotic diseases are therefore:

- Thoroughly wash your hands after feeding or touching animals or moving their waste; do not dry hands on clothing
- Do not eat or drink in animal handling areas
- Wear appropriate clothing when handling animals
- Do not kiss animals
- Wash cuts thoroughly
- Keep animals from where human food is prepared or handled
- Deworm animals on regular basis and provide reasonable control of flies, ticks, and mosquitoes
- 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](mailto:CBC@BetterAnimalHandling.com)

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

- 1. The young, elderly, and infirm are at higher risk for acquiring a zoonotic disease.**

- 2. Large animals that are more likely to carry a zoonotic disease are the young, pregnant, unvaccinated, wild or exotic, fed a poor diet, parasitized, or kept in crowded conditions.**
- 3. Washing your hands after handling all animals is the most important step in preventing most zoonotic diseases.**

More information on animal handling can be found in my recent 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](http://www.betteranimalhandling.com) . This website has more than 150 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.