

Zoonotic Diseases of Cattle and Sanitary Practices

Our topics for this week are:

- Key diseases that can be transmitted from cattle to humans
- Sanitary practices to prevent transmission of infectious diseases from cattle

Apparently healthy cattle pose little risk of transmitting disease to healthy adult handlers who practice conventional personal hygiene. The risks of physical injury are greater than the risks of acquiring an infectious disease.

Systemic Diseases

Since 2000, only cats exceed cattle in the number of reported cases of rabies in domestic animals in the United States. Handlers of cattle that appear and act abnormal are at risk due to the lack of awareness of rabies in cattle and the variability of disease signs.

Anthrax is a spore-forming bacterium that can cause blackened skin infection and death in humans. Cattle sick with anthrax can transmit the disease to humans by body secretions, contaminating soil with anthrax spores, or exposure to an infected animal's hide. There are 3 forms of disease: cutaneous (95% of cases - painless ulceration, fever, headache and possible septicemia), pulmonary (airborne infected wool, hide, or hair), and gastrointestinal (from ingesting infected meat).

Listeriosis (*Listeria monocytogenes*) can cause generalized disease in immunosuppressed humans that includes an atypical pneumonia. Direct transmission is primarily from cattle with encephalitis, abortion, or mastitis, not normal appearing cattle.

Coxiellosis (Q Fever) is a bacterial disease that is transmitted by inhalation of dust contaminated by the body secretions of cattle, sheep, or goats (urine, milk, feces, etc.) infected with *Coxiella burnetii*. Infected placental fluids and tissues are especially hazardous. Infected animals can appear healthy. Handlers who work with cattle or swine have the highest incidence of antibodies indicating exposure to Coxiellosis.

Leptospirosis (*Leptospira pomona* and others) is a bacterial disease of cattle that is transmitted in infected cattle urine or genital fluids. The organism can be transmitted by gaining entrance into a human's mouth, breaks in the skin, or eyes. Leptospirosis organisms can continue to infect the urine after cattle have recovered a normal appearance of health.

Cattle are the most common reservoir of enterohemorrhagic strains of *Escherichia coli*, particularly 0157:H7, a bacterium that is in the feces of apparently healthy cattle finished in feedlot operations. If ingested by young or elderly people, it can cause bloody diarrhea and less commonly, kidney failure. Most cases in humans are from ingesting undercooked, contaminated ground beef. Cattle handlers may be at risk if their immune system is suppressed and poor hygiene leads to ingesting the bacteria from cattle feces contamination of their hands or face.

Vesicular stomatitis virus in cattle causes blisters and ulcers in the mouth and nostrils and on the feet and teats. Handlers of cattle with vesicular stomatitis blisters can become infected. Vesicular stomatitis virus causes flu-like symptoms in humans.

Cattle tuberculosis (*Mycobacterium bovis*) is usually transmitted to people by drinking

raw infected milk, although it can be transmitted by aerosol over long distances and inhaled. Cattle tuberculosis is now rare in the United States due to pasteurization of milk and routine testing of milk cows.

Brucellosis is a bacterial disease that can cause abortions in cattle and is transmitted to humans by exposure to body secretions (saliva, urine, fetal fluids) or eating meat from infected cattle or drinking unpasteurized milk. The disease in humans is influenza-like and called Undulant Fever. Its occurrence in the U.S. is very low due to extensive eradication efforts.

Digestive Tract Diseases

Cryptosporidium is a protozoan parasite that causes diarrhea and is transmitted by fecal contaminated water. Calves or lambs with diarrhea are the usual source to humans.

Campylobacteriosis (*Campylobacter jejuni* or *C. fetus*) is one of the most common causes of bacterial diarrhea in humans. Contact with infected cattle can be a source if the bacteria gain access to a handler's mouth. Most human cases from cattle are from drinking unpasteurized milk.

Salmonellosis is a bacterial disease of the digestive system that can invade the blood stream and become systemic. Human salmonellosis from handling cattle is rare. Transmission is usually from eating undercooked, contaminated beef. The risk of acquiring Salmonellosis is much greater from birds and reptiles.

Taeniasis (*Taenia saginata*) is a tapeworm in humans acquired from eating raw or undercooked beef products. It is not transmitted by handling cattle.

Skin Diseases

Dermatophilosis (*Dermatophilus congolensis*), a bacterial disease of the skin, is transmitted by contact or by stable flies. Ringworm from cattle (*Trichophyton verrucosum*) is a fungal infection that can be transmitted by direct contact. Dermatophilosis or ringworm in humans from cattle is rare.

Nervous System Diseases

Bovine spongiform encephalopathy (Mad Cow Disease) is a zoonotic disease acquired from eating infected cattle tissues, not from handling or restraining cattle.

Vector-Borne Diseases

Cattle and humans can develop a malaria-like blood parasite disease called babesiosis (Tick Fever, Texas Fever). Humans with impaired immune systems can develop babesiosis if bitten by Babesia carrying ticks, but cattle Babesia organisms have been eliminated from the United States with an exception of a quarantine buffer zone along the Mexican border.

SANITARY PRACTICES

A handler of cattle should wear appropriate dress to protect against skin contamination with hair and skin scales or saliva, urine, and other body secretions. Ticks on cattle should be controlled with acaricidal pour-ons, ear tags, or dips. Basic sanitary practices should be practiced, such as keeping hands away from eyes, nose, and mouth when handling cattle and washing hands in warm soapy water afterwards. No one should eat or drink in an animal handling area.

Handling equipment should be cleaned and disinfected before used on cattle from another

origin which may be immunologically naive to diseases that a previous group may have carried. Equipment that may be involved include oral speculums, stomach tubes, dehorning instruments, grooming instruments, balling guns, endoscopes, ultrasound probes, and thermometers. Chutes, alleyways, and concrete flooring should also be cleaned and disinfected.

Special precautions are needed if sick cattle are handled, and sick cattle should be isolated from apparently normal cattle. New herd members should be quarantined for at least 2 weeks to reduce the risk of transmitting an disease that new animals could be incubating.

Animals, especially calves, should be kept in a clean dry enclosure. If handling cattle with diarrhea, handlers should wear gloves and a face shield. Rubber or plastic gloves should be worn when assisting with calving. Cattle should be vaccinated against leptospirosis, and exposure to wildlife, especially rodents, should be controlled.

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

- 1. Enterohemorrhagic strains of *Escherichia coli*, particularly 0157:H7 is a dangerous bacteria in some cattle that can infect people via contaminated, undercooked hamburger.**
- 2. Calves should be kept in clean, dry enclosures.**
- 3. A face shield and gloves should be worn if handling cattle with diarrhea.**

More information on animal handling is available in my book, *Animal Handling and Physical Restraint*, published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is available at: www.betteranimalhandling.com

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.