



Shared human-animal diseases¹

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Since we share a world with animals, it shouldn't surprise us that we also share some diseases. This may be especially true in rural areas and on farms where contact with animals increases the risk. Infectious diseases transmissible between humans and other animals are called zoonoses, or zoonotic diseases. About 40 zoonotic diseases are found in Iowa. The risk to humans depends on the kind of disease and type of exposure.

HISTORICAL IMPORTANCE

Zoonotic diseases have played a role in the development of society. For example, five of the 10 plagues described in the Bible probably were zoonoses. The first plague was related to water pollution, the third and fourth were spread by gnats and flies, and the fifth and sixth were anthrax infections that caused boils and death.

Black Death, or Plague, ravaged Europe and Asia between the 14th and 17th centuries. It killed one quarter to a third of the population, most of which lived on farms or in small communities. Plague is caused by the bacterium, *Yersinia pestis*, which is transmitted from rats to humans by fleas.

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Although many lives were lost during World War I combat, the Spanish Flu epidemic of 1918-1919 also killed many soldiers. In fact, more American soldiers died from this influenza than from combat injuries. The Spanish Flu killed an estimated 40 million people throughout the world, mostly children and young men and women, and led to the end of the war. The Spanish Flu was later renamed Swine Flu when the virus was discovered to have come from hogs. Fear of a similar recurrence prompted the massive Swine Flu vaccine program in the United States when the virus was isolated from a dead soldier at Fort Dix, New Jersey, in 1976.

Zoonotic diseases continue to be a threat, but more knowledge has brought about improved sanitation and development of antibiotics, vaccines, and other drugs to battle them. Prevention, however, requires constant attention to protect ourselves, our families, and our communities.

ZOONOTIC DISEASES ON FARMS

- **Rabies.** This disease is familiar to Iowans and it causes great fear because rabies is always fatal once symptoms begin. The last human death from rabies in Iowa was in 1951, caused by rabid dogs. Increased public awareness, mandatory rabies vaccination of dogs, and control of stray dogs by enforcement of leash laws, significantly have reduced the risk of rabies.

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The greatest risks of rabies today follow cat and skunk bites, and oral examination of salivating cattle by farmers and veterinarians. Anywhere from 15 to 50 or more people need post-exposure rabies treatment each year in Iowa.

- **Tuberculosis and brucellosis.** Thanks to the cooperation of Iowa farmers, the organisms in animals that contribute to these diseases in humans have been almost eliminated from Iowa livestock. The organisms are killed by cooking and pasteurization of milk.
- **Trichinosis.** Once a common human disease in the United States, trichinosis is transmitted by infected pork and the meat of some undercooked wild game. It has virtually disappeared because farmers have participated in a program to cook all garbage and pork trimmings fed to their pigs. Without cooking, these wastes would cause trichina infection in pigs and produce disease in humans who eat undercooked pork.
- **Ringworm.** This disease is a fungal infection of the skin on both humans and animals. It is transmitted easily by direct contact.
- **Giardiasis.** Giardia is a water-borne protozoan, a microscopic, single-celled animal that infects the gut of both animals and humans. It is passed in the feces and can be carried in contaminated water. Giardiasis can cause severe gastroenteritis with fever, nausea, and abdominal pain, which may persist for several days or more.
- **Lyme disease.** This zoonotic disease is mentioned because it is a much talked and written about disease, even though few human cases have been reported in Iowa. Lyme disease in people and animals usually is seen as an arthritis, but may cause heart irregularities and neuralgic problems such as headaches, dizziness, and facial paralysis. The signs may begin soon after infection, become chronic, or be delayed for months or even years.

Lyme disease is caused by a spiral-shaped bacterium similar to that of leptospirosis and syphilis, and is transmitted by deer ticks. Dogs, horses, cattle, deer, and other animals are susceptible to Lyme disease.

PREVENTION AND CONTROL

While other zoonotic diseases also are a threat to animals and humans, it's important to recognize that these diseases can be prevented by sanitation, personal hygiene, and proper animal health care. The following safe practices can help prevent and control health risks associated with zoonotic diseases.

1. **Use a safe water supply.** Make every effort to provide safe drinking water to family and animals alike. Wells must be properly constructed to protect against contamination from livestock, human, and wildlife wastes. Consider chlorination or connecting to a rural water system as a way to insure safe water supplies.
2. **Follow sanitary waste disposal.** Dispose of waste in approved ways. Many diseases can be carried in animal wastes that leak into the water supply, or from the bodies of dead animals not disposed of properly.
3. **Assure meat safety.** People who home-slaughter hogs or make pork sausage with meat from deer and other game animals are advised to cook, smoke, freeze, or otherwise cure meat thoroughly. This will kill trichina larvae that may be present in the meat.
4. **Reduce contact with diseased animals.** Ringworm can be prevented by treating cases in pets and livestock, as well as people, so as not to be a source of further infection. Wear clothing that prevents skin contact with ringworm lesions. Keep stalls, stanchions, cages, and housing clean because ringworm fungi survive and grow in dirt, debris, and contaminated bedding.

All cats and dogs should be vaccinated against rabies. Cattle that salivate excessively should be suspected of having rabies and handled accordingly. Do not keep wild animals as pets and avoid animals that exhibit strange behavior.
5. **Remove ticks.** When you are in a tick-infested area, remove ticks from yourself and your animals frequently to prevent infection with Lyme disease and other tick-borne diseases such as Colorado Tick Fever and Rocky Mountain Spotted Fever. Wear a long-sleeved shirt, tuck pantlegs into socks, and use tick repellent.
6. **Pasteurize milk.** Pasteurization kills bacteria that can cause tuberculosis, brucellosis, Escherichia coli

0157, listeriosis, salmonellosis, and other diseases. Never drink raw milk.

Better animal health and environmental health on the farm translates into better health and safety for the farm operator, employees, and members of the family.

LIVESTOCK SAFETY

How much do you know?

1. How many zoonotic diseases are found in Iowa?
 - a. 6
 - b. 12
 - c. 24
 - d. 40
2. What zoonotic disease was Black Death better known as?
 - a. the flu (influenza)
 - b. Anthrax
 - c. Plague
 - d. rabies
3. Trichinosis is a parasitic disease of pigs and people that is prevented by:
 - a. cooking pork
 - b. vaccinating piglets
 - c. vaccinating humans
 - d. feeding and eating garlic

4. How can Lyme disease in humans be prevented?
 - a. washing hands
 - b. water chlorination
 - c. tick removal
 - d. fly sprays

See answers at the end of the next section.

What can you do?

This publication offers only a beginning look at zoonotic diseases. For specific information about any of the diseases or maintaining a safe water supply, read the following publications available at any extension office.

- Make sure drinking water is safe, Pm-1563g
- Know your livestock and be safe, Pm-1265b
- Lyme disease: A newly described illness in humans and animals, Pm-1331
- Rabies, Pm-925-16

Answers to quiz:

1-d; 2-c; 3-a; 4-c