Zoonotic Disease in Agriculture

Zoonotic Diseases are transmitted between farm animals and humans.

According to the World Health Organization, more than half of all human **pathogens** are **zoonotic** and have represented nearly all of all **emerging** pathogens during the past decade. Farmers and farm workers have higher levels of risk for contracting zoonotic diseases because of the frequency of their exposure to animals.

Prevention is the best defense. Understanding how the disease transmission process works, building a team and effectively communicating within that team are essential in preventing the spread of zoonotic disease.

Protect Yourself:

- ✓ **Choose and use appropriate personal protective equipment (PPE)**
  - respiratory protection
  - gloves
  - safety glasses/goggles
  - clothing: coveralls, aprons, etc.
  - foot gear
- ✓ **Designate specific clothes for farm and ranch work**
  - use laundry precautions – launder separate from other family clothing
  - clean washing machine between washes
- ✓ **Disinfect work spaces with appropriate and clearly labeled designated cleaning solutions**
- ✓ **Provide designated hand washing area for workers**
  - hot water is recommended
  - hand washing station should be designed hands free if possible
  - use paper towels to dry
- ✓ **While walking or working wear**
  - sturdy shoes
  - long pants
  - insect repellent
- ✓ **Inspect entire body, neck, face, and hair for cuts, scrapes or bites daily**
- ✓ **Thoroughly clean, treat, and cover any open area prior to contact with animals**
- ✓ **Check medical records for tetanus vaccine status**

Terms to Know:

PPE: personal protective equipment

Pathogen: an agent that causes disease, especially a virus, bacterium or fungus

Infectious disease: a disease caused by bacteria, viruses, fungi, or parasites that can be transferred to humans

Zoonotic disease: an infectious disease which can be passed between animals and humans

Emerging infectious disease: an infectious disease whose incidence in humans has increased in the past two decades or threatens to increase in the near future

Fungal Zoonoses

Disease	Host/ Carrier	Characteristics & Primary Transmission	Incubation	Human Symptoms	Precaution/ Care / Treatment
Ring Worm	infected farm animals pets	· contact with animals · contact with feed or secretion	10 -14 days	· itchy, red, raised patches on skin · may have pustules · may be ring shaped · hair loss	· keep skin dry · antifungals · protective clothing **scratching may cause a secondary bacterial infection
Histoplasmosis	bats birds	· inhalation of fungal spores from droppings	3 – 17 days	· fever · chills · fatigue · muscle aches · headache · chest pain	· PPE · rest · fluids · pain relievers · anti fungal **treatment may last 3 months to one year

Parasitic and Protein Particle Zoonoses

Disease	Host/ Carrier	Characteristics & Primary Transmission	Incubation	Human Symptoms	Precaution/ Care / Treatment
Tape Worm & Trichinosis - parasites	pigs cattle	· ingestion of infected, undercooked meats	· 1-2 days for acute phase · 2-8 weeks for chronic phase	· abdominal discomfort · fever & flu symptoms with trichinosis	· PPE · antiparasitic drugs for tape worm · usually no meds for trichinosis *may require antiparasitics
Amoebic Dysentery - a Protozoa Parasite	dogs	· ingesting contaminated food, water	2 days – several months	· vomiting · acute or diarrhea	· PPE · antiamoebic drugs · antibiotics if bacterial infection develops

Viral Zoonoses

Disease	Host/ Carrier	Characteristics & Primary Transmission	Incubation	Human Symptoms	Precautions/ Care / Treatment
Rabies	mammals bats wild animals pets	· animal bites · contact with infected tissue	2 – 21 days (usually 5 – 12) may be up to 3 months	· headache - malaise · fever · salivation · difficult swallowing · seizures	· PPE · immune globulin · vaccine
Hanta Virus	infected rodents	· inhalation of rodent feces or urine	7 – 39 days	· fever · dizziness · nausea - vomiting · pulmonary edema	· PPE · intense medical treatment and support of cardiac and pulmonary symptoms
Encephalitis	various animals mosquito ticks rodents	· bites	4 – 14 days	· headache · flu-like symptoms · restless · agitation	· PPE · anti-inflammatories · antivirals · steroids · rest
Hepatitis E	hepatitis E swine	· consumption of fecally contaminated drinking water · from infected animals · consumption of uncooked/under cooked pork or deer meat	3 – 6 weeks	· fever · anorexia · nausea · abdominal pain · jaundice	· PPE · treat symptoms · immunoglobulin · vaccine
New Castle Disease	poultry	· contact with secretions of infected birds	2 – 15 days	· conjunctivitis · rarely flu-like symptoms	· PPE · eye drops · avoid sunlight
Poxvirus	dairy cows cattle	· direct animal contact – teats or muzzle	5 – 14 days	· reddened · nodules · wart like nodules · swelling around affected area	· PPE · keep area dry · topical antiviral ointments
Animal Influenza	Avian (bird) flu H5N1, H7N9 & H9N2 Swine H1N1 & H3N2	· direct or indirect exposure to infected live or dead animals or contaminated environments	Avian: 2 - 8 days Swine: 1 - 7 days	· fever · cough - sore throat · chest pain · abdominal pain - diarrhea · vomiting · bleeding from nose or gums	· rest · fluids · prescribed anti-viral drugs in some instances

Bacterial Zoonoses

Disease	Host/ Carrier	Characteristics & Primary Transmission	Incubation	Human Symptoms	Precautions/ Care/ Treatment
Brucellosis	cattle swine sheep goats	· contact with animal tissue, blood, fluids · inhalation	1 -15 weeks	· fever · malaise · flu-like symptoms · can affect heart, bone & other organs	· rest · fluids · PPE · antibiotics
Leptospirosis	cattle swine sheep goats wildlife	· contact with urine of infected animals	7 – 12 days	· fever · malaise · flu-like symptoms · jaundice	· rest · fluids · PPE · antibiotics
St. Anthony's Fire	swine chickens turkeys	· usually caused by group A Streptococcus · contact with animal tissue or waste · contact with infected soil · ingestion	3 – 14 days	· fever · chills · headache · joint pain · skin lesions	· rest · fluids · PPE · antibiotics · treat cuts and abrasions immediately
Campylobacter	cattle swine sheep	· under cooked meat · raw milk · contaminated water	2 – 4 days	· abdominal pain · diarrhea · fever	· rest · fluids · PPE · antibiotics · food prep - precautions
Lyme Disease	diseased deer or rodents	· infected tick bites	3 days – several weeks	· "bulls eye" reddened area · fever · fatigue · joint pain · swelling	· PPE · anti-inflammatory · antibiotics · rest · fluids · insect repellent
E.Coli	all livestock	· direct or indirect contact with animal waste	1 – 10 days	· diarrhea · cramps · vomiting	· fluids · electrolytes · rest · PPE *see physician if symptoms last more than a few days
Tetanus	horses sheep	· exposure to contaminated soil or agent such as rusty nail	3 – 21 days (average is 10 days)	· muscle spasms · skeletal contractures · seizures · respiratory distress	· PPE · immediate care · anti-toxins
Anthrax	cattle sheep horses swine goats dogs	· animal carcasses · inhaled spores · water	1 – 12 days 1 – 7 days (respiratory)	· skin lesions · itching · bumps · redness · respiratory distress in severe cases	· antibiotics · PPE · immediate care of skin abrasions
Tularemia	sheep rabbits skunks	· sheep · ticks · mosquito · water · inhalation	1 – 10 days	· fever · chills · headache · lymph node swelling · ulceration	· PPE · food prep precautions · antibiotics
Q Fever	cattle goats sheep	· inhalation of contaminated dust (dried placenta/birth fluids) · tick bites · raw milk	3 – 30 days	· high fever · chills · sweating · headache · 30% - 50% develop pneumonia	· fluids · rest · PPE · antibiotics · pain meds
Salmonella	dairy animals sheep poultry	· inhalation · infected soil · water · raw milk · under cooked food	12 – 72 hours	· fever · diarrhea · cramps · vomiting	· rest · fluids · antibiotics · PPE
Psittacosis (Parrot Fever) (Ornithosis)	wild birds poultry	· infected tissue · animal/bird feces · inhalation of secretions	5 – 19 days	· fever · headache · dry cough · pneumonia-like symptoms	· rest · fluids · antibiotics · PPE

COMMUNICATE WITH YOUR HEALTH CARE PROVIDERS

Information to share with your health care provider:

- Occupational exposure
- Symptoms of illness and/or infections
- Suspicion of diseased livestock or pets
- Recent travel to other parts of U.S. or out of country

UNDERSTAND YOUR RISK:

- ✓ **Know your livestock & pets' potential for disease**
- ✓ **Discuss safe animal handling with family and workers**
- ✓ **Talk with your veterinarian**
- ✓ **Understand your risks when visiting petting zoos or agro tourism**
  - check rules and policy for visitors
  - wash hands well with soap and warm water

SIGNS AND SYMPTOMS TO REPORT TO YOUR HEALTH CARE PROVIDER

- fever – short time or intermittent
- headache
- chills
- excessive fatigue
- joint pain/swelling
- redness over joints
- rashes/hives
- nausea/vomiting/diarrhea
- menstrual cycle changes or miscarriage
- orchyitis (scrotal swelling)

SPECIAL CONSIDERATIONS FOR CHILDREN

- Many young people spend their time interacting with pets or young livestock
- Children are at high risk of injury from animal bites, estimated 4.5 million in U.S. bitten by dogs annually
- Children are unaware of pet's temperament or health status
- Children do not understand animal maternal protective instincts

SPECIAL CONSIDERATIONS DURING PREGNANCY

- Pregnant women have compromised immune and respiratory symptoms
  - Increased vigilance in hand washing, PPE use, avoidance of animal body fluids & excrement
- Diseases that cause abortions in animals may have the same effect in humans
  - Avoid handling tissue from aborted animal fetuses
- Know risks related to toxoplasmosis, listeria, influenza, Q fever, and pharmaceuticals

REPORTABLE DISEASES:

Both the World Health Organization and the Center for Disease Control provide data on notifiable zoonotic diseases that must be reported. Reporting and management of these events are initiated at the state level and procedures vary from state to state. For more information visit www.cdc.gov/nndss

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