MONTANA DPHHS Healthy People. Healthy Communities. Department of Public Health & Human Services

MONTANA ONE HEALTH

MONTANA DEPARTMENT OF LIVESTOCK SINCE 1885

October 2017 Vol. 6 Issue 2
http://dphhs.mt.gov\publichealth and http://liv.mt.gov

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Chronic Wasting Disease

Chronic wasting disease (CWD) is a progressive and fatal transmissible spongiform encephalopathy (TSE) in wild cervids (deer, elk, moose, and reindeer). The causative agent in this disease are abnormal proteins called prions. Prions appear to convert normal proteins into an abnormal form that accumulates in the brain, destroying normal tissue, and eventually causing the brain to have a "spongy" appearance. Wild cervids become infected with these prions through ingestion of contaminated vegetation, contact with contaminated soil, or direct contact with other ill animals. Signs of illness include pronounced weight loss, stumbling, listlessness, behavioral changes, excessive salivation, excessive water intake, and excessive urination. Symptom onset can occur over a year after infection, and death usually occurs within a year of symptom onset. The illness is fatal to infected animals with no treatment or vaccine available to protect against CWD.

Chronic Wasting Disease Incidence and Transmission

Chronic wasting disease was originally documented in a Colorado wildlife research facility in 1967. Since 1967, CWD in free-ranging cervids has spread to include 21 U.S. states and two Canadian providences. The only documented emergence of CWD in Montana was detected in a captive game facility near Philipsburg, MT in 1999. That facility was depopulated and has remained vacant. The Fish, Wildlife, and Parks Department started surveillance for CWD in wild cervids in 1998.

To date, no cases of CWD have been detected in free-ranging wildlife in Montana. However, CWD has been detected in areas bordering Montana in wild mule deer, white-tailed deer, elk, and moose (North Dakota, South Dakota, Wyoming, Alberta, and Saskatchewan). The effects to the wild cervid population in Montana over time due to CWD are unknown, but projections suggest that populations could be substantially reduced.

Infected animals accumulate prions throughout their central nervous system and lymphoid tissues and shed prions in their saliva, urine, and feces. Tissues that contain prions include the brain, spinal cord, eyes, tonsils, lymphoid tissues, spleen, pancreas and peripheral nerves. Prions are shed through saliva, feces and urine. These proteins can remain stable in the environment for years and can be ingested by healthy deer, elk, and moose at a later date.

The only way to diagnose CWD is by testing the central nervous system and lymph node tissues. Surveillance of wild cervid populations are ongoing, including testing of symptomatic animals, animals necropsied from research projects, hunter harvested animals, and road-killed animals.

Research has been performed to determine if chronic wasting disease can be transmitted domesticated animals, such as cattle and sheep, which might come into contact with contaminated soil and vegetation. Natural transmission of CWD does not appear to occur to livestock, though infection through intracerebral injection of CWD has been documented in some laboratory animals. A recent Canadian study demonstrated some non-human primates can be infected through consuming infected meat or coming into contact with infected body fluids of deer or elk.

The Centers for Disease Control and Prevention (CDC) has not received any reported cases of CWD infection in humans despite several epidemiologic investigations. Additionally, rates of human TSE cases in Colorado or Wyoming (where CWD is widespread) have not increased. This suggests that the risk of transmission from infected animals or the contaminated soils and body fluids to humans, if any, is low. However, the recent non-human primate study showing transmission through consumption to non-human primates raises the concern that CWD may pose a risk to human health.

Human Transmissible Spongiform Encephalopathy Diseases

Transmissible spongiform encephalopathies are a reportable condition in the state of Montana. Five different human TSEs have been recognized, but the two most notable categories are Creutzfeldt-Jakob Disease (CJD) and variant Creutzfeldt-Jakob Disease (vCJD).

The most commonly reported TSE in humans is CJD, and this is the only TSE that has been reported in the state of Montana since 1981. Symptoms and signs of CJD include rapid mental deterioration manifesting as dementia, behavioral abnormalities, and other cognitive deficits. No effective treatment for CJD exists as it is universally fatal. This disease is classified as one of the following:

- Sporadic due to spontaneous mutation of prion protein (85-95% of cases)
- Familial due genetic predisposition to mutation of the prion protein (5-15% of cases)
- Iatrogenic due to acquisition through exposure to CJD prions (less than 1%)

For cases of an iatrogenic nature, the route of exposure identified is from human growth hormone or donated tissues from donors who died of unrecognized CJD. Montana averages zero to three cases per year of CJD, all of which have been sporadic in nature.

While the majority of TSE cases are classified as CJD and are not acquired through exposure to an infectious prion, vCJD has been associated with exposure to bovine spongiform encephalopathy (BSE or "Mad Cow Disease"). As of March 2014, 228 cases of probable vCJD have been reported worldwide with the majority of those cases having resided in the United Kingdom during the BSE epidemic in cattle in the 1980's to 1990's (peak incidence was in 1992).

When potential cases of human prion disease are reported, local public health jurisdictions work to confirm TSEs and perform a case investigation identifying risk factors for TSE. Information regarding consumption of wild game or handling of high risk animal tissues are collected during this process.

Resources for Prion Diseases:

- The Center for Food Security and Public Health, "Chronic Wasting Disease," 2016. http://www.cfsph.iastate.edu/Factsheets/pdfs/chronic_wasting_disease.pdf
- CDC Website, Prion Diseases. https://www.cdc.gov/prions/index.html
- Montana Fish, Wildlife, and Parks Chronic Wasting Disease Health Program. http://fwp.mt.gov/fishAndWildlife/diseasesAndResearch/healthPrograms/chronicWastingDisease/
- US Geological Survey, Chronic Wasting Disease. https://www.nwhc.usgs.gov/disease_information/chronic_wasting_disease/index.jsp

Chronic Wasting Disease-Key Points

Animal Health

- There is no evidence CWD can be transmitted to domesticated pets or livestock (excluding captive deer and elk on game farms)
- Surveillance for the CWD is ongoing in Montana targeting the deer and elk population

Advice for Hunters and Others Who Handle Carcasses of Wild Game

- No evidence exists that CWD causes disease in humans, however, consumption of meat from infected animals is not recommended
- Do not shoot or eat any animal that appears sick
- Wear protective gloves when field dressing carcasses
- Bone out the meat, and avoid cutting through the brain or spinal cord, and minimize handling of nervous tissues
- Participate in FWP surveillance efforts

References available on web version. Visit http://www.dphhs.mt.gov/publichealth/publications.shtml.

2,836 copies of this public document were published at an estimated cost of $0.59 per copy, for a total cost of $1660.54, which includes $711.04 for printing and $949.50 for distribution.

1400 Broadway
Helena, MT 59620-2951

Sheila Hogan, Director, DPHHS Mike Honeycutt, Executive Officer, DOL Todd Harwell, MPH, Administrator, PHSD Martin Zaluski, DVM, State Veterinarian