

Chronic Wasting Disease in Deer

Chronic wasting disease, or CWD, is a neurological disease infecting wild white-tailed deer in Iowa and throughout North America. This article reviews the most relevant and up-to-date scientific information about the disease and provides recommendations for addressing this emerging challenge in Iowa.

Disease facts

CWD is in the class of neurological diseases called transmissible spongiform encephalopathies (TSE), that infects hoofed mammals in the Cervidae family (cervids), including white-tailed deer, mule deer, elk, moose, and caribou. CWD is similar to other more well-known TSE diseases like bovine spongiform encephalopathy (mad cow disease) of cattle, scrapie of sheep and goats, and Creutzfeldt-Jakob disease of humans. All these diseases are caused by an abnormally shaped class of proteins called prions, which cause microscopic holes to form in the brain, giving it a spongy appearance, and ultimately degrade neurological functions and cause death. All known TSE diseases are fatal, although some, including CWD, have delays between initial infection and display of symptoms and death.

CWD generally has a prolonged incubation period, ranging from 16 months to three years, before the infected animal shows any symptoms. Once symptoms are expressed, they are consistent with those seen in many more common ailments of deer and are thus not individually diagnostic of CWD infection. A symptomatic CWD-positive deer will simply appear sick, with common symptoms including drooling, poor balance, or emaciation. However, healthy-appearing deer could also be infected with the disease and not be symptomatic. Only laboratory tests conducted by disease specialists can confirm CWD infection. Most

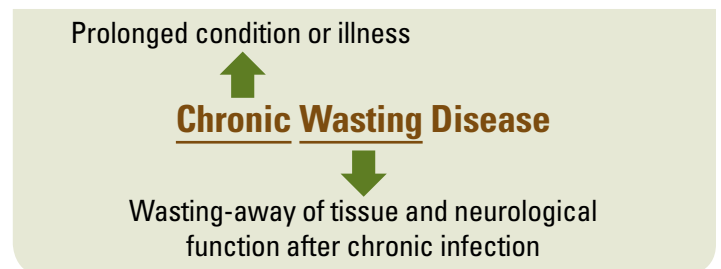
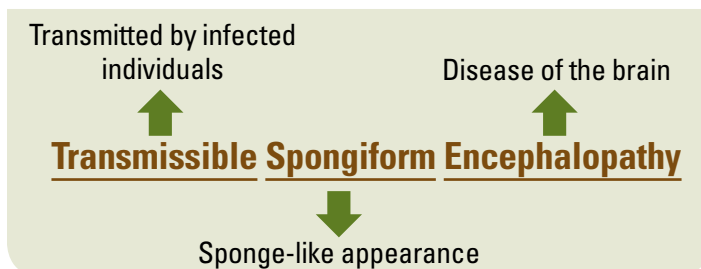
Key Considerations

- ▶ **Take measures to reduce concentrating deer - such as eliminating artificial food and mineral sources - to reduce transmission potential.**
- ▶ **Although there is currently no documented transmission of CWD to humans, the Centers for Disease Control and Prevention recommends avoiding consumption of infected deer.**
- ▶ **Submit samples from deer harvested in CWD zones and discard meat from positive deer.**

laboratory tests are performed with samples of tissue from the brain or lymph nodes of a dead deer.

All known cases of CWD in wild deer have resulted in death of the afflicted animal shortly after symptoms become apparent. There is mixed evidence among white-tailed deer and other species (mule deer and elk) affected by CWD that infection can increase vulnerability to harvest or predation before succumbing to death by the disease. There is also some evidence to suggest that successful reproduction is reduced in infected deer. Research on genetic aspects of the disease has revealed that although there is genetic variation in susceptibility of some animals, there are no known genes that completely prevent infection, suggesting all deer are potentially vulnerable to contracting the disease.

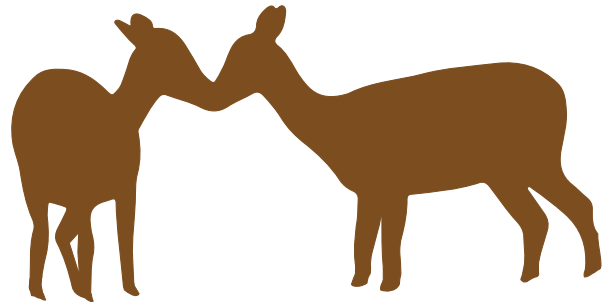
Research has shown no strong evidence that CWD is transmissible to humans or cattle. However, due to the long incubation period of prion diseases, human populations at increased risk of exposure to potentially CWD-infected cervids are undergoing long-term monitoring to help understand what risk, if any, CWD poses. The Centers for Disease Control and Prevention recommends avoiding eating meat from CWD-positive animals, using caution when handling CWD-positive carcasses, and testing deer harvested in areas with the disease.



Primary routes of transmission among deer

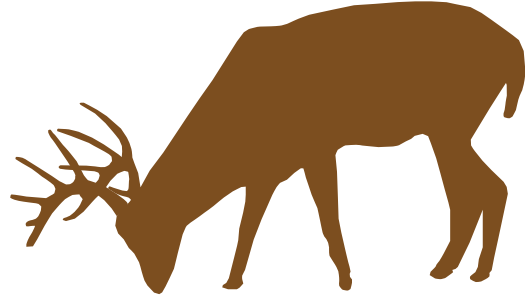
Direct transmission through bodily fluid exchange

CWD can be transmitted from an infected deer to a healthy one through incidental exchange of bodily fluids, such as nasal discharge, saliva, urine, feces, or birthing matter. Likely routes of transmission include behaviors that bring deer into direct contact such as artificial feeding, interactions between bucks, or social interactions among family groups.



Indirect transmission through contaminated soil

Because CWD prions, the disease-causing agent, can persist in the soil, areas where bodily fluids of deer, such as saliva, urine, feces, or birthing matter accumulate could serve as sources of infection. Such locations include concentrated feeding areas, scrapes, or other areas where deer gather.



CWD in Iowa and neighboring states

CWD was first-discovered in Colorado in 1967 in captive mule deer and was not discovered in the wild until 1981 when it was found in wild elk in Colorado. The disease has slowly spread among captive facilities and wild populations throughout the U.S. and Canada since.

The figure to right depicts the date the disease was first detected in wild white-tailed deer in each of Iowa's neighboring states. Each of these states have also documented CWD in captive deer or elk facilities.



Iowa CWD timeline

- 2002**
Iowa DNR started routine sampling of wild deer for CWD surveillance throughout the state.
- 2012**
CWD was found for the first time in a captive deer facility in Davis County.
- 2013**
CWD was detected for the first time in wild deer harvested in Allamakee County.
- Today**
Iowa DNR continues to conduct surveillance for CWD in wild deer statewide, with emphasis on areas near known positive cases in Iowa or adjacent states.

For an [updated map](#) of the distribution of CWD in wild deer in Iowa counties, visit www.nrem.iastate.edu/wildlife/cwd

Management strategies

CWD is an emerging, challenging disease, but one that hunters, landowners, and all citizens have lived with in other Midwestern or western states and in Canada for many years. State wildlife resource agencies, such as Iowa's Department of Natural Resources, generally take action to help reduce spread of the disease by reducing densities of deer in areas with CWD, passing rules and laws regarding feeding deer or transporting deer harvested in areas with CWD, and conducting sampling of hunter-harvested or culled deer to monitor prevalence and distribution of CWD. The following recommendations can also help reduce the spread of CWD in Iowa and as a result, protect wild and captive deer and ensure safe consumption of harvested deer.

All Iowans

► Don't feed deer.

Because CWD prions accumulate in the environment (soil and plants) and are transmitted with bodily fluids, concentrating deer on supplemental food or mineral sources such as licks, feeders, or piles of grain is likely to increase risk of transmission and environmental contamination.

► Report any deer that appear to be sick to local conservation officers any time of the year.

Hunters

► Don't harvest deer that appear sick and report sick animals to your local conservation officer.

► Minimize contact with portions of the animal with highest potential CWD prion concentrations.

Prions are most concentrated in the areas highlighted in the figure to the right, including brain tissue, spleen, lymph nodes, tonsils, and spinal cord. Normal field dressing and processing will remove these tissues.

► When dressing deer, remove meat from bones and avoid sawing through bone or the spinal cord.

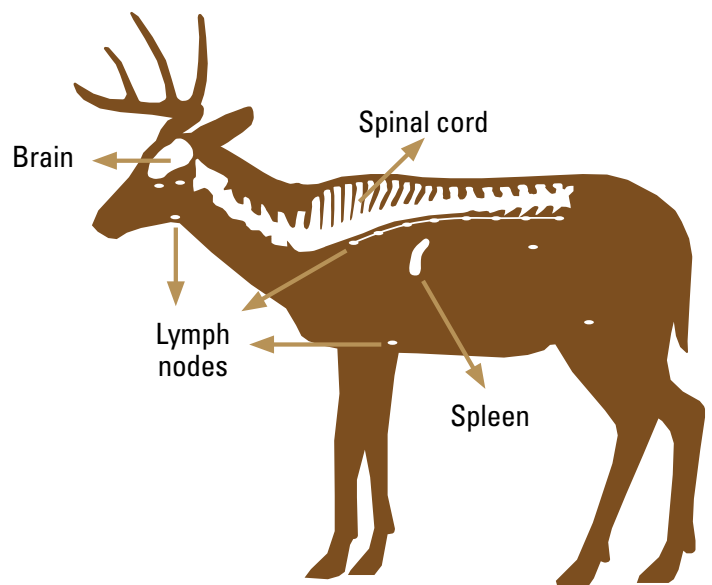
► Safely dispose of carcasses to minimize exposure to live deer or possible environmental contamination.

It is safe to dispose of carcasses in landfills, if allowed. If landfills are not feasible, burying the carcass and bones is the next best procedure.

► Follow Iowa Department of Natural Resources regulations regarding transportation of deer, elk, moose, or caribou harvested from areas with CWD.

These regulations are intended to curb the risk of transporting CWD positive tissue into the state where wild deer may encounter it and contract the disease. The references at the end of this document highlight where information on CWD distribution in North America and additional information from the Iowa DNR can be found.

► Coordinate with the Iowa DNR to submit samples for CWD monitoring near known infection areas and work with the agency to safely discard meat from CWD-positive deer.



Captive facility operators

► Ensure wild deer have no interactions with captive herds.

Captive deer and elk farmers should ensure wild deer cannot interact with captive stock through fences and take actions to prevent unintended access into or out of confinements to ensure the health of wild and captive herds.

► Follow all Iowa Department of Agriculture and Land Stewardship rules regarding CWD monitoring and interstate transfer of captive cervids.

Iowa Administrative Code 21.65.9 provides guidance on minimizing risk of CWD infections in captive facilities.

Additional references

► [Iowa Department of Natural Resources](#)

www.iowadnr.gov/Hunting/Deer-Hunting/Deer-Disease-Information

Find updated information about CWD in Iowa, Frequently Asked Questions about CWD, and other resources on the agency response to the disease in wild deer.

► [Iowa Department of Agriculture and Land Stewardship](#)

www.iowaagriculture.gov/animalIndustry/chronicWastingDisease.asp

Find information about CWD in Iowa and information on testing and regulations pertaining to captive cervid facilities.

► [Iowa State University Extension and Outreach Wildlife Program](#)

www.nrem.iastate.edu/wildlife

Find real-time updates on new developments with CWD and other wildlife conservation issues in Iowa and the Midwest.

► [CWD Alliance](#)

www.cwd-info.org

The CWD Alliance is a national cooperative endeavor among state wildlife agencies and non-governmental organizations with a stake in wild cervid conservation and management. Their website is a national clearing house of information on the disease and state and federal responses.

► [National Wildlife Health Center](#)

www.usgs.gov/centers/nwhc/science/chronic-wasting-disease

Find updated maps reflecting CWD distribution in North America and resources on research and monitoring of CWD from the U.S. Geological Survey.

► [Centers for Disease Control and Prevention](#)

www.cdc.gov/prions/cwd

Resources from the CDC on CWD research and prevention.

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