

Chronic Wasting Disease in Cervids: The Risk of Transmission to Humans and Our Current Public Health Messaging

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Chronic wasting disease (CWD) is a prion disease that affects deer, elk, reindeer, sika deer and moose. It has been found in some areas of North America, including two provinces in Canada and at least 24 states in the United States. It has also been identified in Norway and South Korea. While CWD was first identified in 1967 in captive mule deer in Colorado, the subsequent widespread transmission and increased incidence of game and wild cervid infection has occurred in the past five to seven years.

Although CWD has not yet been found to cause infections in humans, numerous health agencies have taken the stance that people should not be consuming CWD-positive animals. Since 1997, the World Health Organization (WHO) has recommended that agents of any prion disease should not enter the human food chain. Likewise, the Centers for Disease Control and Prevention (CDC), Health Canada and at least six state health and natural resources agencies, including Minnesota, recommend that people should not consume the meat of an animal found to be positive for CWD (CDC, 2018). Despite these recommendations, the Alliance for Public Wildlife has produced rough estimates suggesting that anywhere from 7,000 to 15,000 CWD-positive animals are being consumed annually, with that number expected to increase by up to 20% each year (Geist et al., 2017).

Our public health and public policy experience with bovine spongiform encephalopathy (BSE) in Europe, primarily the United Kingdom, should be a warning to us today of a potential harbinger of things to come with regard to CWD and human infection. BSE was first documented in infected bovine in 1986. British government officials as well as agriculture industry representatives stated that BSE-infected cattle were safe to eat. They claimed that the so-called "species barrier" for prions would prevent transmission from infected cattle to humans as a result of consumption of the contaminated meat. However, the first case of BSE in humans, designated variant Creutzfeldt-Jakob disease, was diagnosed in 1996, 10 years after the first confirmed bovine case. There have now been more than 200 people with BSE-infected meat exposures in Europe who have been diagnosed with variant Creutzfeldt-Jakob disease.

Rapid and reliable testing of killed cervids for CWD is a critical service that should be readily available and utilized to allow a hunter and those that might consume the meat of that hunted animal the ability to eliminate their exposure to CWD prions. CDC strongly encourages hunters that harvest cervids in known CWD-endemic areas to test their animals. Although the offered tests are not considered food safety tests, a result of "not detected" makes it highly unlikely that prions are present in the tested animal.

The Minnesota Department of Natural Resources conducts CWD surveillance around areas with known positives for at least three years. Minnesota currently has mandatory CWD testing in three regions of the state. Mandatory testing was implemented in both the Central and North-Central regions following the discovery of CWD-positive deer on cervid farms. All of the deer harvested in this region on the opening weekend of firearm season are required to be tested. The Southeast region started conducting mandatory CWD testing after routine surveillance detected three positive wild deer in Fillmore County. For this region, testing is conducted on the two opening weekends of firearm seasons A and B. Additionally, a CWD management zone (DPA 603) was created, which circles the epicenter of the initial infections. When a deer is harvested in this zone, it cannot be removed until a test result is received.

Minnesota also offers voluntary CWD sampling for deer that are harvested outside of the mandatory surveillance regions. Hunters who want to test their deer for CWD can pay a fee and submit a sample to the University of Minnesota's Veterinary Diagnostic Lab. Test results are typically reported back two or three weeks after the sample is registered (Minnesota DNR, 2019). The Minnesota Department of Health's recommendations mirror that of the WHO and CDC, as they do not recommend consuming CWD positive meat. However, if a harvested deer is found to be positive for CWD, the decision of what to do with the meat still lies with the hunter.

It is my best professional judgment based on my public health experience evaluating the risk of BSE transmission to humans in the 1980's and 1990's and my extensive review and evaluation of laboratory research studies attempting to define the extent of the human species barrier for preventing CWD transmission that it is probable that human cases of CWD associated with the consumption of CWD-contaminated meat will be documented in the years ahead. It is possible that the number of human cases will be substantial and will not be isolated events. For this reason, there must be a major and immediate effort made by public health and natural resource agencies to educate the public, particularly hunters in areas of endemic cervid CWD as to potential risk of human CWD infection and provide extensive reliable and rapid CWD prion detection tests for killed cervids before the deer are processed or consumed.

References

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