

THINGS YOU KNOW ABOUT CHRONIC WASTING DISEASE (CWD) THAT AIN'T SO...

By Dr. Don Davis

“CWD originated in captive deer” – **False.**

Fact - CWD was first described not discovered in mule deer at Colorado State University (CSU) in 1981 by Dr. Beth Williams. Prior to 1965, an unnamed encephalopathy had been observed in several deer and elk of wild origin by Dr. Terry Spraker and others at CSU. The unnamed disease caused spongiform lesions in the brains of elk and mule deer were consistent with those now seen in CWD. Also the mule deer in some of the CSU pens by had dams captured from the wild. After 1981, the mule deer and elk were killed for chronic wasting disease testing, and CWD was not perpetuated at the CSU pens according to Dr. Williams.

“Captive deer are the original source of CWD and the spread of CWD across the US and Canada ” – **False. Fact** – Obviously, the captive mule deer at CSU and Wyoming with CWD were dead before they were tested, and therefore could not be translocated elsewhere. CWD was found shortly after in the 1980's in wild and free-ranging mule deer, elk, and white-tailed deer in Colorado, and Wyoming that had no exposure with captive deer/elk. CWD was also found in zoological collections in the US and in Canada but these animals were also killed for testing.

“CWD might be transmitted from deer and elk to humans” – **False.**

Fact – All scientific data collected over the last 46 years indicates that humans are not susceptible to CWD. The Center for Disease Control (CDC) did a study and found no evidence of even a single case of CWD in humans. People for 46 years have consumed hundreds of millions of pounds of venison from deer harvested from deer populations known to have CWD. Not a single case of CWD in humans has ever been found. The World Health Organization (WHO) has clearly stated that there is no evidence that CWD is transmissible to humans.

“CWD is a widespread disease” – **False.**

Fact – The presence of CWD and CWD test positive deer/elk has been documented in about 22 states or 44% of the 50 states. This statistic is somewhat misleading because there are about 3500 counties in the US and CWD has been found in about 175 of them or in 5%. Five % is a closer figure but still higher than the actual occurrence and distribution of CWD.

CWD is a very common disease” – **False.**

Fact – The occurrence of CWD documented by USDA/APHIS records collected from 1998 to 2012 indicates that in the 170,120 captive deer and elk tested, only 403 were positive or 2 out of 1000. In the 847,706 wild deer and wild elk tested, 3,600+ were CWD test positive or 4 in 1000. By the way, other prion diseases are also very rare. CJDv (BSE in humans) and CJD is found in 3-5 per million people. Scrapie in sheep and goats is found in 6 per 100,00 animals tested.

“CWD is more common in captive deer and elk than in wild deer and elk” – **False.**

Fact – From the USDA/APHIS rates above it is easy to see that CWD is 2 times more common in wild deer/elk than captive deer/elk. CWD is found in free-ranging deer and not in captive deer in 10 states. There are about 10 states where CWD has been found in both captive deer/elk and wild deer and /elk. There are about 5 states where CWD has been found only in captive deer/elk. Obviously CWD is found more often and in more locations in wild deer/elk than in captive deer/elk.

“CWD is a highly contagious disease” – **False.**

Fact – A highly contagious disease is defined as a disease that is easily transmitted from an infected individual to a susceptible individual, and usually a highly contagious disease has a short incubation period. The common cold is a highly contagious disease. CWD is a rare disease and a chronic disease (hence the name) with an incubation that might be may be as long as 3-8 years. CWD is not a highly contagious disease. In her book, Dr. Beth Williams said CWD should be considered a special type of toxicity instead of an infectious disease.

“Once an area or premise has been contaminated with CWD prions, the disease will always be there” - **False.**

Fact – Even the place where CWD was first described in the pens at CSU did not subsequently maintain the disease. The same can be said regarding the pens at Sybille, Wyoming, and several zoological gardens. Apparently after a CWD outbreak in the state of New York, there has been no more subsequent cases. This erroneous belief “that CWD can not be cleaned up” which is held by officials in many states has resulted in hundreds of both captive and wild deer/elk to be killed unnecessarily. By the way, sheep are routinely returned to pens and pastures after scrapie was present.

“CWD is a devastating disease in wild populations, is a threat to the natural resource, and can result in serious population declines” – **False.**

Fact – Population declines caused by CWD have never been documented with the necessary data eliminating other potential causes such as droughts, fires, malnutrition, other diseases, or fragmentation of habitat. If CWD is so “devastating” or even “population limiting” then why presently are there any mule deer or elk still alive in Northeastern Colorado after being exposed to CWD for over 45+ years? For anyone to say a disease that occurs only in 1-4 per 1000 animals is “devastating” to populations is naïve, illogical, or badly misinformed.

“CWD is always a fatal disease” **False.**

Fact- Well perhaps this “fact” is not so clear cut. In reality, it depends. This is a complicated subject and not easy to put in a paragraph. CWD is invariably a fatal disease after the onset of the clinical signs of spongiform encephalopathy. However, studies on CWD have shown that animals may have prions in their body for 3-8 years before the onset on clinical disease (caused by the “holes in the brain). So during this long incubation period, the deer/elk can live an apparently normal life for years. If during this incubation period, the animal is killed by some other reason such as hunter harvest, predation, vehicles, toxins, or other diseases, then the animal did not die because of CWD, and therefore CWD is not always a fatal disease.

For a more detailed explanation please see it below.

After sufficient numbers of spongiform lesions or “holes” in the animal’s brain begin to affect the animal’s ability to drink, eat, and walk, then death will surely be the outcome. However, as it has been documented in experimental studies, clinical disease and neurologic effects may not appear for as long as 3-8 years after exposure. The diagnostic test for CWD or the IHC test only indicates the presence of prions in the obex or lymph nodes. The presence of prions, however, does not indicate spongiform encephalopathy or “holes” in the brain. When a pathologist looks at the obex after it is stained with monoclonal antibodies in the IHC or the CWD test, they can’t see the “holes” in the brain even if the “holes” are present. To observe the “holes” that would be present in cases of spongiform encephalopathy would require another stain (H&E), and a separate microscopic examination. Even when the CWD test indicates the presence of prions, the other microscopic test

to look for “holes” is not performed. Therefore a positive CWD test does not indicate clinical disease, neurologic disease, or the ability of animal to shed prions, or act abnormally. A deer with prions in its obex may be asymptomatic or show no clinical signs of neurologic disease for many years.

The “infected” animal may eat, drink, breed, and reproduce for years and remain apparently normal. All of hunter killed deer and elk that are later tested and found to be CWD test positive fall into this category. While these deer/elk are in this asymptomatic state, perhaps for years, and if they are then killed by hunters, killed by other diseases, killed by a truck, or killed by predators, then CWD was not fatal to them. Captive deer and elk that appear to be normal, and that are killed for CWD testing and later found to have prions, did not die from CWD. CWD was not fatal to them. They were killed so they could be tested. So while CWD is not always fatal, the CWD testing process is without any doubt always fatal.

Another situation which occurred at Wind Cave National Park further supports both the fact that a,) CWD is not always fatal, and b.) the fact that CWD is not “devastating to populations”. The elk herd in Wind Cave N.P. was determined to have a very high prevalence of CWD test positive animals. Despite a prevalence rate in the elk of about 40%, the elk herd numbers increased to such a high number the Park could not support them. As a consequence of that, about 200 elk were hazed by helicopter from Wind Cave N.P. into neighboring Custer State Park. The elk that were hazed out of the Park were obviously exposed to CWD and probably had a large number of individual that were actually carrying the prions of CWD. The same elk were all apparently normal and without any clinical signs of CWD.

It is interesting to note that if this elk herd was a private herd instead of a governmental herd and CWD had been found in a single animal (instead of 40% test positive as in Wind Cave N.P.), the premise would be quarantined for years, and all exposed animals would have been killed.

Editors Note:

Dr. Davis is an Associate Professor in the Department of Veterinary Pathobiology, the College of Veterinary Medicine and BioMedical Sciences, and the Department of Wildlife and Fisheries Sciences, College of Agriculture and Life Sciences, Texas A&M University. He also holds an Adjunct Professor appointment at the Department of Veterinary Science at Louisiana State University. He has been active in research and teaching concerning wildlife diseases for 38 years.