



TO EAT OR NOT TO EAT?

Pondering venison consumption in the age of CWD

By Andrew McKean. Illustrations by Luke Duran.

The tenderloin, that curious and tender tube of meat tucked under the backbone, is traditionally the first cut I'll cook from a freshly killed deer. My kids, who call it "gut steak," grew up devouring it the same day as the hunt, seasoned and blackened in cast iron or seared to savory perfection on a grill. Far from home, I've roasted fresh tenderloin skewered on sharp sticks, the juices sizzling into a campfire and scorching my fingers as I, too, eagerly feasted on the meat.

I continue this tenderloin ritual even as chronic wasting disease (CWD) has recalibrated my relationship with deer. But it's no longer a same-day feast. Instead, I delay gratification until receiving confirmation from a diagnostic test that the deer that produced the tenderloin and other cuts is free of this unkind disease, which stalks healthy animals and kills them, slowly and inexorably, by eroding microscopic holes in their brains.

These tests are elective and precautionary—and free to Montana hunters—but they hit on the most insidious aspect of CWD. While there is no evidence that humans have contracted the brain-wasting disease from eating infected venison, almost all medical professionals warn against eating meat from diseased deer, elk, or other animals (and Montana Fish, Wildlife & Parks supports those recommendations). Health experts say that, although it hasn't happened yet, they can't rule out the possibility that a hunter could get sick from eating a deer that carried CWD. The human variant of the disease, called Creutzfeldt-Jakob disease (or CJD), is hideous in the creeping insanity and hollowing death it brings to those who contract it.

But, as we do with other frightful things we can't see—including Covid-19 and colon cancer—it's far easier for humans to dismiss the potential for affliction than it is to change our behavior when faced with only a small chance of dying. What's more, the math of CWD in Montana sides with laxity: Of the more than 96,000 deer that hunters harvested in our state last year, 6,977 samples were submitted for CWD testing (including road-killed deer and samples from moose and elk) and 142 were CWD-positive, for a statewide infection rate of 2 percent. That

rate is influenced by hot spots around Libby and parts of northeastern Montana where FWP has intensively tested deer. Statewide, prevalence remains relatively low. Plus, since there's no record of a human ever becoming sick from eating a CWD-infected deer, not just in Montana but in states where the disease has existed for decades, my buddies have a point when they eat their untested deer and question my caution.

Indeed, testing requires steps that hunters never needed to take before CWD became an issue. First, locating the putty-colored glands in the throat of a deer—the retropharyngeal lymph nodes that concentrate the bent proteins signifying CWD—is challenging the first few times. Then you need to visit the FWP website to find instructions for submitting a sample. Test results from node biopsies can take weeks.

In the meantime, I freeze my venison, wrapping whole haunches in unscented garbage bags and labeling them, waiting to defrost and butcher the meat once it tests



clean. I wrap the tenderloins separately. When given the epidemiology green light, they are the first cuts I thaw, celebrated as a sacrament to wild deer and healthy meat and a tangible reminder of the successful hunt.

I've tried to imagine how I'd feel if my

deer tested positive for CWD. I'd probably follow public health agency guidelines that recommend throwing infected venison in a landfill, and curse the disease that has the awful ability to turn a year's worth of beautiful meals into a biohazard.

A TOUGH CALL

Hundreds of Montana hunters have made the hard decision to discard their venison after finding out it's infected with CWD. Most have learned the results from FWP staff, who try to call all hunters whose game tests positive to deliver the news personally, answer questions, and strongly recommend they dispose of the infected meat.

One hunter who received such a call is Addison Idler, a 13-year-old northeastern Montana hunter whose deer, a 3x3 muley buck, tested positive for CWD last fall. Idler didn't find out the test results until after her family had eaten the backstraps.

"We were so proud of her that we wanted to celebrate with a meal," says her father, Ky. "We didn't want to wait for test results, partly because we didn't think it was positive. It was a young buck and it looked healthy. But after we got the call, we threw the rest of the meat in the landfill. It's made us question if we should hunt another area or even not hunt at all and just leave the deer alone."

Such questions make wildlife managers shudder. FWP and wildlife conservation agencies in the other 25 states where CWD has been detected in deer, elk, or moose walk a fine balance. They caution hunters to take CWD seriously, have their deer tested, follow carcass-care guidelines, and discard infected meat. But they also don't want the fear of CWD to scare hunters away from deer and deer hunting. Hunting is an important



cultural tradition, a source of food for many families, and the main way agencies like FWP control the size of deer and elk herds.

It's also an important tool for managing CWD prevalence. To contain the disease, wildlife agencies use hunting to lower population densities, reduce deer numbers in infected hot spots, and lower buck-to-doe ratios (because the wider-ranging males are more likely to spread the disease). CWD is less likely to infect a larger proportion of the population when total abundance and buck-



to-doe ratios are lower.

Tom Hauge has been walking the line between safety and hunting for two decades. Now retired, Hauge was the wildlife chief for Wisconsin's Department of Natural Resources when CWD was first detected there in 2002. It has since spread across most of the state's southern half. In some counties, up to a quarter of all deer tested carry the disease, mainly because the state was unsuccessful in containing CWD back when only a small percentage of deer carried it. "Hunters resisted killing and testing deer, and it got out of control," Hauge says. "Take my county, Sauk County, near Madison. Last year, 994 deer were submitted for CWD testing, and 258 tested positive. That's a 26 percent positive rate. But based on harvest data, we know that only a quarter of the deer harvested in Sauk County were submitted for testing. That means if the prevalence rate holds across all deer killed, then a lot of CWD-positive deer are entering the food chain that nobody knows about."

So far, there hasn't been a single case of

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a human contracting CWD or the human variant, CJD, from eating infected venison in Wisconsin, or in Colorado or Wyoming (two states where CWD was discovered in wild mule deer in 1985), or anywhere else in the world. But that doesn't mean it can't happen. Many scientists believe it's just a matter of time.

CAUTION AND PRECAUTIONS

CWD is what's known as a transmissible spongiform encephalopathy, or TSE. TSEs are persistent and resistant. Cooking even at high temperatures won't eliminate prions (the malformed proteins), and prions may persist for a long time in soil contaminated by dead CWD-positive animals and the plants that grow there.

It's difficult, though not impossible, for TSEs to move from other animal species to humans. It happens with bovine spongiform encephalopathy (mad cow disease) in cattle. And the human variant, CJD, also occurred many years ago among some human cultures that practiced cannibalism.

So caution may not be a bad idea. The first precaution is to assume that every deer and elk is positive for CWD, and only change that perspective after receiving your test results. That means hunters should wear protective gloves and avoid contact with blood, spinal fluid, and brain matter of the deer, elk, or moose they kill. They should also avoid spreading CWD to other areas, which is why FWP requires hunters in Montana to leave the spinal column and head of a field-dressed animal in the field or dispose of those parts in an approved landfill.

Lastly, hunters are encouraged to submit deer and elk for CWD testing. Just as testing for Covid-19 is the best way to determine the



presence and prevalence of the coronavirus, testing as many deer and elk as possible defines where CWD has spread in Montana and how extensively it has infected local wildlife populations.

"If every hunter assumed that every animal they harvested is infected, and then followed transport and disposal recommendations, we would dramatically reduce the risk of hunters contributing to the spread of CWD, and we'd reduce the likelihood of having the CWD prevalence of states like Wisconsin," says Brian Wakeling, FWP's Game Management Bureau chief.

Testing is also a measure to reduce the odds that diseased animals enter the human food chain and create the opportunity for

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CWD to jump the species barrier between deer and humans.

THE DREADED "LEAP"

It's here, in the gulf between what is known and unknown regarding the risk to human health, that agencies and hunters struggle with how to respond to CWD, first detected in Montana's deer population in 2017, south of Billings. "Yes, the risk of humans becoming infected by CWD is low," Emily AlMBERG, FWP's wildlife disease ecologist, says. "But prions can evolve, and with increasing exposure comes increasing opportunity for evolution and adaptation."

In other words, given enough chances, the possibility of a prion from a sick deer finding a receptive human host increases.

By reducing our exposure to infected deer, we also reduce the risk of an inter-species leap. "Several health agencies, including the Centers for Disease Control and Prevention, have advised against consuming CWD-infected meat because they cannot rule out the possibility that it may at some point find a way of crossing the species barrier," AlMBERG says. "We don't know exactly what the disease would look like, or how long it would take for symptoms to appear in an infected human. The years-long incubation period within members of the deer family may indicate any human infection could



also have a long incubation period."

Epidemiologists point to the outbreak of CJD cases in Great Britain—the widely publicized "Mad Cow" epidemic that killed 178 people in the United Kingdom during the 1990s—and the decade-long delay between those who ate infected beef and detection of human infection. During those years of dormancy, many experts insisted that humans couldn't get sick from eating infected beef.

"We know now that there was a connection between bovine spongiform encephalopathy and human infection, and that it can be passed via beef consumption," AlMBERG says. "In wild ungulates, tissues in the central nervous and lymphoid systems are among those with the highest and earliest concentrations of CWD—that's why we test lymph nodes. But CWD prions can be detected throughout the body in nearly all tissues, particularly as the disease progresses."

That's why containing CWD isn't a matter of cutting out the infected parts of a deer, and why FWP recommends disposing of the entire carcass of infected animals in

certified sanitary landfills.

Back in Wisconsin, Hauge continues to hunt deer with his extended family, but with heightened awareness of the prevalence of CWD around him. "When CWD showed up in the places we hunt, it was like a punch in the gut," he says. "But we adjusted. We regularly disinfect our knives. We got good at extracting lymph nodes, and with labeling deer until we got test results back. And we dispose of any deer that tests positive."

"I'm old enough that I could probably eat an infected deer and would die of something else before it caught up with me," Hauge adds. "But I could not in good conscience knowingly feed infected meat to my grandchildren. There's just so much we don't know yet, and one of those things is how it affects the body over many, many years."

As for me and my cherished tenderloins, I maintain my first-bite tradition. If anything, those thawed morsels, once cooked, taste better than ever. Delayed pleasure is pleasure intensified, especially with my all-clear CWD test card cleansing my conscience and sharpening my appetite. 🐾

What about brucellosis-positive elk?

Chronic wasting disease isn't the only wildlife malady with the potential to sicken human hunters. Brucellosis, a bacterial infection that can cause severe flu-like symptoms in humans, is carried by increasing numbers of elk in and around the Greater Yellowstone Ecosystem. Some cow elk infected with the disease abort their calves or deliver weak calves and experience lower pregnancy rates thereafter.

Brucellosis can be transmitted among cattle, bison, and elk, mainly through exposure to reproductive tissues such as placentas, aborted fetuses, and vaginal discharge from infected animals.

Humans can contract a version of brucellosis, known as undulant fever, by handling infected animals, especially bison and elk, says Emily AlMBERG, FWP's wildlife disease ecologist based in Bozeman. "For hunters, the biggest risk for transmission is likely at the time of field dressing, when a hunter might inadvertently contact highly infectious reproductive tissues, like the uterus in a cow elk, during the gutting process," AlMBERG says. She recommends hunters use latex gloves and eye protection while field dressing, and then wash their hands with soap and warm water and sterilize knives and other gutting gear with a disinfectant such as a diluted bleach solution. Also, don't open the uterus to check for a fetus, she adds. "That's where the highest bacteria concentrations are."

There is also some risk of contracting brucellosis from eating raw or undercooked meat from an infected animal. AlMBERG notes that all game should be cooked to an internal temperature of at least 165 degrees F. The Centers for Disease Control notes that smoking, drying, or pickling infected meat does not kill the *Brucella* bacteria or other potentially harmful pathogens. The CDC also cautions against feeding dogs raw or undercooked meat that might contain brucellosis bacteria.

Symptoms of undulant fever are those associated with severe flu, including fever, chills, sweating, headache, low appetite, fatigue, and muscle or joint pain. If you experience prolonged symptoms, and you've been in contact with wild animals that may be infected with brucellosis, see a doctor and be sure to describe your recent experience with wildlife. Your doctor will probably order a blood test to detect *Brucella* bacteria and may put you on a prolonged antibiotic regimen. —Andrew McKean

