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## Rogue Protein Lurks Behind Mad Cow Infection

### DOW JONES NEWSWIRES

DENVER (AP)--Mad cow disease is caused by a mysterious rogue protein that is hard to trace and impossible to treat. With so many cases already established around the world, scientists say it was inevitable that it would show up in a herd in the United States.

While strict quarantines and food management might help protect consumers and cattle, there is no cure or vaccine to prevent the fatal infection. There are several research efforts under way, but a useful medicine or vaccine is probably years away.

Nor are there tests to detect it before an animal shows symptoms or to spot it in people who may have eaten tainted beef products.

In people, the disease can develop as quickly as five years or can incubate for more than a decade. In cattle, which have shorter life spans, the disease takes more than two years to show up. Britain encourages the slaughter of cattle at two years and tests all carcasses 30 months or older.

Scientists believe most cattle get what is formally known as bovine spongiform encephalopathy (BSE) from eating feed that contains protein and bone meal from cows.

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Humans get the disease, variant Creutzfeldt-Jakob disease, by eating food made from processed meat products that include infected brain or nerve tissue, researchers believe. There is no evidence anyone has caught vCJD from eating standard muscle cuts like steaks or roasts.

Humans also can develop non-variant Creutzfeldt-Jakob disease without eating tainted beef products. Its precise cause is unknown and it only infects about one person per million worldwide. It takes longer to

develop -sometimes up to 40 years.

The diseases are among a class of slow-incubating infections known as spongiform diseases because they riddle the brain with tiny holes, making it sponge-like. Sick animals eventually wobble and slobber, losing awareness. Humans also lose muscle control and suffer from dementia before dying.

Scientists believe spongiform diseases are the work of twisted proteins called prions. For unknown reasons, when these proteins in brain and nerve cells misfold, they induce proteins in adjacent cells to misfold and clump, too.

But unlike viruses and other infectious agents, prions withstand ultraviolet light, ionizing radiation, sterilizing temperatures and chemical disinfectants.

They don't contain genetic material, which means prions don't have a biological target that can be easily attacked by drugs or vaccines.

Sheep develop a spongiform ailment known as scrapie. Both wild and farmed deer and elk in the United States have had a related infection, chronic wasting disease.

There are no confirmed cases of human spongiform disease caused by eating infected deer or elk, but many health agencies urge hunters to have their game tested before eating it.

Federal livestock labs are doing tests to determine whether spongiform diseases can easily jump between species.

The human form of mad cow disease has claimed 143 victims in Britain and 10 elsewhere, but none in the United States.

Government rules here prohibit the use of brain and spinal material in processed food. However, critics say few slaughterhouses follow the guidelines carefully and inspections are incomplete.

Crowded conditions in cattle feedlots and processors' use of machinery that strips flesh close to the spinal cord raise the risks of vCJD, some consumer advocates contend.

Health questions range beyond meat, however. What about milk from an infected cow?

British scientists say there is no evidence that infectious prions can be transmitted through cow's milk. The U.S. Food and Drug Administration reports that milk from BSE-infected cows has not caused infections in the same species or in other test animals.

But the FDA has stopped the importation of cosmetic and dietary supplement ingredients containing gelatin and other bovine materials from countries where BSE is a risk.

Blood safety is another concern. Last week, a Briton died of vCJD more than six years after he received

a blood transfusion from an infected donor.

Since 1997, all blood products for use in surgeries in Britain have been imported from the United States. How the first BSE case in the U.S. will affect those exports is unclear.

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