QUEENSLAND MUSEUM

# MAD COW DISEASE

## FACT SHEET



Q26-027

Queensland Government

# WHAT IS MAD COW DISEASE?

Mad cow disease, or bovine spongiform encephalopathy (BSE), is a fatal neurodegenerative disease of cattle. It is caused by prions – misfolded proteins in the brain – that induce other proteins to also misfold, leading to brain damage. In humans, eating contaminated beef products can cause variant Creutzfeldt-Jakob disease (vCJD), a fatal brain disease similar to BSE.

Australia has never had a case of BSE in cattle and is classified as having a negligible BSE risk.

## Natural hosts

There is no natural reservoir host (i.e. there is no wildlife species that maintains the infection without becoming ill). The disease is maintained in cattle, it is believed through infected feed.

## How is it spread?

BSE spreads when cattle eat feed containing meat and bone meal (MBM) from infected cattle, particularly brain and spinal cord tissue. The disease emerged in the UK in the 1980s due to farmers feeding cattle contaminated MBM.

Feeding cattle with ruminant-derived MBM has been banned in Australia since 1997.

Humans can acquire vCJD through:

- consuming beef or processed meat products contaminated with BSE prions, particularly brain, spinal cord, eyes, tonsils and intestinal tissues from infected cattle
- blood transfusions or organ/tissue transplants from infected individuals (rare)
- being operated on with surgical instruments previously used on vCJD patients (extremely rare).

There is no evidence of transmission through milk, casual contact or airborne routes.

Muscle meat (steaks, roasts) from infected cattle contains minimal to no prions and is considered safe.

## Who is at risk?

- People who consumed beef products in the UK or France during the major BSE outbreak of the 1980s and 1990s.
- Vets and vet nurses, farmers, agricultural workers, abattoir workers and meat processors who handle nervous system tissues from cattle.
- Laboratory workers handling BSE-infected materials.



- People who receive blood transfusions or organ transplants from individuals infected with vCJD.

Australians have an extremely low risk of contracting vCJD due to our BSE-free status and strict import controls.



## What are the symptoms?

### In animals

Cattle with BSE typically show symptoms after a long incubation period (2–8 years). The disease is always fatal, usually within weeks to months after symptoms appear.

Early signs include:

- changes in temperament (nervousness, aggression)
- difficulty rising
- loss of coordination/stumbling
- decreased milk production
- weight loss despite normal appetite.

As the disease progresses, cattle show:

- increased nervousness when approached
- hypersensitivity to touch and sound
- trembling
- abnormal posture and head carriage
- (eventually) an inability to stand.

Other animals, including sheep (scrapie disease), deer and elk (chronic wasting disease) and cats (feline spongiform encephalopathy) can develop prion diseases with similar neurological symptoms.

### In humans

There is no subclinical phase. Once symptoms develop, the disease is always fatal. The incubation period can range from several years to decades. vCJD typically affects younger people (average age 28) than other CJD subtypes. The disease progresses over 12–14 months, on average, eventually leading to complete incapacitation and death.

Symptoms may include:

- depression, anxiety, apathy, withdrawal or delusions
- painful burning, prickling or numbness
- progressive dementia and memory loss
- involuntary movements and muscle twitching (myoclonus)
- difficulty walking and loss of coordination (ataxia)
- visual problems
- difficulty speaking and swallowing
- muscle rigidity and stiffness.

⚠ vCJD is always fatal. There is no cure or effective treatment available.

## How can I prevent infection?

There is no vaccine available for BSE or vCJD. Prevention focuses on the cattle industry. Worldwide, BSE is now very rare due to effective control measures. Australia maintains strict import controls on cattle, beef and cattle products from BSE-affected countries. A ban on feeding ruminant-derived MBM to cattle has been in place since 1997. A surveillance program is in effect for detecting BSE in Australian cattle.

Other prevention measures include:

- Remove specified risk materials (brain, spinal cord, eyes) from cattle over 30 months old at slaughter.
- Avoid eating beef products from countries with known BSE outbreaks.
- Properly dispose of cattle carcasses suspected of neurological disease.
- Use dedicated personal protective equipment (PPE) for handling high-risk tissues in abattoirs.

Australia's beef is safe. The country has maintained its BSE-free status through rigorous surveillance and control measures.

## What treatments are available?

There is no cure or effective treatment for vCJD. Care is supportive only, focusing on managing symptoms and providing comfort. The disease is always fatal. Research into prion diseases continues, but no treatments have so far proven effective in humans.

Early symptoms of vCJD can be mistaken for psychiatric illness. If you have unexplained neurological symptoms and consumed beef in the UK during the 1980s or 1990s, consult a doctor.

If you think you may have been exposed to contaminated beef or meat products, please contact your doctor or public health agency for further advice.

**Cover:** A cattle farm in Cambridgeshire, UK. The UK was the epicentre of a BSE outbreak in the 1980s. Courtesy: Alamy/Kumar Sriskandan
**Page 2:** A biosafety laboratory in Spain where research is conducted on mad cow disease and avian influenza. Courtesy: Alamy/Javier Larrea
**Page 3:** Grazing cattle. Courtesy: Alamy/Deyana Robova

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