

# Bovine Spongiform Encephalopathy (BSE)

*A PowerPage Presented By*



The two important transmissible spongiform encephalopathies (TSE) that you need to know about for boards are bovine spongiform encephalopathy (BSE) and scrapie in sheep. The causative agent of these diseases is still a topic of debate but a prion (abnormal protein) is theorized. The agent is extremely resistant to heat and normal sterilization procedures. This PowerPage discusses the key features of BSE in cattle and its implications for human disease.

## Key Points

- Primary source is **contaminated feed** with ingredients from infected cattle
- Key signs are **hyperesthesia (Mad Cow)**, fine tremors, and **persistent licking** of the muzzle
- **Reportable disease**
- Diagnosed by characteristic histologic lesions in brain

## Transmission

BSE is not contagious through casual contact between cattle. The primary source is contaminated commercial feed from incorporating ingredients (i.e. **Bone meal**) from rendered infected cattle. Young animals are most susceptible.

## Clinical Signs

- Onset over several months
  - Nervousness or aggression progressing to hyperesthesia (exaggerated reflexes)
  - Incoordination, abnormal posture, difficulty rising, progressive ataxia, **fine tremor**
  - Weight loss, decreased milk production
  - **Persistent licking of the muzzle**

## Diagnosis

BSE - Requires histology of the brain for characteristic changes of bilaterally symmetric intracytoplasmic vacuolation of neurons. Can confirm with immunohistochemistry for prion protein fibrils.

## Treatment

There is no effective treatment. Report cases of BSE and cull animals.

## Creutzfeldt-Jakob Disease

A chronic and fatal neurodegenerative disease of humans. In 1996, a new variant (vCJD) was discovered in the UK, and experimental and epidemiologic studies have linked these cases to consumption of food containing ingredients of BSE infected cattle. This led to a ban on the use of nonambulatory cattle in the human food chain and additional controls to inspect slaughtered cattle and forbid the use of mechanically separated meat in human food.

## References and Links

Smith, Large Animal Medicine 3rd ed pp 880-1

USDA information:

[http://www.aphis.usda.gov/publications/animal\\_health/content/printable\\_version/BSEbrochure12-2006.pdf](http://www.aphis.usda.gov/publications/animal_health/content/printable_version/BSEbrochure12-2006.pdf)

[http://www.fsis.usda.gov/Fact\\_Sheets/Bovine\\_Spongiform\\_Encephalopathy\\_Mad\\_Cow\\_Disease/index.asp](http://www.fsis.usda.gov/Fact_Sheets/Bovine_Spongiform_Encephalopathy_Mad_Cow_Disease/index.asp)

VIN Conference Proceedings: Chris Clark BSE From A to Z:

<http://www.vin.com/Members/Proceedings/Proceedings.plx?CID=wvc2005&PID=pr08454&O=VIN>

