

## The origin of bovine spongiform encephalopathy: the human transmissible spongiform encephalopathy hypothesis

### **Webpanel: Recommended further research to assess the human TSE hypothesis and to reduce current risks**

#### **(1) Transmission of human TSE to cattle and to mice transgenic for bovine PrNP**

Source human TSE types\*

sCJD-MM-1 (about 65% of CJD cases in countries so far studied, usually classical clinical picture)

sCJD-VV-2 (about 15%, ataxic variants)

sCJD-MV-2 (about 9%, ataxic variants)

fCJD-E200K-129M (commonest type of fCJD)

fCJD-E200K-129V (rare but shows the same molecular analysis pattern as BSE)

vCJD (to see if molecular type remains stable)

Route

In cattle, intracerebral and oral transmissions (high dose) should be run in parallel; intracerebral transmission is likely to be most effective, but oral transmission experiments should not be delayed pending these results

Outcomes

Incubation period, clinical features, neuropathology and PrP molecular analysis

Depending on initial results, more detailed strain studies should follow, including: analysis of distribution of infectivity in different tissues; conventional strain typing; and dose ranging; studies of other human TSE types may be indicated, depending on resources and results of other research including extended studies of CJD types on the Indian sub-continent

#### **(2) CJD surveillance in the Indian sub-continent**

Strengthening of current frameworks, in collaboration with WHO and European and US expert groups; characterisation of CJD types with the latest molecular analysis and neuropathology techniques, as well as by clinical/ epidemiological criteria

#### **(3) Funeral practices and disposal of human remains**

Review of current practices, particularly for Hindus in the Indian sub-continent, with assessment of all aspects of public health risk

#### **(4) Carcass-collecting, bone crushing and rendering practices, especially in the Ganges region**

Examination of current practices and inspection of stocks, with input from state agriculture agencies, local and national public health specialists, and forensic specialists to assist in identifying human remains; further investigation of historical practices

#### **(5) Export practices and regulation in the Indian subcontinent**

Further investigation of current and historical practices

#### **(6) Import controls and animal feed regulation**

Review of current status and evaluation of risk of import of human material, particularly in countries using intensive feeding methods

#### **(7) Feed manufacture practices in the UK, 1965–80**

Extension of current investigations

\*See Gambetti P, Kong Q, Zou W, Parchi P, Chen SG. Sporadic and familial CJD: classification and characterisation. *Br Med Bull* 2003; **66**: 213–39.