UPDATE ON BOVINE SPONGIFORM ENCEPHALOPATHY IN GREAT BRITAIN

ISSUE

1. Defra is updating the Committee on Bovine Spongiform Encephalopathy (BSE) in Great Britain, with particular reference to BSE cases born on or after 1 August 1996.

BACKGROUND

2. In 1996, the UK banned the feeding of mammalian meat and bone meal to farmed animals. The ban is considered effective from 1 August 1996. On 1 January 2001, the EU prohibited the feeding (with certain derogations) of:

   i. proteins derived from animals to ruminants; and

   ii. processed animal proteins to farmed animals which are kept, fattened or bred for the production of food.

3. Feed transmission is believed to be the principal, if not the exclusive route of BSE infection. The 2001 “total feed ban” is therefore a significant date in terms of BSE cases born in the EU on or after 1 January 2001.

4. Annex 1 provides details of BSE cases born on or after 1 January 2001 in the UK. Annex 2 provides details of BSE cases born on or after 1 January 2001 in the EU.

ADVICE SOUGHT FROM THE COMMITTEE

5. The Committee is invited to note the information in Annexes 1 and 2.

REPORT OF UK BSE CASES BORN ON OR AFTER 1 JANUARY 2001

BACKGROUND

Commission Decision 2000/76 entered into force on 1 January 2001, prohibiting the feeding (with certain derogations) throughout the EU15[1] of:

i. Proteins derived from animals to ruminants; and

ii. Processed animal proteins to farmed animals which are kept, fattened or bred for the production of food.

Feed transmission is believed to be the major cause of BSE. 1 January 2001 is therefore a significant date in terms of BSE cases in the EU15 born on or after this date.

CASES BORN AFTER 1 JANUARY 2001 IN UK

The UK has confirmed BSE in **eight** animals born after 1 January 2001. All **eight** cases were identified by active surveillance of emergency slaughtered, fallen or feed cohort surveillance sub-populations. **Five** of the **eight** cases were homebred. **Three** of the **eight** cases originated from the same herd, the two subsequent cases identified as feed cohorts of the index case. The ages of the **eight** cases ranged from **36** to **65** months (mean **51.5** months; median **53.5** months). Annex 3 provides a summary.

1. CASE REFERENCE 05/00024
2. CASE REFERENCE 05/00166
3. CASE REFERENCE 05/00167

The detailed investigations into these three cases are reported at http://www.defra.gov.uk/animalh/bse/pdf/2001-02barb-finalreport.pdf

4. CASE REFERENCE 06/00032

i. Background

This pedigree Charolais bull was born on 22 January 2001 in a herd in Flintshire, North Wales. It died on 31 January 2006 aged 59 months and was tested for BSE as fallen stock. The owner retrospectively reported observing some neurological signs in the animal (incoordination, tremors) from which his private veterinary surgeon had tentatively diagnosed a spinal disorder.

ii. Herd of Origin

[1] The 15 European Union Members States prior to the accession of 10 new Member States in 2004.

The natal herd was a very small pedigree suckler herd (n=3) in Flintshire, North Wales. At 11 months of age, the animal moved to another small suckler herd (n=28) in Gwynedd, North Wales where it remained until it died.

iii. Vertical Transmission

Vertical transmission was not suspected. The dam was slaughtered in an Over Thirty Month Scheme abattoir on 22 November 2003, over two years after the birth of this case.

iv. Feed

The animal had access to commercially traded feed at both farms.

At the first farm the animal received milk from its dam and course mix. The course mix was collected from a local mill in Flintshire, North Wales in bags on a monthly basis. The bags were stored on pallets. No minerals or other supplements were used on the farm.

At the second farm the animal had access to rolled barley supplied by a local feed cooperative in Gwynedd, North Wales and stored in a granary. Cattle also had access to sugar beet pulp delivered in bulk by a national feed company. Cattle were supplemented with proprietary feed blocks.

v. Horizontal Transmission

There were no previous BSE cases linked to either herd.

vi. Environmental Contamination

There was no specific evidence to implicate environmental contamination although feed was stored in bulk at the second farm, so there was a possibility of inadvertent carry-over of contaminated feed. Manure and/ or slurry were applied to pasture on both farms.

vii. Other Species

Other species present on the natal farm included 2 horses, 2 dogs and a cat. Tinned cat and dog food was stored in the house. Horse feed was stored in bags. The risk of access by cattle to non-ruminant feed was assessed as low.

Other species present on the rearing farm included 700 breeding sheep (no scrapie cases reported), 3 dogs and 3 cats. Dog food was stored in a metal bin. Cat food was stored in a granary loft. The risk of access by cattle to non-ruminant feed was assessed as low.

viii. Conclusion

The presumptive origin of disease in this case was ingestion of the BSE agent in cross-contaminated feed.

5. CASE REFERENCE 06/00063

i. Background

This Simmental cross cow was born on 5 January 2001 in a herd in Dorset, South West England. It died on 8 March 2006 aged 62 months and was tested for BSE as fallen stock. Prior to death the owner reported that the animal had been recumbent for one month but had failed to fully recover.

ii. Herd of Origin

The natal herd was now a small suckler herd (n=35) although it was previously a dairy herd.

iii. Vertical Transmission

Vertical transmission was not suspected. The dam (a Friesian) remained alive on 14 June 2006, over two years after the birth of this case.

iv. Feed

The case animal consumed whole milk for at least the first four days of life. Commercial calf milk replacer was used although it is not clear whether the case animal consumed this product.

Commercial calf weaner pencils were fed until weaning. Commercial calf rearer ration was fed post weaning. Both rations were purchased from a Devon feed merchant. The animal was believed to have been transferred to a second rearing ration milled in Devon. Cattle had access to proprietary mineral blocks.

Concentrate rations were either delivered or collected in bags every fortnight and stored in pallets in a shed. The bags were used in rotation. Only cattle feed was kept in the shed. Calves did not have access to adult ration.

The animal did spend several months grazing at a neighbouring farm but no manufactured feed was consumed there.

v. Horizontal Transmission

There were no previous cases linked to the herd of origin which had been closed, other than for bulls, for at least forty years. There was minimal use of pharmaceuticals but anthelmintics and ectoparasiticides were administered (pour on/injectable).

vi. Environmental Contamination

There was no specific evidence to implicate environmental contamination.

Manure and/ or slurry were applied to pasture on the farm. No dead stock had been buried on the farm for over ten years. Water was supplied via mains supplies although there was access to natural watercourses.

vii. Other Species

The only other species present on the farm were a domestic dog, kept in the house, and approximately 20 chickens, kept in a separate shed.

Wild deer were present on the holding.

viii. Conclusion

The presumptive origin of disease in this case was ingestion of the BSE agent in cross-contaminated feed.

6. CASE REFERENCE 06/00100

i. Background

This Holstein Friesian cow was born on 26 March 2001 in a herd in North Yorkshire, Northern England. It died on 20 April 2006 aged 60 months and was tested for BSE as fallen stock. Prior to death the owner reported that the animal was recumbent.

ii. Herd of Origin

The natal herd was a large commercial dairy herd (n=460) kept at two premises 3 miles (5km) apart.

iii. Vertical Transmission

There was no evidence for vertical transmission. The dam (a Friesian) died on 12 August 2002 from acute bloat/acidosis and tested negative for BSE on Western Blot. The dam had three other offspring born in December 1998, February 2000 and April 2002. The 1998 offspring animal remained alive on farm on 15 June 2006. The 2000 offspring was slaughtered for human consumption in June 2001. The 2002 offspring died in May 2002.

iv. Feed

The farm of origin belonged to a “buying group” which sourced feed from various sources. Delivery notes for 2001 indicated that the two premises on which the herd was kept received separate feed deliveries and held separate accounts. The feed obtained in the first year of life originated from a company in the county of Durham. An adult ration and a rearer ration were purchased although the farm advised that calves were often fed adult ration in addition to rearer ration. Contemporary ingredients lists for each of these rations indicate a typical mix of imported (including palm kernel, maize products, soya) and possibly UK-produced (e.g. wheat) feed ingredients.

Feed was delivered in bulk directly from the mill and stored in bulk silos. Feed was blown in at the top of the silos and removed at the bottom. The farmer had never cleaned the inside of the silos. Adult ration was delivered each month, but rearer ration was delivered according to demand (monthly to four monthly).

This animal would have had access to proprietary mineral “buckets” (at pasture) and mineral granules (when housed) from various suppliers.

v. Horizontal Transmission

Seventeen previous BSE cases had been recorded in the herd, twelve of which were homebred animals. These cases were born between 1983 and 1994 and confirmed between 1989 and 2002. The latest born case was born in September 1994 and died in August 2002.

The 2002 BSE case calved on 15 March 2001. The owner believed it was likely that this BSE-offspring animal shared a pen with the 2006 BSE case, born on 26 March 2001, as a calf. However, the 2002 BSE case calved again in April 2002. The March 2001–born offspring animal was slaughtered for human consumption in March 2002. The April 2002-born offspring died in August 2002.

There was no vaccination during 2001. In 2004 the farm commenced Infectious Bovine Rhinotracheitis (IBR) virus vaccination. Growing cattle were wormed with proprietary boluses and pour-on preparations.

vi. Environmental Contamination

There was no specific evidence to implicate environmental contamination although feed was stored in bulk, so there was a possibility of inadvertent carry-over of contaminated feed.

The only manure spread originated from each of the two premises’ own cattle. There was no cross-over of manure between the two premises. Some manure was spread as slurry and some was spread mixed with straw bedding. No other wastes were applied.

Occasional cattle carcases were buried before this practice was prohibited in 2003 but local collectors (hunt kennels) disposed of the majority.

During the first year of life, cattle only had access to mains water.

vii. Other Species

The only other species constantly present on the farm were dogs (n=3) and free-range chickens (n=12). Dog food was purchased from a supermarket and stored in the house. The chickens were not offered any proprietary feed.

Wild roe deer were seen on the farm.

Sheep were over-wintered on the farm infrequently – twice in the last ten years in 2005/06 and once in the late 1990s. No cases of scrapie had been recorded on the farm.

Pigs were last kept on the farm in 1995.

viii. Conclusion

There was no evidence for vertical (maternal) transmission. Horizontal transmission (from the one of the offspring of the 2002 BSE case) was implausible. The presumptive origin of disease in this case was ingestion of the BSE agent in cross-contaminated feed.

7. CASE REFERENCE 06/00175

i. Background

This Belgian Blue cow was born on 12 August 2002 in a herd in Buckinghamshire. At five months of age it moved to a second holding in Oxfordshire. At twenty-three months of age it moved to a third holding in Oxfordshire. At thirty-four months of age it moved to a fourth holding in Buckinghamshire where it remained until it was sent to a licensed abattoir in the West of England, approved to slaughter cattle aged over 30 months, where it was slaughtered on 06 September 2006 aged 48 months. No ante-mortem signs of BSE were reported either at the abattoir or retrospectively at the last holding.

ii. Herd of Origin

The natal herd was established in 1998 with a herd of approximately 400 organic Friesian/Brown Swiss cows. The milking parlour and associated buildings were built in 1998 with new equipment. The dairy herd was dispersed in 2005.

The second (rearing) holding started as a pig farm. The beef herd was established in 1994 after the purchase of grazing land near the farm. It now contains a beef suckler herd of approximately 200 cows plus approximately 500 breeding pigs.

iii. Vertical Transmission

There was no evidence for maternal transmission. The BSE case's dam was born on 6 September 1996 and was slaughtered in an OTMS abattoir on 20 January 2005. The dam's last calf was born on 12 August 2003, a year after the BSE case was born. There is no record of the dam having been tested for BSE under the OTMS.

iv. Feed

At the natal holding, calves were fed whole (waste) milk until 10-12 weeks of age. Milk replacer was not used. Calf feed was available from 1 week of age. The calf feed was home-mixed using the following ingredients:

- Home produced organic wheat
- Purchased soya and molasses – from a Gloucestershire-based supplier
- Purchased prairie meal – from a Hampshire-based supplier
- Purchased mineral – from a Suffolk-based supplier

It was not possible to obtain further details of the origin of the soya, the molasses or the mineral. The mill producing the mineral had closed. The prairie meal was imported via the Port of Tilbury (batches of 21 and 7 tonnes). Prairie meal is a by-product from the manufacture of starch and glucose. The maize from which it the batches in question were derived, was sourced from South West France.

All ingredients were received in bulk and, with the exception of molasses, stored on the floor of a grain store. A feeder wagon was used to mix both calf and adult rations. The storage buildings were built in 1998 (after the 1996 mammalian meat and bone meal (MMBM) feed ban). No other types of feed were stored on the farm. Pets were not fed on the farm.

At the rearing holding, the cattle are fed on home-produced silage, hay wheat, barley, peas and beans. During the first 2-3 months of arrival, the BSE case would have been fed the same calf mix purchased from the natal herd. The rearing herd rarely purchases any calf or adult cattle feed and the investigating officer found no record of any purchases.

The investigating officer noted that cattle and pigs are kept in very close contact. Sows and growers might have been penned next to the cattle during the time the BSE case arrived on the farm. Cross contamination of cattle feed with pig feed was also likely as a result of using the same bags to carry feed to cattle and pigs. In 2003 and 2004, the farm purchased four different pig feeds from two large commercial companies. Pig feed was routinely purchased from 1993. The use of MMBM in farmed animal feed was banned in 1996.

Historically, pig feed was purchased in bulk and blown on to the floor of a shed. Pig feed was stored in this way until 2000, when farm assurance scheme inspectors requested the use of secure feed bins.

One of the pig feed companies provided information on their products produced in 2002/03. The weaner feed contained fish meal of Icelandic origin. Both the weaner feed and the breeding pig pellets contained a variety of ingredients from a variety of UK and non-UK sources.

It is possible that traces of pig feed produced before the 1996 feed ban and contaminated with infectious MMBM, persisted in the shed as it was never thoroughly cleaned out. When pig feed was moved to secure feed bins, the shed was reused to store hay and straw bales, and for the intermittent housing of cattle and pigs.

A small number of free-range chickens on the holding were fed home-produced wheat. Pets were not fed on the farm.

v. Horizontal Transmission

None of the first three holdings have had any previous in-herd or linked BSE cases (i.e. cases sold off). The final holding, to which the BSE case moved at thirty-four months of age, had a single BSE case in a purchased animal in 1994. This animal was born in 1985.

There is no record of any vaccination of the BSE case in the natal herd. Anthelmintics were not administered to the BSE case because the animal was sold before turn-out. Proprietary anthelmintics (pour-on) were applied to youngstock at the second holding.

vi. Environmental Contamination

The natal holding applied only home-produced manure and slurry to grazing and arable pasture. Some carcases were buried on farm in a pit inaccessible to cattle. There were no watercourses near the pit. Exposure to environmental contamination at the natal holding is unlikely as the calf left the farm before turn out to grass. The farm water supply is a bore hole plus mains water.

The second (rearing) holding applied home-produced cattle manure and purchased poultry litter. The BSE case would have had access to this land in 2003 and 2004. Pig slurry was only spread on the pig areas. On-farm burial was carried out using several burial pits in arable areas. All water is supplied from the mains.

vii. Other Species

The only other domestic species present on the natal holding are two pet dogs. Wild deer are common in the surrounding woodland.

The second (rearing) holding has just over 500 pigs plus 6 free-range chickens plus two pet dogs. Again wild deer are common in the area.

viii. Conclusion

This animal is believed to have been infected with BSE at either the natal holding or the rearing holding. There is no evidence for vertical (maternal) transmission. Neither the natal nor the rearing holdings have a previous history of BSE. Environmental exposure appears unlikely other than in relation to feed. The two most plausible aetiologies for this case are either the

inadvertent use of purchased, imported feed ingredients contaminated with the BSE agent, at the natal holding, or exposure of the BSE case to infection contained in the pig feed used at the rearing holding, particularly residual traces of pig feed produced before the 1996 MMBM ban. The State Veterinary Service (SVS) advised the owner of the rearing holding to power wash and clean the shed where the pre-1996 feed was stored. This shed is no longer used to house cattle. During the course of the inquiry the SVS established that feed containing fishmeal continued to be fed to non-ruminants on a holding on which ruminants were kept. The SVS made arrangements to register the holding in accordance with the TSE Regulations.

8. CASE REFERENCE 06/00216

i. Background

This Simmental cow was born on 1 June 2001 in a herd in North Yorkshire. At fourteen months of age it moved to a second holding in Cumbria (for restocking purposes following the Foot & Mouth Disease epidemic in 2001) where it remained until it was euthanased on 15 November 2006 (aged 65 months) and disposed of as fallen stock.

Prior to death, the owner's private veterinary surgeon treated the animal for bloat. The animal is reported to have exhibited teeth grinding. Despite reports of some initial improvement, the animal became recumbent a week later and was euthanased.

ii. Herd of Origin

The natal herd is a small beef suckler herd (adult herd size = 30) which is kept at two premises – premises "2" is used for winter housing. During 2000/2001, the owner rented out some farm buildings at premises "1" for the keeping of 800-1300 pigs. The pig enterprise is understood to have been completely separate from the cattle enterprise.

The second herd is a slightly larger beef suckler herd (adult herd size = 50). Sheep have been grazed over the winter at the farm.

iii. Vertical Transmission

There is no evidence for maternal transmission. The BSE case's dam was born on 1 April 1995 and remains alive on the Cumbria holding (as at 29 December 2006). The dam moved from the North Yorkshire holding to the same Cumbria holding in 29 April 2002, three months before the BSE case moved on 8 August 2002.

The dam's offspring born in 2002, 2003 and 2004 are recorded as dead. The dam did not calve in 2005.

iv. Feed

The BSE case was born at pasture at premises “1” in June 2001 and was suckled by its dam. The animal was weaned in November 2001 and housed in a straw yard at premises “2”. From late August/early September 2001 until turnout at premises “2” in April 2002, the animal would have had access to creep feed. The creep feed was purchased from a local mill in North Yorkshire. The feed contained barley flakes and pellets which themselves contained vegetable extracts, grain and soya. The North Yorkshire mill is approximately 20 miles from the County Durham mill which supplied feed to the BSE case born in North Yorkshire in March 2001, but it is not known whether both mills received the same feed ingredients from the same source.

Feed was delivered in bulk into an enclosed feed bin at premises “2” every 3 weeks. The feed bin was usually emptied between deliveries. Feed was then augered out of the bin into a large portable container which would hold 4 days’ feed for the rearing and finishing cattle. The feed bin had contained pig nuts before 1991 (before the 1996 MMBM ban) and was re-used for cattle feed in 1998 after remaining empty for six years.

At the Cumbria farm, the animal received only silage and grazed pasture.

v. Horizontal Transmission

There are no other recorded BSE cases originating from natal herd. There was no contact with sheep.

There is a single purchased BSE case which was confirmed at the rearing herd in 1993. This animal was born in 1987.

vi. Environmental Contamination

During 2000/2001, the natal herd owner rented out some farm buildings at premises “1” for the keeping of 800 -1300 pigs. The pig enterprise is understood to have been completely separate from the cattle enterprise and no cattle feed was stored at premises “1”. Pig manure was stored in heaps and applied only to arable land. Historically fallen calves were buried in a concrete-lined pit at premises “1”, while fallen adult cattle were disposed of by a knacker. Water at premises “1” is supplied by a borehole, while that at premises “2” comes from a mains supply.

vii. Other Species

The only other domestic species present on the natal holding in 2000/2001 were pigs.

At the second holding, there are three pet dogs fed canned feed, a stray cat which is not fed, and sheep grazed over the winter only.

viii. Conclusion

The animal is believed to have been infected with BSE at the natal holding. There is no evidence for vertical (maternal) or horizontal transmission. Environmental exposure appears unlikely other than in relation to feed. It is possible that the animal was inadvertently exposed to the BSE agent in cross-contaminated rearing creep feed in the first year of life. The probability of the animal being exposed to the BSE agent persisting in the feed bin (formerly used for pig feed before the 1996 MMBM ban) seems less likely given the period of time which had elapsed.

Defra 9 January 2007

ANNEX 2 - BSE CASES BORN AFTER 31 DECEMBER 2000 DETECTED IN THE EU TO 31 DECEMBER 2005

Born in 2001			
Date of Birth	**Target Group**	**Member State**	**Age (Months)**
01/01/2001	Healthy Slaughter	Poland	58
01/01/2001	Healthy Slaughter	Slovakia	44
01/02/2001	Healthy Slaughter	Slovakia	42
01/02/2001	BSE Eradication	Czech Republic	57
12/02/2001	Clinical	Netherlands	58
01/03/2001	Fallen Stock	Ireland	52
27/03/2001	Healthy Slaughter	Germany	51
08/05/2001	Fallen Stock	Germany	47
12/06/2001	Healthy Slaughter	Poland	48
01/09/2001	Fallen Stock	Ireland	44
28/09/2001	BSE Eradication	UK	44
03/10/2001	Emergency Slaughter	UK	39
01/11/2001	Healthy Slaughter	Luxembourg	48
Born in 2002			
Date of Birth	**Target Group**	**Member State**	**Age (Months)**
14/01/2002	Fallen Stock	Spain	41
01/05/2002	BSE Eradication	UK	36
01/10/2002	Fallen Stock	Portugal	32
Born in 2003			
Date of Birth	**Target Group**	**Member State**	**Age (Months)**
30/01/2003	Healthy Slaughter	Poland	25

ANNEX 3 – BSE CASES BORN ON OR AFTER 1 JANUARY 2001

Reference	Origin Herd	Sex	Breed	Herd Type	Surveillance Stream	Birth Date	Death Date	Age at Death (months)	Origin	Previous In-Herd Cases (by Herd Reference)	Previous Linked Cases in other Herds (by Natal Herdmark)
05/00024	Pembrokeshire	F	(Pedigree) Holstein Friesian	Dairy	Emergency Slaughter	03/10/01	17/01/05	39	Homebred	Yes –1994 born.1990	None
05/00166	Pembrokeshire	F	(Pedigree) Holstein Friesian	Dairy	Feed Cohort	28/09/01	12/05/05	43	Homebred	Yes –1994 born.1990	None
05/00167	Pembrokeshire	F	(Pedigree) Holstein Friesian	Dairy	Feed Cohort	01/05/02	12/05/05	36	Homebred	Yes –1994 born.1990	None
06/00032	Flintshire	M	(Pedigree) Charolais	Beef Suckler	Fallen Stock	22/01/01	31/01/06	59	Purchased	No – not in either herd	None
06/00063	Dorset	F	Simmental cross	Was Dairy, now Beef Suckler	Fallen Stock	05/01/01	08/03/06	62	Homebred	No	None
06/00100	North Yorks	F	Holstein Friesian	Dairy	Fallen Stock	26/03/01	20/04/06	60	Homebred	Yes – 2002 born.1994	None
06/00175	Buckinghamshire	F	Belgian Blue	Was Dairy, now Beef Suckler	OTM-Human Consumption	12/08/02	06/09/06	48	Purchased	Yes – one purchased case in last holding in 1994, born 1985	None
06/00216	North Yorks	F	Simmental	Beef	Fallen Stock	01/06/01	15/11/06	65	Purchased	Yes – one	None

				Suckler						purchased case in last holding in 1993, born 1987	