



The BSE Story

Price
30p

The beginning

Government surveillance units exist to receive reports of unusual deaths or sicknesses affecting both animals and humans. In Sept 1985 the Central Veterinary Laboratory saw its first case of a possible new brain condition in a cow but there were complicating factors. It was not until two further cases were investigated at the end of 1986 that BSE, Bovine Spongiform Encephalopathy, became recognised. Scientists were concerned because the disease, quickly labelled 'mad cow' disease by the press, was 'transmissible', but it was not then clear how it was transmitted nor how fast it might spread. More data was immediately sought but it took 12 months to conclude that transmission was (a) undesirably fast and (b) it was spread through meat and bone meal (MBM) containing animal remains.

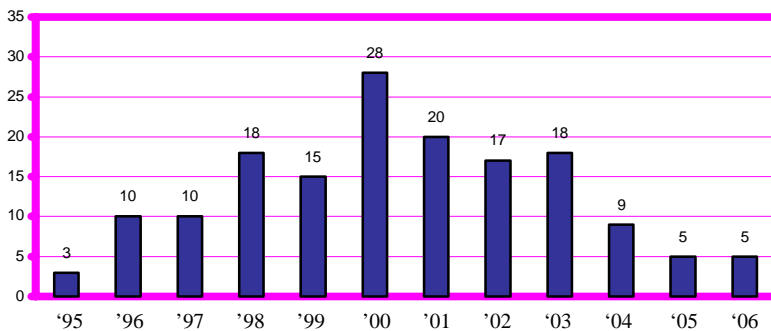
The scientists then needed to work out how the MBM had become infected: it might be simple to prevent. MBM had been used as cattle feed for decades so it was concluded BSE must be a very recent disease and that the most likely source was from material from sheep suffering from the BSE-like disease called scrapie. The idea was persuasive because the MBM processing methods had recently been changed and it was probably this change that had let the infectious agent through.

The three conclusions were all sensible. They were all wrong. It is now thought BSE originated from a naturally caused gene mutation in the early '70s. The change in processing had no effect.

The Southwood Committee

Though the first conclusions were re-assuring MAFF scientists still recommended that cattle showing signs of BSE should not enter the food chain. A compensation scheme for farmers came into force in August 1988. Before that, in March 1988, they also asked the Chief Medical Officer to consider whether there could be any possible risk to human

Fig 1: No. of cases of v-CJD/year



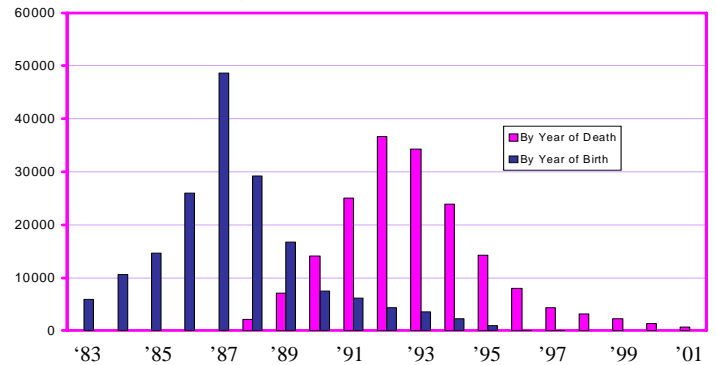
health. The resulting Southwood Committee met for the first time in June 1988 and reported on 9th Feb 1989. They

expressed concerns over risks to slaughterhouse workers and infection carried by bovine tissues used for example in cosmetics (eg anti-ageing creams) and vaccines. They concluded reasonably, but again wrongly, that the risk to human health was 'remote'. They still believed BSE was a form of scrapie and were comforted by the knowledge that, although scrapie had been known to exist in sheep for some 200 years, it had never been infectious to humans.

Precautionary action

However by Spring 1988, the Government had given notice that MBM for cattle containing cattle material would be banned from 19th July 1988. As the pink columns in Fig 2 show the number of *known* cases of BSE was still small at that time and many feed suppliers and farmers used up stocks

Fig 2: Cases of BSE



even after the deadline. In addition scientists had not realised how small a quantity (actually no more than the size of a peppercorn) was needed to transmit the infective agent. Some pig and poultry feed containing bovine material ended up inadvertently being consumed by cattle and some scraps of bovine material still got into feed via slaughterhouses even though MAFF sought to ban *all* bovine material from *all* feed from Sept 1990.

BSE takes about 5 years to show (Fig 2) so the extent of the cross contamination and failure of the ban was not recognised until 1994. Nonetheless the July 1988 ban did dramatically reduce the rate of infection and the risk to human health was further reduced by a decision, in June 1989, to ban the consumption of the most risky categories of offal from *all* cattle, even those showing no signs of BSE. This second ban was also not perfect. Small parts of spinal cord and other potentially infectious fragments still got through until the new Meat Hygiene Service took over the inspection of local abattoirs from local authorities and tightened things up from 1995.

There were other leakages. Human vaccines, produced using

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Information for this note comes primarily from the report of the BSE enquiry published in October 2000. The note has been prepared by Richard Balmer. Comments are welcome. Write to him at 79, Links Drive, Solihull, B91 2DJ, or email richard_balmer@blueyonder.co.uk

bovine tissues, were used until new sources were available in 1992 and animal vaccines used a little longer. There were problems disposing of infected carcasses. Neither sewage works processes nor distribution of sewage sludge as fertilizer to land removed the infective agent.

It is clearly the case that some decisions could have been taken and executed more quickly. The BSE review team noted a number of delays and lack of communication. Nevertheless, though 'leaks' were being plugged right up to 1995, measures to control the spread of BSE began in mid 1988 and more precautions were actually taken than the scientific evidence required at the time.

The cat

So, until May 1990, the virtually universal view was that BSE was exclusively a problem for cattle and that the problem was on the way to resolution. Then an event occurred which sowed the first real seeds of doubt. A domestic cat was diagnosed with a scrapie like disease. Later other cats suffered in a similar way. Some scientists began to ask two obvious questions. First, as cats had not previously caught scrapie could they have something linked to BSE? Second, if BSE could be transmitted to cats, what stopped it being transmitted to humans?

The dilemma

It was from this point onwards that the Government found itself between a rock and a hard place. The Government, most notably Selwyn Gummer and its scientific advisers, genuinely believed that human health was not at risk. If they admitted there was even the slightest risk to health the press would over react and an important industry would be gravely damaged, quite unnecessarily. (In January 1996 Simon Dorrell reported that women using one type of contraceptive pill were at increased risk of death through thrombosis. The press had a field day. Women abandoned the pill in droves. Some 20,000 extra abortions were carried out and, because pregnancy remains a relatively risky business, the scaremongering almost certainly caused 3 extra deaths).

Thus Government continued to say there was no risk to human health though the BSE review team were critical that the grounds for this belief were changed but not explained. Government belief became that in the *unlikely* event that BSE *might* infect humans the *precautions* that had been put in place would make any risk *remote*. Though slower than Government hoped, BSE was disappearing from the cattle population (Fig 2).

Meanwhile, though the Southwood Committee had apparently dismissed the risk of cross infection, they had noted that the most likely human form of BSE would resemble the spongiform brain deterioration known as Creutzfeldt-Jakob disease (CJD) of which 50 cases were occurring each year. Southwood had the good sense to recommend that a special surveillance unit (SU) be set up to conduct research. The CJDSU started work in May 1990. An overarching specialist committee, SEAC, the Spongiform Encephalopathy Advisory Committee, was established the same year.

Given that the risk of infection from BSE was in fact remote (probably less than 100 million to 1 from eating a meal with beef) whilst the minimum period of incubation is 5 years or more, the CJDSU saw no cases giving concern until 1995. By early 1996 however (Fig 1) several human brain samples had been seen which were different to previous forms of CJD.

Worse, this 'new variant' (nv-CJD now v-CJD) appeared to share characteristics with BSE.

20th March 1996 - the day the sky fell in

It was again Stephen Dorrell who had to tell Parliament and the world the awful truth. The sky fell in on the beef industry directly and on government and scientific credibility generally. BSE was rapidly added to asbestos, thalidomide and other grave failures in the past. All kinds of charges of cover up and incompetence were made. Within a week the EU had banned beef exports and a trade worth £600M (£250M to France alone) disappeared. A further massive slaughter of cattle, the vast majority without any clinical signs of BSE at all, took place. John Major's government tried to argue the EU ban was wrong but it was undermined by one local council after another demanding that beef be taken off school meal menus.

The aftermath

Cattle continue to be diagnosed with BSE. (By end April 2002, 179,158 cases of BSE had been recorded with 781 as recently as 2001, though none of the 781 were born after the feed ban of July 1988). No animal older than 30 months could be sold. Beef exports, hindered by the 2001 Foot and Mouth outbreak, only recovered slowly and various restrictions remain such as the giving of UK human blood in the USA. Indeed a very few cases in the UK are thought to have occurred via the transfusion of contaminated blood. Some 4 million cattle were slaughtered and £4bn paid out by the taxpayer.

Interestingly, beef sales in the UK only dropped by a third following Dorrell's announcement and actually recovered within three years. In the weeks before the ban on beef on the bone British consumers actually cleared the shelves with speed. One can not say they were prescient but it has been suggested v-CJD deaths (including one vegetarian) match vaccinations better than actually eating beef.

Conclusions

The BSE review team found that neither the recycling of animal material nor so called 'intensive farming' practices *caused* BSE (though these must have accelerated its spread). They concluded that all parties acted with good intentions though, as noted above, many actions could have been done better and faster. They found no corruption or collusion even with the much criticised MAFF. The origin of BSE may never be discovered and it is still possible, though unlikely, that v-CJD is not in fact related.

It is now almost certain (Fig 1) that annual totals of v-CJD are tailing off. The total, to the end of 2006 is 158. CJD leads to a terrible death but v-CJD will have caused less than one third of all CJD deaths. The real lesson of BSE is that, without the gift of hindsight, scientists will make mistakes from time to time and did so with awful consequences on this occasion. However the press and public can expect that scientists will be right far more often than not and that the risks to human health from food in the UK will be small *provided* that the need for continuous vigilance and rapid action if something starts to go wrong are recognised. If the number of cases of BSE had been halved, so too would have been the final number of v-CJD deaths.
