

BSE Surveillance in the UK; Then and Now

J. Thomas, B. Rajanayagam, J. Tye, M. Arnold
 Department of Epidemiological Sciences, Animal Plant Health Agency (APHA), United Kingdom

Introduction

Bovine Spongiform Encephalopathy (BSE), is a fatal brain disease affecting cattle and from a family of degenerative brain diseases occurring in humans and animals – Transmissible Spongiform Encephalopathies (TSEs). First detected in November 1986, it quickly became one of the worst animal epidemics seen in this country affecting up to half a million cattle and having a devastating effect on the farming industry and public perception of food safety. BSE is considered zoonotic due to its assumed link with the emergence of variant Creutzfeldt-Jakob disease (vCJD) in humans. The key route for transmission of BSE was attributed to the inclusion of contaminated meat and bone meal (MBM) in cattle feed. A reinforced feed ban in the UK on 31st July 1996 prohibited the feeding of any mammalian derived meat and bone meal (mMBM) to livestock. On 1st January 2001 routine active BSE surveillance was introduced across the EU as part of control measures and to monitor prevalence of the disease.

Why we do surveillance:

- To comply with EU law
- To monitor trends in disease incidence and prevalence and to evaluate the effectiveness of BSE controls
- To determine the OIE BSE-Risk status - currently the GB has a 'Controlled Risk' status and Northern Ireland has 'Negligible Risk' status

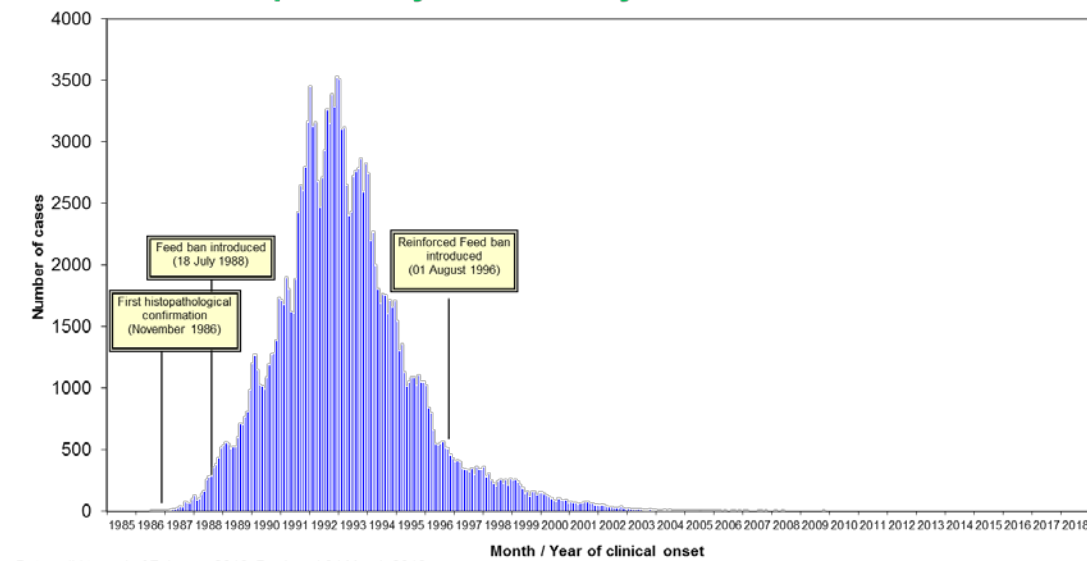
Surveillance is not in itself protective, but underpins other control measures that either exclude affected animals or potentially high risk tissues from the food chain

BSE surveillance Testing Requirements Timeline

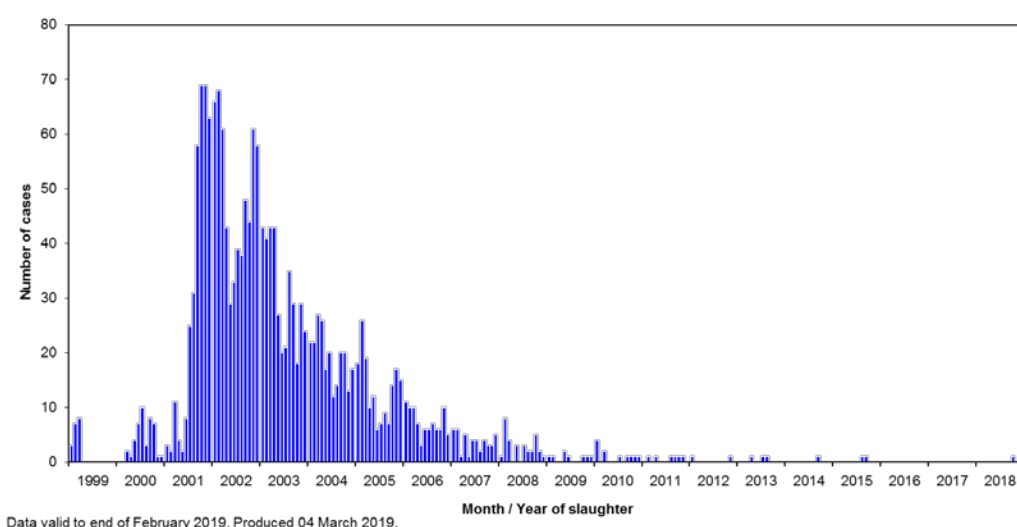
Date	EU Cattle Testing requirements
January 2001	All animals over 24 months : healthy slaughter, fallen stock, emergency slaughter and clinical signs at post mortem.
April 2005	Risk animals over 24 months (risk animals include fallen stock, emergency slaughter or clinical signs at anti mortem) Healthy slaughter over 30 months
January 2009	All animals over 48 months
July 2011	Risk animals over 48 months (risk animals include fallen stock, emergency slaughter or clinical signs at anti mortem) Healthy slaughter over 72 months
July 2013	Risk animals over 48 months Healthy Slaughter animals no longer required to be tested

The requirements for 2019 surveillance is to test all fallen stock, emergency slaughter and animals that show clinical signs at ante mortem over 48 months

BSE cases confirmed by passive surveillance, plotted by month and year of clinical onset



BSE cases confirmed by active surveillance, plotted by month and year of slaughter



Overview of cases from active and passive surveillance in GB

Year	Great Britain			Northern Ireland			UK Total
	Passive	Active	Total	Passive	Active	Total	
Pre 1988	727	0	727	0	0	0	727
1988	2,184	0	2,184	4	0	4	2,188
1989	7,137	0	7,137	29	0	29	7,166
1990	14,181	0	14,181	113	0	113	14,294
1991	25,032	0	25,032	170	0	170	25,202
1992	36,682	0	36,682	374	0	374	37,056
1993	34,370	0	34,370	459	0	459	34,829
1994	23,945	0	23,945	345	0	345	24,290
1995	14,302	0	14,302	173	0	173	14,475
1996	8,016	0	8,016	74	0	74	8,090
1997	4,313	0	4,313	23	0	23	4,336
1998	3,180	0	3,180	18	0	18	3,198
1999	2,258	18	2,276	7	0	7	2,283
2000	1,311	44	1,355	20	55	75	1,430
2001	781	332	1,113	34	40	74	1,187
2002	445	594	1,039	28	70	98	1,137
2003	173	375	548	12	51	63	611
2004	82	227	309	8	26	34	343
2005	39	164	203	0	22	22	225
2006	15	89	104	0	10	10	114
2007	7	46	53	0	14	14	67
2008	2	31	33	0	4	4	37
2009	1	8	9	0	3	3	12
2010	0	11	11	0	0	0	11
2011	0	5	5	0	2	2	7
2012	0	2	2	0	1	1	3
2013	0	3	3	0	0	0	3
2014	0	1	1	0	0	0	1
2015	0	2	2	0	0	0	2
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	1	1	0	0	0	1
2019	0	0	0	0	0	0	0
Total	179,183	1,953	181,136	1,891	298	2,189	183,325

Data valid to 28 February 2019

Recent UK positive BSE case

In November 2018 a case of classical BSE was detected in a fallen stock animal in Scotland. This was the first case in the UK for over 3 years and the first case in Scotland for over 10 years. The animal was born after the reinforced feed ban in 1996, cases born after that date are referred to as born after the reinforced feed ban (BARB) cases and are of great interest to epidemiologists looking at the reason why BARB cases occur. One possibility is residual contamination of BSE within the feed/feed production system or farm environment although epidemiology investigations have been unable to provide conclusive reasons for such cases. To date the UK has had 183 BARB cases.

Summary

The control measures put in place appear to have been extremely effective in controlling classical BSE with an exponential decline in the prevalence within the UK.

Projecting forward the trends from a modelling study at the APHA in 2017 indicated that there was approximately a 50% probability of further cases in the UK and should the current rate of decline continue there remains the possibility of further occasional cases until 2026.