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CATTLE REMOVED FROM THE FOOD CHAIN BECAUSE OF BSE

Year	BSE cases	BSE suspects, not confirmed	Over thirty months old	Selective cull	Offspring of BSE cases
(a) at start	727	-	-	-	-
1988	2,180	192	-	-	-
1989	7,133	924	-	-	-
1990	14,181	2,460	-	-	-
1991	25,026	3,995	-	-	-
1992	36,680	6,474	-	-	-
1993	34,370	6,714	-	-	-
1994	23,943	4,765	-	-	-
1995	14,301	2,855	-	-	-
1996	8,013	2,137	975,296	-	-
1997	4,309	992	751,218	55,465	-
1998	3,178	853	755,213	18,956	1,532
1999	1,982	519	821,901	1,413	5,844
Total	176,023	32,880	3,303,628	75,834	7,376

(a) Numbers at the start are for the period up to June 1998, when BSE became a notifiable disease.

Source: BSE in GB: A Progress Report, December 1999

3617 S1_02 - Western General Hospital, Edinburgh, Scotland, UK
(R. Will, M.D.)

**FORECASTS OF THE NUMBER OF
BSE CASES IN THE UK**

	VLA Model			Wellcome Trust Model	
	Central Estimate	95% c.i.		Central Estimate	95% c.i.
1999	2,083	1,774-2,392		2,578	2,394-2,798
2000	1,114	889-1,339		1,753	1,527-2,202
2001	470	325-615		866	733-1,283

Observed number of cases of BSE in the UK in 1999 = 1,982
(Source: BSE in Great Britain: A Progress Report, December 1999)

**PREDICTED NUMBER OF BSE INFECTED CATTLE
ENTERING THE HUMAN FOOD CHAIN UNDER THE AGE
OF 30 MONTHS IN THE LAST YEAR OF THE BSE
INCUBATION PERIOD**

Year	Number of Animals	95% C.I.
1998	6.2	2 - 17
1999	3.1	0 - 7
2000	1.2	0 - 4
2001	0.8	0 - 3

*Source: Wellcome Trust Centre for Epidemiology of Infectious Diseases,
University of Oxford*

**LABORATORY EVIDENCE SUPPORTING THE
HYPOTHESIS THAT THE BSE AGENT
IS THE CAUSE OF vCJD**

- Lasmezás CI, Deslys J-P, Demaimay R, Adjou KT, Lamoury F, Dormont D et al. BSE transmission to macaques. *Nature* 1996;381:743-4.

- Collinge J, Sidle KCL, Meads J, Ironside J, Hill AF. Molecular analysis of prion strain variation and the aetiology of 'new variant' CJD. *Nature* 1996;383:685-90.

- Bruce ME, Will RG, Ironside JW, McConnell I, Drummond D, Suttie A et al. Transmissions to mice indicate that 'new variant' CJD is caused by the BSE agent. *Nature* 1997;389:498-501.

- Hill AF, Desbruslais M, Joiner S, Sidle KAC, Gowland I, Collinge J. The same prion strain causes vCJD and BSE. *Nature* 1997;389:448-50.

- Scott MR, Will RG, Ironside J, Nguyen H-OB, Tremblay P, DeArmond SJ et al. Compelling transgenic evidence for transmission of bovine spongiform encephalopathy prions to humans. *PNAS* 1999;96(26):15137-42.

CHARACTERISTICS OF 57 CASES OF VARIANT CJD

Mean age at death: 29 (range 15-54)

Mean age at onset: 28 (range 14-53)

Median duration of illness: 14 months (range 7-38 months)

26 males : 31 females

53 cases tested are MM at codon129 of the PrP gene

PROBABLE vCJD CASES

N = 13

- ALIVE = 11
- DEAD = 2 : One died 1999, one died 2000
(both awaiting post mortem result)

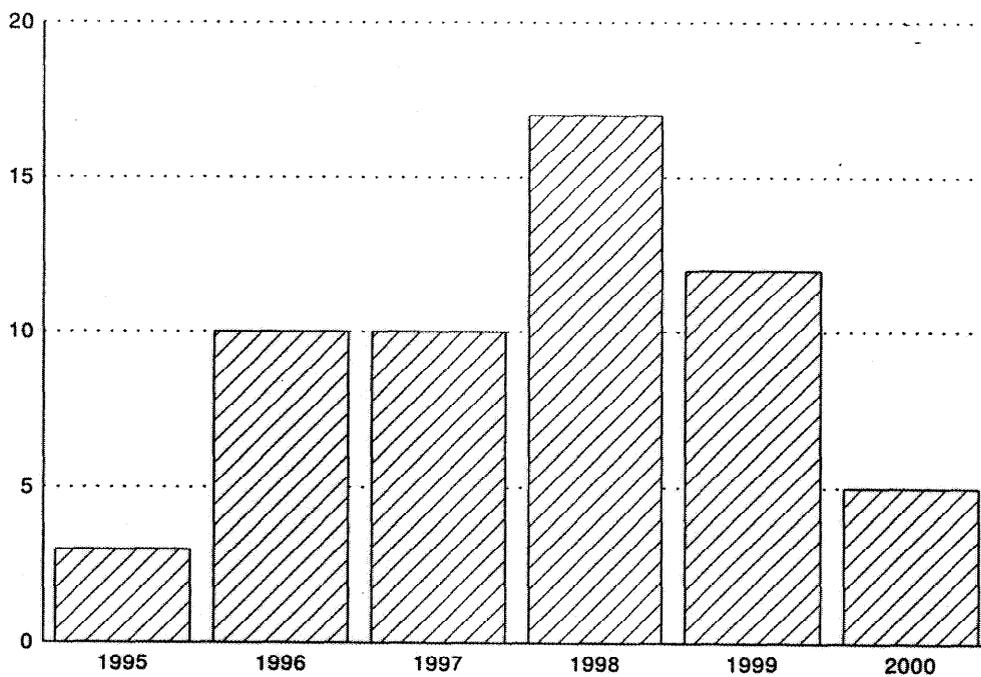
Mean age at onset: 25 (range 12-42)

9 males : 4 females

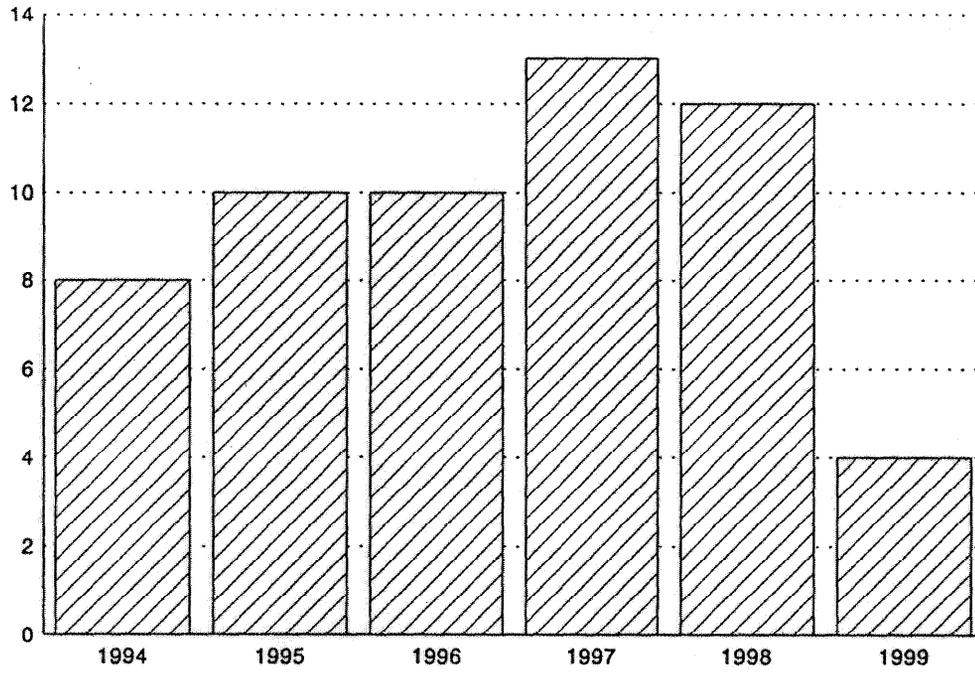
Genetic analysis available on 5 (all MM)

Onsets in 1996: 1 (lost to follow-up, moved abroad)
 1998: 4
 1999: 8

vCJD: DEATHS/YEAR (n=57)



vCJD: ONSETS/YEAR (n=57)



BOUNDS OF vCJD EPIDEMIC SIZE

CASES IN 1999 (OBSERVED = 13)

	4-14	15-29
r 0 - 0.01	50 - 3,400	54 - 4,500
0.1 - 1.0	3,800 - 180,000	3,900 - 340,000
10 - 100	222,000 - 760,000	98,000 - 5.1 x 10 ⁶

CASES IN 1999-2000 (OBSERVED = 13 + 5)

	10-29	30-49
r 0 - 0.01	50 - 1,600	69 - 3,600
0.1 - 1.0	3,900 - 14,000	3,800 - 19,000
10 - 100	-	98,000 - 750,000

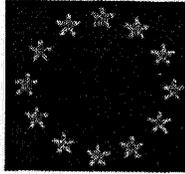
r: mean number of people infected by one maximally infectious bovine
Upper estimates reduced by 5-10 fold if SBO ban > 90% effective

Source: Adapted from Statistical Aspects of BSE and vCJD, Donnelly & Ferguson 1999

**BOUNDS OF vCJD EPIDEMIC SIZE BASED ON UNLINKED
ANONYMOUS TESTING OF TONSIL/APPENDIX TISSUE**

Infections detected	SAMPLE SIZE		
	2,000	5,000	20,000
0	58 - 320,000	58 - 140,000	58 - 64,000
1	990 - 540,000	530 - 190,000	263 - 90,000
2	9,100 - 640,000	3,600 - 250,000	1,800 - 140,000

Source: Statistical Aspects of BSE and vCJD, Donnelly & Ferguson 1999



EUROCJD

(Contract BMH4972216)

Austria

Australia

Canada

France

Germany

Italy

Netherlands

Slovakia

Spain

Switzerland

UK

NEUROCJD

(Contract BMH4CT983698)

Belgium

Denmark

Finland

Greece

Iceland

Ireland

Israel

Norway

Portugal

Sweden

**EXPORT OF CARCASS BEEF FROM THE UK
(TONNES)**

COUNTRY	PERIOD	
	1980-85	1986-1990
Austria	1,097	48
Denmark	842	1,992
France	451,829	342,716
Germany	15,309	17,759
Irish Republic	52,211	52,462
Italy	8,253	13,494
Netherlands	40,423	38,808
Portugal	2,017	1,392
Spain	2,446	4,285
Switzerland	188	9

**EXPORT OF FLOURS, MEALS, PELLETS OF MEAT OR
MEAT OFFAL, GREAVES FROM THE UK*
(TONNES)**

COUNTRY	PERIOD	
	1980-85	1986-1990
Austria	-	-
Denmark	230	115
France	5,508	32,021
Germany	82	1,224
Irish Republic	11,738	7,089
Italy	-	257
Netherlands	2,232	16,249
Portugal	-	580
Spain	-	-
Switzerland	-	12

***THIS CLASSIFICATION APPROXIMATES MOST CLOSELY WITH BONE AND MEAT MEAL AND INCLUDES ALL SPECIES, NOT SPECIFICALLY BOVINE**

**EXPORTS FROM THE UK
LIVE BOVINES**

COUNTRY	PERIOD	
	1980-84	1985-1990
Austria	1	119
Belgium/Lux	63,708	14,080
Denmark	656	1,123
France	819,866	878,020
Germany	3,821	11,319
Greece	5	246
Hungary	41	64
Iceland	150	0
Irish Republic	308,852	109,719
Italy	115,216	17,185
Netherlands	128,073	671,367
Norway	7	4
Portugal	3,595	11,121
Spain	1,115	2,844
Sweden	283	75
Switzerland	4	0

[National peak annual incidence of BSE in the UK (1992) was 0.97% of all adult cattle)

**EXPORTS FROM THE UK
LIVE BOVINES**

REST OF WORLD	PERIOD	
	1980-84	1985-1990
Australia	146	52
Argentina	103	0
Canada	74	124
Egypt	200	303
Falkland Islands*	26	31
Japan	5	29
Kenya	131	21
Morocco	150	128
New Zealand	214	6
Oman**	99	256
Papua New Guinea	0	54
Soviet Union	95	1,259
USA	123	195

* 1 case of BSE in cattle imported from the UK

** 2 cases of BSE in cattle imported from the UK