

Comparative analysis of the trend of the BSE epidemic across Europe, in relationship with control measures

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A comprehensive surveillance system of BSE has been in place in the EU15 since 2001, based on the systematic testing of fallen stock and slaughtered cattle. It has provided the opportunity to analyze the trend of the BSE epidemic in these countries. Taking into account the pattern of the incubation period of BSE, a deeper insight in the epidemiology of the disease may be obtained when considering the temporal variations of the rates along with the age distribution of the populations of cases and susceptible cattle.

The goal of the study was to compare the trend of the BSE epidemic in the European Union countries, based on the surveillance data and adequate and standardized methods, and to interpret the results with regard to the control measures towards BSE implemented in the nineties.

The study was carried out in seven countries: the UK, Ireland, the Netherlands, Germany, France, Italy and Poland. The trend of the BSE epidemic in these countries was compared, using Age-Period-Cohort and Reproduction Ratio (R_0) modelling applied to surveillance data 2001 to 2007. Results were compared with the type and date of the control measures implemented between 1990 and 2001. Because the incubation period of BSE is long (average 5 to 7 years) and the infection occurs preferably in the young age (mostly during the first year), surveillance data 2001-2007 allowed analysing the infection trend in the second half of the 1990s.

A strong decline in BSE risk was observed for all countries that applied control measures during the 1990s. Results show that a ban on the feeding of meat and bone meal (MBM) to cattle alone was not sufficient to eliminate BSE. The fading out of the epidemic (R_0 below one) started shortly after the complementary measures targeted at controlling the risk in MBM (specified risk material removal and MBM treatment). Given the long incubation period, it is still too early to estimate the additional effect of the ban on the feeding of animal protein to all farm animals that started in 2001. These results provide new insights into the risks associated with relaxing current BSE control measures.