

MODELLING BSE SURVEILLANCE STRATEGIES IN CATTLE

ISSUE

1. In December 2008 Defra gave a commitment to the FSA Board that it would keep UK BSE surveillance under review and would continue to consult SEAC on the risk assessments on which the UK BSE surveillance programme was determined.
2. As part of this commitment Defra and the FSA are asking SEAC to consider the methodology and outputs from risk assessment modelling work, carried out by the Veterinary Laboratories Agency (VLA), used to investigate the efficiency of BSE surveillance strategies. It is proposed that the model will be used to inform policy on any future EU proposals for changes to BSE surveillance.
3. In accordance with SEAC's Code of Practice, the attached VLA papers (Annex 1-3) are considered pre-publication and should not be disseminated outside the Committee. The VLA intends to publish the reports at a later date.

BACKGROUND

4. The BSE Control Model previously assessed by SEAC estimates the impact of testing cattle at slaughter on the potential consumption of BSE infectivity. This model has been extended to investigate quantitatively, the impact of different testing scenarios on the efficiency of BSE surveillance.
5. The attached paper describes three approaches used to determine the efficiency of BSE surveillance. The first considers the number of BSE test positive cases missed, the second, the time taken to detect any re-emergence of BSE and the third, a points system to assess the efficiency of the surveillance system using the BSurvE model. Four different testing scenarios to determine efficiency were compared for the years 2009, 2010 and 2011. The first scenario involved the testing of all healthy slaughtered (HS) cattle aged over 30 months and all emergency slaughtered (ES) and fallen stock (FS) aged over 24 months. The second scenario which is equivalent to the current testing regime (since 1 January 2009) involved the testing of all HS, ES and FS cattle aged over 48

months. The third and fourth scenarios involved the testing of all HS, ES and FS cattle aged over 60 months and over 72 months respectively. All clinical suspects (CS) were tested for each scenario.

6. The paper concludes that the estimated mean number of BSE test positive cases missed over the three year period 2009-2011 was less than one for testing scenarios up to the 60 months age threshold. At a BSE testing age of 72 months and over, two cases were estimated to be missed for the same three year period. For all scenarios the number of cases missed in cattle slaughtered for human consumption (HS plus ES) was less than one over the three years.
7. In addition it was concluded that raising the age threshold for BSE testing would have no impact on the time taken to detect re-emergence of disease, unless the only BSE testing was of HS cattle aged over 72 months. However, these results are dependent on a number of caveats, including key assumptions made regarding re-emergence, baseline prevalence, and variability and uncertainty between years, some of which could be investigated further subject to the necessary data being available. Finally, the BSurvE model showed that raising the age for BSE testing to 72 months for HS, ES and FS cattle did not have a significant impact on the efficiency of BSE surveillance.

PREVIOUS SEAC CONSIDERATION

8. The BSurvE Model has not been previously considered by SEAC however, it has been reviewed by the European Food Safety Authority (EFSA) in 2004 (Annex 4).
9. The VLA's BSE Control Model was reviewed in 2006 (SEAC95) and 2008 (SEAC100 & SEAC101). SEAC's consideration of the model was also presented at the October 2008 FSA Open Board Meeting. SEAC concluded the following:

SEAC considered the results from a mathematical model that had been used to estimate the number of infected cattle that may be undetected as a result of raising the minimum age at which healthy slaughtered and fallen stock cattle must be tested for BSE. The model itself, produced by VLA, was previously reviewed by SEAC¹.

¹ Reviewed at SEAC 95, December 2006.

The increased risks to human health estimated by the model from raising the age at which healthy slaughtered cattle are tested for BSE (up to 60 months, the highest age modelled) are very small. The model estimates that much less than one BSE case would be missed annually in the GB herd by increasing the age of testing to 60 months for the healthy slaughter surveillance stream. Although uncertainties are inherent in such modelling, the validation of the model that has been conducted provides assurances about the reliability of the results. Similar results from a different analysis by EFSA^{2,3} provide additional confidence in the findings. The EFSA analysis estimates that less than two BSE cases would be missed annually in the whole of the EU15 by increasing the age of testing to 60 months for the healthy slaughter surveillance stream.

These risk assessments hold provided the incidence of BSE in cattle remains low. Therefore, regulations should not be modified unless effective surveillance remains in place. Surveillance is the only means of monitoring changes in the incidence and prevalence of BSE, the effectiveness of control measures in preventing an epidemic and the possible emergence of new prion diseases. As control measures to prevent cattle and human infection are modified, continued active and passive surveillance become increasingly important to ensure that the remaining controls are effective in minimising the risk to human and animal health.

ADVICE SOUGHT FROM THE COMMITTEE

10. The Committee is asked to assess the validity of the methodology used and the assumptions used in the modelling and to comment on the results for each of the three approaches used in the modelling.
11. The Committee is asked specifically to comment on the human and animal health risks of raising the age thresholds for BSE testing cattle slaughtered for human consumption (HS/ES) and fallen stock (FS) to either 60 or 72 months for both a constant prevalence from 2002 and a re-emerging epidemic.
12. To aid discussion the VLA will give a presentation describing the methodology used and the results from four testing scenarios.

² Risk for Human and Animal Health related to the revision of the BSE Monitoring regime in some Member States. Scientific Opinion of the Panel on Biological Hazards. The EFSA Journal (2008) 762, 1-47.

³ Further consideration of age-related parameters on the Risk for Human and Animal Health related to the revision of the BSE Monitoring regime in some Member States. Opinion of the Panel on Biological Hazards. The EFSA Journal (2008) 763, 1-8.