Medical Xpress

Foot and mouth spread unlikely, predicts researcher

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The outbreak of foot and mouth disease in Britain is unlikely to spread beyond the small affected area says Professor Roger Morris, who is modelling the possible spread of the disease for the British Department of Environment, Food and Rural Affairs.

Professor Morris, an epidemiologist who heads the EpiCentre at Massey University developed software which is used by the British government and other governments around the world to model and predict the spread of diseases such as Foot and Mouth and bird flu. He was involved in the previous outbreak in 2001 and arrived back from meetings in London about other projects he is undertaking for Britain just as the latest outbreak occurred.

“Early Saturday morning I picked up an alert on my email system that there was an unusual disease incident in Surrey that might be foot and mouth. I shot off an email to my counterpart in London to let him know we were available if needed. Seconds after I sent it an email arrived from him advising me that they had foot and mouth and giving me details so that we could fire up our model.

“I said we would do modelling work for them. I put together a team of five EpiCentre staff, we got all the data together, ran the models, mapped the results and fed the pictures and numbers back to them at midnight Saturday.

“We modelled two options: One was that the outbreak started on the

affected farm with an unknown source of virus, and the second, and more likely, option that it started from the vaccine plant or research facilities at Pirbright, less than 5 km away. The outbreak is predicted to be very small in either case – just one to three farms. However, this is based only on what we already know, and if there is any worrying new developments we will have to reassess the situation and run new models."

Professor Morris says the strain identified on the farm is the one that was responsible for an outbreak on almost 2500 farms in 1967-68, and is the same strain used in vaccine production at the nearby plant. It is only found in laboratories, not in the field anywhere. "A notable feature of that virus was that it spread very well on the wind, whereas the virus that caused the 2001 outbreak didn't. The wind patterns in late July fitted very well to suggest this virus could have been carried by the wind into the area of the affected farm. But it needs to be a large amount of virus, as a few virus particles aren't going to infect cattle 5km away. The fact that only cattle have picked up the virus also suggests it was windborne, as cattle are usually the animals that pick up the virus from the air whereas pigs pick it up from eating infected meat. Other explanations are also possible, but in some way a serious biosecurity breach seems likely.

Professor Morris says EpiCentre staff are receiving daily updates and holding themselves ready to do another round of modelling if there are any new farms diagnosed. One of the advantages the EpiCentre offers is that it can undertake the modelling work required during the British night and produce reports in time for the morning in the UK.

He says a combination of clear symptoms in the affected cattle and the quick actions of the farm owner ensured the disease was identified quickly, which is likely to contain the outbreak.

Source: Massey University