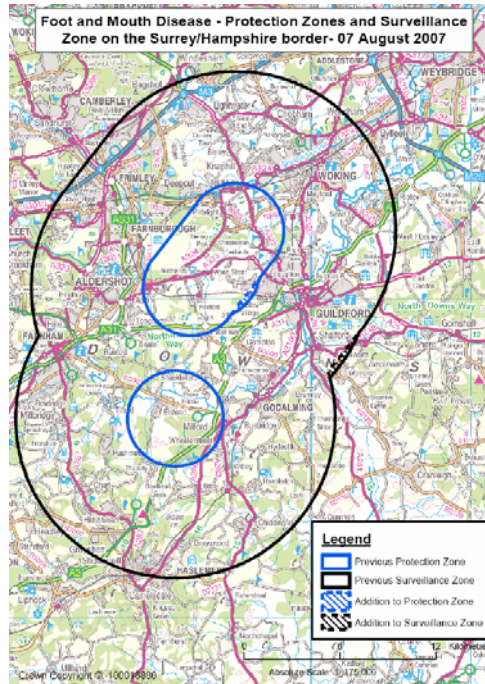


FMD 2007. Summary Epidemiology Report

Situation as at 10:00 Thursday 09 August

Executive summary

1. Two confirmed cases and one highly probable case of Foot and Mouth Disease have been confirmed in Surrey since 9pm on Friday 3rd August 2007. The shape of the Protection and Surveillance Zones on 8th August are shown on the map below.



2. The strain of virus has been identified as Type O1 BFS, which is the strain recovered from the 1967 FMD epidemic in Great Britain. This strain is used by both of the enterprises on the nearby Pirbright site. Current evidence suggests that this site is the most likely source of infection for the first IP.
3. The mechanism of spread from the Pirbright site is under investigation; possibilities include
 - Windborne spread, as winds were in a suitable direction at times during the risk period
 - Via effluent released from the laboratory, possibly aided by local flooding
 - Deliberate or accidental fomite transmission from one of the laboratory containment areas
4. At this stage analysis of the clinical picture on the IPs does not give particular weight to any one of these possible mechanisms.
5. The main concerns are
 - 5.1. Other holdings in the area may have been infected at the same time or during the same risk period, as the identified case and have not yet been detected. Spread of disease may have occurred from these, either locally or further.
 - 5.2. Live virus production for vaccine production has stopped so there is no further risk of release from this source, however livestock in the Protection Zone may

still be at risk from the original release. This could lead to further cases in the area.

Descriptive Epidemiology of FMD 2007/0001 (IP1)

6. This was a small, family run, beef finishing enterprise with 4 associated land-parcels, 3 of which had susceptible stock. The affected animals were in a field approximately 4.5 km south-west of the Pirbright site, IP 1A, Normandy. There were 38 cattle at grass and clinical signs were present in all of these animals. FMD was confirmed by laboratory tests. The oldest lesion was nine days; 30 of the animals had 6-8 day lesions.
7. The main farm premises, IP 1B, Elstead, which was reported with a single inconclusive laboratory test result in one of the 4 cattle there, has been retested and found to be negative. The third premises (IP 1c) had one RT-PCR positive in the 22 cattle, but there was no evidence of clinical disease.

Descriptive Epidemiology of FMD 2007/0002 (IP 2)

8. Suspect disease at a premises at Willy Green was investigated and disease was confirmed on clinical grounds, this became IP 2. This IP is not unexpected, being situated within the Protection Zone and was identified by a routine protection zone surveillance visit.
9. IP 2 is a beef suckler herd run over approximately 300 acres. Suckler calves are reared and fattened and sent direct to slaughter. The enterprise comprises four premises. All breeding, rearing and fattening takes place separately at each premises, but some movement of stock takes place between them.
10. No animals have been sent for slaughter during the spread risk period.
11. Forty-four of 49 cattle showed typical lesions of FMD in the mouth and on the feet. Of the other three premises, one had 51 cattle which had no lesions typical of FMD, although 2 were lame. Another had 12 cattle, with no clinical signs; there were no livestock on the remaining premises.
12. One 'dangerous contact' holding (DC), i.e. a holding on which the livestock is highly likely to have been exposed to infection, and one 'slaughter on suspicion' (SOS) premises, i.e. a holding where the livestock have clinical signs suggestive of FMD but laboratory tests have not been completed, have been identified on adjacent land. These are described further in paragraph 13 below.

Descriptive Epidemiology of SOS to IP 2

13. One adjacent premises, though with no animal contact and consisting of 16 beef cattle, 3 sheep, 2 goats and approximately 280 pigs (sows and followers) is currently being slaughtered on suspicion of disease (SOS). This holding had been visited on 3 occasions since 4/8/07 when no clinical signs had been observed. Serum samples had been taken from the sheep on the first occasion (reported as negative). Suspect disease was reported by the owner this morning. FMD could not be ruled out.

Hypotheses for Source

14. The virus strain that has been identified on the IPs to date is Type O1 BFS, which is the strain recovered from the 1967 FMD epidemic in Great Britain. This strain only exists in FMD reference laboratories and pharmaceutical manufacturing plants, and is not in circulation anywhere in the world. The closest such facilities to the outbreak area are at Pirbright in Surrey; the next closest location where the virus is held is in Belgium. It is therefore very highly likely that the virus in this outbreak derived from one of the facilities on the Pirbright site. This is supported by the HSE report published on 7th August 2007.
15. The virus may have reached one or more of the IPs either directly from the Pirbright site or by onward transmission of infection from another source, itself infected either directly or indirectly from the Pirbright site. In summary the two hypotheses for source for all the IPs are
 - 15.1. Release from one of the laboratories on the Pirbright site. The commercial pharmaceutical plant cultures virus to make vaccine; the virus strain involved in the August 2007 outbreak was last used to make vaccine in the week commencing 16 July 2007. The Reference Laboratory use smaller amounts of the virus to provide reagents for diagnostic tests and disinfectant testing on a continuous basis. Such a release could be accidental or deliberate.
 - 15.2. Spread from another premises, itself infected from the Pirbright site.

Source investigations

16. IP 1: Very few significant movements onto the holding, of a type that could introduce infection, were determined for IP 1 during the source risk period and these have all been followed up and negated. Therefore the most likely source is a release of virus from the Pirbright site.
17. IP 2: No movements onto the holding, of a type that could introduce infection, have been identified for IP 2 during the source risk period. The source for IP 2 could be either IP1A or the Pirbright site. The full genome sequencing in progress on the viruses recovered may clarify the source.
18. The timeline that shows the dates of these events is shown at the end of this report.

Spread investigations

19. Spread from IP 1: No live animals were moved off the premises during the risk period, so spread investigations are focussed on the possibility of local spread. Progress is described in the 'Protection Zones' paragraph below.
20. Spread from IP 2: A single holding that is highly likely to have been exposed to infection through a personnel contact (a 'dangerous contact' (DC)), has been identified. Additionally, stock on the DC premises are adjacent to the IP and only separated from it by a farm track and a lane. Therefore the livestock on the DC

are to be examined daily and the sheep will be examined serologically every other day. Investigations into local spread are described below.

21. **Protection Zones:** One hundred premises have been identified in the Protection Zones from the VetNet database, although not all of these will have stock at present. These premises continue to be subject to regular veterinary inspections to monitor for possible spread of disease. In addition to veterinary inspection, serological samples are also being taken from sheep and goats to look for evidence of past infection. To date 51 sheep flocks have been identified in the PZs, negative results have been received for 42, 2 are pending laboratory testing and 6 are being sampled.

Risk of spread beyond Surrey

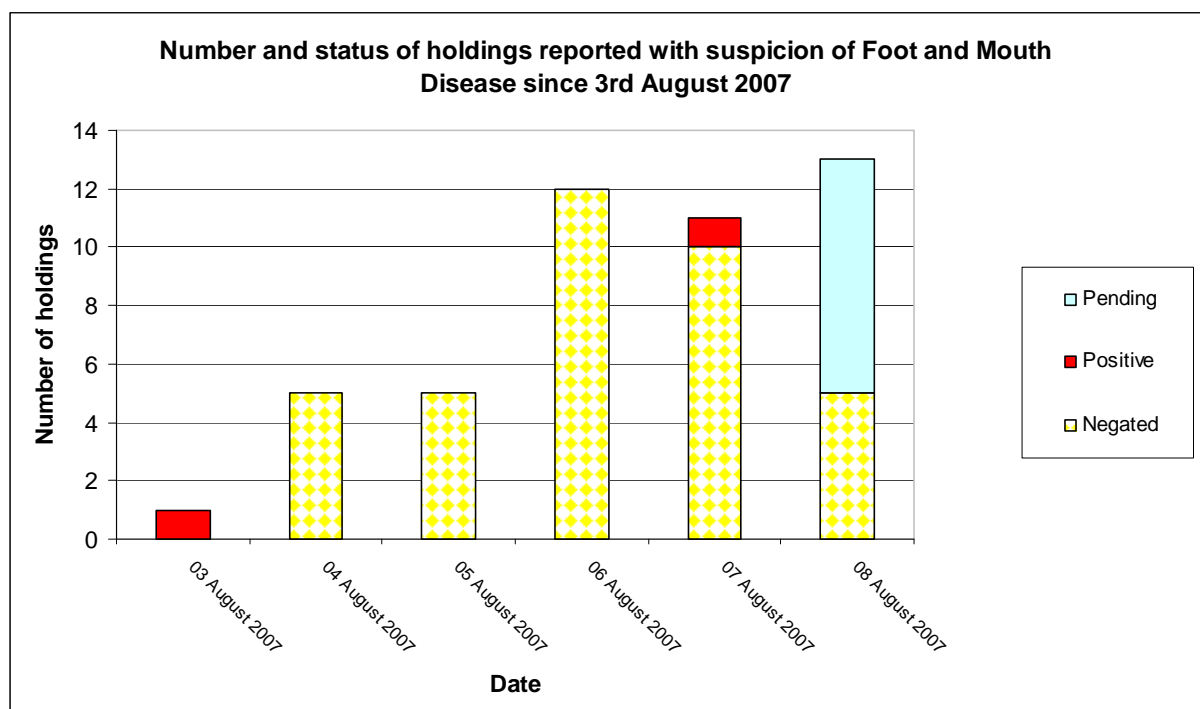
22. Sheep and goats provide the most likely route of silent spread of infection given that clinical signs of FMD are least obvious in these species. Initial data from the Animal Movement Licensing System (AMLS) indicate that 88 movements involving 1659 sheep and goats were recorded from premises in Surrey in July 2007. This represents fewer than 0.1% of movements in GB. Most of these animals were moved out of Surrey. At this point in time there are likely still to be a number of moves awaiting registration. Further investigation of the effect of this delay is being undertaken, however it is not likely to change this figure substantially, as the figures are in agreement for the same period in 2005 and 2006.
23. Investigations have confirmed that no sheep from Surrey or from the surveillance zone that overlapped into the neighbouring county of Hampshire were moved to or sold through Bicester sheep fair at Thame market on 3rd August.
24. In summary, the risk of spread of infection out of Surrey through movements of silently infected sheep during the risk period is very low.

Wider Surveillance

25. Since 3rd August 2007 suspicion of FMD has been reported on 37 holdings, in the counties shown in the table below.

County	Number of notifications
Surrey	13
Devon	4
Somerset	3
Berkshire	1
Derbyshire	2
Essex	1
Gloucestershire	1
Kent	1
Oxfordshire	1
Staffordshire	1
Worcestershire	1
Yorkshire	1
Denbighshire	1
Greater London	1
Hampshire	1
Warwickshire	1
Cornwall	2
Carmarthenshire	1
Caerphilly	1

26. Disease has been confirmed on two of these as described in this report. Five holdings are still under investigation; disease has been ruled out on the remainder. In addition to wider surveillance for FMD, there have been two reports of suspected Blue tongue (one of which has been negated) and one report of avian notifiable disease (which has been negated on clinical grounds). The temporal distribution of the suspect FMD reports is shown in the figure below. These results reflect the data available as of 16:00 08 August 2007.



Forward Look

27. Most likely scenario

There is a possibility that there will be further cases in the same area. If the virus in the original release is now fully dispersed, and diluted beyond infectivity, it is unlikely there will be further cases from the release itself beyond [date live virus production stopped ?PRODUCTION AT MERIAL? + max incubation period]. Further cases may arise from secondary spread from identified IPs or the SOS; if an incubation period of 12 days is assumed these would develop clinical signs by 20th August.

28. Alternative scenario: The virus released from the Pirbright site has not fully dispersed and there is still virus available in the environment that could infect susceptible livestock. At present this is believed unlikely as intensive surveillance has found few cases in the area at risk, and the weather and dilution/dispersal as virus moves into the environment mitigate against its survival.

29. Worst case scenario: Infection may have reached other holdings in the vicinity of the Pirbright site during the risk period, which has not been detected, and infected animals have been moved to other holdings. There is no evidence to support this hypothesis at present. However the risk of non-detection is highest in sheep, and review of movements of sheep out of Surrey (described above) suggests that there is a very low likelihood of this.

National Emergency Epidemiology Group
FFG, Defra
8 August 2007

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