



Livestock Notifiable Disease Factsheets

Foot and Mouth Disease (FMD)

If you suspect signs of any notifiable disease, you must immediately notify a Defra Divisional Veterinary Manager.

Introduction

Foot-and-mouth disease (FMD) is an acute infectious disease, which causes fever, followed by the development of vesicles (blisters) - chiefly in the mouth and on the feet. The disease is caused by a virus of which there are seven 'types', each producing the same symptoms, and distinguishable only in the laboratory.

Serological tests in laboratories have identified **seven** different serotypes as O, A., C, SAT1, SAT2, SAT3, and Asia 1.

FMD is probably more infectious than any other disease affecting man or animals and spreads rapidly if uncontrolled. Among farm stock, cattle, sheep, pigs, goats and deer are susceptible. Elephants, hedgehogs, rats and any wild cloven-footed animals can also contract it. FMD is endemic in parts of Asia, Africa, the Middle East and South America, with sporadic outbreaks in disease-free areas. **After being free of FMD for many years, this country suffered a return of the disease in 2001. 2,030 cases occurred between February and September. The causal agent for this outbreak has been identified as the type O pan -Asia strain.**

The interval between exposure to infection and the appearance of symptoms varies between twenty-four hours and ten days, or even longer. The average time, under natural conditions, is three to six days.

After-effects of the disease

Foot-and-mouth disease is rarely fatal, except in the case of very young animals, which may die without showing any symptoms. Exceptionally, a severe form of the disease may cause sudden deaths among older stock.

The after-effects of FMD are serious. In addition to treating and nursing a herd or flock of sick animals, a reduction in the milk yield in a dairy herd will certainly be experienced, at least until the next lactation. Mastitis may develop and the value of a cow is permanently reduced. In some cases chronic heart disease occurs. The raw surfaces left on the foot when the blisters burst are likely to become infected; this may lead to lameness and loss of a hoof.

Symptoms

Cattle

In the early stage, a rise in temperature is noticed and the animal is dull, blowing slightly and off its food. A cow in milk will show a sudden drop in yield. Blisters begin to develop, usually within a few hours, most frequently on the upper surface of the tongue and the bulbs of the heels. Feeding and cudding may cease and the animal is 'tucked up' with staring coat. If at pasture, the animal will be away from the rest of the herd, and probably

lying down. There is quivering of the lips and uneasy movement of the lower jaw, with copious, frothy saliva around the lips that drips to the ground at intervals a smacking sound is produced by partial opening of the mouth.

About the same time there is evidence of pain in the feet. The animal lies down constantly and, when forced to move, walks very tenderly, occasionally shaking a leg as if to dislodge some object wedged between the claws. Lameness usually gets worse, until the animal can only hobble when moving on hard or uneven surfaces. Loss of condition is marked, partly on account of the fever and partly because the mouth is so painful that the animal is afraid to eat. Cows and heifers may develop blisters on the teats and resent any attempt at milking.

If the mouth is examined in the early stages, blisters on the dental pad, inside the lips, and sometimes on the muzzle, will be found, as well as those on the upper surface of the tongue. At first the blisters are seen as small raised areas, whitish in colour and containing fluid: they quickly increase in size until they may be as big as half a walnut. Two or more blisters may join to form a larger one, sometimes covering half the surface of the tongue. Later, the blisters burst and collapse, leaving the 'skin' loose and wrinkled, with a dead appearance. On handling, the 'skin' is easily removed, leaving a raw surface underneath. When the blisters have burst the temperature falls, pain decreases and the animal may start to eat again.

The blisters develop on the feet about the same time as in the mouth, or a little later; they rarely appear first. Most commonly they occur at the bulbs of the heels, at the front of the cleft of the hoof, and in the cleft itself. They usually burst fairly quickly through movement of the feet, and then appear as a ragged tear exposing a raw surface.

Sheep

The chief symptom is a sudden, severe lameness, affecting one or more legs. The animal looks sick, lies down frequently and is very unwilling to rise. Usually, the disease affects all four feet, and when the animal is made to rise, it stands in a half-crouching position, with the hind legs brought well forward, and seems afraid to move. Mouth symptoms are not often noticeable. There are blisters on the feet at the top of the hoof, where the horn joins the skin in the cleft of the foot. They may extend all round the coronet, and when they burst the horn is separated from the tissues underneath, and the hair round the hoof is damp. Unless complicated by foot rot, the foot is clean and there is no offensive smell. Blisters in the mouth, when they do develop, form on the dental pad and sometimes the tongue.

Pigs

The chief symptom in pigs is sudden lameness. The animal prefers to lie down and when made to move squeals loudly and hobbles painfully, though lameness may not be so obvious where the pigs are on deep bedding or soft ground. The blisters form on the upper edge of the hoof, where the skin and horn meet, and on the heels and in the cleft. They may extend right round the hoof head, with the result that the horn becomes detached. At a later stage new horn starts to grow and the old hoof is carried down and finally shed. The process resembles the loss of a fingernail following some blow or other injury. Mouth symptoms are not usually visible, but blisters may develop on the snout or on the tongue. It is important to remember that the disease known as Swine Vesicular Disease, which first occurred in this country in 1972, has identical symptoms to foot-and-mouth disease. Therefore anyone who sees vesicular disease in pigs must report the sighting and treat the condition as suspected foot-and-mouth disease until laboratory tests prove otherwise.

Spread of disease

The virus is present in great quantity in the fluid from the blisters, and it can also occur in the saliva, milk and dung. Contamination of any objects with any of these discharges is a danger to other stock. At the height of the disease, virus is present in the blood and all

parts of the body. Heat, sunlight and disinfectants will destroy the virus, whereas cold and darkness tend to keep it alive. Under favourable conditions it can survive for long periods.

Airborne spread of the virus can take place and under favourable climatic conditions the disease may be spread several miles by this route. Animals pick up the virus either by direct contact with an infected animal, or by contact with foodstuffs or other things which have been contaminated by such an animal, or by eating or coming into contact with some part of an infected carcass.

Foot-and-mouth disease is extremely infectious. A very small quantity of the virus is capable of infecting an animal, and it is easy to realise how rapidly the disease could spread throughout the country if no attempt were made to control it.

Trucks, lorries, market places, and loading ramps - in or over which infected animals have travelled - are dangerous until disinfected. Roads may also become contaminated, and virus may be picked up and carried on the wheels of passing vehicles.

The boots, clothing, and hands of a stockman who has attended diseased animals can spread the disease: and dogs, cats, poultry, wild game and vermin may also carry infection.

Control

In countries like Great Britain, where the disease arises only as the result of imported infection, the accepted policy is to stamp it out by slaughtering all affected stock and any others which have been exposed to such risk of infection that it is reasonably certain that they would develop the disease if left alive. Full compensation is paid for animals slaughtered.

Disinfection of the infected premises takes place. In addition to this, Defra imposes restrictions on the movement of animals within and into an area which extends for a radius of not less than 10 kilometres around the infected place, and no movement of animals out of this area is permitted. In exceptional circumstances restrictions have to be imposed over a much wider area.

Special precautions within an Infected Area

In order to prevent the spread of foot-and-mouth disease there are special precautions that all producers of milk in an Infected Area must take. Milk from cows in the incubation stage of the disease can contain foot-and-mouth disease virus for a few days before the symptoms become evident. It is, therefore, important that milk producers take all precautions necessary. It is important for slaughterhouse and knacker's yard owners and managers to realise that if the slaughterhouse or knacker's yard they operate is within an Infected Area no carcass or animal product (other than a carcass intended for human consumption) or manure, slurry or litter may be moved from the premises unless an inspector of the Defra authorises the movement by granting a licence. The Defra would grant such a licence only if it considered that there was no risk in spreading foot-and-mouth disease in the disposal of such products.

On declaration of an Infected Area all Artificial Insemination services, including the servicing of farm storage flasks, within that area must be immediately suspended and not resumed until the Defra have issued licences to do so. These licences may impose particular conditions on the inseminators or semen delivery personnel, or limit the areas in which they may work. Inseminators' field flasks which have been used on farms in the infected area may be placed under restrictions. Under certain circumstances the Farm Gate AI Service will be permitted. This means that special insemination kits can be delivered to the farm gate on the condition that the semen must only be used by the owner or his full time employee and

must not taken off the farm. Semen already on the farm in farm storage flasks may continue to be used by the licensee, but not by a visiting inseminator or veterinary surgeon.

Since the epidemic of 1967-68, legislation provides that vaccination is normally prohibited, but may be sanctioned by the EU Commission as an additional means of arresting the spread of the disease. If a decision to vaccinate was taken, the Defra would vaccinate, free of charge, all susceptible stock within the area considered to be at risk.

Early notification

The success of the slaughter policy depends on the prompt reporting of all suspected cases of disease. Delay allows the disease to get a start that is very difficult to overtake. Stock owners should therefore be constantly on the watch for any suspicious symptoms among their animals, even when the country is free from outbreaks of the disease.

Special care is necessary with sheep and pigs where lameness is often the only symptom. It must be remembered that pigs will 'go off their legs' for various reasons, and that foot-and-mouth disease is one of them; also that sheep can be lame from foot rot and foot-and-mouth disease at the same time. Owners of livestock should always be suspicious when one or more pigs or sheep become lame suddenly and the lameness starts to spread through the herd or flock.

The owner of a suspected animal or carcass must by law report the fact to the Defra Divisional Veterinary Manager. The owner is not expected to diagnose the disease, but he ought to know enough about the disease to suspect it. All owners and stockmen should make themselves familiar with the symptoms, and call in a veterinary surgeon as early as possible; they should never ask another stock-owner to look at the suspected animal.

If the suspicion is strong it is better to report at once to the Defra's Divisional Veterinary Manager for the area who will immediately arrange, without cost to the owner, for the examination of the suspected animal.

The Defra's veterinary staff are available at all times, and no one should be tempted, especially in the late afternoon, to wait and see if there is any change in the animal's condition by next morning.

Precautions

Before the Veterinary Officer arrives there are steps that owners should take at once to lessen the risk of spreading the disease. The suspected animal must be isolated, and no one who has been in contact with it should be allowed to go among other stock. If the suspected animal is in an outlying pasture and has been there for some days, it is better to leave it where it is, provided the fences are sound. A suspected animal must not be moved on or across a public road.

No animals, vehicles, foodstuffs, milk etc., must be moved from the suspected premises and, if possible, no person should leave. Dogs, cats, and poultry must be shut in or tied up. Anyone leaving for some essential purpose must first thoroughly cleanse and disinfect his boots, wash his hands and if practicable, change his clothing before leaving the premises. Special care should be taken to see that boots are really clean, and that no dirt or dung is left on the under-surface or in the grooves on the soles of rubber boots. Any disinfectant which indicates on the container label that it is approved for use against foot-and-mouth disease, or a solution of washing soda in hot water - one heaped double handful of soda in a two-gallon (nine litre) bucket of water - can be used.

A notice with the words 'FOOT-AND-MOUTH DISEASE - KEEP OUT' must be displayed at the main entrances. Nobody must be allowed to enter the premises, neither should vehicles (for

example milk tankers, milk lorries, cattle floats, and lorries with feeding stuffs) be allowed to enter. If there is no main gate that can be shut, a rope or chain could be strung across the entrance. In short, the aim should be "nothing in, nothing out" until the Veterinary Officer arrives. Neighbouring owners who hear reports of disease should restrict movements of their stock as far as possible, and keep them off roads in the vicinity. It is better to leave outlying stock where they are, unless they can be moved further from the suspected premises without coming into contact with the main herd.

Foot-and-Mouth disease orders

There are certain orders of the Secretary of State that are designed to reduce the risk of introducing or spreading disease. Careful owners will appreciate that these Orders are made for their protection and will carry out their provisions conscientiously. These Orders include:

1. The Animal By-Products Order 1999 (as amended)

This Order prohibits the feeding to livestock of certain categories of catering waste whether that waste has been processed or unprocessed. It also removes the possibility of non-mammalian animal by-products being rendered for the production of swill for feeding to pigs or poultry.

2. The Foot-and-Mouth Disease (Packing Materials) Orders of 1925 and 1926

These require all hay or straw which has been used as packing to be kept away from all animals and, unless it is used again as packing, or returned in a crate or box to be so used again, to be destroyed. No trees, plants etc., packed in straw or hay may be exposed for sale or stored in any place where animals are exposed for sale.

3. The Transport of Animals (Cleansing and Disinfection) (England) Order 2003

The Order specifies that vehicles and equipment used to transport animals must, with **very few exceptions**, be cleansed and if necessary disinfected after the animals have been unloaded and before any further animals are loaded. **This principle is one of the mainstays of this country's policy on the prevention of the spread of animal diseases and has been for many years.**

Recent Legislation

Following the FMD outbreaks in Great Britain in 2001, many changes have been made to the 1983 Order. These are set out in the Foot-and-Mouth disease (Amendment) (England) Orders 2001 numbers 4 to 14. Similar legislation applies to Scotland. A consolidated version of the 1983 Order is being prepared.

Update: Products moved from slaughterhouses and knacker's yards are also subject to the Specified Risk Material Order 1997 as amended and the Specified Risk Material Regulations 1997.

The Foot-and-Mouth Disease (Control of Vaccination) Regulations 2001 enact EU obligations under Directive 85/511.

Vaccination against foot-and-mouth disease is prohibited unless authorised by the Secretary of State.

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