

DISEASES WE WANT TO MONITOR AND THEIR CHARACTERISTICS

DISEASE: FOOT AND MOUTH DISEASE

Foot-and-mouth disease (FMD) is an acute infectious disease caused by a virus of which there are 7 types, which produce similar symptoms and can only be differentiated in the laboratory.

SYMPTOMS

- Fever.
- Blisters in the mouth and on feet.
- Drop in milk production.
- Weight loss.
- Loss of appetite.
- Quivering lips and frothing of mouth.
- Cows may develop blisters on teats.
- Lameness.

- slobbering and smacking lips
- shivering
- tender and sore feet
- reduced milk yield
- sores and blisters on feet
- raised temperature

On introduction to a herd or flock the Foot and Mouth Disease (FMD) virus can spread very rapidly by direct and indirect transmission. Affected animals have a high temperature, which is followed by the development of blisters chiefly in the mouth and on the feet.

Cause

The disease is caused by a virus of which there are seven 'types', each producing the same symptoms, and distinguishable only in the laboratory.

Immunity to one type does not protect an animal against other types.

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.

The virus survives in lymph nodes and bone marrow at neutral pH, but is destroyed in muscle when pH is less than 6.0, i.e., after rigor mortis. The virus can persist in contaminated fodder and the environment for up to one month, depending on the temperature and pH conditions.

Airborne spread of the disease can take place and under favourable weather conditions the disease may be spread considerable distances 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.

Outbreaks have been linked with the importation of infected meat and meat products.

The disease can also be spread by people, vehicles and other objects that have been contaminated by the virus.

Treatment

Treatment is not given. Affected animals will recover. However because of the loss of production and the infectious state of the disease, infected animals are usually culled.

Prevention

FMD is one of the most difficult animal infections to control. Because the disease occurs in many parts of the world, there is always a chance of its accidental introduction into an unaffected country.

Export restrictions are often imposed on countries with known outbreaks.

FMD outbreaks are usually controlled by quarantines and movement restrictions, euthanasia of affected and in-contact animals, and cleansing and disinfection of affected premises, equipment and vehicles.

Infected carcasses must be disposed of safely by incineration, rendering, burial or other techniques. Milk from infected cows can be inactivated by heating to 100°C (212°F) for more than 20 minutes. Slurry can be heated to 67°C (153°F) for three minutes.

Rodents and other vectors may be killed to prevent them from mechanically disseminating the virus.

Good biosecurity measures should be practiced on uninfected farms to prevent entry of the virus.

Vaccination

Vaccination can be used to reduce the spread of FMD or protect specific animals.

Vaccines are also used in endemic regions to protect animals from clinical disease. FMDV vaccines must closely match the serotype and strain of the infecting strain.

Vaccination with one serotype does not protect the animal against other serotypes, and may not protect the animal completely or at all from other strains of the same serotype. Currently, there is no universal FMD vaccine.

Which animals are susceptible to FMD?

Among farm stock, cattle, sheep, pigs, and goats are susceptible, as are llamas and alpacas. Some wild animals such as hedgehogs, coypu, and any wild cloven-footed animals such as deer and zoo animals including elephants can also contract it.

How is it spread?

The virus is present in great quantity in the fluid from the blisters, and it can also occur in saliva, milk and dung and respired air. 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. Infected animals begin by excreting the virus a few days before signs of the disease develop. Pigs in particular produce large numbers of virus particles.

Airborne spread of the disease can take place and under favourable climatic conditions the disease may be spread considerable distances by this route. For example, circumstantial evidence strongly suggests that the outbreak on the Isle of Wight in 1981 resulted from the airborne spread of the virus from Brittany in northern France.

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. In the past, outbreaks of the disease have been linked with the importation of infected meat and meat products.

The disease is spread mechanically by the movement of animals, persons, vehicles and other things which have been contaminated by the virus. 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 mechanically carry infection.

What are the effects of FMD?

The 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. Affected animals lose condition and secondary bacterial infections may prolong convalescence. The most serious effects of the disease however are seen in dairy cattle. Loss of milk yield will certainly be experienced. Chronic mastitis may develop and the value of a cow is permanently reduced. Abortion, sterility and chronic lameness are commonplace and in some cases chronic heart disease occurs.

Etiology:

The foot and mouth disease virus (FMDV) is a member of the genus Aphthovirus in the family Picornaviridae. There are seven major viral serotypes: O, A, C, SAT 1, SAT 2, SAT 3 and Asia 1. Serotype O is the most common serotype worldwide. It is responsible for a pan-Asian epidemic that began in 1990 and has affected many countries throughout the world. Other serotypes also cause serious outbreaks; however, serotype C is uncommon and has not been reported since 2004. Some FMDV serotypes are more variable than others, but collectively, they contain more than 60 strains. New strains occasionally arise. While most strains affect all susceptible host species, some have a more restricted host range (e.g., the serotype O Cathay strain, which only affects pigs). Immunity to one FMDV serotype does not protect an animal from other serotypes. Protection from other strains within a serotype varies with their antigenic similarity.

What happens when a suspect animal is found?

The owner of a suspected animal or carcase must by law, immediately report the fact to their local Divisional Veterinary Office. All herd owners should make themselves familiar with the symptoms, and call in a veterinary surgeon as early as possible.

Restrictions are imposed on the premises from the time of notification prohibiting any animal, person or thing entering or leaving the premises without permission, and a DAERA Veterinary Officer (VO) makes an investigation. If signs suggest FMD is present, sample material from the affected animal(s) would be sent for testing. The Chief Veterinary Officer will confirm the outbreak if the laboratory results confirm the presence of FMD virus.

What happens if disease is confirmed?

On confirmation of the disease a Protection Zone will be imposed with a minimum radius of 3km around the Infected Premises and a Surveillance Zone with a minimum radius of 10km.

Notices are posted at all entrances to the infected premises and the movement of people on and off the farm is controlled. An approved disinfectant must be used to disinfect footwear, clothing and vehicles before entering or leaving the premises. As soon as possible after confirmation of disease the infected animals are valued and slaughtered. Other susceptible animals are then valued and they too are slaughtered without delay.

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