

Foot & Mouth disease

What is Foot and Mouth Disease (FMD)?

Foot and Mouth Disease (FMD) is a severe, highly contagious viral disease of livestock with significant economic impact. The disease affects cattle and swine as well as sheep, goats, and other cloven-hoofed ruminants. All species of deer and antelope as well as elephant, and giraffe are susceptible to FMD.

In a susceptible population, morbidity approaches 100%. Intensively reared animals are more susceptible to the disease than traditional breeds. The disease is rarely fatal in adult animals but there is often high mortality in young animals due to myocarditis or by lack of milk when the dam is infected by the disease.

FMD is characterized by fever and blister-like sores on the tongue and lips, in the mouth, on the teats and between the hooves. The disease causes severe production losses and while the majority of affected animals recover, the disease often leaves them weakened and debilitated.

The organism which causes FMD is an aphthovirus of the family *Picornaviridae*. There are seven strains (A, O, C, SAT1, SAT2, SAT3, Asia1) each one requiring a specific vaccine strain to provide immunity to a vaccinated animal.

FMD is a disease listed in the World Organization for Animal Health (OIE) *Terrestrial Animal Health Code* and must be reported to the OIE (OIE *Terrestrial Animal Health Code*). FMD is the first disease for which the OIE established an official list of free countries and zones with or without vaccination.

Member Countries can also ask the OIE to officially recognise their national programmes for FMD control.

Where is the disease found?

FMD is endemic in several parts of Asia, most of Africa and the Middle East. In Latin America, the majority of countries applied zoning and are recognized free of FMD with or without vaccination, and the disease remains endemic in only a few countries.

Australia, New Zealand and Indonesia, Central and North America and continental Western Europe are currently free of FMD. However, FMD can occur sporadically in typically free areas.

How is the disease transmitted and spread?

FMD is found in all excretions and secretions from an infected animal. The virus may be present in milk and semen for up to 4 days before the animal shows clinical signs of disease.

Animals that have recovered from infection may serve as carriers of the virus.

Infected animals notably breathe out a large amount of aerosolized virus, which can infect other animals via the respiratory or oral routes.

The significance of FMD is related to the ease of virus spread through any or all of the following:

- new animals carrying the virus (saliva, milk, semen, etc.) may introduce the disease to a herd;
- contaminated pens, buildings or vehicles used to house and move susceptible animals;
- contaminated materials such as hay, feed, water, milk or biologics;
- people wearing contaminated clothes or footwear, or using contaminated equipment;
- meat or animal products, raw or improperly cooked food infected with the virus and fed to susceptible animals, and;
- aerosol spread of virus from an infected property via air currents.

What is the public health risk associated with this disease?

FMD is not readily transmissible to humans.

What are the clinical signs of the disease?

The severity of clinical signs will depend on the strain of virus, the age and species of animal.

The signs can range from a mild infection to severe. Clinical signs are more severe in cattle and intensively reared pigs than in sheep and goats.



The typical clinical sign is the occurrence of blisters (or vesicles) on the nose, tongue, lips, oral cavity, between the toes, above the hooves, teats and pressure points on the skin. Ruptured blisters can result in extreme lameness and reluctance to move or eat. Secondary bacterial infection of open blisters can also occur. Other symptoms often seen are fever, depression, hypersalivation, loss of appetite and weight, drop in milk production.

Health of young calves, lambs, kids, and piglets may be compromised by lack of milk from infected dams. If infected with the FMD virus, death can occur in young animals before development of blisters due to damage to the heart muscle caused by the virus.

Blisters usually heal within 7 days or longer, however the impact of the disease on growth or milk production rates may persist after recovery. Animals that have recovered from infection may sometimes carry the virus and initiate new outbreaks of disease.

More information on the disease can be found in the OIE Technical Disease Card: www.oie.int/en/animal-health-in-the-world/technical-disease-cards/.

How is the disease diagnosed?

The disease may be suspected based on clinical signs with confirmation made through prescribed laboratory tests (OIE *Terrestrial Animal Health Code* and OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*).

What is being done to prevent or control this disease?

Prevention and control measures

The initial measures in the global strategy for dealing with FMD are early detection and warning systems and prevention measures in place according to OIE Guidelines for the Surveillance of Foot and Mouth Disease (OIE *Terrestrial Animal Health Code*). This contributes to monitoring the occurrence, prevalence and characterisation of FMD viruses.

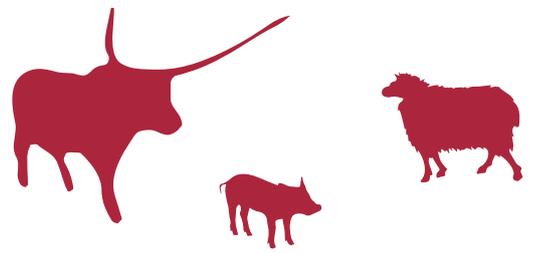
Protection of FMD free countries, areas or zones is enhanced with stringent import and cross-border animal movement controls and surveillance.

It is essential for livestock owners and producers to maintain sound biosecurity practices to prevent introduction/spread of the virus.

Measures that are recommended at the farm level include:

- control over access to livestock by people and equipment;
- control the introduction of new animals to existing stock;
- maintain sanitation of livestock pens, buildings, vehicles and equipment ;
- monitor and report illness;
- appropriate disposal of manure and dead carcasses.

Foot & Mouth disease



Contingency planning for potential outbreaks will identify the elements included in a response effort to eradicate the disease, such as:

- humane destruction of all infected, recovered and FMD-susceptible contact animals (OIE *Terrestrial Animal Health Code*);
- appropriate disposal of carcasses and all animal products (OIE *Terrestrial Animal Health Code*);
- surveillance and tracing of potentially infected or exposed livestock;
- strict quarantine and controls on movement of livestock, equipment, vehicles, and;
- thorough disinfection of premises and all infected material (implements, cars, clothes, etc.).

In endemic countries or zones, culling may be complemented by vaccination for susceptible livestock. Vaccines used must protect against the particular virus strain prevalent in the area.

Disease-free Status

FMD is the first disease for which the OIE established an official list of free countries and zones. The OIE has defined a transparent, science-based and impartial procedure for the recognition of FMD disease status of Member Countries and Territories in their entirety or defined zones.

Categories for FMD disease status include:

- FMD free without using vaccination (country or zone)
- FMD free with use of vaccination (country or zone)

Details on the OIE process for recognition of FMD disease status for a country or zone can be found at: www.oie.int/en/animal-health-in-the-world/official-disease-status/.

Member Countries can also ask the OIE to officially recognise their national programmes for FMD control.



More Information?

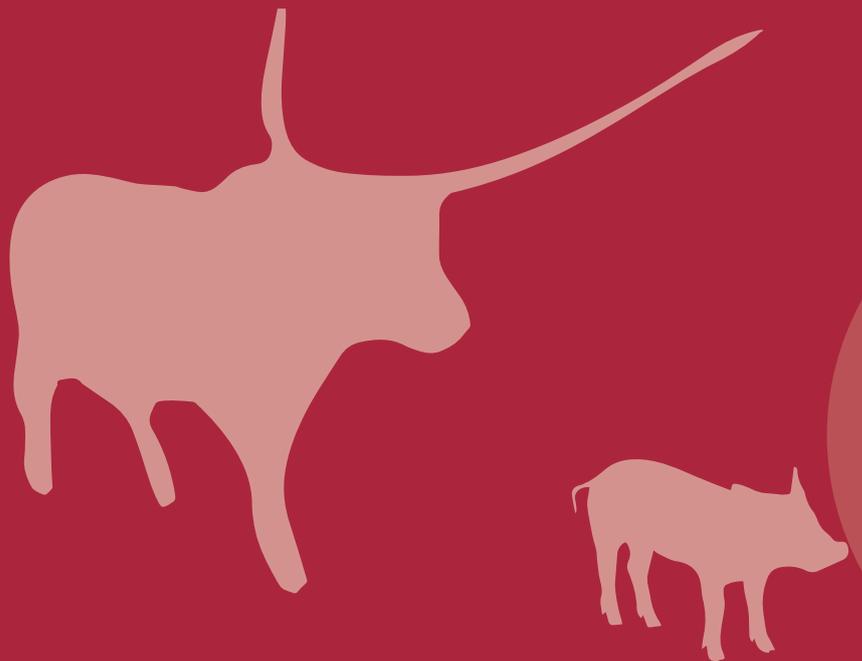
References:

1. OIE *Terrestrial Animal Health Code*:
www.oie.int/en/international-standard-setting/terrestrial-code/access-online/
2. OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animal*:
www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/
3. OIE Technical Disease Card:
www.oie.int/en/animal-health-in-the-world/technical-disease-cards/
4. OIE web portal on FMD:
www.oie.int/en/animal-health-in-the-world/fmd-portal/
5. The Center for Food Security and Public Health, Iowa State University
www.cfsph.iastate.edu/
6. Merck Veterinary Manual:
www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/toc_50000.htm
7. *Atlas of Transboundary Animal Diseases Animales Transfronterizas*
P. Fernandez, W. White;
Ed.: 2011

Ask our experts:

List of Reference Laboratories:
www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/

List of Collaborating Centres:
www.oie.int/en/our-scientific-expertise/collaborating-centres/list-of-centres/





Key Facts

- Since 1997, the Southeast Asia Foot and Mouth Disease Campaign (SEAFMD) coordinated through an OIE Regional Coordination Unit in Bangkok has worked to develop a regional approach to FMD control. Cooperating countries include Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam.
- On February 20, 2001 an outbreak of FMD was confirmed in pigs in the United Kingdom. A total of 2030 outbreaks affecting sheep, cattle, goats and pigs were reported until the situation was resolved in September, 2001. Over 4 million animals were slaughtered as part of the disease control efforts.
- In March, 2007, Argentina, Brazil and Paraguay committed to intensive vigilance for FMD in a shared zone encompassing a small area along both sides of their common borders. The agreement comes as result of a joint evaluation mission by renowned international and regional OIE experts.

- 12, rue de prony • 75017 paris france
- tel. 33 (0)1 44 15 18 88 - fax 33 (0)1 42 67 09 87
- www.oie.int • oie@oie.int

Cover photo: © N.Denormandie OIE.
Inside photos: © N.Denormandie OIE,
© M.Meuret INRA.



OIE