

Foot-and-mouth disease (FMD)

Susceptible species

Foot-and-mouth disease (FMD) is a highly contagious viral disease of cloven-hoofed animals. Domestic and wild ruminants (e.g., cattle, sheep, goats, buffalo) and pigs, giraffes, dromedary camels and hippopotami, as well as elephants (which are not cloven-hoofed) are considered susceptible. The typical hosts for FMD virus in Germany are livestock, but many zoo and wild animals can also be infected. For humans as consumers of meat or pasteurized milk and milk products, there is no risk even if FMD were to be introduced into Germany.

Distribution area

Germany is officially recognized as free of FMD; the last case occurred in 1988. However, FMD remains endemic in many countries in Africa and Asia, including North Africa, the Near East and Anatolia. Illegally imported food from endemic regions poses a constant threat to Europe and feeding food waste to animals is strictly prohibited. Criminal failure to comply with this ban led to a devastating FMD epizootic in the UK in 2001, with subsequent outbreaks in other European countries.

Causative agent

FMD is caused by viruses of the genus *Aphthovirus* of the family *Picornaviridae*. There are seven serotypes (O, A, C, Asia 1, SAT1, SAT2, SAT3), which are subdivided into numerous subtypes and strains.

Transmission

The most common mode of transmission of FMD is by contact between infected and susceptible animals. Animals infected with FMD virus shed it in large quantities with the fluid of ruptured blisters, but also in saliva, milk, manure and exhaled air. There is also a high risk of indirect infection via contaminated feed, objects, vehicles or people.

Clinical pictures

The disease is generally not fatal in adult animals, but leads to a long-lasting decline in productivity. In young stock, high losses may occur due to acute damage to the heart (myocarditis).

In general, dairy cattle show the most severe signs of FMD. After an incubation period of usually 2-7 days, high fever, apathy, loss of milk and appetite, as well as the formation of typical blisters (also called “vesicles”) on the mouth and tongue, the feet and teats become evident. In pigs, after an incubation period of usually 1-3 days, the blisters appear mainly on the feet and snout. Affected animals often show signs of progressive lameness. After a few days, some pigs are unable to stand due to the intense pain and may even lose their hoof horn completely. In sheep and goats, infection is usually inconspicuous; however, the animals can spread the disease covertly as a result.

Foot-and-mouth disease

Diagnostics

Stomatitis and foot lesions are common in farm animals and their causes often cannot be clearly identified. Where FMD cannot be excluded based on the clinical presentation alone, it must be ruled out by laboratory testing. In the case of unclear clinical findings (e.g. fever, drop in milk, increased mortality of young animals) in ruminants or pigs, FMD must also be considered as a possible differential diagnosis. FMD exclusion testing can be requested at the veterinary laboratories of the federal states at any time without negative consequences for the farmer. In many cases, the costs for such exclusion tests are covered by animal disease insurance.

For more detailed information please refer to the “Amtliche Methodensammlung” (in German language only).

Similar disease pictures

Many viral and bacterial pathogens as well as chemical burns or mechanical trauma can cause stomatitis and/or foot lesions similar to those of FMD. If there is any doubt at all, FMD must be excluded by laboratory testing!

Control

FMD is immediately notifiable! Very strict rules apply worldwide for the prevention and control of FMD. There is no treatment for infected animals. If even one animal on a farm is found to be infected, all cloven-hoofed animals must be killed and destroyed. In many cases, cloven-hoofed animals on farms in the vicinity of the infected farm must also be killed. Stables, vehicles and equipment must be thoroughly disinfected. Emergency vaccination of at-risk livestock is possible if certain conditions are met.

Further information: National Reference Laboratory for Foot and Mouth Disease

Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health
Südufer 10, D-17493 Greifswald - Insel Riems, [FLI-Website](#)