

DPI Primefact

Foot and mouth disease (FMD)

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If you suspect FMD you should immediately phone:

- **your Local Land Services on 1300 795 299 (during business hours), or**
- **a NSW Department of Primary Industries veterinarian or authorised officer, or**
- **the Animal Biosecurity Emergency Hotline – 1800 675 888 –monitored 24 hours a day.**

Foot-and-mouth disease (FMD) is an acute, highly contagious viral disease of animals that affects cloven-hoofed animals (those with divided hoofs), including cattle, buffalo, camels, sheep, goats, deer and pigs. It does not usually cause deaths in adult animals but does cause serious production losses.

It is characterised by the formation of vesicles (fluid filled blisters) and ulcers in the mouth. Vesicles may also be found on the skin between and above the hoofs, in the nostrils and on the teats.

The World Organisation for Animal Health (WOAH) lists FMD as a serious disease and it is a significant threat to Australia's livestock industries and export markets. It has the potential to spread rapidly over large areas. Countries without FMD, which include many of Australia's major trading partners, do not import from, or severely restrict imports from FMD-infected countries. This means that an FMD outbreak would impact Australia's trade of all livestock and their products.

FMD is endemic throughout the Middle East, Africa, Asia and most of South America. Australia, New Zealand, New Guinea and the South Pacific islands are free from FMD

What causes FMD?

FMD is caused by a picornavirus. There are seven serotypes of the virus: A, O, C, SAT1, SAT2, SAT3 and Asia1. Immunity to one serotype may not protect from infection against another serotype. Within these serotypes there are over 60 strains which vary in the level of cross protection or immunity they give against other strains, depending on how similar they are. FMD vaccines usually have to be manufactured to match the specific FMD serotype and strain causing the outbreak.

Which species are affected?

Domestic and wild cloven-hoofed animals are the main species affected by FMD. Affected species include cattle, pigs, sheep, goats, camelids (camels, llamas and alpacas), bison, water buffalo (*Bubalus bubalis*), deer, and other wild species, (antelopes, moose, giraffe, wildebeest, warthog and elephants).

Species vary in their susceptibility to infection, the clinical signs they develop and their ability to spread infection. Pigs are very susceptible to infection by eating contaminated food and produce lots of virus when infected. Cattle are mainly infected by inhaling virus, tend to show obvious signs of infection and produce significant virus although less than pigs. Sheep and goats tend to have less obvious signs of infection. Camels, alpacas and llamas appear somewhat resistant to infection. Deer species vary in their susceptibility but clinical cases have been seen in some outbreaks. Generally wildlife become infected from contact with infected livestock and they are rarely implicated in spreading infection. The African Buffalo, which can be long term carriers of the FMD virus, has played a role in spreading infection throughout sub Saharan Africa.

What are the symptoms?

The symptoms can vary from mild to severe. Lameness, drooling and fever are often seen. Blisters or vesicles that develop between the toes and on the heels, mouth and teats rupture, leaving raw ulcers that heal over about ten days. The clinical expression of infection varies between species according to the dose and strain of the virus. For instance some O strains have caused barely noticeable illness in cattle and buffalo while causing classical severe illness in pigs. Sheep and goats generally show fairly mild signs when infected which may be missed if not examined carefully. Because FMD is very contagious, many, or even all of the animals in a herd become infected, however, deaths are unusual except in young animals.

The incubation period can be as short as 24 hours or as long as 14 days and varies between species and the dose and strain of the virus involved in the outbreak.

Figure 1. Cow with mouth blisters causing excessive Salivation



Figure 2. Goat with mouth lesions



Figure 3. Typical pig lesions on foot



Figure 4. Pig with ruptured vesicle on snout



How long does the virus survive?

FMD virus can survive for long periods in hides, some dairy products, and in chilled, cured or salted meats. In the environment under cool moist conditions the FMD virus can survive for up to 6 months. The virus does not survive for long in hot dry conditions.

How is FMD spread?

Infected animals shed FMD virus in their breath, saliva, urine, faeces, milk, and semen. Virus may be shed for up to 4 days before any symptoms are seen.

Spread of infection can also occur when vehicles, clothing, hands or feedstuffs get contaminated with the virus and then come in contact with susceptible animals.

Windborne spread can occur and has on several occasions caused spread of infection over significant distances.

In an FMD outbreak, Australian native species are unlikely to spread FMD except in limited circumstances but feral pigs, cattle, buffalo, goats and camels could cause spread of FMD.

FMD virus is one of the most feared animal diseases because it is highly contagious and can spread in so many ways. In the United Kingdom outbreak in 2001 movements from saleyards of infected sheep before they displayed any symptoms resulted in the rapid spread of infection throughout the country and vastly increased the size of the outbreak.

Preventing FMD entry to Australia

FMD is most likely to enter Australia through illegal imports of meat and dairy products infected with the FMD virus and subsequent illegal feeding of these products (swill) to pigs

Evidence of FMD virus was detected in meat confiscated at Australian international airports in 2019 by biosecurity staff of the Department of Agriculture and Water Resources.

Strict quarantine, surveillance and biosecurity conditions are in place to prevent FMD entering Australia.

New South Wales and all other Australian states and territories have strict laws that prohibit the feeding of food scraps or waste to animals. To help prevent FMD and other serious diseases, domestic and wild pigs must be

prevented from eating food scraps. Pig farms, rubbish tips and ports are monitored to make sure that food scraps are not fed to pigs.

FMD prevention and preparedness

Both government and industry engage in significant FMD prevention and preparedness activities. In addition, Australia has invested heavily in building the capacity of neighbouring countries to combat diseases. Australia also maintains a strong biosecurity program at the border and undertakes extensive planning and preparedness activities to make sure that if an incursion occurred, it can be contained and controlled as quickly as possible.

Has FMD been detected in Australia?

Australia remains free of FMD.

Can FMD affect people humans?

FMD is not considered a public health problem as infection of people with FMD is extremely rare and any symptoms are temporary and mild, only very occasionally resulting in clinical disease (fever, vesicles on the hands or feet or in the mouth). People with open skin wounds can be infected with FMD by handling diseased animals or the virus in the laboratory, or through the mouth lining by drinking infected milk.

FMD can be confused with Hand, Foot and Mouth disease which is present in Australia and affects primarily young children with signs of fever, mouth sores and a skin rash. This is caused by a different virus and is **NOT** related to or associated with Foot and Mouth Disease.

Socioeconomic impact of FMD

The social and economic effects of an outbreak of FMD in Australia would be significant. Livestock industries would be impacted by export market closures, production losses due to disease and response activities. There would be significant flow-on losses to many rural and regional businesses that rely on livestock industry revenue. In addition, there may be indirect effects on sectors such as tourism as a result of customer perceptions and a general downturn of the rural economy.

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) recently costed a small scale three month outbreak at \$7.1billion and a large scale outbreak, lasting 12 months was estimated to cost \$16 billion. Studies have estimated \$50 billion in economic losses over 10 years if a medium to large scale FMD outbreak was to occur in Australia.

There would also be significant social costs. At the individual and family level, the social impacts could range from emotional strains on family relationships to severe mental disorders. Normal community activities may be affected by movement and biosecurity restriction and longer term community cohesion may be impacted.

What action would be undertaken in Australia if FMD was to occur?

Australia has nationally agreed response plans (AUSVETPLANS) for diseases such as FMD. In an FMD outbreak the response would aim to quickly stop FMD spreading and eradicate it by:

- restricting the movements of animals and their products
- using strict hygiene and biosecurity procedures when working with animals and their products
- slaughtering infected animals

- tracing and surveillance
- a public awareness program and
- other strategies, (if required), i.e. strategic vaccination using strain specific vaccines

The National Livestock Identification System (NLIS) would play a key role in rapidly tracing movements of infected animals.

Further information

- Further information on FMD is available via the [Australian Government Department of Agriculture, Fisheries and Forestry](#).
- NSW FMD webpage at: <https://www.dpi.nsw.gov.au/content/agriculture/livestock/health/exotic/fmd>
- Call 1800 680 244 or contact Animal Biosecurity, Department of Primary Industries at animal.biosecurity@dpi.nsw.gov.au
- Contact Local Land Services 1300 795 299, see <http://www.lls.nsw.gov.au/>
- Contact the state veterinary laboratory on 1800 675 623 or at laboratory.services@dpi.nsw.gov.au

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