

## Foot and Mouth Disease: An Overview

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The recent outbreak of Foot and Mouth Disease (FMD) in the United Kingdom, with later spread to the Continent, has generated many questions and concerns from the public, livestock producers, and the media. There is considerable confusion, especially by the public, about the difference between BSE and FMD and the potential for spread in the US. It is important that we have a some knowledge of the disease, how it is transmitted, what it could do if introduced into the US, and what is done to keep it out of our country.

### The Worldwide Foot and Mouth Disease Situation:

Foot and mouth disease exists on every continent on the globe except North America, Antarctica, and Australia. A few years ago, Taiwan experienced a massive outbreak that was catastrophic for its swine industry. It is endemic in many countries and causes occasional cases and economic loss. Their governments have elected to live with, rather than eradicate, FMD. In many of those countries, vaccination is used to help control spread and economic loss. There are major disadvantages to vaccination, however.

The first case in England was recognized by a veterinary inspector at a swine abattoir one February 19 and confirmed in the laboratory the next day. Since then, there have been several hundred cases in England, Scotland, and Wales. There are diagnosed cases in Northern Ireland, France, Holland, and Ireland. These cases are thought to have spread from the outbreak in the United Kingdom. The epidemic in the United Kingdom is dramatic because of our close contact and commerce with that country and the rest of continental Europe. There has not been a case of FMD in the United States since 1929.

In addition to the United Kingdom, there is an epidemic in Saudi Arabia and some other areas of the Mideast. Argentina has also experienced an epidemic, presumably because of spread from adjacent infected countries.

### Description of Foot and Mouth Disease:

Foot and Mouth Disease is a highly contagious disease of cloven-hoofed animals, including cattle, swine, sheep, goats, deer and other wild ruminants. It does not cause disease in man. The virus that causes FMD can be carried on clothing; contaminated footwear, food, and other fomites. It can be carried for several miles on the wind, provided environmental conditions are appropriate for survival of the virus. The disease is easily and quickly spread from animal to animal in a herd via direct contact.

FMD is characterized by blisters or vesicles between the toes, in the mouth, on the tongue, lips, and teats. The vesicles rupture and become open erosions. Affected animals have a fever in the early stages of the disease. Mortality rates are not high, but affected animals show rapid weight loss, precipitous drop in milk production, and very slow recovery. Because of the severe effects on production and its ability to spread rapidly, FMD is one of the foreign animal diseases that is most feared by veterinarians and livestock producers.

### History:

Foot and mouth disease has apparently existed throughout all of recorded history. It is a scourge of livestock production in countries where it is endemic. Periodic epidemics are common. It is one of several foreign animal diseases that are a constant threat to the US livestock industry.

Long ago, the US made the decision to eradicate FMD. Several outbreaks occurred during the 19<sup>th</sup> and early 20<sup>th</sup> century. A major epidemic occurred in 1905. The last case of FMD in the US occurred in California in 1929. There was a case in Saskatchewan in 1951-52 that was promptly eradicated. Mexico and Central America are free of FMD.

### Prevention, Control, and Eradication:

Prevention of the introduction of infection into the United States requires that we preclude all importation of livestock and animal biological materials, including uncooked meat, vaccines, and similar products, from countries that have FMD. This has worked quite well. We can only import uncooked meat from countries that are free of FMD. Whenever a case occurs, that country is immediately embargoed from shipping fresh beef, pork, lamb and other products to the US. People who travel to foreign countries where FMD is endemic are questioned at ports of entry and asked not to have any livestock contact for several days. The virus can be carried for limited periods of time on footwear, clothing, and in the nasal and respiratory passages of people.

Eradication of a highly contagious disease such as FMD requires early and accurate diagnosis and rapid intervention. Once a diagnosis has been made on a premises, it is important that all animals be humanely euthanized and properly disposed of in as short a period of time as possible. Twenty-four hours or less is a reasonable and attainable goal. Slaughter is practiced in order to eliminate the source of infection. After cleaning and disinfection, the premises are held vacant for several weeks. After this period of time, a few susceptible animals are placed in the facility and observed carefully for signs of developing disease. A large area around an infected facility is quarantined and animal movement is restricted or prohibited.

When FMD is diagnosed, nearby livestock facilities are monitored very carefully for signs of disease. In some situations, animals in a two-mile radius are also euthanized and incinerated. This is done to provide an animal free zone, thereby helping to reduce the chance of spread. Wild animals, especially deer, are problematical, as they may carry the infection.

An area with disease is quarantined. Travel in and out is severely restricted. School buses, as an example, could not enter a rigidly quarantined area. Even events where rural people would commonly meet or congregate are severely discouraged. An example is the recent cancellation of the St. Patrick's Day Parade in Dublin, Ireland.

Slaughter and disposal have proven effective. Large confinement livestock units in the US may make this more difficult from both a cost and logistical standpoint. Vaccination has not been considered an alternative, since vaccinated animals may still acquire the infection and serve as a reservoir for disease, even though they may not show disease themselves. Vaccinated animals will test positive for the disease. Current vaccines must be given every few months in order to convey protective immunity. In a

large and uncontained outbreak, however, the use of vaccines followed by slaughter at a future time might become necessary.

Some important questions for Iowans at this point:

1. Should I go to countries such as the UK, the Netherlands, and France

Yes, but avoid rural areas. Above all, don't bring any food products home, clean and disinfect clothing, and don't go near susceptible livestock for seven days.

2. What about foreign visitors to my farm?

They should not be allowed in or near livestock units for 5-7 days, and only then after laundering clothes and disinfecting footwear, if they come from a country that has FMD. Remember, FMD exists on every continent except North America, Antarctica, and Australia.

3. Are meat and dairy products safe in FMD countries?

Yes. FMD is not transmissible to man, and no animal showing obvious signs of disease can be slaughtered.

4. What would be the economic effect of an outbreak of FMD in the US?

The speed of diagnosis and implementation of eradication procedures of the first case are critical. Once significant spread has occurred, the cost of destroying animals and other control procedures increases dramatically. The disruption of commerce and other activities increase the cost and lead to considerable social disruption as well. The value of beef cattle in a 100,000 head high plains feedlot is easily \$80,000,000. The cost to various public agencies would be enormous in a widespread outbreak. It is vital that we don't have the first case.

5. Isn't studying diseases such as FMD a risk to the US livestock industry?

It would be, except we do not study or in any way introduce foreign animal diseases such as FMD onto the US mainland. Research on FMD and other foreign animal diseases is conducted at the USDA Plum Island facility located off the coast of Long Island, N.Y. No animals affected with FMD or other foreign animal diseases are allowed into the US, even for research purposes. This is not to be confused with the recent case of sheep that came into the US and were later found to have been possible exposed to BSE. BSE is infectious but not contagious. It requires ingestion of brain and spinal cord to transmit the disease.

6. Does the situation in Europe require any action in the US at this time?

No, except for rigorous planning by USDA and other agencies.