

Foot & Mouth Disease FMD

1. WHAT IS FOOT & MOUTH DISEASE AND WHAT CAUSES IT?

Foot & Mouth Disease (FMD) is a disease affecting cloven-hoofed animals – animals such as cattle, pigs, sheep, goats, deer. It can also affect other, similar animals that you might find in a zoo or a game park.

Symptoms vary in importance between species, but in general, the animals develop a fever and may get blisters in their mouths and on their feet (which is where the name comes from) as well as on their teats. Most adult animals recover from the disease. Nevertheless, this is a slow process and they may suffer long-term health problems.

FMD is caused by a virus, a member of the *picorna* virus family. There are seven different types of the FMD virus, which vary according to region. These are the European types O, A and C; the African types SAT1, SAT2 and SAT3; and the Asian type Asia1. These all have different characteristics and require different vaccines.

FMD is *highly* infectious. This means that the virus spreads very rapidly, and actual contact between animals is not necessary to carry it from one herd to another.

2. HOW CAN YOU DIAGNOSE FOOT & MOUTH DISEASE?

The first diagnosis is usually made visually, when someone sees the symptoms mentioned above (“Clinical Symptoms”). Following this, samples are taken from the animals and laboratory tests are carried out. These either try to isolate the virus, or grow it from the sample. Alternatively, the laboratory can test a blood sample for antibodies (the body’s immune response – defence – against a disease).

This last is the signal that the disease is or has been present. But it is also the body’s response to a vaccine. This means that when antibodies are found they can be an indication that the disease has been present *or* that the animal has been vaccinated. But “Marker Vaccines” can

be used to distinguish an infected animal from one that is vaccinated.

3. WHY IS FOOT & MOUTH DISEASE SO “DRAMATIC”?

Foot & Mouth Disease causes sickness in the animals. This may lead to pain and suffering, massive inflammation of the feet, weight loss, abortion and even death, particularly in young animals.

This, of course, directly affects the animals, but also affects the farmers due to economic losses caused by the reduced milk production and stunted growth. Furthermore, the animals may develop secondary diseases due to being weakened.

Also very important is the fact that FMD is *highly* infectious. This means that the virus spreads very rapidly, and actual contact between animals is not necessary to carry it from one herd to another.

As a result, the outbreak of FMD is potentially disastrous and countries seek to avoid it. Thus, the most dramatic losses from the disease are caused by trade restrictions. FMD-free countries may refuse importation of animals and animal products from FMD-infected countries.

4. CAN FOOT & MOUTH DISEASE BE TREATED OR PREVENTED?

There is no cure for FMD and, in time, the animals mostly would recover, albeit with the associated long-term health problems that result. Treatment of the blisters can help the animal, but the problem is that the virus still spreads.

As with most viral diseases, however, FMD can very easily be prevented by vaccination. Routine vaccination not only prevents the clinical disease, but also prevent it spreading by removing the “chain reaction” from one herd to another. Thus, vaccination can also be used to eradicate FMD.

5. IS IT SAFE TO EAT PRODUCTS FROM ANIMALS THAT ARE EITHER INFECTED OR VACCINATED?

Foot & Mouth Disease poses no danger to humans. Some farmers who have a lot of contact with infected animals have reported some symptoms, such as a skin rash, for

example. This is, however, quite rare and poses no danger to the health of the farmer.

People can safely eat the meat or drink the milk from animals that have been infected by FMD. Equally, there is no risk from animals that have been vaccinated against it.

6. CAN FOOT & MOUTH DISEASE BE ERADICATED BY VACCINATION?

Yes. Vaccination not only prevents animals catching clinical Foot & Mouth Disease but also hampers the virus’ multiplication. This means that the spread of the disease is also reduced. Universal or “blanket” vaccination programmes may completely remove the Foot & Mouth Disease virus from a region or country.

7. WHY DO WE HAVE A VACCINATION-AVOIDANCE POLICY FOR FOOT & MOUTH DISEASE?

Some countries have an officially recognised “FMD-free” status. These “FMD-free countries” banned the import of animals and animal products from countries that do not have this status, to avoid importing the disease. And, because vaccination of animals can also mask the fact that the animals are infected, as a precaution, “FMD-free countries” also do not import animals or products from countries that vaccinate.

Therefore, other “FMD-free” countries, including those of the European Union – acting as a single market – installed a non-vaccination policy to avoid jeopardising their exports of meat and milk.

8. WHY IS “STAMPING OUT” CARRIED OUT IN A FOOT & MOUTH OUTBREAK?

A “stamping out” programme is the mass culling (slaughter) of animals that might have been in contact with FMD-infected animals.

Experience has shown that fast slaughter and destruction of animals from nearby herds will stop the virus spreading because the “chain” of hosts for the virus is broken.

However, to be effective, additional measures such as strictly enforced restrictions on animal movements are also

necessary. Furthermore, such a programme also means the killing of many – possibly healthy – animals.

9. WILL A “MARKER VACCINE” CHANGE THE FOOT & MOUTH DISEASE POLICY?

The development of a “marker vaccine” and the new “marker test” are a completely new approach to controlling Foot & Mouth Disease. Modern FMD vaccines are different from the existing vaccines in that they do not contain a certain, *non-structural* protein (3ABC). This is eliminated during the manufacture of the vaccine. Because the 3ABC is not present, the animal’s immune system does not produce the antibodies against this protein.

When animals are vaccinated with these modern vaccines, they only form antibodies against the *structural* proteins of the virus. The presence of one antibody or another can be checked using a special test.

The result is that areas can be vaccinated and, unlike before, authorities can still monitor the spread of the virus in vaccinated areas. The slaughter of large numbers of – possibly healthy – animals as a preventative measure is no longer necessary.

10. CAN FOOT & MOUTH DISEASE BE ERADICATED?

Mass vaccination, controls on animal movements and – eventually – the systematic testing for the Non-Structural Protein 3ABC will bring eradication closer. However, this needs to be undertaken region by region and country by country. It also needs to be closely linked with controls on the movement of animals. If, in addition to these measures, imported animals and animal products could be checked for 3ABC-antigens or antibodies, world-wide eradication is possible.

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TEN KEY QUESTIONS

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Or see our additional publication:
“Foot & Mouth Disease:
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