

epidemiological situation of the disease: In general, it is essential for livestock keepers to maintain sound biosecurity practices to prevent introduction and spread of the virus.

Contingency planning for potential outbreaks both at national and county levels is critical in order to identify elements to be included in a response effort such as surveillance and tracing as well as humane slaughter of infected cattle, proper disposal of carcasses and animal products, disinfection and movement control.

b) Measures recommended at farm level include:

- Control of people's access to livestock and equipment;
- Controlled introduction of new animals into existing herds;
- Regular cleaning and disinfection of livestock holding structures, vehicles and equipment;
- Monitoring and reporting of the disease; Appropriate disposal of manure and dead carcasses.

b) Movement control

Strict quarantine and controls on movement of livestock, animal products, equipment and vehicles.

d) Vaccination

Vaccination strategies are designed to achieve mass coverage or be targeted to specific sub-populations or zones. Vaccination programmes should meet several critical criteria, mainly:

- Coverage should be at least 80%;
- Campaigns should be completed in the shortest possible time;
- Vaccination should be scheduled to allow for interference from maternal immunity;
- Vaccines should be administered in the correct dose and by the correct route;

The vaccines used should meet OIE standards of potency and safety, and the strain or strains in the vaccine must antigenically match those circulating in the field. In Kenya samples are submitted to national FMD laboratory at Embakasi for identification the circulating strain. Inactivated virus vaccines, are used since they have no ability to multiply in vaccinated animals.

Why vaccination failure?

1. Low vaccination coverage
2. No vaccine matching with circulating FMD-virus strain or takes longer: Mono/Bi/Tri/quadrivalent inactivated vaccines (O/A/C/S1/S2)
3. Only cattle are vaccinated: other incontact animals? Role of wildlife?
4. Illegal animal movement and poor enforcement of quarantine.

KCSAP Brochure No.



Compiled by: Ilthinji D. and Ndirangu P.

For Further information contact:

**Veterinary Research Institute, Muguga,
P.O. Box 32-00902 Kikuyu
Email: Directorvsri@kalro.org
Tel. Phone: 020 2020512**

**Editorial and Publication coordinated by
Knowledge, Information and Outreach Unit**

Diagnosis and management of Foot and Mouth Disease (FMD)



DIAGNOSIS AND MANAGEMENT OF FOOT AND MOUTH DISEASE (FMD)

Introduction

Foot and Mouth Disease (FMD) is a severe and highly infectious viral disease of livestock with a significant economic impact. Disease symptoms and signs commonly occur on the foot/hooves and mouth region, hence the name foot and mouth disease. It is a transboundary animal disease that affects production of livestock and disrupts regional and international trade in animals and animal products. The disease causes severe production losses, and while the majority of affected animals recover, the disease often leaves them weakened and debilitated. Foot and Mouth Disease is a World Organization for Animal Health (WOAH) listed disease and must be reported to the Organisation through the directorate of veterinary services (DVS). Apart from cattle it also affects, sheep, goats, pigs and other cloven animals.

Cause

The disease is caused by an aphtho-virus of Picornaviridae family. There are seven strains of this virus (A, O, C, SAT1, SAT2, SAT3, and Asia1) which are endemic in different countries worldwide. The strains circulating in East Africa are six of 7 serotypes namely; O, A, C, SAT types 1, 2, and 3 (Serotype SAT3 has been recorded only in Uganda). In Kenya only five (O, A, C, SAT-1 and SAT-2) are commonly reported are the ones targeted by KEVEVAPI during vaccine production. Each strain requires a specific vaccine to provide immunity to a vaccinated animal.

All the serotypes have also been found in wildlife, although wildlife does not play a significant role in the maintenance of the disease. To date, the only confirmed reservoir in wildlife is African buffalo (*Syncerus caffer*).

Transmission and spread

Transmission refers to movement of the disease from one animal to the other in the same area or herd, while spread involves movement of the disease from one herd or area to another. FMD-virus is shed in all excretions and secretions from infected animals; animals breathe out a large amount of aerosolised virus, which can infect other animals via the respiratory or oral routes. The virus may be present in milk and semen for up to 4 days before clinical signs of disease.

The importance of the disease is related to the ease with which the virus can spread through any or all of the following routes:

1. Infected animals newly introduced into a herd (carrying virus in their saliva, milk, semen)
2. Contaminated pens/buildings or contaminated animal transport vehicles;
3. Contaminated materials such as hay, feed, water, milk or biologics;
4. Contaminated clothing, footwear, or equipment;
5. Virus-infected meat or other contaminated animal products (if fed to animals when raw or improperly cooked);
6. Infected aerosols (spread of virus from an infected property via air currents).

Animals that have recovered from infection may sometimes carry the virus and initiate new outbreaks of the disease (are known as carriers).

Note: FMD is not readily transmissible to humans and is not a public health risk.

Clinical signs

Severity of clinical signs depends on serotype of virus, exposure dose, age and host immunity. Morbidity can reach 100% in susceptible populations. Mortality is generally low in adults (1–5%), but higher in young calves. The incubation period is 2–14 days. Clinical signs can range from mild or inapparent to severe.

The typical clinical sign is the occurrence of blisters (or vesicles) on the nose, tongue or lips, inside the oral cavity, between the toes, above the hooves, on the teats and at pressure points on the skin. Ruptured blisters can result in extreme lameness and reluctance to move or eat. Usually, blisters heal within 7 days (sometimes longer), but complications, such as secondary bacterial infection of open blisters, can also occur.

Other symptoms are fever, depression, hypersalivation, loss of appetite, weight loss, growth retardation and a



Caption???

Diagnosis

Tentative diagnosis is based on clinical signs. However, FMD cannot be differentiated clinically from other vesicular diseases, such as vesicular stomatitis and vesicular exanthema.

Confirmation of any suspected FMD case through laboratory tests is always required.

Prevention and control

a) Global approach

Worldwide FMD control measures are described in the [Global Food and Mouth disease control strategy](#) and include the presence of early detection and warning systems and the implementation of effective surveillance. They help monitor disease occurrence/prevalence and allow characterisation of FMD viruses. The implementation of the FMD control strategy varies from country to country and depends on the