

# Foot and Mouth Disease in Pigs: An overview in Indian Perspective

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## Introduction

Foot-and-mouth disease (FMD) is a viral disease of all cloven-footed animals caused by the *Aphthovirus* of the *Picornaviridae* family. In India, where FMD is prevalent, the cases have been documented throughout the year from different regions of the nation. The multiplicity of viral strains in circulation with serotypes O, A, and Asia-1, unrestricted movement of the animals from diseased areas, and apparent infection in small ruminants have compounded the disease situation in India. Type O is the most common serotype and is responsible for 83-93% of outbreaks, followed by Asia 1 (3-10%) and A (3-6.5%). However, the disease occurrence, clinical disease severity, and outbreak frequency have all gradually and significantly decreased in areas receiving routine vaccinations, primarily under the FMD control program and partially under the ASCAD (Assistance to States for Control of Animal Diseases) and RKVY (Rashtriya Krishi Vikas Yojana) of the Government of India.

India's livestock wealth (534.54 million) includes 9.06 million pigs as per the latest census which has been reduced in comparison to the previous census owing to the increased piglet mortality and diseases. FMD is a major contributor of economic losses to the swine industry. Respiratory aerosols and direct or indirect contact with sick animals are the two main ways of viral spread. Under specific meteorological conditions, it is thought that the FMD virus can be transmitted via aerosols over lengths of up to 30 miles. The infected pigs are very effective virus spreaders and can produce aerosols with much higher virus concentrations than other species. Hence, pigs have been referred as the amplifier hosts for FMD virus. Even after recovering from FMD pigs may carry the virus for



weeks, months, or even years.

The affected pigs exhibit mild to severe clinical signs depending upon the type of virus involved and immune status of the animals. The common clinical signs include high fever (104-106°C), dullness, excessive salivation, vesicles in the mouth, particularly on the tongue and gums, ulcers in the inter-digital space of the hoof, blisters on the teats, infertility and retarded growth, thimbling (totally missing hooves). In some cases, abortions and death may occur during extreme circumstances.

The FMD is amongst the most serious diseases of pigs in terms of economic impact and is globally recognized as a priority disease for control and eradication. The economic losses suffered by farmers due to this disease are enormous and continue during the life cycle of the animal.

To reduce the danger of disease transmission and eventually eradicate it preventive measures must be adopted. Basic biosecurity measures are important in minimizing the spread of FMD. Standardize pig movements, restricted people and vehicles movements, placement of foot dips at all entrances, service and feed delivery points, proper cleaning and disinfection procedures, proper health monitoring, isolation of sick animals, treatment of diseased animals, proper sanitization of feed and water are few crucial steps to be taken for control of the disease and minimize the associated losses.

Routine immunization may be used in endemic and high-risk areas primarily to protect breeding stock. Pig vaccination presents challenges due to the limited duration of protection, which is only around six months. Additionally, it's partly because there are three FMD serotypes prevalent in India, and immunity to one makes animals vulnerable to the others. In most endemic areas, vaccines must be multivalent (several serotypes) for effective management of the disease.

