

Workshop on FMD Modelling to estimate the effects of FMD vaccination and other control strategies (Virtual Session)

The virtual workshop on FMD Modelling to estimate the effects of FMD vaccination and other control strategies was organised on 8 December 2020 by OIE Sub Regional Representation for South East Asia (OIE SRR SE Asia) in partnership with Massey University (MU) under New Zealand, Ministry of Foreign Affairs and Trade (MFAT) funded project 'ASEAN Regional Strengthening Foot and Mouth Disease Control in South East Asia'. The workshop has seen the participation of 11 member countries from SE Asia sub-region with 74 participants. The EpiCentre staff from the School of Veterinary Services, MU, Prof Cord Heuer, Dr Masako Wada, and Dr Art Subharat were subject matter experts facilitating the workshop. The overall workshop was coordinated and managed by the OIE SRR SE Asia.

Dr Ronello Abila, OIE Sub -Regional Representative for South East Asia during his opening remark encouraged participants to make use of the opportunity to understand and discuss modelling concepts and tools to improve FMD prevention and control strategies through their respective Veterinary Services (VS).

The objectives of the workshop were to:

1. introduce the reason and concept of modelling.
2. describe the functionality and data requirements of models in general.
3. explain the functionality of Interspread+
4. define and run FMD control scenarios in Interspread+ for FMD (Myanmar, Lao PDR).

The workshop consisted of presentations that align with the objective, followed by a Q&A session. Participants also had an opportunity to think about FMD control scenarios which can be applied to their specific in-country conditions during breakout sessions. The presentation described what modelling is and why it is useful. Ideally, modelling predicts trends of disease in time and space. Findings enable managers to inform decision-makers where, when, and why the FMD virus could be transmitted in the country in the event of incursion and how FMD can best be controlled in a specific endemic situation.

The workflow of disease modelling was explained in 5 stages (with examples) during session one, i.e. data collection (population demographics, contact network, incidence, economic impact), model development and validation (disease spread within and between herds and villages, etc.), cost estimation (with estimated benefit, savings from disease burden, resources required for intervention), policy evaluation, and sensitivity analysis (identify influential parameters that might have to be corroborated by robust field data).

The workshop described Interspread-Plus, a generic modelling framework designed to simulate disease spread between herds or villages in time and space. Once the baseline model was built with currently available data, the next step of testing and validation was explained by comparing the simulated results with data from investigations of actual FMD outbreaks.

In session two, alternate scenarios were compared with targeted vaccination. Using the Laos example, it was demonstrated how Interspread-Plus simulated the spread of infection to different villages under these scenarios. The model uses a Kernel smoothing method by dividing the study area into a grid and generates kernels by means of density equations. The graphical presentation was easy to interpret and helped to identify likely FMD risk hotspots.

Various specific country scenarios of optional outbreak response measures were evaluated in session three. It included enhanced passive surveillance, emergency vaccination, and quarantine as control measures. The different options were discussed to illustrate how modelling could help to evaluate combinations of measures and different levels of compliance.

The breakout sessions provided an opportunity for countries to think about the type of scenarios particularly the set of interventions appropriate for a country for developing a list of options to be evaluated by modelling. Given the interest and response from member countries in the sub-region, it was proposed to plan a follow-up modelling workshop in 2021.