

## Risk of FMD Importation Through Cattle Movement at the Thailand-Myanmar Border: A Preliminary Quantitative Risk Assessment Result

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### INTRODUCTION

Foot-and-mouth disease (FMD) is an important viral infection affecting productivity performance of many livestock species including cattle. Beef cattle are still traditionally raised in Thai households with small number of animals per family. However, a number of cattle are imported from neighboring countries, especially Myanmar. This importation is managed to supply the needs of domestic consumption and also to convey animals to the third countries.

Tak, a Thailand-Myanmar border province, is a major gateway importing cattle from Myanmar. The animals imported into the province are then widely distributed to different regions of Thailand [1]. Therefore, FMD virus may move across the border and further disseminate across the country.

The present study hence tried to comprehend the cattle importation process and employed risk assessment technique to quantify the risk of FMD importation via transboundary cattle movement.

### MATERIALS AND METHODS

We divided our study into 2 parts including field exploration and quantitative risk assessment.

(1) *Field exploration:* We visited Tak animal quarantine station to gain more understanding on cattle importation and quarantine processes. Subsequently, we visited and observed the largest and most important cattle market, where all imported cattle must be presented before being transported to other provinces. To get more insights on the quarantine process, we also visit some private animal quarantine service centers.

(2) *Quantitative risk assessment:* After gathering data and information needed, we carried out an import risk assessment

following the guideline provided in [2]. Briefly, the risk assessment composes of four steps: release assessment, exposure assessment, consequence assessment and risk estimation. In this preliminary study, we focused only on FMD release probability.

### RESULT AND DISCUSSION

*Imported cattle quarantine and FMD examination procedures:* The imported cattle are basically kept for 21 days in private quarantine service centers located in Thai side before entering the main cattle market. All animals are vaccinated against FMD virus once arrive. The cattle are clinically examined for the signs of the disease in 4 consecutive occasions: at arrival and departure of quarantine centers, at the market and at the official checkpoint of Tak animal quarantine station as shown in Fig. 1.

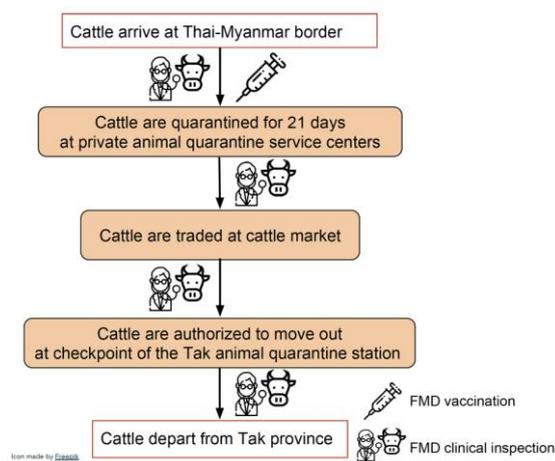


Fig. 1: Cattle importation process and FMD prevention and control measures in Tak province.

The FMD vaccination at entry allows enough time for cattle to develop immunity for

disease protection. Animal keeping period at quarantine centers is apparently sufficient to detect diseased animals if any. The multiple clinical inspections for FMD signs and symptoms are an excellent practice to ensure that the infectious animals are eventually filtered. Based on these standard protocols, the FMD virus is not likely to escape the authority's eyes. However, a more quantitative approach is needed to quantify the actual risk.

**Cattle market:** The main cattle market for imported cattle is located in Mae Sot district, Tak province. The market is operated only on weekends (Saturday and Sunday). At the market, cattle dealers move imported cattle from private quarantine centers to trade (Fig. 2). The veterinary inspectors are there to clinically examine cattle and provide a certified ticket allowing animals to move out of the market. The purchased cattle are then checked again at the checkpoint set by Tak animal quarantine station before leaving the province. As all cattle are vaccinated and quarantined before entering the market, the risk of in-market FMD transmission is relatively low.



Fig. 2: Cattle market in Tak province.

**Release probability of FMD virus:** We developed an import risk pathway as conceptualized in Fig. 3. The probability of releasing imported FMD cattle from Tak animal quarantine station is  $1.25 \times 10^{-8}$ . The value seems very low as the animals are vaccinated, quarantined and repeatedly examined for the presence of FMD clinical signs.

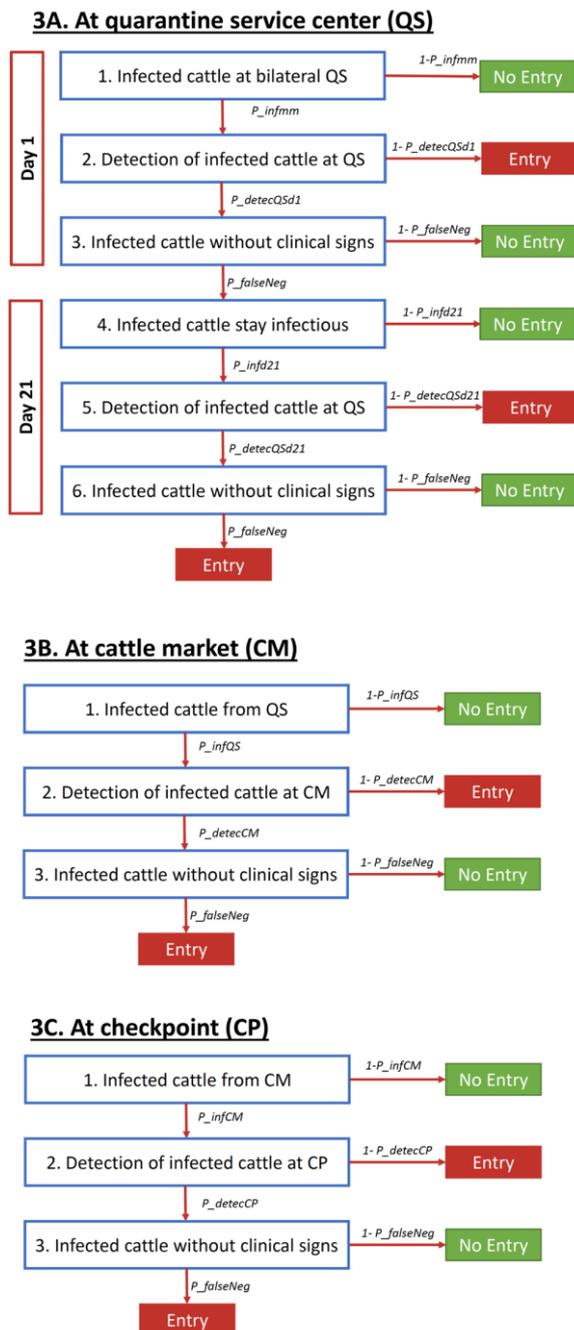


Fig. 3: Risk pathway of cattle importation from Myanmar to Thailand in Tak province. 3A. at quarantine service center, 3B. at cattle market and 3C. at checkpoint of Tak animal quarantine station.

## CONCLUSION

The risk of FMD release from Myanmar to Thailand through cattle importation in Tak province is very low but not neglected. The effective quarantine and examination procedures as routinely performed should be rigorously maintained.

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