

Participatory surveillance of foot and mouth disease: a pilot system in Southern Vietnam

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Abstract

A protocol of participatory surveillance for the detection of Foot and Mouth Disease (FMD) in cattle was designed and applied in a pilot area located at Long An, a province Southern in Vietnam. Tools of the participatory epidemiology such as semi-structure interviews, timeline and participatory mapping were integrated into surveillance protocol and used to investigate 69 sentinel villages. From the focus group organised at these sentinel villages, 18 new villages were identified as potentially infected by FMD. During secondary investigation, 265 individual interviews were conducted and 128 suspected animals were sampled. Out of them, 77 suspected animals were confirmed positive for FMD, with the detection of virus from the serotype O and A. Sensibility and specificity of participatory surveillance were recorded at 0.75 and 0.65, respectively. The results demonstrate the effectiveness of participatory surveillance to detect FMD outbreak in Vietnam. Further field implementations at larger scale (province or region) are necessary to assess the feasibility of integrating participatory methods in the day to day activities of the Vietnamese veterinary services.

Keywords: *Disease detection, effectiveness, suspected cases, participation*

Introduction

Foot and mouth disease (FMD) is known to cause significant impact on the performance of small producers and therefore to threaten livelihood and food security of the poorest communities' worldwide (1). In Vietnam, FMD remains a major threat while causing outbreaks almost every year (2). Between 2014 and 2015, 74 outbreaks caused by serotype O (strains Pan Asia and Mya_98) and serotype A (strain Sea_97) were reported (3). It has been estimated that each affected farm suffers an economic loss of \$84 to \$930 (4).

FMD surveillance in Vietnam is mainly passive. When a farmer is suspecting a case, he needs to inform the communal veterinarian. The communal veterinarian will be then in charge of verifying the suspicion and delivering advices on control methods to the farmers according to the national regulation. The communal veterinarian will inform the district veterinarian and the communal people's committee. The district veterinarian will subsequently inform the provincial veterinary service and the district people's committee. In the event of disease spreading, the head of

the district people's committee will declare an outbreak at district level. Afterwards the provincial veterinary service upon verification will inform the Regional Animal Health Office, the Ministry of Agriculture and Rural Development, and the provincial people's committee (5).

Passive surveillance is fully based on farmers' willingness and many socioeconomic constraints often restrain them to declare the disease. Many studies have shown that information about FMD situation in South East Asia is inaccurate because of under-reporting (1). Participatory epidemiology (PE) is often used in animal health surveillance in developing countries for a better understanding of epidemiological drivers and socio-economical contexts related to the emerging and scarce disease (6). Relying on local knowledge, these methods actively involve the farmers to gather sanitary information and apparently become interesting alternatives to classical passive surveillance. The objectives of this study were to assess the feasibility of including participatory methods within the surveillance system of FMD in Vietnam and to test the effectiveness of participatory surveillance through the setting up of pilot surveillance in sentinel villages.

Materials and methods

Location and surveillance protocol

Two districts of Long An province, Duc Hoa and Duc Hue, in Southern Vietnam were selected to be our pilot areas. Research team included four trained peoples from Faculty of Animal Science and Veterinary Medicine of the Nong Lam University (including one lecturer, one master student and two veterinary students). The study lasted for five months from December 2015 to April 2016. Our surveillance protocol comprised of three stages. First stage was the organisation of monthly focus group interviews (FG) in a random selection of 20 villages per district. Each interview involved 10 to 15 farmers discussing about FMD suspicion within or outside their village. When suspicions were detected, the surveillance team would organise secondary FG within the suspected village to identify potential infected farms. Subsequently, an individual interview was arranged with the farmer whose farm is suspected of FMD to validate the disease's situation in the farm, and identify potential source of disease introduction and potential disease spread. Several participatory tools were used and blood samples of cattle were collected in and around the suspected farm.

Discussion

Our findings highlighted the fact that participatory surveillance could be highly effective in the detection of FMD infected cases in Vietnamese context. With basic participatory tools and limited human resource, participatory surveillance helped us to detect an important number of FMD infected cases from primary source of information. Moreover, participating in the research helped the farmers to spontaneously share information with us during the discussions. In most cases, disease information was mentioned first by farmers during our conversation and they did not feel uncomfortable to declared cases at their farms or in the surrounding farms.

Timelines and participatory maps allowed us to locate new infected farms, track back possible source of infection and predict the next village to visit by taking into consideration the disease mode of transmission (wind flow, animal movement route...).

Information from our study was shared in real time with the District Veterinary Service, thus the authorities are able to apply control measures at small scale. Those participatory tools could be used by communal veterinarians at local level in their routine surveillance activities. Distribution of suspected and confirmed cases also provide information about potential hot spot areas where more attention should be devoted and prevention methods (vaccination, disinfection) should be implemented during the following years to prevent new outbreaks.

Most of the suspected cases in our pilot system were found before and after Vietnamese traditional holidays, suggesting that surveillance activities should be strengthened during this period. One reason for this might be that the second round of vaccination (between September and October) is not always strictly applied and consequently, most of the animals don't have enough immunity capacity to fight the disease. The expansion of such participatory surveillance system during a full year could highlight the highly risky period of FMD infection.

Moreover, according to the principle of modified stamping out policy in case of FMD outbreak in Vietnam, only the first animals with confirmed laboratory results have to be culled. Therefore, an important number of infected animals remain alive, maintaining the virus and being a potential source of infection in the following year.

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