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ORIGINAL ARTICLE

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Timeliness of vesicular disease notification system in Brazilian foot-and-mouth disease surveillance programme

Edyniesky Ferrer-Miranda[1] | Erivânia Camelo de Almeida[2] | Cláudio Tadeu Cristino[1] | Jones Albuquerque[1,3] | Kleber Régis Santoro[1]

[1]Federal Rural University of Pernambuco, Postgraduate Program in Biometrics and Applied Statistics (UFRPE/PPGBEA), Recife, Brazil

[2]Agricultural Defense and Inspection Agency of Pernambuco (ADAGRO), Recife, Brazil

[3]Keizo Asami Laboratory of Immunopathology (LIKA/UFPE), Recife, Brazil

Correspondence
Kleber Régis Santoro, Federal Rural University of Pernambuco, Postgraduate Program in Biometrics and Applied Statistics (UFRPE/PPGBEA), Recife, Brazil.
Email: krsantoro01@gmail.com

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Abstract

Animal health surveillance programmes should be reliable and informative to ensure their effective implementation. As such, the regular assessment of those aiming to demonstrate the absence of disease, as well as the ability to detect outbreaks on time, is of vital importance. Several criteria make it possible to assess the performance of surveillance systems, including timeliness, which represents the speed between steps in a surveillance system. Therefore, the objective of this study was to evaluate the variability in the timeliness, within and between states, of the surveillance programme of the Brazilian Veterinary Services (BVS) for foot-and-mouth disease (FMD), for the notification of vesicular disease. A total of 14 years (2004–2017) of data relating to vesicular syndromes from the Brazilian Continental Information and Surveillance System (SivCont) were included. A categorical variable was created with four classes to group the notified vesicular processes in the SivCont, according to two criteria, the similarity of the symptoms of the diseases reported with FMD and aetiology (viral, bacterial, fungal and non-infectious). The three timeliness values (TL-1, TL-2 and TL-3) related to different portions of the FMD surveillance system were analysed as a response in a generalized linear model in which the states of Brazil were the explanatory variables. The analyses were performed separately for each notification class (FMD, vesicular stomatitis, similar symptoms and similar non-infectious symptoms) and included comparisons within and between states. The study results provide an understanding and evaluation of the timeliness of the Brazilian FMD surveillance system, thereby providing a base of knowledge from which involved agents and decision-makers can evaluate BVS and reinforce surveillance measures in the states with poorer timeliness than permitted.

KEYWORDS

cross-border diseases, generalized linear models, veterinary epidemiological surveillance

1 | INTRODUCTION

Foot-and-mouth disease (FMD) is a highly contagious mammalian disease that can cause severe economic losses involving ungulates (Ferrari et al., 2016; Sobrino & Domingo, 2004). Cattle, pigs, sheep, goats and water buffalo (*Bubalus bubalis*) are among the susceptible domestic species, although many cloven-hoofed wild species may also become infected (OIE, 2017a; Olmstead & Rhode, 2015).

To combat the disease, the Brazilian Ministry of Agriculture, Livestock and Supply (MAPA) developed the National Program for the Eradication and Prevention of FMD (PNEFA). The primary strategy of this programme is to implement disease-free zones according

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