

Eco-epidemiological characteristics of the 2006 – 2007 Rift Valley fever outbreak in Tanzania: A retrospective analysis

Fredrick Kivaria¹, F. O. Fasina², Selemani Makungu¹, Obed Nyasebwa¹, Charles Bebay¹, Raphael Sallu³, and Niwael Malamsha¹

¹Affiliation not available

²Univ Pretoria

³Food and Agriculture Organization of the United Nations

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Abstract

Tanzania was one of the countries that were heavily affected by the 2006/07 Rift Valley fever (RVF) epizootic that affected the entire Eastern Africa region. In this study we used information on the geographical locations of the reported cases (abortions and serological data) to explore the eco-epidemiologic characteristics of the 2006/07 RVF outbreak in the north-eastern Tanzania. A total of 3819 small ruminant serological samples were investigated, of which 68.40% (2614) had serological results on IgM antibodies, and positive history of abortions. Of the 2614 data, 1826 (69.9%), and 1135 (43.4%) had information on abortion and IgM positive status respectively. Suitability analysis showed that 80% of the study area favours the occurrence of RVF. While a pair wise comparison of the risk difference indicated short distances ([?] 15Km) to the points of livestock congregations such auctions ($Z = 20.32$; $P < 0.00001$), dip tanks ($Z = 7.997$; $P < 0.00001$), water bodies ($Z = 19.209$; $P < 0.00001$), and transport network ($Z = 13.589$; $P < 0.00001$) were highly associated with the IgM seropositivity. Also, proximity ([?] 30 Km) to the wildlife reservoirs was significantly ($Z = 14.51$; $P < 0.00001$) associated with the occurrence of RVF. The same risk factors were highly ($P < 0.00001$) associated with the occurrence of RVF related abortions. This work could have future implications in informing a collaborative approach to develop and adapt prevention and control strategies that will help manage the disease risks, and the associated socio-economic and public health impacts.

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