The epidemiology and impact of Rift Valley Fever in Tanzania: a review

1,2 Calvin Sindato; 2 Esron D. Karimuribo, 3 George Dautu

Affiliations:
1 National Institute for Medical Research, Tabora, Tanzania
2 Southern African Centre for Infectious Disease Surveillance (SACIDS), Sokoine University of Agriculture, Morogoro, Tanzania
3 University of Zambia Veterinary School, Lusaka, Zambia
Introduction 1

• Rift Valley Fever (RVF) is a viral haemorrhagic disease primarily of cattle, sheep, goats, camels, wildlife and humans.

• Spread: - Aedes mosquitoes, other blood-sucking insects and through skin abrasions.

• One of the most significant zoonotic disease problems in Africa.
Introduction 2

- Epizootics of RVF in Africa occur often when unusually heavy rainfall is observed.

- The inter-epizootic survival of RVF Virus is believed to depend on transovarial transmission of virus in floodwater Aedes mosquitoes.

- Economic impact attributable to RVF has been found to be substantial.
Introduction 3

• Tanzania had encountered a number of RFV outbreaks since 1977

• This paper reviews RVF in Tanzania focusing on
  – trend of occurrence
  – epidemiological factors
  – socio-economic impact
  – control measures
Methodology

• Extensive literature review
• Web sites:
  – Pub Med Google scholar (http:// scholar.google.com)
  – Food and Agriculture Organization of United Nation (FAO) [www.fao.org]
  – United States Center for Disease Control and Prevention (CDC) [www.cdc.gov]
  – World Health Organization WHO)[www.who.int]
  – World Organization of Animal Health (OIE)[www.oie.int]
Trend of the disease


• The latest outbreak 2006/2007 covered wider areas (mostly Northern and Central zones) of the country involving both human and domestic ruminants.
Distribution of RVF by Regions in Tanzania in 2007

- Dodoma cases 172 (56%, n=309) deaths 92 (64%, n=144)
Trend cont...

- Outbreaks were characterized by sequential outbreaks that appeared across Kenya, Somalia, and Tanzania.

- In the latest outbreak more males (191/309) than females were affected, with the highest proportions of cases (22.6%) observed in the 31–39 years of age group.
Key risk factors reported to be associated with RVF epidemics

• Heavy rains similar to El Niño that resulted in the worst flooding 2- to 3-fold higher than usual

• High mosquito and livestock populations

• Contact with animal products including meat and milk from sick animals
Key socio-economic losses associated with RVF epidemics

- Serious effects on rural people’s food security and household nutrition and on direct and indirect losses to livestock producers in the country

- Morbidity and mortality of livestock and disruption of livelihoods were considerable
Key socio-economic losses...

• The 2006/2007 RVF outbreak in Tanzania affected animals in 11 regions affecting 46,680 cattle, 56,990 goats, and 32,900 sheep
  – Of these 15,726 cattle, 19,199 goats and 12,124 sheep aborted

• Of the affected animal populations RVF caused deaths of 16,973 cattle, 20,913 goats and 12,124 sheep
Key socio-economic losses...

• Incomes of livestock dependent communities dwindled as a result of reduction in the consumption of red meat

• RVF was confirmed in 309 patients of whom 144 died (case fatality rate was 46.6%) of the disease
Key socio-economic losses...

- Patients were hospitalized within an average of 5 days after onset of illness and they remained ill with RVF-associated symptoms for an average of 28 days (range of 2 to 120 days) before death or discharge
  - Such long-term illnesses, disability and suffering in the patients impaired them to resume their normal economic ventures
Key socio-economic losses...

- In addition to pastoralists, the disease threatened the livelihoods of those who were depending on livestock products and related activities for labour opportunities.

- Livestock producers’ inability to pay for children’s school fees, medication, children’s school uniforms, exercise books, washing soap, clothes, salt, cooking oil, and other social financial obligations.
Key socio-economic losses...

• In the latest outbreak the government spent about US$3.84 million to bring the disease under control, with most of the money going on imported vaccines.

• Although few studies have been conducted to assess the economic impact attributable to human RVF, it is perceived to be substantial.
Control measures used to combat the disease in human and animal populations and the consequences

• The response to the latest outbreak was jointly organized by:
  – Tanzania Ministry of Health and Social Welfare (TMOHSW)
  – Tanzania Ministry of Livestock Development (TMOLD)
  – Kenya Medical Research Institute (KEMRI)
  – Centers for Disease Control and Prevention
  – World Health Organization
  – Food Agricultural Organization
Control measures...

- Training in patient care for clinical staff and in diagnostic techniques for laboratory staff
- Journalists and other media staff were trained to increase public awareness about the disease and its prevention
- Behavioural changes for farmers and the general public
- Ban of the slaughter of domestic ruminants
Control measures...

• Restriction of animal movements to and from the suspected areas

• Use of insecticides impregnated bed nets to reduce human contact to mosquito

• Vaccination of domestic animals
  – 2006/2007, about 4.2 million animals were vaccinated that included a total of 2,392,753 cattle, 1,241,406 goats and 542,834 sheep
Lessons learnt from previous outbreaks

• Each subsequent outbreak had expanded to cover wider areas of the country

• The disease had dramatic socio-economic impacts both at community and nation at large

• Inter-ministerial collaboration and support received from external agencies were optimal in combating the disease
Lessons learnt...

- Latest outbreak had the largest case fatality rate than other countries that concurrently faced RVF outbreaks

- The country had little means for early detection and reporting
  - hence early preparedness and response capacity was not optimal
Thanks for listening