

Rift valley fever outbreak in Niger: a real One Health Challenge

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Introduction 1/2

- Rift valley fever (RVF) is an emerging zoonotic vector
 - borne disease causing threat to both animal and human.
- The disease is caused by the Rift valley fever virus (RVFV) of the family *Bunyaviridae* and the genus Phlebovirus.
- Mosquitoes serve as both the reservoir and vector for RVFV



Introduction 2/2

- In human, RVFV is transmitted through contact with infected animal products or body fluid
- The clinical manifestations of the disease among animals are abortion, salivation and death of new born.
- Infected individuals may develop severe disease such as ocular disease, hemorrhagic fever syndrome or encephalitis



Disease history

- **1931:** first description of the disease by Daubny
- **1936:** RVFV detected from animal in many countries from the Horn of Africa
- 1977: first epizootic outbreak of RFV outside Sub Saharan Africa in Egypt
- **2000:** first confirmed RVF outbreak outside Africa
- Since 2006: many countries in sub saharan Africa experienced RVF outbreak

Epidemiology of RVF



Figure: RVF distribution map (CDC 2016)



Contexte of RVF in Niger

- Previous serological studies among animal reported detection of RVFV in Niger (Akakpo et al., 1991; Mariner et al., 1995)
- Neighbouring countries experienced RVF outbreak
 In September 2016, the Republic of Niger declared the first RVF outbreak in the northern region of Tahoua near the Malian border.





Human cases results

- A total of 399 suspected human cases were recorded from August to December 2016.
- 17 cases (4,3%) were confirmed positive to RVFV by ELISA and qRT-PCR.
- 33 (8,3%) death cases were recorded.
- 13 (76%) confirmed and 29 (85%) death cases were recorded among breeders.
- Differential tests for DenV, YFV, WNV, CCHFV and ChikV viruses gave negative result



Figure 2: Weekly evolution of RVF outbreak in human



Animal cases results

- 3 (50%) samples out of 6 were confirmed positive by IPD
- 39 other samples tested, 24 were positive for IgG.
- Overall, >2000 deaths of domestic animals were estimated





Distribution of cases of RVF



Tahoua Region map

Figure : Distribution of RVF human and animal cases 11



Segment M



Figure : Phylogeny of circulating strains

Segment S



Entomological results

Entomological field survey of two sites in the affected area was conducted



181 pools of mosquitoes, sandflies and Culicoides were captured.

No RVFV positive result by RT-PCR



Conclusion

- This first RFV outbreak has been a great challenge in terms of public and animal health in Niger.
- Difficulty to confirm cases at the beginning of the outbreak contributed to the increased of death.
- Rapid establishment of a RVF committee allow to mobilize ressources and take necessary actions.
- Continued investigation should be conducted to prevent future outbreak.

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