



Serological Evidence of Inter-Epidemic Circulation of Rift Valley Fever Virus in Livestock in Kenya

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Introduction

- RVF is vector borne, zoonotic and transboundary disease
- Its spread is dependent on climatic conditions
- It is endemic, notifiable, sporadic and explosive disease in Kenya
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- It Causes massive abortion and death of animals
- Develop resilient livestock and boost livestock production

Study Objectives

Overall objective

To determine the involvement of non-vaccinated ovine, caprine and bovine in maintenance and transmission of RVFV during inter-epidemic period in Siaya, Busia and Kisumu counties

Specific objectives

1. To detect Rift Valley fever virus antibodies in animals in selected counties during inter-epidemic period
2. To establish whether there is association between RVFV seropositivity and hypothesized risk factors

Materials and methods

Study Site(s)

- Siaya, Busia and Kisumu counties

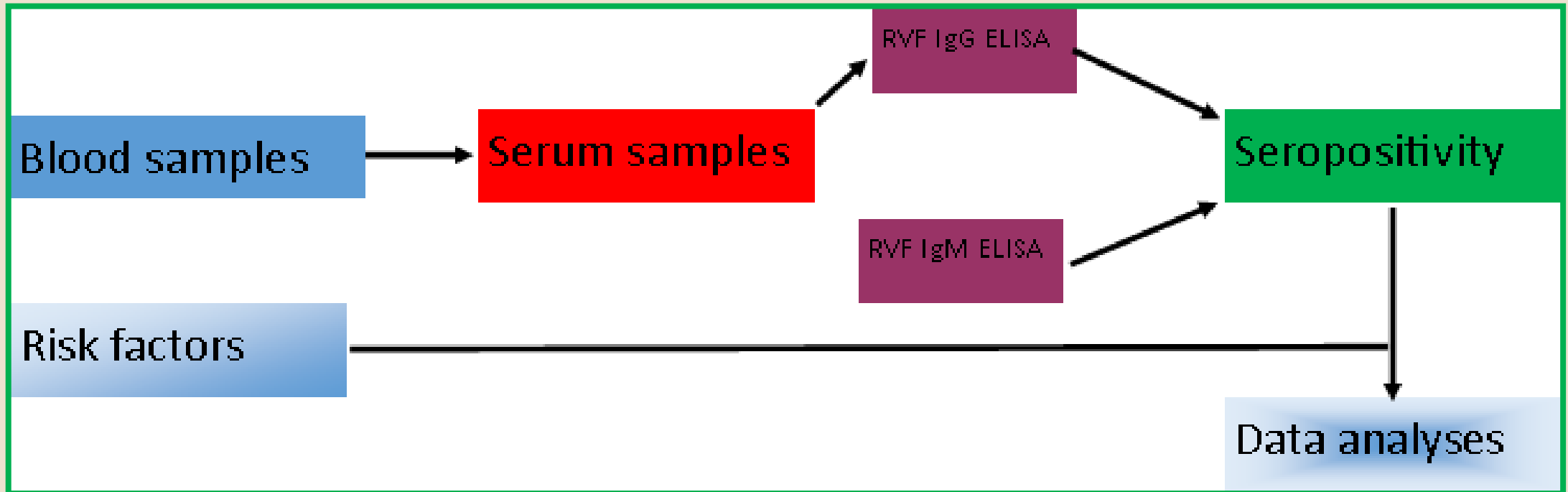
Sampling Frame/ Design

- A stratified and randomized experimental design (Bronsvooort *et al.*, 2019)
- Estimation of the sample size (Dohoo *et al.*, 2003)

$$N = \frac{Z^2 P (1 - P)}{d^2}$$

Materials and methods

Methods, Tools for data collection and data analysis



Univariate logistic regression
Chi-square
Multivariate logistic regression

Results and discussion

Table 1: Distribution of livestock sampled and demographic characteristics of the study

COUNTY	SUB-COUNTY	SPECIES			AGE		SEX	
		Bovine	Caprine	Ovine	Young	Adult	Female	Male
SIIAYA	Bondo	22	58	19	54	71	61	21
	Alego Usonga	15	71	20	47	47	90	23
BUSIA	Bunyala	53	49	26	46	52	64	17
	Samia	41	30	6	49	43	42	13
KISUMU	Nyando	96	17	18	41	89	32	20
	Nyakach	71	16	22	35	79	35	16
TOTAL		298	241	110	268	381	324	110

A total of 615 blood samples were collected and analyzed

Results and discussion

VARIABLE	NUMBER OF SAMPLES	I _G G		I _G M		SEROPOSITIVITY		P VALUE (CI 95%)	
		Positive	Negative	Positive	Negative	IgG	IgM	IgG	IgM
COUNTIES									
SIAYA	205	45	160	49	156	22%	24%	0.47	0.82
BUSIA	204	36	168	14	190	18%	7%		
KISUMU	206	4	202	0	206	2%	0%		
SEX									
FEMALE	324	41	283	46	278	13%	14%	0.16	0.16
MALE	110	8	102	6	104	7%	5%		
SPECIES PER COUNTY									
SIAYA									
BOVINE	37	0	37	6	31	0%	16%	0.01	0.1
CAPRINE	129	45	84	32	97	35%	25%		
OVINE	39	0	39	11	28	0%	28%		
BUSIA									
BOVINE	94	22	72	6	88	23%	6%	0.3	0.66
CAPRINE	79	10	69	0	79	13%	0%		
OVINE	31	4	27	8	23	13%	26%		
KISUMU									
BOVINE	167	3	164	0	167	2%	0%	0.24	0
CAPRINE	33	1	32	0	33	3%	0%		
OVINE	40	0	40	0	40	0%	0%		
AGE									
BELOW 2 YEARS	93	8	85	12	81	9%	13%	0.14	0.14
ABOVE 2 YEARS	206	39	167	34	172	19%	17%		
SPECIES									
BOVINE	298	25	273	12	286	8%	4%	0.59	0.92
CAPRINE	241	56	185	32	209	23%	13%		
OVINE	110	4	106	19	91	4%	17%		

Results and discussion

- RVFV IgG antibodies in Siaya, Busia and Kisumu at a positivity rate of 22%, 18% and 2%
- IgM antibodies circulation was found to be at positivity rate of 24%, 8% and 0% Siaya, Busia respectively, Kisumu
- The findings from this study indicate long-term and recent transmission of RVFV in livestock populations in the Busia and Siaya counties.

Conclusion and Recommendations

- Presence of low circulation of RVFV in counties with no previous RVF history
- Pointer to possible outbreak in the near future
- Need for increased disease surveillance and seasonal livestock vaccination to build livestock resilience
- Need for entomological study to establish the circulation of the virus in the vectors during inter-epidemic period

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