

Outbreaks of Rift Valley Fever in Uganda 2016-2018: Epidemiological and Laboratory Findings

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Initial RVF Case Detection in Uganda March 2016

- First RVF outbreak in Kabale Uganda after 50yrs
- 3 human cases PCR confirmed in March -June 2016
- All male, associated with contact with Livestock
- Had fever, vomiting, diarrhea, headache, hemorrhagic symptoms
- One RVF PCR-positive goat from village of confirmed case
- CFR=0%



Source: Wikipedia

RVF Sero-survey Follow-up Study: Objectives

1. To provide an estimate of the seroprevalence of RVF in animals and humans in Kabale district
2. To assess the risk factors for RVF seroprevalence
3. To assess the knowledge, attitudes, and practices regarding RVF

Methods-One Health Approach

- Sampled both humans and their animals (Cattle, Sheep and Goat)
 - Abattoirs/Slaughterhouse animals and workers
 - Farms
 - Villages in Kabale district and surrounding districts
- Collected blood from animals and humans
 - Animal: Anti-RVF IgG by ELISA
 - Human: Anti-RVF IgG and IgM by ELISA
- District staff conducted standardized interviews regarding knowledge, attitudes, and practice of RVF

Human and Livestock sampling



Human and Animal Serology Results

□Humans

- **88/659 (13%) RVF seropositive**
 - 3 (0.5%) IgM positive
 - 78 (12%) IgG positive
 - 7 (1%) IgM/IgG positive
- All IgM positive cases were from outbreak villages

□Animals

- **133/1051 (13%) RVF IgG positive over all(all sampled species)**
 - 11 (16%) of 67 animals sampled at the abattoir were IgG positive

Human Demographic Risk Factors

Variable	RVF Seropositive	OR	P-value	95% CI
Age Group				
Age 7-19	0			
Age 20-49	66 (17%)	Ref		
Age ≥50	22 (11%)	0.64	0.09	0.38-1.1
Sex				
Female*	15 (7%)	Ref		
Male*	71 (17%)	1.5	0.2	0.81-2.9
Occupation				
Other occupation**	20 (8%)	Ref		
Butcher**	40 (35%)	4.7	<0.01	2.5-8.6
Farmer/Herdsman**	88 (13%)	0.94	0.8	0.51-1.7

*adjusting for occupation **adjusting for gender

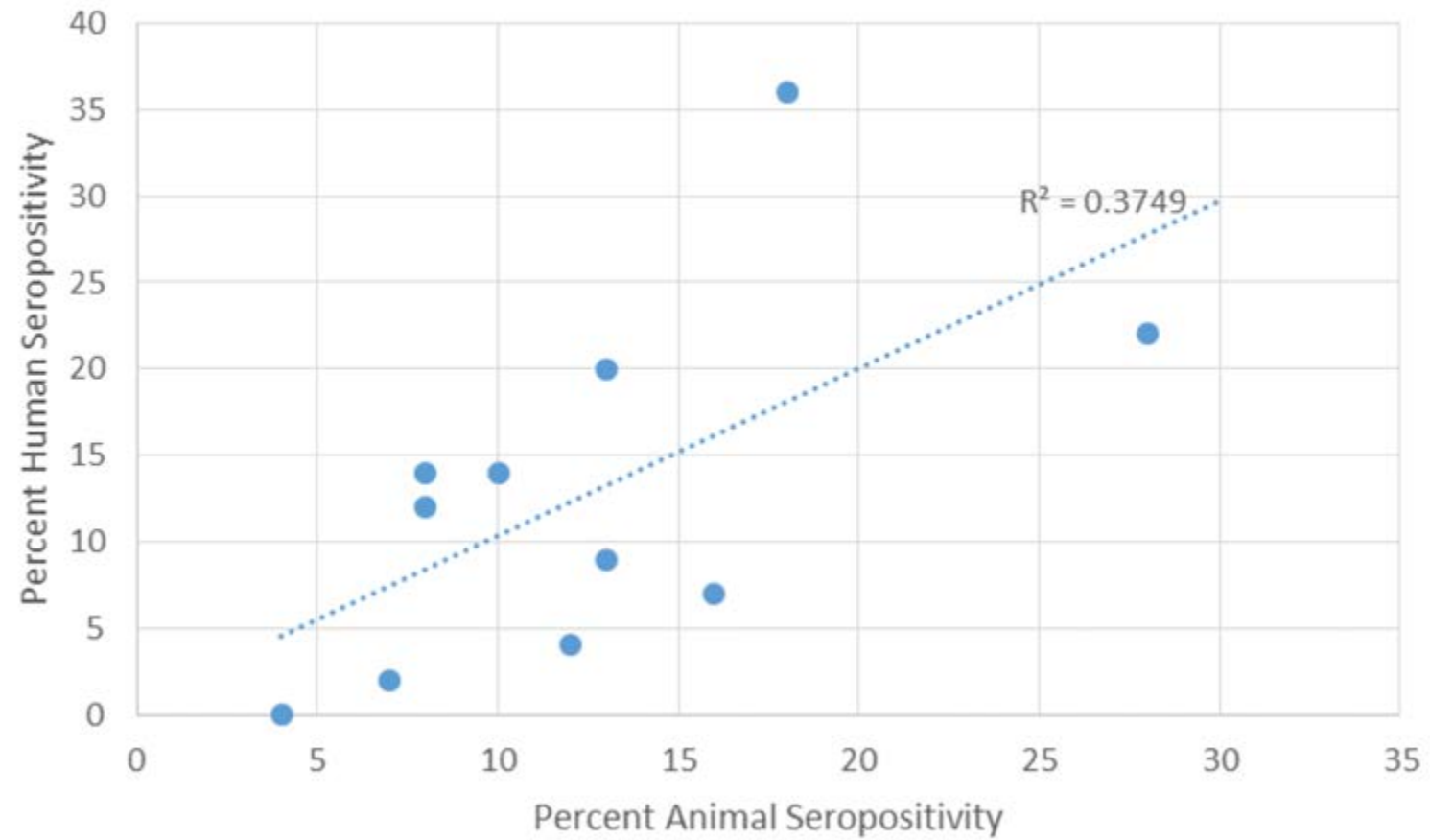
Human Behavioral Risk Factors

Activity	RVF Seropositive (%)	Unadjusted OR	P-value	95% CI
Animal Contact				
Milking	8 (11%)	0.74	0.5	0.3-1.6
Grazing	33 (9%)	0.32	<0.01	0.2-0.5
Grooming	14 (11%)	0.68	0.22	0.4-1
Caring for sick	16 (14%)	1.03	0.9	0.6-2
Birth/fetus disposal	30 (14%)	1.1	0.6	0.7-2
Meat Preparation				
Slaughtering/butchering	53 (22%)	3.5	<0.01	2-6
Handling raw meat	71 (16%)	4.7	<0.01	2-12
Raw milk consumption	4 (11%)	0.8	0.67	0.27-2.3
Raw meat consumption	5 (17%)	1.3	0.6	0.48-3.5

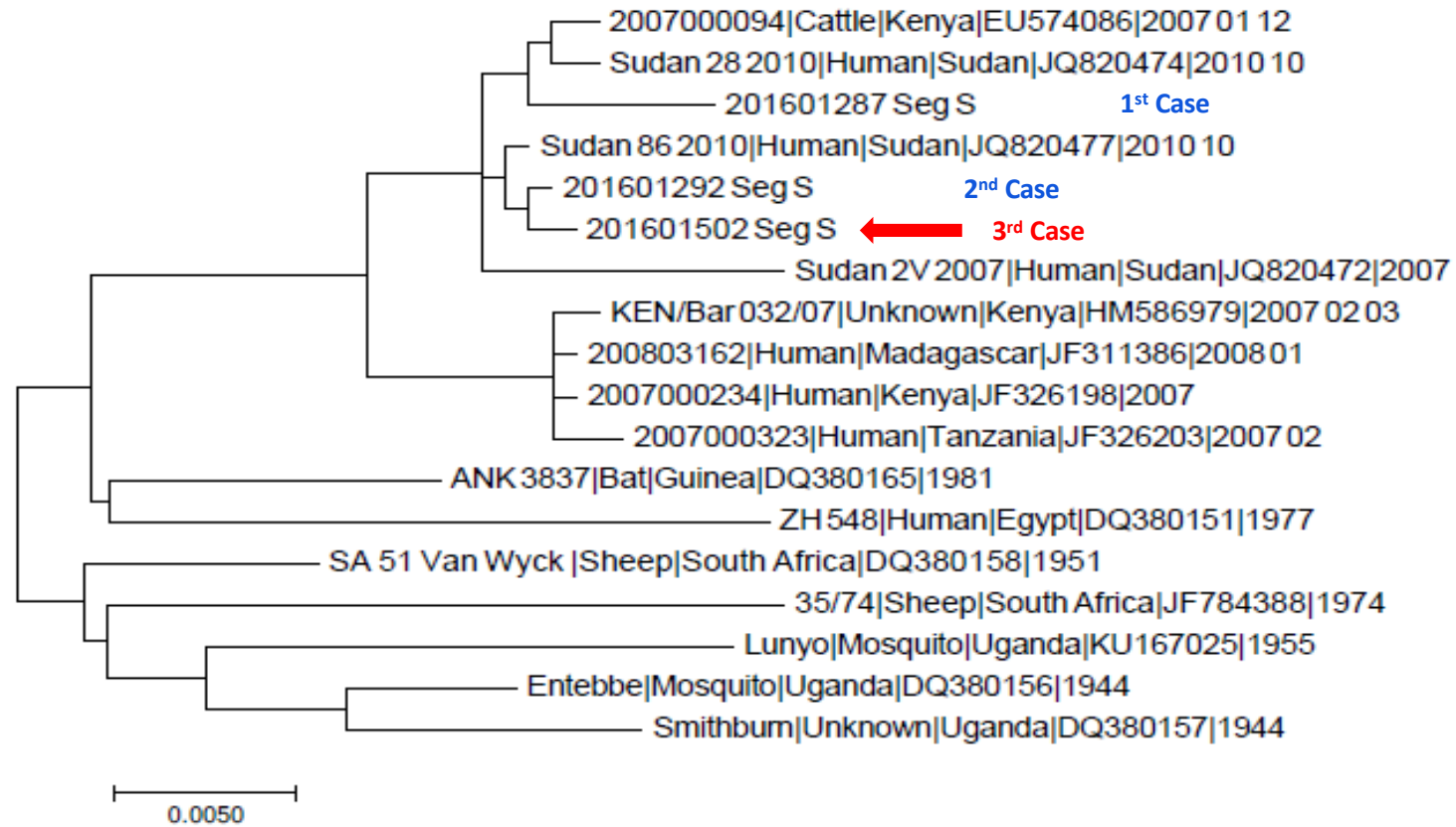
Animal Serology Results

	Seropositive	Adjusted OR	P-Value	95% CI
Species				
Sheep	7 (4%)	Ref		
Goat	40 (7%)	1.6	0.1	0.9-5
Cattle	86 (27%)	5.2	<0.01	4-20
Age Group				
Infant	13 (6%)	Ref		
Middle	14 (7%)	1.1	0.9	0.5-2
Adult	106 (17%)	3.0	<0.01	2-6
Sex				
Male	10 (5%)	Ref		
Female	121 (14%)	2.9	0.04	1-4
Breed				
Local Breed	86 (10%)	Ref		
Other	47 (21%)	1.1	0.8	0.7-2

Human vs Animal Seropositivity by SubCounty



Phylogenetic Analysis



Educational Campaign posters Designed



HOW TO PREVENT RVF

1. AVOID CONTACT WITH SICK ANIMALS AND MEAT OR MILK FROM SICK ANIMALS



WARNING
Call veterinarians if your animals are sick or have had an abortion.



Wash your hands after touching raw meat or milk.



Cook meat thoroughly; boil raw milk.

2. AVOID MOSQUITO BITES



Use bednets to protect you from getting diseases from mosquitoes like Rift Valley Fever, malaria, and yellow fever.



Wear long clothing to cover the body.

WHEN ANIMALS OR FAMILY MEMBERS ARE SICK:



- Report sick livestock, abortions, and unexpected deaths to DVO (District Veterinary Officer).
- Do not handle or bury dead livestock. Call DVO to dispose of the body correctly.



- If you feel ill, visit the local clinic or hospital.
- Seek care early to help chances of survival if you become seriously ill.

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FOR HERDERS, FARMERS, BUTCHERS AND ABBATOIR WORKERS

With Rift Valley Fever, usually animals such as goats, cattle, and sheep become sick first and then humans become sick. Humans can become sick after they have been in contact with sick animals. **RVF does not spread from one person to another person.**

RIFT VALLEY FEVER IN ANIMALS

RVF is very serious in animals. It causes aborted pregnancies, or being born dead, and increased death in young animals.

OTHER SYMPTOMS IN ANIMALS INCLUDE:



Tell your village leaders and health officials if you notice these signs and symptoms. Once animals recover from Rift Valley Fever, they are no longer able to infect people.

RIFT VALLEY FEVER IN PEOPLE

Most people with RVF have no symptoms at all or only mild illness.

RVF does not spread from one person to another person.

People who do become ill might experience:



Typically, patients recover 2-7 days after onset of illness if treatment is sought early. In a small number of patients, more serious illness can happen, including symptoms of:

- Vomiting
- Bleeding (blood in vomit, blood in diarrhoea, bleeding gums)
- Headaches, coma, or seizures
- Blurred vision, redness of the eyes, decreased vision, and sometimes loss of vision

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RVF Human case detections in 2017-Uganda

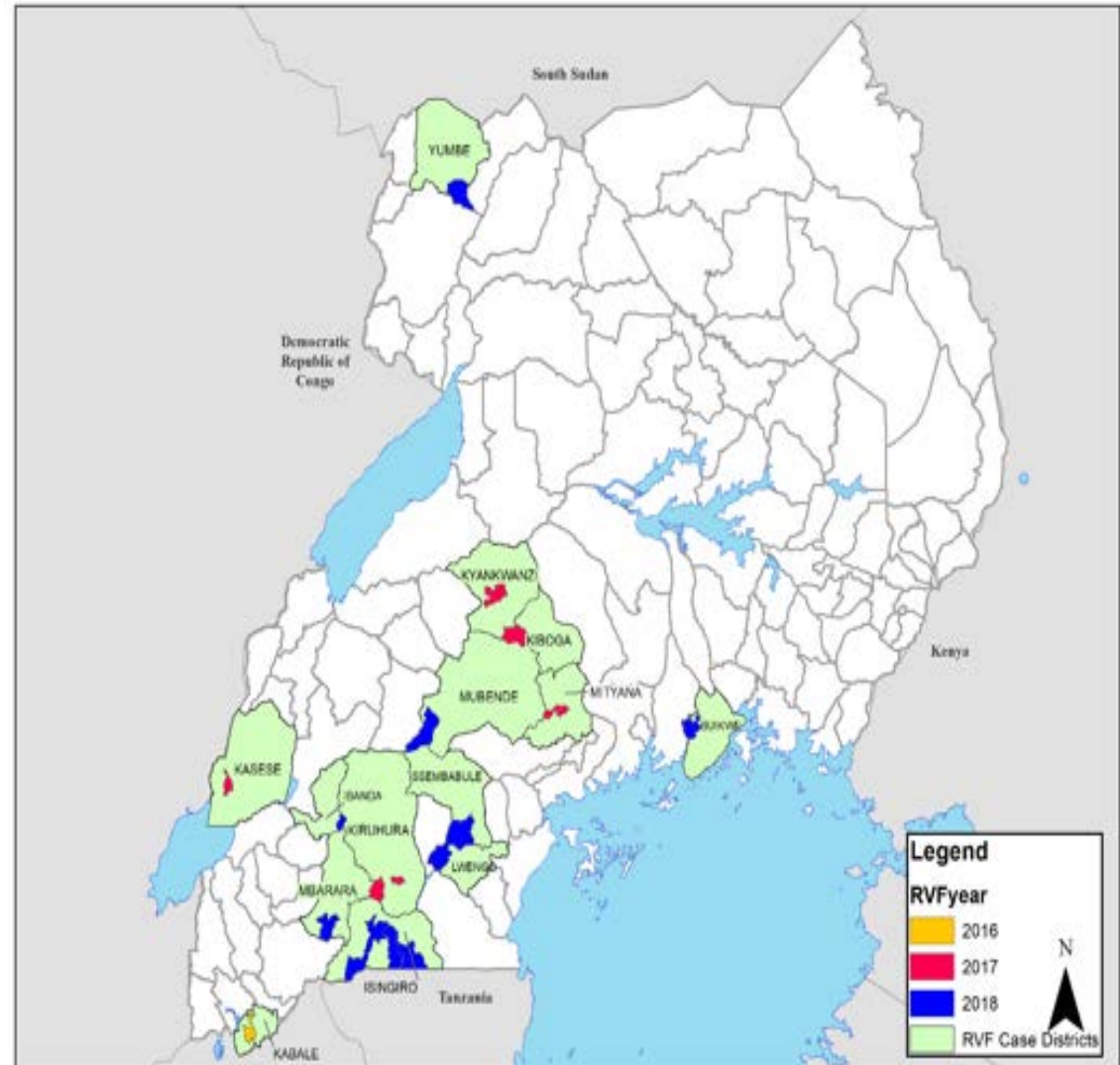
- Total human case count =7
- Four (4) districts affected all from the cattle corridor of Uganda
- Between months of November –December 2017
- 86% (6/7) were Herdsmen by occupation, one forester
- All male, aged between 11-51 age, Median age 26
- CFR=43% (3/7)

RVF Human case detections in 2018-Uganda

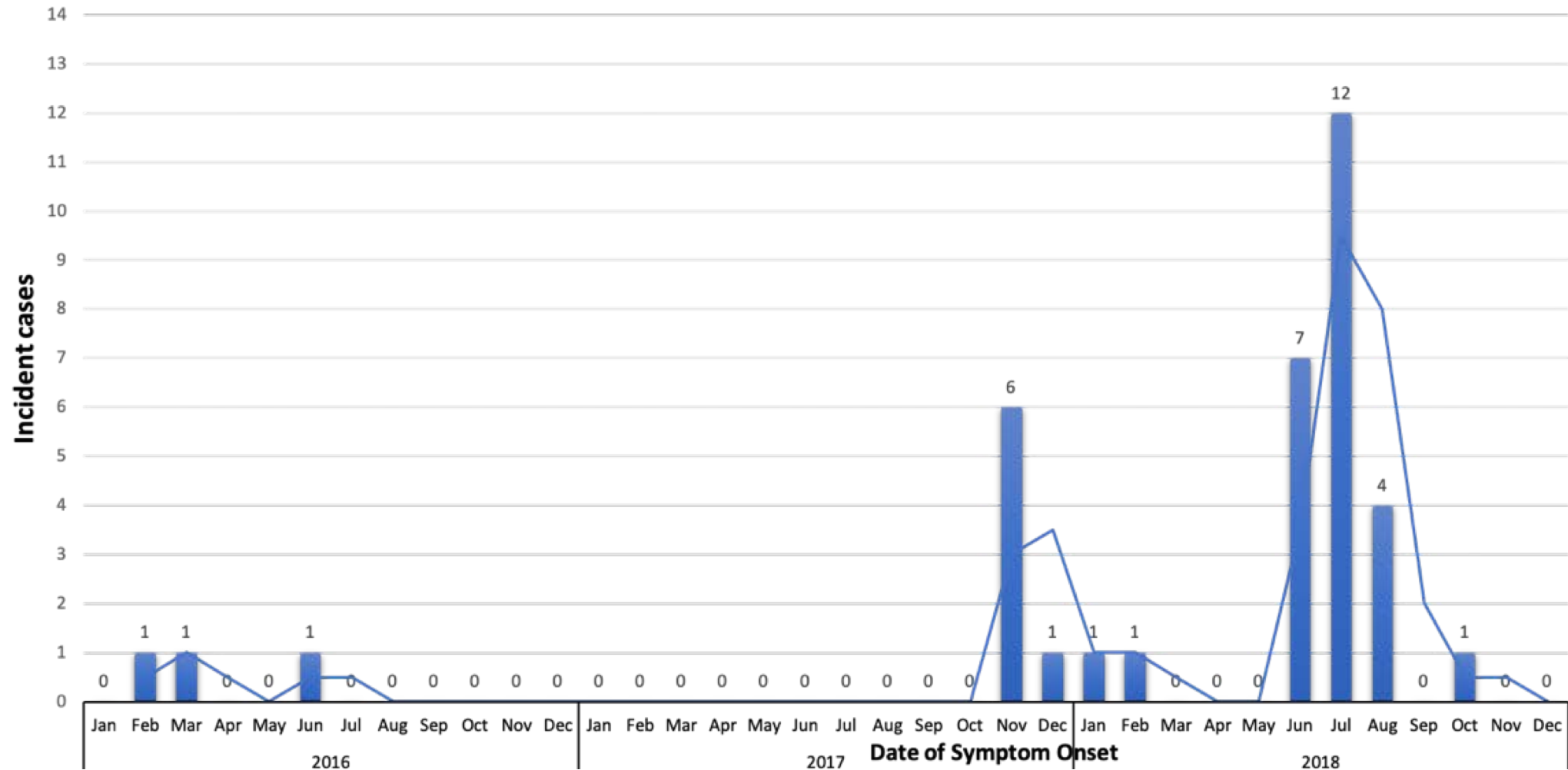
- Total human cases =26
- Thirteen (13) districts affected , 11/14from the cattle corridor
- Reported in months of June –November 2018
- 70% (18/26) had contact with livestock, majority cattle keepers
- All male apart from one, aged between 15-63 age, Median age 34
- CFR= 50% (13/26)

Over all Incident RVF Human cases 2016-2018 Uganda

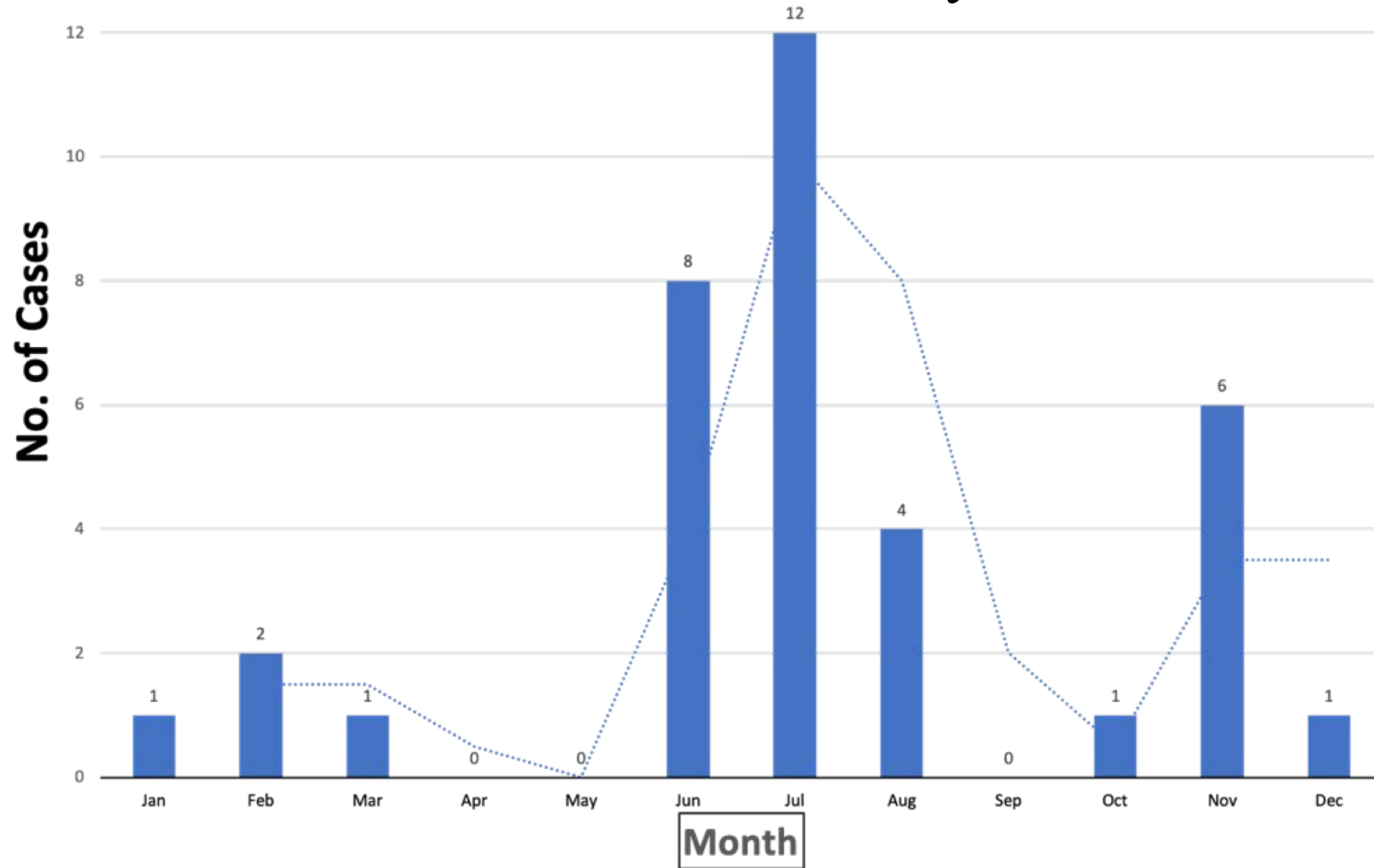
- Total human cases =36
- Seventeen (17) districts affected ,
13/17 from the cattle corridor
- 67% (24/36) detected in month
June-July
- 75% (27/36) had contact with
livestock
- 97% (35/36) are Male, aged
between 11- 63, median 34
- CFR=44% (16/36)



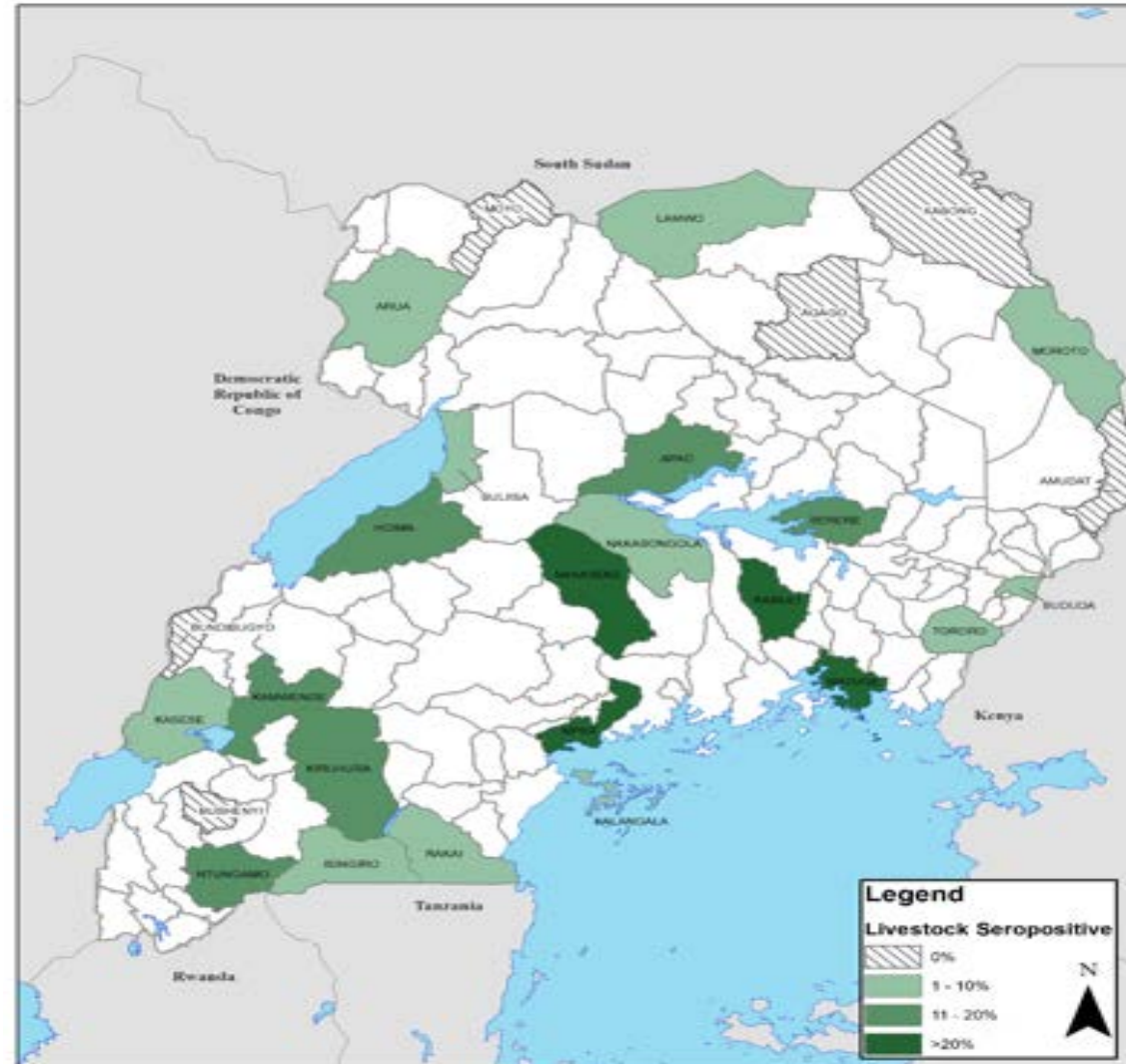
RVF Incident Cases by Month and Year of On-set (2016-2018)



Incident Human RVF Cases by Month



Uganda RVF Livestock Sero-survey 2017



Conclusions and Future Research

- Human cases of RVF are on increase in Uganda
- Contact with livestock is main mode of transmission to humans
- Role of mosquitoes in human infection needs to be investigated
- RVF prospective study on going
- RVF risk factor and emergence modeling started
- Health Education is key in the Control and Prevention of RVF in Uganda

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THANK YOU FOR LISTENING