Joint Risk Assessment Report
Sudan
31/8/2021

1. **Title of assessment:**
   Joint Risk Assessment (JRA) of Rift Valley Fever (RVF) in Rive Nile, Red Sea and Northern States from October 2021- October 2022.
2. **Date, time, and place assessment took place, dates of previous risk assessments to**
   - The assessment will be conducted from October 2021 to October ,2022 in River Nile, Red Sea and Northern states.
   - This is first JRA to be conducted in Sudan.
3. **Participants & affiliations**

No	Name	Department	Agency	Duty station
1.	Osman Omer Salih	Preparedness Department	Ministry of Health (MOH)	GD of Emergency and Epidemics Control
2.	Hafsa Abu Algasim	Surveillance Department		
3.	Hanadi Elawad Hussein	Zoonoses Unit		
4.	Sanad Mohmed Ahmed	IHR		
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6.	Dr. Sara Salah	Microbiology department		Public Health Laboratory
7.	Nadia Abderahman Elsamani	Vector control		Directorate of Environmental Health
8.	Omima Mahdy Nowman	Medical Entomology Department		Public Health Laboratory
9.	Osman Ali Abdelraheem	Risk Communication Focal Point		GD of Health promotion
10.	Gofran Fisal Hammad	Focal point of zoonotic diseases		(MOH) Red Sea State. Epidemiology Department
11.	Islam Gasm Allah	Focal point of zoonotic diseases		(MOH) River Nile State. Epidemiology Department
12.	Salha Idris	Field Investigation	Ministry of Animals Resources (MOAR)	GD of Animal Health and Epizootics Control
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14.	Fatima Alzahraa Moharm	Communication unit		
15.	Wegdan Omer Khairi	GIS		
16.	Nahid Ahmed Ibrahim	RVF Department		Veterinary Research Laboratory
17.	Asia Hassan Mohammed Ali	Entomology Department		
18.	Dr. Rania Khalifa Gurashi Baadri	Focal point of zoonotic diseases		River Nile State. Epidemiology Department
19.	Mohammed Abderahman Allaithy	Focal point of zoonotic diseases		Red State. Epidemiology Department
20.	Mohamed Seed Ahmed	Irrigations Department	Ministry of Irrigation and Dams	Environment Department
21.	Nazik Salah Eldeen	Environment Department	Higher Council of Environment &Natural Resources	Biodiversity Department

4. **Event summary**

Rift valley fever (RVF) is an acute fever causing viral zoonosis disease most commonly observed in domesticated animal (such as Cattle, buffalo, sheep, goats and camels) with the ability to infect and cause illness in humans. Human are highly susceptible to the RVF virus and may become infected with RVF by being bitten by infected mosquitoes through contact with blood, other body fluids or tissues from infected animals.

Three high risk areas are identified in Sudan including (River Nile, Red Sea and Northern states). The highly vulnerable groups are herders, farmers and workers respectively.

Measures taken to control outbreaks of RVF in Sudan include:

- Enhance surveillance system (humans and animals)
- Vector control activities (entomological survey, pesticides spray, health awareness campaign).
- Activated animal check point in states borders to control animal movement.
- Health awareness to slaughterhouse workers
- Case management

Risk Framing

Hazard is **Rift Valley Fever (RVF)**

Scope of the JRA will be 'health risks at the human-animal-environment interface posed by the RVF within Sudan in three high risk states.

Purpose

Is to support mitigation of the risks associated with the RVF in high-risk states.

Key objective

The key objective is to provide a basis for management or communications decisions to tackle RVF in High-risk states at human-animal-environment interface.

5. **Assessment summary**

- Identify and diagram the risk pathway
- Formulate and document risk assessment questions
- Characterize the risk
- key assumptions
- likelihood and impact estimates and associated uncertainties
- justifications for the estimates
- critical management/communication options

6. **Key assumptions underlying JRA**

In recent years in Sudan, there are documented RVF cases in animals followed by human infections. These due to several factors including climate change, construction of new dams and increasing and expansion in agricultural themes. These suggesting an epidemiological link between animals, humans and environment.

7. Detailed risk assessment results

risk assessment question

What is the likelihood and impact of getting increasing number of RVF infected cases among herders in grazing area in 3 target states in next year Oct,2021-2022)?

Likelihood estimate:

High

Rationale for likelihood estimate:

1. Expansion in agriculture construct new dams (Marwi)
2. Influences of climate change
3. Community behavior:

a- Close contact with animals
b- Consumption of un cooked meat and raw milk

Uncertainty level for likelihood estimate:

Low

Rationale for uncertainty level associated with likelihood estimate:

Availability of Limited quantity of information due to some gaps like:

Impact estimate:

Moderate

Rationale for impact estimate:

- Threat to food security.
- Threat to the National trade and sometimes to international trade.
- Several control measures needed at regional and National levels.
- Disruption in all relevant sectors (HCENR- MOH – MOAR)

Uncertainty level for impact estimate:

Low

Rationale for uncertainty level associated with impact

Availability of Limited quantity of information

Risk management options:

Short-term management options:

- Vector control: Control of larval and flying stages of mosquitoes
- Health promotion: awareness lectures, home visits, radio and TV messages and Distribution of health education leaflets
- Case management: Health cadres training, hospitals and health centers equipping.
- Surveillance: Training of surveillance offices, activation of reporting by all the systems including community base surveillance.
- Restriction and control of animal movements within the epidemic foci and neighboring states
- Clinical survey in and out outbreak foci
- Epidemiological surveillance in and out the epidemic foci.

Long-term management options:

- Vector control:

Stakeholders should identify and encourage use of existing biological control measures for vectors that are environmentally friendly.

- Early detection of RVF outbreaks in animals:

Develop rapid point-of-care rapid diagnostic tests for prompt detection of RVF.

- Control of RVF outbreaks in humans at slaughter facilities
- Update and implement the National Code of Meat Inspection and Public Health Act among other pieces of legislation.
- Detection before slaughter: Set up centralized slaughter areas in sub-provinces.

8. Risk communication options

- Farmers and animal traders should be trained and sensitized on detecting RVF infections at farm level through reporting high rates of spontaneous abortions.
- Develop ways to communicate the impacts of RVF on economy, livelihoods, among others.
- Raise awareness among slaughterhouse workers on the risk of RVF infection and appropriate use of PPE

9. Any other issues for the record

Nothing to be considered

10. Recommended next steps

1. Establishment of Early Warning System
2. Establishment of Integrated Rapid Response Mechanism Within (HCENR, MOAR, FMOH)
3. Establishment and or reinforcement of One Health Network /Platform
4. Develop sustained coordination mechanisms between Laboratories
5. Timely data sharing between sectors
6. Community engagement
7. Reinforcement of laws and Legislation
8. Institution Capacity Building

11. Proposed interval until next joint risk assessment for this event

The participants Proposed 6 months to One Year interval until next JRA

Technical interpretation

Based on likelihood and impact estimates, considering the uncertainty level for each of the risk assessment questions, and given the situation and national context discussed, the JRA technical team provided qualitative technical interpretation of the overall risk assessment for the steering committee.

Characterize Risk for Rift Valley Fever

The JRA technical committee assessed the likelihood and impact of getting increasing number of RVF infected cases among herders in grazing area in 3 target states (River Nile, Red Sea and Northern) in next year from Oct,2021 to Oct 2022), and concluded that the likelihood is **high** and the impact is **moderate**. This conclusion assumed that, RVF cases in animals followed by human infections. These due to several factors including climate change, construction of new dams and

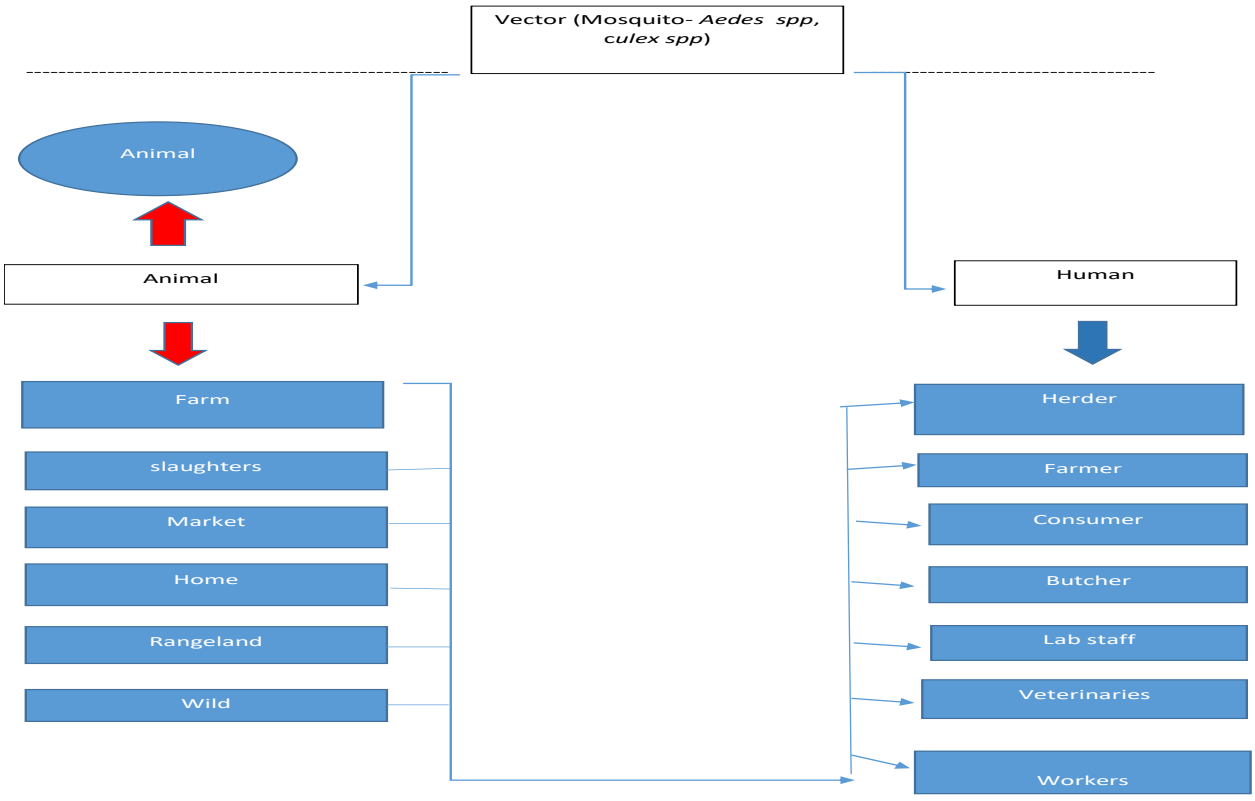
increasing and expansion in agricultural themes. The high likelihood estimate is based on expansion in agriculture construct new dams, example (Marawi Dam) , influences of climate change and community behavior as close contact with animals and consumption of un cooked meat and raw milk .The moderate impact estimate for RVF incursion is based on the threat to food security , estimating economic losses due to loss of livestock ,threat to the national trade and sometimes to international trade ,the intensive control measures needed at regional and National levels and disruption in all relevant sectors. The uncertainty for both estimates is **low** due to the availability of reliable information. Although only a limited quantity of information comes from within the country. There are some gaps and weaknesses such as absence of well-established early warning system in the country, missing data for RVF in humans and animals, Fragile health system, Lack of arbovirus surveillance system for early prediction of RVF outbreaks. The JRA technical team recommended that the JRA steering committee should approve several mitigation and communication measures. For example: the reinforcement of laws and regulations concerning control measures on animal movement during outbreaks, including veterinary quarantine grounds at all major border points and certificate inspection, establishment of Early Warning System, Integrated Rapid Response Mechanism, One Health Network /Platform, develop sustained coordination mechanisms between Laboratories, Timely data sharing between sectors, Community engagement, Institution Capacity Building

12. Attachments:

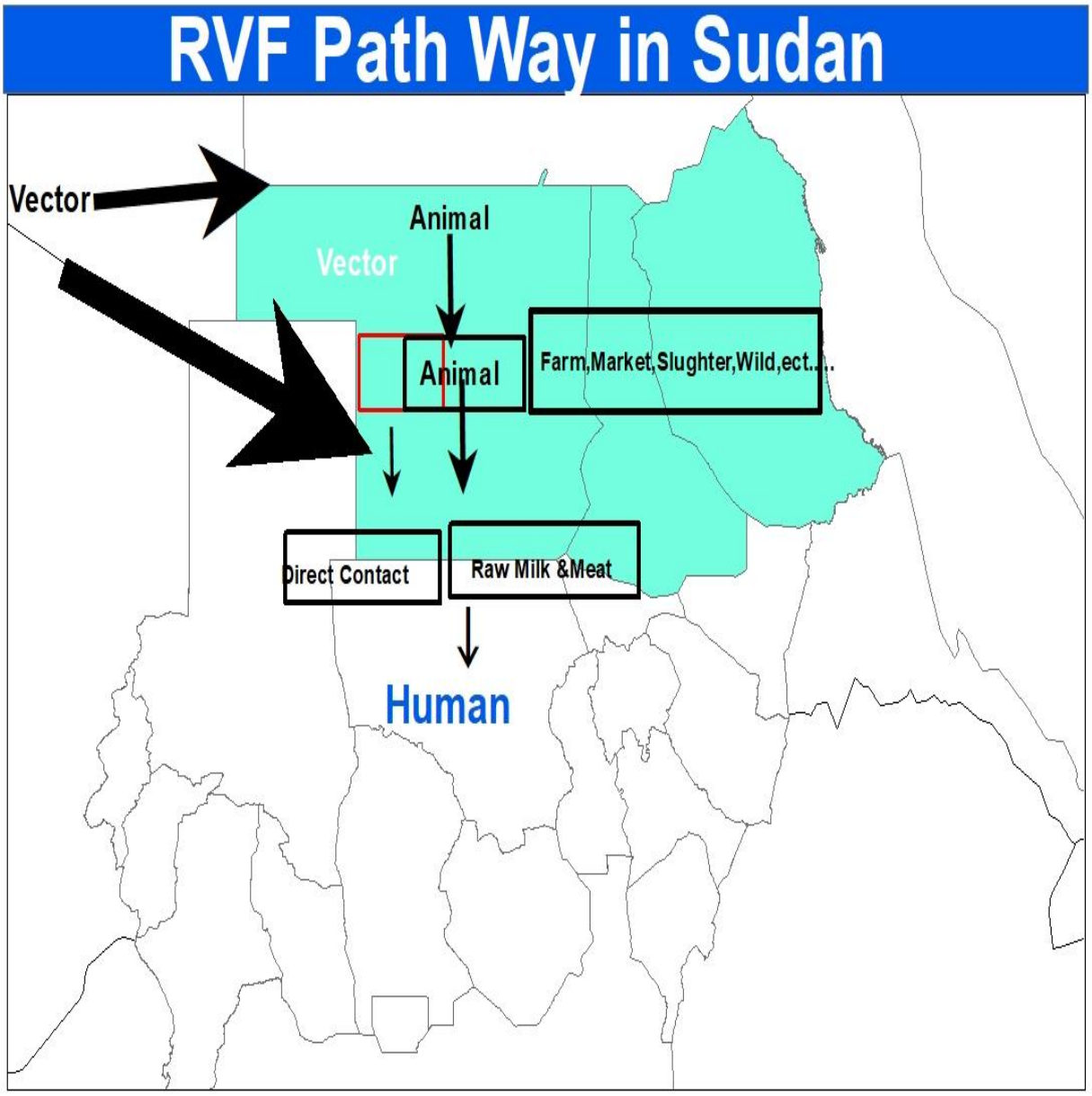
Risk pathway diagram:

describes all potential pathways for Rift Valley fever virus infecting humans at the human−animal−environment interface after introduction into Sudan.

Risk Pathway



Risk pathway map



3- Risk matrix

Risk assessment question

What is the likelihood and impact of increasing number of RVF infected cases among herders in grazing area in 3 targeted states in the next year (OCT 2021-2022)?