Food and Agriculture Organization of the United Nations

UNIVERSITY OF LIVERPOOL

Multisectoral Joint Risk Assessment of Priority Zoonotic Diseases in Kenya

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6.10.2022

African Union

AFRICA CDC Centres for Disease Control and Prevention Safeguarding Africa's Health

UN environment programme

World Health Organization

World Organisation for Animal Health Founded as OIE

PANDORA Pan-African Network For Rapid Research, Response and Preparedness for Infectious Diseases Epidemics

CHATHAM HOUSE

THE GLOBAL HEALTH NETWORK

Multisectoral Operationalization of One Health

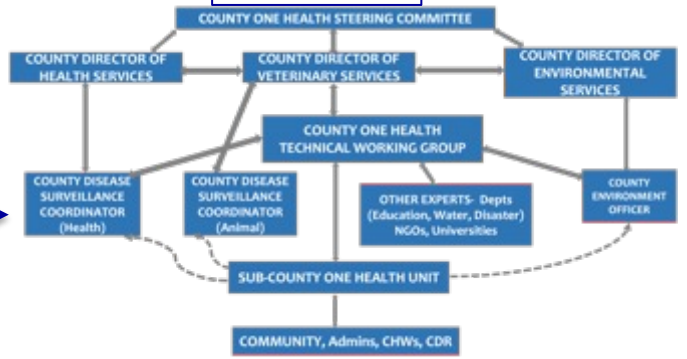
OHDPZ

Taking a Multisectoral, One Health Approach:
A Tripartite Guide to Addressing Zoonotic Diseases in Countries (TZG)

Strategic Planning and Emergency Preparedness

Risk Reduction, Risk Communication and Community Engagement

COHU



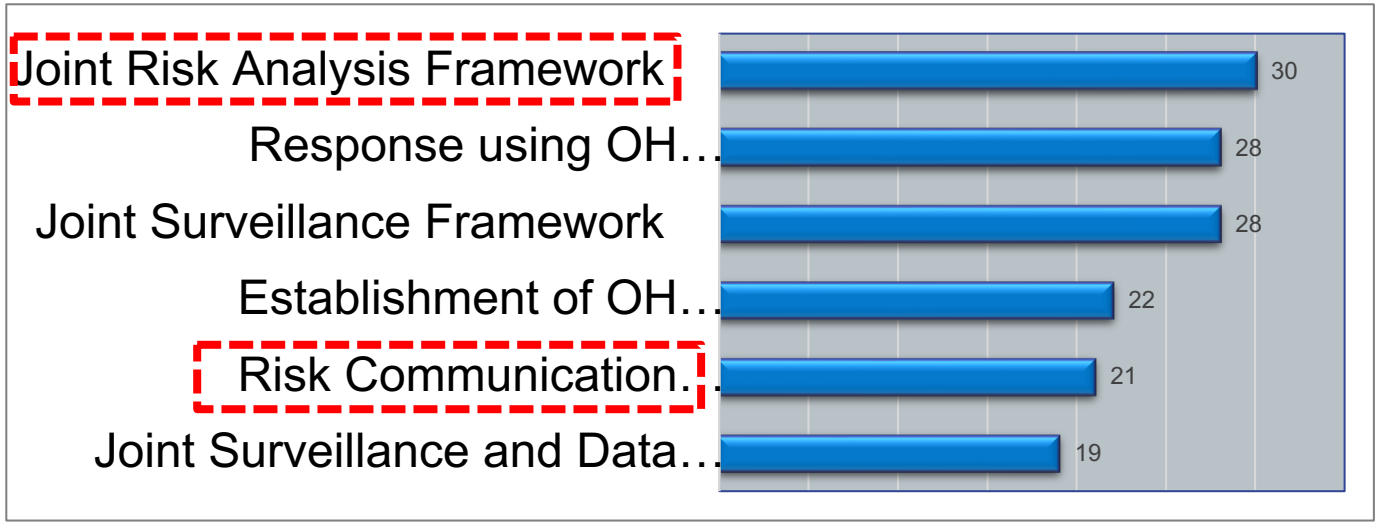
MCM → ZDU REPUBLIC OF KENYA ZOONOTIC DISEASE UNIT →

Joint Risk Assessment → National Piloting (2019), Training (2021) → Subnational Operationalization (2021,2022)

Joint One Health Priority Areas

Nov 2021

IHR-PVS (Human –Animal) Roadmap



March 2022

June 2022

MCM Action Plan

1. Coordinating Joint Risk Assessment

> Strengthen JRA capacity at county levels
> Strengthen RA for CHV &CDR
> Prioritization of JRA at subnational level

2. Coordinating Risk Communication

> Risk reduction, risk communication and Community engagement (RCCE)

Joint Risk Assesment (2019-2022)

Head, Veterinary Epidemiology and Economics Section (VEES)

NATIONAL STEERING COMMITTEE

Head, Department of Disease Surveillance, Epidemic and Response (DSER)

ADVISE

CORDINATE

EVIDENCE & OPTIONS

ADVISE

CORDINATE

RVF Technical Lead

National Technical Teams

County Technical Teams

Anthrax Technical Lead

National Technical Teams

County Technical Teams

Rabies Technical Lead

National Technical Teams

County Technical Teams

COVID-19

Stakeholders

Food and Agriculture Organization of the United Nations

World Health Organization

World Organisation for Animal Health

Founded as OIE

UN environment programme

OHRECA

AFROHUN

Kenya Red Cross

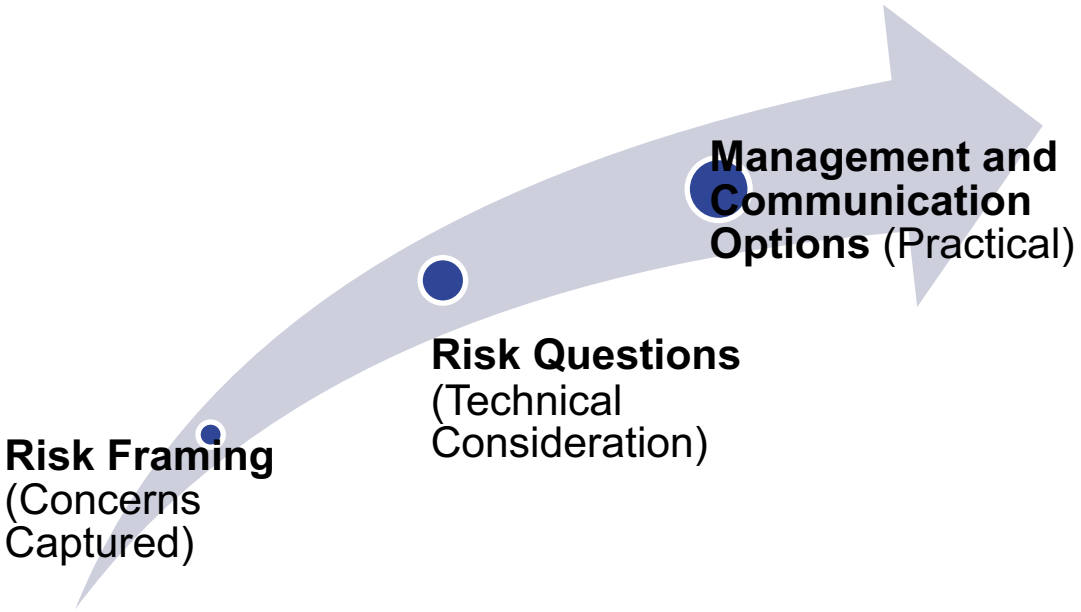
amref health africa

AFRICA CDC

Centres for Disease Control and Prevention

Safeguarding Africa's Health

Risk Framing for a Zoonotic Disease (RVF- 2019, 2021)



- Reports of death of humans after high fever, headaches, bleeding (2018, 2021,2022)
  - *Assessment of humans at risk*
  - *Vaccination status*
  - *Epidemiological shift - hotspots*
- JRA Steering committee (RVF TWG) :
  - *Joint outbreak investigation and surveillance*
  - *Risk mitigation and safety*
  - *Risk communication*
- Improved stakeholder knowledge
  - *Vector control*
  - *Livestock vaccination*

Risk Assessment for a Viral Haemorrhagic Fever - RVF

What is the likelihood and impact of…

Specific, relevant, time-bound:

- **The WHAT? – i.e. Hazard and Event (as agreed during risk framing)**
- **The WHERE? – i.e. Population and Location**
- **The WHEN? – i.e. Timeframe**
- **The HOW? – i.e. Source**
  - The source may be refined/decided/finalised **later**, after discussing the risk pathways

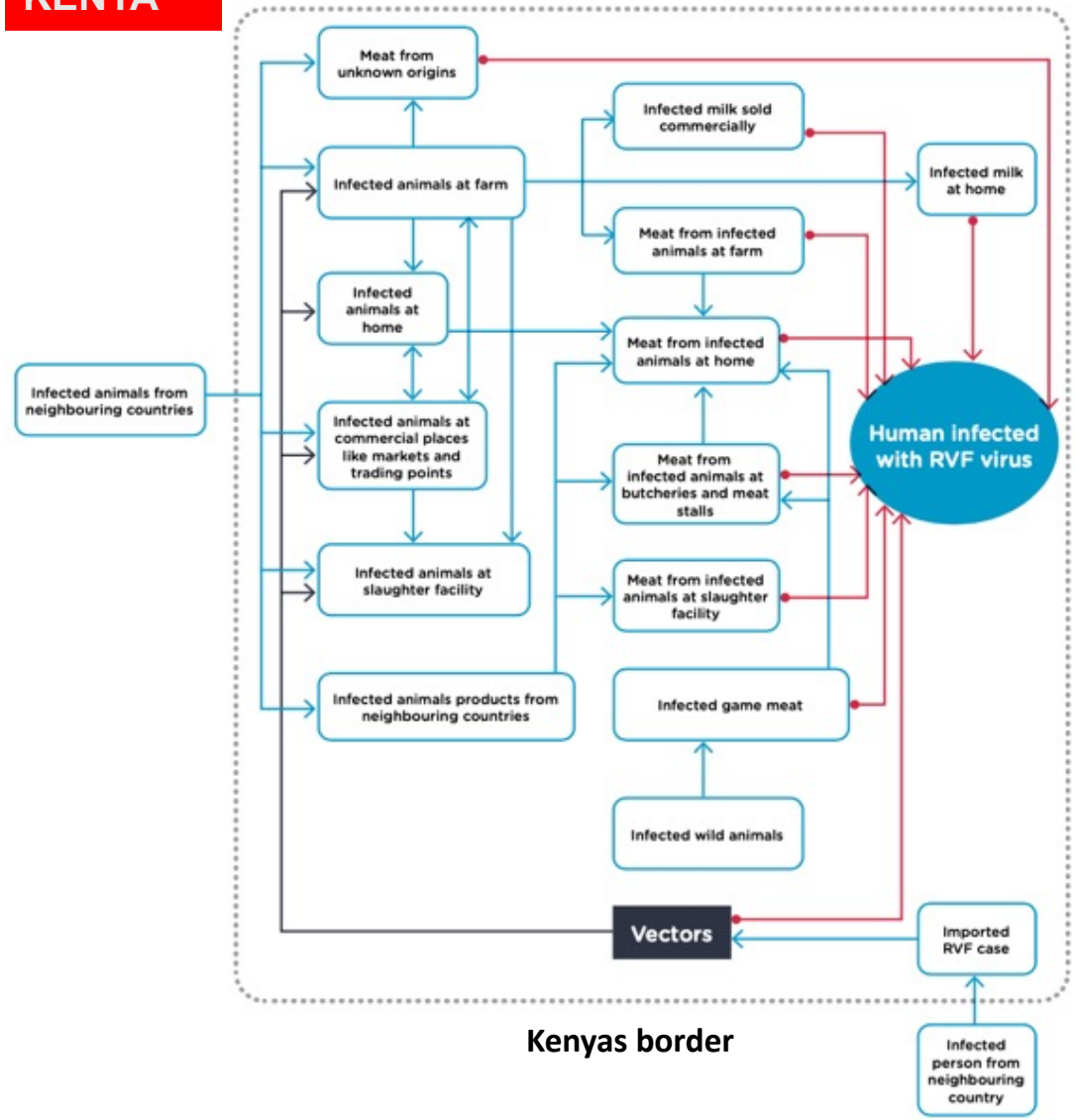
Question:

***What is the likelihood and impact of* occurrence of a human case of RVF a village in Nyandarua due to livestock trade within next 2 years ?**

Risk Pathway for Rift Valley fever

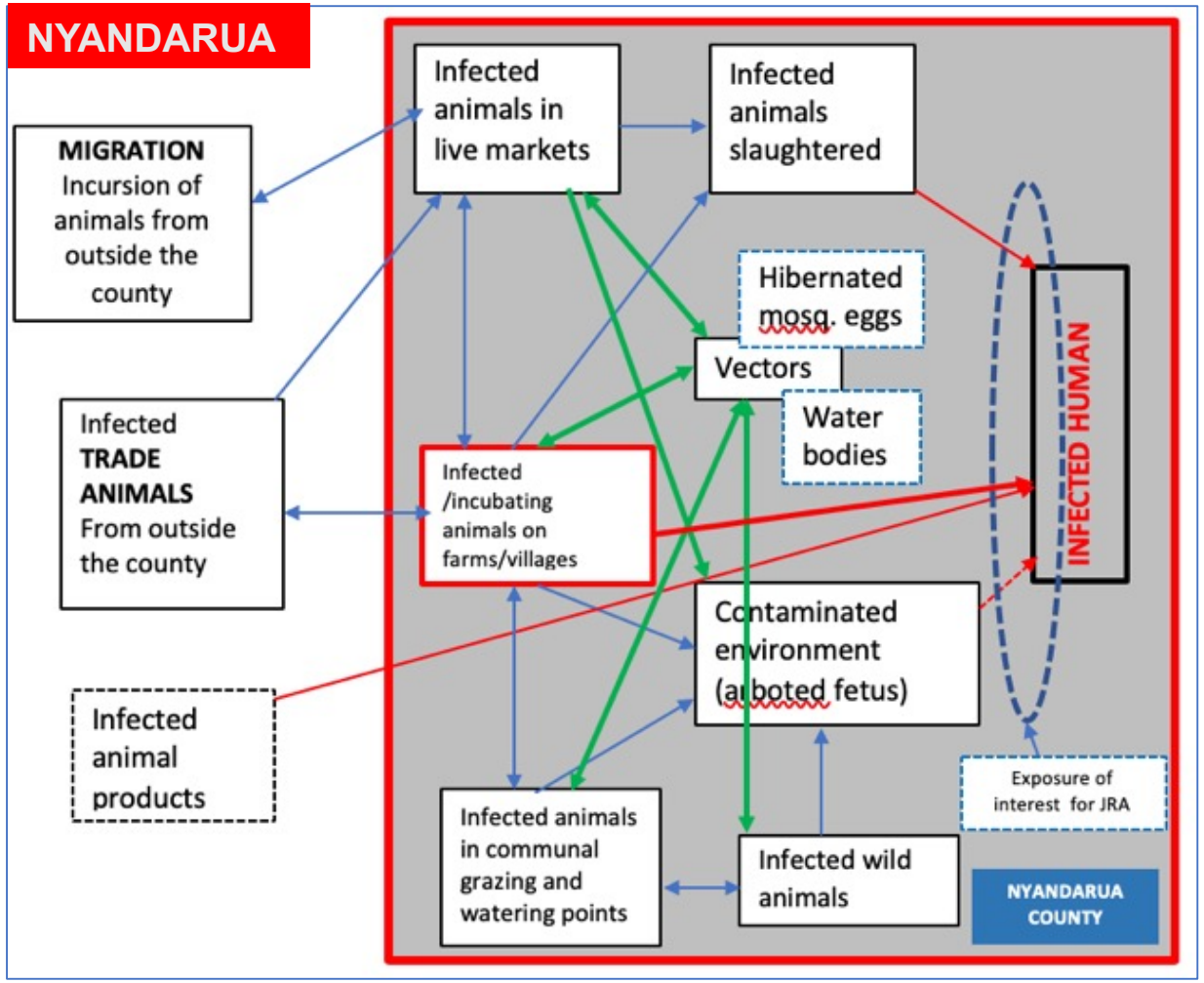
KENYA

National



Subnational

NYANDARUA

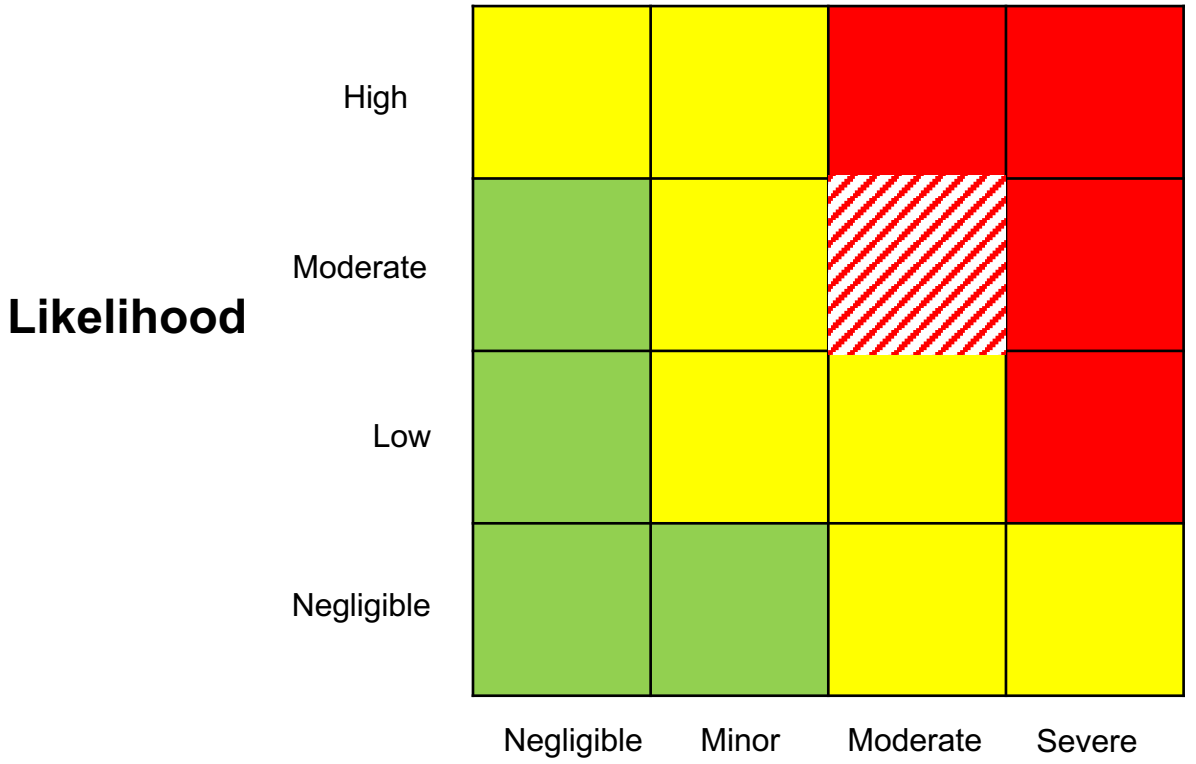


Risk Matrix for Estimating Likelihood and Impact

Likelihood: Moderate
Uncertainty: Low
Rationale: Low seroprevalence, Ecology, Hydrology, Animal Pop. density, Enhanced SS

Impact: Moderate
Uncertainty: Low
Rationale: Food security, Intervention costs, Severity/Burden and Economics-Trade, Disruptions

** National/transboundary trade impacts*



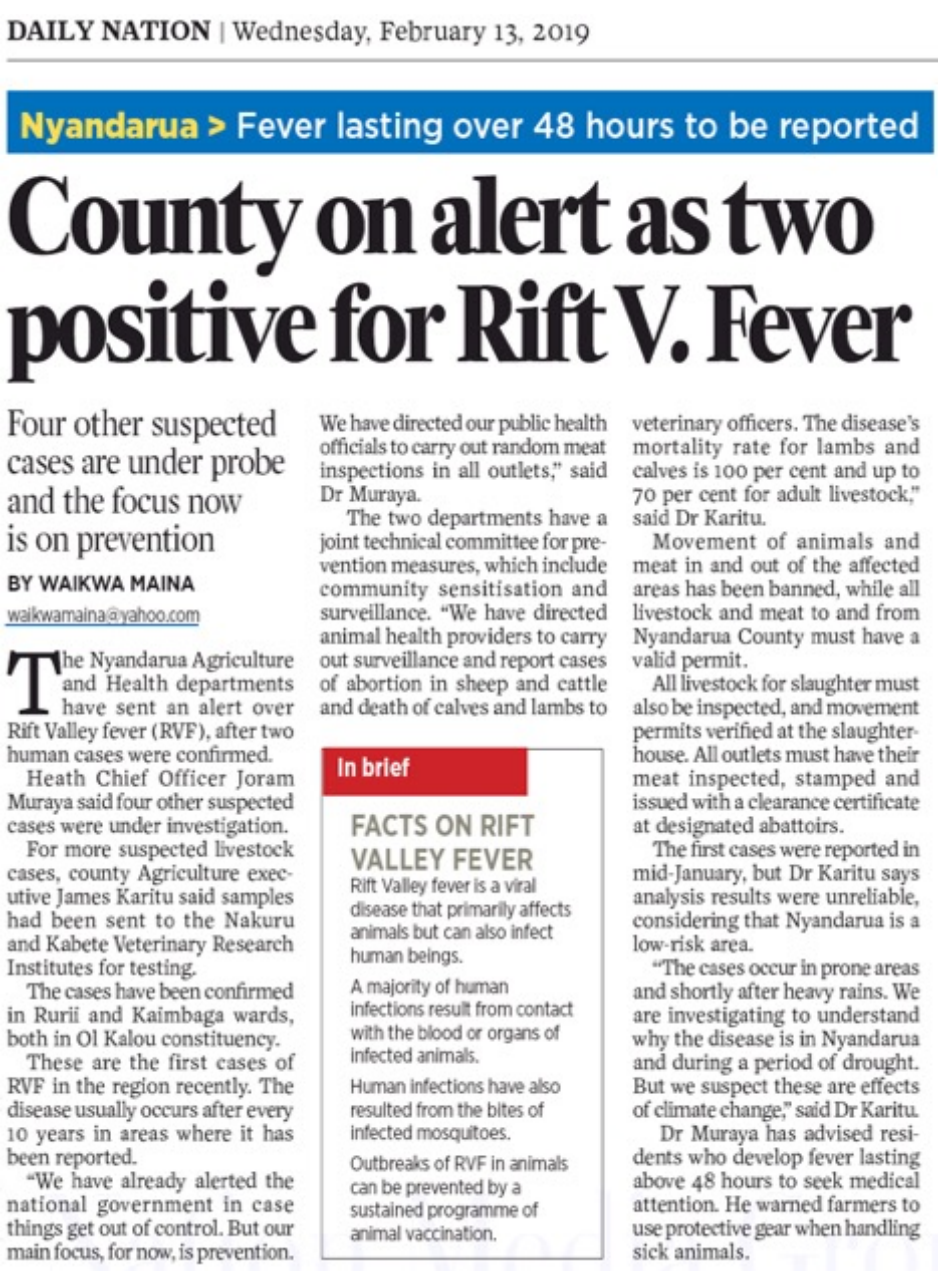
❖ ** SME- Expert opinion*

Linking risk assessment results with risk management

Recommendation : Increased/Enhanced surveillance strongly suggested

Risk Management and Communication

- Data review in health facilities – Differentials for Acute febrile illnesses
- RVF forecasting and Update the RVF risk map
- One Health sentinel surveillance sites
- Strengthen laboratory diagnostic capacity- infrastructure and human capacity.
- Training of animal and human health officers in diagnosis of RVF
- Multisectoral Simulation Exercises and After-Action Review – COHU (2022)
- **Communication**: Enhance community sensitization on RVF (causation, transmission, prevention, signs) – IEC, media



DAILY NATION | Wednesday, February 13, 2019

Nyandarua > Fever lasting over 48 hours to be reported

County on alert as two positive for Rift V. Fever

Four other suspected cases are under probe and the focus now is on prevention

BY WAIKWA MAINA

waikwamaina@yahoo.com

The Nyandarua Agriculture and Health departments have sent an alert over Rift Valley fever (RVF), after two human cases were confirmed.

Heath Chief Officer Joram Muraya said four other suspected cases were under investigation.

For more suspected livestock cases, county Agriculture executive James Karitu said samples had been sent to the Nakuru and Kabete Veterinary Research Institutes for testing.

The cases have been confirmed in Rurii and Kaimbaga wards, both in Ol Kalou constituency.

These are the first cases of RVF in the region recently. The disease usually occurs after every 10 years in areas where it has been reported.

"We have already alerted the national government in case things get out of control. But our main focus, for now, is prevention. We have directed our public health officials to carry out random meat inspections in all outlets," said Dr Muraya.

The two departments have a joint technical committee for prevention measures, which include community sensitisation and surveillance. "We have directed animal health providers to carry out surveillance and report cases of abortion in sheep and cattle and death of calves and lambs to veterinary officers. The disease's mortality rate for lambs and calves is 100 per cent and up to 70 per cent for adult livestock," said Dr Karitu.

Movement of animals and meat in and out of the affected areas has been banned, while all livestock and meat to and from Nyandarua County must have a valid permit.

All livestock for slaughter must also be inspected, and movement permits verified at the slaughterhouse. All outlets must have their meat inspected, stamped and issued with a clearance certificate at designated abattoirs.

The first cases were reported in mid-January, but Dr Karitu says analysis results were unreliable, considering that Nyandarua is a low-risk area.

"The cases occur in prone areas and shortly after heavy rains. We are investigating to understand why the disease is in Nyandarua and during a period of drought. But we suspect these are effects of climate change," said Dr Karitu.

Dr Muraya has advised residents who develop fever lasting above 48 hours to seek medical attention. He warned farmers to use protective gear when handling sick animals.

In brief

FACTS ON RIFT VALLEY FEVER

Rift Valley fever is a viral disease that primarily affects animals but can also infect human beings.

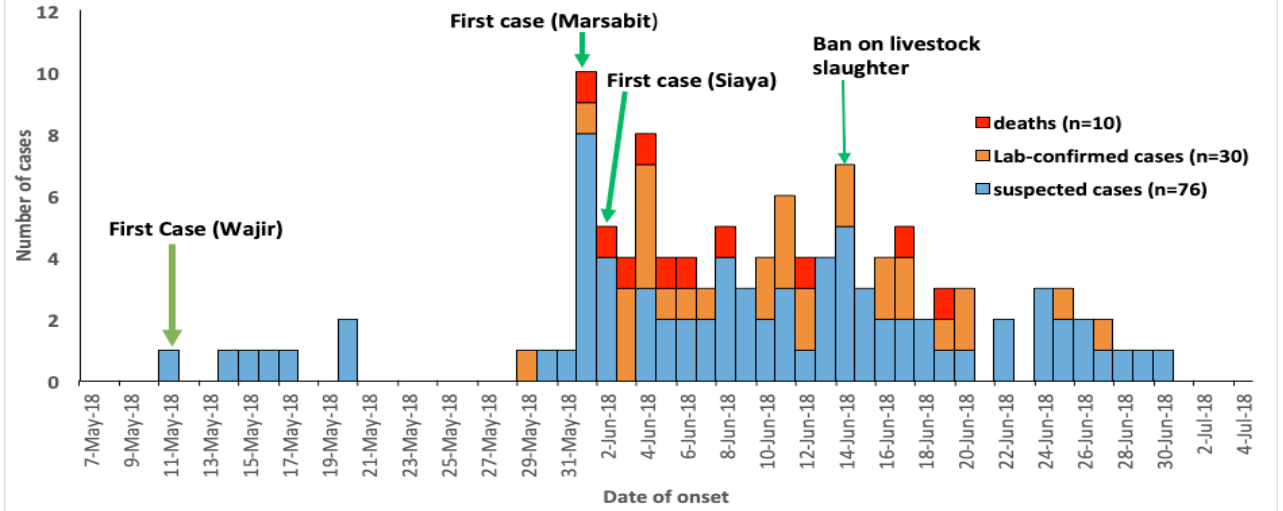
A majority of human infections result from contact with the blood or organs of infected animals.

Human infections have also resulted from the bites of infected mosquitoes.

Outbreaks of RVF in animals can be prevented by a sustained programme of animal vaccination.

Rift Valley fever Outbreaks -2018, 2021

Joint Risk Assesment and Epidemiological Investigation



RVF One Health Surveillance in Kenya, 2022

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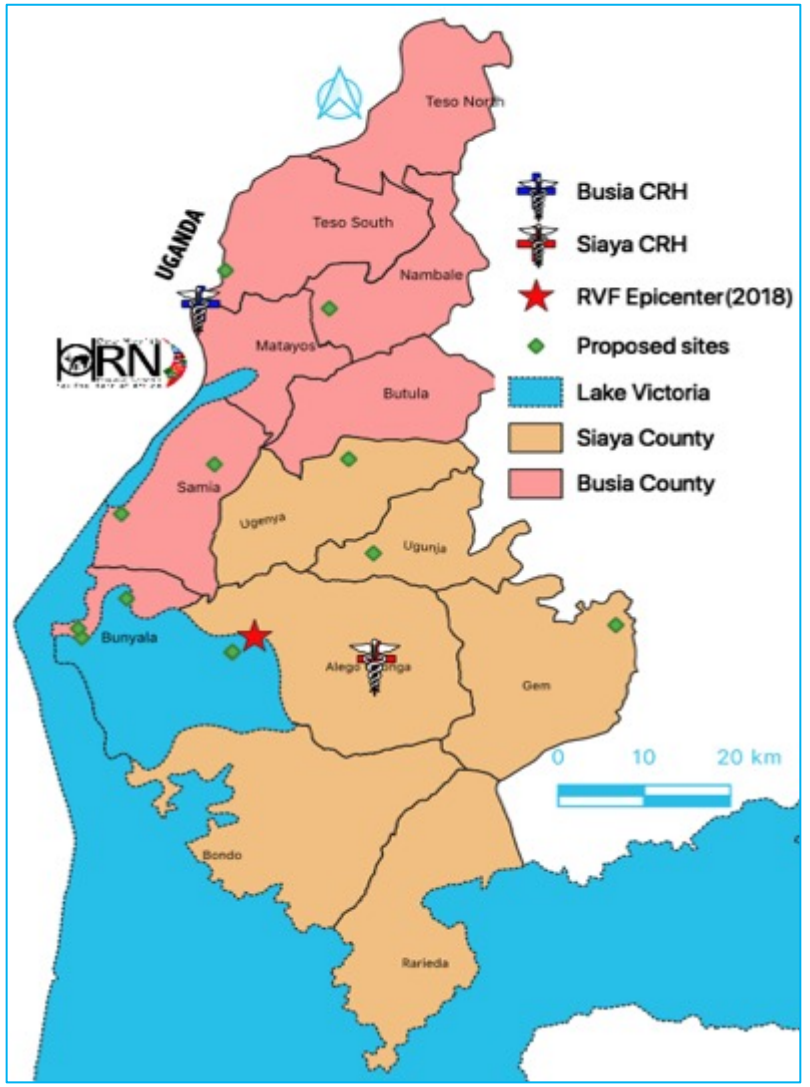


RVF Decision Support Tool (DST) 2022

- **Integrates** near real-time RVF **risk maps** with relevant **geospatial products, expert knowledge, risk assessment** and **categorization, recommended actions** to guide appropriate **response** to RVF at country level
    - **OH guideline document** for RVF Preparedness, response and contingency plans for the target countries
- Pilot countries: **Kenya, Uganda, Tanzania** (interest from other countries):
    - Routine Enhanced Surveillance System
    - National Emergency Response - Incident Coordination Group (ICG) activated
    - Use of risk maps produced to target field activities in Kenya to conduct a RRA
    - Targeted Livestock vaccination
- **Joint FAO-IGAD alert messages (Feb 2022)**

Food and Agriculture Organization of the United Nations

alert

FAO AND IGAD ALERT COUNTRIES IN EASTERN AFRICA TO REMAIN VIGILANT FOR RIFT VALLEY FEVER

15 February 2022

Key facts:

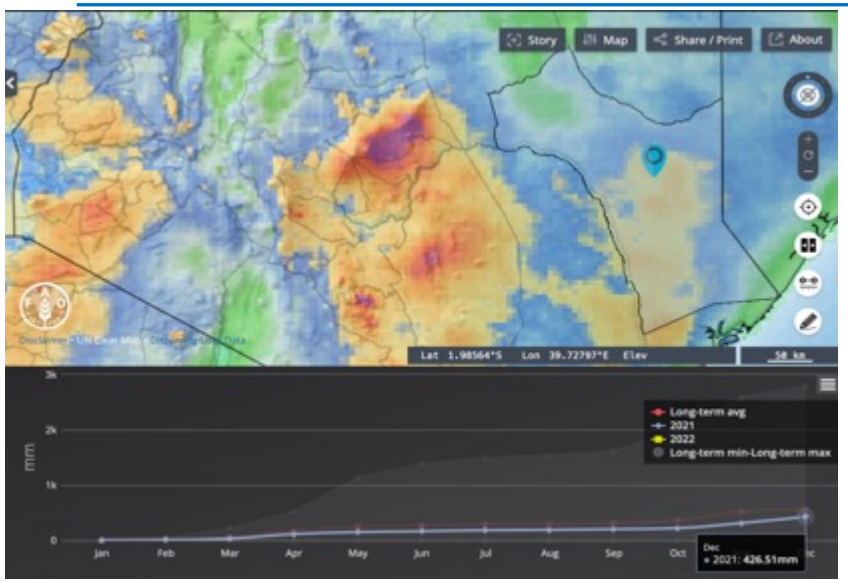
1. RVF is an acute, vector-borne, viral and zoonotic disease that has severe impacts on livelihoods, national and international markets, and human health.
2. The disease has been observed in sheep, goats, cattle, buffaloes, camels and humans and is spread primarily by mosquitoes and the movement of animals.
3. Heavy rains and prolonged flooding increase habitat suitability for vector populations, determining massive hatching of RVF competent mosquitoes (e.g. *Aedes and Culex*), thus influencing the risk of RVF emergence, transmission and spread.
4. The dynamic prediction model calibrated by FAO builds upon the work by Anyamba et al., (2009; 2010), which utilizes vegetation and rainfall anomalies as a proxy for ecological dynamics to map areas at potential risk of RVF in eastern Africa.
5. The FAO RVF Early Warning panel of experts verifies the risk areas with the experts on the ground and assesses if conditions warrant an RVF alert (FAO 2019, 2021).
6. RVF outbreaks can disrupt the livestock sector by depleting the future generation of affected herds and therefore constitutes an important socioeconomic and food security threat to vulnerable households. In addition, it can also affect the funds directly available to households through their animals and impact their capacities to access health care and child education. Moreover, it can result in trade bans and affect national and regional economies.

Rift Valley fever (RVF) is an endemic vector-borne zoonotic disease that represents a threat to human health, animal health and livestock production in the eastern Africa region. The epidemiology of RVF is complex, making monitoring of RVF risk and carrying out efficient and timely control measures challenging. To increase knowledge on RVF epidemiology and inform disease management policies, the Food and Agriculture Organization of the United Nations (FAO) has developed and maintains a web-based RVF Early Warning Decision Support Tool (RVF DST) for near real-time RVF forecasting based on precipitation and vegetation anomalies, among other environmental factors. To this end, FAO, in partnership with the Intergovernmental Authority on Development (IGAD), has been alerting the countries in the region through joint alert messages about the increased risk and what needs to be done to mitigate the risk.

On 26 January 2022, the FAO Animal Health Service, based on the analysis of data available through the FAO web-based RVF DST, Global Early Warning System (GLEWS+), Global Animal Disease Information System (EMPRES-i) and expert knowledge, predicted that there is a **risk of RVF occurrence in the region both in animals and humans in the next three months (February-April 2022), either due to favorable environmental conditions and/or through potential movement of infected animals,** and highlighted the urgent need to ensure adequate preparedness for potential disease outbreaks, through One Health coordination.

Despite persistent and prolonged dryness in the eastern part of the region, **above-average, heavy rainfall and floods occurred** in some areas of the region, creating suitable environmental conditions for vector dynamics. **New hotspots** are forecasted in western **Kenya** and **South Sudan,** while **persistent hotspots** are predicted in the eastern areas of the **Sudan, Eritrea, Djibouti,** small areas of **Ethiopia,** large parts of **South Sudan,** parts of **Uganda, the United Republic of Tanzania, Rwanda, Burundi** and western **Yemen. Suitable areas are predicted in proximity to irrigated lands, swamps and/or high density of susceptible livestock** (Figure 1). The rainfall forecast for the period February-April 2022 highlights above-average rains in the region, particularly in April, suggesting that the risk remains high in those countries.

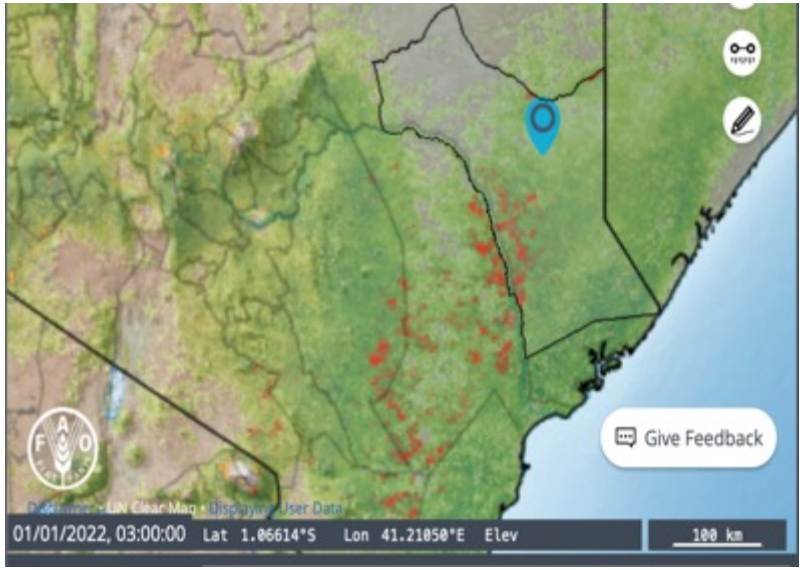
RVF Decision Support Tool (DST) 2022



Cumulative precipitation indicating the Dec 2021 rainfall amounts (Scenario 2)

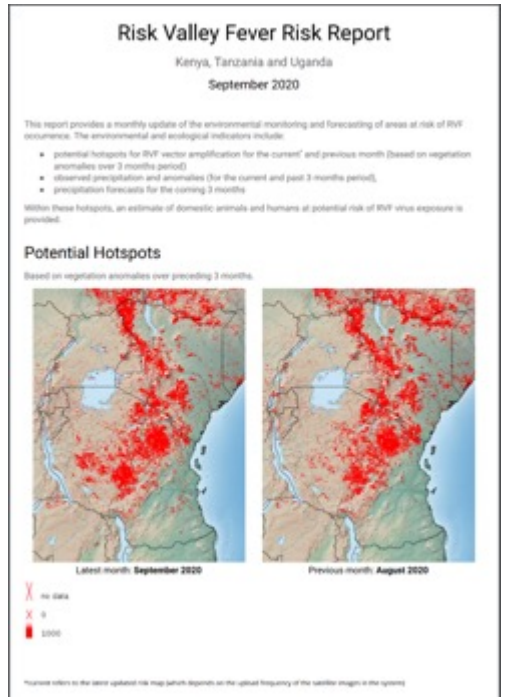
EVI for Dec 2021 and Analysis report for risk of vector amplification , Jan 2022 is high (Scenario 3)

- RVF outbreaks
- RVF risk maps
- Rainfall anomalies
- Livestock
- Roads
- Protected areas
- Markets
- Livestock routes
- Soil
- Water bodies



EVI and current vector amplification monthly forecast (Scenario 4)

Multifactor radar analysis 8.95% risk in humans



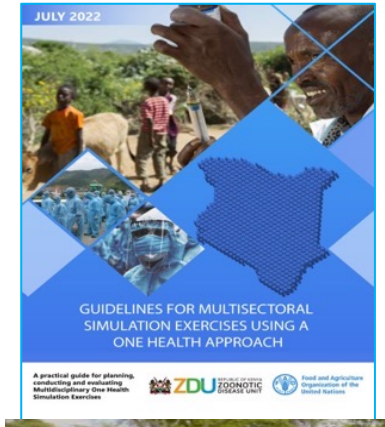
Simulation Exercises (SIMEX) and AAR- (RVF, EVD)

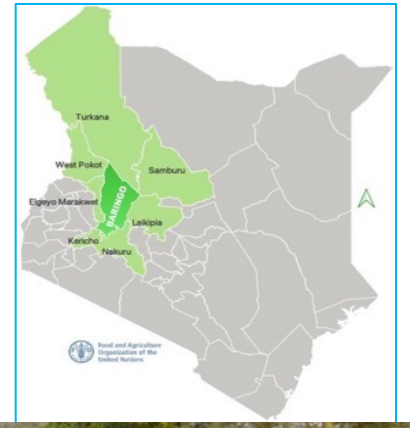
December 2020, July & Nov 2022

- Different sectors have specific risk assessment approaches that can be synergized by a **One Health Approach**.

- Conducting multisectoral, multidisciplinary SIMEX - Risk assessment, identification of critical gaps RVF & EVD contingency plans (Functions areas of surveillance communication and collaboration).

- County One Health Cluster Tabletop Simulation exercises- Review the “Human/Animal” emergency response structures (, PHEOC etc.),





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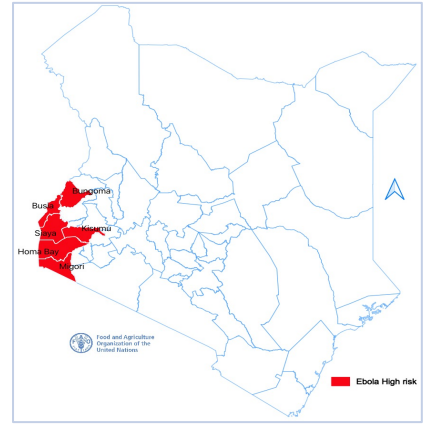

Risk Communication & Community Engagement (RCCE)

- Policy and legislation involving the community
- Community feedback meetings
- Behavioral Change Communication (BCC)
- Risk mapping
- PHEIC – EVD