Report of the Rift Valley Fever Decision-Makers Workshop

September 30 to October 1, 2014

Naivasha, Kenya

Facilitators:

Jeffrey C. Mariner
Bernard Bett

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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1 Executive Summary

In the aftermath of the 2006 epizootic, regional stakeholders established the Decision Support Framework (DSF) for the Prevention and Control of Rift Valley Fever (RVF) Epizootics in the Greater Horn of Africa (www.penaph.net/resources) as a comprehensive guide to outbreak response based on the best information and experience available at the time. The purpose of the present RVF Decision Support Workshop was to revisit the existing decision support framework (Version 3) for RVF and identify enhancements to the framework based on new developments. These developments included new knowledge and information from the HEALTHY FUTURES Project[1] and other sources as well as changes in the institutional context in which RVF mitigation is undertaken. The Healthy Futures Project outputs include hazard and vulnerability maps indicating current and future risk of the disease in the eastern Africa region as well as RVF transmission models.

The meeting began with short technical presentations summarizing the decision support framework and key results from the project research activities were made. Thereafter, participants discussed the presentations, gave feed back to the research team on how to strengthen their analysis and models. The session identified actionable items arising from the research and other sources shared by the participants. In general, the decision-makers were appreciative of the results of the research but noted a number of practical and social concerns that were not adequately addressed.

The remainder of the meeting was spent in focus groups working through a step-by step process to update the decision support framework. By the end of the meeting, the entire tool had been reviewed and systematically revised. The meeting resumed in plenary session to discuss recommendations and future steps. There was consensus that the framework should be circulated electronically for validation and finalized as Version 4.

It was noted during the meeting that there was a NOAA weather alert was in place advising that there was a 65% chance that a moderate *El Nino* event would occur during the end of 2014. This meant that the region had already advanced to the early warning stage in the Decision Support Framework, yet none of the countries represented nor the international agencies had taken any action. The view was expressed that the passage of 7 years since the last outbreak was consistent with escalating risk and this made inaction all the more concerning. Participants agreed to follow up the warning as a priority after the meeting. This was in fact done and it was found that the threat had declined. However, the inaction in the face of what was a valid alert is of concern.

[1] Full title: Health, environmental change and adaptive capacity: mapping, examining and anticipating future risks of water-related vector-borne diseases in eastern Africa; website: http://www.healthyfutures.eu/)

The principal conclusion of the meeting was the recognition that RVF epidemiology in the region was not static and would evolve over time in light of climate change. The concept of a 'normal state' between outbreaks was done away with and replaced with the notion of an evolving inter-epidemic period. However, the meeting was in agreement that the future RVF risk projections that had been generated based on climate models did not include key determinants of RVF epidemiology and probably could not be considered predictive unless greater attention was paid to non-climate risk factors such as soil types and the socio-economic responses to climate change that would probably alter host demographics and production systems significantly.

2 The Decision Support Workshop Process

Risk-based decision support breaks down the process of making choices into explicit steps that match actions to the probability of outcomes. It does this by building frameworks for decision-making that seek to clarify choices, enhance prevention and mitigation, and reduce the likelihood of wasteful, inappropriate or late action. The construction of frameworks is a collaborative activity that involves decision-makers, technical experts and implementers. This assures that the frameworks are practical tools that enjoy a strong sense of ownership.

Below is a brief outline of the process the participants completed to develop an updated risk-based decision support framework.

1. The objective of the decision support framework was reviewed and updated. This is the outcome(s) to be mitigated or avoided.
2. The timeline of the physical, biological and social process leading to the changing risk situation was reviewed. Note that social responses to changing disease ecology can have profound affects on land use, production systems and household economies which in turn affect disease epidemiology.

3. Identify decision-points: Events and milestones indicative of changing risk. These should be easily perceived as evidence of the evolution of the climate-disease interaction indicative of changing disease risks that warrant changes in investment and response. Examples could be changes in average temperature and rainfall of the abundance of vectors.

4. List and describe categories of mitigation activities where change should be considered. The categories are all the different types of actions that are needed to assure a complete, timely and economically efficient mitigation of the hazard. Examples include:
    - Enhanced surveillance to track disease evolution,
    - Tracking impact, knowledge and social responses (land use, coping strategies, etc.),

- Planning future interventions,
- Budgeting and mobilization of resources,
- Building systems and institutions to respond to disease (infrastructure, capacity building, policy, etc.),
- Public awareness and communication

5. Build a table of future events and actions areas. The table has a row for each step in the evolution of the issue and a column for each action category.

6. Establish appropriate content for each cell in the table (each action category at each time point). The content of the cells should avoid being prescriptive and instead act as a reminder to decision-makers of the types of actions they should consider in light of events. For example, perceived changes in vector demographics offer the opportunity to justify increased investment in vector control or habitat destruction.

Upon completion of the workshop, the framework was edited as a brief document and circulated for validation among the participants. There after, it will be circulated for peer-review to correct any oversights and broader acceptance.

3 Results of Discussions

3.1 Expectations of the Participants

The participants were asked to list their expectations from the meeting. Participants expected to:

- Develop and updated DSF
- Merge new and old Information into a coherent response plan
- Sharing information
    - Information on control of vectors
    - Information on new vaccines
    - New tools
- Improve preparedness

3.2 Key Action Points from the Research

3.2.1 Disease Modeling - Mass Vaccination

The disease modeling presentation indicated the optimal time for vaccination in terms of suppression of virus circulation was 6 weeks before first case as determined by model. This period coincided with the rains. The participants indicated that there were considerable constraints to accessing livestock at this point in time and that it would be extremely difficult (or impossible) to mobilize the funding required for mass vaccination at that time point in the evolution of the outbreak. The participants indicated that the modeling work should examine additional vaccination time points, especially 9 weeks before the first case.

The participants also indicated that a targeted approach to vaccination was much more likely to be implementable and requested that this be examined in the model. It was noted that the model was not spatial and may not be suitable for examining a targeted approach.

The participants expressed the view that the most feasible approach to vaccination was vaccination during the inter-epidemic period using combined vaccines. The vaccine would target endemic disease warranting regular vaccination and RVF would be an additional valency. The combined approach was seen as the only strategic that would make RVF vaccination economically efficient given the long inter-epidemic period.

3.2.2 Disease Modeling – Targeting species

The model assumed higher transmission rates in sheep and sheep populations larger than goat populations. The model found sheep vaccination had greater impact than vaccination in other species. The research felt that more evidence was needed these that assumptions were valid before they could firmly conclude that targeting of sheep in vaccination programs was a valid. Participants noted that there was probably sufficient information in the literature to support or refute the assumption.

3.2.3 Disease Modeling – Larvicide

The modeling indicated that use of larvicides applied 1-2 months before the onset of rains would also generally suppress disease. The treatment modeled was a mass approach and again required a significant commitment of funds very early in the evolution of the outbreak. The participants felt this was unlikely.

3.2.4 Comments on Climate Change Model

- The assumptions concerning the ecology and epidemiology of the vector system were not clearly stated and the participants were not sure they were valid
- Participants agreed disease geographic distribution will change as a result of climate change but felt the model did not include sufficient variables to be predictive. Rain and temperature are not enough to be predictive. The quantity of rain is not sufficient as the pattern and duration of rains are also determinants.
- The model needs to include socio-economic factors such as the effect of trade, land use and migration routes. Participants noted that these factors will evolve with climate as well as with other socio-economic forces. Population density and population movements will be affected by climate change and in turn affect disease patterns.
- Ecological determinants such as elevation, soils, wildlife interactions and humidity will also determine regions ability to support RVF transmission and will modulate climate impacts.
- The meeting concluded that climatic assessment and monitoring should be introduced as part of the core inter-epidemic activities, but did not feel that specific actions could be emphasized given the lack of confidence in the existing model.
- Active epidemiological investigations in transition areas suggested by climate change models should be undertaken to understand and validate trends in risk. Simulation exercises on climate change issues should also be considered.
- Create awareness in areas predicted to have increasing risk due to climate change

3.2.5 Other Action Points

- The DSF should be more One Health in its approach
- The DSF should be reviewed every 5 to 10 years
- More variables needed in climate change model
- Incorporate Regional Economic Communities (RECs). They are now key stakeholders and actors
- Risk map changing >> geographic applicability changing

3.3 Objective of the Revised Decision Support Framework (Version 4)

To provide guidance for the anticipation of future RVF outbreaks and mitigate their impact in the changing climate of Eastern Africa using One Health approaches.

3.3.1 Revised Decision Points

The decision points were revised. Important conceptual changes were:

- The DSF should drop the concept of 'Normal' and replace this with an evolving inter-epidemic period
- Inter-epidemic period was defined as the absence of abnormal virus circulation and pre-disposing factors
- Inter-epidemic period is not static, evolving as a result of climate change
- The 6-month waiting period period for absence of disease was a condition of the OIE code. This has now been changed to 45 days in the current code and the DSF should be harmonized with the new code criteria.

3.3.2 Action Categories

- Climate change assessment was added and grouped with Risk and Impact Assessment
- Research was separated risk and impact assessment as a separate action category.
- The titles of other categories were clarified but the nature of the categories were not changed.

3.4 Vulnerability mapping

The framework that has been developed by the project for risk mapping was reviewed. Demonstrations were presented on how the framework combines hazard (disease) maps with vulnerability maps to enable the generation of a risk map. Determinants for vulnerability to RVF that were identified by the participants include:

- Poverty
- Knowledge
- Access to information
- Access to services
- Livelihood options
- Total livestock units
- Environmental resources/services
- Education

Participants worked in 4 groups to rank these determinants on their relative contribution to a community's vulnerability to RVF by using proportion piling technique. Scores obtained from individual groups were collated and results discussed (Picture 2).

Picture 2. Participants collating vulnerability scores from various groups, photo credit – Jusper Kiplimo, ILRI

3.5 Policy Recommendations

- Support regional vaccine bank
- Joint statement on emerging risks for 2014
    - A warning on El Nino occurrence (NOAO about 65% chance) has been given. Why aren't we putting in preparedness plans for RVF outbreak
    - Confirm weather advisory and take appropriate actions per DSF
    - A joint communique between FAO, ILRI, AU IBAR, OIE to reaffirm weather warnings might yield good results
    - Check on FAO forecasts
    - Countries at risk should increase surveillance
- Vaccination strategy:
    - Continuous and targeted vaccination e.g. in high risk areas
- Incorporate One Health Approaches in DSF

- Refine climate change models
- Create awareness in areas predicted to have increasing risk due to climate change

3.6 Recommendations

- Time since last outbreak is a major risk factor
- Register vaccines
- Regional Vaccine Bank
- Remove ' Smithburn' from the document
- Hot spots >> High Risk
- Decentralization
    - National authorities should coordinate county initiatives
    - Local government may choose to vaccinate
- Inter-epidemic period vaccination
    - Consider in high risk areas
    - Targeted vaccination
    - Combined vaccination
- Climate Model

3.7 Way Forward

- Updated DSF draft from this meeting
- Review and validate by E-mail
- Small group to update One Health aspects of the DSF
- Explore OCHEA-RESPOND as mechanism to engage One-Health group to review the framework
- Jointly publicize result through OIE, FAO, ILRI, IGAD, AU/IBAR, EASN
- Publish the updated version

4 Annex I: Meeting Agenda

Rift Valley Fever Decision-Makers Workshop

Review of the Rift Valley Fever (RVF) Outputs of the Healthy Future Project and Their Implications for Decision-Making and Action

30 September – October 1, Nairobi Kenya

Agenda

Tuesday 30 September

8:00 - 9:00	Registration and Networking Coffee	
9:00 - 10:00	Introductions and Workshop Objectives	
10:00 - 11:00	HF Project Outputs	
11:00 - 11:30	Coffee Break	
11:30 - 12:30	Discussion: New Information for Action	
12:30 – 1:30	Lunch	
1:30 - 2:00	Introduction to Decision Support Frameworks	
2:00 - 3:00	Working Session: Objectives and Time Frame of the Updated Framework	
3:00 - 3:30	Coffee Break	
3:30 - 5:00	Working Session: Review Decision Points and Action Categories	

Wednesday 1 October

7:00	Breakfast	
9:00 - 11:00	Working Session: Integrating New Information the Framework – Long-term Climatic Impacts	
11:00 - 11:30	Coffee Break	
11:30 - 12:30	Working Session: Integrating New Information the Framework – Practical Vaccination Options	
12:30 – 1:30	Lunch	
1:30 – 3:00	Discussion: Implications for Policy, Strategy and Research	
3:00 - 3:30	Coffee Break	
3:30 - 5:00	Future Steps and Recommendations	
5:00	Closing	

5 Annex II: Participant List

Name	Position/organisation	Email address
Austin Bitek	Veterinary Epidemiologist, ZDU Kenya	bitekorinde@yahoo.com
Dr. Abdu A. Hayghaimo	Director of Veterinary Services, Ministry of Livestock and fisheries, Box 9152, Dar es Salaam Tanzania	haygh.aa@gmail.com
Dr. Agol M. Kwai	ICPALD, IGAD	agol.kwai@igad.int
Dr. Akuol Arop Deng Ajing	Veterinary Officer, Ministry of Animal Resourses and Fisheries, South Sudan	akoularop@yahoo.com
Dr. Bernard Bett	Senior Scientist, ILRI	b.bett@cgiar.org
Dr. Chrisostom Ayebazibwe	Senior Veterinary Office, National Animal Disease Diagnostics and Epidemiology Centre (NADDEL), MAAIF, Entebbe, Uganda	cayebazibwe@gmail.com
Dr. Emmanuel S Swai	National Epidemiologist, MoLDF, Tanzania	esswai@gmail.com
Dr. Harry Okuom Oyas	Epidemiologist/ Senior Assistant Directore of Veterinary Services	harryoyas@yahoo.com
Dr. James Wabacha	AUIBAR, AMP-AH project coordinator	james.wabacha@aui-bar.org
Dr. Jeff Marinner		
Dr. Kwaja Akuol	Acting Director of Epidemiology and Informatin system, South Sudan	alorkwaja@yahoo.com
Dr. Luka Selemani Makungu	DVO- Epidemiology, Ministry of Livestock and Fisheries, Dar-es-Salaam, Tanzania	makungu57@yahoo.com
Dr. Patrick Bastiaensen	Programme Officer - OIE	p.bastiaensen@oie.int
Dr. Peter Maina Ithondeka	Retired Director of Veterinary Services	pithondeka@gmail.com
Dr. Rees Mbabu Murithi	Deputy Director of Veterinary Services, Central Veterinary Laboratories, Ministry of Livestock Developmen	murithimbabu@yahoo.com
Dr. Robert Mwebe	Senior Veterinary Officer - Epidemics MAAIF, Entebbe, Uganda	rmwebe@gmail.com
Dr. Thomas Dulu	Deputy Director of Veterinary Services, Ministry of Livestock Development, Dept of Veterinary Services	nanetia@gmail.com
Jacob Korok	Director of Veterinary Services, Ministry of Livestock and Fisheries Industry, South Sudan	jacobkorok@yahoo.co.uk
John Gachohi	PhD Student, ILRI	j.gachohi@cgiar.org
Joshua Kimtai	Program Associate, FAO-ECTAD	joshua.kimtai@fao.org
Jusper Kiplimo	GIS Analysit, ILRI	j.kilimo@cgiar.org
Peninah Munyua	Epidemiologist- CDC Kenya	ikg2@cdc.gov
Rosekellen Njiru	Senior Admin. Assistant, ILRI	r.njiru@cgiar.org
Samuel Kabochi Kamau	Chief Principal Zoologist, Ministry of Livestock Development, Dept of Veterinary Services	kamaukabochi@gmail.com
Stacey Noel	Centre Director, SEI	stacey.noel@sei-international.org