Enhancing prevention and control of Rift Valley Fever in East Africa by intersectoral assessment of control options

Tabitha Kimani, (MLD)
Esther Schelling, (STI)
Tom Randolph, (ILRI)
Margaret Ngigi, (EU)
Kariuki Njenga, Robert Breiman, (KEMRI-CDC)
Rift Valley Fever

- Viral zoonosis affecting ruminants and human beings
- Trade sensitive
- First reported in 1930’s, Kenya
- Reported in Eastern and Southern Africa, Egypt, Middle East
- 1997/1998 and 2006/2007 were the largest outbreaks in Kenya
  - 90,000 human cases and 728 humans deaths
- Animal RVF is mosquito-borne.
- Human get infected through contact with infected animals and products
Correlation between RVF and climate

- Correlation between RVF outbreaks, rainfall and Indian Ocean sea surface temperatures
- RVF outbreak prediction models use remotely-sensed environmental indicators

- Dec 2006: high RVF risk was predicted for eastern Africa, outbreaks occurred
  - Dec 2007: high risk predicted for s/ Africa, outbreaks occurred
  - RVF epidemic in Madagascar
- Nov 2008: alert for e/ Africa, but no outbreak

http://www.geis.fhp.osd.mil/GEIS/SurveillanceActivities/RVFWeb/monthlypages/
Lessons learnt from 2006/2007 RVF outbreak in Kenya

• Severe socio-economic consequences as a result of:
  – delayed detection and response
    • Lack of emergency plans,
    • poor risk communication and inadequate information flow
    • Inadequate collaboration between the sectors
    • Lack of emergency fund
• Control of RVF in the livestock sector is most effective
• Improved cooperation between health and livestock sectors is critical
• Need to undertake a comprehensive socio-economic assessments of RVF and its alternative control programmes to establish cost-effective and achievable strategies
  – *reason behind this follow up project*
Objectives of the Project

Overall
To provide evidence-based recommendations on control options for more appropriate allocation of limited resources and to facilitate multisectoral RVF planning

Specific
- Identify the nature of information needed by line ministries for planning of future outbreak management
- Assess cost-effectiveness of control options and prioritize them from a multi-sector perspective
- Make recommendations for institutional change based on one health concept to enhance response capacity to mitigate future outbreaks and control of zoonoses (RVF, HPAI etc)
Methodology

- Three-year project in Kenya
- PhD in socio-economics and medical students
- 5 partner institutions
- Build on information collected during a rapid assessment of the last outbreak

<table>
<thead>
<tr>
<th>Institution</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOK: MLD-DVS</td>
<td>Project implementation, e.g. linking public sectors’ stakeholders, operational framework</td>
</tr>
<tr>
<td>ILRI</td>
<td>Socio-economic impacts of RVF along the market value chain</td>
</tr>
<tr>
<td>KEMRI &amp; CDC</td>
<td>Human health epidemiology and diagnosis</td>
</tr>
<tr>
<td>Egerton</td>
<td>Socioeconomic impact of RVF; workshops</td>
</tr>
<tr>
<td>STI</td>
<td>Assessment of cost- effectiveness of control options</td>
</tr>
</tbody>
</table>
Approaches to Define Needed Information

• Stakeholder analysis (public and private organisations and institutions involved in zoonoses prevention and control)

• Interviews with key informants at central and district level: nature and precision of required information, contingency planning tools, and potential of intersectoral cooperation

• National workshop to identify researchable missing information and priority control options to be subjected to cost-effectiveness analysis
Approach to Assess Cost-effectiveness of Control Options

• Evaluate/Asses/Establish
  – Selected priority control options
  – Public and private sectors RVF control costs (Delphi study)
  – Disability-adjusted live years (DALYs) for RVF in Kenya
    • Human incidences, morbidity and mortality
    – Micro and macro levels costs of the disease
• Compare with and without control outcomes
  – Simulation of epidemic and inter-epidemic
    • livestock to human and
    • mosquito-livestock transmission
• Cost-effectiveness for the public health sector: costs per DALY averted.
• Demonstrate monetary benefits of control for different sectors
Approach Towards Institutional Change

• Regional workshop (3rd year) to initiate regional collaboration (notably Tanzania, Somalia, Burundi and Sudan)

• Recommendations for an operational multisector framework
  – cooperation and improved coordination between all players
  – development of a decision tool for RVF specifically and for zoonotic diseases in general

• Incorporation of recommendations in a contingency plan
Outputs

- Key information required for evidenced based policy making for zoonoses preparedness and planning
- Recommendations on an operational framework to enhance institutional capacity to respond to RVF and other zoonoses
- Impacts of RVF and disease burden
- Costs and benefits of priority RVF prevention and control measures for multiple sectors
- Capacity-building of two Kenyan doctoral students
- Two comprehensive workshop reports, 5 peer-reviewed articles, one policy brief, and other communications to disseminate results beyond research institutes
Outcome and Policy Impact

- Greater awareness of linkages and societal impact of zoonoses & commitment to mitigate in the region
- Enhanced capacity for sustained collaboration between agriculture and health sectors regionally and nationally
  - better integrated and preparedness, more effective policies, and better response to future outbreaks
- Institutionalization of multisectoral RVF control through a joint operational framework
- Provide and inform other Eastern Africa countries with a tool for development of a regional RVF strategy
- Successful multisectoral policy making and planning of RVF can be adapted and applied to other zoonoses
Beneficiaries

- Affected households who bear costs of:
  - Human and animal deaths
  - Reduced income and resulting food insecurity
  - Diagnosis and treatment of patients
- Traders in livestock and livestock products
- Provinces and districts: continuation with development and poverty alleviation programmes
- The line ministries, notably of public health and livestock
  - Assisted in cost-effective allocation of limited resources
- Funding agencies
  - Benefit from more concerted actions between key partners and better return of investments
Relevance to AHRP

• Improved RVF control will mitigate the negative impacts of livestock on public health and vice versa.

• Addresses stakeholders’ perceived need for better cooperation between sectors - health and livestock sectors, for effective RVF control.

• Builds on partners’ experience in interdisciplinary and intersectoral collaborations in research on zoonoses and public engagement.

• Cost-effective allocation of scarce resources of public services contributes to the strengthening of health systems in a way that one sector cannot offer alone.

• Promoting intersectoral participation and cooperation adds value to the international advocacy efforts on zoonoses.