

Rift Valley fever in Kenya: policies to prepare and respond

From the project “Re-emerging transmissible transboundary animal diseases: comparing Rift Valley Fever with BSE”, November 2014

STEPS briefing

Introduction

Our approach to Rift Valley fever (RVF) in Kenya has been informed by a recognition that the experience with diseases such as Ebola in West Africa and BSE in the UK demonstrate that the costs of responding to outbreaks of transmissible and infectious diseases, especially zoonotic infections that can infect both animals and people, can be far greater than the cost of implementing measures to control or prevent problems in the first place.

No figures are yet available for the 2014 West African Ebola outbreak, but for BSE, an investment by the British government in 1986, when BSE first emerged, of some £20 million pounds in disease eradication, would have avoided eventual costs to the UK government of some £20 billion, without including costs borne by households and farmers. A thousand-fold return on a public investment is above average, but the general point remains namely that failing to make prudent preparations can be very costly in human and economic terms.



RVF – a case study of a zoonotic disease

Rift Valley fever (RVF) is a seriously unpleasant disease that can infect human beings as well as susceptible species, including cattle, sheep, goats, camels and wildlife. RVF is interesting because it is a relatively novel disease, with long periods between outbreaks, and one that is incompletely understood by scientists, pastoralists and by policy-makers.

Our study has focussed on exploring diverse ways in which pastoralists, policy-makers and those responsible for veterinary and public health can better respond to the challenges posed by RVF. Our approach has not just focussed on this particular disease; we tried to use RVF as a window through which to consider how Kenyans could better respond to the challenges posed by zoonotic diseases.

About this project

This briefing is an output of a project convened and funded by the University of Sussex-based STEPS Centre, which conducts research into Social, Technological and Environmental Pathways to Sustainability (www.steps-centre.org) in collaboration with Centre for African Bio-Entrepreneurship (CABE - www.cabe-africa.org), which is based in Kenya.

The objective has been to enrich our understanding of possible policy responses to the threats from zoonotic diseases such as RVF. We have examined scientific and policy aspects of RVF, and taken account of both understandings and uncertainties. We analysed earlier work and then gathered the perspectives of a wide range of stakeholders, including pastoralist communities – both nomadic and settled – as well as national and local veterinary and public health officials, government policy-makers and members of relevant research communities.

There are many reasons why the perspectives of scientific experts on their own cannot be sufficient to decide RVF policy. Many RVF control options, such as slaughter bans, livestock movement restrictions and vaccination, require pastoralists' cooperation. Developing a plan for responding effectively to the challenges of RVF requires understanding more than virology, epidemiology and immunology; it also requires an appreciation of the practical challenges and opportunities facing pastoralists and those with responsibility for helping them, and others, to respond to RVF.

From the pastoralist communities, we learnt that they rank as the important challenges confronting them: firstly climate change and the unreliability of water and pasture, and secondly market volatility - both when buying and selling. Against that background, they view zoonotic infections such as RVF as complicating factors. When RVF outbreaks occur, their costs rise while their main source of income evaporates.

This study not only gathered diverse perspectives on the challenges posed by RVF but also compared them to identify consistencies and inconsistencies amongst them. Detailed results will be published elsewhere; this policy brief focuses on some initiatives that could enable Kenya to become more resilient to the challenges posed by RVF and other zoonoses.



Animals being taken to the market. Photo by Omar Chaisi



Focus group discussion – photo by Oscar Okumu

Previous lessons

One component of this study reviewed experiences of and lessons from previous outbreaks of RVF in Kenya, especially the 1997/1998 and 2006/2007 outbreaks. The deaths of over 400 Kenyans were attributed to the 1997-8 outbreak, while there are no reliable estimates of the numbers of cattle, sheep, goats and camels who were afflicted. Several attempts have been made to estimate the costs that arose from the 2006-07 Kenyan outbreak. One authoritative report concluded that in 2006-07: “Households bore four categories of losses, a) animal deaths, b) reduced livestock production, c) loss of income due to market bans, d) the costs of diagnosis and treatment of livestock and contribution to control costs. Abortion and illness of the animal led to reduced annual milk production and emaciation of animals to meat losses.”

The Government of Kenya, responded by producing and endorsing a **Contingency Plan For Rift Valley Fever** in April 2010, for which the Ministry of Livestock Development took the lead with support from Food and Agriculture Organization (FAO) Kenya and United States Agency for International Development (USAID). A revised Contingency Plan is anticipated in late 2014. The 2010 **RVF Contingency Plan (or RVF CP)** estimated that in the 2006-7 outbreak some: “...158 people died...and numerous market actors were severely affected, the financial and economic cost associated with the outbreak was estimated at KSh 4 billion and KSh 2 billion respectively. The disease impacted heavily on the regional and international trade in livestock and livestock products.” The expression ‘direct costs’ referred to losses in the livestock value chain, while ‘indirect costs’ referred to the consequent losses to the broader economy.

If such losses are not to recur, or be exceeded, in future outbreaks, suitably planned and adequately resourced provisions, including veterinary and public health measures, will be required. The range of potentially useful proposed measures have included livestock vaccination, enhanced disease surveillance and diagnostic activities, mosquito control programmes (including distribution of mosquito nets and use of insecticides), risk communication and awareness creation, all of which require investments of financial and human resources. There is no evidence, as yet, that decisions have been taken to allocate the necessary funds. In the event of an outbreak, for which preparations had not been made, it will be extremely difficult rapidly to mobilise and deploy the required resources.

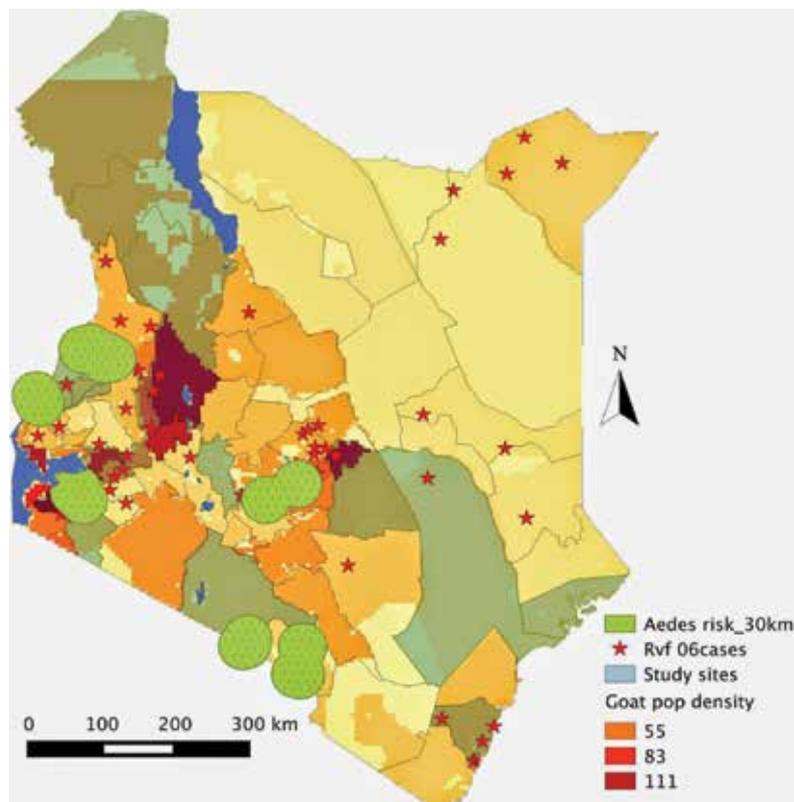
Surveillance

RVF disease surveillance was poor and belated during the 2006-7 outbreak. Severe socio-economic consequences resulted from delays in detection and response, as well as a lack of emergency plans and funds, poor risk communication and inadequate information flows, and inadequate collaboration between the relevant sectors. The national authorities only learnt of the outbreak once the disease had infected not just the livestock but the pastoralists themselves. Subsequent monitoring of

so-called 'Sentinel Herds' in RVF hotspots was undertaken, but appears not to have been sustained. The experience of the 2006-07 outbreak showed that local, national and regional responses to RVF were inadequate. The eventual responses were slow and fragmented. Fortunately the outbreak burnt itself out, but there is little evidence suggesting that official measures contributed significantly to that outcome.

Forecasting

Outbreaks of RVF, just like those of Ebola, are hard to forecast accurately with respect to time or place. The Ebola crisis in West Africa is now far worse than previous outbreaks because, unexpectedly, it transferred from rural to urban areas. Scientists and officials had hoped that improved weather forecasts could identify places and times at which the risk of an RVF outbreak would be high, as a basis for guiding the vaccination of vulnerable livestock. While maps indicating high, medium and low RVF risk areas are available, the weather forecasts' horizon of accuracy is, however, far shorter than the time required to produce, distribute and administer livestock vaccines. When RVF outbreaks occur after heavy rains, travel in the affected areas becomes especially difficult. In 2007 Kenya had some 1.5 million vaccine doses, when more than 3 million doses were required.



Vaccination

The severity of outbreaks of RVF in livestock can be diminished, but not prevented, by a programme of vaccination, but effective and sustained vaccination programmes have not been implemented in most vulnerable areas. Two main types of veterinary RVF vaccines have been developed. Just like Ebola, a safe and effective human vaccine is not yet available but potential candidates are undergoing evaluation. One type of RVF vaccine is a modified live attenuated virus while the other uses an inactivated virus. If the live vaccine is used, only one dose is required to provide animals with long-term immunity, but the currently available live viral vaccine increases rates of spontaneous abortions when administered to pregnant animals. Administering the inactivated vaccine does not have that adverse impact, but annually repeated doses are required to provide sustained protection, which is hard to achieve with nomadic herds. The available vaccines, even if stored in refrigerated conditions, have a shelf life of only about 6 months, but there are few refrigerators in the most vulnerable districts. Pastoralists did acknowledge that in 2006-7 they were surprised to learn that even weak animals when vaccinated were more able to withstand RVF than seemingly stronger animals that remained unvaccinated.

Communication

In the 2006-7 outbreak flows of information were poor and inequitable. Pastoralists were expected to provide prompt reports of cases of RVF, from which samples would be taken from the animals and laboratory tests carried out to confirm the exact diagnosis before the official declaration of RVF cases. In return, however, the pastoralists never received the results of laboratory tests conducted on samples taken from their animals. Pastoralists were also understandably anxious that as soon as an outbreak of RVF was declared officially, movement restrictions would be imposed and the markets at which they would normally sell their livestock would be closed. If pregnant animals miscarried after vaccination they received no compensation, and no compensation would be provided for animals killed by RVF. Active co-operation of the pastoralists with veterinary and public health officials in future outbreaks would probably be more forthcoming if farmers had stronger incentives to collaborate with officialdom.

Community Workers

During previous outbreaks of RVF groups of so-called Community Animal Health Workers (CAHWs) were recruited from pastoralist communities to assist professional veterinarians. The pastoralists with whom we worked reported that the CAHWs played a very constructive and valuable role. Once the outbreak ended, the support for CAHWs ended, as professional veterinarians sought to maintain their pre-eminent role in offering veterinary services.

The Contingency Plan remains the central plank of the Kenyan authorities approach to RVF, and while it suggests many beneficial measures, it could be strengthened by engaging more fully with the perspectives of pastoralists and other key stakeholder groups. Moreover, the resources to implement the Plan's provisions have not been allocated or delivered. A Zoonotic Disease Unit (ZDU), which is a collaboration between the Ministry of Agriculture, Livestock, Fisheries and the Ministry of Public Health was established in 2011, but with modest resources and a limited brief. A 'One Health' approach is articulated rhetorically but not implemented in practice. Neither the pastoralists nor even some rural District Veterinary Officers had any knowledge of the **Contingency Plan**, or first-hand experience with RVF, making it difficult confidently to predict its effective implementation in a future outbreak.



Woman selling raw milk, Jijira district. Photo by Oscar Okumu

Key policy gaps

The RVF prevention and control measures as set out in the Contingency Plan are only partially implemented because of the scale of resources so far allocated. The measures should include active disease surveillance, an Early Warning System for outbreak predictions, targeted vaccinations in high-risk areas, improved coordination between livestock and public health teams.

Large herds of livestock from pastoral regions are being relocated partly due to climate change, but also to improve access to markets serving urban areas, which implies a strengthening case for effective enforcement of livestock movement control and quarantine in the event of an outbreak, but co-operation from nomadic pastoralists will depend on providing them with improved incentives to co-operate.

Lack of activity concerning RVF has resulted in low levels of awareness amongst pastoralists and some animal health professionals, undermining levels of preparedness. In some high-risk areas levels of awareness among pastoralists are lower than among some farmers in low-risk areas. Maintaining awareness and alertness to RVF is essential if appropriate surveillance, diagnoses and responses are to be achieved in future outbreaks.

The **RVF Contingency Plan** refers to pastoralists primarily as sources of information and as communities upon which restrictions may be imposed in the event of outbreaks of RVF. The perspectives of rural communities could usefully be more fully appreciated, and the **Plan** modified accordingly, to take account of the risks that both RVF and measures to prepare and respond to it entail for pastoralists. Such a revised Plan could well be easier to implement and more effective.

The **RVF CP** was framed under the auspices of the previous Constitution. Under the provisions of the new Constitution the allocation of some key responsibilities has changed, while the location of others remains to be decided. A revised **Plan** should take due account of recent constitutional developments to ensure that there is clarity over which jurisdictions are responsible for which measures and actions. Devolving responsibilities to the Counties without allocating the necessary resources to them would be unsuccessful.

Policy proposals

Pastoralists need stronger incentives from the authorities if they are to provide active surveillance, prompt reporting and compliance with movement restrictions. In previous outbreaks, reporting cases of RVF have left pastoralists hampered by movement restrictions and reduced market access. They were not even provided with the results of laboratory tests on samples taken from their animals. If information could flow towards, rather than just away from, pastoralists, that should enhance their co-operation with official prevention and control measures. Providing feedback on the results of laboratory tests should enhance pastoralists' ability confidently to identify RVF cases and differentiate them from other infections. If farmers received financial compensation for confirmed cases of RVF and related losses, their collaboration would also be substantially enhanced. Helping them to re-stock after an outbreak would also encourage farmers to report suspected cases promptly and increasingly reliably. During RVF outbreaks, when pastoralists are advised not to consume milk or meat from infected animals, they need access to other sources of food or income.

Significant benefits could be derived from establishing and supporting Community-Based Early Warning Systems, and if Community Animal Health Workers (CAHWs) and other local stakeholders received official support. Professional veterinarians often maintain that farmers should benefit from the services of trained professionals rather than poorly trained or equipped CAHWs. Some veterinarians consider CAHWs as competitors who undercut their prices while providing inferior services. On the other hand, pastoralists,

especially nomadic ones, see vets as scarce and prohibitively expensive. If professional vets had greater incentives to train, equip and supervise CAHWs, pastoralists communities might obtain enhanced veterinary support that would be accessible and affordable to prevent and/or manage diseases. Such changes could also enable District Veterinary Officers to capture and share larger and more reliable sets of data. This scenario implies institutional changes, based on a One Health concept, to enhance capacities to mitigate and respond to outbreaks of zoonoses.

Programmes to vaccinate livestock against RVF might be very beneficial if they were routinely and effectively conducted, but the necessary resources have not been allocated. During outbreaks of RVF, countries in the Arabian Peninsula ban imports of livestock from affected areas, which create meat shortages in those countries and raise their domestic meat prices. There might be a good case for a joint initiative from Kenya in collaboration with other East African countries seeking financial support for vaccination programmes from wealthy countries in the Arabian Peninsula, as that would help stabilise their meat supplies and prices.

A revised and strengthened RVF Contingency Plan, with adequate preparations and financial and human resources, will be needed if responses to future outbreaks of RVF (and other zoonoses) are to be improved. With zoonotic infections in rural areas you cannot have 'just in time' responses; you need to have 'just in case' preparations.

Credits

This briefing was written by Erik Millstone, Hannington Odame and Oscar Okumu.

Sources

Britch SC et al (2013) Rift Valley Fever Risk Map Model and Seroprevalence in Selected Wild Ungulates and Camels from Kenya, PLoS ONE 8(6): e66626
doi:10.1371/journal.pone.0066626

Jost CC et al (2010) Epidemiological Assessment of the Rift Valley Fever Outbreak in Kenya and Tanzania in 2006 and 2007, American Journal of Tropical Medicine and Hygiene, 83 (Suppl 2), pp 65–72

ILRI and Kenyan Department of Veterinary Services (2008) Learning the lessons of Rift Valley fever: improved detection and mitigation of outbreaks - Participatory assessment of Rift Valley fever surveillance and rapid response activities, Nairobi

Ministry of Livestock Development (2010) Contingency Plan for Rift Valley Fever - Final Draft, Nairobi

Munyua P et al (2010) Rift Valley fever outbreak in livestock in Kenya, 2006-2007, American Journal of Tropical Medicine and Hygiene, 83 (Suppl 2) pp58 – 64

Ochieng Ogodo (2007) 'The impact of Rift Valley fever in Kenya', New Agriculturalist March 2007

Ebola virus disease, WHO fact sheet No. 103, accessed online November 2014 at www.who.int/mediacentre/factsheets/fs103/en/

About the STEPS Centre

The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub uniting development studies with science and technology studies. Based at the Institute of Development Studies and SPRU Science and Technology Policy Research, at the UK's University of Sussex, we work with partners around the world and are funded by the Economic and Social Research Council.

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