



Communique of the Likelihood of Rift Valley Fever Outbreak in Tanzania in October-December 2015

Background

Weather forecasts throughout the world are predicting the El Niño phenomenon during the October – December period of 2015. El Niño is a global phenomenon that results into abnormal weather pattern ranging from extremely high rainfall to extremely dry periods with dire consequences in affected areas. According to the US National Oceanographic and Atmospheric Administration (NOAA) and the UK Meteorological Office, this El Niño is shaping up to be the strongest since records began in 1950.

The meteorological agencies in Tanzania and Kenya have recently announced the above normal rainfall that is expected to occur between October and December 2015. In Tanzania the above normal rainfall is expected over most parts of bimodal areas and some parts of unimodal areas, and is likely to elevate flood risk during this period (Figure 1). This above normal rainfall is likely to trigger the onset of outbreaks of climate sensitive diseases, mainly the vector borne diseases including Rift Valley fever (RVF).

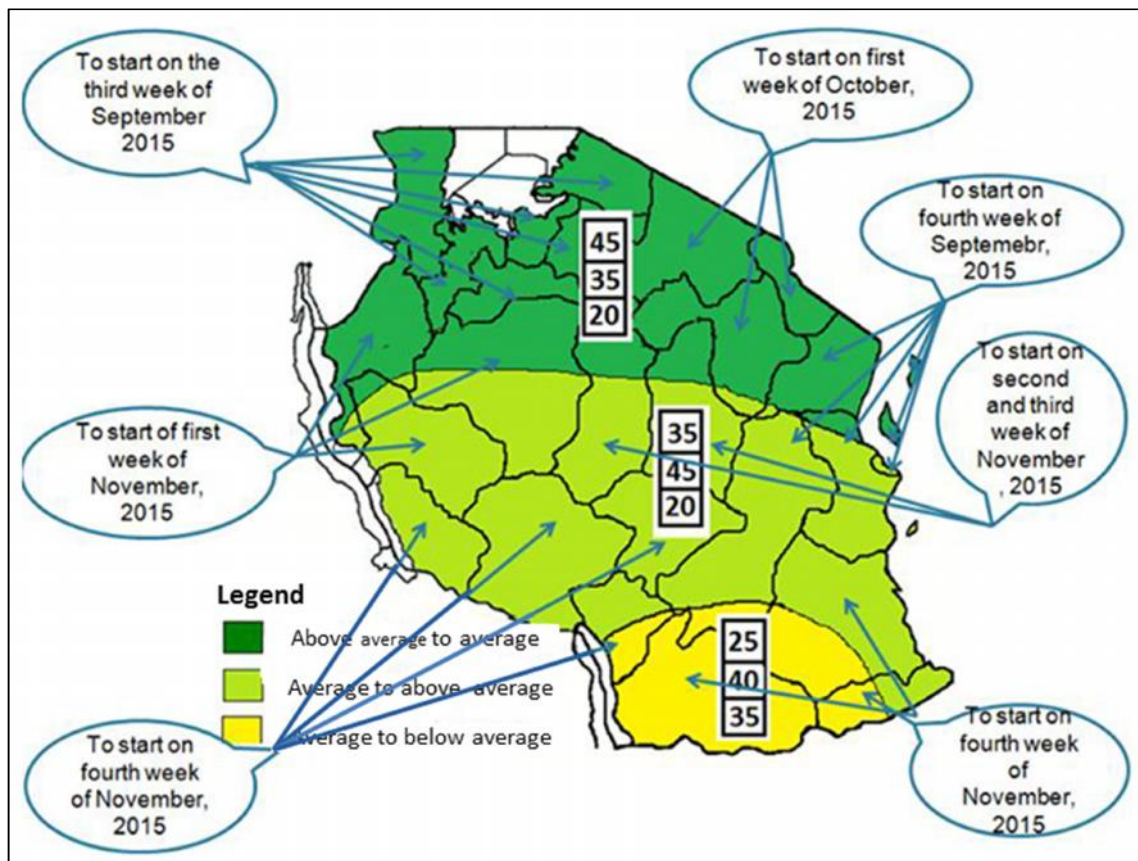


Figure 1: Rainfall prediction by Tanzania Meteorological Agency

Rift Valley fever is an acute viral zoonotic disease, and the clinical disease is limited to primarily domestic ruminants and humans. Animals acquire infection through the bite of infected mosquitoes. *Aedes* mosquitoes are the primary vectors, while *Culex* and *Anopheles* mosquitoes are secondary vectors. Humans acquire infection mainly through contact with infected animal or animal products, consumption of poorly prepared foods of animal origin and bites of infected mosquitoes. The disease spread from one location to another mainly through movement of infected animals.

In animals, RVF manifests itself with a sudden onset of abortion in a large proportion of the cattle herd or sheep flock, associated with high death rates among young animals. The disease may manifest itself as a fatal haemorrhagic disease syndrome in humans, either as sporadic cases or during major outbreaks involving animals. There may also be many severe influenza or febrile illness cases, some with ocular or neurological lesions.

Temporal assessment of past outbreaks in Tanzania has shown that from 1930 when RVF was reported for the first time in the country, further outbreaks were reported in 1947, 1957, 1960, 1963, 1968, 1977/78, 1989, 1997/98 and 2006/07 with average inter-epidemic period (IEP) of 8 years. All past RVF outbreaks in the country had occurred between December and June. These outbreaks, especially the widely spread 2006/2007 outbreak, resulted into devastating socio-economic consequences. Areas of the country that experience bimodal rainfall pattern, mainly the eastern Rift Valley ecosystem, have been identified to be at higher risk for RVF occurrence than locations that experience unimodal rainfall pattern, mainly the western Rift Valley ecosystem of the country.

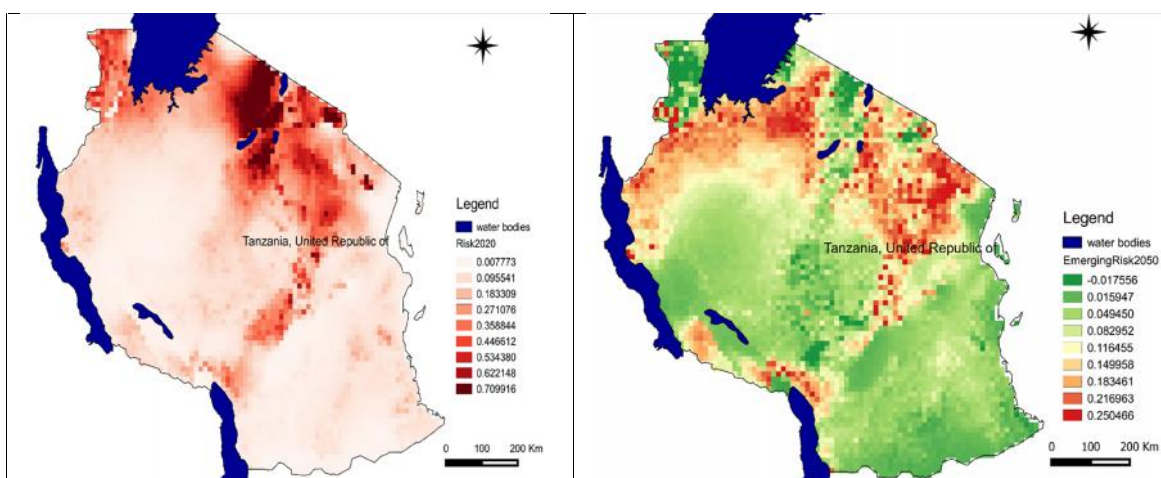


Figure 2: Predicted potential distributions of disease outbreak risk areas based on distribution of *Culex pipiens* complex in Tanzania for 2020 (L) and 2050 climate scenario (R)

Analysis of RVF outbreak and weather data in Tanzania suggests that the onset of an outbreak is preceded by about a two-month rainfall surplus of more than 400 mm, which results to subsequent occurrence of huge mosquito populations. The flooding, which occurs following prolonged heavy rainfall, has been reported to provide suitable habitat for the hatching of infected *Aedes* mosquito eggs and breeding and survival of other mosquito vectors. Climate and mosquito distribution related models indicate that predicted high risk areas are highly spreading (Figures 2), and the nature of animal movement will worsen the situation.

Prediction of current habitat suitability for RVF occurrence suggests that, the north-eastern, central and Lake Victoria zones of the country have larger amount of suitable habitat for RVF occurrence than the western and southern parts of the country (Figure 3).

The Rift Valley Fever threat in 2015

It should be noted that it is now eight years since we had experienced the last outbreak in 2006/2007, and this coincides with the identified average inter-epidemic period 8 years. The epidemiological features of RVF described above and the expected above normal rainfall between October and December 2015 provide an alarm warning for permissive environment for increased likelihood of RVF outbreak in Tanzania (Figure 1).

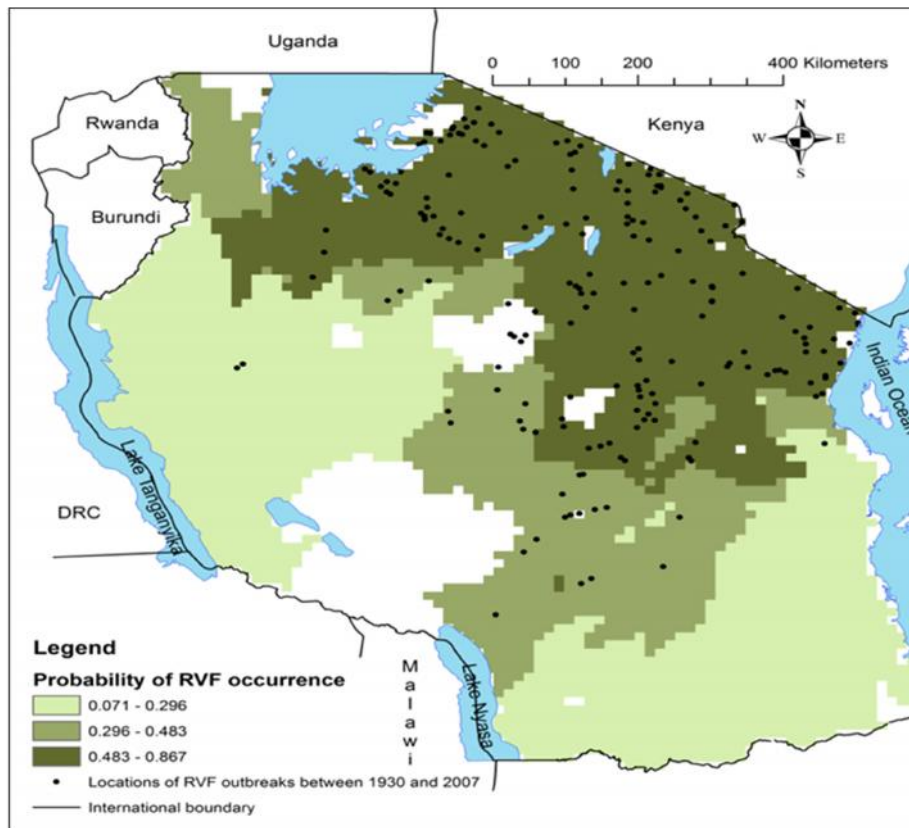


Figure 3: Areas of low, medium and high probability of Rift Valley fever occurrence in Tanzania

This communique provides an early warning on the likelihood of Rift Valley fever outbreak in Tanzania following the above normal rainfall expected from October to December 2015.

What should be done?

Based on the above observations, it is recommended that we SHOULD NOT wait for RVF outbreak to occur to take the necessary actions since it becomes very much challenging to control the disease and associated socio-economic consequences during the outbreak phase. It is therefore important that:

- Active strategic serological surveillance for antibodies specific to RVF virus and pre-emptive vaccination of unexposed cattle, sheep and goats ruminants should be conducted in high risk areas.

- Weather dynamics are being monitored closely for increased level of precipitation and flooding. This should inform extension of surveillance activities to other potential risk areas.
- The ministries responsible for health and livestock and other stakeholders should be well coordinated for cost-effective surveillance and disease prevention and control.
- The Ministry of Livestock and Fisheries Development should consider including a requirement for RVF testing as part of disease surveillance and control strategies in issuing movement permits.
- The Ministry of Livestock and Fisheries Development should advocate and monitor the use of established system for animal identification and traceability.
- Deliberate efforts should be made to use integrated vector control measures and use of broad-spectrum insecticide compounds in the control of biting insects/flyes in cattle, sheep and goats.
- Regional and District Disaster Management Committee should enhance the community awareness, early detection and reporting of clinical manifestations in livestock and humans suggestive of RVF.
- Public awareness messages should emphasize proper boiling of milk, thorough roasting and cooking of meat, as well as avoiding consumption of non-inspected meat/meat from dead animals as well as proper incineration of any carcass unfit for human consumption and dead animals.
- Community, especially livestock keepers should be made aware of clinical manifestations suggestive of RVF (including abortions, bleeding signs and deaths especially in young animals), and encouraged to report such events immediately to local veterinary authorities.
- The Tanzania Veterinary Agency and National Health Laboratories in Tanzania should obtain adequate diagnostic reagents to immediately confirm the RVF suspected cases.
- Attention is needed to consider RVF in the differential diagnosis of febrile illnesses at the health care facilities.
- Protective gears such as gloves and other appropriate protective clothing should be worn and care taken when handling sick animals/ patients or their tissues or any other suspected biological materials

This communique was prepared by:

Calvin Sindato, Clement Mweya, Sharadhuli Kimera, Leonard Mboera

National Institute for Medical Research, Dar es Salaam, Tanzania

Sokoine University of Agriculture, Morogoro, Tanzania

For further information contact:

Director General

National Institute for Medical Research

3 Barack Obama Drive

11101 Dar es Salaam, Tanzania

Tel: +255 222121400