

Applying the One Health principles: a trans-sectoral coordination framework for preventing and responding to Rift Valley fever outbreaks

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Summary

Rift Valley fever (RVF) is a good example of a disease for which a One Health approach can significantly improve the management of outbreaks: RVF is a vector-borne zoonotic disease, its dynamics differ between eco-epidemiological patterns and are modulated by eco-climatic factors. Therefore, collaboration between sectors, disciplines and role players, as well as an understanding of the local epidemiology of the disease, are key prerequisites for proper risk assessment and outbreak control. These principles drove the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) to develop an inter-sectoral strategic approach, with specific actions recommended for each of the four periods in the development of the outbreak (forecasting and preparedness, alert, epidemic control, post-epidemic). Through several outbreak response missions between 2006 and 2012 in various countries, an implementation framework was developed by WHO, FAO and the national authorities of affected countries and used to build national response action plans. The framework proposes a structured attribution of duty and responsibilities to committees made up of representatives of the various institutional and operational role players, and with clear mandates and terms of reference (TOR). Such an approach, ensuring real-time sharing of information, coherence in the various aspects of the response, and ownership of the strategy, has proven its efficiency. It could also be used, with appropriate adjustments in the TOR, for other zoonotic diseases.

Keywords

Coordination – Outbreak – Response – Rift Valley fever – Strategy – Trans-sectoral.

Introduction

Rift Valley fever (RVF) is a peracute or acute disease of wild and domestic ruminants and humans, caused by a *Phlebovirus* (*Bunyaviridae*) and transmitted by insect vectors or direct contact with organs or fluids of infected animals. Domestic and wild ruminants are the usual hosts of the virus and the disease can produce up to 100% mortality rates in newborn animals, 10% to

20% among adult ruminants and abortion in pregnant animals (1). In humans, the disease mainly develops as an influenza-like illness, sometimes accompanied with transient loss of visual acuity or more severe ocular sequelae. However, the virus (RVFV) can occasionally spread to critical organs such as the spleen, liver and brain, so the disease can present clinically (in less than 1% of patients) as hepatitis, meningoencephalitis or haemorrhagic fever. The case fatality rate for patients developing the haemorrhagic form of the disease is approximately 50% (2).

Rift Valley fever is usually associated with widespread and devastating outbreaks in animals and humans that have a dramatic impact not only on human health, but also on the economies of livestock-associated value chains and trade and, therefore, on the survival of people whose livelihoods are almost entirely dependent on livestock. Major outbreaks have been reported in Eastern Africa (mostly Kenya, Tanzania, Somalia, Sudan), Southern Africa (South Africa, Mozambique, Zambia, Zimbabwe), Western Africa (Mauritania, Senegal), in the Arabian Peninsula (Saudi Arabia, Yemen) and on islands of the Indian Ocean (Madagascar) (Fig. 1). Cumulative evidence confirms that the disease is endemic in most of the sub-Saharan countries, and that RVFV is circulating in a variety of bioclimatic conditions, sometimes without visible manifestations (3).

Rift Valley fever: a zoonotic disease with a complex eco-epidemiology and a good model for One Health

Rift Valley fever is a good example of a disease that is best controlled through cross-sector collaboration, as suggested in the One Health approach, so it is important that the barriers to interdisciplinary cooperation are overcome.

Human infections result mainly from contact with the fluids or organs of infected animals, or, less frequently, from bites of mosquitoes infected during a previous blood meal on viraemic animals. There is no human-to-human transmission, therefore the disease cannot emerge and persist without the animal component, and any action to prevent and control its spread should cover both the veterinary and human health sectors.

The dynamics of RVF are modulated by eco-climatic factors. The amplification of the virus very much depends upon the abundance of vector mosquito populations, which are highly modulated by prevailing climatic and hydrological factors. Most large epidemics have occurred following a period of exceptional above-normal rainfall associated with global meteorological mechanisms, and resulting in intense vector activity (4). Some significant outbreaks have also been linked to the construction of irrigation schemes (5, 6) and hydrological dams (7, 8), which create suitable breeding sites for vector populations.

No fewer than 38 species of mosquito have been found infected with RVFV in nature, and vector competence (intrinsic capacity to acquire, multiply and transmit the virus) has been proven for at least 35 of them (9). Furthermore, transovarial transmission of the virus has been demonstrated in a few species of mosquitoes from the *Aedes* genus. These species have eggs able to survive desiccation for years, enabling the persistence of the

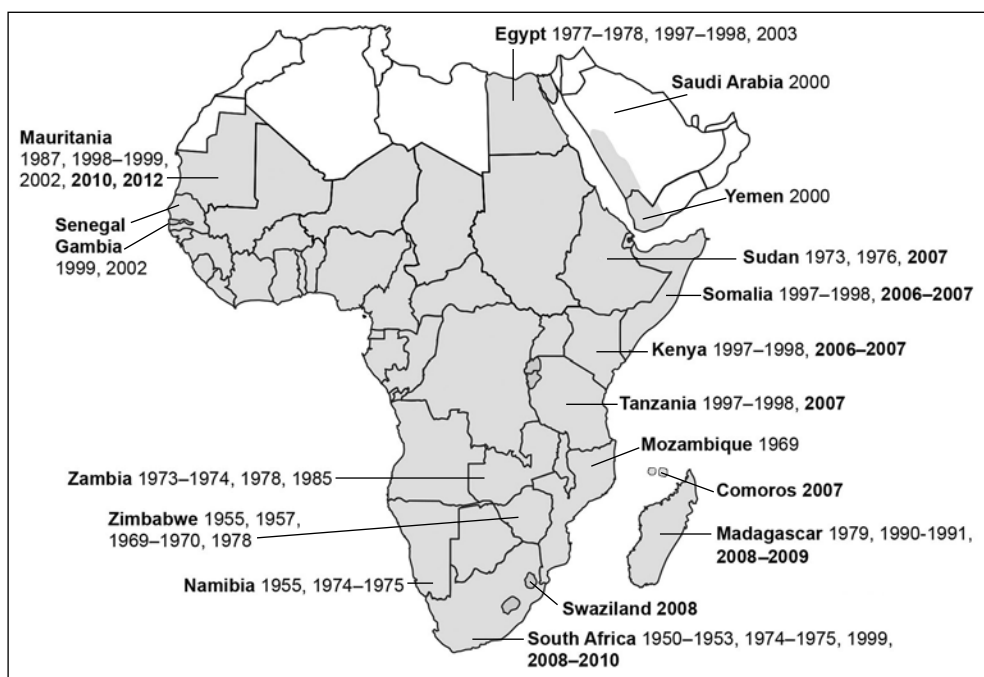


Fig. 1
Countries affected by Rift Valley fever and the dates of major outbreaks

The recent outbreaks (since 2006) are indicated in bold

virus in the environment during inter-epizootic periods. Subsequent flooding of these areas results in a mass hatching of mosquito eggs, some of which are infective, possibly initiating a new outbreak. Once infection has been amplified in naïve livestock, secondary epidemic vector mosquitoes, which breed in semi-permanent pools of water and get infected by biting infected vertebrates, can become involved in transmission; some, like *Culex* spp., serve as excellent secondary vectors if the habitats of immature mosquitoes remain flooded for long enough (4). Other haematophagous insects also contribute to the spread of the virus during outbreaks through mechanical transmission (e.g. tabanids, tsetse flies, *Culicoides* midges) (10).

This diversity of competent vectors can be associated with the wide variety of eco-epidemiological patterns and disease transmission schemes (11). The virus has been detected in contrasting ecotypes over the African continent, including:

- wet and tropical areas, e.g. Côte d'Ivoire (12) or Gabon (13)
- hot and arid areas, e.g. Somalia (14), Sudan (15), Mauritania (7, 16) or Chad (17)
- Saharan oasis, e.g. Mauritania (18)
- irrigated areas, e.g. the Senegal River valley (19)
- the Nile Delta (6).

In Kenya, Davies tentatively described the virus activity in relation to agro-climatic zones (20, 21) as follows:

- enzootic activity (+/– cryptic) in high-rainfall forests and forest edges
- virus activity that periodically increases to epizootic proportions in bushed and wooded grasslands
- rare but explosive epizootic RVF activity in dry grassland and semi-arid zones associated with flood plains.

To be added to this classification are the long-lasting outbreaks following the introduction of viraemic animals into mosquito-infected areas where the water table has been raised by irrigation or other water conservation practices (22).

Considering these various patterns is of crucial importance for assessing the risk of RVF outbreak. Evidence of virus circulation in endemic areas does not always result in virus amplification and the emergence of an epidemic wave. In fact, in the absence of specific surveillance activities, many countries are not aware of the presence of the virus (23, 24). In the basin of the Senegal River, for example, longitudinal studies demonstrated low-level circulation of the virus all year round as a result of persistent mosquito populations, without clinical signs being reported in humans or in animals (25).

The identification and monitoring of vegetation and rainfall risk factors may enable the detection of an increase in the risk of emergence and may allow the dissemination of early warning messages, as demonstrated in October 2006 in the Horn of Africa (26). Risk factors may differ between ecotypes and upstream studies are needed to identify the ecological factors driving the epidemiology of the disease. In the previously mentioned example, the model used for forecasting was based on the prediction of increased rains and consequent vegetation activity, a scenario known to be associated with heavy flooding of mosquito habitats in arid areas of Eastern Africa and with outbreaks of RVF (27). These correlations have been demonstrated after years of monitoring the biology of the vectors and the dynamics of the eco-climatic systems, and with the contribution of national and international actors working together in what could now be called a One Health approach (28). This active collaboration between researchers, national authorities and international organisations actively involved in field response activities (mainly the World Health Organization [WHO], the World Organisation for Animal Health [OIE] and the Food and Agriculture Organization of the United Nations [FAO]) enabled the use of this model in real time during the 2006–2010 wave of outbreaks, resulting in adjustments and a better understanding of its potential for the detection of RVF and other vector-borne diseases (29).

Integrated strategy for the prevention and control of Rift Valley fever outbreaks

This active collaboration between sectors, disciplines and partners also facilitated the development of a strategic framework for the prevention and control of RVF outbreaks. This strategic framework was based on the one developed by WHO for the management of severe diseases such as Ebola and Marburg (30) and has been adjusted for RVF. Despite the recognised diversity of epidemiological patterns, the development of an outbreak follows schematically the same chronology of events summarised in Figure 2. Following unusually heavy rains and/or flooding, the activity of the virus increases, with the abundance of competent mosquito populations feeding mainly on animals. The first phase of the outbreak therefore affects livestock or wild ruminants. It may not be easily detected when in remote areas, and in the past, humans have often played the role of sentinels. Humans are infected later in the development of the outbreak, by direct contact with blood or other body fluids from infected animals or by bites from competent infected mosquitoes. Humans are dead-end hosts and no human-to-human transmission has been reported in the field.

Based on this schematic framework, the strategy for the prevention and control of epidemics unfolds in four distinct and successive periods:

- a period of forecasting and preparedness
- a period of alert when the risk is confirmed
- a period of outbreak control
- a period after the epidemic (Fig. 3) (30).

Specific relevant actions for each of these periods are described below.

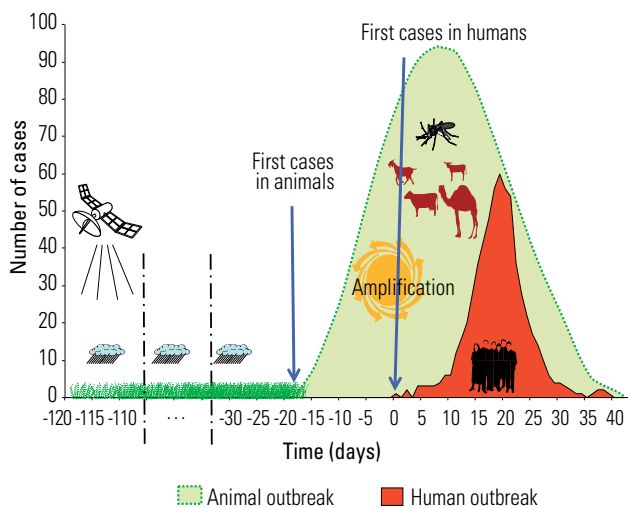


Fig. 2
Schematic chronology of events during the development of a Rift Valley fever outbreak

The time scale on the X-axis is indicative (in days). The number of cases on the Y-axis is also indicative, and may be much higher
Adapted from Formenty *et al.* (30)

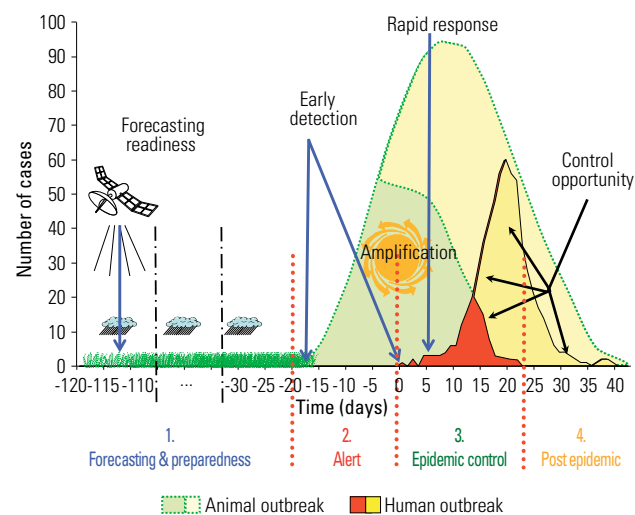


Fig. 3
Strategy for intervention during the development of a Rift Valley fever outbreak

The time scale on the X-axis is indicative (in days). The number of cases on the Y-axis is also indicative, and may be much higher
Adapted from Formenty *et al.* (30)

Period 1 – Before: forecasting and preparedness

Risk factors include unusually heavy rains in areas known to be favourable for RVF. The risk is higher if the last circulation of the virus was several years or more before and the animal population is immunologically naive, as natural infection (or vaccination with a live modified vaccine) provides life-long protective immune response. When risk factors are increasing, action should be oriented to:

- monitoring risk factors, to assess the probability and potential timing of emergence
- monitoring the populations of vectors
- assessing the opportunity for mass livestock vaccination (31).

Rift Valley fever outbreaks in East Africa have been associated with the warm phases of the El Niño/Southern Oscillation, which usually result in very heavy rainfall after a few weeks of drought. On several occasions, a system based on remote sensing data, developed by NASA's Goddard Space Flight Center, succeeded in identifying conditions of RVF emergence in different parts of Africa. By analysing rainfall and anomalies in the activity of the vegetation, this system makes it possible to predict epizootics between two and five months in advance, enabling the dissemination of warning messages (26). When the risk of RVF emergence is confirmed, authorities should focus on the early detection of the virus circulation in livestock and preparedness measures to limit its extension, protect people at risk and manage the human cases. Practically, authorities should define the coordination mechanisms and identify the activities that each sector should carry out and those that should be conducted jointly. Public health services and animal health services should set up surveillance systems to detect the circulation of the virus as early as possible, especially in areas known to be at risk. Passive and/or active surveillance protocols should be associated with appropriate training for personnel and the strengthening of specific diagnostic capacities if needed. Protocols for rapid investigations of suspicious cases and the implementation of emergency preventive control measures should be developed. Public health units should set up specific facilities for the potential management of haemorrhagic fever cases in humans. A communication strategy and appropriate material for information and awareness-raising should be prepared, jointly or, if the information is sector-specific, by the sector concerned (but still in a coordinated manner meeting the overall communication strategy). Targeted educational material should be prepared and disseminated to health care workers, veterinarians, slaughterhouse workers, laboratory personnel and other occupational groups that could be exposed to virulent material (Fig. 4). If a feasibility

assessment for mass vaccination of livestock is positive, vaccines are available and field logistics are favourable, the mass vaccination of domestic animals should be intensively implemented.

Period 1 can start as early as four months before the RVF outbreak begins in animals and it stops when the first suspected cases are reported in animals. The timing of animal vaccination should be carefully considered, as mass animal vaccination campaigns may intensify the dissemination of the virus in certain circumstances, e.g. the use of multi-dose vials and the re-use of needles will increase virus spread if some animals in the herd are already infected and viraemic.

Period 2 – Alert

If the surveillance system reports RVF-suspected cases in animals or humans, a multidisciplinary team must be sent to the site immediately – equipped with the necessary personal protective equipment – to investigate the rumour, evaluate the risk of an outbreak, collect specimens and send them to a national or international reference laboratory, and begin initial control measures pending the laboratory results. Collaboration and coordination between public health and animal health sectors is critical during this period to ensure rapid confirmation of the RVF outbreak and to assess local resources and requirements.

Period 3 – During: outbreak control

As soon as the circulation of the virus is confirmed in animals or in humans, the control strategy should be urgently implemented, respecting the key principles below:

- trans-sectoral coordination of prevention and control activities and resource mobilisation
- enhanced surveillance systems for human and animal case detection
- control of animal movements
- promotion of a social and behavioural interventions programme aimed at informing the public and promoting the adoption of practices reducing community transmission
- clinical management of RVF cases in the affected areas in health care units and hospitals.

Period 4 – After: post-epidemic phase

Once the epidemic is over, surveillance activities of the pre-epidemic phase should be resumed, as sporadic cases may still be reported. The authorities should conduct an evaluation of the outbreak management and produce an end-of-epidemic report proposing improvements on the basis of lessons learned. Experience and data should be shared with the international community to improve preparedness and facilitate additional research on the disease. Finally, proper assessment of social, economic and public health impacts should be conducted.

Based on the experience gathered during the 2006 to 2007 outbreak in the Horn of Africa, the International Livestock Research Institute and FAO developed chronologically organised guidelines for decision-making in the animal sector (32). The sequence of actions described in these guidelines is more or less similar to the framework developed jointly by WHO and FAO during several outbreak responses between 2006 and 2012 in various countries

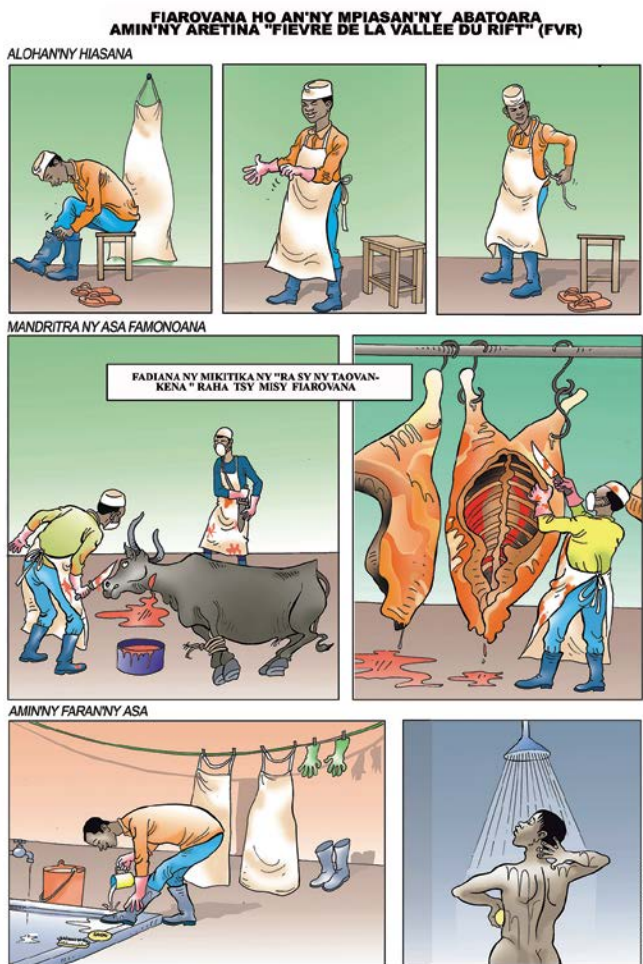


Fig. 4
Example of a poster developed in Madagascar targeting the occupational population at risk

The poster was developed jointly by the Ministry of Health and Family Planning, Ministry of Agriculture, Fisheries and Livestock, FAO and WHO during the 2010 outbreak to educate slaughterhouse workers on good practices to avoid infection

(including countries in other parts of Africa). It covers both the veterinary sector and the human health sector and describes the action they can take, either separately or in conjunction with each other. It has been used to develop national strategies for the control of RVF in several of these countries with the support of the United Nations (UN) agencies and UN emergency funds and has been modified based on field experiences gained during outbreaks. Information on one such fund (the Central Emergency Response Fund) and the support it provided during the recent outbreak in Mauritania is available at: www.unocha.org/cerf/cerf-worldwide/where-we-work/2011/mrt-2011.

Outbreak control: an operational framework

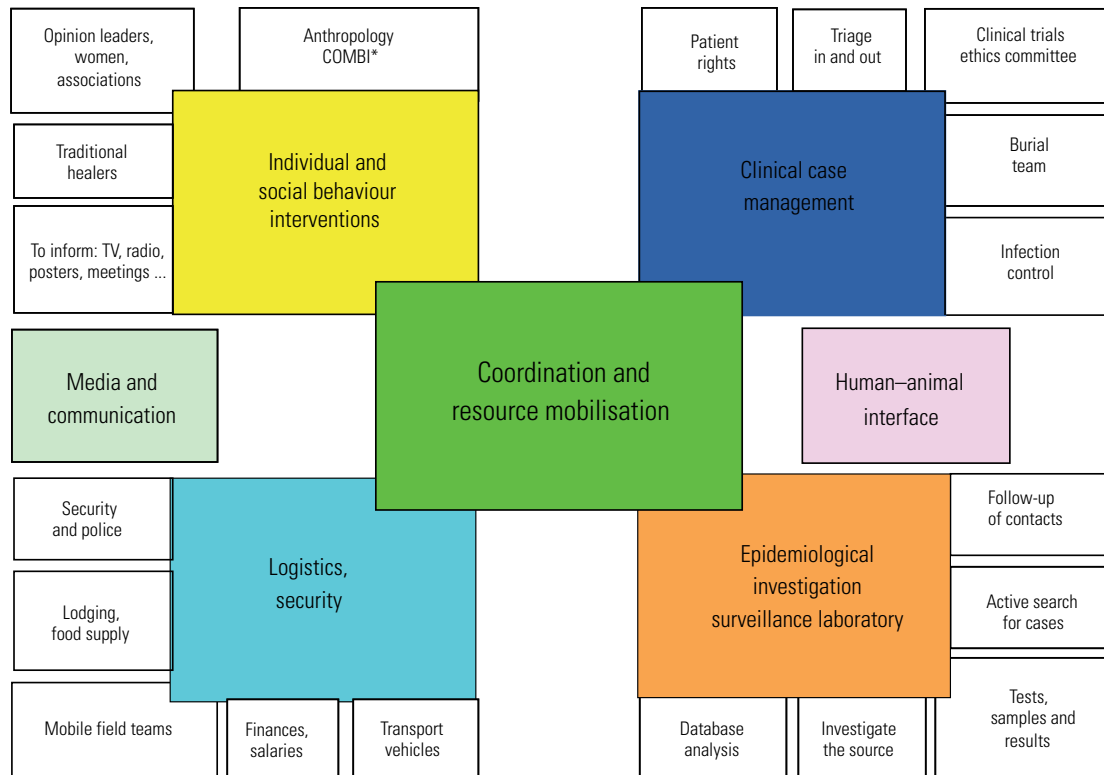
Rift Valley fever outbreaks are true emergencies, they affect large geographic areas and there are severe clinical presentations, both in humans and in animals. During such crises, an inter-ministerial taskforce is usually activated at the highest level (consistent with the concept of One

Health), with the Ministers in charge of public health and animal health at the forefront.

The proposed operational framework includes a leading committee in permanent contact with the taskforce, ensuring support for, and the coordination of, the activities defined and implemented through trans-sectoral technical subcommittees (Fig. 5). The number, composition and attribution of these subcommittees may vary slightly from one country to another, but these variations do not affect the efficiency of the framework. The subcommittees are made up of representatives of the various institutional and operational actors (authorities and institutions involved, experts, and other partners, including non-governmental organisations and the private sector when relevant) to facilitate real-time sharing of information and coherence in the various aspects of the response.

Typically, specific subcommittees are created for:

- epidemiological investigations, surveillance and laboratory diagnostics
- clinical case management



*COMBI: Communication for Behavioural Impact

Fig. 5
Multidisciplinary strategy for controlling a Rift Valley fever outbreak

- disease control at the human–animal interface
- logistics and security
- social and behavioural interventions
- media and communications.

Terms of reference have been proposed for each of these committees, facilitating the attribution of roles and responsibilities to the appropriate actors for each of the phases in the strategy. These terms of reference are summarised in the Appendix, the subcommittees are tasked with defining practical modalities of interventions.

Conclusion

The One Health approach described here for the trans-sectoral management of RVF outbreaks has proven its efficiency. It can be implemented for the duration of the crisis only, but ideally should be maintained, at least partially – e.g. the coordination committee – to be easily reactivated for any kind of zoonotic disease crisis, with adjusted terms of reference for the subcommittees. Similar, structured responses have been proposed by WHO as guidelines for the management of other severe diseases such as Marburg and Ebola (30).

Les principes relevant du concept « Une seule santé » et leur application : un cadre de coordination intersectorielle pour la prévention de la fièvre de la Vallée du Rift et la réaction en cas de foyer

S. de La Rocque & P. Formenty

Résumé

La fièvre de la Vallée du Rift est un bon exemple de maladie pour laquelle la gestion des foyers gagne considérablement en efficacité lorsque la méthode « Une seule santé » est appliquée : il s'agit en effet d'une zoonose à transmission vectorielle dont la dynamique présente divers motifs éco-épidémiologiques subissant l'influence de facteurs éco-climatiques. Par conséquent, la collaboration entre des secteurs, des disciplines et des acteurs multiples et la prise en compte à bon escient de l'épidémiologie locale de la maladie constituent des préalables pour réussir à évaluer le risque et à contrôler les foyers. Ces principes ont conduit l'Organisation des Nations unies pour l'alimentation et l'agriculture (FAO) et l'Organisation mondiale de la santé (OMS) à élaborer une ligne stratégique intersectorielle assortie d'activités spécifiques correspondant à chacune des quatre phases de la survenue d'un foyer (prévision et préparation, alerte, contrôle de l'épidémie, activités post-épidémiques). Au cours des missions de réponse aux épidémies dépêchées entre 2006 et 2012 dans plusieurs pays, l'OMS, la FAO et les autorités nationales des pays affectés ont élaboré un cadre de mise en œuvre qui a été utilisé par la suite pour mettre sur pied des plans nationaux de réponse. Ce cadre répartit de manière structurée les devoirs et les responsabilités attribués aux différents comités composés des représentants des acteurs institutionnels et opérationnels impliqués, chaque comité étant doté d'un mandat et de termes de référence précis. Cette méthode, qui permet un partage de l'information en temps réel, une cohérence entre les différents aspects de la réponse et l'appropriation de la stratégie par tous les intervenants a fait les preuves de son efficacité. Elle pourrait être utilisée pour d'autres maladies zoonotiques, en modifiant les termes de référence selon les besoins.

Mots-clés

Collaboration intersectorielle – Coordination – Fièvre de la Vallée du Rift – Foyer – Réponse – Stratégie.

Aplicación de los principios de «Una sola salud»: marco de coordinación transectorial para prevenir los brotes de fiebre del Valle del Rift y responder a ellos

S. de La Rocque & P. Formenty

Resumen

La fiebre del Valle del Rift es un buen ejemplo de enfermedad cuyos brotes se pueden gestionar con más eficacia si se abordan desde la óptica de «Una sola salud». Se trata de una enfermedad zoonótica transmitida por vectores, cuya dinámica depende de patrones ecoepidemiológicos y viene modulada por factores ecoclimáticos. De ahí que la colaboración entre diferentes sectores, disciplinas e interlocutores y una buena comprensión de la epidemiología de la enfermedad en cada lugar sean requisitos previos fundamentales para determinar los riesgos y combatir los brotes debidamente. Estos principios llevaron a la Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO) y la Organización Mundial de la Salud (OMS) a definir un planteamiento estratégico intersectorial en el que se recomiendan una serie de medidas específicas para cada una de las cuatro fases de evolución del brote (predicción y preparación, alerta, control de la epidemia y fase posepidémica). A raíz de una serie de misiones realizadas entre 2006 y 2012 para responder a brotes en diversos países, la OMS, la FAO y las autoridades nacionales de los países afectados concibieron un marco de aplicación y lo utilizaron para definir planes nacionales de respuesta. En él se propone una atribución estructurada de funciones y responsabilidades a una serie de comités formados por representantes de los diversos interlocutores institucionales y operativos y se asigna a cada comité un mandato y un papel claramente definidos. Se ha demostrado que este enfoque, que asegura el intercambio de información en tiempo real, la adhesión a la estrategia y la coherencia entre las distintas vertientes de la labor de respuesta, resulta eficaz, y que también cabría aplicarlo, con los oportunos ajustes, a otras enfermedades zoonóticas.

Palabras clave

Brote – Coordinación – Estrategia – Fiebre del Valle del Rift – Respuesta – Transectorial.



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Appendix

The leading committee and the subcommittees of the strategic framework for the prevention and control of Rift Valley fever outbreaks

Coordination and Resource Mobilisation Committee

Mandate and composition

The Coordination and Resource Mobilisation Committee ensures the overall coordination of the operations and serves as the link with the inter-ministerial taskforce. It is usually composed of representatives from Ministries of Health, Agriculture/Livestock, Environment, Interior, Communication; the national reference laboratory, which is often under the remit of the Research Ministry; and international partners, e.g. WHO, FAO, OIE, the United Nations Children's Fund (UNICEF), the Centers for Disease Control and Prevention, Doctors without borders (MSF). The Committee can invite technical partners and donors to participate in meetings to keep them informed of the situation and of the management of the event, and explore options for collaboration and support.

Responsibilities

- i)* adopting an RVF epidemic control strategy as recommended by international partners: FAO, OIE and WHO
- ii)* developing a detailed outbreak response plan using the guidelines from WHO and FAO and complying with the OIE standards
- iii)* updating the national authorities on the situation and reporting progress made
- iv)* defining the responsibilities of the various teams (national and international)
- v)* coordinating with the stakeholders in the animal products value chain (representatives from the livestock sector, meat and milk processors)
- vi)* organising the mobilisation of financial, technical and human resources
- vii)* defining the information, reporting and instruction-sharing channels
- viii)* communicating regularly with the national and international media
- ix)* promoting regional and international cooperation for the management of the crisis
- x)* developing the report at the end of the epidemic (technical, administrative, financial and logistical report), including an assessment of the economic and social impacts
- xi)* after the crisis, evaluating the management of the crisis and making recommendations for improved prevention and control of future epidemics.

Subcommittee for Epidemiological Investigation, Surveillance and Laboratory Diagnostics

Mandate and composition

The mandate of this subcommittee is to evaluate the extent of the epidemic, to monitor its evolution and to provide technical information for decision-making. The main tasks of the subcommittee are to organise a system for the reporting and management of rumours, suspicions and confirmations; to develop capacities for field investigations and active detection and confirmation of cases; to prepare daily status reports; and to develop epidemiological studies to monitor the outbreak. The subcommittee includes public health and animal health officers, epidemiologists, virologists, entomologists, and any other professionals with relevant expertise. The pooling of experts from the different sectors facilitates the pooling of expertise and resources (i.e. for laboratory diagnostics). This subcommittee should also include experienced field personnel (i.e. decentralised animal health officers, primary health care workers) to ensure that directives are comprehensive, practicable and will be accepted.

Responsibilities (animal populations)

- i)* organising a system for the detection and reporting of suspected cases, and educating rural populations to improve their ability to recognise clinical signs in livestock
- ii)* creating and training mobile investigation teams and providing adequate material (sampling material, personal protective equipment, etc.). Whenever possible, joint field missions with the human health counterparts should be promoted
- iii)* creating and updating a comprehensive database of cases in livestock and wildlife
- iv)* developing a protocol to ensure proper management of biological samples that includes secured sampling in the field, appropriate preparation of samples for transportation, reliable delivery to the regional or central laboratories, appropriate provisions of diagnostic material and definition of adequate biosecurity procedures
- v)* establishing collaboration with OIE and FAO reference laboratories for advanced analysis when needed
- vi)* sharing the laboratory results with field personnel and the coordination and resource mobilisation committee
- vii)* proposing additional studies on the disease epidemiology, results of which are used to refine recommendations and improve health education messages.

Responsibilities (human population)

- i)* developing a case definition, specifications for investigating cases of RVF and specifications for collecting data as needed (e.g. case-control study, exposed-people tracking, etc.)
- ii)* creating mobile epidemiological surveillance teams, provided with adequate material (sampling equipment, protective equipment, investigation forms, etc.) and resources
- iii)* actively seeking human cases in health facilities (records of consultations, interviews with health personnel) and in the community (discussions with local leaders, interviews with families and other key informants)
- iv)* investigating each reported case, with collection of suitable biological samples when possible. Organising the transportation of samples to the appropriate diagnostic facility and reporting results
- v)* creating and updating a comprehensive database of reported cases
- vi)* facilitating the development of studies on the analysis of risk factors for infection with RVF
- vii)* managing links with WHO reference laboratories and collaborating centres.

The subcommittee may also be in charge of monitoring the population of vectors and proposing options for their control. Finally, it is responsible for determining the date of the end of the epidemic, based on technical criteria and taking into account results in vectors, animals and humans.

Subcommittee for Clinical Case Management

Mandate and Composition

The main objective of this subcommittee is to ensure that patients are provided with proper care, that infection control guidelines are observed at all health facilities, and that the medical team organises the funerals of victims, respecting customs to help families with the grieving process.

Responsibilities

- i)* ensuring that actions taken in the health facilities are compliant with the patients' rights
- ii)* organising the management of RVF patients and applying appropriate infection control practices in the affected area
- iii)* strengthening or introducing standard precautions in health care for the management of all other patients in the affected area
- iv)* strengthening or introducing standard precautions in health care at all catchment hospitals outside the affected area
- v)* organising the safe transport of patients from their homes to the health centre.

Subcommittee for Disease Control at the Human–Animal Interface

Mandate and composition

The objective of this subcommittee is to control the spread of the virus at the human/animal interface through strict animal health and occupational exposure regulations. A joint and integrated approach is crucial to optimise coherence and synergies between sectors and is a key factor in fostering the trust of the population in the action of the authorities.

Responsibilities

- i)* implementing mass animal vaccination if necessary: defining a possible vaccination strategy, specifying the target populations, the vaccine to be used, and the protocol for vaccination
- ii)* defining appropriate measures to regulate the movement of animals from infected areas
- iii)* adopting measures to reduce animal-to-human transmission as a result of unsafe animal husbandry and slaughtering practices; while contact with blood during slaughtering is dangerous, adequate protective measures reduce the risk and the mature meat is safe for consumers. On several occasions, confusion in the messages delivered to the public have created panic, rejection of meat or milk, and collapse of the local or national market
- iv)* adopting measures to reduce the risk of animal-to-human transmission arising from the unsafe consumption of fresh blood, raw milk or animal tissues, in accordance with good practices for food safety
- v)* managing vector control: in collaboration with the Subcommittee on Epidemiological Investigation, Surveillance and Laboratory Diagnostics, evaluate the ways to control the spread of RVF through control of the vector and protection against their bites.

Subcommittee for Logistics and Security

Mandate and composition

The main objective of this subcommittee is to provide operational support to field activities and ensure the safety of response teams. It includes representatives from the different sectors plus logisticians and finance officers.

Responsibilities

- i)* managing the material resources needed for control activities (telecommunications, field office, procurement of equipment, procurement of medicines and/or vaccines as needed, etc.)
- ii)* managing transport and relocation of teams and equipment
- iii)* organising shipment of laboratory specimens
- iv)* bookkeeping and managing human-resource movement
- v)* ensuring security in the field and managing the training of staff on biosafety measures before deployment
- vi)* coordinating activities and logistical requirements with other subcommittees.

Subcommittee for Social and Behavioural Interventions

Mandate and composition

The main objective of this subcommittee is to listen to and address community concerns and to rapidly promote the adoption of practices that reduce the risk of transmission within the community. In the absence of effective treatment and vaccines for humans, the only option to reduce the risk of infection is to raise awareness among the community and at-risk populations of measures that can be taken to reduce exposure to the virus. The mandate of this subcommittee is to organise such campaigns, and it includes experts from social sciences (sociologists, anthropologists) and refers to the method COMBI (Communication for Behavioural Impact) developed by WHO, FAO and UNICEF (33).

Responsibilities

- i)* identifying key specific behavioural targets that support outbreak control objectives; this should be the foundation around which community dialogue and social mobilisation strategies will be based
- ii)* conducting active listening and dialogue with communities in the affected and surrounding areas about the disease, its transmission modes, the control measures in use and the behaviours that are being promoted to reduce risk and protect local communities, and using these results to disseminate tailored messages using the appropriate channels (education of village leaders, use of printed support materials such as posters and brochures, and/or radio messages and public meetings)
- iii)* identifying at-risk populations (farmers, slaughterhouse workers, butchers, veterinarians, health care workers, etc.) and carrying out specific communication activities with those groups
- iv)* feeding back community concerns and potential barriers to compliance with control measures to the Coordination and Resource Mobilisation Committee.

Subcommittee for Media and Communication

Mandate and composition

The main objective of this subcommittee is to establish effective communication with the media. The press closely follows outbreaks of emerging diseases. The zoonotic nature of RVF, the involvement of livestock living in close contact with the population and suspicion about food derived from these animals, and the role of difficult-to-manage insect vectors exacerbate fears and may create panic. Requests to the authorities are pressing and the establishment of effective collaboration with the media is crucial to deliver appropriate key messages.

Responsibilities

- i)* developing a communication plan, together with the Ministry of Health and the Ministry of Livestock, in order to convey coherent and comprehensive messages about RVF
- ii)* gathering information daily and developing talking points to be delivered by official spokespersons of the Ministry of Health and Ministry in charge of animal health, ideally through joint press conferences
- iii)* identifying the most effective media to reach the majority of the population both in urban and rural areas and establishing trusted partnerships for the dissemination of targeted messages; the key messages for the general population are: effective prevention (description of good practices limiting the risk of infection) and improved detection (report of rumours and suspected cases)
- iv)* organising briefings with journalists to provide basic information on the disease and the strategy for crisis management; preparing appropriate materials (e.g. background info, frequently asked questions, etc.)
- v)* training communicators in government and relevant institutions to enhance communication in crisis situations

The key principles in the WHO guidelines for communication during crises are:

- i)* to establish a trusting relationship with the media
- ii)* to promptly and regularly inform the public through the media
- iii)* to be transparent and clearly explain when ethical considerations create limitations in communicating
- iv)* accept all types of questions from the public
- v)* develop a communication plan.