

# Outbreak of rift valley fever in south africa course work sample

[Environment](#), [Animals](#)



## **Outbreak of Rift Valley Fever in South Africa**

### Introduction

Rift Valley Fever (RVF) is a viral disease that affects animals but can be transmitted from animals to human beings. To be more precise, it is a zoonotic arthropod-borne germ that leads to stern mortality and morbidity in both livestock and human beings. It is usually spread by *Culex* or *Aedes* mosquitoes. The disease was first discovered in Kenya around Lake Naivasha in 1915 following deaths of many sheep in a farm. According to the studies that were undertaken during this period, it was discovered that the disease was originated from a virus that infected goats, sheep and cattle as well as human beings; it was also noted that mosquitoes were responsible for its transmission. Although the disease affects most ruminants, the most vulnerable are the gestating ewes and newborn lambs. In the past eighty years distribution of the virus in terms of geography has expanded to cover a good number of countries in Africa, most Indian Ocean Islands such as Comores and Madagascar and the Arabian Peninsula, (Babiuk, Bowden, Boyle, Wallace & Kitching, 2008). Arguably, based on history it can be said that RVFV has the ability to come out and establish in areas that were not previously affected. This ability has been accredited to the wide range of virus host as well as the capability to be transmitted by about thirty different kinds of mosquitoes which falls under six dissimilar genera.

### **RVF Outbreak in South Africa**

In Africa, South Africa has been one of the most affected countries by RVF apart from Kenya where the disease was first discovered. In South Africa, the

disease was first discovered in 1951. During this period, farmers in South Africa lost a good number of their animals, a big proportion being sheep. Precisely, approximately a half million ewes aborted and close to a hundred thousand sheep died. There were no outbreaks in the 1990s as well as in early 2000's. Small and localised outbreaks of RVF in South Africa, was experienced beginning 2008, (Mandell, 2011). In the year 2008 following heavy rains, RVF outbreaks were experienced in four different areas; Mpumalanga, Gauteng, North West and Limpopo. Some cases were also reported in game animals more especially in Kruger National Park. In the year that followed, some minor cases were reported in the province of KwaZulu-Natal as from February to July and in Northern Cape Province from October to December.

However, the most sever outbreak occurred in 2010 which resulted in deaths of many animals and a good number of humans. The disease was first discovered in Bultfontein area, and later on in most parts of the country especially in North West and Western Cape Provinces, Mpumalanga, Guateng, Western Cape, and Northern Cape, (NICD, 2010). Fascinatingly, clinical cases were never reported in the province of KwaZulu-Natal which was affected most in 2009. According to the research that was carried out by the National Institute for Communicable Disease, a new genotype unconnected to isolates collected in 2009 and 2008. Based on these findings, either the virus persisted in this region or different strains were established in the country.

## **Reported cases**

In 2010 following the outbreak, studies were undertaken to identify the affected population and how the disease would be contained. By May 2010, it was discovered that approximately one hundred and seventy two human cases were confirmed of infection and about 15 people had already died.

According to the National Institute of Communicable Diseases (NICD), it was observed that about 81% of the confirmed cases work in professions they are in frequent contact with the animals. Other cases were associated with contact to mosquitoes in the nonexistence of direct animal contact.

It was also observed that a significant number of the reported cases involved men. Precisely, the number of men who were confirmed contacting the disease was higher as compared to the number of women. The main reason for this trend is that in most cases, men are involved in jobs working with animals, specifically animal breeding and slaughter; as compared to women who only get into contact with the animals at home, (Sossah, 2009). During the study, it was as well discovered that more infection cases occurred in the villages than in the urban areas. Arguably, socio-economic factors is one of the reasons that have been put forward to explain why this is the case.

Precisely, the rural population is more vulnerable to RVF as compared to the urban population who dwell in an area where medical help is easily available and accessible as well as where environmental health is high.

## **Symptoms**

There are no clear and unique symptoms for Rift Valley Fever due to the fact that RVF virus can display more than a few dissimilar disease syndromes.

Patients suffering from RVF either show no symptoms or show mild illness linked with liver abnormalities and fever. The most common symptoms include; excessive sweating, muscles aches, abdominal pain, fatigue, headache, fever, and body aches. Further symptoms include; joint pains, anorexia, vision impairment, malaise, vomiting, nausea, chills and severe headache, (NICD, 2010). There are also rare symptoms that can be applicable in the diagnosis of Rift valley Fever which includes; neck pain, coughing blood, nosebleeds, blood in the stool which might be as a result of rectal bleeding, generalized rash, and lastly, photophobia mainly due to an increase in sensitivity to bright light.

## **Transmission**

Transmission of RVF to humans occurs in three ways; from animal to human, from mosquitoes to human, and from human to human.

This occurs basically when the human body comes into contact with an infected animal, or skin wounds caused by a sharp object which contains blood of an infected animal. Consequently, the infection route in the case of humans involves following body tracts. For instance, the digestion system is one of the transmission routes when humans take uncooked animal products more especially milk from infected animals, (Osama, 2010). The respiratory tract is another possible infection route. This will be the case more especially for those who are at risk of inhalation of aerosols produced when they come into contact with contaminated animals or their remains while working. It could also occur while handling samples of the virus in the laboratory.

Arguably, it has not been proved that the disease is transmitted

straightforwardly from human to human. Nonetheless, theoretical assumptions have been put forward that health workers are at risk of contacting the disease when dealing with patient excretion. That is why recommendations are usually called for when medical staffs are dealing with such cases.

Perhaps, this is the common transmission mode of RVF. It occurs when humans are bitten by infected mosquitoes. Lately, it has been discovered that the number of types of mosquitoes which can transmit this disease has increased considerably.

### **Prevention of RVF outbreaks**

According to the National Institute for Communicable Diseases (2010), control of the outbreaks of Rift valley Fever needs various actions which involves; the limitation of movement of animals, use of hygiene and health awareness campaigns to reduce human risk, as well as targeted interventions for people who might be at risk. Notably, WHO and FAO use similar strategies of executing contingency plans during the outbreaks of Rift Valley Fever, and one of the crucial tools in this case is vaccination. In the recent outbreaks in South Africa, two classical Rift Valley Fever vaccines were used. The first vaccine is referred to as live-attenuated Smithburn, which can offer lifelong immunity. Studies indicate that it is more effective as well as less expensive. The second vaccine is based on inactivated Rift Valley Fever Virus. This vaccine needs an inoculation vaccination as well as yearly re-vaccination for optimal effectiveness. However, it has been noted that the Smithburn virus may result to foetal malformation as well as

abortion when applied in gestating adults. Due to the side effects of Smithburn virus, studies have been undertaken with an objective of producing a more effective and safer vaccine. Production of the Clone-13 vaccine recently, has been seen a great effort towards the fight against RVF. Health education is also crucial in lessening infection risks amongst the local people. Thus, preventive measures should be focusing on various aspects. To begin with, according to the report on RVF that was produced after the 2010 outbreak, animal contact was the core cause of RVF in humans. Therefore, there is need to keep away from high-risk animal husbandry as well as animal slaughtering practices by using protective clothing and gloves, mainly when dealing with infected animals. Secondly, people should be educated on the dangers of consuming fresh blood, animal tissue or raw milk, (HPA, 2010). Thorough cooking of animal products should be done before they are consumed. Additionally, animal slaughter for consumption during outbreaks should be highly discouraged. Lastly, individuals and the community at large should be protected against mosquitoes. This could be done by using insecticide-treated bed nets, insect repellents and putting on light-coloured clothing.

Besides, limitation of animal movement can also help in breaking the cycle of the virus. This is one of the preventive measures that were taken by the South African government to reduce spread of the disease from one place to another within the country, (Osama, 2010). For limitation of animal movement regulation to work, the government was forced to temporarily close down livestock markets in most parts of the country more especially in the affected regions.

## **Treatment of RVF**

Regrettably, an established course of treatment for people who have been infected with RVF is yet to found. However, based on the experiments that have been done on various animals more especially monkeys indicates that, ribavirin which is an antiviral medicine, is likely to be applied in humans in the future. Other experiments suggest that immune modulators, interferon, and convalescent-phase plasma can also be helpful in treating this disease, (WHO, 2008c). Other options for treatment of mild cases of RVF include, taking plenty of fluids, enough rest, as well as nonsteroidal anti-inflammatory medications such as Ketoprofen, Ibuprofen, and Naproxen, which usually helps in reducing or rather relieving fever and pain. In the case of stern RVF, treatment may include antiviral medication such as the above mentioned Ribavirin, fresh frozen plasma, blood transfusion, and intravenous fluids.

## **Effects of the RVF**

Lately, RVF has becomes a resurgent threat. This is evident from the rise of its fatality rate from the historical 1% to 43%. Concern regarding the impact of this disease on the global trade in animal products as well as animals is increasing. Based on the studies that have been undertaken in the recent past, the disease has been found to be one of the reasons why business in the tourism industry declined in 2010. South Africa is one of the countries in Africa that receives most tourists throughout the year. Due to the fear of contacting the disease, the number of tourists visiting the country reduced by far following the outbreak of this disease in 2010. Movement of people into and out of South Africa was restricted in order to avoid further spread of



the disease.

In South Africa, animal farming is one of the major economic activities under that agricultural sector that contributes significantly to the overall performance of national economy. The country also earns considerable amounts of foreign exchange through export of animal products such as beef to other countries mostly in the Arab areas. Based on the economic survey that was undertaken after the outbreak of Rift Valley Fever in 2010, export of animal products declined by far. Moreover, contribution from the agricultural sector towards national economy also reduced greatly as a result of deaths of thousands of animals throughout the affected areas, (Frederick, 2008). However, negative economic impacts were relatively higher in the rural areas where most cases were reported, than in the urban areas. In general, the disease had a great negative impact on the economy of South Africa. Besides the economic loss, the government also incurred considerable expenses in treating as well as taking preventive measures.

## **Challenges faced by South Africa in handling RVF**

### Financial challenges

Arguably, financial challenges are the major concern of the South African government in handling outbreaks of Rift Valley Fever. A lot of funds are needed in controlling this kind of diseases. For instance, funds are needed in implementing precautionary measures as well as catering for treatment of affected individuals and animals. In 2010, there situation was more complicated than in the case of the previous outbreaks, following the recent economic crisis. During this time, the major objective of most economies in

the world in general and particularly in South Africa was to stabilize the economy, (HPA, 2010). Thus, little funds had been set aside to cater for such misfortunes. Perhaps, lack of enough funds was one of the reasons why it proved challenging in containing the disease during this period. Due to inadequate financial resources, there was a gap between when the first incident of the disease was reported and the time preventive measures were implemented by the government. From the historical point of view, the 2010 RVF outbreak was one of the worst outbreaks that South Africa had ever experienced since the first outbreak in 1951.

### **Human resource**

Arguably, South Africa has not been experiencing major cases of Rift Valley Fever as compared to other African countries from East Africa such as Kenya. Therefore, little efforts have been made by the government in training and hiring a large number of personnel to deal with such cases. Lack of enough personnel to implement preventive strategies was one of the challenges faced by the government in their effort to control Rift Valley Fever. During the 2010 outbreak, the available personnel were forced to spend a lot of time moving from one place to in the affected regions to ensure that necessary measures were being undertaken, (Elisabeth, Eugene & Soa, 2010). According to the National Institute of Communicable Diseases director, there was a quick response to the outbreak but it was challenging to control the disease due to lack of enough veterinarians. Thus, there is need for the government to take the initiative of training and employing

more personnel in this field in order to ensure quick reactions towards such outbreaks.

## **Lack of awareness**

Usually, Rift Valley Fever is can be transmitted in two major ways; coming into contact with infected animals and through mosquitoes. According to studies that have been undertaken in the recent past, most people more especially in the rural areas lack information on Rift Valley Fever as far as causes, prevention and treatment is concerned. For instance, during the 2010 outbreak, outbreak response team was sent out to the affected regions after the situation had already gone out of hand. Although the disease affects most of people in rural areas as compared to those in the urban areas based on their social-economic occupations, it has been noted that ignorance in rural areas also play a part in the spread of this disease when there is an outbreak, (Bhardwaj, Heise & Ross, 2010). For instance, in South Africa not many people in the rural areas are aware of the dangers of consumption of raw milk and other poorly cooked animal products. Due to lack of information, it becomes difficult to control the disease when there is an outbreak. Thus, the government has a role to play in undertaking countrywide campaigns educating the general public on precautionary or rather preventive measures that should be undertaken to prevent spread of such disease whenever there is an outbreak.

## **Conclusion**

Rift Valley Fever is one of the dangerous animal and human diseases which spread easily from one region to another. Rift Valley Fever was first

discovered in South Africa in 1951 following deaths of thousands of ewes and lambs in North Eastern parts of the country. Precisely, the number of sheep that died during this outbreak was approximated to be about one hundred thousand and those that aborted were about five hundred thousand.

Although there had been fewer outbreaks the following years, a serious outbreak of RVF occurred in South Africa in 2010. Serious cases were reported in about five provinces from different regions in the country.

There are no specific symptoms that are displayed by RVF; however, the common symptoms include; excessive sweating, muscles aches, abdominal pain, fatigue, headache, fever, and body aches. Although studies have been conducted in search of cure for RVF, a specific cure is yet to be found.

However, based on experiments that have been done on various animals more especially monkeys indicates that, ribavirin which is an antiviral medicine, is likely to be applied in humans in the future. As per the studies conducted after the 2010 RVF outbreak in South Africa, the country encountered considerable economic damage following this outbreak. It was also noted that, the South African government encountered various challenges in containing the disease; which included financial challenges, lack of enough personnel as well as lack of awareness among the general public.

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