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# Ebola, a Deadly Viral Disease affecting the West African Country of Sierra Leone

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# Ebola, a Deadly Viral Disease affecting the West African Country of Sierra Leone

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## Introduction

Presently, there has been an outbreak of Ebola Virus Disease (EVD) in the West African countries of Sierra Leone, Liberia, Nigeria, Senegal and Guinea. The outbreak was first discovered in Guinea in March 21, 2014 and has spread to the neighboring countries. This has resulted in a lot of fatalities and is now considered a global public health concern (WHO, 2014).

\* Sierra Leone (SL) with a population of 6 million people recorded first case in May, 2014.

As of November 9, 2014 according to MHS-Sierra Leone...

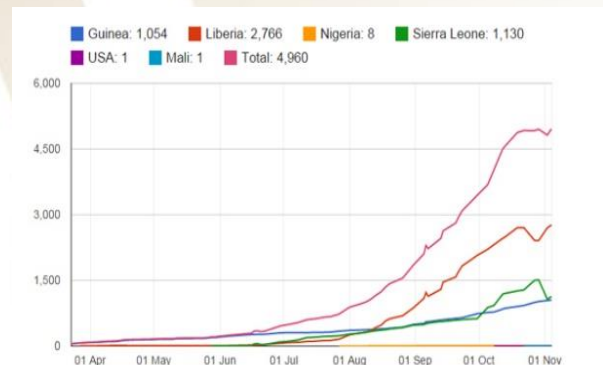
- 4,435 confirmed cases.
- 1,133 confirmed deaths.
- 897 total survival and released patients.
- According to WHO, outbreak is on the increased.

## Background

SL is unable to contain the disease. They lack basic infrastructures and personnel to handle outbreak.

- Fewer Health/Medical Amenities
- Fewer Doctors, Nurses, and other health care professionals.
- 5 Laboratories /testing centers in whole country.
- One of poorest in the world & experience a decade old civil war.
- Lower education rate & high poverty
- High cultural beliefs and practices

Chart showing cumulative death as of November 4, 2012. (WHO, 2014)



## Signs & Symptoms

Ebola is a virus that causes high fever and severe headache, malaise, vomiting, diarrhea and abdominal pain.

- 30-50% of patients shows hemorrhage symptoms.
- Leads to multiple organ failures.
- Septic shock & deaths
- 2-21 days Incubation period, 8 – 10 days when signs & symptoms most visible & transmitted.
- Laboratory testing done by blood test and results confirmed in few days.
- 1 in 5 infections occur during victim burial & death (WHO, 2014).

## Pathophysiology & Significance

The disease is caused by the virus family Filoviridae and five species have been identified. The species that has been causing this outbreak in Sierra Leone is the Zaire ebolavirus. Fruit bats are widely known to be the natural reservoir or host of the Ebola virus. Ebola is transmitted from human to human through direct contact through bodily fluids which include blood, semen, urine, stool, sweats or secretions or parenterally from an infected person or dead body. People also can become infected by direct contact with the virus through surfaces and contaminated clothing/bedding (Feldmann et al, 2011 & WHO, 2014). People can be infected by disease through eating infected animal.

The virus enters the host through broken skin mucosal surfaces. The virus targets monocytes, macrophages, dendritic cells, endothelial cells, fibroblasts, adrenal cortical cells, hepatocytes, and other epithelial cells which causes them to replicate and become infectious. Then, they are transported through the lymphatic system, to the liver and the spleen via blood. It spreads the infection to different organs and parts of the body. EVD suppresses the immune system and triggers inflammatory response that inhibits vascular coagulation which leads to multiple organ dysfunction and death (Fowler et al, 2014, CDC, 2014, & Feldmann et al, 2011).



A map above from CDC is showing levels of transmission and Ebola treatment Units.

The disease has shown a low level of hemoglobin and hypoxia in a person infected with the virus. Also, reduced white blood cell (WBC) and platelet counts, proteinuria, and increased liver enzymes have been found in an infected person. Because of similarities in symptoms with malaria, typhoid fever and meningitis, Ebola is very difficult to distinguish with clinical symptoms. Laboratory testing is therefore significant in confirming the diagnosis of the disease. Laboratory testing for Ebola includes antibody-capture enzyme-linked immunosorbent assay (ELISA), antigen-capture detection tests, serum neutralization test, reverse transcriptase polymerase chain reaction (RT-PCR) assay, electron microscopy, and virus isolation by cell culture. The incubation period with Ebola virus is 2 to 21 days and infected individuals cannot transmit the disease until they develop the symptoms. In Sierra Leone, the most common symptoms with this outbreak are hemorrhagic fever and gastrointestinal symptoms (nausea, anorexia, abdominal discomfort). These symptoms are followed by diarrhea and vomiting which then lead to intravascular depletion and complications. The complications include electrolyte imbalances, hypoperfusion, disseminated intravascular coagulation (DIC), shock, and gastrointestinal bleeding (WHO, 2014, Feldmann et al, 2011, & CDC, 2014).

## Treatment/Prevention

There is no treatment or vaccine for EVD and supportive care is the only option.

- Providing IV fluids.
- Improve Nutrition.
- Maintaining electrolytes
- Treat other infections, pain, and anxiety.

*Proper use of PPE, hand washing and use of sanitizers or decontaminate is essential in controlling.*

## Problems

- SL in state of emergency.
- Many districts and regions in lockdown or quarantine.
- No schooling & public gathering
- Non-essential government workers stay at home.
- Economic cost devastating – people depend on aid services.
- Human loss unbearable. Lost of whole families.
- Sense of helplessness.

## Implications

Lose of healthcare workers in SL is tremendous.

- *Lost 4 doctors including Dr. Sheik Khan, specialist in Viral hemorrhagic fever & Director of Lassa Fever Center in Kenema.*
- *Lost of 7 nurses in a single treatment center in Kenema.*
- *Lost of half the population in a Village in Bombali*

## Conclusion

*Speed-up response in case management, surveillance & contact tracing, facilitating laboratory service, providing safe burials & optimizing social mobilization (WHO, 2014 & Agyepong, 2014)*

- Increase in testing centers.
- Improving burial time within 24 hours
- Increase number of healthcare workers.
- Financial and economic assistance.

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