

## **Ebola Virus and Ebola Hemorrhagic Fever (EHF)**

In 1976 Ebola was discovered in southern Sudan and northern Zaire. Since then 7 species of Ebola have been identified. One is not infectious in humans and another is largely asymptomatic. The other five species produce Ebola Hemorrhagic Fever (EHF) in humans.

### **Description**

Variation exist between the five human disease causing species of Ebola, however, all of them share the following characteristics

- Enveloped
- Non-segmented
- Negative-stranded RNA genomes
- Uniform 80nm circumference with variable length.
- coiled, toroid, or branched

### **Disease: (EHF)**

While variation exist between the symptoms of the five species. EHF is characterized by the following clinical manifestations.

- Average Incubation period of 2-21 days
- Chills
- Malaise and myalgia
- Followed by Anorexia, Nausea, Vomiting, Abdominal Pain and Diarrhea. Headache, Cognitive Loss, and eventually a Coma.
- Hemorrhaging: Petechiae, Ecchymosis, uncontrolled oozing from puncture sites, and mucosal oozing
- Secondary infections

### **Mechanism of Invasion and Tissue Damage**

Very little is clear about the mechanism of infection. What is known is the disease is transferred via fluid to fluid contact which takes place from via mucosal membranes, breaks or abrasions on skin, and parental introduction. It is also widely believed that airborne transmission is possible. Monocytes and Macrophages appear to be primary target cells the virus displays broad scale tropism however, (including dendritic cells, endothelial cells, fibroblast, hepatocytes, adrenal cortical cells and several epithelial cells). During the infection, VP35 protein functions as an interferon antagonist, while VP24, another acts as an interferon signaling scrambler

- Infected Monocyte and Macrophage cells disseminate to lymph nodes. Subsequent infections of:
  - Hepatic cells. Necrosis results in coagulation disorders and Hemorrhaging
  - Adrenocortical cells. Necrosis results in hypotension, and hypovolemia Leading to shock
  - T-Lymphocytes and natural killer not infected but rather convinced to inter apoptosis

## **Questions**

**1. What is EHF caused by**

**Ebola**

**2. What are the primary target cells of Ebola**

**Macrophages and Monocytes**

**3. What cells are self-terminate in the presence of human pathogenic Ebola**

**T-lymphocytes and natural killer cells**