

# EBOLA VIRUS

**A Concise Presentation**

**By**

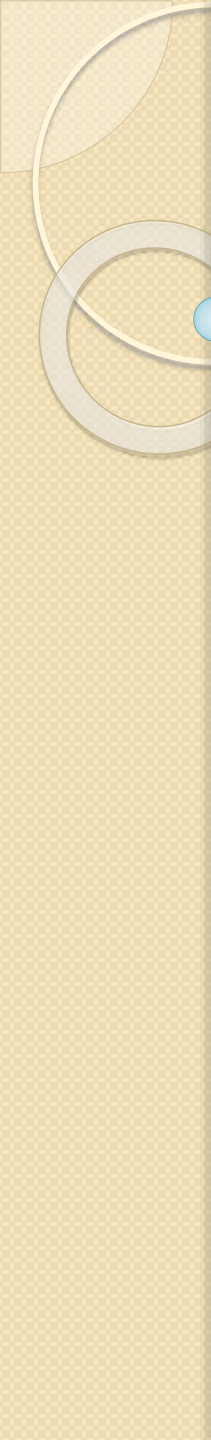
**Mr. Deepak Sarangi** M.Pharm


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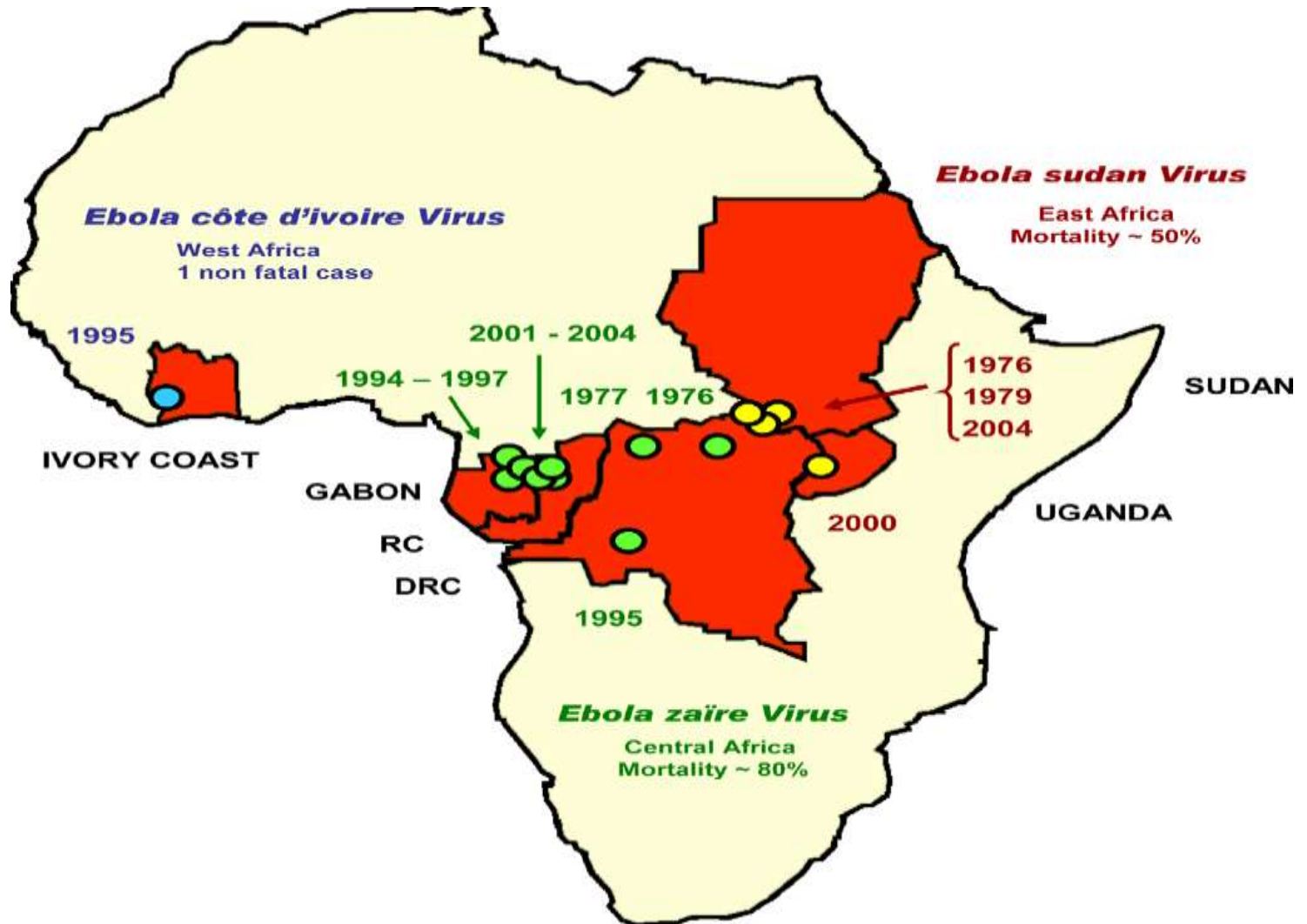
# INTRODUCTION

- The Ebola virus is a severe infectious often fatal disease in human and primates.
- First appeared in 1976 at Nzara in Sudan and at Yambuku in the democratic republic of Congo near the Ebola river in Africa.
- Second appeared in Africa 1989 in Reston.
- Third appeared in 2014 West Africa affecting Guinea, Sierra, Leone, Liberia and Nigeria.

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- Ebola virus is called as hemorrhagic because bleeding will occur during the course of illness.
  - Ebola virus causes bleeding inside and out side the body.
  - Ebola strikes mainly in villages of central and west Africa but it has also spread to African cities too.

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- Ebola is a negative RNA virus.
  - There are different species of the Ebola virus.
  - **Reston ebolavirus** was first discovered in laboratories in Reston, United States of America (USA)
  - Ebola virus is responsible for viral hemorrhagic fevers like:
    - Lassa fever,
    - Yellow fever,
    - Marburg and
    - Dengue fever.

# EBOLA OUTBREAK 1976-2014



# DEFINITION

- Ebola virus disease (formally known as Ebola hemorrhagic fever )is a disease caused by the ebola virus in severe fatality rate, 90% affects human and non human primates.

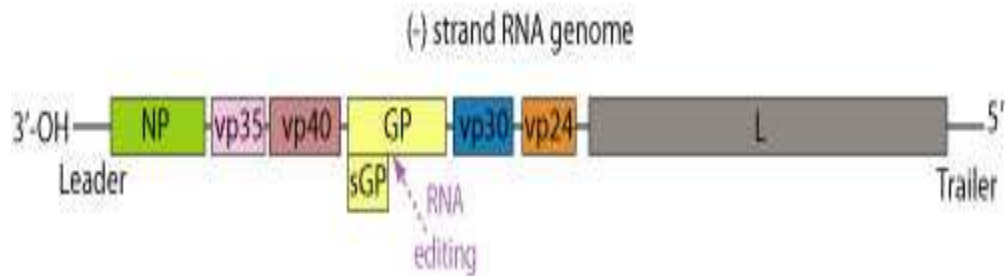
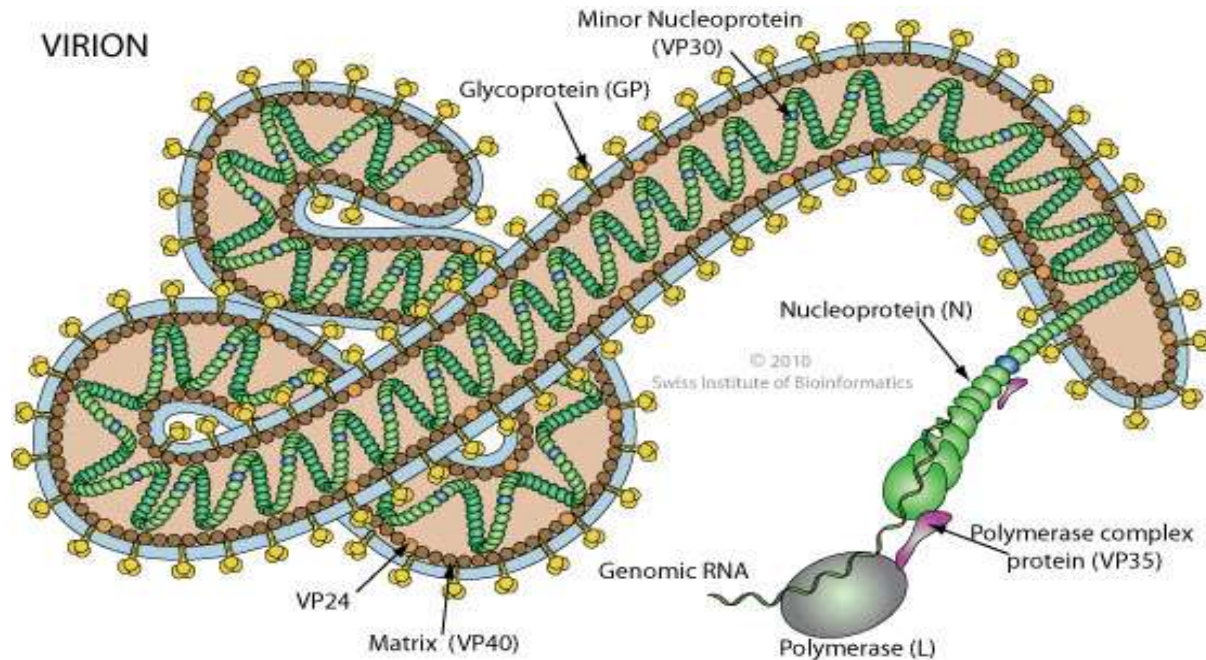



# EBOLA VIRUS

- Ebola virus is an infectious which kill in a short time.
- Needs a host cell to survive.
- Considered like a non-living entity.
- Which is a severe, often-fatal disease caused by infection with a species of Ebola virus.



# STRUCTURE



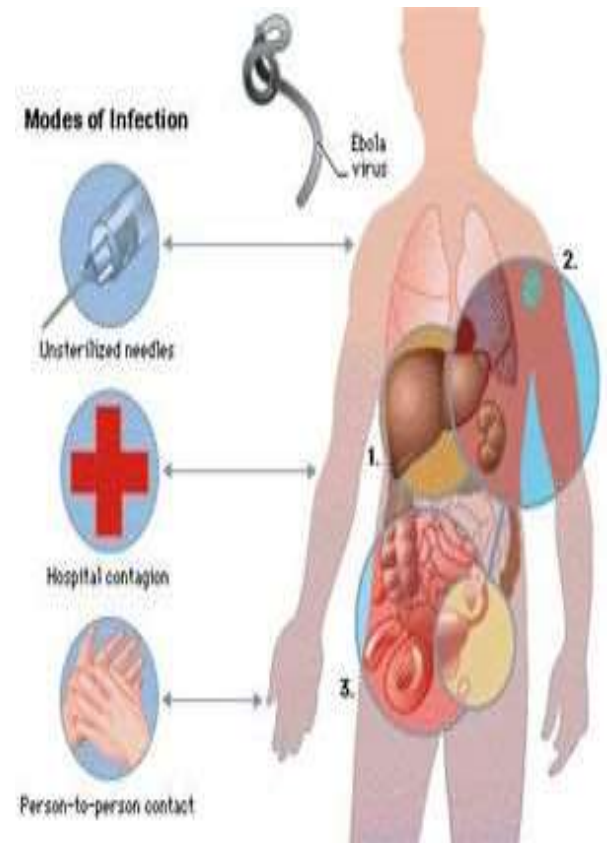
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- Genome 19kb long.
  - Diameter 80nm; length 960nm to 1200nm.
  - Four viral proteins: polymerase (L), nucleoprotein, and proteins VP35 and VP30.
  - Spikes formed by GP1/GP2 Complexes (envelope glycoprotein).
  - VP24 (membrane protein) associated with envelope.

# CLASSIFICATION

- Order : Mononegavirales  
Enveloped, nonsegment, negative strand RNA viruses.
- Family : Filoviridae, contains 3 genera :
  - Ebola virus (1976)
  - Marburg virus
  - Cueva virus
- Genus : Ebola virus, named after the ebola river where it was first found.

# MODE OF TRANSMISSION

- Unsterilized needles.
- Sub optimal hospital conditions.
- Personal contact.
- Through blood to blood contact.
- Human to human transmission.
- Reusing needles and blood gloves in hospital.



◦ ➤ Ebola is introduced into the human population through close contact with the blood, secretions, organs or other bodily fluids of infected animals.



# MECHANISM OF ACTION :

- Every tissue are affected, except bones and muscles.
- The virus creates blood clots.
- Clots goes towards internal organs (lungs, Eyeball).
- It prevents oxygen to rise tissue.
- The virus also destroys connective tissue (affinity with collagen).



# SYMPTOMS :

## INITIAL SYMPTOMS;

- ✓ High temperature (at least 38.8c)
- ✓ Muscle, joints, abdominal pain
- ✓ Nausea
- ✓ Blood stream slow down
- ✓ Loss of appetite
- ✓ Rashes
- ✓ Increased liver enzyme activity



# LATE SYMPTOMS:


- ✓ Vomiting
- ✓ Diarrhoea
- ✓ Coughing
- ✓ Pharyngitis
- ✓ Prostration
- ✓ Severe Vomiting Blood
- ✓ Hemorrhage
- ✓ Internal and external hemorrhages from orifices (nose, mouth, skin, eyes).
- ✓ Low white blood cell count.





# DIAGNOSIS:

- Diagnosing Ebola can be difficult at first since early symptoms, such as fever, are nonspecific to Ebola infection.
  
- Samples from the patient can then be collected and tested to confirm infection are:
  1. Antibody-capture enzyme-linked immunosorbent assay (ELISA).

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2. Antigen-capture detection tests.
  3. Serum neutralization test.
  4. Reverse transcriptase polymerase chain reaction (RT-PCR) assay.
  5. Electron microscopy.
  6. Virus isolation by cell culture.

# TREATMENT

- There are no licensed specific treatment.
- Patients are Frequently dehydrated and requires oral Rehydration with solution containing electrolyte.
- New drug therapies are bieng evaluated.
- However there have been very recent development in preventative medication.



◦ Recommended care includes:

- Volume repletion
- Maintenance of blood pressure (with vasopressors if needed)
- Maintenance of oxygenation
- Pain control
- Nutritional support
- Treating secondary bacterial infections and pre-existing comorbidities

# CONTROLLING THE SPREAD OF EBOLA

- a. Hospitals must follow precautionary methods, such as:
  - 1. Wearing gloves.
  - 2. Isolating infected individuals.
  - 3. Practicing nurse barrier techniques.
  - 4. Proper sterilization and disposal of all equipment.
- b. Burials must be done correctly:
  - 1. No washing or touching carcass.
  - 2. Put into body bags and bury outside city.
- c. Report any questionable illness to officials.

# CONCLUSION

- Ebola virus is extremely virulent.
- The infected organism does not have time to react to the virus.
- First symptoms appear during the critical period.
- Even though scientists have recently made breakthroughs there is still need for extensive research to find vaccines and cures for this deadly virus.

# REFERENCES :

- [www.wikipedia.com](http://www.wikipedia.com).
- [http://www.cdc.gov/ncidod/dvrd/spb/mnpages/di  
spages/ebotabl.html](http://www.cdc.gov/ncidod/dvrd/spb/mnpages/di<br/>spages/ebotabl.html).
- Hampton, Tracy, Vaccines Against Ebola and Marburg Viruses Show Promise in Primates Studies, Medical News and Perspectives. JAMA, Vol. 294 No. 2 July 2005.
- Jones, Steven, Live attenuated recombinant vaccine protects nonhuman primates against Ebola and Marburg viruses, Nature Medicine, Vol. 11 No. 7 July 2005.

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**[sarangi.dipu@gmail.com](mailto:sarangi.dipu@gmail.com)**

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