

Ebola Outbreak Response experience Liberia, 2015



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Introduction

- ❑ Ebola Virus Disease(EVD) is a viral hemorrhagic fever (VHF), characterized sudden onset of fever, intense weakness, muscle pain, headache and sore throat
- ❑ This is often followed by vomiting, diarrhoea, and sometimes internal and external bleeding
- ❑ Initial symptoms are generic and can be misdiagnosed (esp. malaria)
- ❑ Symptoms can appear from 2 to 21 days after exposure to virus
- ❑ Currently there is no effective treatment or vaccine for Ebola(Trials ongoing)

Ebolavirus Ecology

Enzootic Cycle

New evidence strongly implicates bats as the reservoir hosts for ebolaviruses, though the means of local enzootic maintenance and transmission of the virus within bat populations remain unknown.

Ebolaviruses:

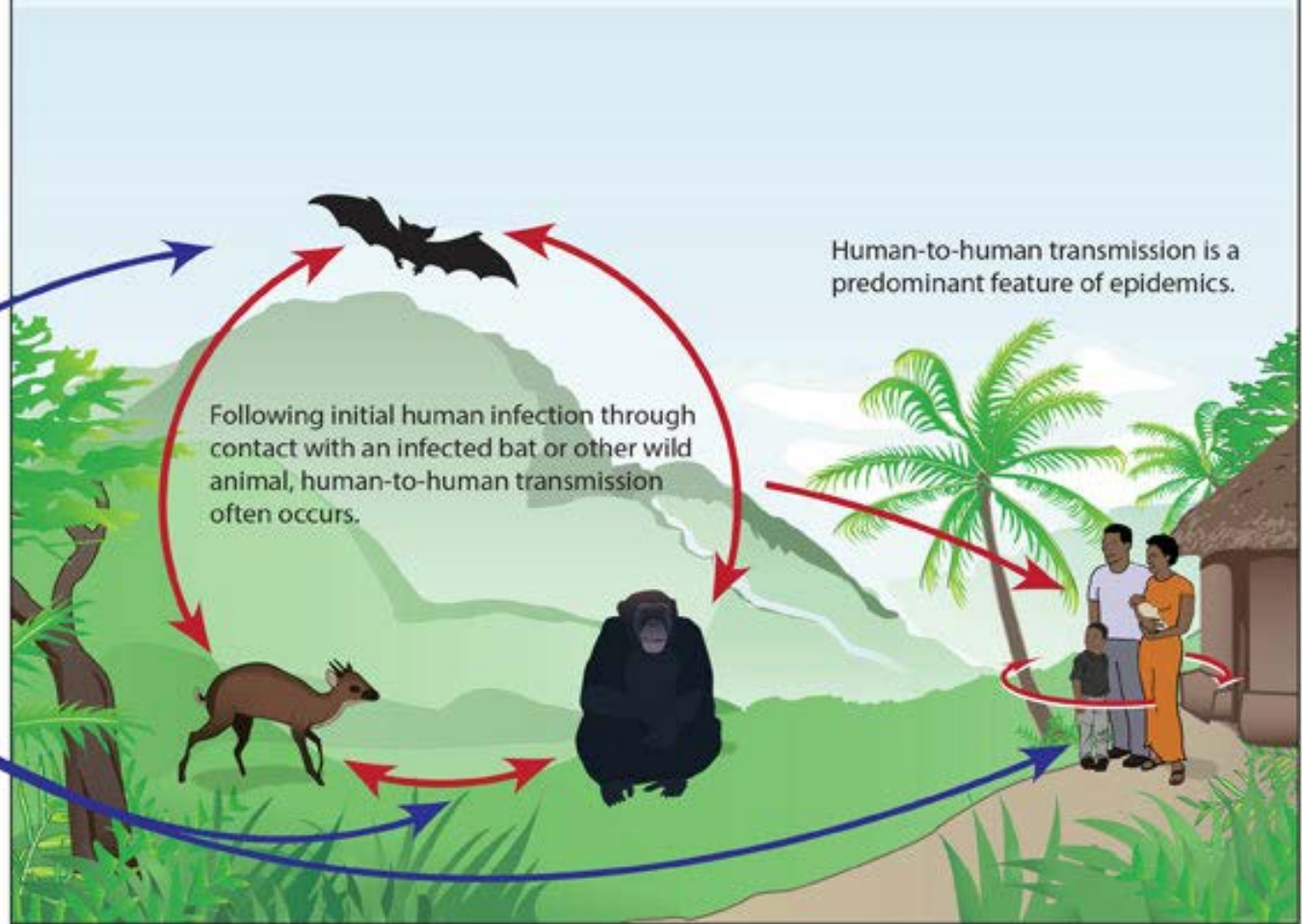
- Ebola virus (formerly Zaire virus)
- Sudan virus
- Tai Forest virus
- Bundibugyo virus
- Reston virus (non-human)



Epizootic Cycle

Epizootics caused by ebolaviruses appear sporadically, producing high mortality among non-human primates and duikers and may precede human outbreaks. Epidemics caused by ebolaviruses produce acute disease among

humans, with the exception of Reston virus which does not produce detectable disease in humans. Little is known about how the virus first passes to humans, triggering waves of human-to-human transmission, and an epidemic.



How is Ebola spread?

□ Human-to-human transmission

- Spread through **direct contact** with broken skin or mucus membranes when in contact with a sick person's blood or body fluids
- Objects contaminated with infected body fluids:
 - Needles, ear piercing, traditional practices among others
- Direct physical contact with infected dead bodies without protection
- Sexual transmission-Strong possibility

□ Common settings where transmission occurs

- Household settings
- Health care settings
- Burials and dead body handling practices

Diagnosis

- High index of suspicion
- Laboratory diagnosis
 - Enzyme-linked immunosorbent assay (ELISA)
 - Antigen detection tests
 - Serum neutralization test
 - Reverse transcriptase polymerase chain reaction (RT-PCR) assay
 - Virus isolation by cell culture.

Control of Ebola outbreaks

- Mortality high, no specific therapy, no vaccine (trials ongoing)
- Key control strategies
 - Early detection and isolation of cases
 - Contact tracing and monitoring
 - Strengthening infection control in health facilities



Ebola outbreak in West Africa

- ❑ Largest, most widespread Ebola outbreak ever
- ❑ 3 severely affected countries, rural and urban areas, capital cities
 - Liberia, Guinea, sierra Leone
- ❑ Lack of infection control in health care settings amplified spread
- ❑ Health care workers heavily impacted

Existing Challenges leading to failure in control

- Resource-poor settings
- Multiple other endemic diseases with similar signs and symptoms.
E.g. Malaria
- Dysfunctional Health care system
 - Limited disease surveillance
 - Delayed response to the outbreak
 - Limited laboratory support for disease detection
 - Healthcare setting amplification of the outbreak
 - Non existent IPC systems
- Traditional beliefs and behaviors
 - Local burial customs-washing of dead bodies

Deployment as part of response team

- ❑ Deployed to Liberia from 10th August – 23rd September 2015
- ❑ Deployed under WHO (Global Outbreak Alert and Response Network) GOARN through CDC
- ❑ GOARN – is a global technical partnership, established by World Health Organization (WHO)
- ❑ Engages the resources of technical agencies beyond the United Nations aiming at:
 - Rapid identification public health emergencies international importance
 - Confirmation and response
 - Contribution to strengthening global health security

Area of assignment in Liberia

Liberia

- 43,000 square miles
- 4.2m population
- Physicians: 1.2/100,000
- Nurses and midwives: 27/100,000

August – September 2015



Role and responsibilities

- ❑ Infection Prevention and Control (IPC)
- ❑ Health restoration (post EVD)
 - Support of the national quality management unit in Ministry of Health and Social Welfare (MOHSW)
 - New unit to house and shepherd IPC in Liberia
 - Implementation of Safe and Quality Services(SQS)
 - Training
 - Mentorship
 - PPE supply

Why IPC?

Why IPC?

- ❑ **Frontline HCW infected before outbreak is recognized**
- ❑ **HCW at high risk for EVD acquisition due to:**
 - Contact with EVD patients before diagnosis
 - Contact with vomitus, feces, blood from EVD patients
 - Inadequate administrative and environmental controls
 - Inadequate access to PPE and other IPC supplies
 - Inadequate IPC standards

Why IPC?

- ❑ Hospitals amplification of EVD transmission
 - Serious decrease in public confidence leading to sharp decline of preventive care, treatment and rehabilitative services
 - Health care system collapse

Results of control failure

□ Health system Collapse

- Staff shortage
- Shortage of supplies
- Improper use of available supplies
- Long working hours for the few staff- unsafe

“The rest of the world can sleep at night because a group of men and women are willing to stand and fight” -Times

Health care workers infections and deaths

Country	HCWs Cases	HCWs Deaths
Guinea	196	100
Liberia*	378	192
Sierra Leone	307	221‡
Total	881	513

Data are confirmed cases and deaths only, apart from deaths in Sierra Leone, which include confirmed, probable, and suspected deaths. *Data are until 9 May. ‡Data as of 17 February 2015

- This data highlights the need for:
 - Proper infection control practices for frontline HCWs in health care settings
 - Establishing a culture of safety in health care settings
 - Importance of occupational health and safety programs for HCWs

Reasons for the many casualties among HCWs



“During the outbreak in Liberia, technicians abandoned laboratories all over the country following the death of six laboratory workers”

Key achievements in IPC



Key achievements in IPC



Key achievements in IPC



HCWs Training and mentorship



Policy review-Waste Management



“We cannot be thinking only about Ebola; today is Ebola, tomorrow could be something else.”

-Dr. Eliot Cowan,

“What of the other killers like Hepatitis B Virus?”



Simple measures like handwashing leave behind a great legacy

Handwashing, handwashing & handwashing



*Let us not wait for an outbreak to wash our hands!
In Kenya only 35% of HCWs comply to this basic IPC practice!*

On September 3, the World Health Organization (WHO) declared Liberia officially “Ebola free,” since 42 days (twice the normal maximum incubation period of the virus) had passed since the last known case recovered and tested negative for the virus twice.

“For the tireless acts of courage and mercy, For buying the world time to boost its defense, For risking, For persisting, For sacrificing and saving” Times 2104 person of year award winner- Ebola Fighters

Acknowledgements

