Working in non-traditional environments: The Ebola Virus Disease Outbreak

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Presentation Overview

Background on Ebola Virus Disease
Ebola Virus Disease Response in West Africa
Safety and Health Challenges in West Africa
BACKGROUND ON EBOLA VIRUS DISEASE
Ebola Virus Disease (EVD) Background

EVD is a rare and deadly disease

1976: First discovered near the Ebola River in the Democratic Republic of the Congo

Outbreaks occur sporadically in Africa
Ebola Virus Disease

Family of zoonotic RNA viruses
Filoviridae

Previously called Ebola hemorrhagic fever, caused by Ebola virus infection

5 species of *Ebolavirus*

*Kaire, Bundibugyo, Reston, Sudan, & Tai Forest*

All but *Reston ebolavirus* known to cause disease in humans

Historically, death rates for Ebola range from 50%-90%
Ebola Virus Ecology and Transmission

Ebola virus disease is a zoonotic disease. Zoonotic diseases involve animals and humans.

**Animal-to-Animal Transmission**
Evidence suggests that bats are the reservoir hosts for the Ebola virus. Bats carrying the virus can transmit it to other animals, like apes, monkeys, and duikers (antelopes), as well as to humans.

**Spillover Event**
A "spillover event" occurs when an animal (bat, ape, monkey, duiker) or human becomes infected with Ebola virus through contact with the reservoir host. This contact could occur through hunting or preparing the animal's meat for eating.

**Human-to-Human Transmission**
Once the Ebola virus has infected the first human, transmission of the virus from one human to another can occur through contact with the blood and body fluids of sick people or with the bodies of those who have died of Ebola.

**Survivor**
Ebola survivors face new challenges after recovery. Some survivors report effects such as tiredness and muscle aches, and can face stigma as they re-enter their communities.

- **Traditional funeral practice**
- **Unprotected healthcare worker**
- **Unprotected contact with blood and body fluids**
Transmission

Ebola virus spreads through direct contact with infected blood or body fluids

- People at highest risk
  - Health workers caring for patients
  - Family and friends in close contact

Contact with

- Bodies of people that died of EVD
- Contaminated objects
- Infected fruit bats or primates
- Bush meat (wild animals hunted for food)

Possible that virus can be spread through sex or contact with semen of male survivors

Mosquitoes, insects, dogs, and cats are not believed to transmit Ebola virus

You CAN’T get Ebola through AIR

You CAN’T get Ebola through WATER

You CAN’T get Ebola through FOOD grown or legally purchased in the U.S.
Signs and Symptoms

Incubation period, from exposure and infection occurred to when signs or symptoms appear, is 2-21 days (average 8-10 days)

A person infected with Ebola virus is not contagious until symptoms appear

Signs and symptoms of EVD

- Fever
- Severe headache
- Fatigue
- Muscle pain
- Vomiting
- Diarrhea
- Abdominal pain
- Anorexia
- Unexplained hemorrhage
Prevention

No FDA-approved vaccine for EVD

Several investigational vaccines being evaluated in trials

So, what can I do to protect myself?

Wash hands with soap and water or alcohol-based hand sanitizer

Avoid contact with blood and body fluids

Do not handle items that may have come in contact with an infected person’s blood or body fluids

Avoid contact with

  Dead bodies, semen from an Ebola survivor, bats and nonhuman primates

Do not go to Ebola treatment units

Promptly report any potential unprotected Ebola exposure or illness

Seek medical care immediately if you develop symptoms

  Limit contact with other people and do not travel
Treatment

Basic interventions, when used early, can significantly improve the chances of survival

- Providing intravenous fluids and balancing electrolytes (body salts)
- Maintaining oxygen status and blood pressure
- Treating other infections if they occur
- Symptoms of EVD and complications treated as they appear

Recovery depends on good supportive care and the patient’s immune response

No FDA-approved medicine (e.g., antiviral drug) for Ebola

- Experimental treatments for Ebola under development, but not yet fully tested for safety or effectiveness
- Several investigational drugs have been used to treat patients with Ebola, but no controlled clinical trials have been conducted
Survivors

Current unknowns:

- Some people who have recovered from Ebola have developed long-term complications
  - Ongoing joint and muscle pain and vision problems
- Antibodies and immunity
  - Not known if survivors are immune for life or can be infected with another species
- Not known if surviving Ebola can affect a woman’s ability to get pregnant or have children

Current knowns, but more information is needed:

- Even after recovery, Ebola virus might be found in some body fluids
  - Semen – decreases over time, but should use protection
  - Breast milk – survivors should not breast feed
  - Eye – limited immune activity in the eye
2014 Ebola Outbreak, West Africa

- Largest Ebola outbreak in history
- Largest outbreak response in CDC’s history

[Map showing the distribution of cases in West Africa]

WHO has declared the following countries free of Ebola virus transmission:

- Sept. 3, 2015: Liberia
- Nov. 7, 2015: Sierra Leone
- Dec. 29, 2015: Guinea

A country can be declared Ebola-free 42 days after the last patient tests negative for the virus (42 = double the 21-day incubation period of Ebola virus)

Sporadic cases of EVD are expected

A new case was identified on January 14, 2016 in Sierra Leone
EBOLA VIRUS DISEASE RESPONSE IN WEST AFRICA
Outbreak Challenges in West Africa
Overburdened Public Health and Healthcare Systems

Unpaid healthcare workers
Insufficient treatment centers, beds, medical supplies, and personal protective equipment (PPE)
Outbreak Challenges in West Africa

- Porous borders
- High population mobility
- Geographic breadth
Outbreak Challenges in West Africa
Lack of Knowledge and Acceptance of Ebola

- Distrust of outsiders & government
- Fear and superstition
- Traditional beliefs
- Limited knowledge of germ theory
- Stigma
Overall Goals in EVD Outbreak Response

Patient Care

- Experienced and/or trained staff
- Strict use of PPE

Stop human-to-human transmission

- Case identification, prompt isolation & infection control
- Contact tracing

Community education is key!!!
Local Signage for Community Education

- EBOLA IS REAL
- A.B.C. Avoid body contact
- N.H.S. No Hand shake

- AMBULANCES ARE SAFE
- Lord of the White Son

- AVOID UNSAFE BURIALS.
  Do not touch or wash dead bodies. Report all deaths to 117.
  Burial teams are on standby to handle all deaths safely.

- Ambulances are clean, safe and ready for use. Call 117, the response is prompt.
SAFETY AND HEALTH CHALLENGES IN WEST AFRICA
Challenges in Ebola Treatment Units

- Patient care
- Handwashing
- Medical equipment
- PPE – donning and doffing
- Hazardous Waste
- Heat Stress
- Training
Basic Healthcare Challenges

Overall lack of healthcare access

Pests and Vectors
- Water-borne illnesses
  - Giardia, Schistosomiasis
- Insect-borne illnesses
  - Malaria, bedbugs
- Food-borne illness
- Animal attacks/bites
  - Dogs, snakes, bats
- Lassa fever

Hot and Humid Weather
Food Safety Issues
Limited Local Safety Regulations
Waste Disposal at Ocean Edge
Transportation Challenges
Summary of Challenges in responding in West Africa

Limited
Healthcare, transportation, electricity

Working with a variety of
International responders AND locals

Local customs

Access to materials

Your safety and health always remain your first priority – even with all the work to be done!
Questions?

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