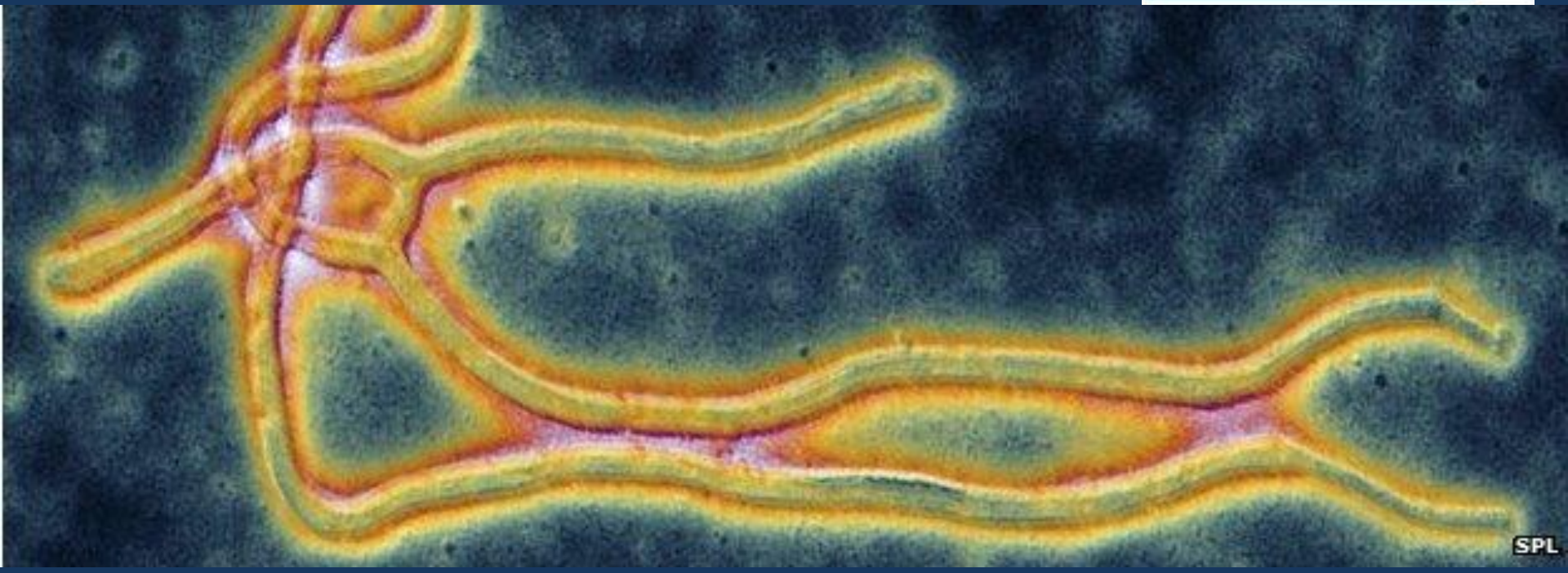
Ebola

Ebola Virus Disease and its Implications for Health, Hunger and Livelihoods in Sierra Leone and Liberia

PRESBYTERIAN MISSION AGENCY



Presentation Outline:

- Ebola virus and Ebola Virus Disease (EVD)
- Update on the Ebola outbreak in West Africa
- Outbreak response, treatment and prevention
- Implications of the outbreak
- Recommendations & credits

Ebola Virus Transmission

- **Zoonotic transmission (i.e., animal · human)**
  - Direct contact (slaughter, consumption) of infected animals:
    - Bats
    - Primates
- **Human to human transmission**
  - Direct contact through broken skin or unprotected mucous membranes (e.g., eyes, nose, or mouth) with:
    - Blood or body fluids (eg feces, saliva, urine, vomit, semen) of a person who is sick with Ebola Virus Disease
    - Objects that have been contaminated with the virus
- Only transmitted by someone who shows signs of illness

Ebolavirus Ecology

Enzootic Cycle

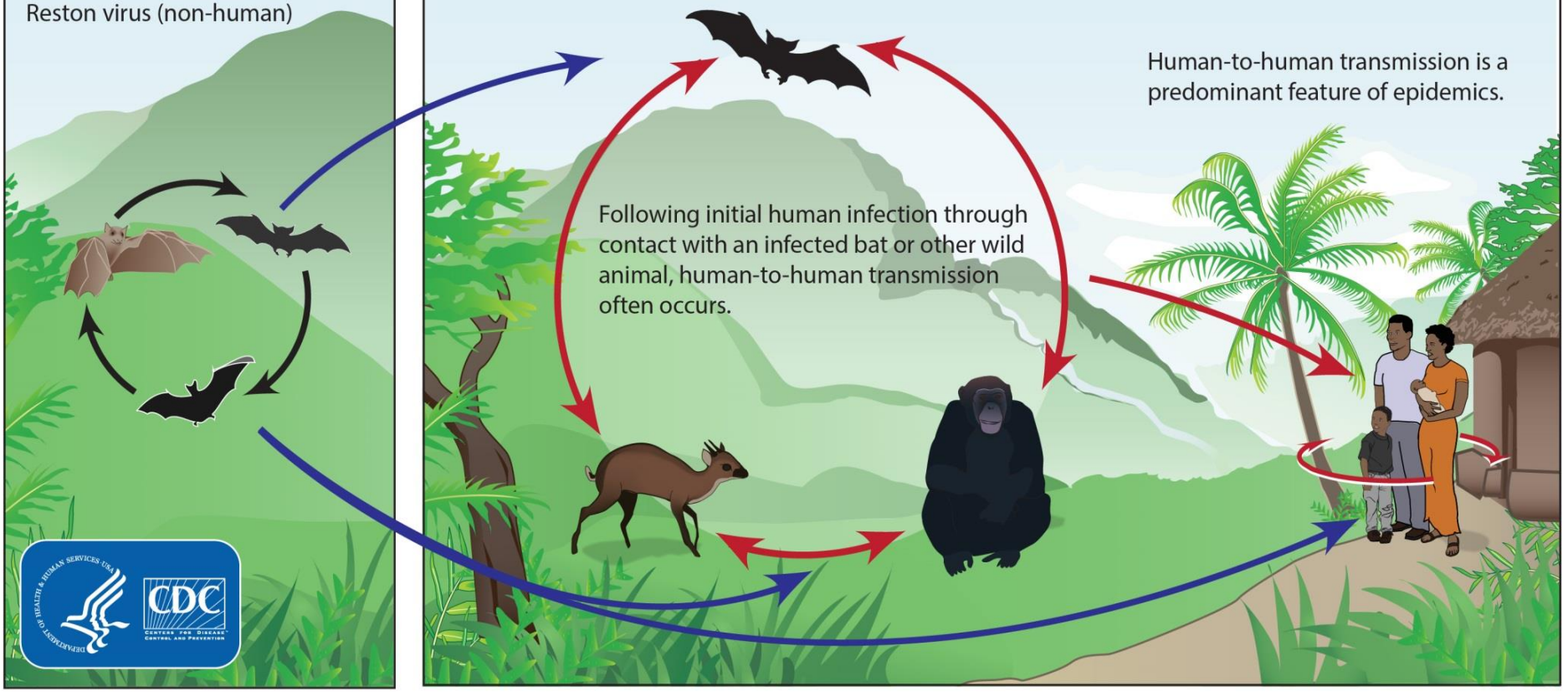
New evidence strongly implicates bats as the reservoir hosts for ebolaviruses, though the means of local enzootic maintainance and transmission of the virus within bat populations remain unknown.

Ebolaviruses:

Ebola virus (formerly Zaire virus)
Sudan virus
Taï 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.



Ebola virus disease (EBV): Clinical course

- Incubation period: 2–21 days post-exposure (usually 8-10 days)
- **Fever, headache, chills, fatigue, and muscle pain**
- GI symptoms common: vomiting, diarrhea, abdominal pain
- Hemorrhagic symptoms in < half of cases
  - Mild: blood spots under the skin, bloody nose, bruising
  - Severe: GI bleeding, shock
  - Less commonly seen: rash (trunk, shoulders), conjunctivitis, pharyngitis, cough, hiccups
- Recovery depends on patient's developing immune response
  - people who recover have antibodies ≥10 years

Exposure risk: High-risk exposures

- Percutaneous, e.g. needle stick, or mucous membrane exposure to body fluids of a **symptomatic** EVD patient
- Direct care of an EVD patient or exposure to body fluids without standard biosafety precautions
- Laboratory worker processing body fluids of confirmed EVD patients without appropriate personal protective equipment (PPE) or standard biosafety precautions
- Participation in funeral rites which include direct exposure to human remains in the area where outbreak is occurring without appropriate PPE (**P**ersonal **P**rotective **E**quipment)

Low-risk exposures

- Providing patient care or casual contact with EVD patient (e.g. household member)
- Direct brief contact with an EVD case without PPE
- Within 3 feet or within a room or care area for a prolonged period of time without PPE

- **Update on the Ebola outbreak in West Africa**

Total # Cases

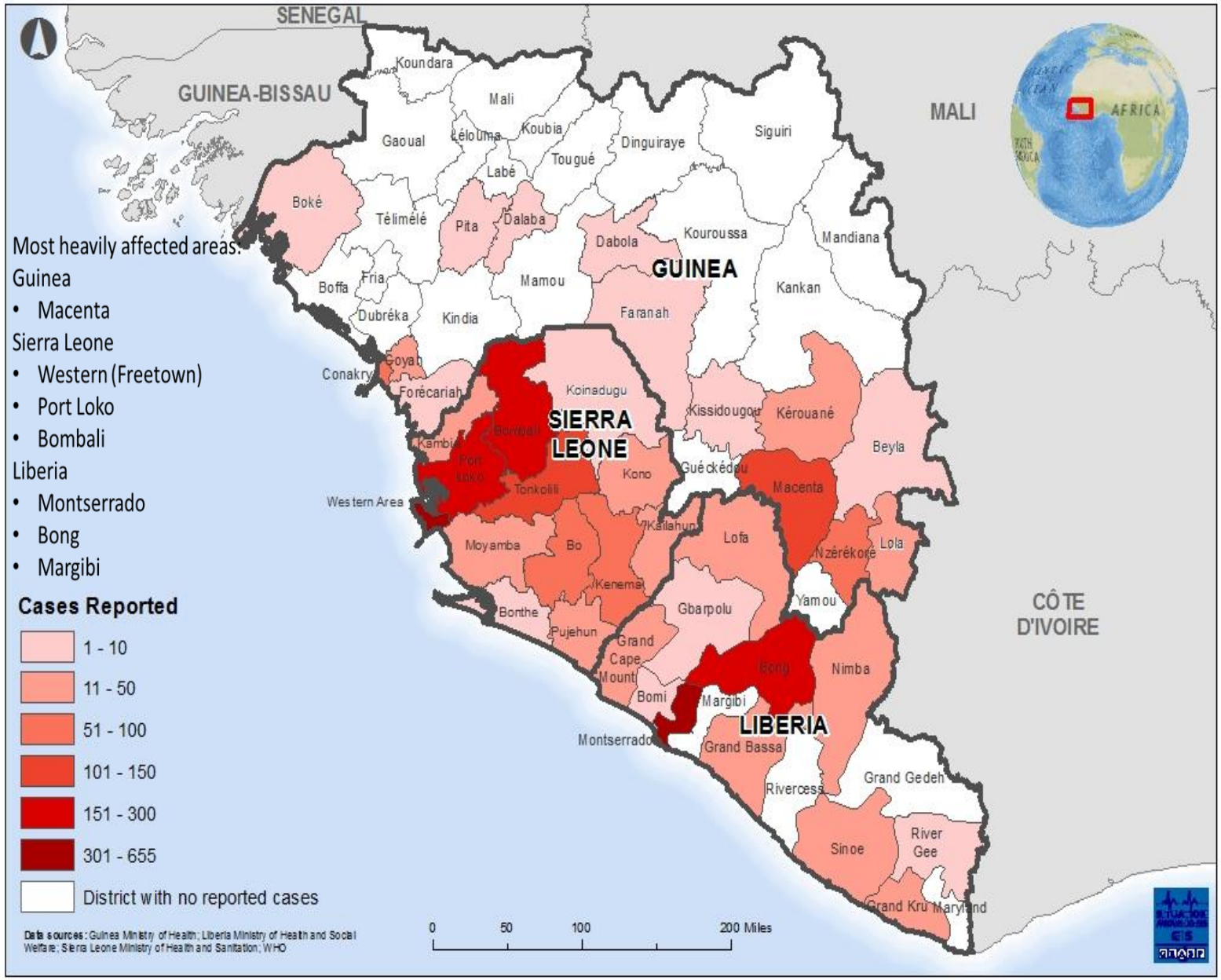
LR 6,535
SL 5,338
GN 1,667
13,540

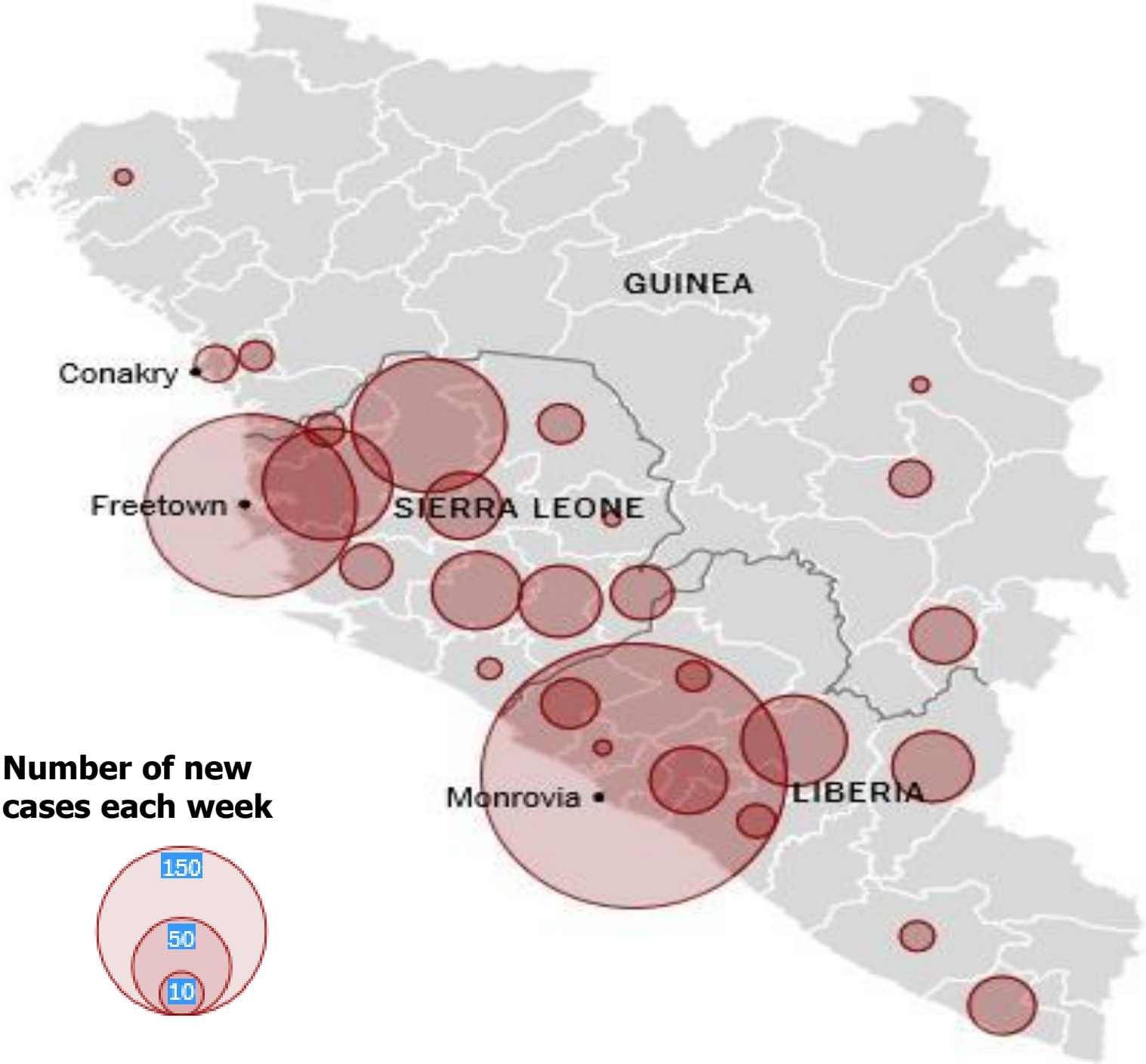
Total # Deaths

LR 2,413
SL 1,500
GN 1,000
4,951

31 October 2014

Ebola Cases Reported
28 September - 18 October 2014




GUINEA
Conakry
Freetown
SIERRA LEONE
Monrovia
LIBERIA
Number of new cases each week
150
50
10

Response
Treatment
& Prevention

Case management - 4388 beds are required in 50 **E**bola **T**reatment **U**nits ETU
At present, 1126 (25%) are in place. A gap of 20 medical teams to staff ETUs.

Case confirmation
An estimated 28 laboratories are required.
Currently, 12 laboratories are operational (Guinea - 3, Sierra Leone – 4, Liberia – 5)

Surveillance
Surveillance and contact tracing are essential to an effective response to EVD.
There are great challenges in urban and rural areas.
An estimated 20,000 additional contact tracing staff are needed.

Safe and dignified burials
Currently there are 140 teams trained in the management of dead bodies (34 in Guinea, 50 in Sierra Leone and 56 in Liberia). 230 more teams are needed.

Social mobilization
Social mobilization, including outreach to community, religious, and traditional leaders, and women and youth groups, is critical.
Key messaging is focused on the need to isolate suspected cases early, promote safe and dignified burials for those who die, and address misperceptions, resistance, and stigma associated with EVD.

Civil unrest &
resistance to Quarantines

Public suspicion &
miscommunication

Contact tracing
Health education
and
social mobilization

TRAVEL TO AND FROM EBOLA-AFFECTED COUNTRIES IS LOW-RISK HERE IS WHAT YOU NEED TO KNOW

WHILE TRAVELLING

If you develop a fever and Ebola symptoms yourself promptly inform airline personnel.

fever, weakness, muscle pain, headache, and sore throat; followed by vomiting, diarrhoea, bleeding.

Alert airline personnel about a fellow traveller who has Ebola symptoms:

AT AIRPORTS AND AT YOUR DESTINATION

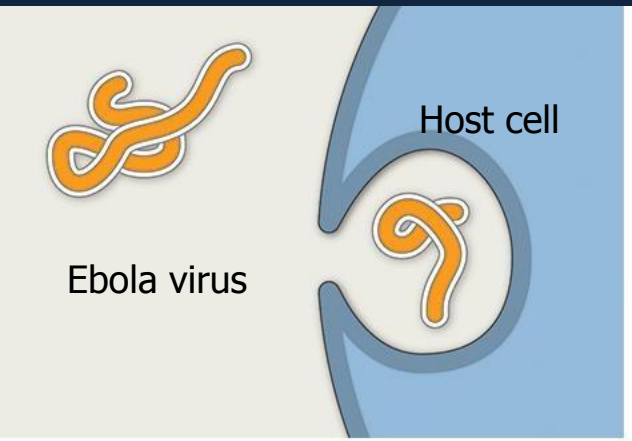
DO NOT touch the body of a person who has died from Ebola.

Use alcohol rub throughout the day. When hands are visibly dirty use soap and water.

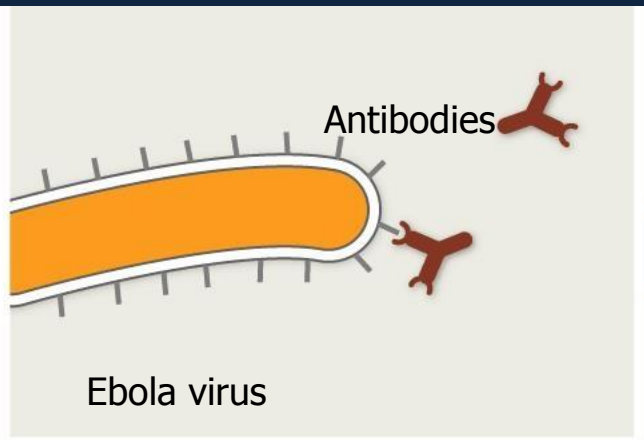
Seek prompt medical attention if you have Ebola symptoms.

Avoid direct physical contact with anyone who is displaying the symptoms of Ebola.

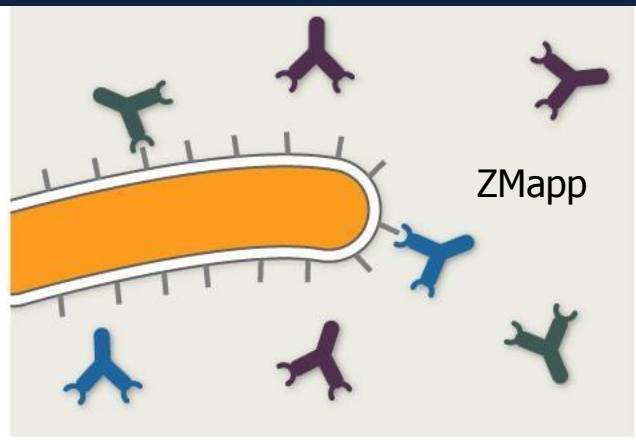
World Health Organization



- The Ebola virus infects by entering a host cell and releasing a small piece of viral RNA. The RNA hijacks the machinery of the cell and uses it to create more copies of the Ebola virus, which in turn infect other cells.



- Ebola survivors have antibodies against the Ebola virus in their blood.
- Plasma extracted from the blood of Ebola survivors might be transfused into infected people, possibly helping them fight the infection.



- The drug ZMapp is a mixture of antibodies that were developed in mice and modified to work in humans.
- ZMapp is developed in tobacco plants and there is only limited manufacturing capacity.

TREATMENT:

- There are more than a dozen Ebola drugs in development, but none have been approved by the Food and Drug Administration.
- Several of these have been approved for emergency use in the current crisis. One of these, **ZMapp**, has been used on at least two patients in the United States, but there were no more doses available as of early October. ZMapp is an experimental treatment; combination of 3 different antibodies that bind to the protein of Ebola virus
- The United States government plans to fast-track development of a vaccine called VSV-ZEBOV, shown to protect macaque monkeys, but there is no guarantee it will be effective in humans.
- **Supportive care** Symptoms of Ebola are treated as they appear
  - Fluids
  - Oxygen
  - Nutritional support
  - NSAIDs (controversial)

Personal Protective Equipment PPE

http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html

Implications of the outbreak

1. Human Trauma and tragedy
    a) Cultural, physical, emotional and psychosocial stress
    b) Anxiety, social stigma & discrimination

2. Stress on an already-crippled Health System
    a) Loss of Health Workers (Ebola deaths & risk aversion) = severe shortages
    b) Neglected disease burden (e.g. malaria, TB)

3. Interrupted general education system
    a) Primary & secondary (teacher shortages)
    b) University & Professional school closures

4. Food insecurity - prevent a health crisis from becoming a food crisis!
    a) Decreased food production – increased food prices (especially rice & palm oil)
    b) Interrupted food marketing – closed transport routes & borders

5. Economic impact
    a) Reduction in household income and national economic security (GDP)
    b) Loss of trade and investment activity (travel bans & departure of international business)

Challenges:

Early detection and rapid response is essential. This requires an effective health system with appropriate diagnostic protocols and efficient communication.

Procurement and distribution of protective equipment and medical supplies

Community sensitization and education messaging

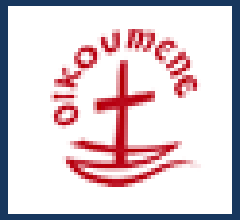
Additional personnel are needed urgently (professional clinical and laboratory staff as well as volunteers for community mobilization and contact tracing

Fear should not lead to paralysis, but instead inspire solidarity with those taking the fight against this disease into the field where the opportunity for impact is the greatest. It is not a fight we can win from afar.

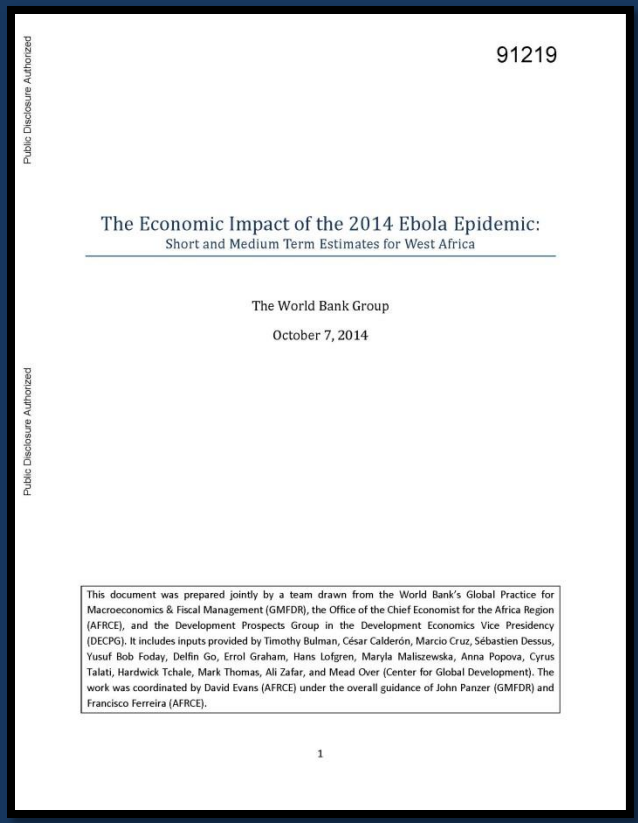
Ebola is a global problem and it requires a global response today.

Credits & Resources

Dr. Rev. James Macauley



Reference Documents



For additional Information:

- http://www.cdc.gov/vhf/ebola/
- http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html
- http://www.doctorswithoutborders.org/article/q-msf's-ebola-response-and-protocols#5
- http://www.who.int/csr/disease/ebola/en/
- http://www.ifrc.org/ebola-crisis
- http://www.rescue.org/ebola-crisis

To enquire about volunteering:

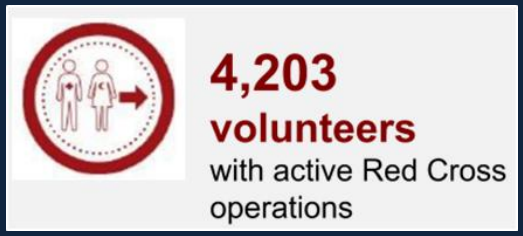
http://www.usaid.gov/ebola/volunteers **(USAID)**

http://www.americares.org
(Americares)

http://www.medicalteams.org/where-we-work/africa/liberia/ebola-outbreak-response
(Medical Teams International)

http://www.msf.org/work-msf/how-apply
(Medecins Sans Frontier)

http://www.ifrc.org/working-with-us/vacancies/
(International Red Cross)



Recommendations

1. **PRAY**
2. **Control the outbreak in West Africa.**
3. **Strengthen the capacity of the Health Systems in each high-risk country.**
4. **Provide resources for public health education and the provision of PPE to respond quickly to future disease outbreaks**