Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology)

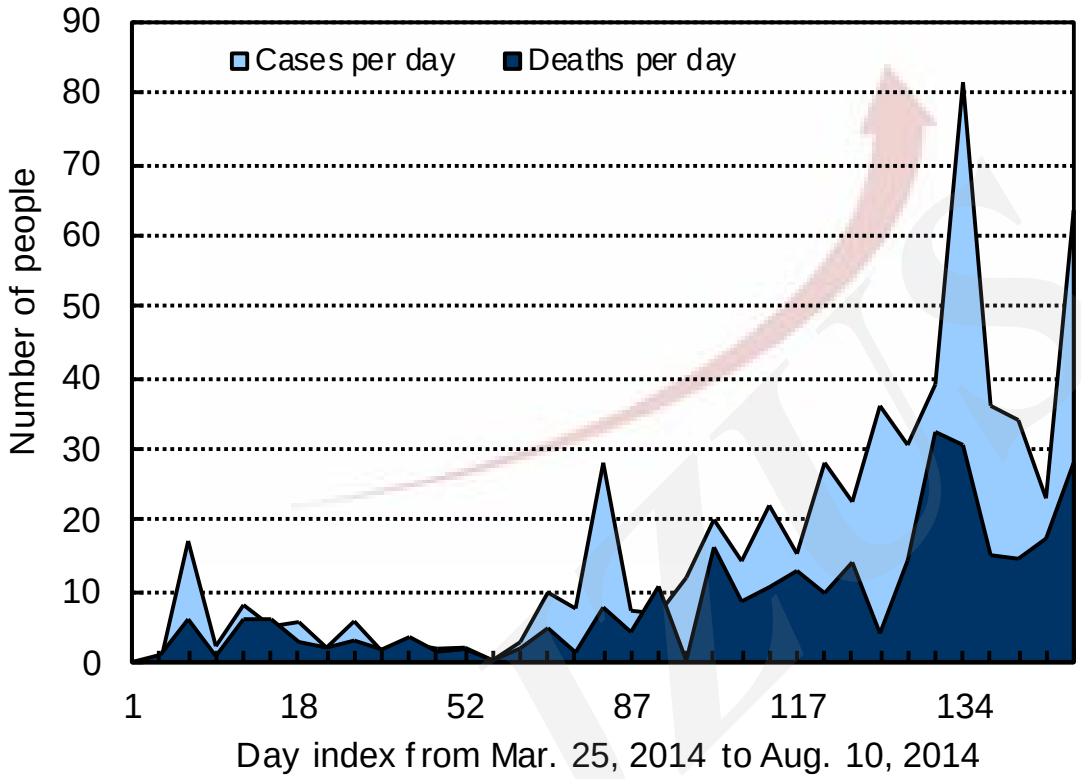
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Forty years of the war against Ebola

Key words: Ebola virus, Outbreak, ZMapp

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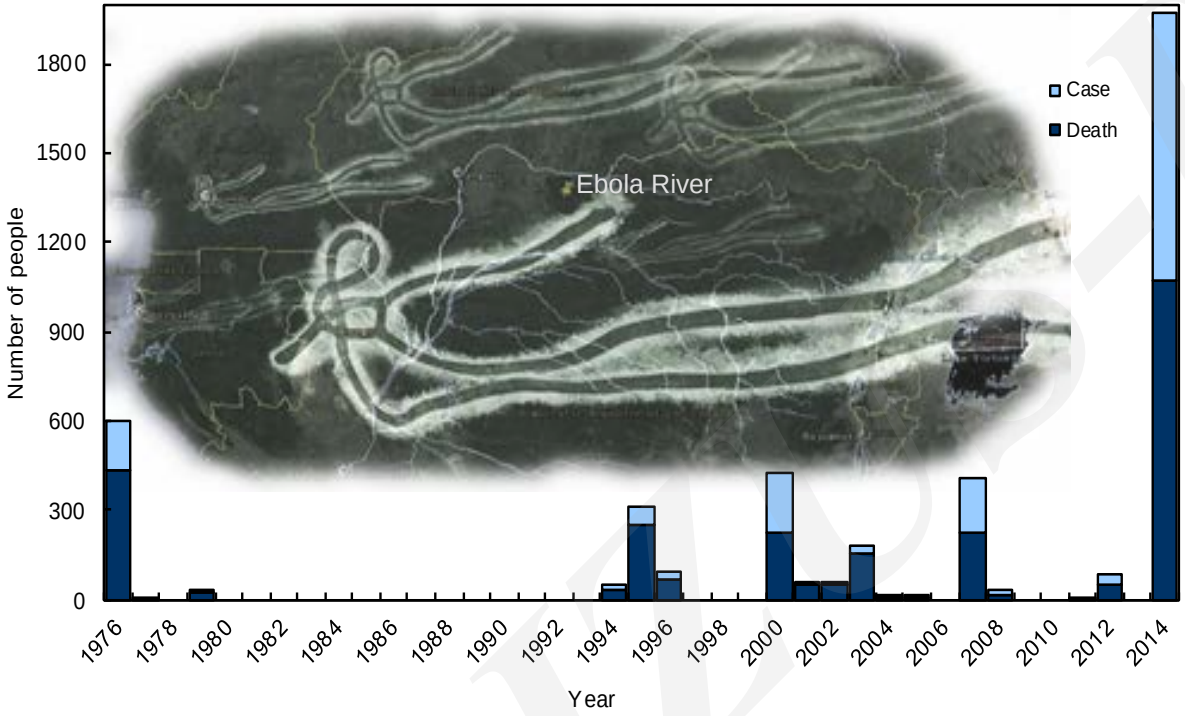
2014 Ebola alert



Ebola cases and deaths per day as reported by WHO from Mar. 25, 2014 to Aug. 10, 2014

- Ebola is attacking Guinea, Liberia, Nigeria, and Sierra Leone since Feb. 2014;
- 1069 have been killed and 1848 have been infected;
- no proven cures and no vaccine available to prevent;
- the situation is out of control.
- WHO declared a Public Health Emergency on 8 August 2014

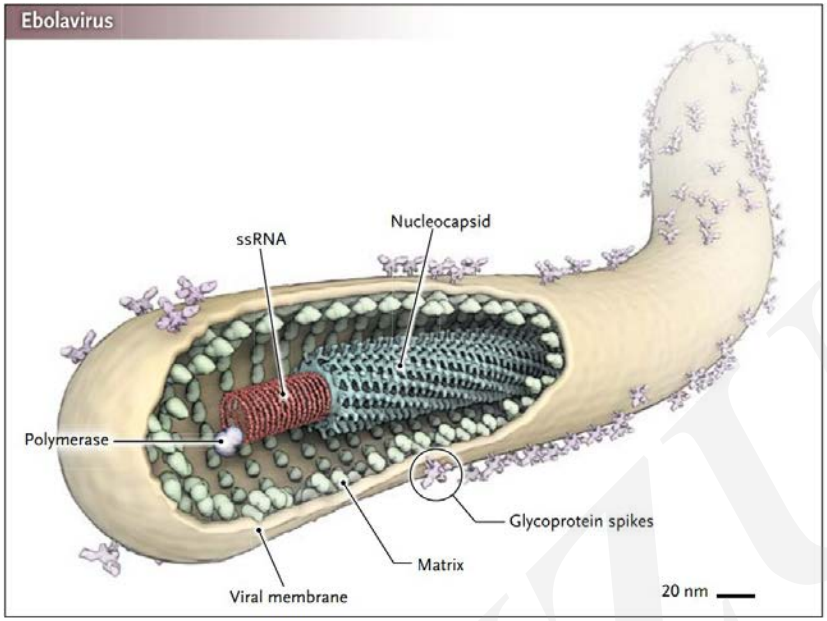
The past and present state of Ebola



15 outbreaks of Ebola virus disease from 1976

- first outbreak in 1976 in Yambuku of Zaire lies on the Ebola River;
- no proven cures and no vaccine available to prevent EVD yet.
- 15 outbreaks of EVD during the past 40 years;
- 4362 infected cases and claimed 2659 lives.

Ebola virus



Structure of the Ebola virus (Feldmann, 2014)

- 5 Ebola subtypes: Zaire, Sudan, Bundibugyo, Tai Forest, Ebola-Reston;
- filamentous viruses with a negative-sense RNA genome,80nm in diameter and 800–1000nm in length;
- EVD spreads person-to-person through contact with bodily fluids;
- The period of incubation for EVD is 2–21d;
- Mortality rates for the EVD is 50%-90%
- bats are considered to be the most likely natural reservoir of the Ebola virus.

Fighting against Ebola virus

- Why is there still no cure for almost 40 years?
  - Difficulty in identifying infection-related receptors
  - Rare virus draws little interest from funders

- Ongoing projects for fighting against Ebola virus
  - Prevention: vaccine
  - Potential treatments: antibody, interferon, RNA- interference drug, and survivor’s serum

- Prospect
  - The FDA opened the “fast track” status for Ebola drugs:Ebola vaccines, TKM-Ebola
  - WHO consider making of the potential use of unregistered interventions;
  - The first shipment of the experimental drug Zmapp arrived in Spain on August 11, 2014.

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