health

Department:
Health
REPUBLIC OF SOUTH AFRICA

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
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ALERT TO HEALTHCARE WORKERS: EBOLA VIRUS DISEASE OUTBREAK IN WEST AFRICA

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Summary

The Ebola virus disease (EVD) outbreak in West Africa was first reported in a World Health Organization communiqué on 23 March 2014. Available evidence suggests that the outbreak began in Guinea's Guéckédou Prefecture during December 2013, with subsequent spread to other prefectures in Guinea (including the capital Conakry), as well as neighbouring Liberia and Sierra Leone. The outbreak is not under control and is ongoing in all three affected countries.

In total, 1 048 cases including 632 deaths (case fatality rate 60%) have been reported during this outbreak.

In Guinea, as of 17July 2014, a cumulative total of 410 cases of EVD, including 310 deaths (case fatality rate 76%) was reported from seven districts and the capital Conakry.

As of 17July 2014, Sierra Leone has reported 442 cases, including 206 deaths (case fatality rate 47%). The fatal cases were all from Kailahun District, located in the eastern region of Sierra Leone bordering on Guinea (Guéckédou) and Liberia (Figure 1).

As of 17July 2014, Liberia reported a total of 196 cases including 116 deaths (case fatality rate 59%).

Of concern is that new cases continue to be reported in all three affected countries; this is likely due to inadequate treatment facilities, insufficient human resources and, in some areas, persistent community resistance to instituting preventive measures.

Suspected cases were reported in Mali and more recently in Democratic Republic of Congo, but have all tested negative for EVD to date.

Current outbreak in Guinea, Liberia and Sierra Leone

The terminology Ebola haemorrhagic fever was replaced by Ebola virus disease (EVD) in line with the International Classification of Diseases (ICD-10). This is the first recorded outbreak of EVD in these Western African countries, where Lassa fever is commonly reported. Epidemiologic analysis suggests that the first case of the outbreak was a 2-year-old child in Guéckédou Prefecture who died on 06 December 2013. An infected healthcare worker is thought to have triggered spread of EVD to three other provinces. A businessman who travelled from central Guinea to the capital city Conakry and died there a day later triggered spread of EVD in

Conakry. In Liberia, EVD first appeared in the northern town of Foya on the Guinean border when a woman travelled from Guinea to visit family in the town, and infected her sister.

Zaire ebolavirus is responsible for the current outbreak and full-length genome sequencing and phylogenetic analysis has shown it to belong to a separate clade from the known *Zaire ebolavirus* strains from DRC and Gabon. This suggests that the ebolavirus strain from Guinea was not introduced from DRC or Gabon, but rather that the strain has evolved in parallel and may have been circulating in the West African region for some time. *Zaire ebolavirus* is typically highly lethal, with CFR of up to 90% reported in previous outbreaks

As this is a rapidly changing situation, the number of reported cases and deaths and their geographic location are apt to change daily due to consolidation of case, contact and laboratory data, enhanced surveillance and contact tracing activities, and ongoing laboratory investigations. A summary of case numbers to date is shown in the Table.

Ebola virus disease: the basics

The ecology of the Ebola virus is not completely understood. The current prevailing hypothesis is shown in Figure 2: the virus is introduced into the human population through close contact with infected animals (including chimpanzees, gorillas, bats, monkeys, forest antelope and porcupines). The likely reservoir of the virus includes specific species of arboreal bats, and contact with these animals and/or their excretions/secretions may also result in transmission of the virus to humans. Human-to-human transmission often occurs, and is a predominant feature of outbreaks. The disease can be spread from person to person through contact with blood, secretions, organs, or other body fluids. EVD outbreaks have been reported most commonly from the Democratic Republic of Congo, Uganda, South Sudan, Congo and Gabon.

The incubation period of the disease is 2 - 21 days. An acute onset of prodromal symptoms which include fever, malaise, myalgia, diarrhoea, vomiting and abdominal pain is usual, followed by progressive multisystem disease with bleeding as a cardinal feature in the majority of patients. Currently, there is no known specific treatment or preventative vaccine for this highly contagious virus.

Risk of imported Ebola virus disease cases to South Africa

The risk of infection for travellers is generally low since most human infections result from direct contact with the body fluids or secretions of infected patients, particularly in hospitals (nosocomial transmission) and as a result of unsafe procedures, use of contaminated medical devices (including needles and syringes) and unprotected exposure to contaminated body fluids.

EVD cases have been reported from the capital cities of Conakry and Monrovia during the current outbreak; given the frequency of travel between southern and western African countries, there is a risk of EVD cases being imported into South Africa, but overall this risk is thought to be low. Healthcare or international agency workers etc. involved in the outbreak response may also travel to and present in South Africa for medical care, and a high index of suspicion is important for such

cases. A detailed history regarding travel and level of contact with suspected/confirmed EVD cases is extremely important.

Recommendations for travel to/from Guinea, Liberia, Sierra Leone, Mali and West Africa

The World Health Organization (WHO) does not recommend that any travel or trade restrictions be applied to Guinea, Liberia,or Sierra Leone. There are no special precautions or directives for commercial flights, passengers or crew departing on flights bound for or returning to Guinea, Liberia, or Sierra Leone. The regulations for evidence of a valid yellow fever vaccination certificate apply.

Any ill persons reported on flights from Guinea, Liberia, Sierra Leone and neighbouring countries will need to be evaluated by the relevant Port Health officials. All requests for medical evacuation of persons from Guinea, Liberia, Sierra Leone or Mali with febrile illness or suspected infectious disease will need careful evaluation by the Port Health officials.

While the risk of introduction of Ebola virus into South Africa is considered low, we strongly recommend that surveillance for viral haemorrhagic fevers (and at present, particularly EVD), be strengthened. This should be done primarily through Port Health services, but it is also extremely important that public and private practitioners are on the alert for any ill persons that have travelled to viral haemorrhagic fever risk areas. There needs to be a high index of suspicion for EVD in health workers from the affected region with unexplained fever.

Evaluation of illness in travellers from Guinea, Liberia, Sierra Leone, and West Africa
It is critical to maintain a very high index of suspicion for common causes of febrile illness in persons who have travelled to Guinea, Liberia, Sierra Leone, and surrounding countries, including: malaria, dengue fever, Lassa fever and other endemic diseases (e.g. typhoid fever). These may be severe and life-threatening, and healthcare workers are urged to do appropriate tests and institute appropriate therapy as a matter of urgency. Malaria is the most likely cause of an acute febrile illness in returning travellers from most African countries and has to be prioritised for testing. However, Lassa fever is endemic in certain West African countries, including Nigeria, Sierra Leone, Guinea and Liberia - and needs to be considered in the differential diagnosis for any traveller from these countries who has unexplained febrile illness and has visited rural areas.

Lassa fever virus is transmitted to humans through direct contact with urine and droppings of infected multi-mammate rats, which contaminate the environment and food items. Transmission can also occur through the inhalation of aerosolised infected rodent excreta. Person-to-person transmission is also important, being common in both village and healthcare settings, and occurs through direct contact with blood, tissue, secretions or excretions of an infected person; therefore, VHF isolation precautions are recommended for nursing patients with Lassa fever. The incubation period is 1-3 weeks; symptoms include fever, retrosternal pain, sore throat, back pain, cough, abdominal pain, vomiting, diarrhoea, facial swelling and mucosal bleeding. Mortality rates approach 20%, with pregnant women in their third trimester being at highest risk for severe disease and death. Given that the incubation periods and clinical presentations of Lassa fever and EVD may overlap,

both diseases must be excluded in persons who have a suggestive travel history and present with a febrile illness.

Suspected Ebola virus disease case definition and laboratory testing

The case definition for suspected Ebola virus disease is as follows:

Any person* presenting with an acute onset of fever that has:

- Visited or been resident in Guinea, Liberia, or Sierra Leone in the 21 days prior to onset of illness AND
- Had direct contact or cared for suspected/confirmed EVD cases in the 21 days prior to onset of illness, or been hospitalised in Guinea, Liberia, or Sierra Leone

OR

Has unexplained multisystem illness that is malaria-negative

*Healthcare workers in particular are at high risk

Testing for viral haemorrhagic fever viruses (including Ebola virus) in South Africa is only available at the NICD.

EVD testing is neither warranted nor useful for persons that are not suffering from a clinical illness compatible with EVD, even in the event of compatible travel histories. The tests cannot be used to determine if the patient has been exposed to the virus and may develop the disease later.

Requests for testing (with a detailed clinical, travel and exposure history) should be directed to the NICD Hotline at 082 883 9920 (a 24-hour service, for healthcare professionals only).

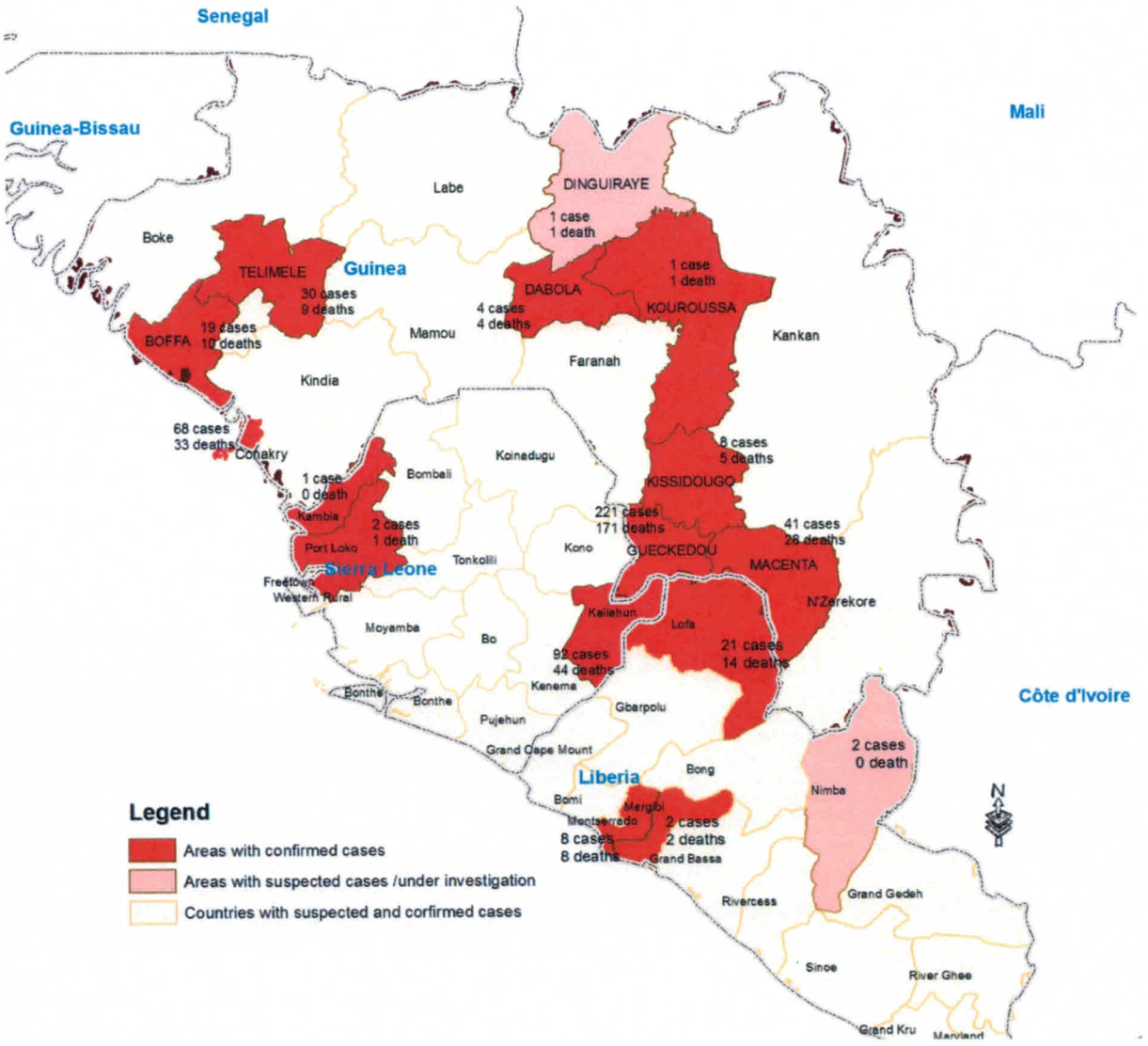

Figure 1: Geographic distribution of Ebola virus disease in West Africa as at 16 June 2014. Adapted from World Health Organization (afrgooutbreakafro@who.int).

Table: Ebola virus disease outbreak in West Africa: summary of cases as at 23 July 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	CFR	Laboratory-confirmed cases	Laboratory-confirmed deaths	Date of illness onset in most recent case	Number of cases in healthcare workers
Guinea	410	310	76%	301	203	Between 15 - 17 July 2014	*25(including 16 deaths)
Liberia	196	116	59%	76	54	Between 15 - 17 July2014	*2 (2 deaths)
Sierra Leone	442	206	47%	368	165	Between 15 – 17 July 2014	*5 (including 1 death)
Totals	1048	632	60%	745	422		

* Status as of 10 June 2014

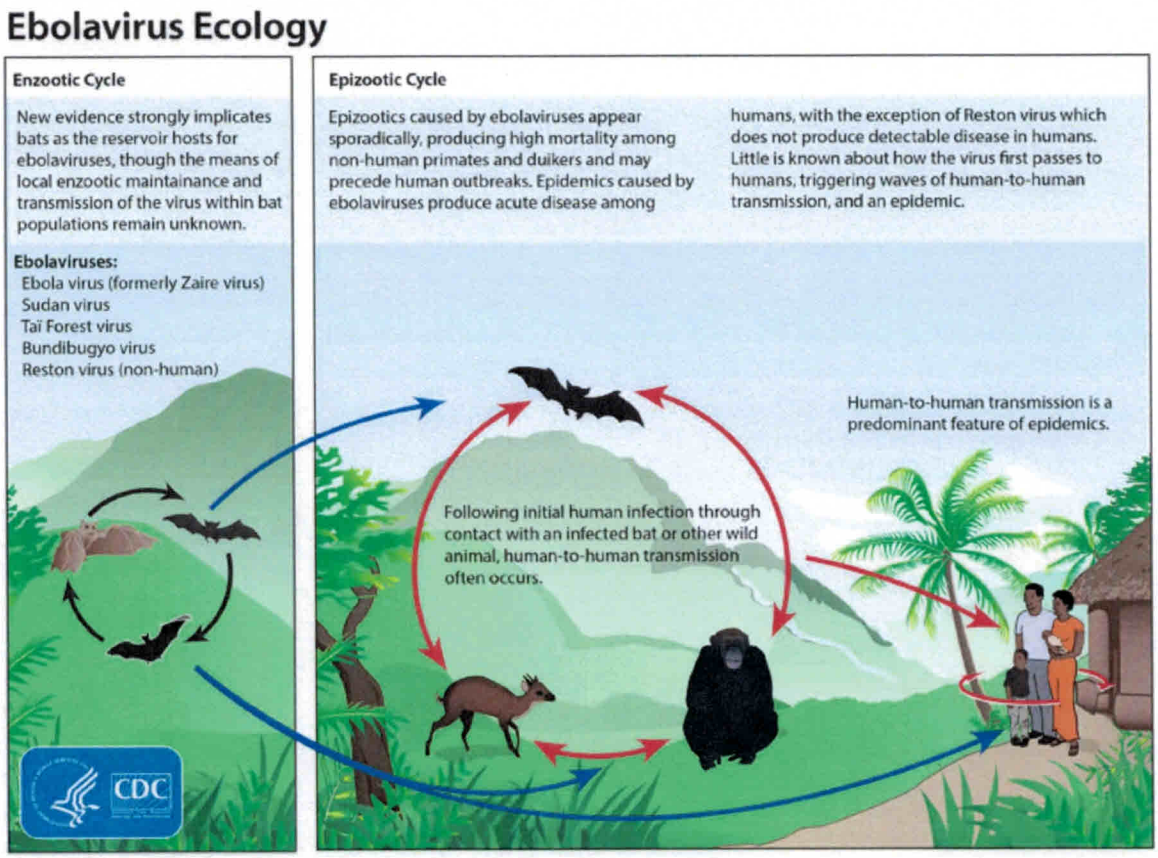

Figure2: Current hypothesis regarding the ecology and transmission of Ebola virus disease. Adapted from Centers for Disease Control and Prevention (US-CDC).