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## Ebola Virus Disease Update



The outbreak of Ebola Virus Disease in West Africa, the largest ever recorded, has recently been designated a 'Public Health Emergency of International Concern'. As such, affected countries are recommended to declare national states of emergency, provide good medical care for infected individuals and to instigate control mechanisms to limit its spread which include exit testing at airports and borders. There have been 1,779 cases reported thus far which have resulted in 961 fatalities.

Nigeria has recently joined Guinea, Liberia and Sierra Leone to become the fourth country affected by Ebola. An infected Liberian national, who recently flew to Lagos via Togo and Ghana, seems likely to be implicated in the infection of up to 12 others at present – although confirmatory testing has not been

possible. To date there are no infections reported from Togo or Ghana although contact tracing is being aided by the WHO and partners.

The risk to travellers and expatriate residents in affected countries is still said to be very low if basic precautions are taken (please see below) however it is prudent to carefully assess the need to travel to these countries beforehand and to ensure that there are adequate arrangements for on-ward travel, as several airlines have halted services including British Airways and Emirates.

The Ebola virus is a rare infection which has caused several epidemics in Central and West Africa. Described after the Ebola River in the Democratic Republic of Congo, which was the site of an early outbreak, this virus is able to cause disease by its ability to disorganise and deplete our immune response, leading to the failure of many systems in the body.

The fruit bat is thought to be the natural host of the Ebola virus but it has also been found in animals which the bat has infected. These include monkeys, apes, pigs, forest antelopes and porcupines. Humans have been infected by being involved with the slaughter of any of these animals, the ingestion of their blood or milk, or by eating raw or undercooked meat. Human to human transmission can then occur by people coming into contact with blood, secretions or bodily fluids of infected individuals.

As there is no specific treatment for this serious illness and outbreaks have often occurred in remote locations, where medical provision is very poor, the fatality rate can be up to 90%.

### What are the symptoms?

Like many viral illnesses the initial symptoms are those of fever, lethargy and muscle ache. These symptoms usually occur from 2 to 21 days after being infected. The virus spreads by infecting certain white blood cells which carry it in the blood to more distant parts of the body, causing further symptoms. For example, in the gut diarrhoea and proteins into the blood which not only destroy our immune defences but cause so much inflammation abdominal pain can occur, shortness of breath can follow when the respiratory system is affected, whereas in the brain confusion or even coma results.

The severe illness which occurs from this multi-system involvement often results in death in only 6 to 16 days.

#### Countries directly affected by Ebola

##### Current Outbreak:

- Guinea – 495 cases
- Liberia – 554 cases
- Nigeria – 13 case
- Sierra Leone – 717 cases

##### Previous Outbreaks

- Congo
- Cote d'Ivoire
- DRC
- Gabon
- Sudan
- Uganda

The virus releases that our clotting system is overwhelmed.

Uncontrolled bleeding can then result which causes internal and external haemorrhaging giving rise to the former name of this disease:

**'Ebola Haemorrhagic Fever'**

## Diagnosis

Diagnosis is possible but difficult as it depends upon specialised blood tests which may not be available at the site of the outbreak. Even taking the blood specimen and performing the appropriate tests is hazardous, as healthcare workers and laboratory staff are at risk of infection from the blood.

## Treatment

There is as yet no specific treatment for Ebola Virus Disease. The only possible therapeutic approach is to support the patient whilst their own immune system combats the infection. This is best done in an intensive care unit setting, where machines can aid lung and kidney function for example. Such a unit must be equipped with specialised devices to protect the medical staff from the infection themselves – there are few such facilities in Africa, however.

As the outlook for an infected individual is bleak, healthcare professionals have utilised isolation practices to limit further infections whilst offering what support they can to the patients in the field.

By far the best approach is to avoid infection in the first place but consideration should also be taken to prevent diseases which might be mistaken for Ebola, especially as the symptoms in the early stage of the disease are common to several infections. Malaria prevention is particularly important as are hand-washing and ensuring food and water safety.

### What precautions can I take?

- Avoid contact with:
  - symptomatic patients and corpses – post-mortem infection has been described
  - close contact with live or dead wild animals.
- Avoid consumption of bush meat.
- Wash and peel fruit and vegetables.
- Prepare and cook meat thoroughly.
- Practise hand-washing.
- Practise safer sex – Ebola virus is found in all bodily fluids.
- Take precautions to avoid illnesses which may be confused with Ebola:
  - take anti-malarials and use mosquito bite prevention strategies.

Travellers who develop viral symptoms within 21 days of returning from an affected country should seek medical attention, detailing their travel history.

## The future

Vaccine studies are being performed to assess not only if some protection can be gained *prior* to infection but also whether a vaccine could improve the immune system *after* being infected. As Ebola infection is often fatal to humans, animal studies have been used to test whether candidate vaccines offer protection against the virus. One promising approach which has produced successful results in monkeys, has been to combine a common cold virus (human adenovirus) with parts of the Ebola virus. There is no viable human vaccine at present, however.

### Key points

- Ebola is a rare, very serious viral illness.
- There is a current outbreak in West Africa.
- The chances of acquiring Ebola are very low.
- There is no specific treatment.
- Precautions to avoid infection can be taken.
- Carefully assess the need to travel to affected countries and ensure adequate arrangements for onward travel are in place

## Further Reading

WHO - [http://www.who.int/csr/don/2014\\_08\\_08 Ebola/en/](http://www.who.int/csr/don/2014_08_08 Ebola/en/)

NaTHNac - [http://www.nathnac.org/pro/clinical\\_updates/ebola\\_pheic\\_080814.htm](http://www.nathnac.org/pro/clinical_updates/ebola_pheic_080814.htm)

## Research Paper

Ebola Haemorrhagic Fever. H Feldmann and TW Geisbert. Lancet. (2011), 377 (9768): 849-862.

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