

Ebola

Ebola is a viral hemorrhagic fever endemic to parts of Sub-Saharan Africa that results in severe illness including internal and external bleeding and carries a high mortality rate.



Symptoms

Symptoms can manifest suddenly between 2-21 days after becoming infected, although the average is 8-10 days. Humans are not infectious to others until the onset of symptoms. Typical initial symptoms include:

- Fever
- Headache
- Joint and muscle pain
- Sore throat
- Severe muscle weakness
- Fatigue

Subsequent symptoms include:

- Diarrhea
- Vomiting
- Rash
- Stomach pain
- Reduced kidney and liver function
- Internal bleeding/bruising
- External bleeding from the ears, mouth, nose, or eyes

Hemorrhagic symptoms occur in 10-20% of infected patients and fatalities are usually as a result of gastrointestinal issues and damage to multiple organs.

In those that recover, it is important to note that the virus can persist in certain areas of the body. This includes the eyes, the central nervous system, semen, breastmilk (if infected whilst breastfeeding), and the placenta, amniotic fluid and fetus (if infected whilst pregnant). In some cases, people have tested positive for the virus several months after recovery. Therefore, although rare, a relapse of symptomatic illness is possible. Those that recover from Ebola infection develop antibodies that provide some immunity that last for at least 10 years.

Diagnosis

If showing early symptoms of Ebola an individual should isolate in the first instance and public health officials should be notified. Making the diagnosis can be difficult as symptoms are similar to many other infections including typhoid fever, malaria, meningitis and other hemorrhagic fevers. Therefore, laboratory diagnostic tests are used to confirm the infection. The particular test used will depend on the stage of infection.

Treatment

There are two vaccines with limited licenses for use against the Zaire ebolavirus strain of the disease. Ervebo has been licensed by several medicines agencies to be used in adults at risk during an outbreak, such as health care workers. It is not recommended as a vaccine for travelers to affected countries. It has been shown to be effective and safe in use in Guinea and Democratic Republic of Congo during outbreaks in recent years. A second vaccine, Zabdeno/Mvabea is being studied for its effectiveness and safety.

New therapies including medications, immune therapies and blood product treatments are under development and a trial for Ebola therapeutics has been launched in Democratic Republic of Congo.

If you are showing any of the above symptoms and have recently been to or are currently in an area previously affected by Ebola, seek medical advice/attention at once. Survival is improved with immediate care and with supportive therapies. These can include oral and intravenous rehydration as dehydration is common, treatment to support blood pressure and supplementary oxygen if required, symptom control for comfort (e.g. analgesia) and treatment of secondary infections

if they occur. It is imperative that any area affected by an outbreak is immediately quarantined and infected individuals need to be treated in isolation in intensive care.

Prevention and Control

Simple precautions are recommended if visiting any previously affected area in order to minimize the risk of infection:

- Regular handwashing using soap and water (alcohol-rub can be used if no soap is available although this is not routinely considered a replacement for handwashing)
- Ensure fruit and vegetables are properly washed and peeled prior to consumption
- Avoid physical contact with anyone suspected of having possible symptoms of Ebola
- Do not handle dead animals or raw meat
- Do not handle items that have been in contact with an infected person
- Do not eat bush meat



Other elements of prevention are related to international and community-based interventions and adaptations which include:

- Increased awareness in identifying possible symptoms and containing the affected area
- Subsequent contact tracing of any individuals that have been in contact with anyone who has Ebola symptoms; this identifies new cases quickly and stops the transmission chain of Ebola, curtailing the outbreak
- Reducing the risk of animal to human transmission of the virus by using gloves when handling raw meat
- Reducing the risk of human-to-human transmission by wearing personal protective equipment (gloves, aprons) if caring for an ill relative at home and regularly hand-washing
- Male survivors of Ebola infection should abstain or practice safe sex (using a condom) until semen tests negative twice for Ebola virus
- Practicing prompt, safe and dignified burials
- Identifying and monitoring the health, for 21 days, of those in close contact with someone infected with Ebola
- Promptly separating unwell individuals from those that are well in order to prevent further spread of the infection

Cause

Ebola is caused by a virus from the Filoviridae family, and there are 6 known ebolavirus species; Ebola virus (Zaire ebolavirus), Sudan virus (Sudan ebolavirus), Tai Forest Virus (Tai Forest ebolavirus, previously Côte d'Ivoire ebolavirus), Bundibugyo virus (Bundibugyo ebolavirus), Bombali virus (Bombali ebolavirus) and Reston virus (Reston ebolavirus). All but the last two are known to have caused severe disease in people. Bombali virus has only recently been identified in bats and it is unknown as to whether it causes disease in either animals or people, whilst Reston virus, first detected in Reston, Virginia, USA, has caused severe disease in non-human primates (monkeys). Several researchers were infected with this virus, but did not become ill. The source of this outbreak was traced to a facility in the Philippines from where the colony of monkeys was imported from.

Transmission

Ebola is thought to be a zoonotic disease, transmitted from animals to humans. Humans can contract the virus through close contact with the infected animals' blood, secretions, other bodily fluids and organs (e.g. handling raw or uncooked bush meat). Human infection of Ebola has been documented in people who have handled infected non-human primates (chimpanzees, gorillas, and monkeys), antelopes (dead or alive) and fruit bats. Non-human primates are not thought to be a natural reservoir of the virus as they develop severe, fatal illness when infected. Fruit bats are thought to be natural hosts of Ebola and the outbreak in 2014 in Guinea is thought to be as a result of infection initially from a bat.

Continued and rapid transmission of Ebola is through human-to-human contact through blood, secretions, vomit, other bodily fluids, and organs.

Transmission of Ebola does not occur through air or water, but is possible through contact with surfaces and materials contaminated with infected bodily fluids (e.g. bedding and soiled clothing of the infected person). The virus is known to be able to survive outside of the body for several days. Burial customs that involve touching a dead body have led to large numbers of people becoming infected as well.

As there is some evidence that traces of Ebola can be present in semen many months after recovery, male survivors should practice safe sex until they have two negative semen tests.

The Ebola Working Group of the Advisory Committee on Dangerous Pathogens (ACDP) in the UK have produced advice on recommendations for egg and sperm donation for fertility treatment.

Overall, there is a risk of further cases and outbreaks of Ebola in those countries that have

previously reported the disease, but the risk to those travelling to Africa is considered minimal. It is advisable to keep up-to-date with the current recommendations from your travel health provider and home country government travel office (e.g. Foreign and Commonwealth Office in the UK).

General Information

Ebola Virus Disease (EVD), formerly Ebola hemorrhagic fever has been a major public health concern in recent years. The average fatality rate is 50%, but can vary between 25-90%. First discovered in 1976, Ebola was initially thought to be a strain of Marburg virus. Simultaneous outbreaks occurred in Nzara, South Sudan and Yambuku, Democratic Republic of Congo, formerly Zaire, the latter near the Ebola River from which its name is derived.

Until 2014, sporadic outbreaks occurred in the Democratic Republic of Congo (DRC), the Republic of Congo, Cote d'Ivoire, Sudan, Gabon and Uganda. Between 2014 and 2016 the largest and most complex outbreak occurred in West Africa (28,000 cases and 11,000 deaths), starting in Guinea and moving across land borders to Liberia and Sierra Leone, with intense transmission in urban areas. Concurrent with this, Ebola was imported to Italy, Nigeria, Mali, Senegal, Spain, the UK, and USA.

There has since been a further Ebola outbreaks including in the Democratic Republic of Congo (DRC) in 2018 and Uganda in 2022. There have been 13 outbreaks in the in the DRC in 40 years.

Always call the Everbridge Assistance line if help is required with medications or any medical issues during travel.

References

CDC, 2019, About Ebola Virus Disease, Available at: <https://www.cdc.gov/vhf/ebola/about.html>, [Accessed on 19/11/2020]
CDC, 2018, Ebola Virus Disease (EVD), <https://www.cdc.gov/vhf/ebola/pdf/ebola-factsheet-P.pdf>, [Accessed on 19/11/2020]

<https://www.cdc.gov/vhf/ebola/history/chronology.html>

Geneva (B.A., P.B., E.B., R.B., S.B., J.M.C., K.C., A. Crosier, J.-M.D., C.D., T.E., P.F., C.F., K.F., A.G., P.G., F.K., A.M.K., D.K., M.K., J. Markoff, E.M., J. Myhre, E.N., D.N., I.N., O.O., S.P., W.P., J.P., O.R., R.S.G.K., M.S., R.V., N.W.K., Z.Y.); Ministry of Health, Liberia (L.B., S.G., S.K., M.K., M.M., J.M.M., T.N.); Ministry of Health, Guinea (P.B., B.D., E.H., K.S.); Ministry of Health, Nigeria (A.N., F.S.); Ministry of Health, Sierra Leone (R.M.C., A.J.); and the Medical Research Council Centre for Outbreak Analysis and Modelling, WHO Collaborating Centre for Infectious Disease Modelling, Department of Infectious Disease Epidemiology, Imperial College London, London (I.B., A. Cori, C.A.D., T.G., H.M., P.N., S.R., M.D.V.K.), and Public Health England (C.L.) — both in the United Kingdom, WHO Ebola Response Team, 2014, Ebola virus disease in West Africa – The first 9 months of the epidemic and forward projections, *The New England Journal of Medicine*, 371 (16), 1481-1495

Kuhn, J. H., Kristian G. Andersen, K. G., Baize, S., Bào, Y., Bavari, S., Berthet, N., Blinkova, O., Brister, J. R., Clawson, A. N., Fair, J., Gabriel, M., Garry, R. F., Gire, S. K., Goba, A., Gonzalez, J-P., Günther, S., Happi, C. T., Jahrling, P. B., Kapetshi, J., Kobinger, G., Kugelman, J. R., Leroy, J. E. M., Maganga, G. D., Mbala, P. K., Moses, L. M., Muyembe-Tamfum, J-J., N'Faly, M., Nichol, S. T., Omilabu, S. A., Palacios, G., Park, D. J., Paweska, J. T., Radoshitzky, S. R., Rossi, C. A., Sabeti, P. C., Schieffelin, J. S., Schoepp, R. J., Sealfon, R., Swanepoel, R., Towner, J. S., Wada, J., Wauquier, N., Yozwiak, N. L., and Formenty, P., 2014, Nomenclature and database-compatible names for the two Ebola Virus variants that emerged in Guinea and the Democratic Republic of the Congo in 2014, *Viruses*, 6 (11), 4760-4799

Médecins Sans Frontières: Doctors Without Borders, Ebola, <https://www.msf.org.uk/issues/ebola>, [Accessed on 19/11/2020]

Médecins Sans Frontières: Doctors Without Borders, Crisis update – April 2019, <https://www.msf.org/drc-2018-ebola-outbreak-crisis-update>, [Accessed on 19/11/2020]

NaTHNaC, 2018, Ebola Virus Disease (EVD) in the Democratic Republic of Congo, <https://travelhealthpro.org.uk/news/316/ebola-virus-disease-evd-in-democratic-republic-of-congo>, [Accessed on 19/11/2020]

NHS, 2019, Ebola virus disease, <https://www.nhs.uk/conditions/ebola/>, [Accessed on 19/11/2020]

Public Health England, 2020, Ebola: overview, history, origins and transmission, <https://www.gov.uk/government/publications/ebola-origins-reservoirs-transmission-and-guidelines/ebola-overview-history-origins-and-transmission>, [Accessed on 19/11/2020]

Public Health England, 2018, Ebola virus disease: ACDP guidance on sperm and egg donation, <https://www.gov.uk/guidance/ebola-virus-disease-acdp-guidance-on-sperm-and-egg-donation>, [Accessed on 19/11/2020]

WHO, 2020, Ebola virus disease, <http://www.who.int/mediacentre/factsheets/fs103/en/>, [Accessed on 19/11/2020]

WHO, 2018, Ebola virus disease: Democratic Republic of the Congo, https://apps.who.int/iris/bitstream/handle/10665/277405/SITREP-EVD-DRC-20181227-eng.pdf?utm_source=Newsweaver&utm_medium=email&utm_term=click+here+to+download+the+complete+situation+report&utm_content=Tag%3AAAFRO%2FWHE%2FHIM+Outbreaks+Weekly&utm_campaign=WHO+AFRO+-+Situation+Report+-+Ebola+Virus+Disease+Outbreak+in+DRC+-+Sitrep+21+%282018%29, [Accessed on 19/11/2020]

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