An epidemic of the Ebola virus disease has broken out in West Africa. The outbreak first began in Guinea in March this year. Since its initial outbreak, the virus has spread to Liberia, Sierra Leone, and Nigeria. With cases speedily intensifying in the West African countries, the World Health Organization (WHO) has declared Ebola a Public Health Emergency of International Concern (PHEIC) which allows the agency to issue recommendations for travel restrictions. It also sends out a strong message that more resources need to be organized to bring the viral disease under control. The Economic Community of West African States (ECOWAS), U.S. Centers for Disease Control and Prevention (CDC), the European Commission and many other societies have donated funds and mobilized personnel to fight the outbreak. Several charities like Médecins Sans Frontières, the Red Cross and Samaritan’s Purse are also operational in the area.

**Ebola and its Transmission**

The virus is named after the Ebola River in the Democratic Republic of Congo, where one of the first outbreaks occurred in 1976. Ebola virus disease, previously identified as Ebola haemorrhagic fever, is a severe illness in humans with a case fatality rate as high as 90%. The disease occurs chiefly in remote villages in Central and West Africa, near tropical rainforests.

The natural host for the virus is Fruit bat of the Pteropodidae family. How transmission of Ebola virus to humans occurs is yet to be proved. However, researchers have hypothesised that Ebola can be transmitted through the handling of ill or dead wild animals. In Africa, the infection is thought to have transmitted through the handling of infected chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead in the rainforest. Amongst humans, the infection can spread via two pathways. First, direct contact with the blood or secretions of an infected person. Second, exposure to objects like needles that have been contaminated with infected secretions. It has been demonstrated that burial ceremonies in which mourners have direct contact with the body of the deceased person play a role in the spread of Ebola. During the epidemic, the disease can spread quickly within clinics and hospitals. Exposure to Ebola viruses can occur in healthcare units where hospital personnel are not taking proper protection, such as wearing masks, gowns, and gloves. Patients who have recovered from the disease can still transmit the virus through their semen for up to seven weeks after recovery from the ailment.

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In the absence of effective medications, only three known measures can stop Ebola outbreaks, these include hospital infection control, community understanding of risks of infection and contact tracing.

Initial Outbreak
The first identified cases of a fevered disease, accompanied by diarrhoea, vomiting, fatigue, and sometimes bleeding occurred in February 2014 from Forested Guinea. By 19th March, a local outbreak of an undetermined viral haemorrhagic fever had been acknowledged by the Ministry of Health’s disease prevention and emergency response division. The outbreak had already infected at least 35 people and killed 23.

On 25 March 2014, WHO reported an outburst of Ebola virus disease in four southeastern districts: Guékédou, Macenta, Nzérékoré and Kissidougou and suspected cases are being investigated in the neighbouring countries of Liberia and Sierra Leone. By 23rd April, the total number of suspected and confirmed cases was 242, at a fatality rate of 59%. Around 23rd May, the outbreak had spread to Conakry, capital of Guinea with about two million inhabitants.

By 8th August, there have been 961 deaths and 1,711 cases reported throughout Guinea, Liberia, Sierra Leone, and Nigeria. Incidence of suspected non-transmissible cases of Ebola infection have been reported from several other countries including Benin, Germany, Ghana, India, Saudi Arabia, Spain and United States.

Symptoms and Diagnosis
The disease is often characterized by a sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhoea, rash, impaired kidney and liver function, and in some cases, both internal and external bleeding. Clinical symptoms include low white blood cell and platelet counts and elevated liver enzymes. The WHO says these broad-spectrum early symptoms can be mistaken for signs of diseases such as malaria, typhoid fever, meningitis or even the plague. The time interval from infection with the virus to onset of symptoms is 2 to 21 days.

Ebola virus infections can be diagnosed definitively in a laboratory through several types of tests: antibody-capture enzyme-linked immune sorbent assay (ELISA), antigen detection tests, serum neutralization test, reverse transcriptase polymerase chain reaction (RT-PCR) assay, electron microscopy and virus isolation by cell culture.

Treatment
Timely treatment of Ebola is crucial but challenging because the early symptoms are often generic. Once diagnosed, the patient should be isolated and public health professionals should be notified. Standard treatment for Ebola is still limited to supportive therapy. This includes balancing the patient’s fluids and electrolytes, maintaining their oxygen status and blood pressure and treating them for any complicating infections.

Prospective Drugs and Vaccines
Currently there are no licensed drugs and vaccines available for treating Ebola virus disease. Several experimental drugs are being developed with promising success in monkeys. However, extensive clinical trials are yet to be performed.

Two US-based missionary workers have been treated with an experimental drug, ZMapp, developed by a San Diego firm. One of them showed positive results. The drug is a mixture of three monoclonal antibodies against the Ebola virus, produced in bioengineered tobacco plants. TKM-Ebola, another anti-Ebola drug, has been developed by Tekmira Pharmaceuticals in Canada. It is designed to target the strands of genetic material of the virus (RNA). The drug has been tested on monkeys and in a handful of healthy human volunteers.

A similar RNA targeted drug has also been developed by Sarepta Therapeutics, a US-based pharmaceutical company but has not yet been tried on human patients. A number of groups all over the globe are working to develop anti-Ebola prototype vaccines most of which are in early stages of research in animal models. But rolling out an untested drug during a massive outbreak would also be very difficult, says Medecins Sans Frontieres (MSF).

In the absence of effective medications available, only three known measures can stop Ebola outbreaks, said David Heymann, a former WHO official and now director of the Chatham House Centre on Global Health Security. These include hospital infection control, community understanding of risks of infection and contact tracing.

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