

Ebola Virus Disease: Readiness for the looming threat

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The world is witnessing the largest outbreak of Ebola in history with several thousand deaths reported from West African countries.^{1,2} The threat is knocking at the door of every country in the shrunken 'global village' by virtue of international travel or trade.

Ebola virus disease (EVD) is an acute, serious illness with an average fatality rate in excess of 50% in non-treated cases.^{3,4} Ebola is introduced into the humans through contact with infected animals. Ebola then spreads through human-to-human transmission via direct contact with the blood, secretions, organs or other body fluids of infected people or with materials contaminated with these. Humans are not infectious until they develop symptoms.² Health-care workers have frequently been infected while treating patients. Burials in which mourners have direct contact with the body of the deceased person can also play a role in the transmission of Ebola.⁵

First symptoms are the sudden onset of fever, fatigue, muscle pain, headache and sore throat followed by vomiting, diarrhoea, rash, symptoms of impaired kidney and liver function, and in some cases, both internal and external bleeding.^{3,4} Laboratory findings include low white blood cell, and low platelet counts and elevated liver enzymes. Confirmation is by reverse-transcription polymerase chain reaction (RT-PCR). People remain infectious as long as their blood and body fluids contain the virus (7-8 weeks).⁶

World Health Organization (WHO) is closely monitoring the situation. A coordination center was established in Conakry, Guinea in July 2014. An initial Ebola Virus Disease Outbreak Response Plan was launched in the same month. In August 2014, an Emergency Committee was convened by the Director-General of WHO under the International Health Regulations that decided on 8th August, 2014 to declare the Ebola outbreak a Public Health Emergency of International Concern.¹

The WHO and partner organizations have agreed on a range of core actions to support countries unaffected by Ebola in strengthening their preparedness in the event of an

outbreak. A set of tools is being proposed.⁷ One of the tools is a comprehensive checklist of core principles, standards, capacities and practices, which all countries should have or meet. Items on the checklist include infection prevention control, contact tracing, case management, surveillance, laboratory capacity, safe burial, public awareness and community engagement and national legislation and regulation to support country readiness.⁸

WHO has issued an Ebola response roadmap on August 28, 2014 that gives an overall plan for the policy makers with respect to involvement of government, Local Political, Community, Traditional (& Religious) Leaders, National and International Technical Agencies, Academic Institutions, NGOs, Humanitarian organizations and the private sector in affected and unaffected countries.⁹

Proper alarm should be raised so that everyone knows the grave consequences of "negligence" or "corruption". Orders passed to the 'next in command' will not be sufficient. The clear example is that of Nigeria; a country that has sociodemographic problems from extremists to petty corruption. This country united in the face of death and defeated the virus within 3 months with minimum casualties. There are lessons to be learnt from Nigerian model.¹⁰ There is a need to develop know how for establishment of "incident management system" on the pattern of Liberia and Nigeria as soon as the need arises.

The following are the major pillars of the proposed planning in unaffected countries.

Social Mobilization

Community engagement is key to successfully control outbreaks. This disease can be fully controlled if all the population is educated about signs and symptoms of an EDV infected person, notifying the health authorities, avoiding contact with an infected patient or patient's materials, safe disposal of a person dying with a mysterious disease, identifying and isolating all contacts of that person for 21 days as major issues. Voluntary surrendering to health authorities in case of suspicion of any contact with an ebola patient or contaminated materials is the key to success.

Surveillance and Contact Tracing

All the international entry points into a country must have rehearsed protocols for the potential 'EVD infected

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passenger'. In a hypothetical scenario it is easy to diagnose a case due to scare of EVD in a person with suspected history of contact, as mostly the patient or relatives are anxious to know the correct diagnosis to take proper treatment and precautions. However most probably the index case for any country will not be 'detectable', at arrival especially if he or she arrives by air. This case will appear a few days after entering the country in a place away from original entry point. Therefore a system of passenger tracking must be in place. All airlines landing at International airports must provide list of passengers with their actual verified seat number and contact addresses in the country of landing and country of embarkation. This will be crucial in tracking and isolating all the possible contacts of a patient showing signs of disease after a few days of arrival. In addition unnecessary travel must be avoided.¹¹

Refresher courses are required for health care workers working at international airports (entry points) and related facilities about steps to prevent the spread of this virus, how to test and isolate patients with suspected cases, and how to protect themselves from infection. The key to success will be being overcautious about any sick traveler with relevant history of travel or contact. These teams must have close coordination with the place of transfer for the patient. There must be dedicated facilities or isolation rooms with vigilant staff ready to receive the potential patient with standardized rehearsed procedures and checklists for management of patient as well as patient's materials.

Containing the virus (Case Management)

Containing the virus in the hospital/health care facilities is very important. Once again citing the example of Nigeria where a single doctor who sacrificed her life raised the alarm on suspicion. The index case was an influential diplomat from Liberia. The doctor managed to contain the patient despite efforts by embassy to let him go. The contacts were identified and isolated. Hospital disposed of all laundry, equipment and other materials properly. The result is that the hospital is now functional again certified ebola free.¹⁰

A good Laboratory Service

Confirmation of EVD is by rapid blood tests that detect specific RNA sequences by RT-PCR or viral antigens by enzyme-linked immunosorbent assay (ELISA). Viral RNA is generally detectable by RT-PCR within 3 to 10 days after the onset of symptoms. PCR testing is also used to determine when a patient can be discharged from a hospital setting. Two negative PCR tests on whole blood, separated by at least 48 hours is current recommendation to declare a

patient healthy.¹² Samples from patients are an extreme biohazard risk. Testing should only be performed in specialized laboratories who have the relevant facilities and protocols to deal with highly infectious materials. It is time now to assign specialized laboratories within shortest distance from all portals of entry into an Ebola free country. Genetic diversity and rapid sequence changes of Ebola virus necessitates that the laboratory must be aware of any new strain to ensure the continued sensitivity of RT-PCR diagnostics.

It is high time that influential health professionals persuade their governments to scramble to the challenge.

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