

Project Report on Ebola Virus

Preface

This project report entitled "**Ebola Virus**" and describe about the basic information, origin, cure, and different aspects of Ebola Virus.

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Introduction towards Ebola Virus :

The past two decades have seen this world experiencing, with alarming regularity, outbreaks of viral diseases like Severe Acute Respiratory Syndrome (SARS), bird flu and swine flu. These have caused alarm spread panic not only in populations that are directly affected but also in places away from the locations of these outbreaks; the recent re-emergence of Ebola Virus, for example has underscored the fact that humans are increasingly and continuously at risk from life threatening viral diseases, and that the unexpected can be expected anytime. These emerging infectious diseases that occur in most parts are generally connected with a rapid growth in population. Human

activities like changes in land use, increased urbanization and high population densities in cities, increased contact with wild animal reservoirs, climate change and deterioration in health-care systems, particularly in developing and poor countries are the major causes.

What is Ebola Virus :

Ebola Virus is a rare disease caused by one of five virus strains found in Several African countries. There is no cure or vaccine against it. And the largest Ebola outbreak in history is currently spinning out of control in West Africa. Increased human mobility and connectivity have radically changed the way in which emerging infectious diseases spread across regions and across the world. India is at risk and it is only a matter of time before cases of Ebola appear in the continent (45,000 Indians are estimated to be living in the affected regions of West Africa). The Indian government has some plans to ward off an Ebola outbreak. But the Ebola epidemic also demands that swift and decisive action be taken in support of affected countries. Airborne transmission has not been documented during EVD outbreaks. They are, however, infectious as breathable 0.8- μm to 1.2- μm laboratory-generated droplets. The virus has been shown to travel, without contact, from pigs to primates, although the same study failed to demonstrate similar transmission between non-human primates. Bats are considered the natural reservoir of the EBOV, plants, arthropods, and birds were also considered. Bats were known to reside in the cotton factory in which the first cases for the 1976 and 1979 outbreaks were employed, and they have also been implicated in Marburg virus infections in 1975 and 1980. Of 24 plant species and 19 vertebrate species experimentally inoculated with EBOV, only bats became infected. The absence of clinical signs in these bats is characteristic of a reservoir species. In a 2002–2003 survey of 1,030 animals including 679 bats from Gabon and The Republic of the Congo, 13 fruit bats were found to contain EBOV RNA fragments. One of the primary reasons for spread is that the health systems in the part of Africa where the disease occurs function poorly. Medical workers who do not wear appropriate protective clothing may

contract the disease. Hospital acquired transmission has occurred in African countries due to the reuse of needles and lack of universal precautions. Some health care centers caring for people with the disease do not have running water.

Outbreak & Impact

The current outbreak of Ebola virus in some West African countries is unprecedented and seems to have spun out of control. What started in three of the poorest countries in West Africa – Guinea, Liberia and Sierra Leone – already ravaged by political turmoil and civil war, has now spread beyond their borders. The epidemic – which the World Health Organization (WHO) says has affected more than a million humans. Although officially reported cases are between 2,000-3,000. In the current outbreak, the first reported case was that of a two-year-old boy who died on December 6, 2013, which was soon followed by deaths of his other family members. By the end of March 2014, the disease had erupted in many locations and the outbreak was termed as “unprecedented.” By end July, it had caused widespread panic, fear and disruption, including steps that led to the closure of borders between the affected countries. The death of a nurse in Lagos, Nigeria, on August 6 and, since then, has added an entirely different dimension to this extraordinary health threat. After an incubation period of 2 – 20 days, the Ebola infection shows a sudden onset of the disease resulting initially in flu-like symptoms: fever, chills and malaise. As the disease progresses, it results in multi-system involvements indicated by the person experiencing lethargy, nausea, diarrhea and headache. Hemorrhagic conditions usually set in at its peak, resulting in uncontrolled bleeding, shock, convulsions and severe metabolic disorders. Fatal clinical signs come up early, with death occurring within about two weeks. In non-fatal cases the fever resolves itself and is generally co-antibody response, suggesting and possibility of a protective mechanism.

Transmission Route :

The African fruit bat (of the Pteropodidae family) is considered to be the natural host for the Ebola viruses as well as the major source of human infections. The chimpanzee, gorilla, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest can also carry the virus and can infect humans [wildlife-to-human transmission]. Whereas Chimpanzee and gorillas are merely accidental hosts and not the natural reservoirs. Close contact with bats is considered to be the major reason. Ebola spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids. Indirect contact with environments contaminated with such fluids. Close contact with infected dead persons can also cause the infection. People remain infectious as long as their blood and body fluids, including semen and breast milk, contain the virus. Men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness. It doesn't spread through air like flu viruses.

WHO Response :

WHO aims to prevent Ebola outbreaks by maintaining surveillance for Ebola virus disease and supporting at-risk countries to develop preparedness plans. The document provides overall guidance for control of Ebola and Marburg virus outbreaks. When an outbreak is detected WHO responds by supporting surveillance, community engagement, case management, laboratory services, contact tracing, infection control, logistical support and training and assistance with safe burial practices. WHO has developed detailed advice on Ebola infection prevention and control :

Statistics by WHO

Symptoms & cure Over time, symptoms become increasingly severe and may include:

- Nausea and vomiting
- Fever (greater than 38.6°C or 101.5°F)

- Diarrhea (may be bloody)
- Red eyes
- Raised rash
- Chest pain and cough
- Stomach pain
- Severe weight loss
- Bleeding, usually from the eyes, and
- Bruising (people near death may bleed from other orifices, such as ears, nose and rectum).

No FDA-approved vaccine or medicine (e.g., antiviral drug) is available for Ebola.

Symptoms of Ebola are treated as they appear. The following basic interventions, when used early, can significantly improve the chances of survival:

- Providing intravenous fluids and balancing electrolytes (body salts)
- Maintaining oxygen status and blood pressure
- Maintaining oxygen status and blood pressure

Experimental vaccines and treatments for Ebola are under development, but they have not yet been fully tested for safety or effectiveness.

Prevention :

If we travel to or are in an area affected by an Ebola outbreak, then following measures should be taken: Practice careful hygiene.

For example,

- Wash your hands with soap and water or an alcohol-based hand sanitizer and avoid contact with blood and body fluids.
- Do not handle items that may have come in contact with an infected person's blood or body fluids (such as clothes, bedding, needles, and medical equipment).
- Avoid funeral or burial rituals that require handling the body of someone who has died from Ebola.
- Avoid contact with bats and nonhuman primates or blood, fluids, and raw meat prepared from these animals.
- Avoid hospitals where Ebola patients are being treated.
- The U.S. embassy or consulate is often able to provide advice on facilities.

After you return, monitor your health for 21 days and seek medical care immediately if you develop symptoms for Ebola. If we travel to or are in an area affected by an Ebola outbreak, then following measures should be taken:

- Wear protective clothing, including masks, gloves, gowns, and eye protection.
- Practice proper infection control and sterilization measures.
- Notify health officials if you have had direct contact with the blood or body fluids, such as but not limited to, feces, saliva, urine, vomit, and semen of a person who is sick with Ebola. The virus can enter the body through broken skin or unprotected mucous membranes in, for example, the eyes, nose, or mouth.

What India Can Do :

India, too, can contribute to global efforts to quell the Ebola crisis. It has a large cadre of epidemiologists, laboratory scientists, doctors and nurses who are experienced in epidemic control and can help support diagnosis, the training of health workers, or clinical services in Ebola treatment units. It also has a large number of social mobilizers who have proved their abilities in health campaigns such as the polio eradication campaign. They could contribute their experiences in community empowerment (one of the cornerstones of the Ebola response), address rumors and fears and help communities regain trust in the humanitarian response. These resources are waiting to be mobilized, both to help contain the crisis in West Africa and to ensure that India is prepared for a possible Ebola emergency in the near future. By stepping decisively into the fray, India will signal that it stands with other world powers in the front line of the global fight against Ebola as well as other emerging infectious diseases. It is only when the outbreak is controlled in West Africa that nations will have done all they could to protect their own citizens from a possible outbreak of Ebola on their shores.

Conclusion

WHO is supporting the national authorities in the response to an outbreak of Ebola virus disease (EVD; formerly known as Ebola Hemorrhagic fever). The outbreak is now confirmed to be caused by a strain of Ebola virus with very close homology (98%) to the

Zaire Ebola virus. This is the first time the disease has been detected in West Africa, though it has not been detected in India. The current outbreak is sure to subside, though unfortunately only after consuming many lives. At the same time, it is bound to reappear somewhere, sometime, and mostly for man-made reasons. Unfortunately, it might happen before long. Would the world have learnt from the present deadly outbreak? If and when Ebola strikes again, would it be able to deal with it better? Hopefully during the lull, scientists, researchers, and the industry would treat Ebola as a common enemy that must be defended with modern medicine and better health-care infrastructure.

Bibliography :

Internet Search :

- <http://www.google.com>
- <http://www.yahoo.com>
- <http://www.ask.com>

Newspapers :

- The Hindu
- Times Of India
- The Indian Express
- Science Reporter