

Zika –an Emerging Global Threat

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Zika virus disease (Zika) is a new emerging mosquito borne illness, transmitted by the bite of an infected mosquito especially *Aedes aegypti*. The infection, known as Zika fever often causes no or only mild symptoms which include fever, rash, joint pain, and conjunctivitis, which may last up to a week [1].

The Pan American Health Organization (PAHO) confirmed the first Zika virus infection in Brazil on May 2015. And then it was declared as “Public Health Emergency of International Concern” (PHEIC) by the World Health Organization (WHO) on Feb 1, 2016 [2].

There is an urgent need of a safe and effective vaccine for pregnant women and women of childbearing age in order to prioritize the epidemics in the near future [3].

Indian company Bharat Biotech is presently conducting research on two Zika vaccines namely recombinant and inactivated vaccines. In addition, the current venture by the National Institute of Allergy and Infectious Diseases (NIAID) US on an innovative vaccine going to have its efficacy trails, most likely in 2017 [4, 5]. NIAID, the U.S. Centers for Disease Control and Prevention (CDC), and Brazilian researchers are planning to collaborate on a study that has

future plans to follow thousands of pregnant women in Zika-infected countries [5].

Recently, the CDC granted a clinical trial for approval of experimental Zika vaccine, which will be tested on a small sample of human participants. The vaccine named as GLS-5700 is a collaborative effort between Inovio Pharmaceuticals of Pennsylvania and Gene One Life Science of South Korea. This vaccine trial has two phases, Phase I will target 40 healthy individuals to evaluate safety, tolerability, and efficacy of the vaccine [6], followed by phase II clinical trials, if the first one succeeds. The duration of vaccine development could take some time to formulate. So, until the vaccine is developed, prevention is the only key to control the spread of the disease.

Over and above, researchers at the University of California, San Diego for the first time explored the pathogenesis of microcephaly in Zika infected fetuses. Using 3D stem cell based model of a first trimester brain, it was found that Zika activates TLR3, a toll like receptor on human cells which normally use this molecule to defend against invading viruses. Consequently, activated TLR3 turns off those genes that are essential for the stem cells to get converted to specialized

brain cells and at the same time this activated TLR3 turns on genes that trigger cell apoptosis [7].

WHO has revised the Strategic Response Plan of Zika virus infection on 17th June 2016 by expanding health systems' capacities to prevent and manage the medical complications especially targeting pregnant women, and their partners, households and communities to ensure that they have the information to protect themselves [8]. The plan highlighted specifically on the potential of international spread of Zika virus, lack of immunity among the population residing in Zika prevalent areas with inadequate of vaccine coverage, paucity of specific treatments, lack of rapid diagnostic tools and public awareness [8].

With the Zika virus spreading rapidly in the Americas, there is a danger of its propagation to Nepal, via transmigration of population between the two places, particularly in the post-monsoon season, when there is an active breeding of the mosquito species. However, till now there is no case of Zika reported from Nepal. At the same time, the possibility of circulation of the virus in the sylvatic environment cannot be ruled out. Of concern is the fact that there were recent reports of sporadic cases of seropositivity against Zika virus in India [9]. Therefore, it is imperative for our public health authorities to facilitate research for assessing any evidence of Zika in Nepal.

In context to Nepal, WHO provided, 'Polymerase Chain Reaction kit' (PCRA kit) to undertake a laboratory test for any evidence of this disease, bearing in mind the risks of outbreak in Nepal. Nepal is the transit for many countries; timely precautions are needed to be taken to prevent the possible risks of Zika virus infection among individuals and pregnant women.

It may take years to find a safe, cost effective and protective vaccine in resource poor countries like Nepal. Preventive measures are what we can take at the moment to avoid potential risk to the population. The government has issued a travel warning for Zika affected regions. Thus, the government in co-ordination with WHO, should lead the awareness campaign against Zika using social media, educational institution and advocacy groups.

The government needs to adopt all the steps to prevent the Zika virus from spreading in the country.

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