

Editorial

Dengue Fever- New Threats from Old Enemy

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Dengue is a mosquito-borne viral infection causing a severe flu-like illness, sometimes potentially lethal complications. It is classified as a neglected tropical disease^{1,2}. Approximately, half of the world's population is at risk and it affects infants, young children and adults. The incidence of dengue has increased 30-fold over the last 50 years. Up to 50-100 million infections are now estimated to occur annually in over 100 endemic countries including Bangladesh³.

The first recorded case of probable dengue fever was in a Chinese medical encyclopedia from the Jin Dynasty (265-420 AD) which referred to a "water poison" associated with flying insects. The primary vector, *A. aegypti* spread out of Africa in the 15th to 19th centuries due to the slave trade. The most plausible early reports of dengue epidemics are from 1779 and 1780, when an epidemic swept across Asia, Africa and North America. From that time until 1940, epidemics were infrequent. During and after the Second World War the marked spread of dengue has been attributed due to ecologic disruption⁴. The Aedes mosquito was confirmed as a vector in 1965. The dengue hemorrhagic fever, the severe form of the disease was first reported in the Philippines in 1953 and dengue hemorrhagic fever and dengue shock syndrome were first noted in Central and South America in 1981⁶.

Bangladesh has been experiencing episodes of dengue fever in every year since 2000. All four serotypes have been detected, with DENV-3 predominance until 2002⁷. After that, no DENV-3 or DENV-4 was reported from Bangladesh. The Institute of Epidemiology, Disease Control & Research (IEDCR) found DENV-1 and DENV-2 in circulation (2013-2016) and predicted that because serotypes DENV-3 and DENV-4 are circulating in neighboring countries, they may create epidemics of secondary dengue in the near future. In 2017, reemergence of DENV-3 was identified; subsequently there was a sharp rise in dengue cases from the beginning of the monsoon in 2018 although the situation was controlled. In 2019 during the early monsoon dengue outbreak with death in Dhaka started in an alarming way and till 20th October 2019 affected number are almost 90,000 and total death is 103 according to DGHS although both numbers are higher according to print and electronic media reports. The situation is highest compared to the last 16 years. Presenting features with cerebral encephalopathy, hepatic and renal failure in current epidemic is higher than past episodes counting more death. Moreover, typical presenting features like

fever with break bone pain and rash have been changed in maximal cases with atypical features like vomiting, abdominal pain and shock. In short, the Dengue syndrome has changed its natural history which demands to update the national guideline on dengue management developed by DGHS, Bangladesh.

The virus passes to humans through the bites of an infective female Aedes mosquito, which mainly acquires the virus while feeding on the blood of an infected person. The full life cycle of dengue fever virus involves the role of mosquitoes as a transmitter (or vector) and humans as the main victim and source of infection. Once humans are infected, humans become the main carriers and multipliers of the virus; serve as a source of the virus for uninfected mosquitoes. The virus circulates in the blood of an infected person for 2 to 7 days, at approximately the same time the person develops a fever. The infected person can transmit the infection via Aedes mosquitoes after the first symptoms appear which normally occur within 4 to 5 days to maximum 12 days.

The government of Bangladesh took the major initiatives to combat the situation like opening "One-stop Dengue Helpdesk" at all hospitals, monitoring cell opened in the ministry, extending dengue service/beds in all hospitals, preparing 3 government hospitals in Dhaka for emergency dengue response, distribution of more than 42,000 dengue kit to all districts hospitals, fixing the fees of basic dengue tests for private sector, workshop on national treatment guideline, discussion on feasibility/prospect of dengue vaccine in Bangladesh, standing against misleading viral posts in social media and involving general population including medical college students in awareness campaign.

Despite all these measures with having 18 years' experience of dengue infection management, the death toll in Bangladesh is high in comparison to neighbor dengue endemic countries like Philippines: 130,463 cases, 561 deaths as of 13 July, 2019; Malaysia: 75,913 cases, 111 deaths as of 27 July, 2019; Vietnam: 115,186 cases, 12 deaths as of 21 July, 2019; Thailand: 44,671 cases, 62 deaths as of 16 July, 2019; Singapore: 8,020 cases without death as of 21 July, 2019 and in Sri Lanka: 234,078 cases, 47 deaths as of 05 Aug, 2019⁸.

So, attention is required for strengthening the early detection of dengue infection at all healthcare facilities and updating management guidelines, followed by training healthcare professionals. In addition, public health management like a vector control program, community awareness regarding prevention and early

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notification of febrile illness and establishment of an early warning system through surveillance platforms are of the utmost importance. To control the vector in addition to conventional insecticide spray, Wolbachia can be used which is a natural bacterium, present in almost 60% of insect species. Wolbachia helps the insects to breed but exception in *Aedes aegypti*. The eggs of Wolbachia infected mosquitoes can't hatch out reducing the mosquito number. Malaysia and Australia are successfully using this biotechnic replacing insecticide use. Technical committee meeting for Wolbachia project was held on 24 July, 2019 to discuss the prospect and feasibility of adopting this innovative tool in Bangladesh.

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