

Dengue Fever in Bangladesh : Present Scenario

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Introduction

In Bangladesh, the booming situation of dengue fever has been surfacing as a staid public health problem in terms of morbidity and mortality¹. Among the arboviral infection in the world, dengue causes more severe illness and death². Four antigenically distinct but related dengue virus serotypes transmitted by *Aedes aegypti* mosquito are responsible for Dengue Fever (DF) and Dengue Haemorrhagic Fever (DHF). DHF is the severe form of the disease which is endemic and frequently amplified into epidemics in South-East Asia resulting in frequent hospitalization and death^{3,4}. In the recent past, dengue has come up as an earthshaking global health problem with increased incidence in new countries and tropical areas^{3,5}. From mid 1960s to the mid 1990s, DF was identified in Bangladesh but there was no previous outbreak of DF in this country^{6,7}. Only sporadic cases of DF were reported from 1990s to 1999s. Another outbreak had reported in late June 2000, when DHF was confirmed by Enzyme-Linked Immunosorbant Assay (ELISA) for anti-dengue antibodies in a 28-year old patient got admitted into a hospital in Dhaka, Bangladesh with haemorrhagic fever, ascites, pleural effusion and thrombocytopenia. During this outbreak, more than 5,551 cases of DF and DHF with 93 deaths were reported in Dhaka and other major cities of Bangladesh^{3,8}. In 2001, half the number of cases and deaths were reported and this was followed in 2002 by a larger epidemic (6132 cases) with 1.0% case fatality⁹. More than 28000 cases and 242 deaths have been

reported to the Directorate General of Health Services from January 2000 to December 2014^{2,10}. The dengue situation from 2014 to December 2018 is depicted graphically in figure 1⁹.

Situation in 2019

Bangladesh is fighting with its worst dengue fever outbreak on record in 2019. The dengue fever is endemic in the South Asian country where heavy rains during the monsoon season have created the appropriate breeding ground for the mosquito-borne virus¹¹. However, this year's outbreak is unprecedented, with hospitals registering hundreds of new patients every day, according to a daily updated released by the Directorate of General Health Services (DGHS). According to Dhaka Tribune, nearly 59,823 people have been infected with the dengue virus so far this year (Updated 7th September 2019) in the country of 170 million of whom 305 died. The number of patients hospitalized in nearly seven months of this year is close to surpassing the highest tally in 20 years¹².

Receptivity of Bangladesh to Dengue

Bangladesh is one of the world's most densely populated countries. Currently population density is 964 people per square kilometer and there are more than three million births per year^{13,14}. Poor city management with an absence of proper waste disposal, sanitation, drainage systems and water supply together with the use of unprotected water reservoirs creates suitable habitats for *Aedes aegypti* and *Aedes albopictus*. Ample mosquito breeding sites, in combination with unrestricted mosquito-human contact due to the absence of window and door screens enhance transmission. The urban poor, about 35.2% of the total population of the six major cities (Dhaka, Khulna, Rajshahi, Barisal and Sylhet) live in slum areas which are overcrowded settlements without access to piped water and people store water in temporary containers like drums and earthen jars in which *Aedes aegypti* lays eggs¹⁵. It is clear that socio-demographic profile of Bangladesh facilitates dengue transmission.

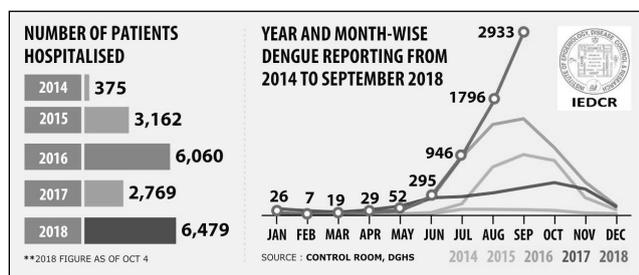


Figure 1 : Incidence of DF from January 2014 to December 2018.

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Future Challenges

Increases in annual temperature of 1.4⁰C and annual mean precipitation 5.6% above baseline average are projected by 2050¹⁶. Ensuing increases in severe drought frequency in pre-monsoon due to increased winter (December - February) temperature and high monsoon rainfall may increase the abundance of *Aedes aegypti* and *Aedes albopictus*. Dengue transmission could increase in the future as a consequence of more frequent and prolonged drought in the pre-monsoon period followed by flooding during the monsoon. It has been projected that an increase of 3.3⁰C in temperature would result in a 40-fold increase in Dengue incidence in Dhaka in 2100 compared to 2010 if no adaptation measures are undertaken and socio-economic conditions remain unchanged.

Conclusion

Passive health surveillance and current control activities are really inadequate and insufficient to address the future risk and therefore strengthening this surveillance as well as control programs are crucial to a national dengue strategy for Bangladesh.

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