



## Dengue and Dengue Haemorrhagic Fever Outbreak in Thailand: A Tropical Infectious Disease Leads to a Critical Potential Healthcare Threat in a Developing Country

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### ABSTRACT

Dengue virus (DENV), a positive-sense single-stranded RNA virus belonging to the family of Flaviviridae, is transmitted to humans mainly by female mosquito bites. Its clinical features range from asymptomatic presentation to severe haemorrhagic fever. DENV has bedevilled several developing countries worldwide, including Thailand. An increasing outbreak in Thailand by DENV indicates circulating among mosquitoes and humans again. Concerned authorities should act to support and development healthcare systems, including research funding, leading to infection control and prevention efficiency.

**Key Words:** Dengue fever; Dengue haemorrhagic fever; Virus; Healthcare; Infection

### INTRODUCTION

Mosquitoes are important reservoir hosts for multiple pathogenic viruses, similarly to bats and rodents [1,2]. They have been associated with the Chikungunya virus, Zika virus, West Nile virus, and Dengue virus [3-6]. First isolated from blood specimens in 1943 in Japan, the Dengue virus (DENV) is a mosquito-borne pathogen, a positive-sense single-stranded RNA virus of the family Flaviviridae [7,8]. DENV is a significant tropical infectious disease and has become a public health issue. DENV is transmitted to humans through the bites of infected female mosquitoes, primarily the *Aedes aegypti* mosquito and forest mosquito *Aedes albopictus* [9]. However, there is evidence of infections through organ transplants and blood transfusions [10,11].

### DESCRIPTION

DENV have a vast spectrum of clinical manifestations, ranging from asymptomatic to flu-like, known as Dengue Fever (DF) and severe form of Dengue disease (SDD), including Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS)

[12-14]. The general clinical manifestations represented severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, diarrhoea, swollen glands, and rash. The severe form of Dengue can lead to threatening complications, including plasma leaking, fluid accumulation, respiratory dysfunction, severe haemorrhage, or organ failure, and it is a potentially fatal complication [15-18]. Diagnosis of viral infections is dependent on immune-chromatographic tests, Hemagglutination Inhibition Assay (HIA), Enzyme-Linked Immunosorbent Assay (ELISA), and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) can deliver the diagnostic results of clinical specimens [19-22]. Currently, there are no specific-antiviral drugs or vaccine for the virus and therapy is mainly supportive treatment.

The DENV has been outbreak worldwide, including in the USA, Gabon, India, Malaysia, China, Italy, and Thailand [23-28]. Thailand has been under its pounce in Southeast Asia; a review reported by Yodjan indicated that from 2007 to 2021, the Dengue virus was responsible for more than 1,000,000 confirmed cases and approximately 1,067 deaths in the country, and the incidence rate of Dengue and Dengue Haemorrhagic Fever var-

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ies between 62.33 to 241.03 per 100,000 inhabitants. In 2021, 9,235 cases were confirmed, and it is noted that the number of patients significantly decreased compared to the preceding year [9]. However, currently 9 September 2022, reports of the DENV outbreak are circulating among mosquitoes and humans again. The number of patients is significantly increasing; more than 19,000 cases have been confirmed, with 14 deaths [29]. These situations reflect that disease surveillance systems and control of vector-borne disease ecology are not efficient. All precautionary actions must be employed to guarantee that the country does not undergo another healthcare threat. Government must allot more funds to the healthcare systems and research. In addition, a highly proficient development assay should be familiarized to distinguish between different flavivirus. As the significant transmission origin of DENV remains in mosquitoes, a particular focus must be applied to introducing high sanitation facilities across the country and ensuring the control of the mosquito populations is efficient due to Thailand is at medically significant risk of contracting multiple arboviruses, such as Dengue, Chikungunya and Zika virus.

## CONCLUSION

Public awareness campaigns engage and educate local communities, enlightening the masses on personal hygiene and mosquito repellants. A public health database for correctly reporting any infection case must be well-developed. Moreover, research programs should be developed to control vector-borne transmissions, disease ecology, and drug development. As a country still recovering from the COVID-19 pandemic, a potential threat of DENV can lead to a disastrous knock, further depriving Thailand of healthcare systems. Therefore, the concerned authorities must take immediate action, or DENV can be the next public health threat to the country.

## AUTHOR CONTRIBUTIONS

### Naluepanat Yodjan

Conceptualization, data curation, formal analysis, investigation, methodology, validation, visualization, writing-original draft, and writing-review and editing.

## CONFLICTS OF INTEREST

The author declares that there is no conflict of interests.

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