

ISSN 0250-8362

2020



Dengue Bulletin

Volume 41, December 2020

From the Editor's Desk

Dengue has emerged as the most widespread and rapidly increasing vector-borne disease in the world. Of the 2.5 billion people around the world living in dengue endemic countries and at risk of contracting dengue fever, 1.3 billion live in dengue endemic areas in 10 countries of the WHO South-East Asia (SEA) Region. All Member States in the Region, except the Democratic People's Republic of Korea, being endemic to dengue, the Region contributes to more than half of the global burden of the disease. Five countries (India, Indonesia, Myanmar, Sri Lanka and Thailand) are among the 30 most highly endemic countries in the world. In spite of control efforts, there has been a significant increase in the number of dengue cases over the years, though improvement has been seen in both case management and reduction of case-fatality rate (CFR) to below 0.5%.

Compared with 2015, dengue cases in the SEA Region increased by 46% by 2019, i.e. from 451 442 cases in 2015 to 658 301 cases in 2019, and deaths decreased by 2%, i.e. from 1584 in 2015 to 1555 in 2019, representing a decline in the case-fatality rate (CFR) from 0.35% to 0.24%. A variety of factors are responsible in the SEA Region for the expansion and distribution of the dengue mosquito vector and viruses, namely high rates of population growth, inadequate water, sewer and waste management systems, rise in global commerce and tourism, global warming, changes in public health policy, and the development of hyper-endemicity in urban areas, among others. The current situation of the high burden of dengue cases in the SEA Region is aggravated by the absence of effective treatment and lack of comprehensive vector control.

All these resulted in researchers engaging in studies on the clinical features, management, vector biology and control of dengue. In line with this priority, the *Dengue Bulletin* is published by the WHO Regional Office for South-East Asia every year, encouraging researchers to explore different aspects of the disease and contribute to the knowledge gap and evidence base for combating its rapid spread. This 41st Volume of *Dengue Bulletin* is in your hands. It consists of papers on the dengue burden, wolbachia, vaccines, diagnostic or therapeutic applications, early warning systems, entomological surveillance and environment management, insecticide resistance, and also the impact of the COVID-19 pandemic on dengue prevention and control efforts.

We also invite contributions for Volume 42 of *Dengue Bulletin*. The deadline for the receipt of the manuscripts is 31 May 2021. Contributors are requested to adhere to the instructions given at the end of this *Bulletin* during the preparation of their manuscripts. Contributions should either be accompanied by flash drives and sent to the Editor, *Dengue Bulletin*, WHO Regional Office for South-East Asia, Parsvnath Red Fort Capital Tower 1, Bhai Veer Singh Marg, New Delhi 110001, India, or by email as a file attachment to the Editor at se_denguebulletin@searo.who.int. Readers who want copies of the *Dengue Bulletin* may write to the same address or the WHO Country Representative in their country of residence. The pdf version will be available on the WHO Regional Office website.

Dr Ahmed Jamsheed Mohamed
Regional Adviser for Neglected Tropical Diseases Control, and
Editor, *Dengue Bulletin*
World Health Organization
Regional Office for South-East Asia
New Delhi, India

Dengue Bulletin

Volume 41, December 2020



REGIONAL OFFICE FOR

South-East Asia

Dengue Bulletin, Volume 41, December 2020.

ISSN 0250-8362

© World Health Organization 2021

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization..

Suggested citation. Dengue Bulletin, Volume 41, December 2020. New Delhi: World Health Organization, Regional Office for South-East Asia; 2021. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

**Indexation: Dengue Bulletin is being indexed by BIOSIS and
Elsevier's Bibliographic Databases including, EMBASE, Compendex,
Geobase and Scopus**

Contents

Acknowledgements.....	iii
1. <i>Wolbachia</i> -induced unidirectional cytoplasmic incompatibility in <i>Aedes albopictus</i>	1
<i>Ipsita Mohanty, Rupenangshu Kumar Hazra</i>	
2. Dengue vaccine acceptance among international students in a USA university	14
<i>Jeffrey L. Lennon, Oswald M. Attin</i>	
3. Burden of dengue in northern India.....	22
<i>A. Biswas, P. Sohal, P. Singla, P. Coshic, A.C. Dhariwal, N. Dhingra, K. Baruah</i>	
4. Are aptamers really promising for diagnostic or therapeutic applications in dengue?	31
<i>Kapil Vashisht, Cherish Prashar, Shivangi Tyagi, Gunjan Rawat, Pratiksha Kumari, Kailash C. Pandey</i>	
5. An integrated approach for control of <i>Aedes</i> breeding in the dump yard of articles confiscated by the Enforcement Department of South Zone of South Delhi Municipal Corporation: a case study	39
<i>Naveen Rai Tuli, Nidhi Srivastava, P.R.S. Koranga, R. Kaur Bakshi, Himmat Singh</i>	
6. Climate and dengue in the Pune region: prospects for an early warning system.....	49
<i>Pratip Shil, Mahendra Jagtap, Charles Reuben Hugo deSouza, Annakathil B. Sudeep, Pradip Awate</i>	
7. Entomological surveillance and management of environment for prevention and control of dengue: an assessment	77
<i>Amarpal Singh Bhadauriya, Pankaj U. Ramteke</i>	
8. Surveillance of breeding sites of dengue vector following the floods in an urban area of Patna, Bihar, India	85
<i>D.S. Dinesh, H. Singh, R.K. Topno, V. Kumar, S. Kesari, S.P. Singh, A.K. Gupta, K. Pradhan, A. Deb, Major Madhukar, V.N.R. Das, R.K. Mondal, M. Kumar, A. Ranjan, P. Das, K. Pandey</i>	



9. Surveillance of *Aedes aegypti* (L.) at different airport/seaports in India 96
R.S. Sharma, Sanjeev Kumar Gupta, Kumar Vikram

10. Dengue in Chennai: a retrospective study 104
Radhakrishnan J, Selvakumar S, Dhanraj B, Sanjeevi Prasad S, Samuel Tennyson

11. Community acceptance of temephos (1% sand granules formulation) and its susceptibility to *Aedes* spp. larvae in Myanmar, 2017 115
Nay Yi Yi Linn, Badri Thapa, Aye AyeMyint, San SanWin, Thaung Hlaing, Thiha, Aung Thi, Nwe Ni Lin, Aye Mon Mon Kyaw, Myat Min Tun, San Kyawt Khine, Sithu Ye Naung, Thiha Myint Soe, Wint Phyto Than, Zaw Lin

12. Preliminary study on underlying biochemical mechanism of insecticide resistance of *Aedes albopictus* in Thiruvarur district, Tamil Nadu, India 129
Arpita Shukla, Rajalakshmi A, Vaishali Verma, Raghavendra K., Alex Eapen, Srivastava P.K., Jayalakshmi Krishnan

13. Dengue and Chikungunya Outbreak Containment: A Success Story of Ranchi in Jharkhand, India 140
Sagya Singh, Kalpana Baruah, Pradeep Kumar Srivastava

14. Epidemiological stratification of dengue in India and strategic challenges 149
Kalpana Baruah, Amit Katewa, Gavendra Singh, Neeraj Dhingra

15. Impact of COVID-19 pandemic on prevention and control of dengue in Delhi, India 166
Naveen Rai Tuli, Kanika Singh, Prithvi Singh, B. Bisht, Himmat Singh

16. Epidemiological and entomological investigation of an outbreak of dengue fever in Durg district of Chhattisgarh, India 183
Amarpal Singh Bhadauriya, Sandip S. Jogdand, Pankaj U. Ramteke, Ram Singh

Acknowledgements

The Editor, *Dengue Bulletin*, World Health Organization Regional Office for South-East Asia, gratefully acknowledges the following for their contribution in the peer review of the manuscripts submitted for publication:

1. Dr Kalpana Baruah
Addl. Director-cum-Head of Office
National Vector Borne Disease Control
Programme
Sham Nath Marg
Delhi 110054, India
2. Dr Rajendra Bhatt
Scientist 'F' (Retired)
ICMR National Institute of Malaria Research
New Delhi, India
3. Dr S.K. Chand
Research Scientist
National Institute of Malaria
Jabalpur, India
4. Professor A.P. Dash
Vice-Chancellor
Central University of Tamil Nadu
Thiruvarur, India
5. Mr Sanjeev Kumar Gupta
Technical Officer - C
ICMR National Institute of Malaria Research
Dwarka, New Delhi, India
6. Dr R.K. Hazra
Scientist 'E'
Regional Medical Research Centre
Bhubaneswar, Odisha
7. Dr P.L. Joshi
Former Director
National Vector Borne Disease Control
Programme
Sham Nath Marg
Delhi 110054, India
8. Dr Vikram Kumar
Technical Officer 'B'
ICMR National Institute of Malaria Research
Dwarka, New Delhi, India
9. Dr Roop Kumari
National Professional Officer (Malaria & VBD)
World Health Organization Country Office for
India
New Delhi, India
10. Dr Zow Lin
Technial Officer (NTD)
Neglected Tropical Disease Control
Department of Communicable Diseases
WHO South-East Asia Regional Office
New Delhi 110001
11. Dr Lily Saroj Nathan
Head, Department of Zoology
Ewing Christian College
University of Allahabad
Allahabad, India
12. Dr R.S. Sharma
Additional Director (Retired)
National Centre for Disease Control
New Delhi, India
13. Dr Himmat Singh
Scientist 'D'
ICMR National Institute of Malaria Research
Dwarka, New Delhi, India
14. Dr Akhouri Trainandan Shekhar Sinha
Ex Entomologist, Jharkhand &
Ex State Training Consultant (NRHM)
Noida, G.B. Nagar District, India
15. Dr P.K. Srivastava
Retd. Additional Director
National Vector Borne Disease Control
Programme
Delhi, India
16. Dr N.R. Tuli
DHO, South Delhi Municipal Corporation
Delhi, India

The quality and scientific standing of the *Dengue Bulletin* is largely ensured due to the conscious efforts of the experts and also the positive response of contributors to comments and suggestions.

The manuscripts were reviewed by Dr B.N. Nagpal and Dr Mohammad A. Jamsheed with respect to format, content, conclusions drawn, including review of tabular and illustrative materials for clear, concise and focused presentation, and the bibliographical references.



预览已结束，完整报告链

<https://www.yunbaogao.cn/report/index>