

# THE SOUTHEAST ASIAN JOURNAL OF TROPICAL MEDICINE AND PUBLIC HEALTH



Vol 38 No. 6

November 2007



OFFICIAL PUBLICATION OF THE SEAMEO  
REGIONAL TROPICAL MEDICINE AND  
PUBLIC HEALTH NETWORK (TROPMED)



***The SEAMEO\* Regional Tropical Medicine and Public Health Project was established in 1967 to help improve the health and standard of living of the peoples of Southeast Asia by pooling manpower resources of the participating SEAMEO member countries in a cooperative endeavor to develop and upgrade the research and training capabilities of the existing facilities in these countries. By promoting effective regional cooperation among the participating national centers, it is hoped to minimize waste in duplication of programs and activities. In 1992 the Project was renamed the SEAMEO Regional Tropical Medicine and Public Health Network.***

***\*SEAMEO=Southeast Asian Ministers of Education Organization***

***With partial financial support from the Commission of Higher Education, Ministry of Education, Thailand, from Vol 38 No.3 (2007)-Vol 39 No.2 (2008).***

# THE SOUTHEAST ASIAN JOURNAL OF TROPICAL MEDICINE AND PUBLIC HEALTH

## Editorial Panel

Honorary Editor Chamlong Harinasuta (Thailand)

Editors Vicente Y Belizario (Philippines)  
Widjaya Lukito (Indonesia)

Executive Editor Suvanee Supavej (Thailand)

Consulting Editors Chev Kidson (Australia), Peter D Echeverria (Thailand)

Editorial Office Vimolpatana Indradat (Administrator)  
The Southeast Asian Journal of Tropical Medicine and Public Health  
SEAMEO TROPMED Network  
420/6 Ratchawithi Road  
Bangkok 10400, Thailand  
Tel: +66 (0) 2354 9145, 2354 9146, 2644 4331, 2644 5135, 2354 9197  
Fax: +66 (0) 2354 4337, 2354 9144, 2354 9197  
E-mail: [tmseameo@diamond.mahidol.ac.th](mailto:tmseameo@diamond.mahidol.ac.th)  
Website: <http://www.tm.mahidol.ac.th/seameo/publication.htm>

## Editorial Board

Alejandro Herrin (Philippines), Chansuda Wongsrichanalai (Cambodia), David Evans (Switzerland), Dwip Kitayaporn (Thailand), Eduardo Gotuzzo (Peru), J Kevin Baird (Indonesia), Jong Yil Chai (Korea), May Ho (Canada), Mediadora Sanie (Philippines), Michael Good (Australia), Myint-Lwin (Myanmar), Nicholas J White (UK), Nick Walters (USA), Pirom Kamolratanakul (Thailand), Pornthep Chanthavanich (Thailand), Prapon Wilairat (Thailand), Srisin Khusmith (Thailand), Stephen L Hoffman (USA), Stephen W King (Thailand), Virasakdi Chongsuvivatwong (Thailand), Yong Poovorawan (Thailand)

## Advisory Board

Caridad A Ancheta (Philippines), CP Ramachandran (Malaysia), Dang Duc Trach (Vietnam), David Molyneux (UK), David Warrell (UK), HM Gilles (UK), Jane Baltazar (Philippines), John H Cross (USA), Lye Munn Sann (Malaysia), Louis H Miller (USA), M Jegathesan (Malaysia), Santasiri Sornmani (Thailand), Soemilah Sastroamidjojo (Indonesia), Somei Kojima (Japan), Tan Chongsuphajaisiddhi (Thailand), Tsutomu Takeuchi (Japan), Walther H Wernsdorfer (Austria), Tang Lin Hua (China)

# SEAMEO REGIONAL TROPICAL MEDICINE AND PUBLIC HEALTH NETWORK

## TROPMED GOVERNING BOARD MEMBERS

INDONESIA  
MALAYSIA  
PHILIPPINES  
THAILAND

Dr USMAN CHATIB WARSA  
DATUK Dr HJ HOHD ISMAIL MERICAN  
Dr JAIME Z GALVEZ-TAN  
Dr THAWAT SUNTRAJARN

## CONSULTANTS

Dr CHAMLONG HARINASUTA (Thailand)  
Dr JOHN H CROSS (USA)  
Dr FRANK P SCHELP (Germany)

## TROPMED CENTRAL OFFICE

Dr PRATAP SINGHASIVANON  
Dr MA SANDRA B TEMPONGKO  
Miss VIMOLSRI PANICHYANON  
Mrs VIMOLPATANA INDRADAT

*Secretary General / Coordinator*  
*Deputy Coordinator*  
*Assistant Coordinator for Programs*  
*Publications*

*The Southeast Asian Journal of Tropical Medicine and Public Health* is published by the SEAMEO Regional Tropical Medicine and Public Health Network (SEAMEO TROPMED Network).

One annual volume comprises of six bi-monthly issues (January, March, May, July, September, and November).

Annual subscription for 6 issues is US\$180.00 (including postage). Single copies US\$35.00 (post free).

Subscriptions payment in US dollars must be made by the International Money Order, money transfer or credit card and sent to SEAMEO TROPMED Network, 420/6 Ratchawithi Road, Bangkok 10400, Thailand.

No part of this Journal may be reproduced in any form by photostat, microfilm or any other means.  
ISSN: 0125-1562