4TH ASIA DENGUE SUMMIT

Saturday **13th Jul 2019** Pre-Summit Workshops
Sunday **14th Jul** – Monday **15th Jul 2019** Summit

JAKARTA INDONESIA

PROGRAMME BOOK

Co-convenors:

ADVA Asian Dengue Vaccination Advocacy

Fondation Mérieux

gdac Global Dengue+Aedes-Transmitted Diseases Consortium

SEAMEO TROPMED Network

Universitas Indonesia Faculty of Medicine

IMERI FKUI Indonesian Medical Education and Research Institute Faculty of Medicine Universitas Indonesia

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PREVENTING DENGUE

Life is a health journey to be enjoyed and protected. Dengue is a mosquito-borne disease that affects about 390 million people a year[1].

As a health journey partner, Sanofi Pasteur has been relentlessly seeking to develop a vaccine against dengue for over 20 years. We succeeded in introducing the first dengue vaccine ever which has now been registered in several of the most endemic countries in the world.

SANOFI PASTEUR

Empowering Life

1. World Health Organization. Dengue and sever dengue. Fact sheet No 117. http://www.who. int/mediacentre/factsheets/fs117/en/ updated April 2017. Last accessed February 2018.

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WELCOME MESSAGE

Dear Colleagues,

On behalf of the Asia Dengue Summit Organising Committee, we are pleased to welcome you to the 4th Asia Dengue Summit held from 14th to 15th July 2019 in Jakarta, Indonesia.

Riding on the overwhelming success of the past three Asia Dengue Summits, the organising committee is geared for the 4th Asia Dengue Summit. The summit will provide a unique opportunity for everyone in the dengue community (clinicians, researchers, government public health leaders and policymakers) to come together to exchange ideas, updates and achievements on dengue management strategies for the region.

The 4th Asia Dengue Summit is co-convened by Asian Dengue Vaccination Advocacy (ADVA), Global Dengue and Aedes transmitted Diseases Consortium (GDAC), Southeast Asian Ministers of Education Tropical Medicine and Public Health Network (SEAMEO TROPMED) and the Fondation Mérieux (FMx). The Summit is supported by the Indonesian Medical Education and Research Institute and the Faculty of Medicine, University of Indonesia.

Along with dengue experts from academies and research institutions, representatives from the Ministries of Health, the regional and global World Health Organization (WHO), ADVA, SEAMEO TROPMED, GDAC, the International Vaccine Institute (IVI), the FMx and others are participating to provide a broad overview of the current status of dengue and its management across Asia.

Dengue is an endemic disease in the region, so Asian countries are locked in a never-ending fight against dengue infection. The disease has no specific treatment, hence being ever-vigilant with ready responses to dengue outbreaks are key to lowering fatality rates. At present, curative action coupled with vector control remain the backbone of dengue control strategies, although sustainability is weak. Dengue vaccination should hence be integrated into dengue control programs in Asia in the longer term. As an independent organization in Asia, it is hoped that ADVA will be well positioned to guide the introduction and use of dengue vaccines to the region.

Indonesia, the host country for the 4th Asian Dengue Summit, has also seen a sharp spike in dengue cases over the first half of 2019. As the country grapples with this dengue outbreak, it is a fitting time to showcase Indonesia's 50-year fight against dengue via a parallel symposium ("Dengue Outbreak Response"), pre-summit workshops for medical students ("A to Z about Dengue"), and a poster gallery exhibition.

To sum it all up, the 4th Asia Dengue Summit will serve as a platform for dengue experts from across the region (and worldwide) to discuss the issues that surround dengue disease management and propose strategies that can enhance dengue control. Such a wide representation of key stakeholders will help throw light on the burden of dengue, its management, new vector control strategies and successful vaccine introduction across the region.

The local organizing committee has worked relentlessly to make this summit a fruitful platform of learning and collaboration. We hope you will take home with you valuable insights on dengue and the many wonderful sights, sounds and experiences from this scenic country!

Warmest Regards,

Prof Sri Rezeki Hadinegoro

Organizing Chairperson
4th Asia Dengue Summit

Dr Maria Rose Capeding

Chairperson
Asian Dengue Vaccination Advocacy Group

ABOUT US

The Asian Dengue Vaccination Advocacy (ADVA) Group consists of a group of paediatricians and other healthcare workers who are passionate about vaccination. They advocate and educate about the dengue vaccine regardless of manufacturer.

The Global Dengue & Aedes-Transmitted Diseases Consortium (GDAC) is a consortium composed of the Partnership for Dengue Control (PDC), the International Vaccine Institute (IVI), the International Vaccine Access Center (IVAC) at the Johns Hopkins Bloomberg School of Public Health and the Sabin Vaccine Institute. The World Health Organization advises and collaborates with GDAC.

The Southeast Asian Ministers of Education Organization (SEAMEO) is a regional intergovernmental organization established in 1965 among governments of Southeast Asian countries to promote regional cooperation in education, science and culture in the region.

Fondation Mérieux's mission is to fight the infectious diseases that affect vulnerable populations in developing countries, especially mothers and children, by building local capacities. They work in over 20 countries worldwide, in regions prone to infectious outbreaks, and mount their own projects, working closely with local and international partners.

COMMITTEE

LOCAL ORGANISING COMMITTEE:

Sri Rezeki Hadinegoro (Chairperson)
Hindra Irawan Satari
Anggraini Alam
Ari Prayitno
Mulya Rahma Karyanti
Rita Yustisiana
Eggi Arguni
Erni Juwita
Tedjo Sasmono
Kiki MK Samsi
Ida Safitri
Hendri Wijaya
Ernie Setyawati
Indri Nethalia
Ririn Widiastuti
Valleri
Fitri Mahartami

ADVA INTERNATIONAL ADVISORS:

Lulu Bravo
Sally Gatchalian
Duane Gubler
Tikki Pangestu

ADVA STEERING COMMITTEE:

Maria Rosario Capeding (Chairperson)
Usa Thisyakorn
Daniel YT Goh
Sri Rezeki Hadinegoro
Zulkifli Ismail
Terapong Tantawichien
Sutee Yoksan

AGENDA

PRE-SUMMIT WORKSHOPS

Date: **Saturday 13th July 2019**
Venue: **IMERI FKUI** *(Indonesia Medical Education and Research Institute, Faculty of Medicine, University of Indonesia)*

TIME	PROGRAMME	SPEAKER
07:30 – 08:30	Registration	
08:30 – 09:00	Opening Pre-summit Workshop	Ari Fahrial *(Dean of FKUI)*
09:00 – 09:30	Flashback 'Kick-off 50 years Dengue in Indonesia'	Sri Rezeki Hadinegoro *(ADVA)*
09:30 – 10:00	Tribute to Prof. Sumarmo: Pioneer in Dengue Research • Commemoration Speech • Award Of Appreciation Presentation	Duane Gubler *(GDAC)* & Thomas Suroso *(CDC-MOH)* Health Minister of Republic of Indonesia *(tbc)*
10:00 – 10:20	Ethics and Patient Safety	Yuli
10:20 – 10:40	Opening of 'Posters Gallery'	Ari Fahrial *(Dean of FKUI)*
10:40 – 11:00	Coffee Break	

WORKSHOP A

TIME	PROGRAMME	SPEAKER
11:00 – 11:15	Pre-workshop Assessment for Students	
	Session 1: Dengue Serotype Moderator: Eggi Arguni	
11:15 – 11:30	Circulating Dengue Serotype in Indonesia	Tedjo Sasmono *(Indonesia)*
11:30 – 11:45	Dengue Serotype in Outbreak Period	Siswanto *(Indonesia)*
11:45 – 12:00	Dengue Serotype in Aedes Aegypti Related to Dengue Cases	Eggi Arguni *(Indonesia)*
12:00 – 12:15	Discussion	
	Session 2: Clinical Dengue Outbreak in Children Moderator: Mulya R. Karyanti	
12:15 – 12:30	Clinical Dengue Outbreak in Children	Mulya R. Karyanti *(Indonesia)*
12:30 – 12:45	Clinical Dengue Outbreak in Adults	Bachti Alisyahbana *(Indonesia)*
12:45 – 13:00	Dengue Outbreak 2019: Clinical and Serology Pattern	Edi Hartoyo *(Indonesia)*
13:00 – 13:15	Discussion	
13:15 – 14:00	Lunch	
	Session 3: Outbreak Responses Moderator: Ari Prayitno	
14:00 – 14:15	Hospital Preparedness in Dengue Outbreak	Ari Prayitno *(Indonesia)*
14:15 – 14:30	Dengue Outbreak Responses System: Lessons Learnt from Jakarta	Widyastuti *(Indonesia)*
14:30 – 15:00	Indonesian Dengue Community (Discussion Forum)	Kiki MK Samsi *(Indonesia)*
15:00 – 15:15	Post-workshop Assessment for Students	
15:15 – 15:30	Coffee Break	
15:30 – 15:45	Closing Remarks	

WORKSHOP B

TIME	PROGRAMME	SPEAKER
11:00 – 11:15	Pre-workshop Assessment for Students	
	Session 1 Moderator: Ida Safitri	
11:15 – 11:35	Dengue is Spreading Over the Globe	Duane Gubler *(USA)*
11:35 – 11:55	Circulated Dengue Virus: Genotype and Strain-Specific Differences in Disease Severities	Beti Ernawati Dewi *(Indonesia)*
11:55 – 12:15	Basic Immunology in Dengue Pathogenesis	Sutee Yoksan *(Thailand)*
12:15 – 12:35	Discussion	
12:35 – 13:30	**Lunch Break: Industry Symposium**	Sanofi
	Session 2 Moderator: Dr Narain H. Punjabi , Anggraini Alam	
13:30 – 13:50	Clinical Diagnosis & Management in Paediatric Cases	Maria Rosario Capeding *(Philippines)*
13:50 – 14:10	Clinical Diagnosis & Management in Adult Cases	Erni Juwita Nelwan *(Indonesia)*
14:10 – 14:30	Laboratory Diagnostics in Dengue	Ariyati *(Indonesia)*
14:30 – 14:50	Discussion	
	Session 3 Moderator: Lulu Bravo, Pratiwi Andayani	
14:50 – 15:10	Dengue Prevention Strategy	Anggraini Alam *(Indonesia)*
15:10 – 15:30	Do We Need Dengue Vaccines?	Sri Rezeki Hadinegoro *(Indonesia)*
15:30 – 16:00	Panel Discussion	
16:00 – 16:15	Post-workshop Assessment for Students	
16:15 – 16:30	Coffee Break	
16:30 – 16:50	Closing Remarks	

COMBINED SESSION

TIME	PROGRAMME	SPEAKER
15:45 – 17:30	Poster Viewing at Poster Gallery	
17:30 – 18:30	Live Music and Mini Operette	
18:30 – 20:30	Asia Dengue Summit Opening Ceremony & Reception	Welcome remark: Hindra Irawan Satari
18:30 – 19:00	Opening of Summit Registrations	
19:00 – 19:30	Opening: 1. ADVA Chairperson 2. Dean of FKUI	 Maria Rosario Capeding Ari Fahrial
19:30 – 20:30	Summit Opening Dinner	

AGENDA

MAIN SUMMIT

Date: **Sunday 14th – Monday 15th July 2019**
Venue: **Double Tree Hilton, Jakarta**

DAY 1 - SUNDAY 14th JULY 2019

TIME	PROGRAMME	SPEAKER
07:30 – 08:00	Registration	
08:00 – 08:30	**Welcome Address** Speakers: Sri Rezeki Hadinegoro *(Organising Chairperson)* Ari Fahrial *(FKUI)* Badriul Hegar *(IMERi)* Maria Rosario Capeding *(ADVA Chairperson)*	
	Plenary Lecture 1: Global Challenges of Dengue Infection Moderators: Maria Rosario Capeding, Hindra Irawan Satari	
08:30 – 09:00	P1.1: The Impact of Climate Change on Dengue Infection	Duane Gubler *(USA)*
09:00 – 09:30	P1.2: Dengue Vaccine Pipelines	Usa Thisyakorn *(Thailand)*
09:30	Opening of Exhibition	
09:30 – 09:45	Coffee Break	
10:00 – 11.00	Press Conference	
	Symposium 1: Basic Science of Dengue Moderators: Sutee Yoksan, Amin Soebandrio	
09:45 – 10:05	S1.1: Dengue Molecular Epidemiology in Indonesia	Tedjo Sasmono *(Indonesia)*
10:05 – 10:25	S1.2: Dengue Vector Control: What Works?	Olaf Horstick *(Germany)*
10:25 – 10:45	S1.3: Advances in Dengue Pathogenesis	Ooi Eng Eong *(Singapore)*
10:45 – 11:00	Q&A	
11:00 – 12:00	S1.4: Forum on Dengue Classification Moderator: Olaf Horstick	Sri Rezeki Hadinegoro *(Indonesia)* Lucy Lum *(Malaysia)* Hashita Tissera *(Sri Lanka)*
	Industry Lunch Symposium (Sanofi)	
12:00 – 12:05	Opening	Prof. Sri Rezeki Hadinegoro
12:05 – 12:30	From clinical trials to real world: the long-term data of CYD-TDV	Dr. Cesar Mascareñas
12:30 – 12:50	The way we vaccinate people now in Thailand	Prof. Terapong Tantawichien
12:50 – 13:00	Q & A	

TIME	PROGRAMME	SPEAKER
13:00 – 14:00	Lunch	
	Symposium 2: Dengue Surveillance Moderator: Kriengsak Limkittikul, MM Deah Hapsari	
14.00 – 14.20	S2.1: Active and Passive Epidemiological Surveillance for Dengue: How Does It Contribute to Predict and Detect Outbreaks?	Katie Anderson *(USA)*
14:20 – 14:40	S2.2: Dengue Emergency and Outbreak Response Preparedness	Leo Yee-Sin *(Singapore)*
14:40 – 15:00	S2.3: Global Strategy for Dengue Prevention and Control, 2012-2020	Vinod Bura *(Indonesia)*
15:00 – 15:15	Q&A	
15:15 – 15:30	Coffee Break	
	Symposium 3: Diagnostic Tool of Dengue and Its Implication Moderators: Usa Thisyakorn, Ida Safitri	
15:30 – 15:50	S3.1: Definitive Test of Dengue: The Need for Rapid and Accurate Check	Sutee Yoksan *(Thailand)*
15:50 – 16:10	S3.2: Potential Dengue Biomarkers as a Predictor of Severe Cases	Nattachai Srisawat (*Thailand)*
16:10 – 16:30	S3.3: Diagnostic Tools for Pre-vaccination Screening	Sherlock Chung-Chih Lai *(Singapore)*
16:30 – 16:45	Q&A	
	Symposium 4: Adult Dengue Moderator: Zulkifli Ismail, Ari Prayitno	
16:45 – 17:05	S4.1: Addressing the Issue of Asymptomatic Dengue: How Can We Bridge the Gap?	Anavaj Sakuntabhai *(Thailand)*
17:05 – 17:25	S4.2: Pitfalls in Diagnosis and Management of Adult Dengue	Terapong Tantawichien *(Thailand)*
17:25 – 17:45	S4.3: Clinical Management of Dengue Fever in Adults	Somia Iqtadar *(Pakistan)*
17:45 – 18:00	Q&A	
19:00 – 21:00	Summit Dinner (Hotel venue)	

AGENDA

DAY 2 - MONDAY 15th JULY 2019

TIME	PROGRAMME	SPEAKER
07:30 – 08:30	Registration	
08:00 – 08:15	Welcome Speech	Anung Sugihantono *(DG of CDC Ministry of Health)*
08:15 – 08:30	Poster and Exhibition Viewing (World Mosquito Programme)	
	Plenary Lecture 2: Moderators: Zulkifli Ismail, Mulya Rahma Karyanti	
08:30 – 09:00	P2.1: Fifty Years of Dengue Haemorrhagic Fever in Indonesia	Anung Sugihantono *(CDC DG of MOH, Indonesia)*
09:00 – 09:30	P2.2: Dengue Vaccine Benefit & Challenges in Endemic Countries	Tikki Pangestu *(Singapore)*
09:30 – 10:30	***Media Conference (by invitation)***	
	Symposium 5: Vaccination Updates Moderator: Tikki Pangestu, Zulkifli Ismail	
09:30 – 09:50	S5.1: Update from Parana, Brazil	Expedito Luna *(Brazil)*
09:50 – 10:10	S5.2: Update from the Philippines	Juliet Sio-Aguilar *(Philippines)*
10:10 – 10:30	S5.3: Safety Monitoring	Maria Rose Capeding *(Philippines)*
10:30 – 10:40	Q&A	
10:40 – 10:55	Coffee Break	
	Symposium 6: Pre-vaccination Screening Moderators: Charissa Borja-Tabora, Tedjo Sasmono	
10:55 – 11:15	S6.1: Systematic Review on Available RDT for Diagnosing Dengue Sero-Status	Butsaya Thaisomboonsuk *(Thailand)*
11:15 – 11:30	S6.2: Update Of Diagnostic Tests for Dengue	Philippe Bosco *(BluSense - Denmark)*
11:30 – 11:50	S6.3: Pre-screening Update from the Philippines	Anna Lena Lopez *(Philippines)*
11:50 – 12:00	Q&A	
12:00 – 13:00	Lunch	

TIME	PROGRAMME	SPEAKER
	Symposium 7: Clinical Aspects Moderators: Lulu Bravo, Kiki MK Samsi	
13:00 – 13:20	S7.1: Dengue in Pregnancy: Correlation with Maternal Morbidity and Mortality	Nguyen Minh Nguyet *(Vietnam)*
13:20 – 13:40	S7.2: Mother to Child Transmission During Pregnancy	Ismoedijanto *(Indonesia)*
13:40 – 14:00	S7.3: Haemophagocytic Lymphohistiocytosis (LHL) in Dengue	Shanthi Ratnam *(Malaysia)*
14:00 – 14:10	Q&A	
	Symposium 8: Dengue Vector Control Moderators: Sally Gatchalian, Yenny Djuardi	
14:10 – 14:30	S8.1: Wolbachia-infected Aedes Aegypti as a Promising Dengue Vector Control	Warsito Tantowidjoyo *(Indonesia)*
14:30 – 14:50	S8.2: Alternative/Complementary Vector Control Methods in Reducing Dengue Transmission	Indra Vythilingam *(Malaysia)*
14:50 – 15:10	S8.3: An Update of a Global Evidence Picture for Wolbachia Control of Dengue Transmission	Scott O'Neill *(Australia)*
15:10 – 15:20	Q&A	
15:20 – 15:35	Coffee Break	
	Symposium 9: Going Forward Moderators: Duane Gubler, Anggraini Alam	
15:35 – 15:50	S9.1: Dengue Vaccines: Recent Developments, Ongoing Challenges and Current Candidates	Cesar Mascareñas *(Sanofi-France)*
15:50 – 16:05		Goh Choo Beng *(Takeda-Singapore)*
16:05 – 16:25		Cathy Hoath *(MSD/Butantan/NIH-USA)*
16:25 – 16:45	S9.2: Increasing Public Confidence in Dengue Vaccine	Lulu Bravo *(Philippines)*
16:45 – 17:05	S9.3: ISNTD and World Dengue Day	Kamran Rafiq *(UK)*
17:05 – 17:25	S9.4: Can We Eliminate Dengue? A Dream Comes True	Sri Rezeki Hadinegoro *(Indonesia)*
17:25 – 17:35	Q&A	
17:35 – 17.45	Closing Remarks	

SPEAKERS' BIOGRAPHIES

DR. ANUNG SUGHIHANTONO, M.KES

Director General of Prevention And Disease Control
Ministry of Health,
Republic of Indonesia

Born in Temanggung, Dr Sughihantono previously served as Director General of Public Health. He also served as Director General of Nutrition and Maternal and Child Health and Head of the Central Java Provincial Health Office in 2011 as well as Head of the Central Java Provincial Investment Board in 2009. In February 2018, he graduated from the Faculty of Medicine at Diponegoro University and S2 at Gajah Mada University and was appointed by the Minister of Health as Director General of Disease Prevention and Control (P2P). He has received a civil service award, the Satyalancana Karya Satya 30 Years for 30 years of service, which is given for civil servants who demonstrate skills, discipline, loyalty and dedication so that they can be role models for every other employee.

PROF. SRI REZEKI HADINEGORO

Professor of Paediatric Infectious Disease;
Senior Lecturer at Division of Infectious and Tropical Diseases,
Department of Child Health,
Faculty of Medicine, University of Indonesia,
Indonesia

Professor Sri Rezeki Hadinegoro MD, PhD is a paediatrician who graduated from the Faculty of Medicine University of Indonesia, Jakarta. She has been working at the Department of Child Health in the same university since 1983. In 1986 she was certified as an Infection and Tropical Paediatric consultant. She obtained a Fellowship from the Japan Society on Promoting of Sciences (JSPS), in Kobe University and Iwate Medical University, Japan from 1993 to 1995. She graduated with her PhD in medicine from the Faculty of Medical University of Indonesia in 1996.

Prof. Hadinegoro is active in several organisations and conducts research in the field of infection and tropical paediatrics, especially in dengue and immunisation. Over the past fourteen years she has held a position in the Immunisation Committee, Indonesian Paediatric Society (IPS). Currently, she is chairman of the Indonesian Technical Advisory Group on Immunisation (ITAGI), Indonesian Ministry of Health (2007); and member of National Adverse Event Following Immunisation Committee, Indonesian Ministry of Health (past chairman 1999-2012). Regionally and internationally, Prof. Hadinegoro was appointed as a board member of Asian Society of Paediatric Infectious Disease (ASPID, past president in 2008-2010), member of the Asian Strategy Alliance of Pneumococcal Diseases Prevention (ASAP) since 2007, board member of World Society of Paediatric Infectious Disease (WSPID, 2009-2013), member of Asia Pacific Dengue Prevention Board (APDPB) since 2012, steering committee of Asian Dengue Vaccination Advocacy (ADVA) since 2012, and president elect of International Society of Tropical Paediatrics in 2015.

Prof. Hadinegoro has authored papers in scientific journals and several books. She has also been a recipient of medical awards for her strong support and participation in those activities.

PROF. DR. H. ARI FAHRIAL SYAM, SPPD-KGEH, MMB, FINASIM, FACP, FACG

Dean,
Faculty of Medicine Univeritas Indonesia (FKUI)
Indonesia

Prof. Dr. H. Ari Fahrial Syam, SpPD-KGEH, MMB, FINASIM, FACP was born in Jakarta June 19, 1966 and is a Professor at the Department of Internal Medicine FKUI-RSUPN Dr. Cipto Mangunkusumo. Prof. Ari is Dean of FKUI for 2017-2022.

Prof. Ari completed his general medical education in 1990 at FKUI. He continued his specialist education in the Department of Internal Medicine and became a consultant for Gastroenterology and Hepatology in 2005. He obtained his Master of Molecular Biology degree from the University of Queensland, Australia in 2001 before earning a doctorate in Biomedical Sciences FKUI in 2011. In 2018 Prof. Ari was appointed Professor of Internal Medicine FKUI with an inaugural speech entitled: The Future of Medical Research in the Age of Disruption and Precision Medicine: Research on Helicobacter pylori in Indonesia as a Model.

Prof. Ari also actively participated in training at home and abroad, including the Gastroinetestinal Motility Course at National University Hospital, Singapore in 2017. In addition, Prof. Ari is also a Visiting Physician at the Department of Gastroenterology, Jichi Hospital, Japan.

Besides being active as a teaching staff in the Department of Internal Medicine, FKUI-RSUPN, Prof. Ari is active in professional organizations, including being the Chair of the Indonesian Gastrointestinal Endoscopy Association (PB PEGI) from 2016 until now, and as chairman of the Jakarta Association of Internal Medicine Specialists (PAPDI JAYA) from 2012 to 2018. Prof. Ari is also a member of the Fellow of the American College of Physicians since 2011. Prof. Ari actively speaks at national and international scientific meetings including the 27th Annual Meeting of the Korean College of Helicobacter and Upper Gastrointestinal Research & the 16th Japan-Korea Joint Symposium on Helicobacter Research (Busan, Korea 2019), the 10th International Gastrointestinal Consensus Symposium (IGICS) (Nagoya Congress Cente, Japan, 2018), Emirates Gastroenterology & Hepatology Society (EGHS) - World Gastroenterology Organization (WGO) (Abu Dhabi, United Arab Emirates, 2016), Asian Pacific Digestive Week 2016 (APDW) (Kobe Convention Complex, Japan, 2016), and various other international seminars.

Prof. Ari is a constituent member and editor of the Research Consensus on Irritable Bowel Syndrome (IBS) in Indonesia, the National Consensus Irritable Bowel Syndrome (IBD) in Indonesia, and the National Consensus for the Management of Dyspepsia and Helicobacter pyori infection. Besides that, Prof. Ari is also the author of the Textbook on Internal Medicine and Textbooks on Gastroenterology. His research interests include H. pylori, functional gastrointestinal disease , and Gastroesophageal Reflux Disease (GERD).

SPEAKERS' BIOGRAPHIES

PROF. BADRIUL HEGAR, MD, PH.D, SP.A(K)

Pediatric Gastrohepatology Division Department of Child Health
University of Indonesia
Indonesia

Director
Indonesian Medical Education and Research Institute (IMERI)

Badriul Hegar has been a Staff Member in the Pediatric Gastrohepatology Division Department of Child Health University of Indonesia from 1995 until present. In 1995, he was a fellow in pediatric gastroenterology at the Academic Medical Center, University of Amsterdam, Netherland. In 1997, he received a fellowship in Pediatric Gastrointestinal Motility at Free University of Brussles, Belgium. In 2002, he was appointed as Consultant in Pediatric Gastroenterology by Indonesia Pediatric Society. He got his Ph.D in Free University of Brussles, Belgium in 2011 and Profesor in Pediatric from University of Indonesia in 2017. Since 2017 he has been appointed as Director of Indonesian Medical Education and Research Institute (IMERI).

Currently, he is participating in several profesional societies. He also became editor in Indonesian Journal of Gastroenterology, Hepatology, and Digestive Endoscopy and Paediatrica Indonesiana. He received several awards from Indonesia Medical Association, University of Indonesia, and Indonesian Pediatric Society for his contribution in research and organization development. He has more than 100 international and national scientific publications.

PROF. DUANE J. GUBLER, SC.D., M.S.

Emeritus Director
Signature Research Program in Emerging Infectious Diseases,
Graduate Medical School
Duke University-National University of Singapore

Adjunct Professor
Johns Hopkins Bloomberg School of Public Health
Duke University School of Medicine
Duke Global Health Institute

Director,
Asia-Pacific Institute of Tropical Medicine and Infectious Diseases

Prof. Duane J Gubler, ScD, FAAAS, FIDSA, FASTMH, is Emeritus Professor and founding director of the Signature Research Program in Emerging Infectious Diseases at the Duke-NUS Medical School, Singapore. He is Adjunct Professor in his alma mater, Johns Hopkins Bloomberg School of Public Health, the Duke University School of Medicine and Duke Global Health Institute. He has spent his entire career working on tropical infectious diseases with an emphasis on dengue and other Aedes-transmitted diseases. He has extensive field experience in Asia, the Pacific, tropical America and Africa, and has published extensively on all aspects of dengue and other vector-borne infectious diseases, with over 350 publications and 2 books to his credit. Prof. Gubler was founding Chief of the Dengue Branch, United States Centers for Disease Control and Prevention (CDC) in Puerto Rico for 9 years, Director of the Division of Vector-Borne Infectious Diseases, CDC in Fort Collins, Colorado for 15 years and Chair, Department of Tropical Medicine, Medical Microbiology and Pharmacology, University of Hawaii School of Medicine, in Honolulu for 5 years. He has and continues to serve on numerous WHO, national and international committees and study groups, and on the Scientific Advisory Boards of a number of companies and institutions. Prof. Gubler was founding Chair, Board of Councillors, Pediatric Dengue Vaccine Initiative in Seoul, Korea, founding Chair, Partnership for Dengue Control in Lyon, France, and the Global Dengue and Aedes-transmitted Diseases Consortium in Seoul, Korea, for which he currently serves as Chairman. Prof. Gubler is a Fellow, Infectious Disease Society of America, Fellow, American Association for the Advancement of Science, and Fellow and Past President of the American Society of Tropical Medicine and Hygiene.

DR. R. TEDJO SASMONO

Head & Senior Research Fellow
Dengue Research Unit
Eijkman Institute for Molecular Biology,
Ministry of Research, Technology, and Higher Education, Jakarta,
Indonesia.

Dr. R. Tedjo Sasmono is a Senior Research Fellow at the Eijkman Institute. He started his scientific career at the Institute back in 1994, and soon after graduated from Gadjah Mada University, Indonesia as a research assistant. He then pursued a postgraduate diploma study in molecular biology in 1997 at the University of Queensland, Australia. In 2000, he continued his education in molecular biology and obtained his Ph.D. degree from the Institute for Molecular Bioscience, University of Queensland in 2003. Afterward, he performed a short postdoctoral fellowship at the same institute and in 2004 he continued his postdoctoral training in the Department of Biochemistry and Molecular Biology at Monash University, Australia. He then moved back to Indonesia and set up the Dengue Research Unit at the Eijkman Institute. Dr. Sasmono received several scholarships/awards such as the Australian IPRS and UQ-IRPS scholarships (2000), the University of Queensland Indonesian Alumni Award (2011), Australia Awards Fellowship (2016), ASTMH Travel Award (2016), and World Intellectual Property Organization (WIPO)-Bioventures for Global Health (BVGH) Sabbatical Fellowship (2018). Currently, Dr. Sasmono is the group leader for Dengue Research Unit. His other activities include serving as a member of the National Ethics Commision for Health Research and Development, Indonesia and member of the Medical Research Ethics Committee of the National Institute for Health Research and Development (NIHRD), Ministry of Health of the Republic of Indonesia.

PROF. OLAF HORSTICK, FFPH (UK), Dr med (D), MSc, MPH, DTM&P, 3rdStEx (D)

Director,
Teaching Unit,
Institute of Public Health, University of Heidelberg,
Germany

Associate Professor Olaf Horstick is a consultant in public health medicine, as a Medical Doctor with a main interest in public health in low and middle income countries, with over 25 years of work experience in public health at local, national and international level as well as clinical medicine. He went through postgraduate academic training as a Fellow of the Faculty of Public Health, London, as a Doctor of Tropical Medicine at University of Heidelberg, Germany, as well as a MA in Public Health and Science in Public Health in Developing Countries. He is currently Director of the Teaching Unit at the Institute of Public Health at the University Hospital, Heidelberg, Germany.

SPEAKERS' BIOGRAPHIES

PROF. OOI ENG EONG, BMBS, PHD, FRCPATH

Professor and Deputy Director,
Programme in Emerging Infectious Diseases, Duke-NUS Medical School
Singapore

Prof. Ooi trained in medicine at the University of Nottingham and conducted his doctoral studies on molecular epidemiology at the National University of Singapore. He has been working in the field of dengue for 20 years and his research interest spans dengue epidemiology to molecular pathogenesis of arboviral diseases. His laboratory interfaces clinical studies with virology and immunology to address research questions. He has published in journals such as The Lancet, Science and Nature Medicine. He is a three-time recipient of the Clinician-Scientist (Senior Investigator) Award by the National Medical Research Council of Singapore.

PROF. DR. LUCY LUM CHAI SEE

Department of Paediatrics,
Faculty of Medicine, University of Malaya,
Malaysia

Professor Dr. Lucy Lum Chai See obtained her medical degree from the University Of Malaya in 1981, and became a member of the Royal College Of Physicians, United Kingdom in 1987. She joined the University of Malaya, Department of Paediatrics in 1990, and underwent clinical-fellowship training in paediatric intensive care in The Hospital for Sick Children, in 1996. She later became the first Malaysian to complete the Paediatric examination for the European Diploma in Intensive Care.

Her clinical expertise was sought after by WHO, and regional offices in the Western-Pacific Region where she has been to China, Laos, the Solomon Islands and Africa. She was invited by WHO/TDR to be the lead author of the handbook on clinical case management of dengue and by WPRO to design a training curriculum of dengue management. She collaborated with the various hospitals in Ministry of Health and WHO, Geneva, Oxford University, Brandeis University, and other universities in Singapore, SEAsia, Latin America and European Union. In the field of paediatric intensive care, she collaborates with colleagues in North America and around the world in pediatric sepsis, congenital diaphragmatic hernia and neonatal hypoxic ischemic encephalopathy.

DR. HASITHA TISSERA

Consultant Epidemiologist,
National Coordinator for Dengue Prevention and Control,
Ministry of Health,
Sri Lanka

Dr. Hasitha Tissera is a Medical Epidemiologist leading the National Dengue Control Programme of the Ministry of Health, Sri Lanka. He joined the Central Epidemiology Unit in 2002 after serving as a Regional Epidemiologist in the then war-torn Eastern Province of Sri Lanka. His responsibilities at the Epidemiology Unit encompass national surveillance of dengue, coordination of dengue case management based on National Guidelines and training of alllevels of clinical and public health staff. Heading the National Dengue Control Programme since 2013 he is involved in planning, implementation and evaluation of all dengue control activities at national and sub-national levels. Dr. Tissera is responsible for the technical evaluation of dengue vaccines registration in Sri Lanka. He is also the Principal Investigator of a number of International Research Projects on Dengue including vaccine studies and has authored a number of original publications in peer-reviewed journals. He serves as an expert on dengue prevention and control internationally. He received his Post-doctoral training in public health both at the Health Protection Agency – Centre for Infections (former Public Health Laboratory Services) and the Department of Health, London during 2006/08. Dr. Tissera has also been a researcher at the London School of Hygiene and Tropical Medicine, University of London.

PROF. KATIE ANDERSON, MD PHD CTROPMED

Department of Medicine
University of Minnesota
USA

Dr. Anderson is an Assistant Professor of Medicine at the Department of Medicine, University of Minnesota, an internist and an infectious disease epidemiologist. She has worked in the field studying dengue epidemiology for over a decade. She first began studying dengue virology at Colorado State University, then received her MSPH at Emory University where she worked with the CDC studying dengue in Vietnam. In 2003, Katie worked at the Walter Reed Army Institute of Research and began her work on arbovirus epidemiology in Thailand, which continues today. This work has resulted in multiple publications in the Lancet and other journals. She currently divides her time between Bangkok, Thailand and continuing clinical work at the University of Minnesota, where she also serves as a core global health faculty member and works as a hospitalist.

SPEAKERS' BIOGRAPHIES

PROF. LEO YEE SIN

Executive Director
National Centre for Infectious Diseases
Singapore

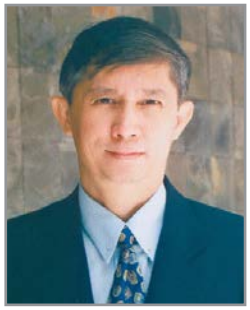
Prof. Leo Yee Sin, an adult Infectious Disease specialist, is the Executive Director of the National Centre for Infectious Diseases. Prof. Leo has led her team through multiple outbreaks in Singapore. These include the Nipah outbreak in 1999, SARS in 2003, pandemic influenza in 2009 and multiple surges of vector-borne diseases including the Zika outbreak in 2016. Most recently she has successfully managed Singapore's first imported case of the Monkeypox in May 2019. She has won many awards among which is the most prestigious Public Service Star in recognition for her outstanding battle against SARS. Other awards include the Excellence Star Award 2005, Red Ribbon Award 2014 and National Healthcare Group (NHG) Distinguished Senior Clinician Award 2016. Prof. Leo is extremely active in academic advancement. Her key research interests are emerging Infectious Diseases, Dengue, and HIV. Her recent focus on point-of-care testing (POCT) attest to her work in improving patient care and outbreak control. Having published more than 200 scientific papers, she is highly sought after as an advisor and conference speaker.

DR. VINOD BURA, MBBS, MPH

Medical Officer/ Epidemiologist
Communicable Diseases
World Health Organization
Indonesia

Dr. Vinod Bura is a medical doctor with specialization in Epidemiology. He completed his post-graduation at the London School of Hygiene and Tropical Medicine. A senior Epidemiologist working with WHO Indonesia, he provides technical assistance to the Ministry of Health, Indonesia in areas of immunization and surveillance, and works in collaboration with partners like UNICEF, GAVI, World Bank etc. He has over twenty-five years of progressive experience in public heath, mostly in challenging grassroots conditions i.e. Primary Health Centres and at international level with Government and UN agencies (WHO and UNICEF). These involved strategy policy, planning, coordination and implementation of public health programs, specifically Immunization and Infectious Disease Surveillance programs. His work has been internationally recognized for his contributions in vaccinology, and public health work, and he has received awards from WHO, UNICEF and the Government of Myanmar.

He is a facilitator at the prestigious "International Vaccinology Course" held at the International Vaccine Institute, Seoul, South Korea.



EMERITUS PROF. SUTEE YOKSAN, M.D., Ph.D. (Pathobiology)

Director,
Centre for Vaccine Development,
Mahidol University
Thailand

Prof. Sutee Yoksan graduated from Mahidol University with a M.D. in 1979 and a Ph.D. in 1987. After obtaining his MD he trained in clinical pathology at the Department of Pathology, Ramathibodi Hospital Faculty of Medicine, Mahidol University. To increase his research capability he continued laboratory work at the Department of Tropical Medicine and Medical Microbiology, U. Hawaii, USA, Sir William Dunn School of Pathology, U. of Oxford, UK. and Queensland Institute of Medical Research, Brisbane, Australia.

From 1984-2014, he served as Director of the Center for Vaccine Development, Mahidol University. Prof. Sutee is a world leader in research on dengue and other arthropod-borne viral infections. He has published over 180 scientific papers and book chapters on many areas of vaccine research and development, namely dengue, Japanese encephalitis, Chikungunya and Zika vaccines.

At present he serves as a consultant of the Center for Vaccine Development, Institute of Molecular Biosciences, Mahidol University, Thailand.

PROF. NATTACHAI SRISAWAT

Director,
Excellence Center for Critical Care Nephrology,
King Chulalongkorn Memorial Hospital, Thai Red Cross,
Division of Nephrology,
Department of Medicine,
Chulalongkorn University, Thailand &
Collaborating CRISMA faculty member
Department of Critical Care Medicine,
University of Pittsburgh School of Medicine,
USA

After finishing Nephrology training from Thailand in 2007, Assistant Professor Srisawat became a CRISMA research fellow for 2 years and a clinical fellow of Critical Care Medicine for 1 year under mentorship by Professor John A. Kellum at the Department of Critical Care Medicine, University of Pittsburgh School of Medicine, Pennsylvania, USA. His main research focused on AKI epidemiology in resource limited settings, novel biomarkers of AKI, tropical infections causing AKI such as leptospirosis, and dengue infection.

He is currently appointed as Clinical Instructor, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand and has published in international journals on a first author basis and is also a reviewer for reputed professional journals.

He has an active association with many international societies and academies and received several awards for his contributions to the scientific community. His research interests include critical care nephrology, renal replacement therapy in the ICU, septic acute kidney injury, and urinary and plasma biomarkers.

SPEAKERS' BIOGRAPHIES

PROF. ANAVAJ SAKUNTABHAI

Honorary Assistant Professor,
Department of Medicine,
Faculty of Medicine Ramathibodi Hospital,
Mahidol Univesity, Bangkok,
Thailand

Associate Professor Sakuntabhai obtained his PhD in Molecular Genetics in 1999 from The Wellcome Trust Centre for Human Genetics, Nuffield Department of Clinical Medicine, University of Oxford, UK, and his MD (Dermatology) from University of Newcastle upon Tyne, UK in 1992, and Chulalongkorn University, Bangkok, Thailand in 1986. He currently serves as head of laboratory at Laboratoire de Génétique de la réponse aux infections chez l'homme, Institut Pasteur, Paris, where he has been since 2007, specialising in human genetics of infectious diseases, notably malaria and dengue.

He began his career as a medical doctor. In 2000 he joined the Institut Pasteur as a senior scientist and in 2007 became the leader of the laboratory of Genetics of Human Response to Infections. In 2010 he created and became a head of the Functional Genetics of Infectious Diseases Unit. For several years, he was a principal investigator of one of the four consortial projects of the MalariaGEN consortium, a global community of researchers working together to integrate epidemiology with genome science financed by the Bill & Melinda Gates Foundation. He is a partner of a Wellcome Trust financed project on the human genome wide screening for dengue susceptible genes. His laboratory is a principal investigator of a French initiative to tackle the disease burden under changing environments. He is a coordinator of the European FP7 project on Dengue Framework for Resisting Epidemics in Europe (DENFREE). The project aims to find key factors determining dengue transmission and dengue epidemics in order to develop new tools and strategies for controlling dengue transmission. The project also estimates the risk of spreading DENV to uninfected areas, especially in Southern Europe where susceptible vectors exist.

Sakuntabhai coordinates a global network for dengue research in the Institut Pasteur International Network. In 1999 Sakuntabhai discovered a gene responsible for Darrier disease, a monogenic skin disorder. In 2005 he discovered a variant on a promoter of DC-SIGN associated with gene expression and outcome of dengue infection. Since its discovery this variant has been shown to be associated with other infectious diseases including tuberculosis and HIV, amongst others. It has been confirmed in a replicated study. In 2009, together with other researchers, he participated in the finding of positive selection of G6PD (glucose 6 phosphate dehydrogenase) and its effect on Plasmodium vivax (one of the six species of malaria parasites that commonly infect humans) density. The work challenges the former belief that G6PD mutations were selected by P. falciparum and highlights the significant effect of P. vivax on human health, one hitherto neglected.

His recent research has shown that both gene-gene and gene-environmental interactions play a significant role in susceptibility to malaria and dengue.

PROF. TERAPONG TANTAWICHIEN

Head of Division of Infectious Diseases and Deputy Chairman,
Department of Medicine,
Faculty of Medicine, Chulalongkorn University
Thailand

Prof. Terapong Tantawichien is Professor in the Division of Infectious Diseases, Department of Medicine, Faculty of Medicine at Chulalongkorn University, Thailand, and has previously held positions at King Chulalongkorn Memorial Hospital and Kuzell Institute, California Pacific Medical Centre, San Francisco, USA. He received his medical degree from Chulalongkorn University in 1987 and is board certified in internal medicine and infectious diseases (Thailand). Prof. Terapong began his teaching career in 1993 when he started teaching infectious diseases at Department of Medicine, Faculty of Medicine, Chulalongkorn University. He is a member of the Royal College of Physicians (Thailand) and the Infectious Diseases Association of Thailand. He was also Secretary-General of the Infectious Diseases Association of Thailand (2002-3, 2004-5) and Deputy Chairman of Scientific Committee, The Royal College of Physician of Thailand (2009-10). Presently he is President of the Infectious Diseases Association of Thailand (2014-15, 2015-2017) and Head of Division of Infectious Diseases and has played an active part in infectious disease activities in Thailand.

Prof. Terapong occasionally gives special lectures at several other universities and institutions. He regularly attends academic conferences and seminars both in and outside the country. In addition to teaching, he is a regular contributor to medical researchers in Thailand and collaborated on many manuscripts with his student and colleague. He had more 60 international medical publications and was awarded the 1st Young Investigator Award from the Infectious Diseases Association of Thailand in 2001 and the Research Award from the Royal College of Physician of Thailand in 2014. His main scientific interests are rabies vaccination, adolescent and adult immunisation, dengue in adult, nosocomial infections and infections in immune-compromised hosts.

SPEAKERS' BIOGRAPHIES

PROF. DR. SOMIA IQTADAR

Department of Medicine,
King Edward Medical University,
Lahore,
Pakistan

A Fellow in Medicine and Associate Professor of Medicine at King Edward Medical University, Prof. Somia graduated from Kinnaird College in 1998. She received her bachelor's degree in sciences in 2001 and completed her bachelor's in medicine & surgery in 2004 from her country's top medical institution, King Edward Medical University. Prof. Somia completed her post graduation in internal medicine in 2010 and is one of the youngest medical fellows in her faculty at King Edward Medical University.

She is the focal person for infectious diseases and epidemic control and has prepared guidelines and teaching modules for medical students and doctors. She is also trained at Asian Institute of Technology Thailand, Sri Lanka and WHO Singapore in Dengue fever and is currently working as a Master Trainer of Dengue Fever for the government of Punjab, and for WHO for the Asia Pacific. She is the Associate Secretary of Dengue Expert Advisory Group (DEAG), which provides national guidelines on clinical management of Dengue infection and imparts training to doctors and paramedical staff nationally.

Prof. Somia has also been very actively involved in research, infectious diseases being her prime focus. She has numerous publications to her name in indexed journals. She has also contributed three chapters on Dengue, Ebola and Chickungunya in Kumar and the latest edition of Clark Textbook of Medicines. She has authored an information booklet on Dengue for public awareness, and represented Pakistan in numerous international infectious disease conferences, presenting her research and experiences.

PROF. EXPEDITO J.A. LUNA

Institute for Tropical Medicine,
University of São Paulo,
Brazil

Expedito J. A. Luna, MD, PhD, is an epidemiologist and professor at the Institute for Tropical Medicine, University of São Paulo, Brazil. For a large part of his career he worked as a medical epidemiologist in the Brazilian Epidemiologic Surveillance and Disease Control System, at the local level (Municipality of São Paulo), state (State of São Paulo Health Secretariat) and at the Ministry of Health, where he occupied the position of Director of the Department of Surveillance and Control of Infectious Diseases. He joined the University of São Paulo in 2008. He has been working on epidemiology of infectious diseases, especially on vaccine preventable diseases, influenza, dengue, trachoma and other neglected tropical diseases. He is also a member of the National Advisory Group on Immunization (NITAG-Brazil).

PROF. TIKKI PANGESTU

Visiting Professor,
Lee Kuan Yew School of Public Policy,
National University of Singapore,
Singapore

Prof. Pang joined the Lee Kuan Yew (LKY) School of Public Policy after 13 years at the World Health Organisation (WHO) in Geneva, Switzerland as Director of its Research Policy & Cooperation department. In this capacity he worked with countries to strengthen their national health research systems, developed mechanisms and initiatives to improve the efficiency and transparency of global health research, and helped formulate an Organisation-wide research policy.

Prior to his WHO career, Prof. Pang was the Professor of Biomedical Sciences at the Institute of Postgraduate Studies & Research, and Associate Professor/Lecturer at the Faculty of Medicine, the University of Malaya, Kuala Lumpur. He was previously Co-Director of the WHO Collaborating Centre for Dengue & Dengue Haemorrhagic Fever at the University of Malaya, Kuala Lumpur, Malaysia (1982-1995), and a member of the WHO Technical Advisory Group which developed the guideline Dengue Haemorrhagic Fever: Diagnosis, Treatment and Control (1986).

Prof. Pang's main research and academic interests lie in the area of infectious diseases, the impact of genomics on public health, global health governance, national health research systems, knowledge translation, research transparency and accountability, and the use of evidence in health policy development. In these areas, he has published more than 200 scientific articles and 12 books, edited volumes and reports, which includes several major WHO reports, including Genomics and World Health (2002), the World Report on Knowledge for Better Health (2004) and a History of Research in WHO (2010). Prof. Pang's involvement with the LKY School of Public Policy began in 2009 through the ST Lee Project on Global Health Governance.

Prof. Pang is a Fellow of the Royal College of Pathologists (UK), American Academy of Microbiology (USA), Institute of Biology (UK) and the Academy of Medicine of Malaysia. He was the Founding Editor of Health Research Policy & Systems and the Asia-Pacific Journal of Molecular Biology and Biotechnology.

SPEAKERS' BIOGRAPHIES

PROF. JULIET SIO AGUILAR

Professor XII, UP College of Medicine
Chair, Department of Pediatrics,
UP College of Medicine,
Philippine General Hospital

Head,
Pediatric Clinical Nutrition Division,
St. Luke's Medical Center Quezon City

Consultant,
Section of Pediatric Gastroenterology,
St. Luke's Medical Center Quezon City
Republic of the Philippines

Professor Aguilar is chairperson of the Dengue Investigative Task Force (DITF) formed by the Department of Health (DOH) of the Philippines, a 10 member expert panel tasked to review dengue vaccine-related deaths. She obtained her Master of Science in Paediatrics and Child Health (Gastroenterology), University of Birmingham, United Kingdom, 1988. She is a board certified fellow of the Philippine Pediatric Society and Philippine Society of Pediatric Gastroenterology and Nutrition, and International Council Member, Asian Pan-Pacific Society for Pediatric Gastroenterology, Hepatology, and Nutrition, Past President and Founding Member, Philippine Society for Pediatric Gastroenterology, and Nutrition (PSPGHAN), and Associate of Wellstart International, World Health Organization Breastfeeding Collaborating Agency.

She has received numerous awards for her work in pediatrics, including:

- One UP Professorial Chair in Pediatrics for 2016–2018, awarded by the University of the Philippines System
- The 2015 International Publication Award, given on December 16, 2015 by the University of the Philippines
- UK Education Ambassador for 2014/2015, awarded by the British Embassy in Manila, presented by Her Majesty's Ambassador Asif Ahmad
- Dr. Luis M. Mabilangan Outstanding Leadership Award, University of the Philippines Manila College of Medicine presented on December 2, 2014
- Philippine Association of Nutrition (PAN) Fellow for Outstanding Performance in Clinical Nutrition, July 2013

She has authored or co-authored 20 original research works, 13 books and book chapters, and numerous scientific papers and short articles on pediatric gastroenterology, nutrition and general pediatrics.

DR. MARIA ROSARIO Z. CAPEDING

Head, Department of Microbiology and the Dengue Study Group
Research Institute for Tropical Medicine, Philippines

Dr. Capeding is a pediatrician, an infectious disease specialist, and a clinical microbiologist of the Research Institute for Tropical Medicine, Philippines. She is the Head of the Department of Microbiology, Consultant of the Medical Department, and Head of the Dengue Study Group of the said institute. She is the Section Head of Infectious Diseases of the Department of Pediatrics, Asian Hospital and Medical Center, Philippines.

She has engaged in significant researches on the safety, immunogenicity and efficacy of childhood vaccines: Haemophilus influenzae type b, Pneumococcal and Meningococcal Conjugate; Influenza; Hepatitis A; Hepatitis B; DtaP-Hib-IPV-HepB combination vaccine; Typhoid Conjugate; Cholera; Japanese Encephalitis, and Dengue.

She is an accomplished medical researcher though her contributions: 54 original articles and reviews in peer reviewed international and local journals; presented scientific papers in 77 international medical conferences; acted as an expert or member of advisory board to 31 international consultative meetings; and 47 completed and current researches and clinical trials. She is an active member of national and international professional medical societies and global, regional scientific fora. She is also a frequent lecturer to numerous conventions of medical societies, postgraduate courses and local chapter meetings.

Dr. Capeding is an awardee of the 23rd Dr. Jose P. Rizal Memorial Award for Research by the Philippine Medical Association (PMA). She was given the distinction as one of the world's Top Women in Biotech Industry 2014. The paper, Clinical Efficacy and Safety of a Novel Tetravalent Vaccine in Healthy Children in Asia: Phase 3, Randomized, Observer-Masked, Placebo-Controlled Trial, Maria Rosario Capeding, Ngoc Huu Tran, Sri Rezeki, et. al. (The Lancet, 2014. 384:1358-1365 was adjudged Paper of the Year 2014 by the International Society for Vaccines (ISV). She is a recipient of the 2015 Outstanding Professional of the Year Award in the Field of Medicine and Eric Nubla Excellence Award given by the Philippine Professional Regulation Commission.

SPEAKERS' BIOGRAPHIES

DR. BUTSAYA THAISOMBOONSUK

Head,
Virology and Serology Section,
Department of Virology,
Armed Forces Research Institute of Medical Sciences (AFRIMS),
Bangkok,
Thailand

Dr. Thaisomboonsuk received his doctorate and masters in microbiology from Mahidol University, Thailand, after graduating from Chulalongkorn University with a degree in microbiology in 1982. As a Medical Research Scientist, he has published papers in over 20 local, regional and international journals, as well as presented in numerous symposia and international workshops. His research interests include enzyme immunoassays, plaque reduction neutralization testing, mosquito inoculation, hemagglutination inhibition testing, tissue and viral cultures (dengue, chikungunya zika), respiratory viruses, monoclonal antibody production, ascite production in mice, radioimmunoassays, and cell binding assays using H3 -leucine.

DR. FILIPPO GIACOMO BOSCO

CEO
BluSense Diagnostics ApS

Dr. F. G. Bosco (Co-founder, CEO & Board member of BluSense Diagnostics ApS) has undergone intensive entrepreneurship training in parallel to his Ph.D. studies, with participation at prestigious courses in US, Europe and China. He has been awarded with the "Strategic Research Award" by the Danish Minister of Science and Technology in 2014", given for excellence in developing commercial-oriented technologies.

DR. GOH CHOO BENG

Director
Regional Medical Affairs,
Takeda Vaccines,
Singapore

Dr. Goh Choo Beng is currently leading regional medical affairs for Takeda Vaccines, Asia.

He is a trained oncologist and has spent more than a decade working in medical affairs across vaccines especially HPV and pharmaceuticals in regional and country roles.

DR. ANNA LENA LOPEZ, MD, MPH

Director
Institute of Child Health and Human Development
University of the Philippines Manila-National Institutes of Health
Republic of the Philippines

Currently the Director and a Research Associate Professor of the Institute of Child Health and Human Development (ICHHD) at the University of the Philippines (UP) Manila-National Institutes of Health and Clinical Associate Professor at the UP College of Medicine, Dr. Anna Lena Lopez is a board-certified pediatrician and pediatric infectious diseases specialist. In the ICHHD, she leads a team of researchers working on diverse topics that impact children's health, including vaccine-preventable diseases. She has previously worked as a Senior Scientist and Coordinator of the Cholera Vaccine Program at the International Vaccine Institute, Seoul, South Korea where, under her coordination, the first low-cost oral cholera vaccine was licensed in India and is now WHO prequalified. She has worked as a Consultant for the World Health Organization, a member of the WHO's Immunization and Vaccine Implementation Research Advisory Committee and is a member of the Delivering Oral Vaccines Effectively (DOVE) team, based in Johns Hopkins University.

Dr. Lopez received her Bachelor's degree and Doctor of Medicine from the University of the Philippines. She had her internship and residency training in Pediatrics at the Albert Einstein College of Medicine, New York, USA and her fellowship in Pediatric Infectious Diseases at Children's Hospital Los Angeles and University of California Los Angeles Center for Health Sciences, Los Angeles, California, USA. She obtained her Master of Public Health with Certificate in Vaccine Science and Policy from the Johns Hopkins Bloomberg School of Public Health in USA and has practiced in the Philippines and in the United States.

DR. NGUYEN MINH NGUYET, MD, PHD.

Deputy Head & Clinical Postdoc Scientist
Dengue group, Oxford University Clinical Research Unit
Vietnam

Nguyet obtained her medical degree from University of Medicine and Pharmacy in Ho Chi Minh City, Vietnam in 2005. She started working as a study doctor in Dengue group, OUCRU in 2007. She got her PhD from the Open University, UK in 2016 investigating the variables mediating dengue virus transmission and severity and mortality of this disease, under the supervision of Prof. Cameron Simmons and Prof. Tran Tinh Hien. She is now involved in managing many clinical studies of the Dengue Group. She is also voluntarily participating in many activities of Public Engagement team, such as Science Theatre, Chat with the Scientists ("I'm a Scientist, get me out of here!"), Science articles for children, etc.

SPEAKERS' BIOGRAPHIES

DR. SHANTHI RATNAM

Consultant Physician and Intensivist,
Clinical Head of Intensive Care Unit,
Department of Anaesthesia and Intensive Care,
Hospital Sungai Buloh, Selangor,
Malaysia

In addition to her appointments at Hospital Sungai Buloh, Dr. Ratnam is also Honorary Lecturer (Intensive Care) Taylor's University Malaysia, Honorary Lecturer (Intensive Care) UiTM (University Technology Mara), Secretary of the Malaysian Society of Intensive Care (MSIC), Ministry of Health Malaysia (MOH) representative in the National Accreditation Board for Intensivist in Malaysia, Panel member in the Dengue Selangor state Mortality review Board, Committee member of the Sungai Buloh Hospital trauma team, and member of Hospital Antibiotic Committee Hospital Sungai Buloh.

She obtained her MBBS from Kasturba Medical College, University Mangalore, India in 1995, MRCP from the UK in 2000, and was made a Fellow of Joint Faculty of Intensive Care Medicine Australia New Zealand College of Anaesthetists in 2009 and Fellow of College of Intensive Care Medicine Australia and New Zealand in 2010. Her clinical interests include septic shock, Dengue Shock Syndrome, Nosocomial Infections in ICU and Traumatic Brain Injury. She has co-authored or authored over 10 papers or posters and served as reviewer in review panels for several clinical practice guidelines.

DR. WARSITO TANTOWOJOYO, PHD

Entomology Team Leader & Scientific Publication Coordinator
Eliminate Dengue Project Yogyakarta,
Indonesia

Dr. Warsito is Entomology Team Leader and Scientific Publication Coordinator at the 'Eliminate Dengue Project' based in Yogyakarta, Indonesia. He obtained his Masters in entomology from EntomologilFakultas Pasca Sariana, Institut Pertanian Bogor and finished his doctorate at Melbourne University, Australia. He has a certificate for Good Clinical Practice from Centre for Tropical Medicine, FK UGM and has co-authored numerous papers.

PROF. INDRA VYTHILINGAM

Department of Parasitology,
Faculty of Medicine
University of Malaya (UM), Kuala Lumpur,
Malaysia

Indra Vythilingam (PhD) is currently a Professor in the Department of Parasitology, University of Malaya (UM). She worked as a Principal Research Scientist, in Environmental Health Institute, Singapore prior to her appointment to UM. She has contributed vastly to the field of vector biology and control for the past 30 years when she worked in the Institute for Medical Research (IMR) in Kuala Lumpur. She has successfully completed many research projects on vectors of malaria, Japanese encephalitis, dengue and filariasis. She incriminated the vectors of simian malaria in Malaysia. She has published more than 130 articles in peer reviewed International and local journals and presented numerous papers at International and local conferences. She has served as a WHO consultant on many occasions and recently served as a member of the WHO Vector control advisory group on new tools (2013-2016). She was awarded the Sandosham Gold medal in 2007 by the Malaysian Society of Parasitology and Tropical Medicine for her contribution towards parasitology and Tropical Medicine. In 2017 she received Malaysia's Research star Award for outstanding national research in Tropical diseases from the Ministry of Higher Education and Elsevier. She is a subject Editor for Parasites and Vectors.

PROF. SCOTT O'NEILL

Professor & Director
Institute of Vector Borne Disease (IVbD)
Monash University, Melbourne
Australia

Scott O'Neill (PhD FAA FAAAS) is the Director of the Institute of Vector-Borne Disease at Monash University. He has spent his academic career at the University of Illinois, Yale University, the University of Queensland and Monash University where until recently he was the Dean of Science.

Prof O'Neill leads a large international research collaboration, The Eliminate Dengue Program. This program is working on the development of Wolbachia as a novel method to block the transmission of dengue fever and other mosquito transmitted viral diseases like zika and chikungunya. The Eliminate Dengue program - a global not for profit - is conducting field trials of the novel Wolbachia method in multiple countries. More information can be found at www.eliminatedengue.com.

SPEAKERS' BIOGRAPHIES

PROF. USA THISYAKORN, MD

Tropical Medicine Cluster
Chulalongkorn University
Bangkok, Thailand

Professor Usa Thisyakorn is presently a Professor of Pediatrics and an Executive Director of Tropical Medicine Cluster at Chulalongkorn University, an advisor of Faculty of Tropical Medicine, Mahidol University, Department of Health, Bangkok Metropolitan Administration and Faculty of Medicine, Thammasat University.

Her additional positions include Past President of International Society of Tropical Pediatrics, Asian Society for Pediatric Infectious Diseases, Pediatric Society of Thailand as well as Pediatric Infectious Disease Society of Thailand.

In 1989, she received a Rockefeller grant for dengue research at the Centers for Diseases Control and Prevention in Atlanta and Scientific Awards in 1994 from the Elizabeth Glaser Pediatric AIDS Foundation for Pediatric HIV training at the National Institutes of Health in Bethesda. In 2000, under Professor Thisyakorn's guidance as Chair of the medical committee on the Save a child's life from AIDS project, the project was selected as one of the UNAIDS best practices in the year 2000. This project has contributed significantly to the recognition of Thailand by the World Health Organization as the first country in Asia to successfully eliminate mother-to-child transmission of HIV in 2015. For her contributions, she has received several awards including **Woman of the Year** from the Foundation for Thai Society, **The Outstanding Asian Pediatrician** from the Asia Pacific Pediatric Association and **The Outstanding Woman in the International Stage/Network** from Ministry of Social Development and Human Security on the occasion of the International Women's day 2019.

Professor Thisyakorn has served as an editorial board of several medical journals and has contributed over 150 indexed publications to date.

DR. CESAR MASCAREÑAS, M.D.

Head
Dengue, Enteric and Endemic Vaccines
Sanofi Pasteur Global Medical Affairs

Dr. Cesar Mascareñas is a physician specialized in Pediatric Infectious Diseases, and is Head of Dengue, Enteric and Endemic vaccines at Sanofi Pasteur Global Medical Affairs. Dr. Mascareñas obtained his MD at the Universidad de Monterrey (Mexico, 1990), Pediatric specialization at the Instituto Nacional de Pediatría (Mexico, 1993) and Pediatric Infectious Diseases at Instituto Nacional de Pediatría (1994). He continued his career as part of the faculty at the Hospital Infantil Privado, Universidad Nacional Autónoma de Mexico, as post-graduate professor of Pediatrics with focus on Infectious Diseases. In 2000 Dr Mascareñas started in Sanofi Pasteur as medical Director for Mexico. In 2011, Dr. Mascareñas was offered the position as Medical and Scientific Director for Latin America at Sanofi Pasteur; in this position he consolidated a New Medical Governance Model for the region.

Dr. Mascareñas has served in his current position as Head of Dengue, Enteric and Endemic Vaccines since December 2015. He is in charge of coordinating the Dengue Global Medical Department that is accountable, among other activities, in the development of clinical research studies of the dengue vaccine and medical communication with different internal and external stakeholders: fundamental roles for supporting endemic countries in the launch and implementation of the dengue vaccine.

Dr. Mascareñas is a member of several scientific societies as Sociedad Latinoamérica de Infectología Pediátrica (SLIPE) and Asociación Mexicana de Infectología Pediátrica (AMIP), among others. He has published multiple scientific articles in peer-reviewed journals and participated in several textbooks on pediatric infectious diseases.

DR. SHERLOCK CHUNG-CHIH LAI, MD, MSC

Regional Medical Expert
Sanofi Pasteur

Dr. Lai is the Regional Medical Expert at Sanofi Pasteur in Asia. He leads scientific strategies in prevention of dengue, meningococcal & pneumococcal diseases, endemic diseases, and travel health. He is an infectious diseases and internal medicine physician with 8 years of clinical experience. Before joining the industry, his main research interests were HIV and antimicrobial resistance. He has published 20 papers in peer-reviewed journals, with total citations: 258 and h-index: 11.

SPEAKERS' BIOGRAPHIES

PROFESSOR EMERITUS LULU C. BRAVO, MD

Professor Emeritus College of Medicine,
University of the Philippines Manila

Lulu Bravo is a Professor Emeritus at the College of Medicine, University of the Philippines Manila. She is the former Vice Chancellor for Research and Executive Director of the National Institutes of Health, University of the Philippines Manila (2005 – 2011) and current head of the Vaccine Study Group of the NIH – UPM.

She is the President of the Immunization Partners in Asia Pacific (IPAP), current Executive Director and past President of the International Society of Tropical Pediatrics (ISTP) 2008 – 2011, past Chair and Founder of the Asian Strategic Alliance for Pneumococcal Disease Prevention (ASAP) 2007 – 2011, and Executive Director, Sec-General (1998 – 2006) & past President of the Asian Society for Pediatric Infectious Disease (ASPID) 2006 – 2008. She has served in various capacities in many other Asian medical and professional societies and as WHO Technical Advisor. She has served as well in national medical organizations such as PMA, PPS, PIDPS, PSMID and the Philippine Foundation for Vaccination (PFV) of which she is the founding President and current Executive Director. In the international scene, she is a member of the Rota Council, Pneumococcal Awareness Council of Experts (PACE) and member of the Dengue Vaccine Initiative (DVI). Her work has earned for her various national and international honors and awards in the professional, academic and research fields, including the Outstanding Physician (2009) and the prestigious Dr. Jose P. Rizal Memorial Award for Academe (2011) given by Philippine Medical Association, the 2012 Asian Outstanding Pediatrician Award given by the Asia Pacific Pediatric Association and 2018 Outstanding Professional in Medicine given by the Professional Regulation Commission of the Philippines. As vaccine advocate, she was named Pneumonia Fighter in 2018 by the JustActions Organization, a US-based movement and corporation associated with People Empowerment.

Dr. Lulu Bravo completed her MD, pediatric residency and subspecialty training in infectious disease at Philippine General Hospital-College of Medicine of the University of the Philippines Manila. She supplemented her fellowship in pediatric infectious disease at the University of Texas Southwestern Health Science Center in Dallas, USA in 1986.

KAMRAN RAFIQ

Co-Founder and Communications Director
International Society for Neglected Tropical Diseases

Kamran is the Co-Founder and Communications Director at the International Society for Neglected Tropical Diseases. After graduating from The School of Pharmacy, University of London in Pharmacology and Toxicology Kamran went on to complete his Masters in Neuroscience at the Institute of Psychiatry and The Maudsley, Kings College London. He has worked as a research scientist at Schering-Plough Research Center at the San Raffaele Hospital in Milan, Italy working on neuropeptides and novel mechanisms of pain transmission and Parkinson's Disease modelling. Upon returning to the UK he worked for Reuters Business Insights setting up their drug discovery intelligence unit and then as Sales Director for Datamonitor being an integral part of the acquisition and subsequent integration of the company Life Science Analytics and then as Managing Director at Global Data overseeing both Pharma/Biotech and Medical Device Diagnostics market teams. As well as co-founding the ISNTD he sits on the editorial board of Break Dengue and also has co-founded the behavioural research company Actingforhealth.org

LECTURE SYNOPSES

Dengue Vector Control: What Works?

Prof. Dr Olaf Horstick, FFPH (UK)
Director, Teaching Unit, Institute of Public Health, University of Heidelberg, Germany

There are biological, chemical and environmental methods for dengue vector control. But can these control the vector and/or reduce dengue incidence?

When looking at the available research with recently emerging summary evidence for each individual vector control method, and meta–analyses and systematic reviews covering all vector control methods, and using an a priori framework for the analysis, the following picture evolves: ten existing systematic reviews and two meta–analyses provide low-to-moderate evidence that the control of Aedes mosquitoes can be achieved using 1) chemical methods, particularly indoor residual spraying and insecticide treated materials, and 2) biological methods, where appropriate. 3) Environmental methods may contribute, where appropriate. The level of efficacy and community effectiveness to control the vectors, of most methods and in most studies is low, as is the overall assessment of study quality. Furthermore, the results show that to optimise results, larvae and adults should be targeted simultaneously. Evidence of reduction of dengue incidence is very weak. As further elements, high quality of vector control delivery is probably one of the most important features for successful vector control and aiming for high coverage.

The analysis also highlights the urgent need for standards to guide the design and reporting of vector control studies, ensuring the validity and comparability of results. These studies should aim to include measurements of human transmission data – where and when possible.

Advances in Dengue Pathogenesis

Prof. Ooi Eng Eong
Professor, Programme in Emerging Infectious Diseases, Duke-NUS Medical School, Singapore.

The global burden of dengue, a lack of licensed anti-dengue drug and the limited success of vaccine development programmes collectively underscore a major need for more detailed understanding of the mechanisms underpinning dengue pathogenesis. Progress in research on dengue pathogenesis has, in recent years, addressed several major gaps in knowledge. These include demonstration of clinical authenticity of antibody-dependent enhancement, understanding of molecular determinants of clinical and epidemiological fitness of dengue virus as well as definition of host factors that contribute to severe dengue susceptibility. These findings now enable us to assemble a more holistic picture of dengue pathogenesis and provide a more solid foundation to formulate new antiviral and vaccine development strategies. I will attempt to review these findings and show how they can be applied to reduce the global burden of dengue.

The Paraná Experience with Dengvaxia®

Expedito Luna [1], José Cássio de Moraes [2], Fernanda Crozewski [3], Irina Riediger [4], Francieli Fantinato[5], Carla Domingues [5], Denise Garrett [6]

1. *Faculdade de Medicina, Universidade de São Paulo, São Paulo, Brazil.*
2. *Faculdade de Ciências Médicas da Santa Casa de São Paulo, São Paulo, Brazil.*
3. *Secretaria Estadual de Saúde do Paraná (SESA), Curitiba, Brazil.*
4. *Laboratório Central de Saúde Pública do Paraná (SESA), Curitiba, Brazil*
5. *Ministério da Saúde, Brasília, Brazil*
6. *Sabin Vaccine Institute, Washington, USA*

Soon after its largest dengue outbreak to date, the Brazilian state of Paraná decided to use the Dengvaxia® as an additional tool to control the disease. To select the municipalities that would be targeted by the vaccination program two criteria were used: (i) municipalities that had three or more outbreaks in the previous 5-year period, with incidence rates > 500/100,000; or (ii) an incidence rate above 8,000/100,000 in the current year (2016). Two municipalities fulfilled the latter criterion and 28 the former. In the first group of municipalities the target was the age group with largest incidence of reported cases, 15 to 27 years of age. In the second, the target was from 9 to 44 years of age, the entire age range for which the vaccine was licensed in Brazil. The target population was estimated in 500,000. Three vaccine campaigns were carried out, between 2016 and 2018. Vaccine uptake was 61% for the first dose, 43% for the second, and 22% for the third dose. Doubts about the operational aspects of the vaccination campaign, fear of adverse events, and negative news on social networks were the main reasons not to vaccinate, according to an evaluation survey. To evaluate the effectiveness of the vaccination a case-control study of incident cases has been set up. The study is being conducted in the 5 largest municipalities targeted by the vaccine campaigns. A RT-PCR positive for dengue is required for the cases. Two asymptomatic IgM negative controls for each case are being recruited. The vaccine registry is consulted to ascertain the exposure (vaccination). A major limitation to the study has been the low transmission of dengue in the whole country in 2017 and 2018. In these years 2,894 dengue suspect cases within the vaccination age range were reported in the participating municipalities. Just two of them had a PCR positive result for dengue, both of them by the end of 2018. In 2019 dengue transmission has intensified. By the end of March 1,787 dengue suspect cases had been reported in the participating municipalities, within the vaccination age group, 193 of them had a positive PCR (10.8%). Dengue transmission season is still ongoing. The number subjects of actually enrolled in the study is likely to increase until the end of the transmission season, but it will probably fall short of the expected sample size.

Pre-vaccination Screening for Dengue Exposure: Updates from the Philippines

Dr. Anna Lena Lopez

Institute of Child Health and Human Development, University of the Philippines Manila-National Institutes of Health, Republic of the Philippines

The Philippines is endemic for dengue, with cases occurring year-round. Dengue exacts a huge toll in the country, with 216,190 cases and 1,083 dengue-related deaths reported in 2018 to the Department of Health. Following the licensure of the first dengue vaccine, CYD-TDV in the Philippines in 2015, a government-led dengue vaccination was initiated in 2016. However, with new findings released in November 2017, the WHO recommended pre-vaccination screening prior to vaccination. We present preliminary findings from a study currently being conducted in the Philippines on the baseline serostatus of a cohort of children eligible to have received CYD-TDV and are under surveillance for dengue illness.

LECTURE SYNOPSES

Dengue in Pregnancy: Correlation with Maternal Morbidity and Mortality

Nguyet M. Nguyen[1], Dong Thi Hoai Tam[1], Dinh The Trung[1], Luong Thi Hue Tai[2], Nguyen Thi Tuyết Mai[2], Le Quang Thanh[3], Hoang Thi Diem Tuyet[4], Ta Thi Thanh Thuy[5], Lam Phung Khanh[1], Vuong Nguyen Lam[1], Cameron Simmons[1,6], Bridget Wills[1,7]

1. *Oxford University Clinical Research Unit, HCMC, Vietnam;*
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5. *Mekong Hospital, HCMC, Vietnam;*
6. *World Mosquito Programme, Institute of Vector-Borne Disease, Monash University, Australia;*
7. *Centre for Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, Oxford University, United Kingdom*

Zika virus infection during pregnancy is now recognized to cause major adverse effects on fetal development and infant outcomes. Although dengue is a closely related flavivirus and many pregnant women living in endemic areas must be exposed to it, there is limited information on the effects of dengue during pregnancy on the affected women or their babies. We performed a prospective observational study at the Hospital for Tropical Diseases in HCMC, enrolling all pregnant women admitted with suspected dengue, together with 1-2 non-pregnant controls matched by maternal age and day of illness at study enrolment. In total 212 pregnant women and 329 non-pregnant controls, hospitalized between Oct16 and Jan18, were confirmed to have dengue. Among the pregnant patients, 57 (27%) experienced dengue in the first trimester, 99 (47%) in the second and 56 (26%) in the third. The threshold for admission was lower for the pregnant women than the controls (42% had one or more warning signs at admission versus 60%, respectively). Despite this, similar proportions in each group developed severe vascular leakage (1% versus 2% in pregnant and control groups, respectively), resulting in shock and/or respiratory distress. No patient developed severe bleeding, and all the women recovered fully. A detailed description of the evolution of the clinical and laboratory features of acute dengue in the two groups will be presented. Pregnancy outcome data were available for 200/212 pregnant women: 11/57 (19%) of women infected in the first trimester experienced vaginal bleeding and progressed to miscarriage thereafter; hypertension and diabetes developed in only a small number; among the 189 live births, 9 were born before the 37th week, 6 had low birth weight (< 2500g), and 18 were admitted to NICU including several infants with congenital anomalies. There were no neonatal deaths, and the infants are now in a follow up study to assess neurodevelopment during the first 2 years of life. We have demonstrated a number of serious adverse maternal and fetal outcomes associated with dengue in pregnancy, indicating that this may be a significant public health concern in endemic settings.

Can we eliminate dengue? A dream comes true

Prof Sri Rezeki S Hadinegoro MD.,PhD
Department of Child Health, Faculty of Medicine, University of Indonesia

It is not impossible to eliminate dengue from Asian countries since we have strong commitment to achieve the goal of Global Strategy for Dengue Prevention and Control (WHO, 2012). All elements those WHO recommended have been implemented in all Asian countries, except vaccine. To eliminate dengue we need reevaluate all those elements. Each element needs to be strengthened, changed, or added by the new technical innovation (including dengue vaccine introduction). Improved and collaboration in supporting use of the same dengue clinical classification will result the true threat of dengue in Asian countries. On the other hand as dengue is the vector borne disease, vector control program is the important element and should be evaluated.

With the collaboration and partnership among Asian countries we can improve the strategies in dengue control. With better advocacy & resource mobilization, coordination & collaboration, and communication will achieve behavioral outcomes. Finally with reassess the capacity building and monitoring-evaluation, the goal to reduce dengue deaths at least 50%, to reduce dengue morbidity at least 25%, and better ascertain the true burden of the disease by 2020.

Dengue Induced Hemophagocytic Lymphohistiocytosis

Dr. Shanthi Ratnam
Consultant Physician and Intensivist, Clinical Head of Intensive Care Unit, Department of Anaesthesia and Intensive Care, Hospital Sungai Buloh, Selangor, Malaysia

Dengue induced hemophagocytic lymphohistiocytosis (HLH) is a serious condition and may prove fatal if not detected early and treated appropriately .While HLH is most commonly associated with Epstein-Barr virus infections, it has been reported as a complication of dengue infection.It is characterized by fever, bicytopenia, hepatosplenomegaly, hypertriglyceridemia and/or hypofibrinogenemia, and hemophagocytosis . Phagocytosis of blood cells and their precursors is a hallmark of hemophagocytic syndromes. Hemophagocytosis is achieved mostly by monocytes and macrophages. Excessive activation of monocytes in HLH is due to stimulation by high levels of activating cytokines. In 2004 three additional criteria were introduced by the Histiocyte Society; low or absent NK-cell-activity, hyperferritinemia, and high-soluble interleukin-2-receptor levels .Diagnosis of HLH is challenging and usually missed as clinical and laboratory findings are nonspecific. Moreover, the pathophysiology of the systemic inflammatory response syndrome and/or sepsis is remarkably similar to HLH. Elevated ferritin levels > 10,000 µg/L has been demonstrated to be 90% sensitive and 96% specific for HLH and should be used as screening tool for early detection of HLH, triggering further investigations . The aim of management of infection associated HLH is to treat the underlying infection that triggered it. Most cases of HLH also need to be treated upfront with standard protocols. Regarding treatment of dengue associated HLH, review of the existing literature showed that few cases have recovered spontaneously with supportive treatment only .However, in majority of the cases pulse dosage of methylprednisolone or dexamethasone have been used to suppress the hyperinflammatory state. Intravenous immunoglobulin G has been used in few cases either alone or with dexamethasone or methylprednisolone.

Alternative/Complementary Vector Control Methods in Reducing Dengue Transmission

Prof. Indra Vythilingam
Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Dengue is now a serious public health problem on a global scale. Currently dengue is endemic in about 100 countries, while before 1970 only about 10 countries were affected by dengue. This year the cases of dengue have increased compared to the same period last year (2018). In 2018, there were 80,615 dengue cases with 147 deaths in Malaysia. Vector control is the hallmark of the dengue control programme in most countries of Southeast Asia. The existing, reactive programs appear to lack sensitivity and proactivity. This may be the reason for the control programs being insufficient at keeping dengue epidemics in check currently. It is also known that asymptomatic, dengue-infected individuals are able to spread the disease and this could be one reason for the increase in the number of cases. Thus, proactive and sensitive methods which facilitate the early detection of dengue are desperately needed to pre-empt dengue outbreaks. The use of sticky traps to lure and trap gravid adult Aedes females for vector surveillance/control appears to be promising in a number of countries. Also the NS1 rapid test kits are a simple and reliable tool for detecting the presence of dengue in mosquitoes caught by the sticky traps. Studies have shown that dengue cases occur lag of one week after infected mosquitoes have been obtained. This may be the way forward to control dengue epidemics. Although novel techniques such as the release of genetically modified mosquitoes (RIDL), sterile males and the use of the bacteria Wolbachia to control the population of the Ae. aegypti are currently undergoing trials in many countries, it is imperative to carry out control measure based on positive adult mosquitoes. It is thus envisaged that the current trial being conducted will be able to provide insight and solutions to reduce the number of dengue outbreaks.

LECTURE SYNOPSES

Dengue Vaccines: Recent Developments, Ongoing Challenges and Current Candidates

Cathy Hoath
Director, Regulatory Affairs International – Vaccines, MSD

The U.S. National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID) developed a live, attenuated, tetravalent vaccine for the protection against symptomatic dengue disease that was then licensed to Instituto Butantan and MSD for further development. In 2018, MSD and Instituto Butantan entered into a collaboration to share information and data to enable more rapid development. An update on the current status of the developmental vaccine will be presented.

Dengue Vaccine

Professor Usa Thisyakorn, MD
Tropical Medicine Cluster, Chulalongkorn University, Bangkok, Thailand

Dengue is the most common mosquito-borne viral disease in the world with a wide spectrum of clinical manifestations from mild acute febrile illness to the potentially fatal disease. Vector control has achieved only limited success in reducing the transmission of dengue. A dengue vaccine is needed as part of an integrated approach to dengue prevention and control. Dengue poses a heavy economic cost to the health system and society. The potential economic benefits are associated with promising dengue prevention interventions such as dengue vaccine and vector control innovations.

Dengue is a unique and complex disease; developing a dengue vaccine has proven equally complex. The first chimeric virus dengue vaccine, licensed in December 2015 for use in individuals living in the dengue endemic areas for use in person age 9-60 years depending on the specific country approved license. The second chimeric virus dengue vaccine candidate met primary endpoint in pivotal phase 3 efficacy trial with details to be published.

Several other dengue vaccine candidates are under development, including live-attenuated virus vaccines, live chimeric virus vaccines, inactivated virus vaccines and live recombinant, DNA and subunit vaccines as well as virus-vectored and virus-like particle-based vaccines.

Dengue vaccine is seen as the most effective way to control dengue diseases in the future through the use of a safe and effective vaccine.

Increasing Public Confidence In Dengue Vaccine

Prof. Em Lulu C Bravo, Md
University Of The Philippines Manila

The first dengue vaccine licensed in 2015 is now currently approved for use in 21 countries including the USA, Brazil, Columbia, Singapore, Thailand and many countries in Europe. It had its share of various issues including efficacy and safety and how it should be introduced for mass vaccination or in national immunization programs. WHO SAGE came up with updated recommendations since 2016 , the latest of which was in 2018 highlighting the benefits of the tetravalent live dengue vaccine especially for those with previous dengue infection, the risk of developing a more severe dengue for those without previous dengue infection and a recommendation to first determine that the person has had dengue infection as a pre-requisite to vaccination. For many non-endemic countries, this could be considered appropriate and acceptable but for the hyperendemic countries with the highest burden of dengue infections like the Philippines, the recommendation has brought some confusion and further controversy. A provision was included stating that in highly endemic countries where a seropositivity rate of 80% at 9 years and above exists, prior testing for seropositivity could be waived if mass vaccination is implemented. Thus countries introducing dengue vaccination in NIP will need intensive surveillance as well as epidemiologic and seropositivity data. The experience in the Philippines with regards to dengue vaccine introduction serves as a valuable lesson for other countries with similar characteristics. New dengue vaccines are set to be introduced in the near future. It is important that reforms and adequate risk communication with vaccine advocacy be the priority in dengue vaccination programs.

Active and Passive Epidemiological Surveillance for Dengue: How Does It Contribute to Predict and Detect Outbreaks?

Asst. Prof. Katie Anderson
Department of Medicine, University of Minnesota, USA

This session will discuss the drawbacks, relative benefits, and contributions of active and passive surveillance systems for detecting and characterizing dengue virus outbreaks. Lessons and examples will be drawn from our 20+ years of performing dengue surveillance and research in northern Thailand.

LECTURE SYNOPSES

Basic Immunology in Dengue Pathogenesis

Emeritus Prof. Sutee Yoksan M.D., Ph.D.
Center for Vaccine Development, Institute of Molecular Biosciences, Mahidol University, Thailand

Dengue viruses (DENV) are the causative agents of dengue fever (DF) and dengue hemorrhagic fever (DHF). Here we review the current state of knowledge about the human antibody response to dengue and identify important knowledge gaps. A large body of work has demonstrated that antibodies can neutralize or enhance DENV infection. Investigators have mainly used mouse monoclonal antibodies (MAbs) to study interactions between DENV and antibodies. These studies indicate that antibody neutralization of DENVs is a "multi-hit" phenomenon that requires the binding of multiple antibodies to neutralize a virion. The human antibody response is complex as it involves a polyclonal response to primary and secondary infections with 4 different DENV serotypes. Most dengue-specific antibodies in human immune sera are weakly neutralizing and bind to multiple DENV serotypes. The human antibodies that potently and type specifically neutralize DENV represent a small fraction of the total DENV-specific antibody response. Moreover, these neutralizing antibodies appear to bind to novel epitopes including complex, quaternary epitopes that are only preserved on the intact virion. The leading theory proposed to explain the increased risk of severe disease in secondary cases is antibody dependent enhancement (ADE), which postulates that weakly neutralizing antibodies from the first infection bind to the second serotype and enhance infection of FcγR bearing myeloid cells such as monocytes and macrophages.

The hallmark of DHF is a short-lived plasma leakage that is believed to be immune mediated. There are several factors that may influence disease severity in dengue virus infection, including host factors, virus serotype or genotype, sequence of virus infection, and quantitative and qualitative differences in dengue cross-reactive antibody and CD4 and CD8 T-cell responses. Understanding the mechanism(s) that underlie this immunopathology is critical for the development of safe therapeutics and vaccines to prevent DHF.

Definite Test of Dengue: The Need for Rapid and Accurate Check

Emeritus Prof. Sutee Yoksan M.D., Ph.D.
Center for Vaccine Development, Institute of Molecular Biosciences, Mahidol University, Thailand

The Chimeric Yellow Fever Tetravalent Dengue Vaccine (CYD-TDV) (Dengvaxia, Sanofi Pasteur) has already been licensed in several endemic countries of Asia and Latin America where dengue is a major public health concern. To assess the overall benefits of the vaccination on individual and population levels, long-term surveillance will require a robust, affordable and easy monitoring diagnostic system of suspected dengue cases. A working group of experts* on dengue diagnostics has reviewed and defined optimized guidelines for laboratory confirmation using surveillance programs where CYD-TDV vaccine has been implemented. They have privileged an algorithm of combination of NS1 antigen capture ELISA and IgM capture ELISA, considering additional investigation in a convalescent serum only to further characterize probable and ambiguous dengue cases. The algorithm could be considered for national dengue surveillance programs and may also be of interest to the scientific and medical community (e.g., vaccine advisory groups, vaccine manufacturers, and the health care professionals).

Key words: dengue virus, vaccine, CYD-TDV, diagnostics, NS1 antigen, IgM, ELISA, algorithm, surveillance

* List of working group of experts: Elizabeth A. Hunsperger, Claudia Nunes Duarte dos Santos, Huong Thi Que Vu, Sutee Yoksan, and Vincent Deubel

Development and Preliminary Evaluation of Dengue Board Game for Elementary School Children in Lombok, Indonesia

D Suryani, TP Karuniawati, DP Sari, E Triani
Faculty of Medicine, Mataram University

Background:
Children have the potential to act as agent of change and participate actively in efforts to prevent dengue in schools. Nevertheless there is the absence of an innovative, age-appropriate learning media for children that is in accordance with dengue prevention program in Indonesia. To overcome the gap above, board game can be an alternative educational media that may improve children's cognitive and skills towards efforts to prevent dengue. This study aims to develop a dengue board game for elementary school children.

Methods:
The Winn board game development approach was conducted to design the dengue board game. Furthermore, a preliminary evaluation of the dengue board game was performed, which include content and user experience analysis through a series of playtest by content expert, board game designers and also elementary school children in Lombok.

Results:
Three dengue board game was developed in this study titled as: Dengue Hero, Termosted and Dengue School. All three board game encompases knowledge content on dengue including: cause, sign and symptom of dengue, treatment and prevention strategies. In regards to user experience, Termosted game was preferable compared to the other two board game as it had a higher score for learning layer, storytelling layer, mechanic and excitement of game.

Conclusion:
Overall, all three dengue board games prototype have the potential to be further developed as a dengue learning tool for elementary school children. However further revision and trial implementation are required before it could be integrated in dengue prevention program.

Effectiveness of Platelet Transfusion on Children with Dengue Infection at Malinau District Hospital

Syahperlan Wendi Simangunsong, Suci Ardini Widyaningsih, Amanda Sari Puspita, Fitria Nur Anisa, Herlita Novaria Purba

Malinau District Hospital, Malinau District, North Kalimantan Province, Indonesia

Background:

The incidence of dengue infection in Malinau district is still steadly high and has high case fatality rate. Thrombocytopenia is one of the most concerned parameter for dengue management. Platelet transfusion in dengue management is still debatable. We assessed the effectiveness of platelet transfusion in cases of dengue infection with thrombocytopenia.

Methods:

Retrospective cohort study was conducted from medical record patients diagnosed with dengue fever with platelet count ≤30,000 cell/mm3 from March 2018 to March 2019. We excluded patients with previous hematology, cardiac, lung, or kidney abnormalities, and referred patients. Subjects were separated into two groups based on the administration of platelet transfusion. We compared the increment of platelet count within 24 hours after platelet transfusions, time to reach platelets ≥ 50,000 cells/mm3 (≤2 days or >2 days), adverse event of transfusion, and length of stay. The results were analyzed with SPSS statistics 21.

Results:

There were no significant differences in subject's basic characteristics, such as age, sex, nutritional stage, dengue severity, and mean-lowest platelet count. There were 20 subjects of non-transfusion group and 13 subjects of transfusion group that reach platelet count >50.000 cells/mm3 within 2 days (p=0.015). The mean of hospital length of stay in transfusion group were 4.4 days, and in non-transfusion group were 3.8 days (p= 0.762). There was one subject with adverse event of platelet transfusion (urticaria).

Conclusion:

There were significant differences of time to reach platelet count >50.000 cells/mm3, but length of stay were not significantly different.

Keywords:

Dengue, platelet transfusion

IPF (Immature Platelet Fraction) is useful parameter to monitor the course of dengue

KW Looi, JX Ong, CS Ang, CA Tan, PHY Tan, C Samudi, H Shanmugam, SFS Omar, M Kono, Y Matsui, LCS Lum (Initials first)

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Scientific Affairs, Sysmex Corporation, Kobe, Japan

Background:

Platelet count trends are useful in monitoring the course of dengue. There are reports that the Immature Platelet Fraction (IPF), a Sysmex hematology analyzer's parameter, is more useful than platelet count because recovery of immature platelets precedes that of mature platelets. Additionally, some reports noted that serum soluble thrombomodulin (sTM) level, a marker of endothelial damage may predict the severity of dengue. Despite some reports stating D-dimer, activated partial thromboplastin time (APTT) and thrombin anti-thrombin complex (TAT) were also useful, the patient number was inadequate and dengue severity criteria unclear in these studies. Therefore, we study these parameters in a prospective cohort of adult dengue patients.

Methods:

302 patients with suspected dengue were enrolled into the study. Platelet counts, IPF, sTM, DD, APTT, TAT were measured every day until discharge. These items were compared with severity which was decided by clinical manifestation and plasma leakage. Final dengue diagnosis was performed using antibodies testing and RT-PCR method.

Results:

There were 287 patients with confirmed dengue, among whom 25 were severe dengue according to the 2009 WHO classification. IPF recovery occurred 2-3 days earlier than platelet recovery in most patients. The levels of sTM, APTT, TAT and DD on enrolment day, i.e 4 days after fever onset, of severe dengue patients were significantly increased compared to non-severe patients.

Conclusion:

IPF has the possibility to monitor recovery. Additionally, 4 parameters of sTM, APTT, TAT and DD may be useful to predict severity.

Inappropriate fluid intake and electrolyte imbalances in adult dengue patient

KW Looi, JX Ong, CA Tan, CS Ang, HC Ong, SFS Omar, LCS Lum

Institutions and Country

University Malaya, Malaysia

Introduction:

Patients with Dengue often present with electrolyte imbalances and clinical deterioration requiring admission.

Method:

Adult patients admitted to UMMC for dengue between October 2017 and January 2019 were included. Detailed oral intake history was obtained.

Results:

Of 285 confirmed Dengue patients, 174 (61.1%) were male, median age was 33 years. The median day of illness on admission was 4.

Total fluid intake of <2L and food intake of <50% from baseline over 2 days pre-admission was noted in 47.0% (n=134) and 63.9% (n=182) respectively. 54.7% (n=156) of patients drank only plain water. Of 182 patients whose food intake <50% from baseline over 2 days, 53.8% drank only plain water. 105 (36.8%) patients had reduced urine output.

The most common warning signs are lethargy (82.8%), vomiting (61.4%), diarrhea (60.0%) and abdominal pain (38.6%).

Hyponatremia (<136mmol/L), hypokalaemia (<3.6mmol/L), hyperuremia (>8.2mmol/L), hypoglycaemia (≤4.0mmol/L), hyperglycaemia (>11.0mmol/L) and significant ketonuria (3+ and 4+) comprised of 63.5% (n=181), 25.4% (n=72), 5.6% (n=16), 1.4% (n=4), 6.6% (n=18) and 23.2% (n=66) patients respectively.

84.2% dengue patients had warning signs, 7.4% without warning signs and 8.4% were severe dengue. Plasma leakage was observed in 45% of subjects (n=128).

Hyponatremia was significantly associated with lethargy (p=0.034) and drinking plain water (p=0.015). 41 (14.4%) subjects had both lethargy and hyponatremia without plasma leakage or elevated liver enzymes.

Conclusion:

Drinking solely plain water is common in dengue patients and could cause hyponatremia and lethargy. 14% of these patients may not require admission should the type of fluid intake include sufficient electrolytes.

Arbovirus and Wolbachia co-infections in Aedes aegypti and Aedes albopictus larvae in Peninsular Malaysia

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2. Pathology Division, School of Medicine, International Medical University, Kuala Lumpur, Malaysia
3. Sarawak Research and Development Council, Ministry of Education, Science and Technological Research, Sarawak, Malaysia

Background:

Aedes aegypti and Ae. albopictus are capable of transmitting multiple arboviruses, and are known to be naturally infected with the Wolbachia endosymbiont. We investigated the presence and distribution of dengue virus (DENV), Zika virus (ZIKV) and Wolbachia in Aedes larvae collected from urban localities in the Klang Valley, Peninsular Malaysia.

Methods:

Field collections of Aedes larvae were carried out monthly between May 2016 and April 2017 in 18 sites within the Klang Valley. Samples were identified and tested for the presence of DENV, ZIKV and Wolbachia using PCR. Positive samples were sequenced and phylogenetic analysis was conducted in MEGA X.

Results:

In total, 1,389 Aedes larvae were identified and screened. DENV and ZIKV of the Asian lineage (n=30 each) were detected in both Ae. aegypti and Ae. albopictus. One larvae of each species were co-infected with ZIKV and sylvatic DENV4 genotype IV. Only Ae. albopictus were singly or dually infected with Wolbachia types wAlbA and wAlbB (n=629). No sample was co-infected with all three microbes. Five DENV positive larvae were infected with both Wolbachia types, viz. DENV3 genotype V (n=1) and DENV4 genotype IV (n=4). Ten ZIKV positive samples were co-infected with Wolbachia, types wAlbA (n=5), wAlbB (n=1) and both types (n=4).

Conclusion:

Native Wolbachia was highly prevalent amongst the local Aedes mosquito population. Co-infections with both DENV and ZIKV indicate that the larvae infected with Wolbachia were still susceptible to either virus. Dual infections with DENV and ZIKV in larvae raise concerns over the transmissibility of both viruses to humans in adulthood.

Evaluation of Time Resonance Fluorescence (TRF)-based high sensitive Point-of Care Test Kit to Detect the Dengue Virus Infection

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2. Seoul St. Mary's Hospital, Rep. of Korea

Background:

Dengue virus causes clinically a wide range of human disease from mild Dengue Fever to severe Dengue Hemorrhagic Fever. To decrease the risky progression of Dengue fever, the diagnosis of Dengue virus infection has to be rapid and accurate. Although there are many types of serological reagents including ELISA or rapid kit, highly sensitive and rapid point-of care test is required. Here, we developed the immunofluorescent assay (IFA) using TRF system to increase the sensitivity and evaluated it clinically in St. Mary's Hospital.

Method:

A total of 138 samples (34 suspected patients for DENV infection, 60 samples with confirmed DENV infection and 44 control samples from healthy subjects) were tested with 6 serological reagents, ELISA kits and RDTs. ELISA kits are provided by Inbios, Abcam, Euroimmun and RDTs are provided by SD Bioline, Asan and Boditech Med (ichroma kits).

Results:

For NS1 antigen, ichroma Dengue NS1 Ag kits showed the sensitivity of 64.4%, better sensitivity than other RDTs, and the specificity of 100%. For IgM, ichroma Dengue IgG/IgM kits showed the sensitivity of 85.7%, better sensitivity than other RDTs and a couple of ELISAs, and the specificity of 92%. For IgG, ichroma Dengue IgG/IgM kits showed the sensitivity of 94.3%, better sensitivity than other RDTs, and the specificity of 98.5%.

Conclusion:

Evaluating the combined NS1 antigen and IgM antibody, Inbios ELISA and ichroma Dengue kits have higher sensitivities (95.6% and 88.2%, respectively) than other ELISAs and RDTs. It means that ichroma Dengue kits is highly sensitive and rapid POCT.

Detection of dengue virus serotype 1 in a CNS infection study in West Java: A case report

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Background and Objective:

Although dengue virus (DENV) is traditionally considered a non-neurotropic virus, CNS involvement has been reported in an increasing number of studies. In this report we evaluated the clinical and laboratory findings of a patient with CNS infection confirmed to be DENV infection by reference assays.

Methods:

The case report was part of a multicentre prospective study in West Java, Indonesia, to characterize common viral and bacterial etiology of CNS infection in children during the period of 2017 to 2018. Blood and CSF from the suspected DENV case was further processed for molecular and cell culture assays at the Eijkman Institute for Molecular Biology. Laboratory, clinical, and outcome data were collected. Neuroimaging was not conducted.

Findings:

A 7-year-old boy presented at the emergency department of Hasan Sadikin Hospital with 2 days of fever, coffee ground vomiting, and deterioration of consciousness. CSF analysis conducted on first day of hospitalization was normal and patient was diagnosed as viral encephalitis. Thrombocyte count gradually decreased until it reached 51,000/mm3 on 4th day of hospitalization. Haematocrit as well as liver enzymes were elevated. The patient improved with supportive therapy and was discharged on the seventh day of admission. One-month follow-up revealed that the patient had recovered completely without any neurological sequelae. DENV RT-PCR was positive on both serum and CSF samples and sequencing reported DENV-1 serotype which is rarely associated with CNS infection.

Conclusion :

High degree of suspicion for CNS involvement should be considered in a dengue patient with neurological manifestations in DENV endemic areas.

Modified NS1 wing domain peptide as a novel vaccine candidate against dengue virus infection

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Background:

Current dengue virus (DENV) vaccine development is mostly based on the generation of antibodies against DENV envelop protein to neutralize DENV infection. However, it cannot avoid the potential danger that when the antibody titer induced is low, it may enhance DENV infection through the mechanism of antibody dependent enhancement. Nonstructural protein 1 (NS1) which can be expressed on DENV-infected cells and secreted into blood circulation. Secreted NS1 plays important pathogenic roles to cause vascular leakage and hemorrhage in dengue pathogenesis. Studies have shown that immunization with NS1 can induce protective immune responses against DENV infection. However, immunization with NS1 can also induce antibodies cross-react with host proteins. Therefore, to use NS1 as DENV vaccine candidate, we need to avoid this potential risk.

Methods:

To avoid this possible side-effect, a short modified NS1 peptide containing an 11-a.a. conserved wing domain (WD) region of NS1 (NS1-WD) was designed; this peptide modified the critical pathogenic amino acids to reduce cross reactivity but maintain immunogenicity.

Results:

Both active immunization with NS1-WD peptide and passive transfer of polyclonal Abs against NS1-WD peptide provided protection against DENV in a hemorrhagic mouse model and a lethal infection mouse model. Furthermore, the amounts of Abs against NS1-WD peptide are inversely correlated with the severity of disease in dengue patients, indicating that these Abs can be induced in patients and are protective. Conclusion

This modified NS1-WD peptide can be a novel vaccine candidate against DENV infection.

The Smart Immunization Record of MesVaccins.net allows the implementation of complex vaccine recommendations, such as dengue vaccination

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Background:

Vaccine recommendations are increasingly complex and citizens are exposed to contradictory messages, leading to vaccine hesitancy and controversies. This is particularly true for new vaccine recommendations, like those against dengue fever.

Methods:

MesVaccins.net uses an artificial intelligence system that produces a personalized vaccine diagnostic coupled with a reminder/recall sending system, which is integrated into a Smart Immunization Record (SIR) shared between the citizen and the health care professional (HCP). The system takes into account any relevant information within 48 hours (new recommendation, change in the summary of product characteristics, vaccine shortage, outbreak, pharmacovigilance data). The SIR is interoperable with any third-party information system and is available on desktop and mobile.

Results:

MesVaccins.net simplifies vaccine recommendations through personalization, increasing the impact of evidence-based information and helping people have the right representation of the benefit-risk balance of vaccination. The tool provides decision support to HCPs and contributes to their continuing education regarding vaccines, sends personalized recalls/reminders and optimizes personal vaccine protection. It provides health authorities with real-time, high granularity, factual data for public health actions.

Conclusion:

Direct administration and personalization of information through the SIR has the potential to overcome the "fake news" disseminated through social networks. Therefore, this method represents a new way to increase adherence to vaccination and to support implementation and epidemiologic surveillance for new vaccines.

Perceptions and behaviors related to persistent dengue transmission in Klaten, Indonesia: Health Belief Model in social and behavior change communication approach

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Background:

Increasing epidemics of dengue hemorrhagic fever (DHF) is caused by complex factors, at the root of which is human behavior. The Health Belief Model (HBM) in social and behavior change communication (SBCC) approach allows understanding of cultural practices that are critical in dengue control yet may not be identified in outbreak investigations. The study aimed to assess health beliefs, barriers and motivations of individuals that will be useful in formulating the appropriate SBCC campaigns regarding dengue vector control.

Methods:

The qualitative study was conducted in adult residents of Gergunung and Kajen villages in Klaten, Central Java, Indonesia. The study comprised of in-depth interviews (IDIs) and focus group discussions (FGDs) using a guiding questionnaire. Audiorecorded interviews were transcribed and coded. The analysis focused on general perspectives and practices of behaviors in the attempt of vector control.

Results:

A total of 188 respondents from 2 villages were recruited in the study. Barriers include incorrect perceptions on disease severity, perceived mosquito breeding places, improper practice on mosquito source reduction, and perceived toxicity of the insecticides. Households tend to weigh the benefits of performing vector control against the perceived benefits.

Conclusion:

The results of current study provide important information on barriers and motivations regarding dengue vector control in Klaten, Indonesia. By using the HBM theory, future SBCC campaign should be adjusted more into changing beliefs that DHF is a serious disease, increasing knowledge on mosquito source reduction and insecticide use, and promoting benefits of performing dengue vector control.

Identification of cellular pathways predicting susceptibility to severe dengue fever

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Background:

Symptoms of moderate dengue include vomiting, pain in the eyes and rashes on the upper and lower limbs. A proportion of cases can progress to severe dengue also known as dengue hemorrhagic fever (DHF), associated with vascular permeability, thrombocytopenia and hemorrhages. To date, there is no validated way to identify which patients will progress to severe dengue, which results in ineffective patient triage and resource allocation. We hypothesize that single cell approaches like cytometry by time-of-flight (CyTOF) will untangle the complexity of cellular compartment induced in response to dengue in order to identify biomarkers able to predict disease severity.

Methods:

To address this hypothesis, we developed a CyTOF antibody panel to analyze peripheral blood mononuclear cells of dengue fever (DF) and DHF patients, recruited at the Pondok Indah Hospital in Jakarta, Indonesia.

Results: Unsupervised t-SNE analysis 22 markers revealed that whereas monocytes and CD4+ T cells are more abundant in DF, both B cells and CD8+ T cell pools were expanded DHF cases. Further analysis on gated memory B cells (MBCs), CD4+ T cells and CD8+ T cells revealed a high level of complexity, with diverse subpopulations present in each condition. Clusters of CD19+CD20+CD10-CD21-CD27- atypical MBCs, CD45RA+ICOS+PD1+CD127+CD4+ T cells along with a population of highly cytotoxic NK-like CD16+CD8+T cells appear to be overrepresented in DHF cases compared to DF individuals.

Conclusions:

These results provide proof of concept for the potential of single-cell approaches to identify specific biomarkers for diagnostic tools for early detection of complicated dengue.

DELEGATES' ABSTRACTS

Clinical Features of Dengue Disease in Western, Central, and Eastern Regions of Indonesia, 2017-2018

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5. Raden Mattaher Hospital and Siloam Hospital, Jambi, Indonesia

Background:

Dengue is an acute febrile disease endemic to Indonesia with 4 different serotypes, all of which have been found circulating the country.

Methods:

A total of 159 confirmed dengue cases were collected from hospitals in Ambon, Banjarmasin, and Batam, representing the western, central, and eastern regions of Indonesia. Dengue infection was confirmed by detection of NS1 antigen and/or serotyping using real-time RT-PCR. Immunologic statuses of samples were obtained by rapid tests on site or Panbio Dengue ELISA. Data on clinical features and hematology results were recorded on site upon admission to the hospital.

Results:

The dominant serotypes found in Ambon, Banjarmasin, and Batam were DENV-1, DENV-3, and DENV-2, respectively. Dengue patients in Ambon were significantly more likely to be younger compared to those in Banjarmasin and Batam ($p < 0.001$). Median hematocrit and leucocyte results in Ambon were significantly less severe compared to those in Banjarmasin and Batam ($p < 0.001$). Dengue cases in Banjarmasin were more likely to be secondary infections compared to those in Ambon (OR 6.7, $p < 0.001$), and Batam (OR 35.4, $p < 0.001$). Dengue cases in Banjarmasin were also more likely to report bleeding manifestations compared to those in Ambon (OR 3.8, $p = 0.007$).

Conclusion:

The diversity of population characteristics in the different regions of Indonesia leads to varied clinical features and serotype dominance of dengue disease in the country. Information on these differences in dominant serotype and clinical features of dengue may be able to aid the prevention of transmission and clinical management in these different regions of Indonesia.

Evaluation of NS1 Antigen Rapid Tests in Indonesian Population

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Background:

Dengue is an acute febrile disease endemic to Indonesia. Rapid tests have an important clinical role in diagnosis of dengue disease, particularly in areas that have no access to more sophisticated diagnostic techniques. This study compares the accuracy of NS1 antigen rapid tests on patients from Ambon, Banjarmasin, and Batam, representing the eastern, central, and western regions of Indonesia, respectively.

Methods:

A total of 307 clinical serum samples were obtained from febrile patients with suspected dengue infection from hospitals. Patients were tested for NS1 antigen with StandardTM Q Dengue Duo Test by SD Biosensor in the hospitals upon admission. The same samples are also tested with real-time RT-PCR testing using SimplexaTM Dengue Kit.

Results:

The overall sensitivity and specificity of the NS1 antigen rapid test were found to be 78.6% and 78.5%, respectively. The sensitivity in adults aged 18 and over was 90.9%, which was significantly higher than that in children under the age 18 years (70.6%, $p = 0.020$). The test had a significantly higher specificity in primary infections (95.0%) compared to secondary infections (69.4%, $p < 0.001$). It was also significantly higher in cases with a fever onset of 3 days and shorter (82.1%) compared to cases with a fever onset of longer than 3 days (74.2%, $p < 0.001$).

Conclusion:

The overall sensitivity and specificity of the NS1 antigen rapid test are comparable to previous studies conducted in other populations with endemic dengue. Patient characteristics such as age, immunologic status, and fever onset may affect the accuracy of the test.

Diagnostic Accuracy Of Three Dengue Diagnostic Tests For The Diagnosis Of Acute Dengue In Malaysia

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Background:

The growing demand of rapid dengue diagnosis gave rise to many point-of-care tests (POCT). This study evaluated the accuracy of ViroTrack Dengue Acute - a new biosensors-based dengue NS1 POCT, SD Bioline Dengue Duo NS1/IgM/IgG combo- a commercially available POCT, and SD Dengue NS1 Ag enzyme-linked immunosorbent assay (ELISA), for the diagnosis of acute dengue.

Methods:

This prospective cross-sectional study consecutively recruited 494 patients with suspected dengue from a Malaysian health clinic. They were tested for all evaluated tests; as well as reference standard comprised of a reverse transcription-polymerase chain reaction, and three ELISAs, each for the detection of dengue NS1 antigen, IgM and IgG antibodies. The diagnostic performance of evaluated tests were computed using STATA version 12.

Results:

The sensitivity and specificity of ViroTrack were 62.3% (95%CI 55.6-68.7) and 95.0% (95%CI 91.7-97.3), versus 66.5% (95%CI 60.0-72.6) and 95.4% (95%CI 92.1-97.6) for SD NS1 ELISA, and 52.4% (95%CI 45.7-59.1) and 97.7% (95%CI 95.1-99.2) for NS1 component of SD Bioline, respectively. The combination of the latter with its IgM and IgG components were able to increase test sensitivity to 82.4% (95%CI 76.8-87.1) with corresponding decrease in specificity to 87.4% (95%CI 82.8-91.2).

Conclusion:

The performance of ViroTrack Dengue Acute was comparable to SD Dengue NS1 Ag ELISA. However, the presence of serology component in SD Bioline Dengue Duo significantly improved its sensitivity such that it missed least dengue patients. New POCT like ViroTrack Dengue Acute may be an alternative POCT if its combination with serology component is proven better in future studies.

Keywords:

dengue, dengue diagnosis, point-of-care test, biosensors, evaluation

IMMUNE RELATED METABOLITES, CYTOKINES AND NS1 IN SEVERE DENGUE

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5. Perdana University

Background:

Severe dengue can be lethal caused by manifestations such as severe bleeding, fluid accumulation and organ impairment. This study aimed to investigate the role of dengue non-structural 1 (NS1) protein and host factors contributing to severe dengue.

Methods:

Electrical cell-substrate impedance sensing system was used to investigate the changes in barrier function of microvascular endothelial cells treated NS1 protein and serum samples from patients with different disease severity. Cytokines and metabolites profiles were assessed using a multiplex cytokine assay and liquid chromatography mass spectrometry respectively.

Results:

NS1 was able to induce the loss of barrier function in microvascular endothelium in a dose dependent manner, however, the level of NS1 in serum samples did not correlate with the extent of vascular leakage induced. Further assessment of host factors revealed that cytokines such as CCL2, CCL5, CCL20 and CXCL1, as well as adhesion molecule ICAM-1, that are involved in leukocytes infiltration were expressed higher in dengue patients in comparison to healthy individuals. In addition, metabolomics study revealed the presence of deregulated metabolites involved in the phospholipid metabolism pathway in patients with severe manifestations.

Conclusions:

Disease severity in dengue virus infection did not correlate directly with NS1 level, but instead with host factors that are involved in the regulation of junctional integrity and phospholipid metabolism.

The Dynamics of Chemokine Expression Profiles in Dengue Infection and Their Potential Use as Predictor of Disease Severity

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Background:

Dengue is considered the most important vector-borne disease in the world. The pathogenesis of dengue is still not fully understood and immunopathogenesis of severe dengue involves host immune mediators and soluble factors, mainly cytokines and chemokines, leading to the hallmark features of increased capillary permeability and extensive plasma leakage. In this study, we sought to decipher the role of chemokines in the progression of dengue disease severity.

Methods:

Thirty-eight dengue patients were recruited in Jakarta after provided informed consents. Clinical and hematological data were recorded. Dengue infection was confirmed using NSI antigen detection and real-time RT-PCR serotyping. The primary/secondary infection status was determined using Dengue Duo IgM & IgG ELISA. We evaluated the expression level of eight chemokines (CCL2/MCP-1, CCLI 7/TARC, CXCL5/ENA78, CXCL8/1L-8, CXCL9/MIG, CXCLIO/IP-IO, CXCLI 1/1TAC-1, and IL-10) using Luminex 8-plex multiplex immunoassay on plasma samples. The correlation between chemokine profiles, disease severity, and infection status was analyzed.

Results:

We measured the different chemokine expression profiles in the plasma of dengue patients. Increased levels of three chemokines, i.e. MCP-I, IP-IO, and ITAC-I was prominent in individuals with dengue hemorrhagic fever compared to dengue fever patients. The elevated expression of IP-IO and IL-IO were also observed in patients having secondary infection compared to the primary counterpart.

Conclusions:

Different chemokine expression profiles are demonstrated between mild and severe dengue patients. Collectively the data show that specific chemokines are associated with dengue disease progression and can potentially be used as dengue biomarkers.

Keywords:

dengue; chemokine; severity; IP-IO; biomarkers

Dengue Shock Syndrome in Infants: A Very Rare Case . A Case Series

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Objective:
To report dengue shock syndrome (DSS) case in infants.

Case 1:
An –eight-month- old baby presented to emergency unit with high fever since three days of admission. The vital signs at the time of admission was heart rate 140 x per minutes, blood pressure 80/60 mmHg, and temperature 390 C. No sign of bleeding. The laboratorium examination was hemoglobin 12,6 g/dl, hematocrit 34,9% leucocyte 4.480 mm3/µL, thrombocyte 32.000 mm3/µL, and positive NS1Ag. Dextra pleural effusion was found on right lateral decubitus (RLD) chest X-ray so the diagnosis of dengue hemorrhagic fever (DHF) was made. On the second day of inpatient, the patient was assessed compensated shock. The patient was recucitated with ringer lactate 20 ml/kgBW within 30 minutes and hemodynamic was improved. Twelve hours after loading, the patient was assessed compensated shock again and 7 ml/kgBW/hour was given and monitored intensively. On the seventh day of fever, the clinical condition was stable and the patient was recovered with the hemoglobin level was 9,3 g/dl and hematocrit was 27,3%.

Case 2:
A–six-month-old baby presented to emergency unit with high fever since four days before admission. The vital signs at the time of admission was heart rate 140 x per minutes,blood pressure 80/60 mmHg, and temperature 390 C There was petechie at region of sinistra retroauricular. On the day of admission, the patient was vomitting twice but the diuresis was still enough. We found hemoglobin 13,7 g/dl, hematocrit 39,3%, leucocyte 4.950 mm3/µL,thrombocyte 63.000 mm3/µL, and positive NS1Ag. Dextra pleural effusion was found on RLD chest X-ray, the diagnosis of DHF was made. The patient was assessed compensated shock and recucitated with ringer lactate 20 ml/kgBW and monitored in intensive care unit. On the tenth day of fever, the clinical condition was stable and the patient was recovered with the hemoglobin level was 9,1 g/dl and hematocrit was 27%.

Conclusion:
DSS can occur in infants. The clinician should be aware that the prevelance of Anemia is high, hemoglobin and hematocrit can't be reliable to determine hemoconcentration. Thoracal radiology like RLD can help to detect pleural effusion (sign of plasma leakage) which support diagnosis DHF,Anti-NS1 dengue is a helpful tool to confirm diagnosis DHF especially within 3 days.

Keywords:
dengue shock syndrome, infant, rare, leucopenia, thrombocytopenia

Epidemiological Characteristics of Dengue Hemorrhagic Fever (DHF) in Children in Primary Health Care

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Background:

The incidence of dengue has grown extremely fast around the world. In Indonesia, about 80% of regencies or cities had been infected and posed as the very high vulnerability of spreading the disease.This objective of this study is to describe the epidemiological characteristics of dengue hemorrhagic fever (DHF) in Primary Health Care.

Method:

An observational study had been conducted from January 2018 to December 2019 at Tebet Primary Health Care, South Jakarta. A total of 217 patients with dengue hemorrhagic fever (DHF) were collected, and only 143 data were children that implemented for this study. This study was carried using secondary data while adjusting for several criteria such as age, gender, and region.

Results:

The result showed that the peak incidence of DHF infections was detected in February and March 2019. There were 78 male patients (55%) and 65 female patients (45%) ages ranging from 20 months to 21 years old. Based on the age group, the highest incidence of DHF was found in the age group under 12 years old about 67 children (46.9%). The most region with Dengue Hemorrhagic Fever cases was Menteng Dalam subdistrict with 41 cases (28,67%).

Conclusion:

The present study reported that dengue mainly affected males and children. People should be aware of DHF and the awareness has to be raised particularly in February-March.

Keywords:

Epidemiological, Characteristics, Dengue Hemorrhagic Fever, Children, Tebet Region, Primary Health Care.

Dengue Virus in Jakarta in the Last Three Decades: Origin, Evolution, and Endemic Circulation

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Background:

Jakarta, the capital of Indonesia, is routinely afflicted by dengue disease outbreaks. Nevertheless, the genetic characteristics of dengue virus (DENV) causing the outbreaks have not been studied in-depth. Here, we describe the origin, evolution, and genetic characteristics of DENV in Jakarta in the last three decades.

Methods:

All publicly available DENV sequences as of June 2019 were analyzed, including published sequences reported from 1988, 1998, 2004, and 2009 dengue outbreaks in Jakarta. In addition, new sequences generated from our 2015 DENV surveillance study were incorporated in the dataset. Envelope gene dataset was inferred using Bayesian method to determine DENV evolutionary parameters and molecular clock dating of divergence time.

Results:

Published records shown that DENV-3 was the predominant serotype during outbreak in 2004, replaced by DENV-1 in 2009, and regained its predominance in 2015. Within each serotype, phylogenetic analysis grouped majority of Jakarta DENV-1 strains from 2009 and 2015 into Genotype I while older strains from 1988 and 2004 into Genotype IV. All DENV-2 strains were grouped together into Cosmopolitan genotype. DENV-3 strains grouping into Genotype I was marked with further distinct lineages grouping between 2009 and 2015 strains and older 1988 and 1998 strains, displaying different divergence times. DENV-4 strains were classified into Genotype II.

Discussion:

The dynamic of DENV circulation in Jakarta was shown by the cyclical behavior of DENV serotype predominance and DENV-1 genotypes replacement. Phylogenetic and evolutionary inference analyses depict an endemic DENV transmission and local evolution, causing periodic outbreaks in the last three decades.

Keywords:

dengue, Jakarta, serotype, genotype, evolution

Entomological Status Based on Vector Density Index and Transovarial Infection on Aedes sp. Mosquito in Meteseh Village, Semarang City

MARTINI

Diponegoro University, Indonesia

Dengue Hemorrhagic Fever (DHF) is a disease caused by Dengue virus. In 2016, the number of DHF patients in the working area of Rowosari Community Health Center was 247 people, IR 289.6 and the highest number of the patients was from Meteseh Village. The study was conducted to identify the general description of entomological status of House Index (HI), Container Index (CI), Breteau Index (BI), Free Number of larvae (ABJ), Ovitrap Index (OI) of DHF vector as well as transovarial infection in Aedes sp. Mosquito. This descriptive research was conducted by examining the entomological status of dengue mosquito vector based on HI, CI, BI, ABJ, OI, and transovarial infection in Aedes sp. The result showed that the average number of HI was 8.99%, CI was 2.88%, BI was 16.40%, ABJ was 91.01%, and OI was 35.46% with an average egg density of 10. 23%. The identified mosquitoes were 30, among which two species found were Aedes aegypti at (93.33%) and Aedes albopictus at (6.67%). Transovarial infection in Aedes sp. generated from transovarial examination with Elisa method showed that 6 samples were mosquitoes positive dengue virus collected from RT 01 (1 sample), RT 02 (2 samples), RT 03 (3 samples). Related institutions should advise community to do EBP actively to decrease vector density and increase the awareness to avoid dengue disease.

NOTE

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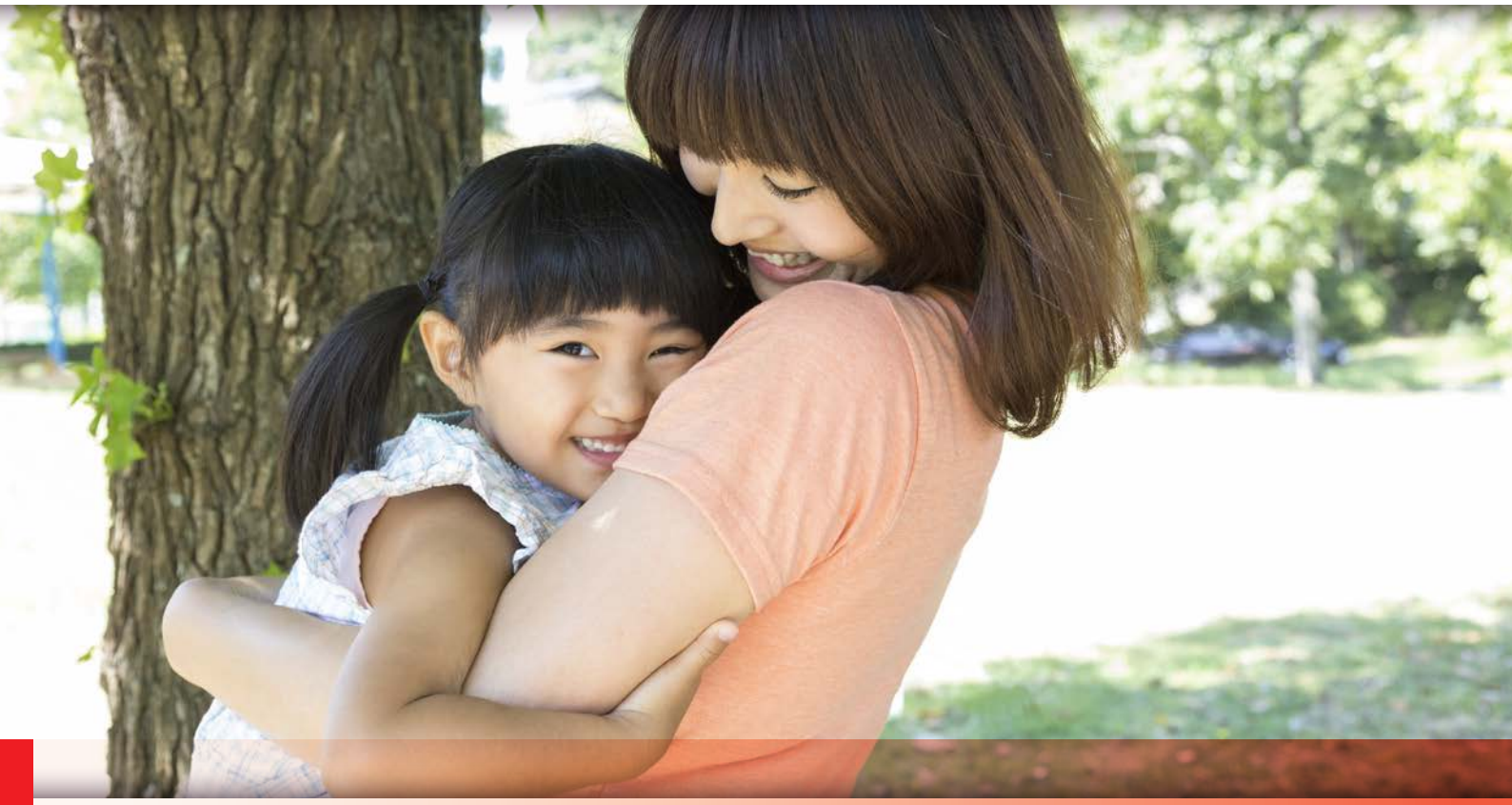

Better Health, Brighter Future

Vaccines prevent between 2-3 million deaths per year and have greatly reduced the burden of infectious diseases worldwide.[1]

Building upon two centuries of healthcare experience in Japan, Takeda's world-class vaccine team is demonstrating leadership in global vaccine development and delivery. Substantial investments in vaccine R&D aim to tackle challenging health problems for which there is currently an unmet need.

With our breadth of expertise and our collective experience, Takeda will always be committed to addressing pressing public health issues.

[1] WHO Immunization Coverage Fact Sheet http://www.who.int/mediacentre/factsheets/fs378/en/