

World Health Organization Collaborating Centre for Reference and Research of Arbovirus and their Associated Vectors



Terms of Reference for EHI as a WHO CC

- Environmental Health Institute (EHI) of National Environment Agency (NEA), Singapore, conducts research, surveillance and evidence-based risk assessment on infectious diseases of environmental concern.

Terms of Reference

- Support WHO to strengthen capacity of entomological and viral surveillance and control in countries and support WHO's efforts in developing a regional and global network of national dengue surveillance systems.
- Provide testing protocols, surveillance kits, reference biological materials and tertiary referrals to enhance the quality of surveillance and disease diagnostics during outbreaks at the request of WHO.
- Participate in operational research under WHO guidance and support the implementation of Global Arbovirus Initiative.



Receiving the WHO Regional Director's award for Outstanding Collaborating Centres, at WHO-WPRO's 3rd Regional Forum, Nov 2018

1 Strengthening Capacity of Entomological and Viral Surveillance and Control Among WHO Member States

Project *Wolbachia* – Singapore

- 98% suppression of the urban *Aedes aegypti* mosquito populations with regular releases of male *Wolbachia*-carrying *Aedes aegypti* mosquitoes since 2016.
- 30% of high-rise public residential apartments in Singapore receive releases of male *Wolbachia*-*Aedes* mosquitoes as of Sep 2022, more than 1 million residents protected from dengue.
- Over 150 overseas delegates from over 70 countries have visited NEA's mosquito production facility, to learn mosquito rearing for large-scale releases, as at Mar 2023.
- Strong local and international collaborations: IAEA, Imperial College London, Michigan State University, National University of Singapore, Sun Yat-Sen University, Orinno Technology and Verily Life Sciences.



Official opening of EHI's Mosquito Production Facility, 2 Dec 2019

2 Training and Sharing of Best Practices to Enhance Regional and Global Surveillance and Control

Singapore International Dengue Workshop (SIDW)

- Key capacity and capability building programme on dengue surveillance and control
- Jointly organised by EHI, WHO and Ministry of Foreign Affairs (Singapore)
- Trained more than 450 participants from 57 countries, over 7 workshops held from 2009 – 2023.



6th SIDW, 21 – 25 Oct 2019, SIN

Training Courses on Surveillance and Control of *Aedes* mosquitoes with the International Atomic Energy Agency

- Trained over 90 participants from 13 countries over 5 sessions (Nov 2022, Jan 2022, Dec 2019, June 2018, Nov 2015)



Regional Training Course Co-organised with IAEA, 21 – 25 Nov 2022

3 Enhancing Quality of Surveillance and Disease Diagnostics Globally

Regional External Quality Assessment (EQA) Programmes for Dengue and Emerging Infectious Diseases

- Raise standards in regional dengue and chikungunya diagnosis, and strengthen regional surveillance and preparedness for other emerging infectious diseases.
- Continue to contribute to the WHO Arbovirus Laboratory Training Programme by providing external quality assurance to participating countries (Myanmar, Philippines and Indonesia).

Reference Testing and Characterisation of Arboviruses

- Genotyped 823 dengue virus samples and shared sequence information amongst UNITEDengue partners from Mar 2022 – Feb 2023.
- Collaborated with the University of Queensland since Jan 2021 to expand knowledge of the virome of urban- and rural-caught mosquitoes in Singapore.
- Commenced the evaluation of two commercially-available multiplex RT-qPCR kits for the detection of dengue, zika and chikungunya using circulating viruses and clinical specimens.

4 Sharing Knowledge and Expertise in Outbreak Preparedness and Response to Arboviral Infections

Technical Consultancy in WHO Activities

- 45 appointments as WHO Temporary Advisors from 2011–2022

Regional Training and Capacity Building Efforts

- Held 55 training attachments/visits for regional scientists and public health officers from 2011–2023
- Build capacity through sharing and participating in various platforms, e.g.:

- ASEAN Member States Dengue Day forum held on 15 Jun 2021 – participated by close to 50 attendees from ASEAN Member States and WHO.
- Presentations at the 5th Asia Dengue Summit held on 13 – 15 Jun 2022 in Singapore. This summit provided opportunity for the regional dengue community to exchange ideas, provide updates and share achievements on dengue management strategies.
- Local GP seminars as part of ASEAN Dengue Day (12 Jun 2021 and 18 Jun 2022) - participated by medical, scientific and public health professionals.



Ms Grace Fu, Minister for Sustainability and the Environment, Singapore, delivering key note speech at the 5th Asia Dengue Summit, 13 – 15 June 2022

5 Partnering WHO Member States in Operational Research

Research Collaborations with WHO Member States

- Collaborated with MRC Centre for Outbreak Analysis and Modelling, Imperial College London (WHO CC for Infectious Disease Modelling) on data analytics and mathematical modelling
- Part of the Worldwide Insecticide resistance Network (WIN): WHO-TDR initiative and international consortium, which undertakes global surveillance and management of insecticide resistance in mosquito vectors of arboviruses



UNITEDengue (UNited In Tackling Epidemic Dengue)

- Regional network for cross-border sharing of dengue surveillance information and dengue control knowledge among Brunei, Malaysia, Philippines and Singapore.
- Initiative by NEA-EHI and Malaysia's Ministry of Health.
- Endorsed by the ASEAN Health Sector, as a platform for sharing of dengue data in region.



Launch of UNITEDengue, 28 Aug 2012, SIN

