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Meeting of Partners on Dengue Prevention and Control in Asia-Pacific

Chiang Mai, Thailand, 23-24 March 2006



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Executive Summary

Dengue has emerged as a serious public health problem in the countries of the South-East Asia and Western Pacific Regions of the World Health Organization (WHO). As the disease spreads to new geographical areas, the frequency of its outbreaks are increasing along with a changing disease epidemiology. Efforts to effectively prevent and control dengue have been constrained due to the inadequate resources and lack of coordinated efforts. In view of this, and with generous support from the Government of Japan, a two-day meeting of partners on dengue prevention and control in Asia and the Pacific was held in Chiang Mai, Thailand on 23-24 March 2006. The meeting was preceded by a press conference at the Foreign Correspondents Club in Bangkok, Thailand on 22 March 2006. There was significant coverage of the event by the national and international media following the press conference. Advocacy documents and posters related to the disease burden of dengue, strategy and partnerships were prepared for the meeting.

The meeting involved National Programme Officers from nine countries of the WHO South-East Asia Region, seven from the Western Pacific Region and partners from the Asia-Pacific Economic Cooperation (APEC), USAID, UNICEF, South-East Asia Education Organization on Tropical Medicine (SEAMEO Tropmed), the private sector, foundations, academia, WHO collaborating centres, WHO country and regional offices, WHO headquarters and TDR. Dr Narongsak Unkasuwapola, Deputy Permanent Secretary, Ministry of Public Health, Royal Thai Government, delivered the opening remarks on behalf of the Ministry of Public Health of Thailand.

Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia Region, delivered the inaugural address. In his address, he thanked the Government of Japan for generously providing funding to support the meeting. He highlighted the changing epidemiology of dengue-relating unplanned and uncontrolled urbanization and how increased and rapid travel and migration contributed to the emergence of dengue. He stressed the need for a review of the dengue situation by experts and partners in order to evolve appropriate strategies on the prevention and control of the disease. Dr Dato Tee Ah Sian, Director of Combating Communicable Diseases, WHO Western Pacific Region, also addressed the meeting on behalf of the Regional Director of WHO's Western Pacific Region. Mr Trang Tuan Tran, Ambassador to the Asia-Pacific Economic Cooperation (APEC), stressed the economic goals of APEC and on health security impacting the growth and prosperity in the countries of the Region.

The general objectives of the meeting included a review of the dengue situation and a strengthening of the partnership in the Asia-Pacific with specific objectives to review the evolving situation in the Region. It also aimed to discuss priority strategies and interventions for prevention and control of dengue and promote and discuss partnership roles for the same.

Presentations were made at the meeting to review the global dengue situation. Future perspectives were discussed by Prof. Gubler, Temporary Adviser for WHO, and an overview of the dengue situation in the Western Pacific Region was presented by Dr Kevin Palmer. Dr Chusak Prasittisuk also presented a summary of the dengue situation in the WHO South-East Asia Region and a concept paper for dengue prevention and control.

Under the agenda item on success stories on dengue prevention and control, presentations were made on the subject on public health policies by Dr Vijay Kumar, Temporary Adviser, and on Vector Control by Dr Michael Nathan, Focal Point for Dengue, CDS/HQ. Prof. D. J. Gubler spoke on surveillance and laboratory networks and Dr Suchitra Nimmanitaya deliberated on clinical management. Experiences on vector control in Singapore and on communication for behavioural impact in Malaysia were shared by Dr Go Kee Tai and Dr Raili Suhalli respectively.

Under the agenda item on partnership, the role and importance of working partnerships and existing partnerships were presented by Dr Elil Ranganathan, Director, WHO Mediterranean Centre for Vulnerability Reduction, Tunisia. He also moderated the discussion on networks for dengue prevention and control for the Asia-Pacific, which saw the active participation of partners attending the meeting.

Discussions were held on each agenda item and programme managers and partners shared perspectives and experiences in dengue control in their respective countries with participating agencies making a number of constructive comments/suggestions.

The participants agreed to and adopted the following recommendations following extensive discussions:

- The 'Asia-Pacific Dengue Partnership' be established, including a core group and technical working groups, in order to increase public and political commitment to achieve financial and programmatic targets for the prevention and control of dengue in the Asia-Pacific.

- Member States send expressions of interest to join the core group to SEARO and WPRO (while keeping WHO representatives informed) by 15 April 2006. Expressions of interest should include demonstrated competence to work on an international basis, a proven track record for mobilization of funds and availability of time.
- WPRO and SEARO finalize membership of the core group comprising of selected Member countries and key partners for dengue prevention and control by 1 May 2006.
- The core group develops a strategic plan for dengue partnership based on the information from countries, lessons learnt from existing experiences in dengue prevention and control and partnerships formed for the control of HIV, TB and malaria. The strategic plan, to be prepared by 30 September 2006, should identify priority actions, capacity and resource needs, TORs and scope of work for the working groups, a plan for sustaining the partnership, and resource mobilization.
- A follow-up partners' meeting to be organized to review the Strategic Action Plan, finalize the TORs and agendas of working groups and plan subsequent actions before the end of 2006.

The meeting also appreciated the support provided by the Government of Japan and highlighted the cooperation of WPRO and SEARO on combating dengue, calling it a model for cooperation at the global level.

1. Background

Dengue has emerged as a serious public health problem in the countries of the South-East Asia (SEA) and Western Pacific (WP) Regions of the World Health Organization (WHO) over the last couple of decades. During this period the disease has spread to new geographic areas, the frequency of its outbreaks has increased and it has changed its epidemiology. Efforts to effectively prevent and control dengue have been constrained in the past because of inadequate resources and lack of coordinated control efforts. The Ministry of Health, Labour and Welfare of the Government of Japan has provided generous support for taking steps for strengthening of partnerships in Asia-Pacific countries for the prevention and control of dengue. A meeting of partners on prevention and control of dengue in the Asia-Pacific was organized in Chiang Mai, Thailand on 23-24 March 2006. It was preceded by a press conference at the Foreign Correspondents' Club in Bangkok, Thailand on 22 March 2006.

Participants in the partners' meeting included national programme staff from nine countries of the South-East Asia Region and seven from the Western Pacific Region. The partners included the Asia-Pacific Economic Cooperation (APEC), United States Agency for International Development (USAID), United Nations Children's Emergency Fund (UNICEF), South-East Asia Ministers' Education Organization on Tropical Medicine (SEAMEO Tropmed), representatives from the private sector, foundations, academia and temporary advisers as experts. WHO was represented by staff from WHO Collaborating Centres (CCs), country offices, regional offices, headquarters and Research in Tropical Diseases (TDR) unit. A list of the participants is included in the annexure.

2. Opening session

The Provincial Health Officer of Chiang Mai province welcomed the participants at the meeting. Dr Narongsak Unkasuwapala, Deputy Permanent Secretary, Ministry of Public Health, Royal Thai Government, delivered the opening remarks on behalf of the host country's Ministry of

Public Health. Calling the dengue situation in the Asia-Pacific alarming, he said the prevention and control of the disease would require intersectoral collaboration and community participation since dengue is everyone's concern. Partnerships are required and resources have to be mobilized. Dr Narongsak, outlined the success in reduction of fatality rates through standard case management and vector control through Thailand's weekly household monitoring programme in Thailand. The Royal Thai Government is committed to the control of dengue for which it is ready to work closely with neighbouring countries through intercountry collaboration, he added.

Dr Dato Tee Ah Sian, Director of Combating Communicable Diseases, WHO Western Pacific Region, called dengue a 'neglected disease' since it made headlines only during an epidemic but was forgotten as soon as the crises was over. There is no vaccine for the prevention of dengue but vector control and other control measures are effective and will still be required even when a vaccine is available, she said. The Asian Development Bank (ADB) has been supporting Laos, Cambodia and Viet Nam and the Pacific countries are being supported by AUSAID. She articulated the commitment of the Western Pacific Region and hoped that the collaboration between the two Regions in the prevention and control of dengue will be further strengthened.

Mr Trang Tuan Tran, Ambassador to APEC, stressed on the economic goals. Health security being a major issue for economic development, the impact of infectious diseases on the growth and economic prosperity of the countries of the Region is an important concern for APEC. APEC has finalized a strategy for combating infectious diseases in 2001 and supported efforts in the control of Severe Acute Respiratory Syndrome (SARS) and avian influenza. A task force was established by APEC in 2004 in response to these threats. The organization supports the networking approach in the prevention and control of dengue and promotes higher levels of cooperation amongst the countries of the Asia-Pacific region.

Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia Region made the inaugural remarks. In his address he highlighted the changing epidemiology of dengue which is related to unplanned and uncontrolled urbanization, creating problems in water supply and solid waste management that lead to increased vector breeding. The phenomenon of increased and rapid travel and migration is also contributing to the emergence of dengue. He stressed the need for a review of the dengue situation by experts and partners in order to evolve

appropriate strategies in the prevention and control of the disease. Much more attention will be required on intersectoral collaboration and community mobilization since dengue control has to be everyone's concern, he said. Prompt control of outbreaks would require the development of an effective surveillance and early warning system. Dr Samlee thanked the Government of Japan for its generous support and appreciated the interest and participation of UN agencies, bilateral partners, foundations and academic institutions in the meeting. The Royal Thai Government was also praised for organizing the meeting.

The list of participants is given in Annex 1 and the programme of the meeting is provided in Annex 2.

3. Objectives

3.1 General objective

- To review the dengue situation and strengthen partnerships in the Asia-Pacific.

3.2 Specific objectives

- To review the evolving dengue situation in the Asia-Pacific;
- To discuss priority strategies and intervention for prevention and control of dengue, and
- To promote partnership and discuss on partners' roles for dengue prevention and control.

4. Emergence of dengue

The efforts made by WHO in developing effective prevention and control interventions for dengue were appreciated. These include the following:

- Development of a global strategy;
- Support to the development of operational and emergency response plans in countries;

- Development of vaccine;
- Improved case management for reduction in case fatality rates;
- Development of better diagnostic tests, and
- Improved surveillance and formation of a DengueNet.

Currently there is no vaccine to prevent dengue and no specific antiviral drug for the treatment of dengue. However, enough is known about the epidemiology of dengue to implement and scale up effective prevention and control programmes. Future success will depend on the mobilization of resources, sustained political commitment, initiation and sustenance of partnerships at global, regional and local levels, improved surveillance and vector control.

Dengue declined in tropical American countries for about 40 years because of effective mosquito control but reappeared over the last three decades. In Australia, dengue was common until the 1920s till effective control was exercised as a result of good environmental management. But, as in countries of the American continent, it has reappeared in Queensland. Dengue outbreaks also occur in Africa, but surveillance being poor not much is known of the disease in that continent. In Asia and the Pacific, dengue has become an alarming public health concern. The disease has an important public health, social and economic impact on most countries in these regions. The Disability adjusted life in years (DALYs) lost due to dengue are comparable to hepatitis and meningitis. The mosquito responsible for the transmission of dengue is also responsible for the spread of yellow fever and Chickungunya. An effective vector control strategy would contribute to the collateral benefits in prevention and control of these diseases.

In the Western Pacific Region the disease is of concern in Viet Nam, Cambodia, Laos, Malaysia, Singapore and the Phillipines. The maximum incidence of dengue is in the Pacific countries. The shipment of tyres and tourism have been implicated for the emergence of dengue in this region. The health infrastructure in the Pacific island countries is fragile. In some affected islands dengue may affect up to 75% of the population with high case fatality rates. The problem in the Pacific islands is worrisome since their economies depend on tourism and this gets a serious setback as a result of the outbreaks. The region has, however, done well in reducing the case fatality rates through standard case management.

The dengue situation in the countries of the South-East Asia Region has worsened. All countries in the Region except DPR Korea and Nepal report outbreaks of dengue. Bhutan reported the first outbreak in 2004. The frequency and intensity of dengue epidemics is increasing, though case fatality rates have declined at least in the larger cities in the region due to improved case management of DHF.

Points for discussion

Movement of population, urbanization, lack of effective mosquito control and modern transportation are responsible for the dramatic spread of dengue. Climatic factors are often implicated, but are not important. Dengue outbreaks are related to the immunity of the population and the strain of virus. When the immunity is low the risk of an epidemic is high though the vector density may be low.

5. Dengue control: Everyone's concern and concept paper for dengue prevention and control

Since the vector responsible for dengue transmission breeds in a domestic and peri-domestic environment, effective control of dengue is possible only if it is viewed as everyone's concern. The roles of individuals, family members, the community, local self government, national authorities and international agencies were identified during the meeting. The strategy concept paper for prevention and control of dengue in the Asia-Pacific was summarised. The five-year strategic plan (2006-2010) includes specific goals and targets. Key strategic interventions include the following:

- Prevention of dengue;
- Standard case management;
- Epidemic prevention and control, and
- Partnerships.

The key indicators to measure progress were presented and the expected outcomes by the year 2010 shared. The draft strategic concept paper for prevention and control was provided to participants from Member countries of the Asia-Pacific for comments and suggestions. This should be

discussed with the partners and stakeholders and presented to the Regional Technical Advisory Group (RTAG) for review, refinement and revision. Following this the Regional Strategy for the Asia-Pacific should be used as a framework to prepare national operational plans incorporating budgets and timelines. This will prove useful in identifying the resource gaps.

As part of the advocacy measures a poster on dengue, a docket containing key information and the Dengue Bulletin, Volume 29 (2005), produced by WHO/SEARO & WPRO, were available for distribution at the meeting.

6. Success stories on dengue prevention and control

6.1 Partnerships

Strong and sustainable partnerships are key to success in programme implementation and are important for the following reasons since they;

- Increase the visibility of the problem;
- Increase levels of political commitment, and
- Enhance mobilization of resources.

Partnerships are likely to work if there is a common cause; partners contribute according to their comparative advantage and there is an ongoing exchange of information and communication to sustain their interest and involvement. Dengue is a complicated problem and effective prevention and control requires holistic participation. Several existing partnerships were described at the meeting with some example including:

- Paediatric vaccine development initiative;
- DengueNet established by WHO/HQ;
- Communication for Behaviour Impact (COMBI) in several countries in the region for community involvement;
- Support provided by WHO CC on Clinical Management, Bangkok, Thailand to reduce the case fatality rates;
- Contributions from TDR on research and development;
- Partnerships between the government and private sector in Singapore;

- Inclusion of research on developing new drugs for dengue treatment by Novartis, and
- Support provided by the Rotary International in the community-based control of dengue in Indonesia and its work through the municipal health authorities in Cambodia.

The existing partnership in the prevention and control of dengue is a good starting point for initiating new partnerships and for sustaining them. Partnerships will be successful if political commitment is sustained and public pressure for effective prevention and control of dengue is stepped up.

6.2 Healthy public policies

Healthy public policies require the involvement of health, environment, law, and industry ministries. These policies should focus on partnerships with private sector for improved design of buildings, water-storage tanks, drainage systems, coolers, air-conditioners and other household containers where stored water serves as a breeding site. It also includes improved tyre management. WHO should provide the standards to guide the framing of national policy and health impact assessment of developmental activities should become mandatory.

The national policy on dengue prevention and control needs to be written after obtaining a consensus with stakeholders including the academia. A key elements is making dengue a notifiable disease. Vector breeding should be made punishable. The strategic principles as a part of national policy should include the following:

- Risk assessment and management;
- Risk communication;
- Control of vector breeding sites through environmental management, personal protection, control of larva, chemical and biological control and adult mosquito control.
- Guidance on reporting and information exchange across the borders.

The implementation of national policy can be successful through regulations in which there is participation of local self governments, municipalities and other concerned stakeholders in the private sector.

6.3 Vector control

Several success stories are available to illustrate the role of vector control:

- Latin American countries achieved considerable success in controlling dengue through vector control between 1930 and 1970;
- Cuba has successfully implemented traditional approaches in an intensive manner;
- Singapore has undertaken a successful effort that includes vector monitoring and vector control;
- Viet Nam has been successful in adopting biological control methods through social mobilization, and
- Cambodia has achieved good results by improving the design of water-storage containers and improved larval control measures implemented through partnerships.

Enduring partnerships have been common denominator for success in these countries. The key lesson learnt is that the approach should be integrated vector management (IVM) through partnerships. There has been some success on a short-term basis and it remains to be seen if these efforts can be sustainable.

6.4 Surveillance and laboratory networks

The currently used active and passive surveillance for dengue were described at the meeting. Surveillance in most endemic countries is not very useful since it is mainly passive and reporting is done by clinicians who are mostly in the government sector. What is required is the support of an active laboratory-based surveillance system to monitor dengue activity by time, location, serotype and severity during inter-epidemic period. The triggers for early recognition should be used without any political interference. A sentinel fever alert system supported by laboratory facilities

for testing for a variety of infectious diseases is recommended to determine the agents that are circulating in the community. The number of countries participating in DengueNet in the Asia-Pacific continues to be low. A number of national and regional laboratories with quality assurance and networking is required for effective surveillance. This networking can be functional through intercountry and national partnerships.

6.5 Clinical management

Important aspects of standard case management that have contributed to reductions in case fatality rates were discussed. These include:

- Early referral of patients with Dengue Haemorrhagic Fever (DHF) is useful in reducing the case fatality rates;
- Use of standard guidelines produced by WHO has helped in reduction of case fatality rates in DHF;
- WHO CC in Thailand has assisted in development of capacity of staff responsible for treatment of DHF in Thailand and neighbouring countries, and
- Monitoring of platelets and haematocrit has been very useful in the management of patients.

6.6 Experiences with vector control in Singapore

The success in Singapore has been achieved through the strategy of vector control, source reduction, health education and legislation. Partnerships have been important in determining this success. The strategy is implemented through public private partnerships and people's participation. Vector control measures have lead to a reduction in vector density but in spite of this dengue outbreaks have occurred in Singapore. This is attributed to low herd immunity, travel and influx of foreign workers, migration, and shift in breeding sites. The outbreaks in Singapore are associated with the milder form of disease. Intensive vector surveillance has become very important. Ovitrap and gravid traps are being used to monitor the vector; the latter also kills the mosquitoes.

6.7 Experience in Malaysia on communication for behavioural impact (COMBI)

The dengue situation has worsened in Malaysia since 2001. Vector breeding is high at building sites, in schools and in other public places. Mobilization of the community and vector control were undertaken through political commitment, partnership and community participation. The COMBI strategy was used in 2001 for a period of three months. Behaviour impact objectives were identified with targets to be achieved. The expected impact was that every family will monitor the vector by examination of the household for 30 minutes per week. Every case of fever should be reported to a hospital within 24 hours of occurrence. Johor Baru was selected as the site since it reported the highest incidence of dengue in Malaysia. The five-pronged strategy comprised:

- (1) Advocacy and public relations;
- (2) Sustained appropriate advocacy;
- (3) Interpersonal communication;
- (4) Personal selling, and
- (5) Point of service promotion.

About 89% of the households reported this weekly inspection which was non-existent prior to the mobilization. Nearly 65% of the patients with fever reported to the hospital within 24 hours of occurrence of the illness. Encouraged by the initial success of a 40% reduction in the incidence of dengue, the programme has been expanded to eight states of the country.

Points for discussion

Mobilization of resources needed for dengue prevention and control is handicapped by the lack of accurate epidemiological data or estimation of burden of disease. It is difficult to carry out mathematical modelling for estimation of the burden of disease because of the inaccuracy of data. It is recommended to undertake a few good studies and then estimate the burden by modelling. The cost estimations for dengue made by Dr Schwarz are US\$ 2.6 billion between 2000-2009.

The WHO Special Programme on Research and Training in Tropical Diseases (TDR) is an important partner in supporting dengue research at all levels; case classification and case management; vector control tools and strategies; pathogenesis, as well as implementation research. TDR works with the Paediatric Vaccine Initiative (PDVI) on the evaluation and further development of dengue diagnostics. The example was given of kala-azar where research makes a crucial contribution to an elimination initiative. A similar approach can be adopted for dengue.

7. Partnerships and networking for dengue prevention and control

The following key issues were discussed:

- The lack of visibility of dengue except during an outbreak;
- The problems in sustaining political commitment;
- Dengue control is a part of the vector-borne disease control programme in most countries of the Asia-Pacific;
- There is insufficient intersectoral collaboration;
- Partnerships and networking (except DengueNet) are not enough and often not sustained;
- The resource gap is large and not estimated;
- Effective control requires intercountry and cross border collaboration, and
- Global support and advocacy is important.

There being a felt need for partnerships and networking as the way forward, the meeting tried to crystallize the key steps for these.

7.1 Comments by country programme managers

Timor-Leste and Indonesia have experienced outbreaks. While the Case Fatality Rate (CFR) is low in large cities, it continues to be high in the outer islands where the capacity of the health facilities for standard case

management is low. Indonesia narrated the example of partnership between Rotary International, the oil industry and the Women's Movement Association, an illustration of public-private partnership. The experience of Thailand indicates that the approach for dengue control should be multi-sectoral and community mobilization is essential. Dengue does not respect international borders. Transparency and regular information exchange are important and this requires multi-country activity. International support with regional involvement is necessary for improving laboratory investigation and quality assurance. The DengueNet needs to be expanded and further, reduction of case fatality rates is possible through improving standard case management in the smaller hospitals.

In the Philippines, dengue control is a part of the Vector-borne Disease Control Programme. The programme is trying to position itself so that it can be strengthened within the vector-borne disease control efforts. Disease surveillance initiatives are being given considerable support in the Asia-Pacific for tackling the SARS and avian influenza epidemics. Dengue surveillance should find a place within the national and regional surveillance and networking efforts. Dengue has also been included in the Mekong Basin Disease Surveillance Project. This is an opportunity for refining surveillance and strengthening intercountry information exchange.

India is implementing a project for integrated disease surveillance and proposing to upgrade the laboratory diagnosis capacity. Dengue can be included in the portfolio of these laboratories. The surveillance of dengue can take advantage of the information technology inputs in integrated disease surveillance. The partners can support the national programme manager in positioning dengue control efforts as a part of the Vector-Borne Disease Control Programme through World Bank funding.

Laboratories are being upgraded to respond to the threat posed by avian influenza. A similar effort was made at the time of the SARS epidemic. The sophisticated laboratories should include investigation of known and unknown agents including dengue. They have an important role to play in quality assurance.

The partners should be on the lookout for increased opportunities for funding for country operational plans which will identify resource gaps and enhance intercountry/multi-country activities.

The collaboration between the South-East Asia and Western Pacific Regions of WHO in the past over dengue prevention and control has made important contributions. This collaboration should be further strengthened in view of the continuing challenges.

7.2 Comments by the partners

Rotary International has 1.3 million members in over 160 countries worldwide and has been instrumental in the success of the programme for eradication of poliomyelitis. Rotary has also funded dengue-control programme in several countries in Asia and Latin America for over 20 years. Education, water supply and environment are on Rotary's priority list for the new millennium. Prevention and control of dengue – which is an emerging problem – best fits into the priorities of Rotary. Besides funding support, Rotary also brings in a broader participation. WHO and partners should advocate with Rotary to include dengue control in its support programme following the eradication of polio.

UNICEF has been an important partner and can contribute to community mobilization efforts. It should be on the agenda since the brunt of dengue and DHF is borne by children.

USAID is currently focussed on, controlling the spread of avian influenza, HIV/AIDS and TB. The participation of USAID in the partners' meeting reflects the importance attributed to dengue prevention and control in the Asia-Pacific. It is possible to include dengue prevention and control in the existing portfolio of disease surveillance and epidemic control.

The Paediatric Dengue Vaccine Initiative (PDVI) was established to facilitate the introduction of dengue vaccines to dengue endemic countries for prevention of the disease. PDVI works closely with all the major dengue vaccine development research groups and with manufacturers who have licensed potential candidate vaccines. It proposes to undertake vaccine safety and vaccine efficacy studies through a network of surveillance sites in a number of countries in both the Asian and American regions preparatory to vaccine licensure and introduction. It is also supporting vaccine safety research and cost effectiveness studies.

An effort can also be made to mobilize funds from Global Fund for HIV & AIDS, TB and Malaria (GFATM) as a part of vector-borne disease control. World Bank funding as part of the ongoing support that it provides in the countries should be explored by the dengue prevention and control programme. A strong case should be made for finding the appropriate position for dengue within the portfolio of neglected diseases initiative.

Panbio is interested in providing diagnostics at a discounted price and support training and education as a social cause. Novartis has established a major programme to develop antiviral drugs for dengue in Singapore. Novartis is establishing a research centre in Indonesia in partnership with the Eikman Institute and Hasanuddin University.

The Armed Forces Research Institute of Medical Sciences (AFRIMS) in Thailand works with the nationals but supports other countries on request. SEAMEO Tropmed in Thailand includes a partnership of 11 countries with a focus on development of capacity in education and health. It has AIDS and disaster management on its agenda. Dengue prevention and control has a strong justification for inclusion in the agenda of SEAMEO Tropmed.

Academic institutions such as the College of Public Health, Chulalongkorn University in Thailand, Burnet Institute, Australia, Genome Institute in Singapore and the University of Hawaii are important partners that link the programme with research and assist with capacity development.

A strategic plan for advocacy should be prepared by the partners. The participants decided to form a core group comprising of countries from the South-East Asia and Western Pacific Regions and key partners to prepare the strategic plan for the partnership on dengue and the terms of reference for working groups that will deal with important technical issues. There is a need to mobilize seed funds for the partnership mechanism to become functional. The various terms of reference and the specific scope for the partners should be formulated. While new partnerships should be established existing partnerships also need to be expanded and sustained and this should be included in the strategic plan. The strategic plan for partners should include intercountry collaboration and bi-regional collaboration. It should also include an action plan for the partners to support the countries and work with the NGOs and participants from the private and corporate sectors. It should be focused on advocacy, sustained political commitment, capacity development and a blueprint for initiating

and sustaining partnership. Advocacy for funds should highlight the collateral benefits of dengue control in the control of yellow fever and Chikungunya epidemic. It is an important input into integrated disease surveillance and control of vector-borne diseases. The prevention and control of dengue envisages that the corporate sector and developed countries have an important stake since the disease is a threat to travellers and overall economic progress. Seed support funds are required to initiate the partnerships. The strategic plan for the Asia-Pacific should be focused and not generic; there are partnerships for dengue prevention and control but these are not coordinated, coalesced or harmonized.

A clear differentiation is needed between the Asia-Pacific strategic plan which is required for countries to use as a framework for preparing their operational plans with timelines and budget. The gaps in resources should be reflected in the operational plans. The operational plans need to include multi-country activities and intersectoral collaboration in the prevention and control of dengue. The medium-and long-term strategy requires development and use of vaccine to prevent dengue and to treat dengue with specific anti-viral drugs. Investments required for these developmental activities are substantial. Global efforts and partnerships are needed for progress in the development of vaccines and drugs. Till such a time the existing evidence-based knowledge should be applied and the main strategies for dengue prevention and control-comprising of prevention through vector control, standard case management, epidemic control through revamped surveillance and partnership-being cost-effective approaches can be scaled up. Projections are needed to compare the cost of the disease with the cost of interventions.

8. Conclusions and recommendations

The first major joint regional meeting of partners on dengue saw the participation of representatives from the governments of many high burden countries and a wide range of other public and private sector agencies and institutions. The meeting, which came in the wake of the growing public health problem of dengue, was supported by the Government of Japan. There was broad consensus on a way forward through the establishment of the Asia-Pacific Dengue Partnership to more effectively mobilize resources and implement measures of prevention and control in accordance with the global strategy.

The meeting recommended the following:

- (1) The 'Asia-Pacific Dengue Partnership' be formally established with a core group and technical working groups to increase public and political commitment to achieve financial and programmatic targets to prevent and control dengue in the Asia-Pacific.
- (2) Member States send expressions of interest to join the core group to WHO SEARO and WPRO (while keeping WHO representatives informed) by 15 April 2006. Expressions of interest should include demonstrated competence to work on an international basis, proven track record for mobilization of funds and availability of time.
- (3) WHO WPRO and SEARO finalize the membership of the core group comprising of selected member countries and key partners for dengue prevention and control by 1 May 2006.
- (4) The core group finalizes the strategic plan for dengue partnerships based on the information from countries, lessons learnt from existing experiences in dengue prevention and control and partnerships formed for the control of HIV, TB and malaria. The strategic plan, to be prepared by 30 September 2006, should identify priority actions, capacity and resource needs, TORs and scope of work for the working groups and a plan for sustaining the partnerships and resource mobilization.
- (5) A follow-up partners' meeting be organized to review the Strategic Action Plan, finalize the TORs and agendas of working groups and plan subsequent actions before the end of 2006.

Annex 1

List of participants

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Annex 2

Programme

Thursday, 23 March 2006

0800 – 0900 hrs	Registration
0900 hrs	Agenda I: Opening session Welcome address by the Governor of Chiang Mai Province Opening address by <i>Dr Narongsakdi Aungkasuwapala</i> Deputy Permanent Secretary, Ministry of Public Health Royal Thai Government Remarks by Regional Director WHO Regional Office for the Western Pacific Region (To be delivered by <i>Dr Dato' Tee Ah Sian</i> , Director, DCC/WPRO) Remarks by H.E. Ambassador and Executive Director <i>Mr Tran Trong Toan</i> , Asia-Pacific Economic Cooperation (APEC) Secretariat, Singapore Inaugural address by <i>Dr Samlee Plianbangchang</i> Regional Director WHO Regional Office for South-East Asia Region Vote of thanks by <i>Dr Narong Sahamethapat</i> Deputy Director-General, Department of Disease Control, Ministry of Public Health, Thailand Group photograph followed by high tea
1000 – 1030 hrs	Tea/coffee
1030 hrs	Administrative announcements by <i>Dr Seeviga Saengtharatip</i> , the Local Organizer, and <i>Dr Chusak Prasittisuk</i> , VBC/SEARO
1035 hrs	Agenda II: Emergence of dengue (Moderator: <i>Prof Goh Kee Tai</i>)
1035 – 1050 hrs	Global dengue situation <i>Prof. D.J. Gubler</i>

1050 – 1105 hrs	Emergence of dengue in the Asia-Pacific <i>Dr Kevin Palmer</i>
1105 – 1125 hrs	Discussions
1125 hrs	Agenda III: Dengue control: everyone's concern (Moderator: <i>Mr Ibrahim Shaheem</i>)
1125 – 1145 hrs	Dengue control: everyone's concern Concept Paper <i>Dr Chusak Prasittisuk</i>
1145 – 1200 hrs	Discussions
1200 – 1300 hrs	Lunch
1300 hrs	Agenda IV: Success stories on prevention and control of dengue (Moderator: <i>Prof. D.J. Gubler</i>) (presentation of 10 minutes each followed by 5 minutes of discussions) Partnerships for dengue prevention and control <i>Dr Elil Ranganathan</i> Healthy public policies <i>Dr Vijay Kumar</i> Vector control <i>Dr Michael Nathan</i> Surveillance / laboratory networks <i>Prof D.J. Gubler</i> Success story on clinical management in Thailand <i>Dr Suchitra Nimmanitaya</i> Experience of Singapore <i>Prof Goh Kee Tai</i> Communication for behavioural impact and experience in Malaysia <i>Dr Will Parks/Dr Raili Suhaili</i>
1500 – 1530 hrs	Tea/coffee
1530 hrs	Agenda V: Network for dengue prevention and control (Moderator: <i>Dr Elil Renganathan</i>)
1700 hrs	Conclusion for the day

1830 hrs Welcome reception/dinner hosted by the Royal Government of Thailand

Friday, 24 March 2006

830 hrs Agenda V: Network for dengue prevention and control (cont...)
(Moderator: *Dr Elil Renganathan*)

830 – 1000n hrs Discuss on the roles and modalities of networks

1000 – 1030 hrs Tea / coffee

1030 hrs Agenda VI: Conclusions and recommendations
(Moderator: *Dr Vijay Kumar*)

1030 – 1200 hrs Presentation of recommendations

1200 – 1400 hrs Lunch

1400 – 1500 hrs Conclusions and recommendations

1500 hrs Agenda VII: Closing session

Remarks by representatives from Member States:
(SEARO and WPRO)

Remarks by representative from partners

Closing remarks
by *Dr Narong Sahamethapat*
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1530 hrs High tea